UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

OFFICE OF
GENERAL COUNSEL

October 17, 2019

Austin Evers
American Oversight
1030 15th Street NW, Suite B255
Washington, D.C., 20005
foia@americanoversight.org

Re: Freedom of Information Act Request No. EPA-HQ-2019-008587, Interim Response

Dear Mr. Evers:

This letter concerns the above referenced Freedom of Information Act (FOIA) request, received by the U.S. Environmental Protection Agency (EPA or Agency) on September 3, 2019.

I. Previously Released Information

EPA has recently processed a FOIA request related to Bristol Bay that, among other topics, seeks records about the NEPA Process and communications with Pebble Partnership. Portions of this request may also be responsive to your request.

To date, 29 interim responses have been provided to this requester. These records may be accessed at the link below or by searching for FOIA request EPA-R10-2019-000135.

https://foiaonline.gov/foiaonline/action/public/submissionDetails?trackingNumber=EPA-R10-2019-000135&type=request

II. Next Steps

Please review the records provided. If these records satisfy your request, please let us know promptly so that we can close the request. We will continue to process your FOIA request.

If you would like to discuss your request and the records further, please email or call Denise Walker at 202-564-6520 or walker.denise@epa.gov to set up a time.

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If you wish to request information connected to this request in the future, please reference the FOIA request number.

Additionally, you may seek assistance from EPA's FOIA Public Liaison at hq.foia@epa.gov or (202) 566-1667, or from the Office of Government Information Services (OGIS). You may contact OGIS in any of the following ways: by mail, Office of Government Information Services, National Archives and Records Administration, Room 2510, 8610 Adelphi Road, College Park, MD 20740-6001; email, ogis@nara.gov; telephone, (202) 741-5770 or (877) 684- 6448 or fax, (202) 741-5769.

Sincerely,

s/s Denise A. Walker

Denise A. Walker
National FOIA Office, Office of General Counsel 202-564-6520

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/21/2018 12:57:13 AM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

→ Join by Phone

Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA Conference Line/Code / Ex. 6 office

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/27/2018 7:15:29 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]

Subject: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

Meeting to brief David on the highlights of the comments from our pre-DEIS review, prior to finalizing and sending to the Corps.

Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 8:14:12 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Fordham, Tami; Stern, Allyn; Detwiler, Susan K.; Chu, Rebecca

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Toll number: Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/13/2018 10:03:30 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]

Subject: Prep for Pebble scoping letter meeting
Location: DCRoomARN7500/DC-Ariel-Rios-OGC; OGC-WLO-O365-ConferenceLine Conference Line/Code / Ex. 6

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 5:00:00 PM
Show Time As: Busy

I thought it would be helpful for folks to talk through David's comments. Sorry for the lunch time meeting. I couldn't find any other time to get a critical mass and I know not everyone is available. If there are critical folks that can't make this time, just let me know. Also, let me know if you think there are others that should be added.

+++

Adding call in number for Region 10 folks:

Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/13/2018 8:09:48 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping Prep
Location: Cara's

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 4:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/13/2018 8:08:50 PM

Subject: Pebble Scoping

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Toll number: Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/1/2018 4:00:00 PM
End: 8/1/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/15/2018 4:00:00 PM
End: 8/15/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/29/2018 4:00:00 PM
End: 8/29/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/12/2018 4:00:00 PM
End: 9/12/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/26/2018 4:00:00 PM
End: 9/26/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/10/2018 4:00:00 PM
End: 10/10/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/24/2018 4:00:00 PM
End: 10/24/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C1C256A2466C4126B7E6734EB7D08641-MARSHALL, V]
Sent: 6/13/2018 6:21:41 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: Conference Line/Code / Ex. 6 Code: Conference Line/Code / Ex. 6

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line Conference Line/Code / Ex. 6 Code: Conference Line/Code / Ex. 6

Start: 7/18/2018 4:00:00 PM
End: 7/18/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/24/2018 8:54:30 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; R10Sea-ConfLineMM; Conference Line/Code / Ex. 6 Wehling, Carrie [Wehling.Carrie@epa.gov]

Subject: Pebble Scoping

Start: 5/2/2018 8:00:00 PM
End: 5/2/2018 9:00:00 PM
Show Time As: Tentative

Moving so that Carrie Wehling can join.

Hi –

We were originally planning on talking about the interaction between the PD and the scoping letter tomorrow during the biweekly. But, talked to Palmer after talking to MaryAnne and then Cara today, and we think a separate meeting on this is best. Heidi likely can't call in tomorrow and also I think we may want a full hour. Schedules are busy so this is the first available.

Conference Line/Code / Ex. 6

Hopefully this works.

Thanks,

Ashley

AMERICAN OVERSIGHT

Appointment

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 4/23/2018 8:15:01 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]

Subject: Pebble Scoping Comments
Location: Phone- I wil call you

Start: 4/24/2018 4:30:00 PM
End: 4/24/2018 5:00:00 PM
Show Time As: Busy

David,

I was on a phone call with ORC, OGC, Palmer and members of the regional team in which this was discussed. If you have a moment, I am hoping to be able to share our thoughts with you. I saw that there may be other opportunities, if this does not work for you. I don't imagine it will take long. Thanks.

Mary Anne

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/27/2018 7:15:26 PM
To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]

Subject: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Tentative

Meeting to brief David on the highlights of the comments from our pre-DEIS review, prior to finalizing and sending to the Corps.

Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/28/2018 9:22:10 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble Scoping - current compiled version
Attachments: Pebble Project Scoping 062818 compiled draft.docx

Hi David,
I have completed a resolution/compilation of the edits received to date. There are a very limited number of places where I did not accept edits yet, and have left for your consideration (with explanatory comments). I do not think any of the remaining edits are intolerable, but felt they were ones that warranted bringing to your attention. Please let me know if there is anything else I can do to assist with finalizing this letter.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/28/2018 7:30:15 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: RE: Pebble scoping letter

I am available for the next half hour.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Thursday, June 28, 2018 12:27 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: RE: Pebble scoping letter

It is my understanding that there are 2 versions of the scoping letter. There is one version that has incorporated OFA and OW comments that Molly has. The version that OGC commented on is not the latest version.
It is not clear whether Molly or David is consolidating these two versions.
Can we discuss?

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 12:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Feeley, Drew (Robert)
Sent: Thursday, June 28, 2018 12:20 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>;

AMERICAN OVERSIGHT

Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Thanks! We can work from this version, assuming it's the most recent one.

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 2:14 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>

AMERICAN OVERSIGHT

Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Remaining bubbles:

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 3/30/2018 8:11:05 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)
Attachments: document_gw_05.pdf

Jill and David-

The Corps today issued its NOI to prepare an EIS and its scoping schedule. See links below.
The scoping period runs from April 1 to 30.
I had hoped that the Corps would extend the schedule based on letters that have already come in, including the attached letter from the DNR commissioner.
I recommend that we write a short letter also requesting an extension of the scoping period. If you agree, I will work with Molly on a letter.

Thanks - Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, March 30, 2018 11:22 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: March 30, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

LOCATION: The project would be located in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit.

CONTACT:
For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

_____
**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

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Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

AMERICAN OVERSIGHT

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources
COMMISSIONER'S OFFICE
550 W. 7th #1400
Anchorage, AK 99501
Main: 907.269.8431
Fax: 907.269.8918

March 28, 2018

Col. Michael Brooks
Commander
U.S. Army Corps of Engineers – Alaska District
Post Office Box 6898
JBER, Alaska 99506-0898
michael.s.brooks@usace.army.mil

Dear Colonel Brooks,

I write regarding the anticipated publication of the US Army Corps of Engineers' (USACE) Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) set to be published in the Federal Register this week. It is the State of Alaska's understanding that the USACE intends to announce a 30-day scoping period for the proposed Pebble Project. For a variety of reasons, explained below, the Alaska Department of Natural Resources (DNR) requests that the USACE extend the scoping period to at least 90-120 days for the proposed Pebble Project EIS.

The Code of Federal Regulations defines scoping as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). Although the USACE has conducted some outreach with tribes and stakeholders, including DNR, following receipt of Pebble Limited Partnership's 404 application, and proactively posted the application along with draft scoping materials on-line ahead of the NOI, it does not relieve the USACE from offering a scoping period commensurate of the scale and importance of the Pebble Project.

The proposed Pebble Project envisions an open pit mine, a mile across, near the headwaters of the most prolific salmon fishery in the world. The region supports villages and subsistence activities year-round. Due to the size and potential impact of the proposed mine, a 30-day scoping process is likely insufficient for the public to identify, and the USACE to address, issues of concern, studies that are needed, and alternatives to be examined.

The scoping process will rightfully include several public meetings with those affected by the proposed project. Western Alaska is not always easily accessible because travel is often affected by weather and distance. With multiple meetings scheduled across the state, should just one scoping meeting be delayed it could jeopardize the Corps' 30-day scoping process. Thus, from a practical standpoint, USACE should consider a longer scoping period.

The scoping period for the proposed Donlin mine included a National Environmental Policy Act (NEPA) review, was led by the USACE, and lasted from December 14, 2012 to March 29, 2013, a total of 105 days. In that scoping process, the USACE conducted 14 public meetings across Western Alaska, one nearly each week of the entire scoping period. The State of Alaska requests that the USACE follow a similar scoping process to that of the Donlin mine.

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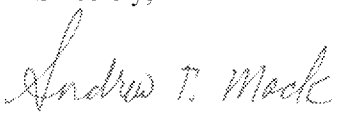
The scoping process will be extremely important to a thorough evaluation of environmental impacts from the proposed Pebble Project. We encourage the USACE to take every opportunity to accept comments and suggestions from the public as this project moves forward. The most effective way to achieve this is by ensuring a sufficient scoping period.

Sincerely,



Andrew T. Mack,
Commissioner

cc: Sheila Neuman
USACE Regulatory Division Program Manager

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 11/27/2018 7:22:02 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: Follow-up from reg review re: Pebble preliminary draft EIS
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx; EPA Comments Pebble Pre-Draft EIS Sections 3.1_3.5_4.1_4.5 110918.docx

fyi

From: Palomaki, Ashley
Sent: Tuesday, November 27, 2018 10:48 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS

We have only sent two sets so far, and they are attached.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Tuesday, November 27, 2018 7:15 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Follow-up from reg review re: Pebble preliminary draft EIS

Please see request from David below.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, November 27, 2018 10:13 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS

Thanks, Heidi. Could you please ask the Region for the three most-recent sets of comments provided to the Corps so I can get a sense of what is being sent?

David Fotouhi

Principal Deputy General Counsel
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From: Nalven, Heidi
Sent: Tuesday, November 27, 2018 9:55 AM
To: Fotouhi, David <fotouhi.david@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Follow-up from reg review re: Pebble preliminary draft EIS

Hi David,

We wanted to follow-up on your questions from reg review last week regarding comments Region 10 is providing to the Corps on the preliminary draft EIS chapters. I talked with Carrie, Allison (CCILO) and ORC (Ashley and Cara). The

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please let us know if you need any further information.
Heidi

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Pebble EIS Preliminary Draft Chapter 1 and 2
EPA Comments
11/21/18

Thank you for the opportunity to review the preliminary drafts of Chapters 1 and 2 of the Pebble EIS, in accordance with our role as a Cooperating Agency. We do not have any comments to provide on Chapter 1 at this time. Our comments on Chapter 2 are provided in table format below.

We have a number of comments requesting more detail in the description of Alternative 1 (the proposed action) and the other alternatives. In addition, we have significant concerns regarding the rationale for the range of alternatives and lack of inclusion of a tailings dry stack alternative and bulk TSF liner alternative. We have previously provided comments related to our recommendations to analyze these alternatives in the Draft EIS to the Corps in our review of the Draft Appendix B Alternatives Development Process and review of AECOM's dry stack memo. At the October 24, 2018 Cooperating Agency meeting, the Corps and AECOM presented the range of alternatives proposed for analysis in the EIS. At that meeting, we expressed our concerns with lack of both a dry stack alternative and TSF liner alternative included in the EIS, and we requested a follow-up conversation with the Corps and AECOM technical experts to discuss our concerns. The Corps agreed to hold this meeting but has not yet scheduled it. We note that establishing a robust range of alternatives is a foundational issue for NEPA compliance as it effects the scope and scale of other sections of the EIS. Per the Cooperating Agency plan, we would like to collaborate with the Corps to try and resolve our concerns prior to release of the Draft EIS. We therefore reiterate our request for a technical meeting to discuss these tailings storage options. We recommend that along with the EPA, the Corps and AECOM, other cooperating agency experts be invited to participate.

Due to the limited time available for review of Chapter 2 and uncertainty regarding how the Corps intends to address the comments that we have previously provided on Appendix B, our public comments on the Draft EIS may include additional concerns or recommendations.

Page	Section	Existing text (if applicable)	Recommendation
1	2.0	The alternatives development process for the proposed Pebble Project (the project) considers a broad range of alternatives in sufficient detail to address both NEPA and CWA Section 404(b)(1) requirements.	We recommend providing additional explanation regarding the process for evaluating alternatives to comply with the CWA Section 404(b)(1) guidelines. We note that the current alternatives evaluation does not enable comparison of the alternatives for the purpose of compliance with the 404(b)(1) guidelines and to identify the potential least environmentally damaging practicable alternative (LEDPA) for 404 permitting purposes because, for example, there is insufficient information about how all practicable steps have been taken to avoid and minimize aquatic impacts. We understand that the 404(b)(1) guidelines analysis will be included in an appendix, and we request an opportunity to review and provide comments on that appendix prior to release of the Draft EIS.

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Page	Section	Existing text (if applicable)	Recommendation
2	2.2	Alternatives Carried Forward for Detailed Analysis – General comment on identification of preferred alternative	We recommend that the Draft EIS note that the NEPA regulations require that agencies identify the preferred alternative in the DEIS if one exists and disclose whether the action agencies have identified that alternative and if not, why not. The three action alternatives proposed to be carried forward for detailed analysis combine various alternative project elements into three discrete alternative packages, and include variants to those alternatives. We note that this approach can be confusing to agency reviewers and members of the public, who may not understand that separate elements/variants can also be combined into a new alternative at the Final EIS or Record of Decision. In addition, we note that it can be difficult for decision makers to understand the environmental trade-offs of various elements when packaged in this way. We recommend that the Corps ensure that the Draft EIS clearly explains the process for packaging alternative elements/variants into complete alternatives and for ultimately selecting a preferred alternative, including explaining that the final preferred alternative could include a combination of the alternatives and variants analyzed in the EIS for the different project components. In addition, we recommend that the analysis of environmental consequences clearly analyze each project element separately, rather than summarizing impacts for an alternative as a whole (e.g., analyze the impacts of the downstream TSF compared to the proposed action, separate from consideration of impacts from North Access Road). This information will be critical to decision makers in alternative selection.
6	2.2.2	"…employ approximately 850 to 2,000 personnel for operations and construction, respectively."	We recommend clarifying that 2,000 personnel would be employed for 4 years of construction and 850 personnel would be employed for 20 years of operation. In addition, we recommend that the EIS clarify whether these numbers are annual or total estimates for each period.
6	2.2.2	"An 84-mile transportation…" "A 29-mile private two-lane…" "A 37-mile private…" "A 187-mile gas pipeline…"	We recommend verifying the miles provided for each of these project components, as what is stated here differs slightly from the miles given in the updated project description on pages 1 and 2.
6, 7, and 12	2.2.2		We note that the tons of material to be mined and placed in the Tailings Storage Facility varies throughout the document and recommend confirming the correct quantity prior to the release of the DEIS.
7	2.2.2.1	"Fine and coarse-grained soils would be stored southwest of the pit and north	We recommend clarifying how and where these soils/sediments would be stored and managed to ensure they are not mobilized over the 20-year period of the

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Page	Section	Existing text (if applicable)	Recommendation
		of the TSF embankments and would be used for reclamation during mine closure."	mine life. We also recommend that the EIS clarify whether these storage areas are the same as or different from those labeled as the growth media areas in Fig 2-3.
7	2.2.2.1	During this period, 1,300 million tons of mineralized rock and 150 million tons of waste rock and overburden would be mined	We note that the total here is 1.45 billion tons, whereas in other places the total is stated as 1.4 billion tons or 1.3 billion tons. We recommend verifying the correct amount and clarifying where values may be summing a subset of the material.
7	2.2.2.1	Non-potentially acid-generating (NPAG) waste rock would be used in construction of the tailings embankments.	We recommend that the EIS provide the criteria that will be used to distinguish NPAG and non-metal leaching (ML) waste from PAG and ML waste and discuss how the NPAG/PAG determinations will be made during active mining. These details are typically provided in EISs for mining projects and are necessary to evaluate the effectiveness of the NPAG/PAG separation and potential environmental impacts from tailings and waste management.
8	Fig 2-3		We recommend adding text to the document that explains what quarries are and why they are needed (Quarries A, B, C are shown in Fig 2-3, but are not mentioned anywhere in the text).
9	Fig 2-4		We recommend improving the digital simulation to better clarify which features are part of the mine vs. which are natural features (e.g., gray shading for lakes and mine components may be confusing to the readers of the EIS). We also recommend expanding the scale of Fig 2-4 to encompass all components shown in Fig 2-3 (e.g., Quarry B is not included in Fig 2-4).
11	2.2.2.1	"Material would be stockpiled within the pit footprint, or in designated stockpiles, as appropriate."	We recommend providing additional detail regarding where mineralized material would be stockpiled, as well as showing the locations in Figure 2-3. Figure 2-3 indicates stockpile locations for overburden but does not show mineralized material stockpile locations.
11	2.2.2.1	In the grinding plant, it would be reduced to the consistency of very fine sand. The next step is froth flotation, in which the copper and molybdenum minerals are separated from the remaining material to produce concentrates… See Figure 2-6 showing the process flow diagram.	We recommend that the EIS state here that water and chemicals (reagents) are added during mineral processing and refer to the table that provides the list of reagents that would be used. We recommend expanding Figure 2-6 to show points in the process where water and reagents are added. In addition, this figure shows that some gold will be extracted by gravity separation, but the text never mentions this process, nor does it say how it will be handled. We recommend that the gold extracted in the gravity separation process be accounted for in the description of handling of products leaving the mine site.

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Page	Section	Existing text (if applicable)	Recommendation
11	2.2.2.1	[1] Bulk tailings are comprised of relatively inert, non-acid-generating fine-grained ground waste rock that remains after economic minerals and pyritic materials have been extracted through ore processing at the mine site. See also pyritic tailings. Pyritic tailings are comprised of potentially acid-generating fine-grained ground waste rock containing the naturally occurring mineral pyrite.	We recommend revising the definitions to remove the term "waste rock" so as not to confuse tailings with waste rock that is extracted during mining. For example, the term "waste material" is often used instead of waste rock since tailings also contain process reagents and water.
11	2.2.2.1	The TSFs would be designed to meet or exceed the standards of the updated 2017 Guidelines for Cooperation with the Alaska Dam Safety Program (ADSP) prepared by the Alaska Department of Natural Resources (ADNR).	Further information is necessary to support this statement. We recommend that the DEIS provide a table that lists the ADSP standards that are being referred to in this sentence. For each standard that is applicable to the project, the EIS should provide information specific to the bulk TSF, pyritic TSF, and water management pond designs and operations that clearly demonstrate that they meet or exceed the state ADSP standards. In addition, given the size of the dams and importance of downstream aquatic resources, and for the bulk TSF, centerline dam construction methodology (which is not as stable as downstream construction), we recommend that: (1) a Failure Modes Effect Analysis (FMEA) or other type of formal risk assessment be conducted for the dam designs; and (2) the Corps require that the tailings dam designs be independently reviewed per 33 CFR 325.1. FMEA/risk assessment and independent review are recommended best practices from both the Independent Expert Engineering investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach (2014) and the International Council on Mining and Metals Review of Tailings Management Guidelines and Recommendations for Improvement (Golder 2016) for evaluating safety and stability of tailings dams. Mitigation measures arising out of the risk assessment and independent reviews should be identified and required of the final designs and operating plans. We recommend that the FMEA/risk assessment and independent review occur now so that the results can be disclosed in the DEIS to support the Corps' hard look, as required by NEPA, at tailings dam stability and safety.
14	2.2.2.1	The main embankment of the bulk TSF would function as a permeable structure to maintain a depressed zone of	We recommend that the EIS describe how the main embankment would be designed, constructed, and operated to maintain both permeability and stability. We also recommend that the document discuss whether

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		saturation in the embankment, and tailings mass in proximity to the embankment.	100% of the water flowing through the embankment would be captured and how it would be captured.
14	2.2.2.1	A basin underdrain system would be constructed at various locations throughout the bulk TSF basin to provide preferred drainage paths for seepage flows.	We recommend describing whether the underdrain system would be designed to capture 100% of the TSF seepage. We also recommend providing a figure that shows the number of underdrains and alignment of the underdrain system below the TSF. These details are necessary to evaluate effectiveness of the system and potential groundwater impacts.
14	2.2.2.1	The pyritic TSF would be a fully lined facility.	We recommend that the EIS describe the type of liner that would be used (material and thickness) as well as the construction and waste rock and tailings placement techniques that would occur to ensure liner integrity.
18	2.2.2.1	The south Bulk TSF embankment would be constructed using the downstream construction method to facilitate lining of the upstream face	We recommend clarifying why this particular embankment would be lined and the others in the same TSF would not be.
18	2.2.2.1	The embankments would be constructed using select borrow materials, and include a liner bedding layer, overlain by a liner, on the upstream slope and over the entire internal basin	We recommend that the EIS clarify whether the pyritic TSF will have a drainage system under the liner.
18	2.2.2.1	TSF embankments would be constructed in stages throughout the life of the project, with each stage providing the required capacity until the next stage is completed.	We recommend adding a table or figure that provides the rate of rise for the TSF dams.
18	2.2.2.1	It would be a fully lined facility and would be constructed using quarried rockfill materials. The embankment would be approximately	We recommend disclosing the type of liner that would be used under the water management pond.
11-18	2.2.2.1	General comment on description of tailings management and TSFs	The discussion on tailings management is missing several key elements, which we recommend be added to the description, including: (1) how dust and erosion of the TSF buttresses and beaches will be managed and mitigated; (2) the stability, seepage, and environmental monitoring that would occur to determine whether the dams are performing as designed, and actions that would be taken if they are not; and (3) the emergency action plans that would be developed and how notification would occur in the event of an emergency.

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Page	Section	Existing text (if applicable)	Recommendation
21	2.2.2.1	Table 2-2. Grinding Media, Reagents, and Miscellaneous Supplies	We recommend providing, in Table 2-2, the annual quantity of each of the mineral processing reagents that appear in Table 2-1 (e.g., as was done in for fuel and ammonium nitrate). We also note that "Grinding Media" does not appear in Table 2-1 and recommend that these materials be listed in both tables. In addition, please provide the estimated quantities of chemicals that would be used in the water treatment plants.
21	2.2.2.1		In the section for material management and supply, lubricants and diesel fuel are discussed as being stored in secondary containment. We recommend that the document also discuss that multiple chemicals to be used (at the main mine site for water treatment plants and processing and for the port WTP) also require secondary containment (and some will require freeze protection). It will be important for agency decision makers and the public to understand all of the specific chemicals that will be stored using secondary containment.
21	2.2.2.1	The project would develop a comprehensive water management plan that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of stream flow fluctuations and minimizes impacts to fish habitat.	We recommend that the water management plan referred to in the text be included in the DEIS, and that Cooperating Agencies have an opportunity to review this plan prior to public release of the DEIS, to allow for evaluation of the effectiveness of the stream flow reduction and fish habitat impact minimization measures. Understanding the effectiveness of these measures is a key factor in evaluating impacts to groundwater, surface water, and aquatic resources. In addition, we recommend that the goal of water management be to manage discharges to match the natural flow regime as much as possible, in addition to reducing the effect of stream flow fluctuations.
22	2.2.2.1	Prior to the operations WTPs being brought on-line, modular WTPs would be used to treat contact water that does not meet discharge requirements.	We recommend describing the water treatment processes that would be used prior to the operations plants being brought on-line, similar to the information disclosed regarding the operations water treatment plants.
23	2.2.2.1	Production Phase Water Treatment	We recommend providing the following additional information in order to evaluate the effectiveness of water treatment and discharge: (1) design capacity of the mine area WTPs in comparison to expected and reasonable worst-case flows; (2) additional detail regarding the "multiple independent treatment trains"; (3) discharge (outfall) locations for each of the WTPs; and (4) as mentioned in previous comments, more information on the discharge timing (seasonal or

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			year-around; specifically, how flows will be distributed among the outfalls).
23	2.2.2.1	• The pyritic TSF and associated seepage collection ponds would be reclaimed, and surface water runoff from the area discharged to the downstream environment. • The main WMP would be reclaimed, and surface water runoff from the area discharged to the downstream environment.	We recommend that the following be added to these two requirements: "once the runoff has been demonstrated to meet water quality criteria." A similar statement is found on the next page as a requirement prior to discharge from the reclaimed bulk TSF
24	2.2.2.1		There is no discussion of waste tire disposal during operations, which are notably mentioned on page 2-2 (2-19) as a primary material. We suggest that the discussion in the Updated Project Plan be added here as well for clarity. The Updated Project Description discusses used or damaged parts (Section 3.7 on PDF page 52) as "Used tires and rubber products will be reused to the extent practicable. Additional used tires, along with other damaged parts and worn pipes, will be packaged and back-loaded into empty containers for shipment and disposal off site."
24	2.2.2.1	Closure/Post-Closure Phase Water Management Plan	We recommend providing the following additional information related to closure/post-closure water treatment: (1) Describe the type of water treatment that would occur at closure, as was done for the operations Water Treatment Plants; (2) Closure WTP design capacity in comparison to predicted flows; (3) Estimated quantities of WTP chemicals needed during closure; (4) Discuss where WTP sludge would be disposed and estimated sludge quantities produced annually; and (5) Describe closure WTP outfall location(s) and whether discharges would occur year-around, seasonally, or otherwise be timed.
24	2.2.2.1	"Water quality would be closely monitored, and changes and adjustments to	We recommend expanding on this point to explain how water quality will be monitored (how often, by whom) and how adjustments will be made.

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Page	Section	Existing text (if applicable)	Recommendation
		the treatment process would be made as needed."	
21-23	2.2.2.1	General comment on water management description	We recommend providing the following additional information related to water management: (1) Surface water diversions are cited as key BMPs to minimize contact water. Provide figures that show where the surface water diversions will be located in relation to the mine site layout during construction, operations, and closure. (2) Describe the location of each treated water APDES outfall and describe the outfall structure/diffuser. (3) WTP sludges and residuals will be disposed in the pyritic tailings TSF. Discuss how much WTP sludge will be generated and how it will be disposed.
25	2.2.2.1	"Inert mine site materials, such as geomembrane material, piping, and pumps, would be drained and cleaned, as appropriate, and placed into a facility that would be permitted within the submerged waste rock dump in the pit or within the footprint of the reclaimed pyritic tailings facility." "Material that has residual value or is not suitable for onsite disposal would be hauled offsite for disposal (PLP 2018-RFI 055a)."	In Section 6.1 (PDF page 77-78) of the Updated Project Description, there is discussion of disposal of inert materials from dismantling and removal of site mine features during physical reclamation being "disposed of in an on-site monofill that will be sited within the disturbed footprint, while others will be shipped off site for disposal as appropriate." The Updated Project Description does not mention any disposal of these types of waste materials into the pit, but it is presented in RFI 055a. The RFI is dated prior to the Updated Project Description file. We suggest clarifying what materials would be disposed of in the pit at closure that could influence how the water is treated prior to release after closure.
25	2.2.2.1	Reclamation and closure of the project falls under the jurisdiction of the ADNR Division of Mining, Land, and Water, and the Alaska Department of Environmental Conservation.	The list of permits and approvals in Appendix N (Table 7-1) does not appear to include reclamation and closure. We recommend that the required permits and approvals for reclamation and closure be added to the table.
	Figure 2-10 and Figure 2-11	"habitat conditioning"	This term is not defined or explained in the text. We recommend that the EIS describe what it involves.
	Figure 2-11	"Waste sludge to tailings storage facility"	We recommend clarifying whether this is the pyritic TSF or the bulk TSF.
	Figure 2-11		We recommend that it would be helpful to the reader if the line between the RO unit and the biological reactor was red instead of blue, to indicate that it is the RO reject being treated. We note that this is not described in the text of the chapter (but is in the Updated Project Description).

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	Figures 2-10 and 2-11		We recommend explaining in the EIS why the rejects from the RO are being treated differently at the two treatment plants, and how reject will be treated at the port.
28		"Once the level of the pit lake has risen to about 890 feet in elevation, water would be pumped from the pit, treated as required, and discharged to the environment."	We recommend that the EIS discuss the treatment steps for this process. We also recommend including a discussion of how the pit water would be managed to minimize its anticipated acidity and metal/metalloid load, which would minimize long-term treatment requirements.
25-28	2.2.2.1	General comment on mine site reclamation and closure	We recommend that the following additional information be provided. This information is typically included in mining EISs since reclamation and closure activities should be described in a sufficient level of detail to predict long-term environmental impacts: (1) As discussed above, provide more details on closure water treatment (WTP process flowsheet, estimated design flow, discharge outfall location and discharge timing, WTP sludge management); (2) List reclamation standards and objectives and describe the monitoring that would occur to demonstrate that objectives are met; (3) Provide a reclamation schedule that describes when key reclamation actions would occur (e.g., timing for physical reclamation, tailings consolidation, pit filling, and discharge, etc.); and (4) Most jurisdictions require a temporary closure plan that describe actions that would occur in the event the mine ceases operations prior to completion of mining. A temporary closure plan should be provided that describes how mine facilities would be closed in the event of pre-mature or temporary closure. This is particularly relevant for the TSFs, open pit, and for water management.
29	2.2.2.1	Financial Assurance	As discussed in our scoping comments, we recommend that the DEIS disclose the estimated financial assurance amount. This information is necessary to assess the effectiveness of reclamation and closure activities, which is critical to the assessment of environmental consequences of the project at and beyond closure.
29	2.2.2.2	"…whether the streams are fish-bearing….88 culverts; of these, 35 are designated as fish passage culverts."	We recommend that the EIS clarify whether this means any fish, or anadromous fish specifically, and provide data to support this statement. We note that only 35 of 88 crossed streams having fish seems very low.
	2.2.2.1	General comment on description of Alternative 1 - quarries	The description of the mine site does not discuss the quarries. We recommend that this information be added to section 2.2.2.1, similar to what was included for the material sites along the transportation corridor. Please provide the estimated size of the quarries (acres and

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Page	Section	Existing text (if applicable)	Recommendation
			depth), the amount of material that would be mined, testing that would occur, location of where the material will be placed, and how the quarries would be closed.
30	2.2.2.2	Culverts at streams with fish would be designed and sized for fish passage in accordance with ADOT&PF and Alaska Department of Fish and Game (ADF&G) standards.	We recommend that the EIS include a discussion or table that lists the specific standards referred to in this sentence.
38	2.2.2.2	A custom-designed ferry would transit Iliamna Lake between the north and south ferry terminals, carrying inbound supplies from Amakdedori port to the mine site, and returning with copper-gold and molybdenum concentrates, backhauled waste, and empty shipping containers.	We recommend that the document describe the method of personnel transport to and from the site.
38	2.2.2.2	Bilge water would be pumped through oil/water separation equipment installed on the vessel, and then discharged back to Iliamna Lake.	The ferry would require coverage under EPA's Vessel General Permit for discharges such as bilge water. Please see https://www.epa.gov/npdes/vessels-vgp for the current requirements for various sized vessels.
46	Table 2-3		We recommend clarifying whether material usage for the Kokhanok spur road is included in the material site quantities estimates for the port access road or provide a separate listing in the table as was done for the Iliamna spur road.
		All material site tables	We recommend adding supporting information that discusses the methodology for choosing the sites for material source, including: location within the landscape, type and amount of wetland impacts, and individual location analysis for avoidance and minimization of impacts.
47	2.2.2.2	Water Extraction Sites section	We recommend that the document include information on where the water extraction sites are located (e.g., show on maps as done with material sites, or list drainages/specific water bodies in table).
		All water extraction tables	We recommend adding supporting information that discusses how the water withdrawals would impact downstream receiving water quality and quantity, if any impacts are anticipated, and discusses the identification process used to avoid and minimize water quality and quantity issues resulting from the withdrawals.
48	2.2.2.2	"These camps would remain in place until the natural gas	We recommend that the EIS include an estimate for how long these camps would be in place, and the number of people they would be supporting.

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		line construction is complete."	
58	2.2.2.3	"Copper-gold concentrate would be transported from the mine site to Amakdedori port by truck…"	We recommend clarifying that ferry transport will also be needed to get concentrate to the port.
58	2.2.2.3	The empty containers would be cleaned of any residue on the outside while at the port, and then returned to the laydown pad	We recommend clarifying how this will be accomplished and if there is potential for contaminated wash water to be discharged.
60	2.2.2.3	Port WTP	We recommend describing the WTP design capacity as compared to expected flows and describe the location of the WTP discharge outfall.
60	2.2.2.3	The treated water would be suitable for discharge.	Please clarify that any discharge needs to be authorized by an APDES permit.
60	2.2.2.4	Natural Gas Pipeline	We recommend clarifying whether the pipeline will be a common carrier and whether the four nearby villages have the ability to transport gas for their own use through the line.
60	2.2.2.4	Natural gas pipeline description	The description says the pipeline will be laid on the seafloor crossing the Inlet but also states that the pipeline crossing Iliamna Lake will be buried similar to Cook Inlet Crossing. Please provide clarification and additional detail regarding the method of pipeline installation for crossing of Cook Inlet and Iliamna Lake.
60	2.2.2.4	The pipeline would come ashore at Amakdedori port,	We recommend clarifying whether horizontal directional drilling would be utilized for the pipeline to come onshore at the port. If HDD would not be used, we recommend discussing how it will be ensured that the pipeline would not be a navigational hazard to vessels using the port.
		General comment on description of Alternative 1 - monitoring	The description of Alternative 1 mentions monitoring in several locations but does not provide any details. A monitoring plan is typically provided as part of a mine plan of operations to support EIS development and described in Chapter 2 of the EIS (since it is part of the project description). We recommend that a monitoring plan be included in the Alternative 1 description or provided in an appendix. The monitoring plan should include a sufficient level of detail to demonstrate that it can measure environmental effects and trends. In addition, the monitoring plan should have an adaptive management component and describe changes that would be made to the project design or operations should impacts be different than predicted or if standards are exceeded. The monitoring plan should describe the process and environmental monitoring that would occur during construction, operations, and closure for all project components and include monitoring locations, parameters, frequency, and

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			objectives. Please see our scoping comments related to monitoring.
66	2.2.2.5	"Concentrate would be stored at the port site during the winter months."	It is not clear why concentrate would need to be stored at the port site. Please explain/clarify this in the EIS.
66	2.2.2.5		Please clarify if this variant would also require increased storage of other supplies during winter months (e.g., fuel).
68	2.2.2.6	"A total of 8 waterbodies would be crossed."	Please clarify if this refers to streams only, or if this also considers other waterbodies (ponds, wetlands).
73	2.2.3	Action Alternative 2 – North Road and Ferry	We recommend that the title of this alternative be revised to include mention of the downstream TSF, so that it is clear to agency decision makers and the public that the road and ferry are not the only changes that distinguish this alternative from Alternative 1.
88	2.2.3.3	Any remaining dredged material and any material from maintenance dredging would be disposed of on-shore in a bermed facility on uplands west of the dock site	We recommend that this section also describe the APDES and any other permits that would be required for the discharge of the drainage from the on-shore dredge pile.
95	2.2.3.5	"…storage of concentrate would be needed during the winter months…"	It is not clear why concentrate would need to be stored along the transportation corridor. Please clarify.
95	2.2.3.5		We recommend that the EIS clarify if this variant would also require increased storage of other supplies during winter months (e.g., fuel).
104	2.2.4.5	Alternative 3 – Concentrate Pipeline Variant	We recommend that the description of this variant specifically disclose the reduction of truck traffic with use of the pipeline (number of truck as compared to Alternative 1).
105	2.2.4.2	Manual isolation and drain valves would be spaced at intervals no greater than 20 miles apart	It is unclear why manual isolation valves would be used for the concentrate pipeline, rather than automatic valves as would be used for the fuel lines. We are concerned that the longer response time associated with manual valves could lead to larger spills of concentrate or process water. Please provide additional detail on the isolation valves that would be used and the ability for timely response to a potential spill event.
109	2.2.4.2	The water quality characteristics of the slurry filtrate water and port area stormwater streams are expected to exceed discharge criteria for pH and metals concentrations to marine waters.	We recommend that the requirements of 40 CFR 440 Subpart J be discussed in the EIS when putting forth this alternative. The slurry filtrate water is process water under these regulations, and as such, it cannot be discharged except under certain circumstances where process water is comingled with wastewater that is allowed to be discharged and only that allowable volume can be authorized.

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Page	Section	Existing text (if applicable)	Recommendation
		General	For all of the alternatives, we recommend including maps of the water extraction sites.
	2.3	Alternatives Eliminated from Further Consideration – Request that additional alternatives be considered	This section refers to Appendix B for the rationale for dismissal of options. The EPA reviewed a draft Appendix B in September 2018 and submitted comments to the Corps on October 3, 2018. We also submitted follow-up comments related to the dry stack tailings option on October 24, 2018. We have not seen a revised version of Appendix B or a response to the comments that we have previously submitted. We participated in the October 24, 2018 Cooperating Agency meeting where the Corps and AECOM presented the alternatives proposed to be carried forward for detailed analysis in the EIS. However, the meeting did not include a substantive discussion of, or response to, comments that had been submitted. At the end of the Cooperating Agency meeting, we requested a follow-up meeting with the Corps and AECOM technical experts to discuss our outstanding concerns related to several of the tailings options. The meeting has yet to be scheduled. Based on the information presented in Section 2.3, and without a revised version of Appendix B that is responsive to our comments, we continue to have significant concerns about several aspects of the alternatives screening and range of mine site layout and tailings alternatives. For example: Mine site layout and TSF location alternatives - See our October 3, 2018 comments requesting additional discussion in the EIS to support the basis for the proposed mine site layout design and lack of alternatives related to the mine site layout. This is particularly relevant for TSF siting options since Appendix N states that PLP considered more than 35 tailings disposal sites, yet Table 2-21 identified only one possible alternative location for the pyritic TSF. We again request that the Corps evaluate the TSF locations previously considered by PLP against the smaller mine plan – we recommend listing these locations in Appendix B (and showing them on maps) and assessing whether and which of the 35 alternative locations are reasonable and could result in reduced impacts. This information would better support the Corps' hard look at alternative TSF locations as required by NEPA. Dry stack tailings alternative (TSF-004) – Please see our October 24, 2018 comments on AECOM's analysis of the dry stack option. Absent a revised analysis of the dry stack option that is responsive to our comments, we continue to recommend that this option be considered as

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Page	Section	Existing text (if applicable)	Recommendation
			an alternative in the DEIS for the reasons discussed previously. TSF liner (TSF-015) – Please see our October 3, 2018 comments related to the bulk TSF liner option. We continue to recommend that a liner option be considered as an alternative for the bulk TSF as we have not been convinced that the TSF dam and impoundment could not be engineered accordingly. We understand that including a liner may result in the need for a revised (water-retaining) embankment design. Seepage from the bulk TSF is predicted to exceed water quality standards for some parameters. The proposed action requires long-term post-closure collection and treatment of seepage from the bulk TSF. No alternatives are proposed to minimize seepage or reliance on long-term management of seepage. No information has been provided to demonstrate that the proposed seepage control system for the TSF would collect all of the seepage, which could otherwise impact groundwater. Due to the potential for long-term groundwater impacts from uncollected seepage and the desire to reduce reliance on long term water management and treatment of TSF seepage, we continue to recommend that a liner be included. The Corps recently permitted the placement of a liner for the Donlin Gold Mine TSF, which is of similar size. Effluent outfall locations - It is not clear from the proposed project description that the outfall locations have been optimized to minimize impacts of dewatering. In fact, the project description does not describe the timing or quantities of water that would be discharged at each outfall. Therefore, we continue to recommend that this information be provided and that alternative outfall locations be assessed. See our October 3, 2018 comments. Throughput scenarios - Only one option smaller than the proposed throughput of 180,000 tons per day was considered, and it was dismissed as not reasonable because it would not provide a reasonable return on investment. We recommend that mine sizes between 50,000 tpd and 180,000 tpd be assessed to determine if there are other smaller mine throughputs that could still be practicable while also resulting in reduced impacts. In addition, where indicators such as "positive net present value" or "reasonable return on investment" are being used to screen out alternatives, we recommend that this same information be provided for the proposed action. We also recommend providing more information that defines: (1) the thresholds for positive net present

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Page	Section	Existing text (if applicable)	Recommendation
			value and reasonable return on investment; (2) the net present value and return on investment for the proposed action; and (3) the estimated net present value and return on investment for options that are eliminated based on these factors.
114	2.3	Others were not carried forward as options because they were more properly characterized as potential mitigating measures. Mitigation measures are addressed in Chapter 5, Mitigation. and Tables 2-12 through 2-23, Options Eliminated from Further Consideration	The text of this section states that some of the options were carried forward as mitigating measures. However, the tables do not identify that any of the options were carried forward. We recommend that the option descriptions be revised for those options that were carried forward as either mitigating measures or RFFAs (LAY-006).

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Pebble EIS Draft Sections 3.1, 3.5, 4.1, 4.5
EPA Comments
11/9/18

Thank you for the opportunity to review draft Sections 3.1, 3.5, 4.1 and 4.5 of the Pebble EIS, in accordance with our role as a Cooperating Agency. Our comments are provided in table format below. Due to the absence of a complete document to review as a whole for context, our ability to accurately and adequately comment is limited and our public comments on the Draft EIS may include additional concerns or recommendations.

Page	Section	Text from Draft Section	Comment
	3.1	**Affected Environment - Introduction**	
General	3.1		The introduction to the affected environment focuses on the proposed action (e.g., Section 3.1.1 Project Components and Section 3.1.4 Project Physical Setting). It is important that the affected environment characterize the potential area of impact for all alternatives. We recommend revising the text in Section 3.1 such that it does not focus solely on the proposed action. Please also ensure that the information in each resource section of Chapter 3 appropriately characterizes the affected environment for the potential impact area of the full range of alternatives carried forward for analysis. In addition, we recommend that each resource section include a subsection that summarizes the data gap analysis that was performed and clearly identifies any data gaps for the impact area of the proposed action and alternatives.
	3.5	**Affected Environment - Recreation**	
General	3.5		No comments.
	4.1	**Environmental Consequences - Introduction**	
4.1-2	4.1.3	"Actions are considered reasonably foreseeable if they are proximate to the project area and are anticipated to enter the permitting process in the next 5 years, are identified in planning documents as scheduled for development, or if significant resources have been committed to the proposed action."	The 5-year timeframe presented here appears to conflict with a statement later in this section that "the USACE has determined that expansion of the Pebble Project to develop 55 percent of its reserves over a 78-year period, as outlined in the Wardrop 2011 Preliminary Assessment Technical Report, will be analyzed under the cumulative effects analysis (see Table 4.1-1 for further discussion). Therefore, other reasonably foreseeable future activities that may occur in the 78-year time period will also be considered" (pg. 4.1-4). Based on our review, it appears that the 78-year timeframe was used in assessing RFFAs, which is reasonable because it aligns the analysis of potential cumulative impacts with the reasonably foreseeable future impacts of the Pebble Project. We recommend that the document clarify throughout the document that a

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			78-year timeframe is used for consideration of reasonably foreseeable future actions.
4.1-3	4.1.3.1	Commercial and Subsistence Harvest of Fish and Wildlife: "However, fish and wildlife resources are managed by the Alaska Department of Fish and Game (ADF&G) and federal land managers to maintain sustainable populations, and there are no long-term adverse effects or trends affecting the resource."	We recommend adding a reference to documents reviewed or other information/analysis that discusses how the authors reached this conclusion.
4.1-3	4.1.3.1	Mining Exploration Activities: "In the immediate area of the project, there has been no mineral production activity that has had lingering adverse effects on the environment."	We recommend adding a reference to documents reviewed or other information/analysis that discusses how the authors reached this conclusion.
4.1-3	4.1.3.1	Mining Exploration Activities paragraph	Given the extensive amount of exploration work conducted at the Pebble site, we recommend that more information be supplied to support the conclusions of this paragraph. Specifically, we recommend that the draft EIS: (1) summarize the amount and type of exploration work that has occurred (number of drill holes, acreage of surface disturbance, number of years of exploration activity, etc.); (2) explain the best management practices and reclamation actions that occurred; and (3) discuss whether this has resulted in impacts to wetlands, surface water, and ground water.
4.1-4 to 4.1-5	4.1.3.2	Parameters used to identify potential reasonably foreseeable future activities for the cumulative effects analysis	We recommend that the EIS provide additional explanation of how the six parameters listed in the bullets on pages 4.1-4 to 4.1-5 were applied to identify potential reasonably foreseeable future activities. For example, please clarify how many of these factors need to be met, whether all factors are equally weighted, and whether there is a sequence in which the factors are applied.
4.1-5	4.1.3.2	"The question of whether development of the project would facilitate development of other nearby mineral deposits depends in part on proximity to the project and ability to use project infrastructure… While the access road would be privately funded on State land, the State of Alaska would likely require allowing access to other mineral deposit owners if an agreement could be reached with PLP regarding operation and maintenance costs,	We recommend that the document provide additional information regarding how the future potential use of the road is being analyzed in the EIS. As provided in the EPA's scoping comments, we recommend that the analysis of indirect effects in the EIS consider the extent to which it is reasonably foreseeable that the proposed transportation corridor and natural gas pipeline may be made accessible to the public and may stimulate additional reasonably foreseeable mining exploration and development projects in the area, and potential environmental effects associated with that induced mining.

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		based on the precedent set in state permit conditions for granting Pogo Mine Access (S. Buckley, personal communication 2018)."	
4.1-6	Table 4.1-1	Description of Pebble Project Expansion	To ensure a complete description, we recommend that the description of the Pebble Project Expansion reasonably foreseeable future action also include a waste rock storage facility and an underground mine component. In addition, we note that our scoping comments recommended that the Corps consider evaluating the expansion and continued operation of the currently proposed project as a reasonably foreseeable indirect effect of the proposed action under NEPA.
4.1-6	Table 4.1-1	Potential Mineral Deposits in Southwest and Southcentral Alaska	The table lists a number of potential mineral development projects in southwest and southcentral Alaska (Pebble South through Copper Joe) and makes decisions about whether these projects are RFFAs for exploration and/or development. We recommend that more information be provided for projects that are determined not to be reasonably foreseeable development projects, so that the basis for these determinations are strongly supported. For example, Groundhog will be considered an RFFA for further exploration but not for development since "Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document and is not considered reasonably foreseeable in the 78-year time frame." Please describe which of these factors was key to determining that development of Groundhog is not reasonably foreseeable and describe the basis for that determination. We recommend that the document describe the basis for the statement that resource delineation has not progressed sufficiently and provide reference to any documents or websites that were reviewed to support this determination. We recommend a similar discussion be provided for each of the development projects listed.
4.1-6	Table 4.1-1	"Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and utilize the Pebble Project transportation system."	The entries for Pebble South and other potential projects listed say "No" to development and production but include this Note. We recommend clarifying in the table that a separate NEPA analysis would have to be done for these future projects.
4.1-10	Table 4.1-1	Whistler Deposit	The table includes Copper Joe, a porphyry copper deposit "located significantly north of the Pebble Project, in close proximity to the Whistler Deposit,"

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			but does not include the Whistler Deposit itself. Please clarify why the Whistler Deposit is not listed as a potential mineral deposit.
4.1-18	4.1.7	Incidental or induced mortality of fish and wildlife resulting from project construction and operations, as well as any reduction in habitat value, could result in localized irretrievable commitment of these resources during the life of the project	We recommend revising this statement to acknowledge that impacts to fish, wildlife, or habitat may exist beyond the life of the project.
4.1-19	4.1.8	Financial Assurance and Bonding	As discussed in our scoping comments, we recommend that the draft EIS disclose the estimated financial assurance costs to reclaim and close the site, including long term water treatment costs. We believe that this information is necessary to evaluate the effectiveness of reclamation and closure, which is a key component in determining the environmental impacts of the Pebble project. Our scoping comments provide recommendations on the level of detail to include.
	4.5	**Environmental Consequences - Recreation**	
4.5-4	4.5.2.3	"Boat traffic to and from the port would be minimal: up to 27 concentrate vessels and 33 supply barges per year during operations."	Regarding potential recreation impacts at Amakdedori Port, the draft document notes the number of concentrate vessels and supply barges anticipated per year but does not discuss the amount of time these vessels would remain in port. We continue to recommend including this information, because it is relevant to the level of impact at the port location and the time in port may differ among alternatives or variations. This information would also be relevant to consider for other resource sections in addition to Recreation, including fish and wildlife impacts.

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Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 4/6/2018 7:28:38 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]; Knight, Kelly [knight.kelly@epa.gov]; Tomiak, Robert [tomiak.robert@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: POA-2017-271, Special Public Notice scoping extension

The Corps has issued an extension of the Pebble EIS scoping period through Friday June 29, 2018 - an additional 60 days. I wanted to make sure that you knew about the extension and that we'll be revising our internal schedule as to when a draft letter would be ready for HQ review.
Thanks,
Jill

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, April 06, 2018 12:10 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: POA-2017-271, Special Public Notice scoping extension

All-

The Corps has issued a special public notice extending the Pebble EIS scoping period an additional 60 days to end on June 29, 2018 (see link in the email below).
Molly had developed a schedule for our scoping letter based on the original 30 day comment period and was working with many of you on drafting an initial letter. A revised schedule will be developed based on the extended time period. This will give us all more time to provide technical, legal, and management input into our scoping letter.

Also, the Corps has added an additional public scoping meeting in New Stuyahok on April 13. This information can be found on the Corps' Pebble EIS website.

Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, April 6, 2018 11:52 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: POA-2017-271, Special Public Notice scoping extension

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: April 6, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

CONTACT: For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

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The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/28/2018 6:21:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: FW: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping OGC.docx

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 11:14 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor

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American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

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If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Remaining bubbles:

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/28/2018 6:06:23 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: FW: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx

We have clearance from Justin Schwab and David F, but something is still open with OP? See email from Drew Feeley below.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Feeley, Drew (Robert)
Sent: Thursday, June 28, 2018 11:00 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

I have talked with Justin and we are okay with the responses. There are a few things we are still working on right now, and will let you know if we need OGC review shortly.

Drew

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

Heidi Nalven

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U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Remaining bubbles:

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/28/2018 5:28:08 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Pebble scoping letter
Attachments: Pebble Project Scoping 062818 draft.docx

Hello David,
Per your request, I have attached the most current version of the scoping letter that I have been maintaining. This letter

Deliberative Process / Ex. 5

This version does not incorporate any of the track changes or comments received from OGC. Please let me know if you would like me to consolidate the versions, or incorporate any of the other edits received to date from OGC.

Thank you,
Molly

From: Allnutt, David
Sent: Thursday, June 28, 2018 8:52 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Pebble scoping letter

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 9:02 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Pebble scoping letter

AMERICAN OVERSIGHT

See below for Heidi's responses that she put together based on what I sent her last night.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 8:11 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

I, of course, welcome any additional edits/comments anyone else may have on the draft responses too.

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 11:09 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Once I hear back that you are okay with the proposed response, I will send this on to Justin.

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Remaining bubbles:

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/28/2018 5:03:44 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter

Thanks. I agree re the mitigation and have already conveyed that to Heidi.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Allnutt, David
Sent: Thursday, June 28, 2018 9:52 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Pebble scoping letter

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 9:02 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Pebble scoping letter

See below for Heidi's responses that she put together based on what I sent her last night.

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

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Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

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Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Once I hear back that you are okay with the proposed response, I will send this on to Justin.

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

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To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 6/28/2018 4:36:51 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: Pebble scoping letter

Are you good with this? Thanks.

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 9:02 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Pebble scoping letter

See below for Heidi's responses that she put together based on what I sent her last night.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

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Sent: Thursday, June 28, 2018 8:11 AM
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Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

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AMERICAN OVERSIGHT

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Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/15/2018 9:26:57 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: Fwd: Pebble Scoping Letter - version with responses
Attachments: EDIT DF edits to Pebble Project Scoping 060518 draft_pm.docx; ATT00001.htm

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

From: "Nalven, Heidi" <Nalven.Heidi@epa.gov>
Date: June 15, 2018 at 1:55:41 PM PDT
To: "Fotouhi, David" <Fotouhi.David@epa.gov>, "Schwab, Justin" <Schwab.Justin@epa.gov>
Cc: "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Marshall, Tom" <marshall.tom@epa.gov>, "Hoppe, Allison" <hoppe.allison@epa.gov>
Subject: Pebble Scoping Letter - version with responses

Hi David and Justin – I have attached a version of the scoping letter that includes responses to your comments. Please let us know if you have any further questions.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/15/2018 5:59:43 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: Oops. Got it Steve. Thx. nm Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

From: Neugeboren, Steven
Sent: Friday, June 15, 2018 1:58 PM
To: Nalven, Heidi; Marshall, Tom; Hough, Palmer; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie; Hoppe, Allison; Nogi, Jill; Koslow, Karin; Palomaki, Ashley; Allnutt, David
Subject: RE: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

I just spoke to Karin. We agreed since this is mostly NEPA CCILO would take the lead. We also agreed we should bring with copies (we are making them) of *yesterday's* version of the comments (as some of today's comments were more for internal team deliberation) and walk through them with David and Justin, so the team can present how we considered their comments and ways of addressing them. See you there.

Steve Neugeboren
Associate General Counsel for Water
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
202 (564-5488)

From: Nalven, Heidi
Sent: Friday, June 15, 2018 1:49 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Thanks Tom. Given the nature of some of the comments, I am not planning to share the sharepoint version with David Fotouhi yet. We can send him the mark-up after we talk him through some of the bigger issues at 2:30 eastern today.

Adding David Allnut and Ashley to this distribution. I shared access to the letter with them separately.

AMERICAN OVERSIGHT

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Friday, June 15, 2018 1:33 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Note proposing policy tweaks to adaptation, of course, but whether Region thinks that may make sense bc will be elevated here, it seems, to Brittany, who may ask for breakdown of potential impacts, etc., I have no idea.

From: Nalven, Heidi <no-reply@sharepointonline.com>
Sent: Friday, June 15, 2018 10:28 AM
To: Hough, Palmer; Neugeboren, Steven; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie; Hoppe, Allison; Marshall, Tom; Nogi, Jill
Cc: Nalven, Heidi
Subject: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Here is a link to the version of the scoping letter with responses to Justin and David's substantive edits/comments.

We were hoping to share this with David prior to our 2:30 meeting today. Please let us know if you have any concerns by 1:00 eastern/10:00 pacific if possible.

Thanks,
Heidi

Open EDIT DF edits to Pebble Project Scoping 060518 draft.docx

See more related to Nalven, Heidi in Delve.

 Get the SharePoint mobile app!

  

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/15/2018 5:46:46 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Sorry for the initial oversight. Will respond all so you are on the distribution.

From: Marshall, Tom
Sent: Friday, June 15, 2018 1:31 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

My understanding is that Joel in the AO's office has reviewed this language. OFA reviewed this language and did not have any comments.

Joel is the career Agency's Senior Climate Resilience Adviser in OP. Note that Samantha supported Agency-wide climate resilience work, including an Agency-wide Climate Resilience Working Group with Regional representation. The Agency's 2019 budget submission included climate resilience work, albeit focused on non-fed partners (States, Tribes, local gov'ts, and communities) as I recall.

From: Nalven, Heidi <no-reply@sharepointonline.com>
Sent: Friday, June 15, 2018 10:28 AM
To: Hough, Palmer; Neugeboren, Steven; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie; Hoppe, Allison; Marshall, Tom; Nogi, Jill
Cc: Nalven, Heidi
Subject: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

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Thanks,
Heidi

Open EDIT DF edits to Pebble Project Scoping 060518 draft.docx

See more related to Nalven, Heidi in Delve.

Get the SharePoint mobile app!

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/15/2018 4:12:25 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: Fwd: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

From: "Nalven, Heidi" <no-reply@sharepointonline.com>
Date: June 15, 2018 at 7:28:50 AM PDT
To: <Hough.Palmer@epa.gov>, <Neugeboren.Steven@epa.gov>, <Steiner-Riley.Cara@epa.gov>, <Stern.Allyn@epa.gov>, <Vaughan.Molly@epa.gov>, <Wehling.Carrie@epa.gov>, <hoppe.allison@epa.gov>, <marshall.tom@epa.gov>, <nogi.jill@epa.gov>
Cc: <Nalven.Heidi@epa.gov>
Subject: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'
Reply-To: "Nalven, Heidi" <Nalven.Heidi@epa.gov>

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Open EDIT DF edits to Pebble Project Scoping 060518 draft.docx

See more related to Nalven, Heidi in Delve.

 Get the SharePoint mobile app!



AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 6/14/2018 3:56:36 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: Prep for Pebble scoping letter meeting

Come to my office

From: Stern, Allyn
Sent: Thursday, June 14, 2018 8:50 AM
To: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Fwd: Prep for Pebble scoping letter meeting

The OGC call is going long - so I will join when it's done. I read the scoping letter last night and saw David's comments.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> **Date:** June 14, 2018 at 8:48:31 AM PDT
> **To:** "Nalven, Heidi" <Nalven.Heidi@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Marshall, Tom" <marshall.tom@epa.gov>, "Hoppe, Allison" <hoppe.allison@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Stern, Allyn" <Stern.Allyn@epa.gov>, "Hough, Palmer" <Hough.Palmer@epa.gov>
> **Cc:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>
> **Subject: RE: Prep for Pebble scoping letter meeting**
>
> I will try to join for the last half
>
> Steve Neugeboren
> Associate General Counsel for Water
> U.S. EPA
> 1200 Pennsylvania Ave., NW
> Washington, DC 20460
> 202 (564-5488)
>
> -----Original Appointment-----
> **From:** Nalven, Heidi
> **Sent:** Wednesday, June 13, 2018 12:08 PM
> **To:** Nalven, Heidi; Neugeboren, Steven; Wehling, Carrie; Koslow, Karin; Marshall, Tom; Hoppe, Allison; Palomaki, Ashley; Steiner-Riley, Cara; Stern, Allyn; Hough, Palmer
> **Cc:** McGrath, Patricia; Allnutt, David
> **Subject:** Prep for Pebble scoping letter meeting
> **When:** Thursday, June 14, 2018 12:00 PM-1:00 PM (UTC-05:00) Eastern Time (US & Canada).

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

I thought it would be helpful for folks to talk through David's comments. Sorry for the lunch time meeting. I couldn't find any other time to get a critical mass and I know not everyone is available. If there are critical folks that can't make this time, just let me know. Also, let me know if you think there are others that should be added.

+++

Adding call in number for Region 10 folks:

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/31/2018 7:52:01 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Press release from PLP and/or Quantum

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Thursday, May 31, 2018 12:31 PM
To: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: RE: Press release from PLP and/or Quantum

FYI – this article refers to another statement from Collier

https://www.platts.com/latest-news/metals/anchorage-alaska/northern-dynasty-says-confident-will-secure-new-10448937

Northern Dynasty says confident will secure new partner for Alaska Pebble Mine

Anchorage, Alaska (Platts)--29 May 2018 510 pm EDT/2110 GMT

Northern Dynasty Minerals is confident it will secure a new partner for its contested undeveloped Pebble copper/gold project in Alaska following the announcement Friday that First Quantum Minerals will not exercise an option for a share in the project.

"I believe we will secure the necessary funding to continue the permitting and review process for Pebble under the National Environmental Policy Act," said Tom Collier, CEO of Pebble Partnership, in a statement Monday. "This will result in an Environmental Impact Statement for Pebble."

Pebble Partnership is Northern Dynasty's operating subsidiary for Pebble.

"Pebble remains one of the nation's most important undeveloped mineral resources," Collier said. "It is on state land and is an important economic asset for Alaska. Our project is well defined and we are going to continue communicating with Alaskans about why we believe in the opportunity it represents."

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First Quantum was not available Tuesday to comment on the reason for its decision. However, opposition groups including tribal entities from the Bristol Bay region and the Natural Resource Defense Council, a major US conservation organization, mounted an intense lobbying campaign on First Quantum's management to exit the project and also attended a recent shareholder meeting, according to the NRDC.

The groups also meet with management at BlackRock, an equity investment group holding a major stake in First Quantum. BlackRock has been touting a new "sustainable" investment strategy, and the NRDC playing on that in meetings with BlackRock, it said.

Pebble has reduced its project scope by about 50%, although exact have not been released. The company submitted permit applications to the Corps of Engineers late last year. The Corps has deemed the application complete and has initiated the draft EIS process. If built, the mine would be connected by road to a new port on the west side of Lower Cook Inlet from where ore concentrates would be shipped.

Opponents to the mine were quick to celebrate First Quantum's decision.

"No project is worth more than a culture or a way of life" that would be jeopardized if the mine affected Bristol Bay's rich salmon fisheries, said Robert Heyano, board president of the United Tribes of Bristol Bay, a Native American opposition group in the region, said Monday.

While many Bristol Bay residents see the mine as a threat to fisheries, Collier said previously that the Pebble project, if built, will also provide high-paying, year-round jobs in villages in the region and much-needed tax base to the Lake and Peninsula Borough, an economically depressed region.

--Tim Bradner, newsdesk@spglobal.com

--Edited by Richard Rubin, richard.rubin@spglobal.com

From: Skadowski, Suzanne
Sent: Tuesday, May 29, 2018 2:07 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: RE: Press release from PLP and/or Quantum

Northern Dynasty Minerals press release: https://www.northerndynastyminerals.com/site/assets/files/4701/may_25-_2018.pdf

> Northern Dynasty and First Quantum Minerals Terminate Framework Agreement
>
> May 25, 2018
>
> Vancouver – Northern Dynasty Minerals Ltd. (TSX: NDM; NYSE American: NAK) ("Northern Dynasty" or the "Company") advises that Northern Dynasty and First Quantum Minerals Ltd. ("First Quantum") (TSX: FM) have been unable to reach agreement on the option and partnership transaction contemplated in the December 15, 2017 framework agreement (the "Framework Agreement") between the parties. As such, the Framework Agreement has been terminated in accordance with its terms. About Northern Dynasty Minerals Ltd. Northern Dynasty is a mineral exploration and development company based in Vancouver, Canada. Northern Dynasty's principal asset, owned through its wholly-owned Alaska-based US subsidiary Pebble Limited Partnership and other wholly-owned subsidiaries, is a 100% interest in a contiguous block of 2,402 mineral claims in southwest

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Alaska, including the Pebble deposit. The Pebble Partnership is the proponent of the Pebble Project, an initiative to develop one of the world's most important mineral resources. For further details on Northern Dynasty and the Pebble Project, please visit the Company's website at www.northerndynastyminerals.com or contact Investor services at (604) 684-6365 or within North America at 1-800-667-2114. Review Canadian public filings at www.sedar.com and US public filings at www.sec.gov. Ronald W. Thiessen President & CEO

Collier's statement, per the Associated Press (can't find the original release): https://www.apnews.com/819344129426428bbfa952ae5a1a9b58

Pebble Limited Partnership CEO, Tom Collier, vowed to continue the project in a statement released after the news that the framework agreement between Northern Dynasty Minerals and First Quantum Minerals had been terminated.

In a statement, he said Friday was "business as usual" for him, and that developers are "continuing to press forward."

He said he believes Pebble will secure the funding necessary to continue the permitting process.

Collier stated, "Pebble remains one of the nation's most important undeveloped mineral resources. It is on state land and is an important economic asset for Alaska. Our project is well defined and we are going to continue communicating with Alaskans about why we believe in the opportunity it represents."

From: Hough, Palmer
Sent: Tuesday, May 29, 2018 6:35 AM
To: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Cc: Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Press release from PLP and/or Quantum

Suzanne

Can you locate the press release or full statement from PLP and/or Quantum from Friday's announcement. Many of the articles from Friday have quotes from Collier but I could not find a link to a full statement from either entity.

Thanks, Palmer

From: Google Alerts [mailto:googlealerts-noreply@google.com]
Sent: Saturday, May 26, 2018 8:01 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Google Alert - bristol bay

bristol bay
Daily update - May 27, 2018

NEWS

Latest potential investor pulls out of Pebble

AMERICAN OVERSIGHT

Cordova Times

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Tampabay.com

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First Quantum Minerals backs away from investing in Pebble - KDLG

Major investor in Pebble Mine pulls out, putting controversial Alaska project in jeopardy - SFGate

Full Coverage

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... has been widely condemned. The proposed mine is near Alaska's **Bristol Bay**, which is where about half the world's sockeye salmon is produced.

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Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 10/19/2018 1:53:21 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]
Subject: Re: Pebble PDEIS Update

Thanks, Molly. I had a chance to connect with Kelly this morning about the PDEIS update. With the request for letterhead, and with the high visibility on Pebble, she felt that HQ will want to see what we develop. I said that I would talk with David next week and get back to her. I think that it makes sense for a manager to sign the comment letter. We'll talk more soon.

Sent from my iPhone

On Oct 18, 2018, at 9:28 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:

> Hi Jill,
> In follow up to our brief chat today, here is a summary of the status of the Pre-DEIS review for Pebble:
>
> 1) We just received the last few Pre-PreDEIS chapters for review – with comments due by Oct. 31. I will plan to share those comments with you for review by Monday the 29,th if you want to review.
> 2) The Corps has indicated that they plan to distribute the full PDEIS to cooperating agencies by Nov. 9, with comments due Nov. 21. I expect we will be receiving sections on a rolling basis between now and the 9th, as they become available. Although we are receiving all of the sections, our comments are only requested on those sections we have been assigned to review in the cooperating agency plan. Comments are requested on letterhead, but according to the Coop agency plan, the signatory can be Patty or myself, as POCs.
> 3) The Corps has acknowledged that they have received requests from cooperators for additional time (30 days) for the review of the full Pre-DEIS, but they have said they do not plan to provide an extension.
>
> Thanks,
> Molly
>
> ~~~

Message

From: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Sent: 5/30/2018 5:29:42 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: Pebble EIS scoping letter & Lee Forsgren AK visit

Hi Jill,

Can I get an update on the timing for our letter?

Did I hear right that the Corps extended the comment deadline?

Thanks!
Suzanne

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

From: Skadowski, Suzanne
Sent: Thursday, May 24, 2018 6:51 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Re: Pebble EIS scoping letter & Lee Forsgren AK visit

Thank you Jill!

Let me know when you're ready to prep some messages/talking points on this, I think we'll need this for Chris and Lee.

Suzanne Skadowski
U.S. Environmental Protection Agency
Pacific Northwest Region 10
206-553-2160 Office
206-900-3309 Mobile

On May 23, 2018, at 5:09 PM, Nogi, Jill <nogi.jill@epa.gov> wrote:

> I think it's ok Suzanne- thanks. I talked with David this afternoon and we'll work towards June 22nd if we can send something out by then. That's a week before the deadline. I can let you know more as it gets closer. Jill
>
> Sent from my iPhone

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On May 23, 2018, at 4:05 PM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

From my press team meeting today with Marianne Holsman…

Suggest that you talk with David A about the timing of our EIS scoping letter to the Corps and timing and communications around Lee Forsgren's visit to AK around the same date on June 18.

This needs to be thought out and planned re communications.

Please check in with David and then let me know if we need to talk.

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/29/2018 7:17:27 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: Press release from PLP and/or Quantum

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Skadowski, Suzanne
Sent: Tuesday, May 29, 2018 11:07 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Holsman, Marianne <Holsman.Marianne@epa.gov>
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To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Google Alert - bristol bay

[redacted]

bristol bay

Daily update · May 27, 2018

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Message

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 6/29/2018 10:13:54 PM
To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble letter and scoping comments
Attachments: Pebble.062918..pdf

Thanks,

Christine Kelly
EPA- Region 10
206-553-2770

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 9/10/2018 1:26:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Herbst, John [herbst.john@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
Subject: FYI - Bristol Bay, not Pebble Mine, is the sound investment

FYI – mentions lack of prefeasibility study for Pebble

https://www.adn.com/opinions/2018/09/06/bristol-bay-not-pebble-mine-is-the-sound-investment/
Opinions

Bristol Bay, not Pebble Mine, is the sound investment

- Author: Jonas Kron

Our investment firm is in the business of recognizing, understanding and pricing risk. It's a job that often demands difficult judgment calls, but this one is a no-brainer: Pebble Mine is a bad bet. That's one reason why the governor of Alaska recently called for a hold on mine permitting.

Today's smart investors don't just look at the bottom line. We look for opportunities to promote good corporate behavior through long-term investment strategies that consider social and environmental well-being: in other words, sustainable economic growth that will deliver returns over the long term.

The Pebble Mine, a vast gold and copper mine proposed in the headwaters of southwest Alaska's Bristol Bay, is the type of project that runs counter to sustainable economic growth. The mine jeopardizes a vast renewable resource –one that provides 14,000 jobs and an abundant source of healthy seafood that helps feed the world.

Ecosystem degradation is of serious concern to investors. That is why my company, along with 28 other investors, has taken a public position against the Pebble Mine.

Alaska's Bristol Bay is one of the great ecological resources of the world. It is the site of the largest remaining run of wild sockeye salmon, and it produces roughly half of the world's commercial supply of wild sockeye. While many global fisheries are in serious trouble, the Bristol Bay fishery generated a nearly record-setting return of 62 million wild salmon in 2018.

The great risk posed by this mine is not only reflected in science and the views of the people of Bristol Bay, but by the market as well. Northern Dynasty, the small Canadian company behind the project, has been promising the sun and moon with this project. Yet four major mining companies have walked away from the Pebble project, including some of the world's largest mining companies. Mitsubishi withdrew in 2011. Anglo American pulled out in 2013 after spending more than $540 million and citing a desire to focus on projects with the "highest value and lowest risks." Rio Tinto walked away in 2014, donating all of its shares to two Alaskan charitable foundations. First Quantum left in May 2018 after sinking nearly $40 million into the project.

This is an unprecedented response that speaks volumes about the risks associated with this project. It also leaves Northern Dynasty with a bleak financial outlook. Its 2018 quarterly financial statement claims that the securities of Northern Dynasty are "highly speculative," and that it needs substantial additional capital, but it has no arrangements in place for this funding.

Investor firms are increasingly looking at social opposition as a major consideration for large mining projects, and Pebble fares poorly on that count as well. The governor of Alaska, Bristol Bay Native tribes and corporations, commercial fishing companies, restaurants, supermarkets, churches, outfitters and jewelers have all declared their opposition to the mine. They recognize that the economic engine for the region is the salmon fishery, and the science has repeatedly shown Pebble will have unacceptable consequences for salmon.

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As importantly, Pebble has failed to provide a prefeasibility study to demonstrate that its current mine proposal is economically viable. These studies, normally published before the permit application, provide data to support the company's claims that the mine will be profitable. Every other large mine in Alaska has done so at this point in the permitting process, but not Pebble.

The state of Alaska is right in calling for a hold on permitting until the company demonstrates that Pebble is feasible. The federal government should not be wasting public resources on a lemon, and an incredibly destructive lemon at that. Responsible resource development is critical to all economic, environmental and cultural stakeholders. The sound investment is in protecting Bristol Bay's incomparable ecological resources.

Jonas Kron *is a senior vice president at Trillium Asset Management, an investment firm that focuses on sustainable and responsible investing.*

The views expressed here are the writer's and are not necessarily endorsed by the Anchorage Daily News, which welcomes a broad range of viewpoints. To submit a piece for consideration, email commentary(at)adn.com. Send submissions shorter than 200 words to letters@adn.com or click here to submit via any web browser. Read our full guidelines for letters and commentaries here.

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/16/2018 1:22:50 AM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Herbst, John [herbst.john@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: Notes from 11-14-18 meeting between Deputy AA OW and PLP

Thank you Palmer.

I've added the notes to our Bristol Bay External Meeting Notes_404c Review document.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

From: Hough, Palmer
Sent: Thursday, November 15, 2018 3:16 PM
To: Bennett, Brittany <bennett.brittany@epa.gov>; Herbst, John <herbst.john@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Notes from 11-14-18 meeting between Deputy AA OW and PLP

Pebble 404(c) Team

Yesterday Lee Forsgren met with PLP and other BB stakeholders supportive of Pebble mine. Attached are the notes from that meeting put together by Russ Kaiser. Please add these to our meeting records.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/29/2018 2:58:57 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter

Sounds good

From: Allnutt, David
Sent: Friday, June 29, 2018 6:48 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Re: Pebble scoping letter

Patty - I hope to end confusion by speaking with some subset of ORC this morning. Ask that everyone please put pens down until I can have that conversation.

Sent from my iPhone

On Jun 28, 2018, at 8:48 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

> This will need to be compared to the letter that Molly sent to David earlier. We need to work off of Molly's letter since it incorporated the OFA and OW edits and most of the OGC edits. Does this OGC version have new/different comments from the one that we saw earlier today and that Molly worked from?
> Let me know if you want me to do that comparison in the a.m.
>
> **From:** Stern, Allyn
> **Sent:** Thursday, June 28, 2018 5:44 PM
> **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
> **Subject:** FW: Pebble scoping letter
>
> Does this look good to go or are there issues we still need to work out?
>
> Allyn L. Stern
> Regional Counsel
> U.S. EPA, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> 206-553-1223
>
> **From:** Marshall, Tom
> **Sent:** Thursday, June 28, 2018 5:37 PM
> **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
> **Cc:** Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara

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<Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Drew forwarded this as a good-to-go comments version for the Regional folks. (I left the bubble comments in since you all already had them.) Note that there's new language on p. 17 that does not appear to be redlined. Thanks all, and good luck to the Region finalizing.

202.564.5549

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Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/29/2018 2:41:27 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: Re: Pebble scoping letter

What time are you free this morning? Ashley and I can't make it at 9. Personal Matters / Ex. 6 How about 11? Or 8:30?

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

On Jun 29, 2018, at 6:47 AM, Allnutt, David <Allnutt.David@epa.gov> wrote:

> Patty - I hope to end confusion by speaking with some subset of ORC this morning. Ask that everyone please put pens down until I can have that conversation.
>
> Sent from my iPhone
>
> On Jun 28, 2018, at 8:48 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:
>
> > This will need to be compared to the letter that Molly sent to David earlier. We need to work off of Molly's letter since it incorporated the OFA and OW edits and most of the OGC edits. Does this OGC version have new/different comments from the one that we saw earlier today and that Molly worked from?
> > Let me know if you want me to do that comparison in the a.m.
> >
> > **From:** Stern, Allyn
> > **Sent:** Thursday, June 28, 2018 5:44 PM
> > **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
> > **Subject:** FW: Pebble scoping letter
> >
> > Does this look good to go or are there issues we still need to work out?
> >
> > Allyn L. Stern
> > Regional Counsel
> > U.S. EPA, Region 10
> > 1200 Sixth Avenue, Seattle, WA 98101
> > 206-553-1223
> >
> > **From:** Marshall, Tom
> > **Sent:** Thursday, June 28, 2018 5:37 PM
> > **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Schwab, Justin

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<Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Drew forwarded this as a good-to-go comments version for the Regional folks. (I left the bubble comments in since you all already had them.) Note that there's new language on p. 17 that does not appear to be redlined. Thanks all, and good luck to the Region finalizing.

202.564.5549

AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

April 25, 2018

VIA ELECTRONIC MAIL

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: EPA's Continued Reliance on the Bristol Bay Watershed Assessment

Dear Administrator Pruitt,

I am writing in response to your decision in January to suspend the withdrawal of the Proposed Determination to restrict the discharge of dredged or fill material in Alaska's Bristol Bay watershed related to the Pebble deposit. Your decision was surprising and disappointing, especially in light of your public statements during your confirmation hearing affirming that preemptive federal vetoes – which the Proposed Determination unquestionably is – "could undermine both the administrative process and rule of law."[1] But even more concerning is the fact that your decision is based entirely and misguidedly upon the Bristol Bay Watershed Assessment ("BBWA"), a flawed and biased study that remains EPA's only attempt to evaluate the environmental impacts of a potential Pebble mine. Despite what some in EPA may have led you to believe, it is highly inaccurate to conclude "that any mining projects in the region will likely pose a risk to [Bristol Bay's] abundant natural resources."[2] That conclusion was in fact the starting point for the previous Administration's approach to the Pebble matter, and the BBWA was merely a tool to fulfill it. The document is the result of an unfair, pre-determined process and shoddy scientific work by "scientists" of questionable reputation determined to kill the Pebble mine at all costs. As the attached materials demonstrate in even greater detail, the BBWA is the ultimate example of bad science, and I encourage you to carefully examine EPA's record and consider allowing the normal legal permit application process to unfold without the cloud cast by a study as woefully inadequate as the BBWA.

The BBWA Sprung from Early EPA Efforts to Veto Pebble

Although EPA has repeatedly touted a petition purportedly submitted by six Alaska Native Tribes as the impetus for action in Bristol Bay, that petition was in fact the result of collusion between an EPA employee and the Tribes' attorney. That employee, Phil North, had

[1] Response to Questions for the Record from Scott Pruitt (Jan. 18, 2017), at 196.
[2] Press Release, EPA, *EPA Administrator Scott Pruitt Suspends Withdrawal of Proposed Determination in Bristol Bay Watershed, Will Solicit Additional Comments* (Jan. 26, 2018).

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been vocally advocating within EPA for a veto of the Pebble mine as early as 2009, and by 2010 had recruited at least two high-ranking EPA Region 10 officials to his cause. Officials in the region began drafting policy memoranda and budgets preparing for a veto and even convinced U.S. Fish and Wildlife Service employees to join the efforts. By the time the tribal petition was submitted in June 2010, which EPA's Inspector General concluded was the result of a "possible misuse of position," the Agency already had a running start on its veto efforts.

The BBWA Process Was Designed from the Start to Justify a Pebble Veto

The BBWA was never meant to be an objective study of the effects of copper mining on Bristol Bay. All of EPA's words and actions prove this. A 2010 memorandum outlined steps EPA could take to provide the appearance of public involvement to "deflect political backlash" and "derail opposition." Knowing that it needed a scientific record but unwilling to engage in a comprehensive and statutorily-required environmental impact statement upon Pebble's submission of a permit application, EPA instead developed a plan for its own "information gathering and analysis…in order to support a decision to formally initiate…404(c)." And when Senator Lisa Murkowski of Alaska suggested that EPA's decision to conduct the BBWA in February 2011 meant no pre-emptive action would occur until all the science had been evaluated, an EPA official stated "her statement would suggest no 404(c) would be done until all the science is in (EIS?). Obviously, that's not what we have in mind…"

EPA's close collaboration with environmental activists further demonstrate its bias. EPA officials communicated hundreds of times with anti-Pebble activists and scientists to share information, technical studies, and public relations strategies. One EPA employee even shared an outline of the BBWA with an anti-Pebble scientist a year before it was even announced. In particular, EPA became obsessed with a biased risk assessment conducted by The Nature Conservancy and scheduled several briefings to determine how that study could support EPA's efforts. All these communications stand in stark contrast to EPA's treatment of Pebble, as then-Administrator Lisa Jackson repeatedly refused to meet with Alaska Native interests close to the proposed mine that support due process for the project.

The BBWA Evaluates Fake, Unpermittable Mines to Bolster EPA's Case against Pebble

The BBWA analyzed hypothetical and implausible mine designs that did not reflect modern engineering or environmental standards. EPA knew that doing so would result in exaggerated environmental impacts and overstated risks, ensuring it could justify its preordained pre-emptive action. For example, any mine of Pebble's size would necessarily involve compensatory mitigation, which EPA's hypothetical mines conspicuously omitted. Peer reviewers noted this weakness, stating that the overall utility of the BBWA was "questionable" because of the inherent uncertainty involved with studying hypothetical design plans.

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The BBWA is Rife with Fake Science

EPA stacked the BBWA deck with anti-Pebble personnel and material. Richard Parkin, who not only admitted under oath to favoring a preemptive Pebble veto but also stated in a public meeting that politics were "as big or [a] bigger factor" than science in a Pebble decision, was installed as BBWA team leader. Phil North, fresh off his secret collusion that resulted in the tribal petition, was the BBWA's "technical lead." From outside EPA, the Agency brought in several other anti-Pebble extremists, most notably Ann Maest, who admitted in litigation related to the infamous *Chevron* case in Ecuador to having falsified scientific reports to fit her preferred, anti-development agenda. In perhaps its most brazen move, EPA carefully selected seven vehemently anti-Pebble studies and subjected them to an unannounced peer review so that their conclusions could be included in the BBWA.

Not surprisingly, these selections led to biased results, which peer reviewers repeatedly questioned, even concluding that the BBWA's conclusions were "not appropriate for a document that is intended to provide a scientific and technical foundation for future decision making." To further the bias of the BBWA's contents, EPA completely ignored the comprehensive environmental baseline studies that Pebble had conducted, the result of eight years of evaluation by 35 professional organizations and comprising about 27,000 pages and $150 million in investment.

EPA Even Tried to Short-Circuit the BBWA's Peer Review to Conceal its Flaws

EPA designed a peer review process that was contrary to its own regulations and guidelines so the many flaws in its BBWA study would remain hidden. For example, EPA officials had excessive contact with peer reviewers during the review period and limited oral and written submissions during public peer review meetings. When the second draft of the BBWA expanded from 339 pages to 618, and included an entirely new hypothetical mine scenario, EPA ignored requests that it conduct a full peer review of the new document. Several peer reviewers complained that the time given to review the Assessment was far too short to enable them to reach sound conclusions.

* * *

It is thus no surprise that virtually every independent investigation of EPA's conduct with respect to Pebble and the BBWA has concluded that there was wrongdoing. The U.S. House Committee on Oversight and Government Reform concluded that "EPA employees had inappropriate contact with outside groups and failed to conduct an impartial, fact-based review of the proposed Pebble mine" and that the pre-emptive veto was "without legal basis." Former U.S. Senator and Secretary of Defense William Cohen determined that the circumstances "raise serious concerns as to whether EPA orchestrated the process to reach a predetermined outcome; had inappropriately close relationships with anti-mine advocates; and was candid about its

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decision-making process." A federal court in Alaska granted a preliminary injunction halting all EPA work on the 404(c) veto after seeing just a fraction of the evidence of EPA misconduct. And the U.S. House Committee on Science, Space, and Technology found EPA's actions rife with misconduct and "determined that the pre-emptive action taken for the Pebble Mine Project was unprecedented under the Clean Water Act and was justified by a questionable assessment that relied on predetermined conclusions developed by EPA officials."

In addition to the BBWA's obvious flaws, the use of a preemptive veto under Section 404(c) of the Clean Water Act sets a dangerous precedent. In the history of the Clean Water Act, EPA has only exercised its veto authority 13 times. In each instance, EPA invoked Section 404(c) only after receipt of a permit application that described the scope and details of the project being proposed, the anticipated environmental impact, and techniques to be employed to mitigate or control that impact. EPA's campaign against Pebble throws that entire process into uncertainty, unsettling the legitimate business expectations of potential developers. By going its own way, EPA has sent the message, in the words of the National Mining Association, that "it can do whatever it wants. If it can decide to (preemptively veto a project) for this industry, there is no reason it can't ignore the legal process and preempt other projects from going forward."

In light of this overwhelming record and potentially catastrophic precedent, I strongly urge you to reconsider your reliance on such an obviously flawed study. You have not been shy to point out the errors made in the previous Administration's environmental policies and overreach. This is another opportunity for you to restore the rule of law and sound scientific analysis into environmental decision-making.

Sincerely,

Thomas C. Collier
CEO

Attachments: *EPA's Abuse of Due Process, Science, and its CWA 404(c) Veto Authority*

Comments of the Pebble Limited Partnership on the Proposal to Withdraw Proposed Determination to Restrict the Use of an Area as a Disposal Site; Pebble Deposit Area, Southwest Alaska (Oct. 17, 2017)

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Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/28/2018 10:02:02 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Re: Pebble Scoping - current compiled version

Can you talk now? Ashley and I can call you.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

On Jun 28, 2018, at 2:53 PM, Allnutt, David <Allnutt.David@epa.gov> wrote:

Deliberative Process / Ex. 5

How should I go about doing that?

<image001.png>
<image005.png> <image006.png> <image007.png>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Vaughan, Molly
Sent: Thursday, June 28, 2018 2:22 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping - current compiled version

Hi David,
I have completed a resolution/compilation of the edits received to date. There are a very limited number of places where I did not accept edits yet, and have left for your consideration (with explanatory comments). I do not think any of the remaining edits are intolerable, but felt they were ones that warranted bringing to your attention. Please let me know if there is anything else I can do to assist with finalizing this letter.
Regards,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

<Pebble Project Scoping 062818 compiled draft.docx>

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THE pebble PARTNERSHIP

April 24, 2018

The Honorable Scott Pruitt
Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Pruitt:

It is our understanding that you appeared before a group of non-governmental organizations and others last Wednesday, April 11, 2018. During the course of that meeting, you responded to a question about your decision to leave in place the Obama-era regulatory overreach and unprecedented preemptive 404(c) veto imposed on the Pebble mine.

We heard from several people who attended that meeting, who are very concerned about the EPA's use of a 404(c) preemptive veto, about your comments on Pebble and suspending the withdrawal of the "Proposed Determination."

According to participants, you also said we could bring new information about the mine to you. We appreciate your willingness to listen and respectfully request a meeting to do so. We will contact your staff to set up such a meeting. In advance of that discussion, we believe it is important to provide you with accurate information and provide our perspective on some of the issues you cited.

Flawed and Biased Science Was Created by Obama EPA to Justify Unprecedented 404(c) Action.

You noted that the decision was based on the data before you. You stated that the mine was in an area with two rivers, and that the mine could impact millions of fish. We assume that in making these statements, you are relying on the Bristol Bay Watershed Assessment ("BBWA"). That report was developed by the Obama Administration to support a predetermined decision to veto the Pebble Mine through an unprecedented

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process before a permit application – containing an actual mine plan and other important aspects, such as proposed mitigation – had even been submitted for review. This discredited Obama EPA science is wholly insufficient to support making any regulatory decision, especially one of this significance, and that point was made by a number of EPA's own peer reviewers of the BBWA.

Moreover, The BBWA is an outdated, severely flawed study that used hypothetical mine plans in assessing potential impacts to the region. When EPA prepared the BBWA, it is important to remember that Pebble had never filed a mine plan or a Section 404 permit application. The BBWA assumed we would be in two river systems. As our permit application makes clear, major mining operations are only in one watershed. Pebble Project, Department of the Army, Application for Permit, POA-2017-271, p. 31, found at https://pebbleprojecteis.com/documents/background.

Former Senator and Secretary of Defense William Cohen undertook an independent review of EPA's actions. Among other things, he found that "EPA relied upon the BBWA in its Proposed Determination but acknowledged that there were significant gaps in its assessment and that it was not designed to duplicate or replace the Permit/NEPA Process." http://files.cohengroup.net/Final/Final-Report-with-Appendices-compressed.pdf.

The U.S. House of Representative's Committee on Science, Space, and Technology extensively reviewed the process used to veto the mine and the so-called science developed to support that process. The Chairman of the Committee wrote: "EPA employees colluded with third party Pebble Mine opponents. They sought to deliberately establish a record that pointed to one outcome: the Pebble Mine will be excluded from the regular permitting process and should be stopped." https://science.house.gov/sites/republicans.science.house.gov/files/documents/HHRG-114-SY-WState-S000583-20160428.pdf. The Committee also "determined that the pre-emptive action taken for the Pebble Mine Project was unprecedented under the Clean Water Act and was justified by a questionable assessment that relied on predetermined conclusions developed by EPA officials." https://science.house.gov/sites/republicans.science.house.gov/files/documents/02.22.17%20SST%20Letter%20to%20EPA%20Administrator%20Pruitt.pdf. Finally, the Committee found "that EPA employees inappropriately assisted outside groups in petitioning the

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agency to change the way they operate and use Section 404(c) to stop this project." https://science.house.gov/sites/republicans.science.house.gov/files/documents/02.22.17%20SST%20Letter%20to%20EPA%20Administrator%20Pruitt.pdf. The U.S. House Committee on Oversight and Government Reform came to a similar conclusion, stating in a November 2015 report "that EPA employees had inappropriate contact with outside groups and failed to conduct an impartial, fact-based review of the proposed Pebble mine." https://oversight.house.gov/wp-content/uploads/2015/11/Bristol-Bay-Pebble-Mine-Staff-Findings-Nov-2015-Final.pdf.

The Actual Pebble Mine Plan, Designed for Sustainability.

As our permit application sets out, "[t]he layout was designed to consolidate the majority of the site infrastructure in a single drainage, the North Fork Koktuli, and avoid the placement of waste rock or tailings in the Upper Talarik Creek drainage." Pebble Project, Department of the Army, Application for Permit, POA-2017-271, p. 31, found at https://pebbleprojecteis.com/documents/background. I took those steps explicitly for sustainability purposes, because the Upper Talarik Creek supports significantly greater numbers of salmon than does the North Fork Koktuli. However, your statement that "millions of salmon" occupy this area is simply incorrect. The average escapement of salmon (*i.e.*, those that return to these streams to spawn) for the years 2004-2009 is about 65,000 salmon/year.

This single point most perfectly exemplifies why this veto raises such serious concerns. President Obama's EPA initiated a preemptive veto, and the decision to leave it in place is evidently based on "facts" that our permit application and other data show are simply not true.

No Consultation with Project Proponent.

We understand that you stated that you sent "political advisers" to the area to investigate. While these Agency employees did attend public hearings, they did not speak with anyone from Pebble while in the state. It seems that if they wanted to get a comprehensive understanding of the issues involved, a meeting with the project proponent would have been advisable. We would have, of course, welcomed such a meeting.

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Withdrawal of Proposed Veto is Clearly a Discretionary Action.

We understand the concern that you could be sued if you withdrew the Obama-era proposed preemptive veto by a suit alleging that your decision was arbitrary and capricious under the Administrative Procedure Act. Such suits are common, and we understand why you would be concerned about such a suit. Such a case has no merit and would likely be thrown out by any court. The decision to initiate a veto or not to do so is entirely in your discretion. The case law on such actions is solid – they are not reviewable. In addition to being entirely within your discretion, a decision to withdraw the veto would not be final agency action, and therefore not subject to review by courts. We have attached a memorandum that addresses this issue. *See*, Attachment 1.

If you are concerned about any mining in the area, as some meeting participants indicated to us, it is important to remember that the Obama EPA acknowledged in the BBWA that a mine smaller than their .25 hypothetical mine would be allowed to go through the permitting process. Therefore, even the Obama Administration is on record as stating that some mine in the area could be approved.

Continued Denial of Due Process.

Just because Pebble can go through permitting, that does not mean that the project has due process. While the U.S. Army Corps of Engineers is reviewing our permit application, it cannot issue a permit while the proposed veto is still pending because the regulations prevent them from doing so. *See*, 33 CFR Sec. 323.6(b). This "overhang" represents a clear denial of due process and does not reflect the rule of law. We should not be subject to a requirement that a veto must be withdrawn before we can receive a permit. That was clearly not the way Congress designed the Clean Water Act, nor was it the intent of the settlement agreement we have with the Agency.

An Adverse Precedent for Resource Development in the U.S.

Many of your ardent supporters understand that the precedent purposely left in place can and likely will be cited by future administrations as justification for action on other projects. Environmentalists understand that it may take only a proposed, preemptive veto to stop a development project, thus weaponizing the 404(c) veto process. Such administrations could use the 404(c) authority to initiate one, or dozens, or hundreds of

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proposed preemptive vetoes. These vetoes could prevent permits from ever being issued whether EPA finalizes those vetoes or not. Because proposed vetoes are not final agency actions, project proponents would not be able to obtain judicial review of those proposed preemptive vetoes. EPA will have created a 'Catch 22' that could effectively stymie development. This seems inconsistent with your successful record of regulatory reform at the EPA.

This action also is completely inconsistent with the policy position articulated by President Trump on EPA's appropriate role on such matters. As you know, in the recent proposal to Congress concerning infrastructure financing and project streamlining, President Trump has proposed to repeal Section 404(c) of the Clean Water Act in its entirety.

Pebble Did Legally Challenge EPA's Authority.

Participants report that you said Pebble had not sued the Agency attacking EPA's authority to issue a preemptive veto. In fact, we did attack in court the statutory authority to issue such vetoes. The court dismissed the suit as not ripe because there was no final agency action. Interestingly, the Federal judge in Alaska hearing the three cases we filed requested briefing on both the merits and on the ripeness issue simultaneously. *See,* Attachment 2. We believe that the argument that the Agency lacks statutory authority to promulgate a preemptive veto is strong, and we commend these arguments to your attention.

The "proposed determination" left in place is exactly the same preemptive veto proposed by the Obama Administration. It is NOT based on an examination of our proposed mine plan, nor does it have a robust environmental impact statement to support it. Withdrawing this flawed preemptive veto does not prevent you from initiating a new one at the proper point in the process if you choose to do so, based on a full administrative record. Continuing with the Obama-era flawed veto, based on a discredited Bristol Bay Assessment, is to continue a preemptive veto.

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We look forward to discussing these issues with you further, and will be pleased to fully describe the mine plan that we have submitted for review, when we meet.

Sincerely,

Tom Collier
CEO

AMERICAN OVERSIGHT

Attachment 1

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Judicial Review of Withdrawal of Proposed Determination

- EPA would likely prevail on an APA or citizen suit challenging its decision to withdraw the Proposed Determination without reviewing public comments.

    - Under either APA, or CWA's citizen suit provision, a plaintiff seeking to challenge the withdrawal of EPA's Proposed Determination has to demonstrate that it is challenging a *nondiscretionary* duty. *See* 5 U.S.C. 701(a) (APA grants a court jurisdiction to review actions taken by an agency except to the extent "agency action is committed to agency discretion by law"); 33 U.S.C. § 1365 (citizen suits may be brought where there is an alleged "failure … to perform any act or duty under this Act which is not discretionary with the Administrator").

    - We have not found any case challenging EPA's decision to withdraw a Proposed Determination. However, several courts have dismissed suits claiming that EPA improperly failed to exercise its Section 404(c) authority, holding that such authority is committed to the discretion of the agency. The reasoning of these cases is persuasive here.

        - In *Preserve Endangered Areas of Cobb's History, Inc. v. United States Army Corps of Engineers*, 87 F.3d 1242, 1249-50 (11th Cir.1996), plaintiffs brought a CWA citizen suit against EPA for failing to veto the Corps' issuance of a 404 permit. The court dismissed the claim, holding that EPA's authority to veto a section 404 permit is discretionary. The court summarized the various reasons why Section 404(c) is best viewed as discretionary, including the statute's use of the word "authorized" in Section 404(c). *See* 33 U.S.C. § 1344(c) (the "Administrator is authorized to prohibit . . . and authorized to deny or restrict the use of any defined area for specification . . . ."). The court found that the use of the term "authorized" (as opposed to "shall") suggests a discretionary function. The court also pointed out that the discretionary nature of the EPA's veto authority is also the interpretation adopted by the agency, as seen in its regulations, which use the permissive "may," as opposed to the mandatory "must" or "shall." *See* 40 C.F.R. § 231.1(a) ("Under section 404(c), the Administrator may exercise a veto over the specification by the U.S. Army Corps of Engineers or by a state of a site for the discharge of dredged or fill material.").

        - Numerous courts have agreed with this reasoning. *See also Hill v. Boy*, 144 F.3d 1446, 1449 n. 7 (11th Cir. 1998) (upholding dismissal of citizen suit against EPA and the Corps for failing to use their authority to veto the Corps' issuance of a section 404 permit because authority to veto a section 404 permit is discretionary); *City of Olmstead Falls v. EPA*, 266 F. Supp. 2d 718, 722-23 (N.D. Ohio 2003) (court lacked jurisdiction under APA to review EPA's decision not to veto the Corps' decision to issue a Section

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404 permit because the EPA's "veto power as set forth in Section 404(c) is discretionary").

- Other courts have also noted in dicta that the use of Section 404(c) is discretionary. *See Mingo Logan Coal Co. v. EPA*, 70 F. Supp. 3d 151, 166 (D.D.C. 2014) (noting "section 404(c) contains *permissive, discretionary* language") (emphasis added); *Ctr. for Biological Diversity v. United States Army Corps of Engineers*, No. CV 14-1667, 2015 U.S. Dist. LEXIS 76653 at *8 (C.D. Cal. Feb. 4, 2015) (EPA "has the *discretionary* authority to veto that decision if it makes certain findings regarding the adverse effects of the permitted action.") (emphasis added).

- Despite this case law, two courts have permitted suits against EPA where the agency chose not to initiate a veto.

    - Relying on a Fourth Circuit case that held generally that EPA's ultimate responsibility for the protection of wetlands under the CWA was a non-discretionary duty, *Nat'l Wildlife Fed'n v. Hanson*, 859 F.2d 313 (4th Cir. 1988), one district court held that a plaintiff can maintain a suit where the "Administrator fails to exercise the duty of oversight imposed by" Section 404(c). *See South Carolina Coastal Conservation League v. United States Army Corps of Engineers*, No. 2:07-3802-PMD, 2008 U.S. Dist. LEXIS 69499 (D. S.C. Sept. 11, 2008).

    - In *Alliance to Save the Mattaponi v. United States Army Corps of Engineers*, 515 F. Supp. 2d 1 (D.D.C. 2007), the district court dismissed plaintiff's citizen suit alleging that EPA failed to veto a Corps permit, holding that "this veto power … is discretionary." However, it concluded that plaintiff's APA claim survived because the CWA provides a standard by which to judge EPA's discretion – whether the discharge will have an unacceptable adverse effect. Because in this case EPA had not based its decision on this standard, the court ultimately found that EPA had acted arbitrarily and capriciously, *Alliance to Save the Mattaponi v. United States Army Corps of Engineers*, 606 F. Supp. 2d 121 (D.D.C. 2009).

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Attachment 2

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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF ALASKA

PEBBLE LIMITED PARTNERSHIP and ALASKA PENINSULA CORPORATION,

Plaintiffs,

and

STATE OF ALASKA,

Intervenor-Plaintiff,

vs.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and DENNIS J. McLERRAN, in his official capacity as Regional Administrator of EPA Region 10,

Defendants.

No. 3:14-CV-0097-HRH

ORDER

Case Status

A status and scheduling conference was held in this case on July 11, 2014.

The court minutes of the foregoing conference are supplemented as follows for purposes of scheduling clarity.

Plaintiffs moved for reconsideration[1] of the court's order of July 7, 2014,[2] granting UTBB's motion to intervene. Plaintiff has responded to the motion for reconsideration.[3]

[1]Docket No. 71.

[2]Docket No. 69.

[3]Docket No. 72.

AMERICAN OVERSIGHT

EPA-0135-0000380

Reconsideration is granted. The court's July 7, 2014, order granting intervention is vacated. The court will entertain opposition to UTBB's motion to intervene if filed on or before July 18, 2014. Any reply shall be served and filed on or before July 23, 2014.

Nunamta Aulukestai has moved to intervene.[4] Any opposition to that motion shall be served and filed on or before July 18, 2014. Replies may be served and filed on or before July 23, 2014.

The defendants propose to file a motion to dismiss. That motion shall also be served and filed on or before August 11, 2014. Usual response and reply times shall be observed.

Defendants' response to plaintiffs' motion for preliminary injunction is currently due July 28, 2014.[5] A second motion for preliminary injunction by intervenor-plaintiff State of Alaska has been filed.[6] The time for defendants to respond to both motions for preliminary injunction is extended to August 11, 2014. Usual reply times shall be observed.

Defendants' response to the two motions for preliminary injunction may be consolidated, but the defendants' proposed motion to dismiss shall be separately briefed.

After consultation with counsel, the court has determined to invoke the provisions of Rule 65(a)(2), Federal Rules of Civil Procedure, which permits a court to consolidate proceedings on the merits of a case with proceedings on motion for preliminary injunction. That is, the court intends taking up first defendants' motion to dismiss and then the construction of § 404(c) of the Clean Water Act, 33 U.S.C. § 1344(c), and the State of Alaska's arguments based upon the Alaska Statehood Act, Pub. L. No. 85-508, 72 Stat. 339 (1958). The defendants' response to the motions for preliminary injunctions, as well as replies on those motions, should focus upon these legal issues. It is the court's perception that if the defendants' motion to dismiss is not dispositive of the case, a decision on the merits of the

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[4]Docket No. 77.

[5]Docket No. 70.

[6]Docket No. 61.

AMERICAN OVERSIGHT

EPA-0135-0000381

foregoing legal issues (the construction of § 404(c) and the Alaska Statehood Act) are likely to be dispostive.

DATED at Anchorage, Alaska, this 11th day of July, 2014.

/s/ H. Russel Holland
United States District Judge

AMERICAN OVERSIGHT

EPA-0135-0000382

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/28/2018 7:25:55 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: RE: Pebble scoping letter

Quick call?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 11:21 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 11:14 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM

AMERICAN OVERSIGHT

To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/28/2018 5:23:49 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter

In a meeting in Cedar – could be interrupted if you come up to 20.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Nogi, Jill
Sent: Thursday, June 28, 2018 10:17 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Pebble scoping letter

I was just on a call with HQ this morning. I would like to share with you what I heard about the climate section when you have a few minutes.

From: Allnutt, David
Sent: Thursday, June 28, 2018 9:52 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Pebble scoping letter

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 9:02 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Pebble scoping letter

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 8:11 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

I, of course, welcome any additional edits/comments anyone else may have on the draft responses too.

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 11:09 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie

AMERICAN OVERSIGHT

<Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Once I hear back that you are okay with the proposed response, I will send this on to Justin.

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/4/2018 5:00:17 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Nogi, Jill has shared 'Pebble Project Scoping 052418 draft'

All – I've added my (relatively minor) thoughts and edits to the onedrive version. The letter is looking good; appreciate your efforts.

Molly – there are a couple of bigger picture topics I mentioned to Jill and would like to talk with you two about, maybe later today.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Allnutt, David
Sent: Wednesday, May 30, 2018 5:37 PM
To: Nogi, Jill <nogi.jill@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Nogi, Jill has shared 'Pebble Project Scoping 052418 draft'

Quick update on status. Despite best efforts, I have not been able to turn my attention to this yet. Have printed it out to review on my plane to Philadelphia tomorrow. Will call Jill with any significant concerns. Can add minor changes to the OneDrive version when I'm back in the office Monday.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Nogi, Jill [mailto:no-reply@sharepointonline.com]
Sent: Friday, May 25, 2018 7:25 AM

AMERICAN OVERSIGHT

To: Allnutt, David <Allnutt.David@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Nogi, Jill has shared 'Pebble Project Scoping 052418 draft'

I have reviewed the draft scoping letter and added my suggestions related to clarity/brevity/consistency and NEPA writing style for consideration. David and Tami, please add your suggested edits to this version on my One Drive - Molly will be back on 6/4 and will incorporate all of our comments at that point before sharing with HQ. Thank you for your review. Jill

Open Pebble Project Scoping 052418 draft.docx

See more related to Nogi, Jill in Delve.


Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/28/2018 2:00:33 AM
To: (b) (6)
Subject: Fwd: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx; ATT00001.htm

Sent from my iPhone

Begin forwarded message:

From: "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
Date: June 27, 2018 at 5:57:32 PM PDT
To: "Allnutt, David" <Allnutt.David@epa.gov>, "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Wednesday, June 27, 2018 5:57 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: FW: Pebble scoping letter

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Stern, Allyn
Sent: Wednesday, June 27, 2018 4:01 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Fwd: Pebble scoping letter

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> **Date:** June 27, 2018 at 3:50:29 PM PDT
> **To:** "Stern, Allyn" <Stern.Allyn@epa.gov>
> **Subject: Fwd: Pebble scoping letter**
>
> Sent from my iPhone
>
> Steven Neugeboren
> Associate General Counsel for Water
> U.S. EPA
> 202-564-5488
>
> Begin forwarded message:
>
> > **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> > **Date:** June 27, 2018 at 6:18:51 PM EDT
> > **To:** "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> > **Subject: FW: Pebble scoping letter**
> >
> > Please see below from Justin
> >
> > **David Fotouhi**
> >
> > Deputy General Counsel
> > Office of General Counsel
> > U.S. Environmental Protection Agency
> > Tel: +1 202.564.1976
> > fotouhi.david@epa.gov
> >
> > ---
> >
> > **From:** Schwab, Justin
> > **Sent:** Wednesday, June 27, 2018 6:16 PM
> > **To:** Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
> > **Cc:** Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
> > **Subject:** Pebble scoping letter
> >
> > Please find attached. David and I have reviewed with Drew.
> >
> > If anyone else's review is necessary in OGC/ORC, please circulate accordingly.
> >
> > Remaining bubbles:
> >
> > **Attorney Client Privilege/Deliberative Process Privilege / Ex. 5**

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/14/2018 10:35:40 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Draft Pebble Scoping letter

OK. Cc'ing those who will be leading comment collection/incorporation efforts while I'm out next week. Please ensure that Jill receives any edits as soon as Lee has them.

Am fine with the letter going out the week of June 25.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Hough, Palmer
Sent: Thursday, June 14, 2018 3:09 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Draft Pebble Scoping letter

John/Brian/David:

When we met with Lee this afternoon, he indicated that his edits to the scooping letter would be modest and that he would likely be able to provide them next week.

Deliberative Process / Ex. 5

-Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)

AMERICAN OVERSIGHT

1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/14/2018 12:17:45 AM
To: Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping Prep
Location: Cara's

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 4:30:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/13/2018 2:21:12 PM
To: (b) (6)
Subject: Fwd: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx; ATT00001.htm

Sent from my iPhone

Begin forwarded message:

From: "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
Date: June 13, 2018 at 5:42:21 AM PDT
To: "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 5:36 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/13/2018 1:56:34 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
CC: Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: Fwd: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx; ATT00001.htm

Deliberative Process / Ex. 5

Sent from my iPhone

Begin forwarded message:

From: "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
Date: June 13, 2018 at 5:42:21 AM PDT
To: "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 5:36 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/13/2018 1:48:28 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Fwd: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx; ATT00001.htm

FYI. Have not reviewed the redline yet.

Sent from my iPhone

Begin forwarded message:

> **From:** "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> **Date:** June 13, 2018 at 5:42:21 AM PDT
> **To:** "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>
> **Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th**
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> **From:** Nalven, Heidi
> **Sent:** Wednesday, June 13, 2018 5:36 AM
> **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
> **Cc:** Wehling, Carrie <Wehling.Carrie@epa.gov>
> **Subject:** FW: Pebble Scoping Letter for HQ Review by COB June 12th
>
> FYI.
>
> **Heidi Nalven**
> U.S. EPA Office of General Counsel
> 202-564-3189
>
> **From:** Fotouhi, David
> **Sent:** Tuesday, June 12, 2018 11:50 PM
> **To:** Nalven, Heidi <Nalven.Heidi@epa.gov>
> **Cc:** Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
> **Subject:** RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/30/2018 3:19:23 AM
To: Tomiak, Robert [tomiak.robert@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
Subject: Fwd: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf; ATT00001.htm

Phew.

Sent from my iPhone

Begin forwarded message:

> **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> **To:** "Allnutt, David" <Allnutt.David@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> **Cc:** "Vaughan, Molly" <Vaughan.Molly@epa.gov>
> **Subject: FW: Pebble EIS - EPA scoping comments**
>
> FYI. Scoping comment submittal to the Corps.
> Patty
>
> ---
>
> **From:** McGrath, Patricia
> **Sent:** Friday, June 29, 2018 3:46 PM
> **To:** 'POA Special Projects' <poaspecialprojects@usace.army.mil>
> **Cc:** McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
> **Subject:** Pebble EIS - EPA scoping comments
>
> Hello Shane-
>
> Attached are EPA's scoping comments on the Pebble EIS.
> We appreciate the opportunity to provide comment and look forward to working through these issues with the Corps.
> Please let me know if you have questions.
>
> Best Regards-
> Patty
>
> **Patty McGrath | Mining Advisor**
> U.S. Environmental Protection Agency, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> M/S: RAD-202
> Office: (206) 553-6113
> Cell: (206) 743-7068
> mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/28/2018 10:48:49 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble Scoping - current compiled version

Done

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: McGrath, Patricia
Sent: Thursday, June 28, 2018 3:16 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Pebble Scoping - current compiled version

All-
I did not notice this before.

Deliberative Process / Ex. 5

Patty

From: Vaughan, Molly
Sent: Thursday, June 28, 2018 2:22 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping - current compiled version

Hi David,
I have completed a resolution/compilation of the edits received to date. There are a very limited number of places where I did not accept edits yet, and have left for your consideration (with explanatory comments). I do not think any of the remaining edits are intolerable, but felt they were ones that warranted bringing to your attention. Please let me know if there is anything else I can do to assist with finalizing this letter.
Regards,
Molly

AMERICAN OVERSIGHT

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/28/2018 9:53:36 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Pebble Scoping - current compiled version
Attachments: Pebble Project Scoping 062818 compiled draft.docx

Deliberative Process / Ex. 5

How should I go about doing that?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Vaughan, Molly
Sent: Thursday, June 28, 2018 2:22 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping - current compiled version

Hi David,
I have completed a resolution/compilation of the edits received to date. There are a very limited number of places where I did not accept edits yet, and have left for your consideration (with explanatory comments). I do not think any of the remaining edits are intolerable, but felt they were ones that warranted bringing to your attention. Please let me know if there is anything else I can do to assist with finalizing this letter.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 4/23/2018 8:48:24 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Tentative: Pebble Scoping Comments
Location: Phone- I wil call you

Start: 4/23/2018 10:30:00 PM
End: 4/23/2018 11:00:00 PM
Show Time As: Busy

Running in many directions this afternoon – would it be possible to discuss tomorrow? I'm currently open 9:30-11:30 and after 3pm.

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C1C256A2466C4126B7E6734EB7D08641-MARSHALL, V]
Sent: 6/13/2018 6:13:31 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line Conference Line/Code / Ex. 6 Code: Conference Line/Code / Ex. 6

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Fordham, Tami [fordham.tami@epa.gov]
Sent: 4/5/2018 6:18:43 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Fordham, Tami

Fordham, Tami 11:17 AM:
Thanks! FYI - OW Division at ADEC added the Pebble Project under the cross office items.

Anderson-Carnahan, Linda 11:18 AM:
I'll let David know.

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 4/5/2018 6:18:40 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Allnutt, David

Anderson-Carnahan, Linda 11:18 AM:

FYI - OW Division at ADEC added the Pebble Project under the cross office items.

AMERICAN OVERSIGHT

Message

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/28/2018 12:09:37 PM
To: Bolen, Brittany [bolen.brittany@epa.gov]
Subject: FW: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx

Hi Brittany – Attached is the most recent draft of the scoping letter. I talked to Rob last night and he's working with Joel on the climate paragraph, and plans to have a draft at this morning's check in.

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 6/28/2018 7:54:02 PM
To: Bolen, Brittany [bolen.brittany@epa.gov]
Subject: Pebble Scoping comments

Brittany:

I am the RA for Region X, would be happy to talk to you about our response.

Thanks

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/20/2018 9:17:56 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]

Subject: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Busy

Hello All,
Per my previous email, Patty and I would like to meet with you all to discuss the preliminary alternatives document shared by the Corps.

Join by Phone

Conference Line/Code / Ex. 6

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 7/26/2018 6:45:53 PM
To: Craig, Bill [bill.m.craig@aecom.com]; Douglas, Mark [douglas.mark@epa.gov]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]

Subject: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Busy

-----Original Appointment-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Tuesday, July 24, 2018 11:25 AM
To: Craig, Bill; bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Subject: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

All,
Please plan on an informational 2 hour meeting August 22, 2018 so that we may present the Chapter 2 Alternatives currently being identified. The draft scoping report should be available by 8/17 or earlier, so it won't be enough time for your agency to process the information and inform alternatives identified in the scoping process. Plan on having a follow up in middle September after screening criteria for the alternatives have been used and the alternatives to be carried forward for analysis are identified.

VR
Shane McCoy

-----Original Appointment-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Tuesday, July 24, 2018 10:12 AM
To: Craig, Bill; POA Special Projects; Bella, Elizabeth; Isaacs, Jon
Subject: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives

AMERICAN OVERSIGHT

When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

-- Do not delete or change any of the following text. --

Join Webex meeting
Meeting number (access code): Conference Line/Code / Ex. 6

Join from a video system or application
Dial **Conference Line/Code / Ex. 6**

Join by phone
Conference Line/Code / Ex. 6 Toll
Toll Free
Global call-in numbers | Toll-free calling restrictions

Can't join the meeting?

If you are a host, go here to view host information.

IMPORTANT NOTICE: Please note that this WebEx service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/19/2018 10:03:53 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS -- Ch 3.17, 3.18, K3.18, K4.18

Hi All – Yet another update, this one regarding Figures associated with the Hydrogeology and Water and Sediment Quality sections. We just received a large number of additional figures for sections 3.17, 3.18, K3.18, and K4.18, which are now available in the Sharepoint folder.
Thank you,
Molly

From: Vaughan, Molly
Sent: Wednesday, November 14, 2018 2:04 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation
Importance: High

Hello All,
The Corps has just distributed Chapter 5 Mitigation for review as well, and I have loaded it onto the Sharepoint site. When reviewing the analysis of Environmental Consequences for each resource, please also take a look at the mitigation measures that have been proposed for that resource, and provide any additional recommendations where mitigation is not sufficient, including revisions to proposed mitigation language or additional measures recommended.
Thank you,
Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

AMERICAN OVERSIGHT

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Muche, Muluken [Muche.Muluken@epa.gov]
Sent: 11/16/2018 8:26:58 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Maley, Timothy [maley.timothy@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Thanks Molly!

Muluken

From: Vaughan, Molly
Sent: Friday, November 16, 2018 3:25 PM
To: Muche, Muluken <muche.muluken@epa.gov>
Cc: Maley, Timothy <maley.timothy@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hi Muluken – Thanks again for bringing to my attention that the Section 4.16 figures were not available. I just received these figures from the project manager and loaded them onto the Sharepoint site. In the folder 'Pre Ch 4 Figures"
I do not believe any of the other Chapter 4 sections are missing figures, but if you find that another one is, please let me know as soon as possible and I will request it from the Corps.
Thanks,
Molly

From: Muche, Muluken
Sent: Friday, November 16, 2018 5:42 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hello Molly,

I could not find figures of chapter 4 in the Sharepoint.

Thanks,
Muluken

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: Vaughan, Molly
Sent: Wednesday, November 14, 2018 6:04 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>;

AMERICAN OVERSIGHT

Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation
Importance: High

Hello All,
The Corps has just distributed Chapter 5 Mitigation for review as well, and I have loaded it onto the Sharepoint site. When reviewing the analysis of Environmental Consequences for each resource, please also take a look at the mitigation measures that have been proposed for that resource, and provide any additional recommendations where mitigation is not sufficient, including revisions to proposed mitigation language or additional measures recommended.
Thank you,
Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

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Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

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- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
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- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,

AMERICAN OVERSIGHT

Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 11/8/2018 11:33:56 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Please Review -- Pebble Ch 2 Alternatives
Attachments: Comment spreadsheet_Ch2_ks.docx

Hi Molly,

Attached are my Chapter 2 comments. In addition to the specific comments in the spreadsheet, a few general points

Deliberative Process / Ex. 5

Please let me know if you have questions or need anything else.

Thanks!
Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Vaughan, Molly
Sent: Friday, November 2, 2018 5:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

Hello All,
I previously provided the draft Chapter 2 as an FYI, but the Corps has now said they will be accepting comments on this chapter, with a due date of 11/23. As you have been assisting in review of the various alternatives screening documents, I would appreciate your review of this section as well. In order to meet the comment deadline including time required for internal management review of the comments, please send me any comments you may have on Chapter 2 **by COB Friday 11/9**. (I apologize that this is a quick turnaround, but hope that you may have already begun looking over the document.)

Chapter 2 and the associated figures are available on the Sharepoint site, but please let me know if you are not able to access them or have any questions.
Thank you,
Molly

Molly Vaughan

AMERICAN OVERSIGHT

U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Butler, Barbara [Butler.Barbara@epa.gov]
Sent: 11/6/2018 9:02:00 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Please Review -- Pebble Ch 2 Alternatives
Attachments: Comment spreadsheet_Chapter 2_BAB.docx

Hi Molly,

My comments are attached. I don't have all of them formed as recommendations in the last column, as some are questions and some are things that need to be kept in mind. Please feel free to use anything as you wish, and let me know if you have any questions.

A question: is Chapter 5 (Mitigation) one that EPA will be able to review and comment on?

Thanks,
Barb

From: Godsey, Cindi
Sent: Tuesday, November 06, 2018 11:22 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Please Review -- Pebble Ch 2 Alternatives

Molly,

As always, feel free to include or not or change. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Friday, November 02, 2018 2:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Please Review -- Pebble Ch 2 Alternatives

Sorry, I forgot to provide the attached blank comment table in my previous email. Please use this format for your comments.
Thanks,
Molly

From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Barbara Butler (Butler.Barbara@epa.gov) <Butler.Barbara@epa.gov>; Hough, Palmer

AMERICAN OVERSIGHT

<Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

Hello All,
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Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 11/6/2018 4:22:06 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Please Review -- Pebble Ch 2 Alternatives
Attachments: Chapter 2 comments - cg.docx

Molly,

As always, feel free to include or not or change. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Friday, November 02, 2018 2:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Please Review -- Pebble Ch 2 Alternatives

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Thanks,
Molly

From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Barbara Butler (Butler.Barbara@epa.gov) <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

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Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10

AMERICAN OVERSIGHT

Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/2/2018 9:13:13 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Please Review -- Pebble Ch 2 Alternatives
Attachments: Comment spreadsheet blank.docx

Sorry, I forgot to provide the attached blank comment table in my previous email. Please use this format for your comments.
Thanks,
Molly

From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Barbara Butler (Butler.Barbara@epa.gov) <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

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Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/7/2018 10:17:53 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/11/2018 4:00:00 PM
End: 9/11/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Toll number: Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6, Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/21/2018 8:56:32 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: current draft of Pebble scoping letter
Attachments: Pebble Project Scoping 051418 draft.docx

Hi Mark – I am still unable to access sharepoint… but in the meantime, here is the current draft of the letter, FYI.
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Halstead, Zachary [Zachary.Halstead@hdrinc.com]
Sent: 7/5/2018 6:54:01 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: gear/HASP
Attachments: 2018 Wetland Field Gear List.xlsx; Working_Pebble_Wetlands_2018_HASP.DOC

Good speaking with you today Mark –

Attached is our gear list. The third tab lists the basic personal gear we carry with us out in the field on a daily basis. Also attached is a copy of our project specific health and safety plan for reference.

Please let me know if you have any additional questions.

Thanks,
Zach

Zachary Halstead, PWS
Wetland Scientist

HDR
2525 C Street, Suite 500
Anchorage, Alaska 99503
D 907.644.2040 M 907.644.2000
zachary.halstead@hdrinc.com

hdrinc.com/follow-us

AMERICAN OVERSIGHT

2018 HDR Wetland Field Gear List

Wetland Field Team Gear (2-person team)					NOTES:
Wetland Field Kit (1 kit per field team)	**Quantity/Kit**	**Total Required**	**Current Total**	**Needed**	
Soil Kit					
soil kit bag	1	8	8	0	
10L waterproof bag for field guides	1	8	8	0	
Munsell	1	8	8	0	
soil knife	1	8	8	0	
wooden folding measuring stick	1	8	8	0	
cloth soil tape	1	8	8	0	
squirt bottle	1	8	13	0	8 small spray bottles and 4 small squirt bottles.
U-Dig-It	1	8	8	0	
rag	1	8	10	0	
alpha-alpha strips	20	~160	200	0	
waterproof match case (for alpha-alpha strips)	1	8	8	0	
tarp	1	8	8	0	
scooping bowl	1	8	8	0	
Additional Wetland Field Kit Items					
shovel	1	8	11	0	
clinometer	1	3	6	0	
clipboard	1	8	8	0	
Miscellaneous Field Team Gear	**Quantity/Team**	**Total Required**	**Current Total**	**Needed**	
camera & charger	1	8		8	Check with Samuel/Mike.
gps/ipad & charger	1	8		8	Check with Samuel/Mike.
sat phone	1	4		4	
radios	1	provided by client	NA	NA	
300ft survey tape	as needed	4	4	0	
2016 NWI Wetland Plant List	1	8	2	6	
field cheat sheets				0	Currently don't have any. Would need to build.
field forms	as needed			0	
field maps	as needed			0	
calculators	1	8	8	0	
Rite-In the Rain Field Notebooks	2	10	10	0	
bear spray	8	8	2	0	Pebble will provide spray.
bear spray holsters	2	8	8	0	
bear spray travel containers	8	8	8	0	6 single spray containers + ammo that holds 2 sprays.
head nets	2	6	4	0	
bug spray	2	10	8	0	
sunscreen	2	10	6	0	
first aid kit	1	4	4	0	Added to survival kit
Miscellaneous Supplies (per trip)					NOTES:
	Quantity/Trip	**Total Required**	**Current Total**	**Needed**	
lap top computer	as needed		1	0	
power strip	2	4	4	0	
jump drives	as needed		3	0	
plant press and newspaper	1	1	1	0	
air horn (bear safety)	1/team	5	5	0	
microscope	1	1	1	0	
boot dryers	1 per person	8	6	0	Pack 3 for Pebble.
hand warmers	2-3 boxes	3	8 10-packs	0	
toe warmers	2-3 boxes	3	3	0	
trash compactor bags	several bags	several bags	several bags	0	
ziplocs - gallon size	1-2 boxes	2	2	0	
ziplocs - quart size	1-2 boxes	2	2	0	
ear plugs	lots	lots	lots	0	
safety glasses	several pairs	several pairs	several pairs	0	
file	1	3	3	0	
duct tape	4 rolls	8	8	0	
AA batteries	1 pack	lots	lots	0	
hot water heater	1	2	2	0	
french press	1	1	1	0	
clothesline	1 roll	1 roll	1 roll	0	
clothespins	~25	~25	~25	0	
desk lamp	2	2	2	0	
pencils	lots	lots	lots	0	possibly grab another box of 0.9.
sharpies (fine and wide tip, black, blue, red)	lots	lots	lots	0	
scotch tape	1 roll				
binder clips	~12				

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scissors	1			
coffee	enough for one trip			
Books				
NRCS soils guide	1	5	5	0
Viereck - Alaska Vegetation Classification	1	2	2	0
Current NWI AK Plant list	1	8	8	0
2007 USACE Alaska Regional Supplement	1	8	8	0
Viereck - Alaska Trees and Shrubs	1	2	2	0
Hulten - Flora of Alaska and Neighboring Territories	1	2	2	0
Tande and Lipkin - Wetland Sedges of Alaska	1	8	11	0
Skinner et al - A Field Guide to Alaska Grasses	1	2	2	0
Collet - Willows of Interior Alaska	1	8	10	0
Collet - Willows of Southcentral Alaska	1	8	9	0
Pojar and MacKinnon - Plants of Pacific Northwest	1	2	2	0
Johnson - Plants of the Western Boreal Forest	1	2	2	0
Harris and Harris - Plant Terminology	1	2	1	1
Optional Books				
Pratt - Field Guide to Alaskan Wildflowers			1	
Studebaker - Wildflowers and other Plant Life of the Kodiak Archipelago			0	1

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Survival Kit (1 per 2-person field team)				
	Quantity/ Kit	Total Required	Current Total	Needed
waterproof pack	1	4		4
3 season tent	1	4		4
sleeping bag	2	10		10
sleeping pad	2	10		10
emergency blanket	2	10		10
cliff bars	8 bars/Kit	32		32
First Aid Kit	1	4		4

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NOTES:
Only four tents; 3 do not have ground clothes and will have tarps instead.

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Personal Field Gear (own responsibility/preference)	NOTES:
hand lens	
compass	3 spares
field vest	
bug head net	
bug jacket	
rain gear	
xtra-tuff or other waterproof boots	
baseball cap/sun hat	
sunscreen	
bandana/buff	
sunglasses	
field pack	
warm hat	
extra clothes	
favored field snacks	
rubber gloves	

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Site-Specific Safety, Health, and Environmental Plan

2018 Pebble Wetlands and Vegetation Fieldwork

Project 10093231

Iliamna, Alaska

June, 2018

Draft

[redacted]

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PART 1 – SITE-SPECIFIC SH&E PLAN

1.0 INTRODUCTION

1.1 Plan Development and Approval

The purpose of this Site-Specific SH&E Plan (Plan) is to define measures to be implemented to address worker safety, health, and the protection of the environment for field work associated with the 2018 Pebble Limited Partnership (PLP) wetlands fieldwork.

A copy of this Plan will be posted at the jobsite and/or maintained in project vehicles.

Prepared By: Zachary Halstead Date: June 12, 2018

Approved By: Paul McLarnon Date:

Project Manager Acknowledgment: Anna Kohl Date: June 14, 2018

1.2 Modification Log

This Plan will be revised as applicable to address any changes in site conditions, assignments, and/or anticipated hazards, or when new information surfaces from a procedural failure or incident investigation. Revisions to this Plan will be distributed to affected parties through site safety meetings.

Change Number	Effective Date	Description of Change	Approval

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1.3 SH&E Meetings and Briefings

1.3.1 Orientation

The contents of this Plan will be transmitted to field team members (including subcontractors and client representatives as applicable) via verbal discussion at a documented project kick-off/orientation meeting prior to initial field work. New hires and transfers who join the team after this meeting must be provided this same orientation before going to the field. Documentation of all orientation meetings shall be included in the project file (see attached Project Safety Orientation Form).

1.3.2 Daily Safety Meetings/Briefings

The field team lead shall conduct daily safety briefings at the project site at the beginning of each shift. Documentation of daily briefings (see attached Job-Site SH&E Meeting Form) shall include the names of employees present and the topics discussed which could include the following:

- Assigned duties and tasks for the day
- Anticipated site conditions (access, weather, etc.)
- Anticipated site hazards and control measures
- Lessons learned from reported near miss and injury/illness incidents from this project or from any other projects that may be beneficial or applicable to this project
- Revisions/updates to the Site-Specific SH&E Plan and/or safe work procedures

In the event that field team members are unable to attend the briefing, the SH&E Representative shall conduct a separate briefing with these personnel before they will be allowed to begin work.

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PROJECT SAFETY, HEALTH, AND ENVIRONMENTAL ORIENTATION FORM

Project: Pebble Project, Wetlands and Vegetation Field Verification 2018

Date: 6/13/2018

Location: HDR

Attendees: Zachary Halstead, Mac Salway, Ashley Hovis, Trent Parks, Mike Witter (phone), Mike Duffy (sub), Anna Kohl (PM)

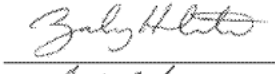
Topics

- ❑ Review assigned duties and tasks
- ❑ Discuss anticipated site conditions (access, weather, etc.)
- ❑ Review the Site-Specific SH&E Plan and Job Hazard Analysis (JHA) forms
- ❑ Confirm training, equipment/supplies, medical clearance, and vaccinations have been acquired for all field team members
- ❑ Review emergency procedures and reporting and investigation procedures for near miss, injury/illness, damage, and environmental incidents
- ❑ Discuss environmentally safe work practices (spill/release management, hazardous waste, solid waste, protected ecological/cultural resources, etc.)

Notes/Comments

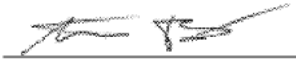
Team Member Signatures:

I have been briefed on and understand and agree to follow the requirements of the Site-Specific SH&E Plan and JHAs for this project.





ZH for Mike Duffy



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JOB-SITE SAFETY, HEALTH, AND ENVIRONMENTAL MEETING FORM

Project: _____

Task: _____

Date: _____ Time: _____

Location/Work Area: _____

Attendees: _____

Topics (check off list as completed):

- ❑ Review assigned duties and tasks for the day
- ❑ Discuss anticipated site conditions (access, weather, etc.)
- ❑ Review the Project-Specific SH&E Plan and Job Hazard Analysis (JHA) forms for the day's work
- ❑ Confirm team roles (on-site SH&E Representative, first aid/CPR responders, Short Service Employee mentors)
- ❑ Discuss emergency procedures and equipment (satellite phone, whistles, horns, etc.)
- ❑ Identify necessary medications and individual team member's medical situations/precautions (if staff is willing to share with team)
- ❑ Review lessons learned from any reported incidents and the status of any corrective actions
- ❑ Confirm everyone is comfortable with daily plan of action

Summary of Work Conducted and Planned:

_____

_____

_____

_____

_____

Attendees:

Name (print)	Signature

Name (print)	Signature

Meeting Conducted by:

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Name (printed)	Signature

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2.0 SCOPE OF WORK AND PROJECT SCHEDULE

The overall objective of the wetlands and vegetation study is to collect baseline data necessary to update the Preliminary Jurisdictional Determination (PJD) report previously submitted to USACE in 2017, and to prepare additional wetland mapping and reporting to support the project's alternatives analysis. Please see the project 2018 Wetlands and Vegetation Field Study Plan for detailed methods. Specific objectives of the study are to:

- Field verify wetland/upland status of previously mapped mosaics
- Field verify unmapped areas of questionable wetland/non-wetland status and areas with photo-signatures that cannot be correlated with previously collected data
- Collect data to support final mapping
- Record incidental observations of rare plants tracked by the Alaska Natural Heritage Program

The following study areas will be included in the 2018 field effort (Figure 1):

- Areas previously identified as mosaic complexes within the proposed mine project footprint
- Areas previously identified as mosaic complexes within the Northern Transportation Corridor along the north side of Iliamna Lake from the mine site to Williamsport except for areas located within Pedro Bay Corporation (PBC) lands (alternatives analysis)
- Unmapped Southwest Transportation Corridor around the west and south sides of Iliamna Lake (alternatives analysis)
- Unmapped Eagle Bay Spur Road (alternatives analysis)
- Unmapped natural gas pipeline tie-in on the Kenai Peninsula

A total of six field trips will be conducted to identify wetlands and other waterbodies within the PLP study areas during the summer 2018 field season. Each field team will be made up of two HDR wetland scientists, at least one of which will have previous PLP wetlands-related field experience, or experience on the Kenai Peninsula as appropriate. PLP will provide a bear guard to accompany each field team when working remotely, observers when on native owned lands, and helicopter support as needed. A breakdown of the trip dates and number of teams in each trip is provided in Table 1. Travel days for preparation, mobilization, and demobilization at the beginning and end of each trip have been included.

Table 1. Wetlands and Vegetation Summer 2018 Field Trip Details

Trip Number	Target Area	Start Date	End Date	Number of Teams
1	Mosaics within Proposed Mine Footprint	6/18	6/25	3
2		7/6	7/14	3
3		7/19	7/25	2
4	Mosaics within Northern Transportation Corridor Eagle Bay Spur	8/1	8/7*	3
5	Southwest Transportation Corridor	8/13	8/21	2

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6	Kenai Peninsula Natural Gas Pipeline Area	8/27	8/27	1

*Two teams will continue until 8/8 to complete Eagle Bay Spur.

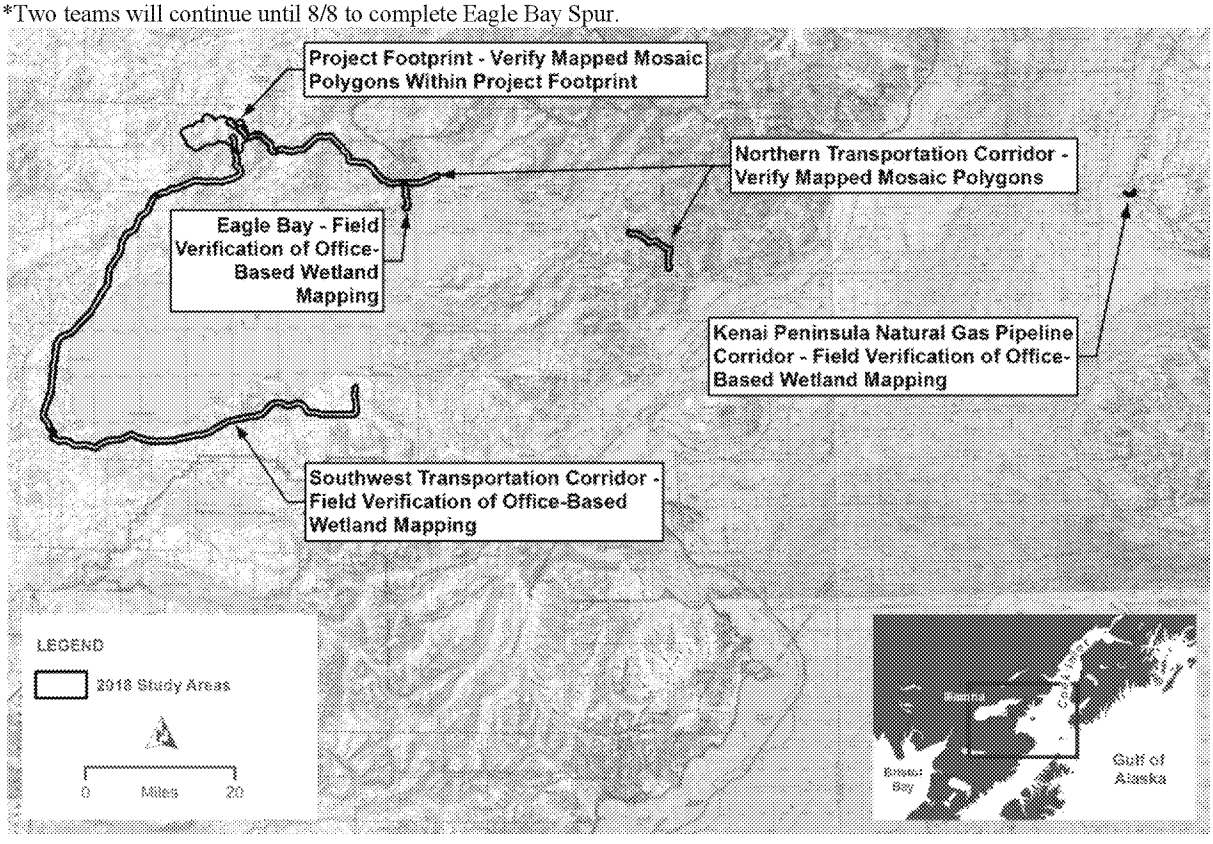

Figure 1. 2018 Wetlands Field Study Area

2.1 Project Location and Site History

2.1.1 Trips 1, 2, and 3 – Mosaics within Proposed Mine Footprint

Three field trips, each consisting of two-to-three field teams, will focus on revisiting previously mapped mosaics in the proposed mine footprint (Figure 2). HDR will field verify 10 percent of the approximately 2,500 polygons (2,000 acres) currently mapped as wetland or upland mosaics within the footprint, pending negotiations with USACE. These areas will be either verified as true wetland/upland mosaics, categorized as either entirely wetland or upland, or divided into smaller entirely wetland or upland areas. Teams will be based out of Iliamna for these field events and will access the study area daily through use of one dedicated helicopter for each trip. USACE will be conducting a field trip in this area in early July; HDR field teams will maintain flexibility to ensure proper coordination and review of this plan and JHAs with USACE prior to and during this timeframe.

2.1.2 Trip 4 – Mosaics within Northern Transportation Corridor, Eagle Bay Spur

One field trip, consisting of three teams, will focus on revisiting previously mapped mosaics within the Northern Transportation Corridor except for areas within PBC lands (Figure 2). Similar to the proposed mine footprint, HDR will field verify 10 percent of the approximately 570 polygons that comprise the

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440 acres currently mapped as mosaics within accessible sections of the corridor. Teams will be based out of Iliamna and will access the study area daily through use of one dedicated helicopter.

Two teams will stay one additional day to focus on identifying wetlands and waterbodies along the unmapped Eagle Bay Spur corridor (Figure 2). The area to be investigated includes a 2,000 feet wide corridor along approximately 3.5 miles of alignment which totals approximately 850 acres.

2.1.3 Trip 5 – Southwest Transportation Corridor

One field trip, consisting of two teams, will focus on identifying wetlands and waterbodies within the unmapped Southwest Transportation Corridor (Figure 2). The corridor starts at the limits of the existing mine area mapping and runs around the west and south sides of Iliamna Lake to its terminus near Kokhanok. The area to be investigated includes a 2,000-foot wide corridor along approximately 81 miles of alignment; totaling approximately 19,600 acres. Teams will be based out of Iliamna or Kokhanok (depending on site logistics to be determined by PLP) and will access the study area daily through use of one dedicated helicopter.

2.1.4 Trip 6 – Kenai Peninsula Natural Gas Pipeline Area

One field trip, consisting of one team, will focus on identifying wetlands and waterbodies within the unmapped Kenai Natural Gas Pipeline tie-in area on the Kenai Peninsula (Figure 3). The location of the study area has not been finalized but is assumed to be 20 acres. It is anticipated that the field work will be completed in one day. The team will access the study area by road using an HDR supplied automobile. Bear guards are not required for this trip.

2.2 Site Logistics

2.2.1 Site Access and Security

Field teams will fly from Anchorage to Iliamna, where they will meet PLP staff. PLP will provide helicopters for accessing the study area, and will arrange for access to or will provide direction to avoid any private properties within the study area. PLP will also coordinate to have necessary liaisons to accompany field teams on private property as needed. PLP will provide all necessary lodging, meals, and ground transportation while on-site, as well as two-way handheld radios for communication with helicopter pilots. Upon arrival in Iliamna, PLP will provide site orientation and site-specific safety briefing.

Photographs taken while on-site should not be shared or posted on social media in order to meet client's needs for confidentiality. All project-related activities observed during the field event, including project-related discussions, are to remain confidential. All staff, including HDR subcontractors, must sign the project's Non-Disclosure Agreement (NDA) prior to conducting any work on the project. Please see the project NDA for additional details.

2.2.2 Drinking Water and Sanitary Provisions

On-site PLP representatives will provide direction regarding safe drinking water, disposal of trash, and other sanitary provisions.

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2.2.3 On-Site Documentation and Postings

A copy of this Plan, including emergency contacts, WorkCare contact information, route maps to emergency and non-emergency medical facilities, Job Hazard Analysis (JHA) forms, and chemical safety data sheets (SDSs) will be kept on-hand with each field team. Field teams will verify the locations of emergency and non-emergency medical facilities with PLP staff upon arrival at the site.

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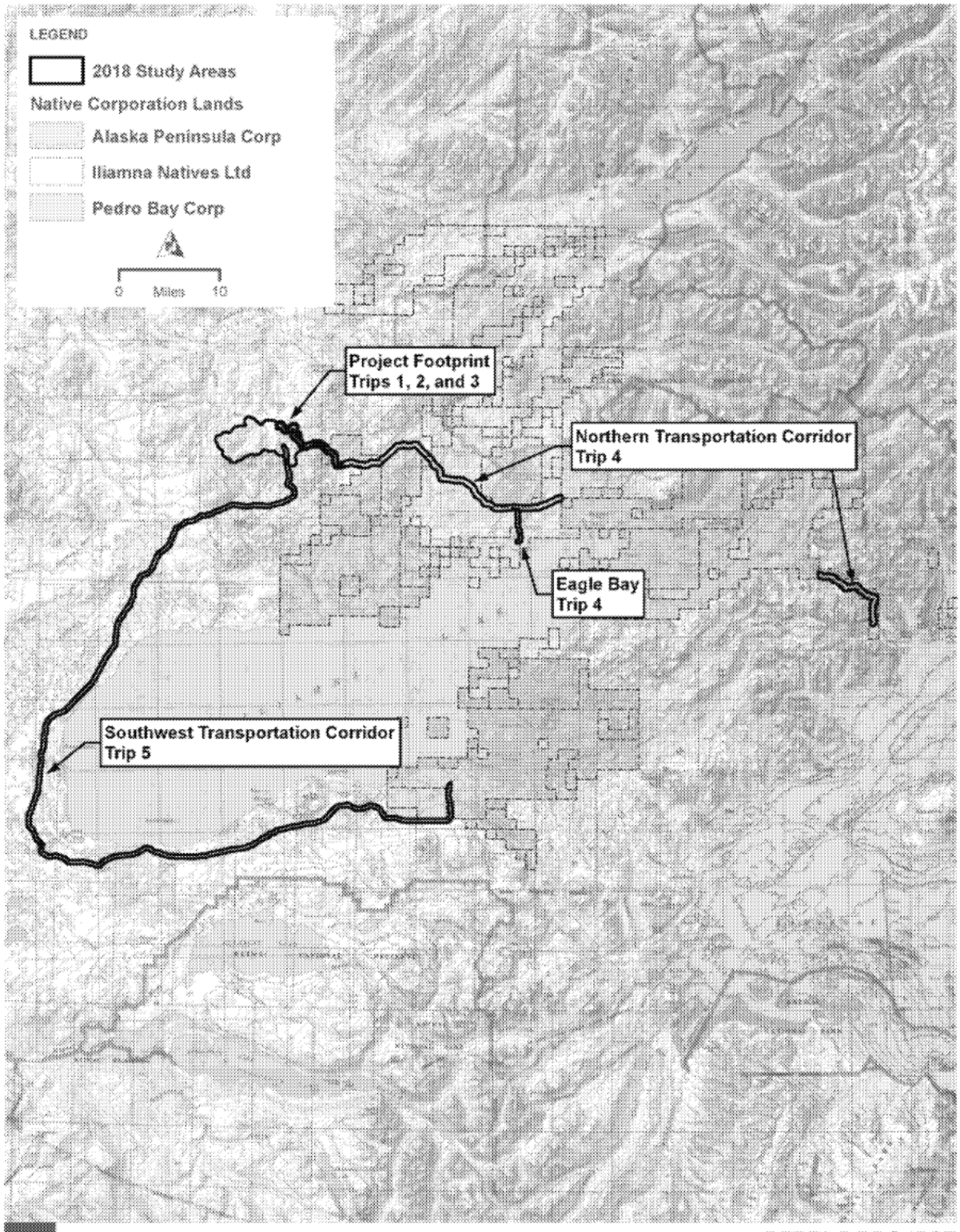

Figure 2. Iliamna Lake Vicinity Study Areas

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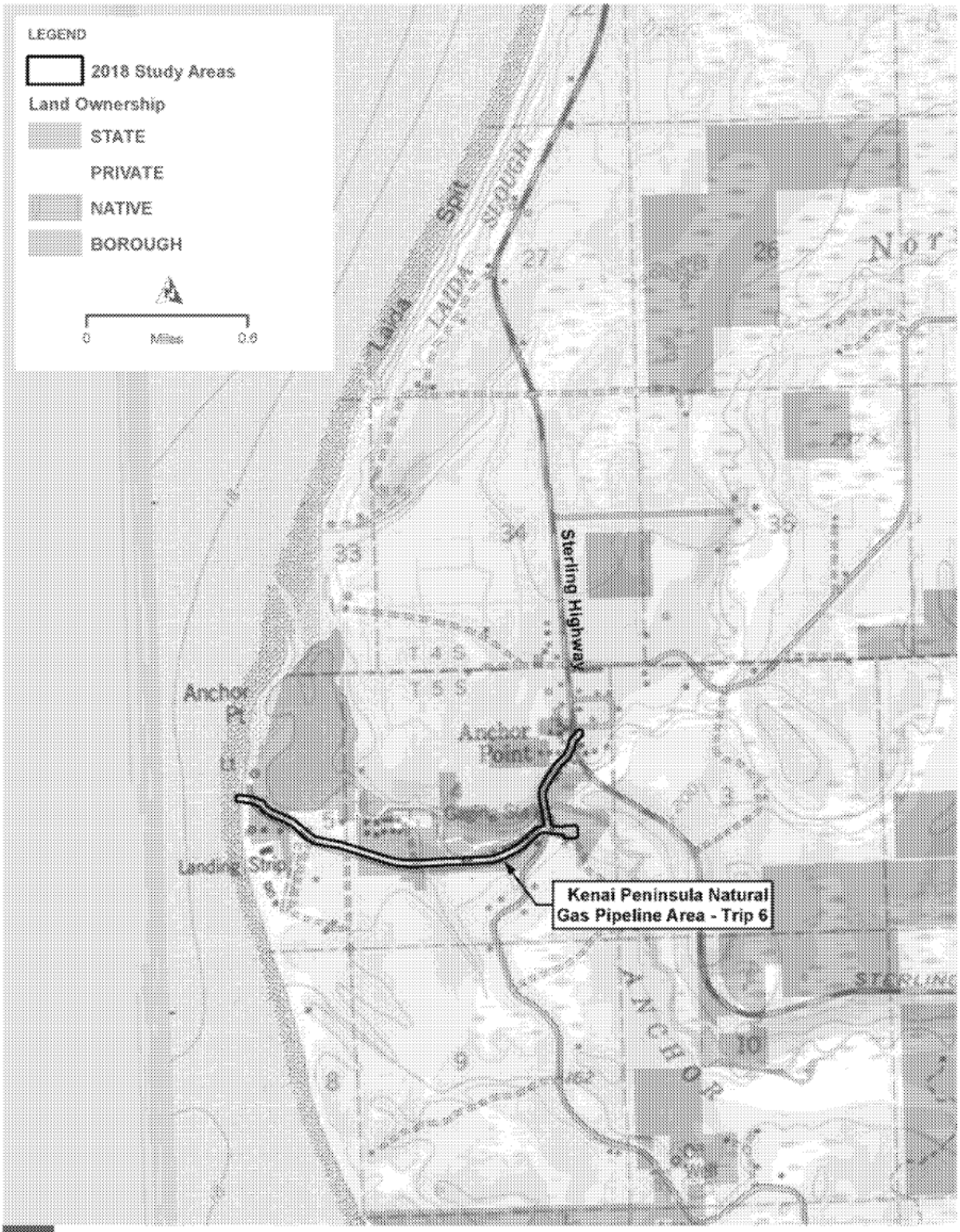

PEBBLE PROJECT

2018 WETLANDS AND VEGETATION FIELD STUDY PLAN

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Figure 3. Kenai Peninsula Study Area

Figure 4. Kenai Peninsula Study Area

Figure 5. Iliamna Lake Vicinity Study Areas

2.2.4 Drugs and Alcohol

The manufacture, distribution, possession, use, or being under the influence of drugs is prohibited while performing work for HDR. This includes the use or possession of prescription medications without a valid prescription.

Employees whom HDR management/supervision reasonably believes directly or indirectly caused a work-related injury or property damage will be required to undergo drug and alcohol impairment testing. Such testing will be conducted as soon as practicable, but not later than 32 hours after the incident for drugs and not later than six hours for alcohol.

3.0 FIELD WORK IMPLEMENTATION

3.1 Key Personnel

The following personnel have principal responsibility for the implementation and maintenance of health and safety measures during field work.

- Zach Halstead – Field Team Lead and Fieldwork Task Manager
- Mac Salway – Field Team Lead
- Mike Witter – Field Team Lead
- Hannah Griego – Field Team Lead
- Simon Wigren – Field Team Lead
- Alena Gerlek – Field Team Lead

3.2 Responsibilities and Lines of Authority

3.2.1 Project Manager and On-Site SH&E Representative

The Project Manager serves as the primary point of contact and is responsible for SH&E implementation and enforcement of safe work practices. When the Project Manager is not on-site, he/she will delegate an on-site SH&E Representative to take on the following responsibilities. If the SH&E Representative needs to leave the site or is not available, the Project Manager will assign an alternate HDR team member to fill the role (any field team member competent in the responsibilities below can serve as the SH&E Representative).

- Oversee SH&E implementation in the field and enforce safe work practices.
- Conduct and document daily safety briefings.
- Monitor on-site hazards and conditions and document safety inspections.
- Enforce safe work practices.
- Ensure availability and use of PPE.

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- Maintain SH&E equipment/instrument operation manuals and records of use and calibration.
- Monitor field team for heat and cold stress.
- Confirm employees' suitability for work based on physician recommendations for assignments requiring medical clearance (for example, hazardous waste work, rope access, exposure to noise, asbestos).
- Ensure reporting of all incidents in accordance with HDR reporting procedures, including contact to WorkCare for non-emergency injuries/illnesses and submittal of incident reports in the IndustrySafe reporting system (*https://industrysafe.com/hdrinc*).
- Provide oversight for site access for visitors and conducting visitor orientations.
- Serve as the facilitator of communications in emergencies.
- Immediately contact the Director of SH&E regarding any regulatory visits, audits, or inspections (for example, OSHA inspections).

3.2.2 Field Team Members

Field team members must be continually conscious of safety hazards and are expected to:

- Plan, organize, and perform each facet of work in the safest manner possible.
- Be constantly alert and report any unsafe act or condition, injury, incident, and safety infraction to a supervisor, the Project Manager, or the SH&E Representative so treatment can be obtained and/or corrective action taken them immediately.
- Actively participate in all safety training programs relevant to the work which they are performing
- Attend and actively participate in HDR trainings, meetings, and briefings.
- Use and maintain assigned equipment in a safe and responsible manner.
- Follow the procedures and processes specified in this Plan.

3.3 Stop Work Authority

Personal safety takes priority over all project deadlines, demands, and any other considerations. At all times and on all sites, it is HDR's policy, practice, and responsibility to provide a place of employment where HDR employees can conduct project-related activities in a safe and healthy environment. HDR strives to ensure the health and safety of its employees by identifying and mitigating recognized hazards to avoid or eliminate potential for injury or illness.

HDR employees need to be conscious for the safety of other project personnel and are expected to promote safe work habits. HDR employees are encouraged and empowered by HDR to maintain a safe workplace and only work when the hazards have been removed, controlled, or mitigated. No HDR employee is expected or obligated to perform work they consider unsafe or damaging to the environment.

Employees are to immediately report safety, health, and environmental (SH&E) concerns to their local Safety Coordinator, supervisor, and/or Project Manager. In addition, **Stop Work Authority (SWA) allows any HDR employee to stop work conducted by HDR or HDR subcontractors where there is a serious hazard or imminent danger**. Once invoked, the activity in question will be stopped and reviewed by those performing the work and their immediate supervisors. Work will not resume until all

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stop work issues and concerns have been adequately addressed. There will be no retribution for invoking SWA.

3.4 Unsafe Condition Reporting

Although HDR is not responsible for the health and safety or means and methods of other employer's work, when HDR employees (or HDR subcontractors) could be exposed to unsafe conditions/practices created by another contractor, or when observed unsafe conditions/practices pose a risk of serious injury or death to those exposed (regardless of company affiliation), the observing employee is obligated to notify someone who can take appropriate corrective action.

3.4.1 Exposure to Others (Non-HDR Employees/Non-HDR Subcontractors)

If an HDR employee observes an unsafe condition/practice by another contractor (not contracted with HDR) to which HDR/HDR subcontractors are not exposed but, in the employee's judgment, poses a serious hazard or imminent danger to others that could be exposed, the employee is to:

- Immediately warn those in imminent danger, regardless of company affiliation.
- Immediately notify HDR supervision for reporting to the creating/controlling contractor's senior management.
- When describing the serious hazard or imminent danger observation, do not provide any means or methods or specific remedies for correction. Our obligation is strictly limited to informing site supervision of the observation.
- Make it clear that our notification is advisory only and should not be construed as a direction or a stop-work order - the non-HDR contractor is solely responsible for determining and implementing the necessary corrective action.
- Document the notification in the project field logbook, daily report, or other records based on contract requirements.

3.5 Regulatory Inspection Protocols

It is our expectation that all employees will follow the requirements set forth in this Plan as well as all regulations that apply to their work location. HDR is committed to cooperating with regulatory and/or compliance inspection personnel as applicable on our project sites. HDR does not authorize any HDR employee to prohibit a properly identified representative from prompt admittance to any work area. Therefore, we will not require warrants for occupational SH&E officials' entry into any project location where HDR is engaged. We will cooperate with all inspectors in accordance with local regulatory requirements.

Guidelines for HDR actions during the inspection are summarized as follows.

Activity	HDR Action
Arrival of Inspector(s)	HDR project personnel are to contact their Regional SH&E Manager if an occupational SH&E inspector appears onsite to conduct an investigation involving HDR personnel.
Meeting with Site Representative	All HDR project sites require designation of an on-site SH&E Representative. The SH&E Representative is responsible for interaction with the inspector(s) and must be summoned immediately upon arrival of an inspector(s) at the site.

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Activity	HDR Action
Credential Verification	Immediately upon arrival of the inspector(s), the SH&E Representative is to request and document the inspector's identification. If the Inspector is missing his/her Identification card, or the identity of the inspector(s) is in question, a call to his/her home office is an acceptable practice to verify authenticity of credentials and inspection authorization.
Inspection	The SH&E Representative is to accompany the Inspector(s) at all times during the visit. HDR should attempt to replicate all photos, samples, or notes collected by the inspector(s), paying special attention to where the Inspector(s) goes, who is talked to, what sampling is done, which instruments are used, and any specific comments that are made. Site personnel are to conduct themselves in a professional manner when interacting with regulatory officials. The following guidelines should be adhered to during the inspection. • Keep all responses short and to the point without elaboration. Personnel should not volunteer information not specifically asked for by the inspector and should avoid statements that might be construed as an admission of noncompliance. • Do not demonstrate any operations for the Inspector(s) that are not part of the daily normal planned activities. • If possible, immediately remedy any alleged violation(s) identified by the Inspector(s). If an employee violates a work rule during an inspection, the same remedial/disciplinary action will be taken as if the Inspector(s) was not present. Failure to correct a violation noticed during the inspection may itself result in a citation. • Regulations may require the maintenance of certain safety and health records. If the Inspector(s) requests to review records, grant access to the documents.

3.6 Disciplinary Action

Should an employee commit a SH&E violation (any act contrary to the SH&E requirements set forth in this manual or those established by a client or governmental regulations), intentional or not, disciplinary action may result. Depending on the severity of the violation, the employee will typically be retrained to reinstruct the employee on the proper conduct expected. This retraining, and the circumstances necessitating it, will be documented and retained in the employee's personnel file.

For serious first time violations and repeat violations in which an offending employee continues to exhibit a disregard for the same or similar SH&E procedures after retraining, the responsible manager shall consult with the Director of SH&E and the Director of Employee Relations. As appropriate to the situation, actions could include any one, or a combination, of the following forms of disciplinary action: verbal warning; written warning; probation; suspension; and/or discharge. This is not an all-inclusive list and, because HDR is an at-will employer, it reserves the right to terminate at will without prior disciplinary action.

4.0 JOB SITE INSPECTIONS, AUDITS, AND OBSERVATIONS

4.1 Self-Audit/Take 5

A self audit/Take 5 is a proactive safety process used by employees to confirm they are prepared and confident in their ability to do an assigned task before they begin (they have the necessary training, knowledge, equipment, resources, etc.). The process involves employees "taking 5" (spending

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approximately 5 minutes) to review the task hazards, associated risks, and control measures prior to exposure.

Field staff will incorporate this self-audit practice into their work through daily morning safety meetings. The JHA form may be used as a facilitation tool for these meetings, but new issues that may not have been captured in the initial JHA creation should be addressed as well.

4.2 Job Site Inspections

The SH&E Representative is responsible for conducting and documenting regular job site inspections to confirm compliance with the Site-Specific SH&E Plan and proper identification of site hazards and conditions.

During the daily morning safety meetings, the SH&E Representative, and other field team members, should consider the changing environment and any potential hazards that may be encountered in that day's fieldwork. If these hazards are not already captured in the JHA form, they should be noted along with any ways that the teams will mitigate for the hazards.

4.3 Corporate SH&E Field Audits

Corporate SH&E is responsible for conducting field audits. Sites selected for audit are based on a project's scope and duration, anticipated hazards/exposures, potential for environmental impact, and the frequency and complexity of the work being performed. PMs can contact a Regional SH&E Manager to request a formal audit by a qualified safety professional at any time.

4.4 Behavior Based Safety Observations

For projects performed by offices participating in HDR's BBS program, all personnel on the project are to care for the safety of their fellow coworkers by being cognizant of their observed behaviors and documenting them in IndustrySafe (*https://industrysafe.com/hdrinc*). See the *SH&E portal* for more information on BBS implementation and expectations.

5.0 INCIDENT REPORTING AND INVESTIGATION

In the event of an incident, the most important immediate action is to provide medical assistance to those that may need it and to ensure the safety of others that may be affected.

5.1 Incident Reporting

All work-related near miss, injury, illness, damage, environmental, and security incidents involving HDR employees, subcontractors, and/or other parties at HDR work sites must be reported and investigated as soon as possible following occurrence.

Employees involved in or witness to an incident:

1. All Incidents
    a. Notify Supervisor to arrange for post-incident drug and alcohol testing (if applicable)
    b. Notify Project Manager for client reporting
    c. Submit Incident Report in IndustrySafe
2. Non-Emergency Injury/Illness Incidents
    a. Contact WorkCare (888-449-7787) for medical consultation

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3. Serious Incidents (incidents involving death, hospitalization, amputation, loss of an eye, significant damage, and/or environmental impact)
    a. Notify Director of SH&E or Regional SH&E Manage for regulatory reporting
    b. Notify Project Manager for client reporting

5.2 Incident Investigation

All incidents will be investigated by the Regional SH&E Manager with assistance from the on-site SH&E representative, project manager, and/or local safety coordinator and documented in IndustySafe.

6.0 EMERGENCY ACTION PLAN

This Emergency Action Plan has been prepared to define the responsibilities, resources and actions necessary to respond to incidents and emergency situations.

6.1 Communication Methods

The following communication methods will be used by the field teams:

☐ Cellular Phone (in camp)	☐ 2-Way Radio	☐ CB
☐ Satellite Phone	☐ Verbal	☐ Hand Signals
☐ Smoke / Flares	☐ Air Horn	☐ Siren
☐ Other:	☐ Other:	☐ Other:

6.2 Contact Numbers

Contact	Name/Address	Phone Number
Emergency Contacts		
Medical, Fire, and Police Emergency		911[a]
Medical Facility for Emergency Care	Iliamna Clinic, Roadhouse Strip Road Kokhanok Clinic, Clinic Drive	907-571-1818 907-282-2203
Non-Emergency Contacts		
WorkCare[c] (non-emergency injury/illness consultation)		888-449-7787
Medical Facility for Non-Emergency Care[d]	Same as Emergency	Same as Emergency
HDR Project Management and SH&E Contacts		
Project Manager	Anna Kohl	907-644-2008 office 907-727-9436 cell

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Local Safety Coordinator	Paul McLarnon	907-644-2020 office 907-250-8182 cell
SH&E Regional Manager	Dave Clemens	907-947-3431
Director of SH&E	Jeff Kleinfelter	760-450-6497
On-Site PLP Camp Manager/Technical Operations		
	Chasity Anelon	907-571-1788 office 907-360-4460 cell
	Dan Gallagher	907-571-1788 office 907-315-3995 cell
First Aid/CPR Trained Responders[e]	**Expiration**	**Phone Number**
Zach Halstead	6/2020	907-355-7637
Malcolm Salway	6/2020	907-301-4305
Alena Gerlek	6/2020	907-310-0387
Simon Wigren	6/2020	907-980-1901
Ashley Hovis	6/2020	907-764-2619
Mike Witter	First Aid 5/2020	206-909-7187
Hannah Griego		650-464-7642
Erin Cunningham	6/2020	907-602-7422
Maki Dalzell	First Aid 5/2020	425-691-7870

[a] The emergency number "911" is not applicable in all areas. Confirm based on the project location and replace as appropriate with the correct emergency contact numbers.

[b] If the project site includes public highway-rail grade crossings, identify the railroad emergency notification number posted on or near the crossing sign or single equipment. Use this phone number to report problems at the crossing (malfunctions, stalled vehicles on tracks, etc.) so the dispatcher can intercept trains or equipment approaching the crossing. If there is an immediate threat to life, call 911.

[c] Contact the WorkCare Incident Intervention hotline for non-emergency injuries/illnesses. WorkCare is available 24/7 for evaluation of self-care treatment options or referral to a designated occupational health facility.

[d] Select a facility from HDR's list of Designated Occupational Health Facilities when practical. If there is not a facility in near proximity, contact Amber Lyles in Corporate SH&E to find an acceptable alternative.

[e] If the job site is more than 15 minutes (3 minutes for sites where serious accidents such as those involving falls, suffocation, electrocution, or amputation are possible), there must be at least one person at the job site with current certification in first aid/CPR. At remote sites (a site that is isolated from normal human activities or not easily accessible by emergency services), at least two first-aid providers must be present at the job site.

6.3 Medical Facility Maps and Driving Directions

The Iliamna Clinic is located on Roadhouse Strip Road. Field teams will get directions to the clinic before commencing field work when based in Iliamna.

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Kokhanok Clinic is located on Clinic Drive. Field teams will get directions to the clinic before commencing field work when based in Kokhanok.

6.4 Emergency Equipment

- First Aid Kits
  - Each team will carry a field first aid kit.
  - First aid kits will be checked by the PM (or designee) before being sent out on the project and at least weekly thereafter during field operations to ensure they are full, in good condition, and that contents that have expiration dates have not expired.
- Overnight Supply Kits
  - Each team will be equipped with an overnight supply kit which will include a 3-season tent, sleeping bags, sleeping pads, and either a water filter or iodine drops
  - Team members will need to bring enough extra food and clothing to keep them fed and warm in the event that they are stranded away from base for one to two nights.

6.5 Evacuation Routes/Procedures

In the event the project needs to be evacuated, employees shall gather in the areas designated by PLP staff.

6.6 Inclement Weather

Inclement weather may occur while on the project site or during travel to and from the project. The on-site SH&E Representative will monitor the weather and weather forecasts while in Iliamna or Kokhanok for conditions that may require the field team to stop work or evacuate the site (high winds, heavy rain, lightning, fog, snow/ice, etc.). Daily meetings/briefings led by the SH&E Representative will include discussion of any anticipated inclement weather conditions that may impact the field team and the proper actions to take if facing these conditions. As appropriate, these discussions will include stop work and communication procedures, evacuation routes and shelter locations in the case of remote project work, etc. Field team leads will maintain communication with PLP base and helicopter pilots throughout the fieldwork to monitor weather and alert the pilot if they anticipate early extraction may be needed due to weather.

6.7 Safe Driving and Journey Management

Vehicle drivers must complete HDR's Safe Driving course on HDR University and must meet the driver eligibility criteria specified in HDR's Vehicle Use Policy and Procedures. Vehicles must meet the insurance, use, and maintenance requirements specified in HDR's Vehicle Use Policy and Procedures.

7.0 FIELD HAZARD ANALYSIS AND RISK ASSESSMENT

7.1 Job Hazard Analysis Forms

All field team members and subcontractors are responsible for being actively involved in the HDR hazard analysis and risk assessment process, which involves the identification, assessment, and prioritization of risks and measures to eliminate, minimize, monitor, and/or control them. Consideration is given to the safety, health, and security of workers, the public, and the environment.

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Job hazard analysis (JHA) forms are used to document the process and identify the sequence of work, specific hazards anticipated, and control measures to be implemented to eliminate or minimize each hazard. The JHA form also lists the necessary equipment and training required to perform the task safely.

Initial JHAs for tasks associated with this field work effort are included in Part 2. Prior to initiating a task, the field team must confirm the JHA is complete and adequately identifies and controls associated hazard. If there is a change in the scope of the work, if work conditions change, if new hazards are identified, or the controls prove inadequate or ineffective, the field team must revise the JHA as necessary, review with the team, and have each team member sign it before any work is conducted. Revisions can be handwritten on the form.

7.2 JHA Record Retention

All HDR field team members involved in the task must sign the JHA form in the field to acknowledge completion of the review and concurrence with the job steps, hazards, and controls described in the JHA. The SH&E Representative shall keep completed JHAs in a binder at the job site until the work is complete. After the work is complete, the electronic version of the initial JHA will be updated to include improvements that were identified in the field to assure better planning and a safer work experience the next time the task is performed. A copy will be forwarded to Corporate SH&E for inclusion in the JHA library.

8.0 HAZARD CONTROL

Methods to control hazards include hazard analysis of specific work tasks, safe work procedures, training, personal protective equipment (PPE), medical surveillance, and exposure monitoring.

8.1 Safe Work Procedures

Safe work procedures for the hazards/exposures associated with this project are included in Part 3.

8.2 SH&E Training

Confirm that all training listed on the task-specific JHAs and in the Safe Work Procedures is included here (and vice-versa as applicable).See the training catalog on the *SH&E portal* to help identify applicable requirements. Use the Safety Training Tracker on the *SH&E portal* to view HDR employee training records and verify training completion.

Table 2. SH&E Training Assignments and Completion Dates

Training	Field Team Member Date of Training – Trip 1					
	Zach Halstead	Malcolm Salway	Ashley Hovis	Mike Witter	Trent Parks	Mike Duffy
Alaska Field Health and Safety	4/16/18	6/13/18	6/1/2018	6/12/18	6/14/18	6/14/18
Alaska Field Communication Protocol	4/16/18	6/13/18	6/4/2018	6/12/18	6/14/18	6/14/18
Bear Safety Awareness	6/15/18	6/13/18	6/4/2018	6/12/18	6/14/18	6/14/18
Biological Hazards – Plants	6/14/18	6/13/18	6/4/2018	6/14/18	6/14/18	6/14/18
Blood Borne Pathogens	6/14/18	6/13/18	6/4/2018	6/14/18	6/14/18	6/14/18

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Helicopter	6/14/18	6/13/18	6/4/2018	6/13/18	6/14/18	6/14/18
PPE	6/15/18	6/13/18	6/13/2018	6/14/18	6/14/18	6/14/18
Remote Site Safety	6/15/18	6/13/18	6/13/2018	6/14/18	6/14/18	6/14/18
Reporting Requirements	6/15/18	6/13/18	6/15/2018	6/14/18	6/14/18	6/14/18
Slips, Trips, Falls Prevention	6/15/18	6/13/18	6/15/2018	6/14/18	6/14/18	6/14/18

8.3 SH&E Equipment and Supplies

8.3.1 Personal Protective Equipment (PPE)

- High-visibility safety vests will be worn while conducting fieldwork.
- Appropriate footwear (X-tra Tuff or Muck-brand type boots) shall be worn while conducting fieldwork.
- Hearing protection shall be worn when flying in helicopters and employees shall be enrolled in HDR's Hearing Conservation Program as applicable. See the *SH&E portal* for information regarding enrollment.
- Safety glasses shall be worn when flying in and loading/unloading helicopters.
- Gloves appropriate to the task shall be worn.
- Appropriate clothing (long pants, rain wear, non-cotton, etc.) shall be worn for all field work.

8.3.2 Other Equipment and Supplies

Biological Hazards Protection

- ☐ Insect Repellent
- ☐ Mosquito Head Net

Communication Equipment

- ☐ Two-Way Radios
- ☐ Satellite Phone

Emergency Response Equipment and Supplies

- ☐ First Aid Kit
- ☐ Compass, map, GPS receiver
- ☐ Lighting (flashlight, extra batteries)
- ☐ Food/Water
- ☐ Survival Gear
- ☐ Tool kit

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PART 2 – JOB HAZARD ANALYSIS (JHA) FORMS

Insert JHA forms

See the *SH&E Portal* for examples)

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PART 3 – SAFE WORK PROCEDURES

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A. BIOLOGICAL HAZARDS - INSECTS AND ARACHNIDS

A.1 Description

Insects and arachnids (including spiders, scorpions, mites, and ticks) will be encountered in a variety of outdoor project settings. Table 3 presents descriptions and habitat information for various types of stinging and biting insects and arachnids.

Table 3. Stinging and Biting Insects and Arachnids

Organism	Description	Habitat	Problem	Severity	Protection
INSECTS					
Bed Bugs	Small, oval, brownish insects. Adult bedbugs have flat bodies about the size of an apple seed. After feeding, however, their bodies swell and are a reddish color.	Enter homes/hotels on luggage, clothing, used beds and couches, etc. Live in groups in mattresses, box springs, bed frames, and headboards where they have easy access to people to bite in the night.	**Bites.** Lives on the blood of animals and humans.	Most bedbug bites are painless at first but later turn into itchy welts. They do not transmit diseases.	Inspect bed and upholstered furniture and alert hotel staff If you spot a bed bug Keep bags closed and zipped. Never lay luggage, backpacks or clothes on bed or on the floor.
Bees	Variable in size and color, many species ranging in size from microscopic to Bumblebee. European Honey Bee most familiar. Has two pair of wings.	Hollow logs, underground nest, and old buildings.	**Stings** when annoyed. Honey Bee leaves venom sac in victim. The ripping away of the venom sac kills the individual bee.	If person is allergic, nausea, shock, and constriction of the airway can result. Death may result.	Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when swarming about you.

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Organism	Description	Habitat	Problem	Severity	Protection
Flies	One pair of wings; variable in size and color; some species microscopic (biting Midges), others (Horse flies) bumblebee size.	Variable, may range far from wetland breeding areas. Common around rural farmlands, swamps.	**Bites. Bloodsucking.** Black Flies, Horse flies and Yellow Flies, in particular, can be vicious biters.	Very painful bites. Often more inhibiting during daytime lowland work than mosquitoes.	Wear thick protective clothing. Use plenty of insect repellant.
Hornets	One inch long with some body hair. Abdomen is mostly black.	Round, paper like nest hanging from trees, shrubs, or under eaves of buildings.	**Stings**. One nest may contain up to 100,000 hornets, which may attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees. Can be fatal.	Do not come near or disturb nest. If a hornet investigates you, do not move.
Mosquitos	Small, dark, fragile body with transparent wings.	Wherever water is available for breeding.	**Bites. Bloodsucking.** Itching and swelling result.	Can transmit diseases (**see Table 4**).	Use insect repellant and wear gloves. Stay in windy areas.
Wasps	Very thin waist. Color can be black, yellow or orange with stripes.	Underground nest; also paper-like honeycomb nest in abandoned buildings, hollow trees, etc.	**Stings**. Some species will attack en masse if you disturb or even closely approach the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid nests. Do not swat at them.

Table 4. Mosquito-Borne Diseases

Disease	Symptoms	Geographic Distribution
Zika virus	Common symptoms of Zika virus begin 2-7 days after transmission and include fever, rash, joint pain, and red eyes. Other symptoms include myalgia (muscle pain) and headache. Note besides transmission from the bite of a mosquito, Zika virus can also be transmitted through direct contact with a Zika infected person's blood or other body fluids or from a pregnant woman to her fetus. Zika virus has been linked to a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant.	http://www.cdc.gov/zika/geo/index.html
West Nile virus	Most people infected with West Nile virus will not have any	http://www.cdc.gov/westnile/

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	symptoms. About 1 in 5 people who are infected will develop a fever and other symptoms. Less than 1% of those infected develop a serious, sometimes fatal, neurologic illness.	*statsmaps/index.html*

A.2 Hazard Control

In addition to the protection measures listed in **Error! Reference source not found.**, the following actions are recommended to prevent insect and arachnid bites and stings:

- General
  - Do not wear perfumes or colognes when performing field activities as they often attract stinging insects.
  - Workers with a history of severe allergic reactions to insect bites or stings should carry an epinephrine auto injector (EpiPen) and should wear a medical identification bracelet or necklace stating their allergy.
- Mosquitos/Ticks
  - Check the Center for Disease Control and Prevention website for travel notices and updated maps of areas with mosquito and tick-borne disease transmission.
    - *http://www.cdc.gov/niosh/topics/outdoor/mosquito-borne/other.html*
    - *http://www.cdc.gov/ticks/index.html*
  - Use insect/mosquito repellents containing 20 -30% DEET on exposed skin in accordance with product label instructions and reapply as directed.
  - If DEET cannot be used for some reason (such as a personal sensitivity or the potential for cross-contamination when conducting environmental sampling), select an alternative EPA-registered product.
    - *https://www.epa.gov/insect-repellents/regulation-skin-applied-repellents*
  - Apply sunscreen prior to applying insect repellent.
  - Treat clothing and gear with permethrin (see HDR catalog) or purchase permethrin-treated items.
  - Wear light-colored long-sleeved shirts and long pants so you can easily see ticks on your clothing; tuck your pants into your socks to form a barrier.
  - Wear hats with mosquito netting to protect the face and neck.
  - Avoid non-essential outdoor activities at sunrise, sunset, and early evening when mosquitoes are most active.
  - Avoid high grass if possible and walk in the center of trails to avoid ticks in overhanging grass and brush.
  - Check your body, gear, and clothing for ticks, paying close attention to the head, armpits, and groin area. A daily total-body skin inspection greatly reduces the risk of infection since ticks may take several hours to two days to attach to the skin and feed.
  - Put your clothes in a dryer on high heat for an hour to kill any remaining ticks.

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A.3 Post-Exposure Incident Response

A.3.1 All Insect/Arachnid Bites and Stings

Risks from bites and stings include allergic reaction, infection, and transfer of disease-causing agents such as parasites, bacteria, and viruses. General guidelines are as follows:

- Wash the area around the bite/sting with soap and water.
- For bee stings, remove the stinger by gently scraping it out with a blunt-edged object, such as a credit card or dull knife. Don't try to pull it out as this may release more venom.
- If you have any symptoms of an allergic reaction, infection, or illness following a bite or sting occurring at work, regardless of how minor, immediately notify your supervisor and call WorkCare at (888) 449-7787.
- If you have a serious reaction involving any of the following symptoms, seek immediate medical care:
  - Swelling of the throat
  - Abnormal breathing
  - Tightness in throat or chest
  - Fainting
- Report all incidents in IndustrySafe (*https://www.industrysafe.com/hdrinc*).

A.4 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #034, Biological Hazards
- HDR University eLearning – *Biological Hazards: Insects*
- HDR University eLearning – *Biological Hazards: Arachnids*

B. BIOLOGICAL HAZARDS - MAMMALS

B.1 Description

Black and brown (grizzly) bears are common within the project area. Additionally; moose, wolves, caribou and other wildlife may be encountered during fieldwork.

Encounters with mammals are potentially dangerous either from traumatic injury due to direct contact or from infectious diseases that are carried by them or their parasites (see Section 10.0 for details on rabies, hantavirus, and histoplasmosis). Animal species that could be encountered depend on geography and will vary in size and ferocity. Mammals most likely to attack humans in North America are feral animals, bears, mountain lions, and moose.

B.2 Hazard Control

General precautions are as follows:

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- Be aware of the appearance and habitat of animals you are likely to encounter and plan accordingly based on the danger these animals pose.
- Complete the HDR University eLearning – *Biological Hazards: Mammals*
- Do not setup near obvious animal nests or burrows.
- Keep food and garbage stored in sealed containers.
- Minimize the amount of time you use lights after dark because light may attract animals.
- Don't touch rodents or other mammals, dead or alive.
- Do not attempt to feed animals.

B.2.1 Feral Animals

Employees conducting work at landfills, abandoned buildings, or urban project locations may encounter feral animals. A feral animal is any formerly domesticated animal that is now living as a wild animal. They are particularly dangerous because their appearance as a familiar pet causes people to assume they will act like one and, former association with people often causes feral animals to act without fear of humans. Feral dogs can become pack oriented, very aggressive, and represent serious risk of harm to unprotected workers.

- Do not feed, chase, act threatening or call to these animals or try to pet them.
- If the animal acts in a threatening manner, back away while facing the animal.

B.2.2 Bears

All species of bears are dangerous and should be avoided if possible. Brown (including Grizzlies) and black bears are the two species of bears expected to be encountered most often by HDR employees while working in Alaska, Canada, and northern and western regions of the United States. Employees required to work in these regions must be trained to work safely in bear country and be positively protected against a bear attack by either (a) the presence of a third party bear guard or (b) carrying an industry accepted chemical bear deterrent (such as bear spray). Under no circumstances, should an HDR employee work alone in bear prone areas.

The method of positive protection selected for each project will vary depending on the project location, type of work, bear population and risk of attacks, project logistics, and client requirements. The method of protection must be chosen prior to the project start and all associated requirements communicated to team members and the client to ensure awareness and concurrence by affected employees.

B.2.2.1 Bear Guards

A bear guard (an independent third party or the client) should be assigned to accompany a group of workers for any field work performed in medium to high density bear areas where the number of workers and/or the worker experience is not adequate to provide the positive protection needed. The designation of bear guard is assigned only to trained individuals whose sole responsibility is to provide positive protection against bears for the group of workers they are accompanying.

The project manager or team leader is responsible for verifying that the assigned bear guard is competent to perform the job duties through completion of a required firearm safety course

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and any additional training course completion, past experience or certification by an independent third party.

Bear guards carrying firearms shall provide the project manager documentation of the following:

- Completion record of a formal training class (and refresher training, as required) on firearm safety sponsored by the National Safety Council, National Rifle Association or other nationally recognized safety organization.
- Completion record of a formal training class on bear awareness and response sponsored by a recognized organization in the field of bear safety. Note: participants completing the LTR Training Systems Learn to Return Wilderness Safety Leader (Bear Guard) course must receive a minimum rating of 3 to serve as bear guard for HDR.
- Record of a passing pre-employment drug and alcohol test and enrollment in their employer's random drug and alcohol testing program.

B.2.2.2 Bear Spray

HDR encourages each individual to carry a bear deterrent such as pepper spray when working in bear prone areas. The spray canister should be carried in a holster on a belt, shoulder strap or pack to allow quick response if needed.

Caution must be used when discharging the spray to make sure that the individual is upwind from the spray to avoid exposure to the irritating and possibly disabling effects of the deterrent. Training for the use of bear spray should be obtained through bear safety classes or live training presented by experienced HDR employees.

Bear spray products are considered hazardous materials for ground and air common carrier transport. Each product should be handled according to applicable regulations and transportation providers should be alerted about its presence. Prior to shipping, contact Corporate SH&E for manifest preparation. Privately commissioned air transport does not fall under the air common carrier regulations and therefore does not require a formal manifest.

B.2.2.3 Personal Protective Equipment

Employees are to wear orange or orange/yellow vests when working alongside a bear guard carrying a firearm and during any hunting seasons that are occurring near the project area.

B.2.3 Moose

In North America, the moose range includes almost all of Canada (excluding the arctic and Vancouver Island), most of Alaska, northern New England and upstate New York, the upper Rocky Mountains, northern Minnesota, Michigan's Upper Peninsula, and Isle Royale in Lake Superior.

If you encounter a moose:

- If it hasn't detected you, move away from it. Give the moose plenty of space.
- If it knows you're there, talk to it softly and move away slowly.
- Don't be aggressive - you want to convince the moose that you aren't a threat.

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- If you think the moose is going to charge you, take cover or run away.
- Try to get behind a tree or a car if a moose charges.
- Never get between a mother moose and her calves.

B.3 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #034, Biological Hazards
- HDR University eLearning – *Biological Hazards: Mammals*
- Bear Safety Training

C. BLOODBORNE PATHOGENS

C.1 Description

Bloodborne Pathogens (BBP) are disease-causing microorganisms present in human blood and bodily fluids. The most prevalent of these pathogens are Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV). HDR has developed an exposure control plan for employees who have the potential to come into contact with potentially infectious material as part of their expected job duties (see HDR SH&E Procedure #008, Bloodborne Pathogens Exposure Control Plan. Job duties with potential for exposure on this project include:

- First aid/CPR responders

C.2 Hazard Control

To prevent potential exposure to infectious pathogens when administering first aid/CPR, HDR employees will employ the medical-care concept of “Universal Precautions” whenever working with injured personnel. “Universal Precautions” literally means that every person is assumed to be infected with bloodborne pathogens. All blood or other bodily fluids will be considered infectious regardless of the perceived status of the victim. To prevent transmission of these infectious agents, the following actions will be implemented:

a. Avoid all contact with blood or other bodily fluids (i.e., vomit or saliva).

b. Wear latex style (latex-free if allergic) gloves or equivalent when there is potential contact with potentially infectious materials.

c. Warn nearby personnel not to contact any potentially infectious materials.

d. Provide appropriate first aid, if trained to do so.

e. Report all BBP exposure incidents to your supervisor.

f. Dispose of, or decontaminate all PPE, equipment, and surfaces contaminated with blood or other body fluids.

g. Employees exposed to potentially contaminated materials shall wash-up immediately following the exposure.

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Decontamination of areas will be necessary if surfaces or equipment come into contact with blood/other bodily fluids. BBP decontamination will be accomplished as follows:

a. Wash with a ten percent bleach solution (one part bleach, nine parts water). Decontaminated materials are no longer considered regulated waste for disposal purposes;

b. Rinse with clear water until all visible blood/body fluids have been cleaned up;

c. Dispose of water generated during the decontamination process in the sanitary sewer or absorb on paper towels for normal refuse disposal;

d. Following thorough decontamination, solid materials may be disposed of as ordinary refuse. In the unlikely event that decontamination cannot be performed, call Corporate Safety for instructions.

C.3 Medical Monitoring/Vaccinations

HDR employees who have been identified as having the potential for exposure to blood or other potentially infectious materials (typically assigned tasks listed above) will be offered the Hepatitis B vaccine, at no cost to the employee. The current HBV vaccine process consists of three shots and takes six months to complete. The vaccine is for immunization against Hepatitis B only.

After receiving information on the hazards of Hepatitis B and the vaccine procedure, HDR employees may voluntarily choose to either accept or decline the vaccination. If accepted, the vaccination can be obtained either from the employee's personal physician or from a medical facility included in HDR's medical monitoring program. If declined, the employee must sign a ***Hepatitis B Vaccination Declination Form*** to document that the vaccination was offered by HDR but not accepted by the employee. Any employee who initially declines the vaccination may voluntarily elect to receive it at a later date, at no cost to the employee, during the employment period of exposure.

C.4 Training

Prior to field work, HDR personnel assigned tasks with the potential for BBP exposure must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SHE& Procedure #008, Bloodborne Pathogens Exposure Control Plan
- HDR University eLearning – *Bloodborne Pathogens*

C.5 Applicable Forms

The ***Hepatitis B Vaccination Declination Form*** must be signed by employees who elect not to receive the Hepatitis B vaccination.

D. HELICOPTER AND SMALL AIRCRAFT SAFETY

D.1 Description

The project area will be accessed via helicopter.

HDR personnel utilizing helicopters and small aircraft are exposed to many serious hazards during flight, when approaching or exiting the aircraft, and when working near the landing zone of the aircraft.

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Helicopter and small aircraft travel is most commonly used when performing services such as surveying and environmental investigations, or transporting equipment/personnel into remote areas.

While helicopter and small aircraft travel is not considered a high risk activity, in the event of an accident, the potential for serious personal injury is great. Therefore, it is incumbent that all HDR employees follow the guidance presented in HDR SH&E Procedure #042, Helicopter and Small Fixed Wing Aircraft Safety when traveling by or working near helicopters and small fixed wing aircraft.

D.2 Hazard Control

Travel on small contracted aircraft (non-commercial) for work assignments may expose employees to noise levels that exceed occupational exposure limits. In accordance with HDR SH&E Procedure #026, Noise and Hearing Conservation, prior to working near or traveling on helicopters or small aircraft, the following employee actions are required:

Step 1. Notify SC of scheduled flights.

Employees must notify their SC of all travel plans involving contracted aircraft.

Step 2. Complete Flight Detail Tracking Form.

Documentation of flight details (including flight duration and type of aircraft) must be submitted on the ***Contracted Aircraft Flight Tracking Form*** on the *SH&E portal* within two weeks of completed travel. This information is critical for complying with OSHA regulations and will be used by Corporate SH&E to determine the need for enrollment in HDR's Hearing Conservation Program (HCP).

Step 3. Enroll in HDR's Hearing Conservation Program if applicable.

If the flight duration is long enough that OSHA's occupational noise action level (as specified in OSHA 29 CFR 1910.95) could be exceeded, exposed employees will be enrolled in HDR's HCP. Enrollment may occur prior to the employee's first flight or could occur following the flight (OSHA allows up to 6 months from an employee's first exposure at or above the action level for completion of a baseline audiogram).

Table 5 summarizes predicted flight durations that could exceed OSHA's action level and thus require enrollment in HDR's HCP.

Table 5. Flight Durations for a Single Work Shift Requiring Enrollment in HDR's HCP

	Type of Aircraft			
	Float Planes	**Fixed Wing Aircraft Other than Float Planes**	**Rotary (Helicopter) Aircraft**	**Flights in Multiple Aircraft**
Predicted Flight Durations that Could Exceed OSHA's Action Level[1,2]	Greater than 1-hour	Greater than 3-hours	Greater than 4-hours	Contact Corporate SH&E to Calculate

[1] If aircraft-specific monitoring has been conducted and indicates exposure levels are below the OSHA action level, enrollment in HDR's HCP is not required. Contact Corporate SH&E to review and confirm the adequacy of such monitoring.

[2] These durations were determined through noise monitoring conducted by Corporate SH&E. We will continue to measure exposures on future flights and will update and communicate any

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changes to these values if additional data indicate this is warranted.

Step 4. Complete HDR's Noise and Hearing Conservation training.

This self-directed online training is available on HDR University and is required for all employees traveling on contracted aircraft. Employees enrolled in HDR's HCP must repeat the training annually.

Step 5. Wear assigned hearing protection.

Regardless of flight duration, when in contracted aircraft with the engine running, employees must wear inflight communication ear muffs provided by the carrier. In addition, on fixed wing aircraft and float planes, employees must also wear disposable ear plugs with a Noise Reduction Rating of 25 or higher. These must be worn in combination with the inflight communication ear muffs provided by the carrier.

D.3 Personal Protective Equipment (PPE)

Personal protective equipment includes eye and hearing protection and may also include head protection, flash fire protection, and personal flotation devices for over-water flights. Employees traveling in remote areas must also be equipped with the appropriate level of survival gear should they become stranded.

- Eye Protection is required for the prevention of eye injuries caused by flying particles, such as dust and debris, generated by rotating aircraft propellers. Protective eyewear should meet the specifications cited in ANSI Z87.1 (2010 or latest edition).
- Hearing Protection is required when working near or traveling on helicopter or small aircraft for a duration that causes an exposure exceeding 85 dBA time-weighted average (TWA) or 100 dBA maximum noise level.
- Fire Retardant Suits may be required by the air conveyance pilot. HDR personnel will comply with the pilot's requirements and wear fire retardant suits if required.
- Helmets must be worn to provide protection from potential head injuries that could be incurred during any emergency landing. HDR personnel will comply with all helmet requirements set forth by the air travel provider or pilot.
- Survival Gear may be necessary when traveling to remote areas where emergency landings and weather may ground the aircraft for an extended period of time. HDR personnel must be prepared for exposure to the natural elements, including sustained high or low ambient temperatures, winds, blizzards, and/or precipitation for several days until rescued or flights can resume. Shelter provisions, extra food, and water, and several layers of warm, moisture wicking clothing, hats, and gloves should be carried during travel.

D.4 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #042, Helicopter and Small Fixed Wing Aircraft Safety
- Aircraft Briefing - The pilot is required to give passengers a briefing concerning the safety features of the aircraft and expected passenger behavior. This briefing should include at a minimum:

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- Normal Procedures
  - Proper Entry and Exit procedures
  - Proper seating in aircraft
  - Passengers must exit the aircraft and remain at least 50 feet away during refueling
  - No smoking
  - Loading and unloading tools and equipment
  - Proper use of PPE, for example, securing hardhat or helmet with chinstrap
- Emergency Procedures
  - Location of first-aid kit and survival equipment
  - Operation and location of fire extinguisher
  - Emergency electrical and fuel shut-off
  - Operation of doors and seat belts
  - Exit and rendezvous
  - General emergency procedures

- Sling Load Training - Sling loads should always be prepared by helicopter pilots or others who have been properly trained. HDR personnel should not take the responsibility for preparing sling loads unless there is no other alternative and they have been properly trained. Improper sling loading can alter a craft's balance, takeoff and flight ability. In the event that a team has to prepare a sling load, sling load training must include:
  - Viewing the video, Keep Your Eyes on the Hook – Helicopter External Load Operations – Ground Crew Safety, Minster of Transport, Canada
  - Successful completion of a quiz based on the information in the video
  - Hands-on instruction from the pilot will be identified and provided.

D.5 Applicable Forms

Flight details (including flight duration and type of aircraft) must be submitted on the ***Contracted Aircraft Flight Tracking Form*** on the *SH&E portal* within two weeks of completed travel. This information is critical for complying with OSHA regulations and will be used by Corporate SH&E to determine the need for enrollment in HDR's Hearing Conservation Program (HCP).

E. NOISE (HEARING CONSERVATION)

E.1 Description

Daily helicopter use presents a noise hazard during these field events.

HDR employees must recognize and avoid noise hazards encountered at the project site. Exposure to prolonged excessive levels of noise can result in a permanent loss of hearing acuity, development of

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tinnitus (i.e., ringing of the ears), a possible increase in blood pressure, and stress-related problems. Noise may also cause difficulty in communicating or working effectively and safely.

E.2 Hazard Control

The three ways to reduce employee noise exposure are through the use of (1) engineering controls (best option), (2) administrative controls (good option), and/or (3) hearing protectors (worn when other controls fail). Unfortunately, HDR is rarely able to implement engineering controls such as equipment substitution, alteration, or isolation to reduce noise generation, since we do not own the facility/equipment.

Our best option when confronted with excessively loud noise sources is to move away from it. Moving away works, as noise dispersal generally acts on the inverse square law – for any doubling of the distance from the noise source, the noise level received decreases by six decibels. Also, conversing in a normal tone with another worker at a distance of three feet may be used as a guide that you are in a safe noise environment.

If any HDR employee is, or is expected to be, routinely occupationally exposed to continuous noise at or above OSHA's time-weighted average Action Level of 85 dBA (regardless of whether hearing protection is worn), the employee shall be enrolled in HDR's Hearing Conservation Program, which includes:

- Annual education on the health effects of noise exposure and instructions on how to fit and wear hearing protectors;
- A baseline audiogram and annual follow-up audiometric testing.

To enroll in the HDR HCP, contact your Regional SH&E Manager.

E.3 Personal Protective Equipment (PPE)

Hearing protectors should only be used as a last resort when engineering and administrative measures are infeasible or have been implemented as possible and further protection is still needed. Hearing protection must be worn by HDR personnel when the workplace noise levels are greater than the Action Level(s) shown in Table 1 of HDR SH&E Procedure #026, Noise.

The most common hearing protectors are earplugs and earmuffs, and each model is assigned its own numerical noise reduction rating (NRR) value. The higher the number, the more noise the protector is predicted to attenuate as long as it is well fitted and used as recommended by the manufacturer. The project safety coordinator will determine the level of protection needed for the job site and assist with the selection of hearing protectors for each team member.

E.4 Training

Prior to field work, HDR personnel who will potentially be exposed to noise above occupational exposure limits must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #026, Noise (Hearing Conservation)
- HDR University eLearning – *Noise and Hearing Conservation* (annual requirement)

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E.5 Applicable Forms

For travel in helicopters or small fixed-wing aircraft, flight details (including flight duration and type of aircraft) must be submitted on the ***Contracted Aircraft Flight Tracking Form*** on the *SH&E portal* within two weeks of completed travel. This information will be used by Corporate SH&E to determine the need for enrollment in HDR's Hearing Conservation Program (HCP).

F. REMOTE SITE SAFETY

F.1 Description

The entire project area is considered “remote”, and is accessible only by helicopter or small aircraft.

F.2 Hazard Control

HDR considers a site "remote" if it is isolated from normal human activities or if travel over unmarked roads or off-road is required to reach it. The primary hazards associated with working in remote locations are:

1. Isolation of employees from public rescue services
2. Limited means of communication
3. Exposure of employees to adverse severe weather
4. Danger to employees from crime

In addition to the general hazard controls presented in the following subsections, procedures and protocols for the following have been established:

- Journey Management – A travel safety form detailing the travel plans, emergency contact information for each team member, and the nightly check-in schedule and contact person will be completed and distributed to the appropriate staff prior to departure for the field.
- Emergency Planning (see Section 6.0)
- Communication Protocol (see Section 6.1)

F.2.1 Strangers

Avoid contact with strangers at remote locations. Maintain an adequate “personal space” between yourself and the stranger. If contact (verbal or physical) cannot be avoided, be wary of the intentions of unknown persons. If you are in a secluded area and stranger approaches, move immediately to a highly visible area before conversing. If you feel uncomfortable by the presence of a stranger, leave the site.

F.2.2 Rough Terrain

Occasionally, HDR employees are required to perform surveys or inspections in areas that are wooded and/or mountainous, which could reasonably pose a physical hazard to employees due to the terrain of the area, the altitude, or the possibility of becoming lost.

- Know the physical limitations of each member of your team, especially if any member has a predisposing medical condition that could possibly require immediate care while on the trip

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(e.g. diabetics and persons with heart conditions). Among your considerations should be the altitude acclimatization of each team member, and the comfort level of party members when working near steep ridges.

- Do not attempt to make any steep rock climbs without the use of appropriate equipment. Remember that descending the same pitch will be much more difficult than the ascent. In ascending, the foot placements are easily visible somewhere between the feet and waist level and one never has to look down. In descending, the foot placements are now below the feet, perhaps six to eight feet below the eyes and are not easily discernable. Additionally, in order to find those footholds, the climber must look down, which could cause the climber to panic, or undergo an adrenaline rush resulting in accelerated fatigue.
- Be aware of and avoid ledges or other fall hazards and take special care to avoid slip, trip, and fall hazards. Even a minor injury is magnified if a great deal of effort is required to obtain treatment or to get to a safe area.
- Keep the team together at all times.
- If lost, remain where you are. With employment of the communication system described in Section 6, even if the cell phone is inoperative, your office will have a good idea of the approximate area where you are, unless you begin to wander, in an attempt to walk out.

F.2.3 Nature and Weather

Hazards from outdoor elements can be avoided by having an understanding of the hazards and by proper planning and preparation. Remain cognizant of the weather and look for clues that it is about to change. The key to safety during a potential thunderstorm is to know the most likely point where lightning might strike. General guidance to avoid a lightning strike is as follows:

- Stay away from isolated or large trees. If the tree is isolated, stay farther from isolated trees than the height of the tree.
- When on an exposed talus or scree (rock fields with no tree protection), stay nearer the smaller rocks.
- In open areas, seek a low place such as a ravine or valley, but be alert for flash floods.
- In all cases, stay away from sources of water (e.g. streams, lakes, puddles or even small pools of water collected on rocks). Water is an excellent conductor of electricity.
- The optimal location would be sheltered by small trees in a ravine, away from water and rock overhangs. As an electrical charge traveling along the ground reaches an overhang, it will very likely arc across to your body and travel through it rather than along the rock.
- If your team is a large group of people, spread out as much as possible to reduce the risk of multiple casualties.
- If you take shelter in a cave, stay away from the entrance. As the lightning passes through the ground, it will travel near the opening of the cave and will use a body as a bridge to pass from one side of the entrance to the other.
- Avoid body positions that would allow the charge to pass through the body. Whenever possible, drop to your knees and bend forward putting your hands on your knees. Try not to place your hands on the ground, as this would increase the chance of entry and exit points resulting at opposite extremes. NEVER lie flat on the ground. Occupy the smallest area possible.

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- At all times, wear shoes and stay on something insulated such as dry clothing, packs, ropes, or tree branches. When there is a hazard of lightning, remove all exposed metal objects from your clothes. These objects become hazardous not only because they present a possible target for a direct strike but also because they will heat up significantly and fuse clothing or flesh as the current passes through the body on an indirect strike.
- When you see a bolt of lightning, count how long it takes for you to hear the thunder and divide by 5. The result is your distance, in miles, from the lightning.

F.3 Lone Workers

It is strongly encouraged that more than one employee ("buddy system") be assigned to complete tasks at remote sites. Before allowing an employee to work alone at a remote site, PMs must evaluate site conditions to determine if such assignment is appropriate. Factors to consider include:

- Availability of cell phone coverage
- Access to emergency services
- Whether the site is in a high crime area
- If there is a potential for acute chemical exposure
- If there is a high potential for physical hazards such as high voltage or other electrical hazards, working at heights, confined spaces, heavy lifting, heavy equipment operations, etc.

If an employee is allowed to work as a lone worker, they must have cell phone or satellite phone and must develop a communication protocol that includes a check in/check out schedule with someone in the office. The schedule must include check in at a minimum of two agreed upon times each day (morning, afternoon) with a designated office contact and check out confirmation upon leaving the site and/or upon arriving at the final destination for the day (office/home/hotel, etc.)).

F.4 Personal Protective Equipment (PPE)

In addition to a cell phone or satellite phone, the following equipment, depending on the degree of isolation, the climate, and the topography, should be considered:

- Global Positioning System (GPS) and/or U.S. Geological Survey Topographic Map and Magnetic Compass
- Weather Radio
- Flashlight (with extra batteries and bulb).
- Extra clothing (including mittens, hat, jacket and rain gear).
- Sunglasses/safety glasses
- Extra Food and Water
- Waterproof Matches in Waterproof Container
- Candle/Fire Starter
- Pocket Knife
- First Aid Kit
- Insect repellents and medications to treat exposure to biological hazards such as insect bites, poison ivy, etc.
- Space blanket or two large heavy-duty trash bags

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F.5 Training

Prior to departure for field activities in remote areas, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #038, Remote Site Safety
- HDR University eLearning – *Remote Site Safety*
- At least two members of the field team at remote sites must be certified in first aid/CPR

G. SLIP, TRIP, & FALL PREVENTION

G.1 Description

Slips, trips, and falls (S/T/F) result from encountering an unexpected change in the walking surface (change in frictional resistance or level) resulting in a loss of balance. Most of these accidents are preventable through proper housekeeping, correct walking surfaces/footwear, and simple precautions.

G.2 Hazard Control

Common project site sources of S/T/F hazards are:

- Stepping out of vehicles onto uneven terrain/loose gravel/ice – realize you are shifting your weight from a sitting to a standing posture, and transferring this weight onto the new surface. Do this carefully, especially in winter in a parking lot. Initially reduce stride and assess.
- Carrying items while walking. This has several dangers – holding any items reduces your ability to use your hands/arms to recover from a momentary loss of balance, and carrying a large item, such as a box, impedes your view of the walking path in front of you.
- Embarking/disembarking from boats. Very common source of injury. Docks are stationary and at a higher elevation, while boat floors are rocking with wave action, and have clutter/seats, etc. in them, reducing the targeted landing spot for feet. Shifting your weight to leave a dock and embark into a small boat is especially dangerous. Performing a one minute stretch (hamstrings, hips, knee bends, low back) for increased flexibility (aids in balance) is a very good idea before embarking.
- Climbing ladders and walking on elevated grating-type (expanded metal) surfaces. These freeze easily and hide the presence of ice.

Most S/T/F accidents can be avoided through:

- Awareness – recognize trouble spots/uneven terrain and avoid where possible. Watch your pathway while you walk.
- Housekeeping – do not stack materials/cords in walkways, close file drawers, apply de-icer, or manually remove on walking and climbing surfaces – don't create a S/T/F hazard!
- Wear proper footwear – many serious injuries result from ankle turns. Wear over-the-ankle boots, laced up snugly. Select soles that offer good traction (lugged, not smooth) and are made from high frictional resistance materials (rubber-like compounds). These two characteristics will prevent many falls and injuries, due to uneven terrain.

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- Stride dynamics – Slips generally happen when an employee walks across one surface with a higher frictional resistance (e.g., carpet), which sets his/her stride at a fast pace, and then steps with that same stride onto a new surface with a lower resistance (marble, wet floor). Reduce the distance of your stride (space between steps) and slow your pace when first encountering a new walking surface – almost walk gingerly, until you have ascertained what pace the surface friction will support. Keep toes pointed a little outwards to enhance stability; make wide turns around corners. The ultimate stride goal in slick conditions is to keep your center of gravity directly between your legs, and your legs as close to vertical under your trunk.
- Avoid jumping or running on project sites – both actions increase both the likelihood of, and the extent of injury suffered as a result of, a S/T/F.

G.3 Training

Prior to field work, HDR personnel must complete the following training or an equivalent substitute.

- Review and confirm understanding of HDR SH&E Procedure #003, Slip, Trip, and Fall Prevention
- HDR University eLearning – *Slip, Trip, and Fall Prevention*

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Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 9/27/2018 12:22:43 PM
To: Butler, Barbara [Butler.Barbara@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Correct version of the Alternatives memo
Attachments: AppendixB_comments_KSchofield.docx

Attached are some additional comments from me. Just let me know if you have questions or need more information.

Kate

_____
Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

-----Original Message-----
From: Butler, Barbara
Sent: Thursday, September 20, 2018 4:10 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Correct version of the Alternatives memo

Hi Molly,

Here are my comments on the alternatives document.

Please let me know if you have any questions.

Thanks,
Barb

-----Original Message-----
From: Godsey, Cindi
Sent: Thursday, September 20, 2018 3:50 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Correct version of the Alternatives memo

Molly,

Here are my comments on the Alternatives. There is one that I need to discuss with Patty and we'll get back to you on it before the 26th.

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, September 17, 2018 3:52 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Correct version of the Alternatives memo

Hello All,
The Corps has distributed the updated, more detail, discussion on Alternatives development for cooperating agency review. Per the below email, comments are welcome if we would like to provide any. I would appreciate your review of the attached, if you have time (I realize this is later than originally anticipated). If you do have any comments, please send them to me by COB Wednesday 9/26.
Thank you,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, September 17, 2018 1:32 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell,

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David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Bill Craig <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Correct version of the Alternatives memo

All,
Attached is the correct version. My apologies for sending previous email.

Attached is the more robust discussion on alternatives. We are not requesting comments, however if your agency has comments and can provide them NO LATER THAN Close of Business October 3, we will incorporate as much as possible. Comments received after October 3 will be considered after the release of the draft EIS.

Thanks

Shane McCoy
Program Manager

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Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 9/20/2018 7:49:58 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Correct version of the Alternatives memo
Attachments: Alternatives comments.docx

Molly,

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From: Vaughan, Molly
Sent: Monday, September 17, 2018 3:52 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
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Thank you,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, September 17, 2018 1:32 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Bill Craig <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Correct version of the Alternatives memo

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Thanks

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/22/2018 8:01:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Please Review: Pebble EIS: Preliminary Alternatives Screening
Attachments: 4-Pebble Project - Operations Water Management Plan Rev 1.pdf

All-
Per our discussion today, Figure 1.1 in the attached document (Pebble Project Operations Water Management Plan) shows the current project layout.
This document was submitted to the Corps and AECOM in response to a request for additional information related to water management. This document is also available on the Corps' Pebble EIS website under RFI 019.

Patty

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, August 20, 2018 2:17 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review: Pebble EIS: Preliminary Alternatives Screening

Hello Kate, Barb and Palmer,
We have received a preliminary list of alternatives and description of screening criteria used in developing alternatives for the Pebble EIS. Given your experience in developing mine scenarios for the Watershed Assessment, we would appreciate if you can review this preliminary document. We would appreciate any input you may have by COB Friday, so that we can compile all comments in time to meet the Corps deadline. I will also follow this email with an invite to discuss later this week. Please don't hesitate to call if you have any questions about this document or the review request prior to the scheduled conference call.
Thank you,
Molly

~~~~~~
Molly Vaughan
U.S. Environmental Protection Agency Region 10 Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, August 17, 2018 3:53 PM
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Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Pebble EIS: Preliminary Alternatives Screening for Aug 22; Comments by 8/31/2018

All,
Attached is the PRELIMINARY list of alternatives and the screening criteria used for considered by not analyzed in depth. This is the document we will discuss August 22, 2018 (1300-1500 AST). Please review for our meeting next wed. Please submit written comments by Friday 8/31/2018.

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VR

Shane McCoy
Program Manager

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Project Number
VA101-176/57-4

PEBBLE PROJECT

PEBBLE MINE SITE

OPERATIONS WATER MANAGEMENT PLAN

Rev	Description	Date
0	Issued in Final	July 6, 2018
1	Updated with Client Comments	July 6, 2018

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ABBREVIATIONS

Pebble Project	the Project
ADSP	Alaska Dam Safety Program
Bulk TSF	Bulk Tailings Storage Facility
Bulk TSF Main SCP	Bulk TSF Main Embankment Seepage Collection Pond
IDF	Inflow Design Flood
Main WMP	Main Water Management Pond
NFK	North Fork Koktuli
NOAA	National Oceanic and Atmospheric Administration
NWS	US National Weather Service
OP WMP	Open Pit Water Management Pond
PAG	Potentially Acid Generating
PLP	Pebble Limited Partnership
Pyritic TSF	Pyritic Tailings and Potentially Acid Generating Waste Rock Storage Facility
RO	reverse osmosis
SFK	South Fork Koktuli
TDS	Total dissolved solids
tpd	tons per day
TSF	Tailings Storage Facility
USGS	United States Geological Survey
UT	Upper Talarik

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1.0 INTRODUCTION

1.1 PEBBLE PROJECT OVERVIEW

The Pebble Project (the Project) is a proposed mining development of a copper-gold-molybdenum deposit located approximately 238 miles southwest of Anchorage, Alaska, and 17 miles northwest of the village of Iliamna. The deposit is situated on a drainage divide at the headwaters of three waterways, with the Upper Talarik (UT) draining to the east, and the North Fork Koktuli (NFK) and South Fork Koktuli (SFK) draining to the west and southwest, respectively.

The deposit will be mined by open pit methods feeding an associated process plant with a throughput capacity of 180,000 tons per day (tpd), over an operating life of 20 years. The milling process produces two streams of tailings; a bulk tailings stream and a pyritic tailings stream. The Bulk Tailings Storage Facility (Bulk TSF) will manage non potentially acid generating tailings (bulk tailings), and the Pyritic Tailings Storage Facility (Pyritic TSF) will manage pyritic tailings, which are assumed to be Potentially Acid Generating (PAG), and PAG waste rock from the mining activities.

The Project includes the following key water management facilities: fresh water diversion channels, the Open Pit Water Management Pond (OP WMP), the Main Water Management Pond (Main WMP), the Bulk and Pyritic TSF's, the Bulk TSF Main Embankment Seepage Collection Pond (Bulk TSF Main SCP), seepage collection and recycle ponds, sediment ponds, and two water treatment plants (WTP#1 and WTP#2). The Project general arrangement, showing the locations of the TSF's and water management facilities, is presented on Figure 1.1.

The Bulk TSF will manage approximately 1.1 billion tons of bulk tailings solids. The main embankment of the Bulk TSF is proposed to operate as a drained facility to promote long term drainage of the bulk tailings mass. The Bulk TSF Main SCP, which is located downstream of the main embankment of the Bulk TSF, will collect seepage that passes through the main embankment. Water collected in the Bulk TSF Main SCP will be pumped to the Main WMP. The Bulk TSF south embankment is proposed to include a hydraulic barrier, consisting of a HDPE liner or a low permeability core zone, and a grout curtain installed in the weathered bedrock of the foundation. A seepage collection pond will be located downstream of the south embankment to collect any potential seepage and embankment runoff. A seepage collection pond will also be constructed along the east side of the Bulk TSF to collect potential seepage and runoff from the east side of the facility. Water collected in the seepage collection ponds to the south and east of the Bulk TSF will be pumped back to the Bulk TSF.

The Pyritic TSF will manage approximately 150 million tons of pyritic tailings and 126 million tons of PAG waste rock, stored sub-aqueously. The Pyritic TSF is a lined facility and will include an underdrain to convey groundwater and potential seepage from the facility to a seepage collection pond at the north end of the facility. Water (groundwater, seepage and surface runoff) collected in the seepage collection pond will be pumped to the Main WMP.

Construction materials are proposed to be primarily sourced from three quarries located around the Bulk TSF, as shown on Figure 1.1. Construction materials for the various embankments will be sourced from

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Quarry A, Quarry B and Quarry C, with additional non-PAG materials sourced from Open Pit stripping activities, as available. Quarry A will be active during the pre-mining phase (construction) and during operations until the tailings level in the Bulk TSF inundates the quarry. Ongoing construction materials will be sourced from Quarry B, Quarry C, and Open Pit stripping (as required) throughout operations.

Hydraulic confinement of the Bulk TSF will be achieved and maintained using a series of seepage control measures including grout cut-off walls and seepage pump-back systems. Confinement will be monitored based on groundwater levels and quality in installed wells. The quarries developed on the perimeter of the TSF will be designed to maintain a groundwater level above the elevation of the supernatant pond, thereby preventing the seepage of pond water into the quarries.

Surplus water collected within the Project footprint (surface runoff and groundwater) that is not required to supply the milling process will be treated and released. Water stored in the Main WMP will be used to supply the process during prolonged dry periods. Discharge locations for treated water are proposed in the NFK, SFK and UT catchments, as shown on Figure 1.1. Two water treatment plants will treat surplus water from the Project site; WTP#1 is located near the Open Pit and will treat water from the OP WMP, and WTP#2 is located near the Main WMP and will treat surplus water from the Main WMP. The water treatment plants will each include pumping and piping systems configured to convey flows to all three of the discharge locations.

1.2 SCOPE OF REPORT

The purpose of this report is to describe the water management plan for the mine site area during operations when all of the project facilities (e.g. processing mill, water treatment plants, etc.) are operating. Normal operating conditions included consideration of climate variability scenarios. In addition to climate variability, allowances for storm storage and freeboard have been provided for all ponds and water management facilities.

A summary of the hydrometeorological and groundwater characteristics for the Pebble Project are provided within this report. A full description of the hydrometeorological conditions will be provided in the hydrometeorology report (currently in progress). A full description of the baseline groundwater conditions is presented in the 2015 Groundwater SEBD Chapter 8 (Groundwater Hydrology) and SEBD Chapter 9 (Water Quality) reports (PLP 2015a; 2015b). A description of the predicted groundwater conditions during and after mine operation will be provided in the groundwater modelling report (currently in progress). The geochemical parameters used for the development of the water quality model were provided by SRK and are summarized in their geochemical source term report (SRK 2018).

This water management report includes the following:

- Characterization of the hydrometeorological and hydrogeological setting for the mine site
- Description of how mine drainage and stormwater will be managed at the mine site
- Demonstration of adequate storage and supply of makeup water to the Process Plant over a full range of potential climate conditions, including prolonged dry and wet periods
- Identification of the surplus flows available for treatment and discharge, and

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- Provision of water quality predictions for the major water management facilities and water treatment plants.

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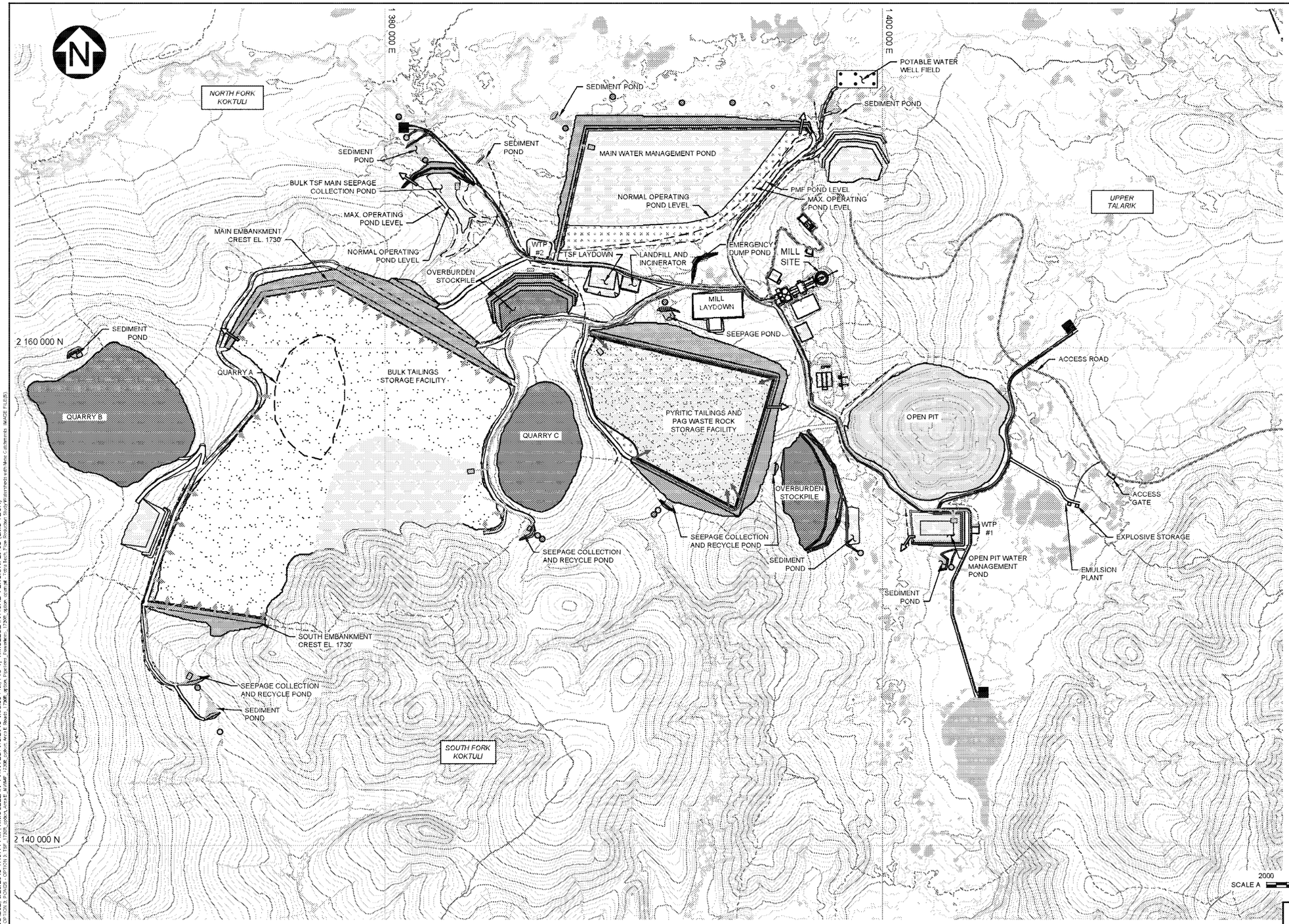

LEGEND:

- OPEN PIT
- BULK TAILINGS
- OVERBURDEN STOCKPILE
- GROWTH MEDIUM STOCKPILE
- EMBANKMENT FILL
- POND
- PYRITIC TAILINGS
- LINER
- MINERAL CLOSING ORDER
- DRAINAGE DIVIDE
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- BULK TAILINGS PIPELINE
- BULK TAILINGS DISCHARGE
- PYRITIC TAILINGS PIPELINE
- PYRITIC TAILINGS DISCHARGE
- WTP POTABLE WATER PIPELINE
- WTP DISCHARGE PIPELINE
- NATURAL GAS PIPELINE (10 Inch DIAMETER.)
- ROAD
- WTP DISCHARGE POINT
- WATER QUALITY MONITORING POINT
- GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- DIVERSION CHANNEL
- COLLECTION DITCH
- EMERGENCY SPILLWAY

NOTES:

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANES; ZONE 5.
2. CONTOUR INTERVAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP. JUNE 14, 2018.
5. ACCESS ROAD PROVIDED BY RECON LLC. ROAD CONNECTION TO MILL SITE COMPLETED BY AUSENCO LTD.
6. CONCEPTUAL HAUL, SERVICE, AND ACCESS ROAD CUT AND FILL EXTENTS SHOWN INCLUDE ALLOWANCE FOR BERMS, DITCHES, AND POWER POLES, AS REQUIRED.
7. ORIGINAL DRAINAGE DIVIDES PROVIDED BY HDR. JUNE 15, 2018. DRAINAGE DIVIDES HAVE BE REVISED AROUND MINE FACILITIES AS REQUIRED.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	05JUL'18	ISSUED WITH REPORT	JRG	RMM	LJG

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PEBBLE PROJECT

GENERAL ARRANGEMENT MAXIMUM FOOTPRINT

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P/A NO VA101-176/57 | REF NO 4

FIGURE 1.1 | REV 0

SAVED: M:\101\00176\57\A\ca8\FIGS\852 6/29/2018 1:13:44 PM RMCLELLAN PRINTED: 7/5/2018 4:03:58 PM, FIG 1. RMCLELLAN ACAD VERSION: 23.0S (LMS TECH)
XREF FILES: 101_176_57_MILLSITE_DMP3_OPTION B FINDEP_OPTION B 150_1750R_opt2a_vers4.E_MVMP_1750R_opt2a_vers4.E Roads - 1750R_option Footprint_Roads.dgn - 150R_option Footprint_150R_option_opt1.M - Topo from_Pow Revpolen Rocky Watershed with Mine Catchments (MADE FILES)

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2.0 HYDROMETEOROLOGICAL CHARACTERISTICS

2.1 OVERVIEW

The Project location and regional setting are shown on Figure 2.1. The position of the Project site relative to the three main local drainage basins (NFK, SFK, and UTC) is shown on Figure 2.2.

The locations of hydrometeorological stations in the Project area are shown on Figure 2.2. These include meteorological stations, which are discussed in Section 2.2, and streamflow gaging stations, which are discussed in Section 2.3. A spreadsheet model, referred to as the Pebble Project Watershed Module (described below), was developed to relate meteorological inputs to groundwater and surface water responses in the project. Long-term regional climate records, which were adjusted for site specific conditions, were used as input to the Watershed Module to generate long-term estimates of groundwater and streamflow conditions.

The Pebble Project Watershed Module is a numerical, semi-distributed, spreadsheet-based precipitation-runoff model that incorporates the key components of the hydrologic cycle including precipitation as rain and snow, evaporation, sublimation, runoff, surface storage, and groundwater recharge, discharge and storage.

2.2 CLIMATE CHARACTERISTICS

2.2.1 SETTING

The Project is located in a transitional climatic zone with strong maritime influences. Summer temperatures are moderated by the open waters of Iliamna Lake, the Bering Sea, and Cook Inlet. Winter temperatures are more continental because of the presence of ice on Iliamna Lake and Bristol Bay during the coldest months of the year. Winter weather systems typically travel into the region from the Bering Sea to the west, from along the Aleutian Islands chain to the southwest, and from the Gulf of Alaska to the south; as a result, winter temperatures are less influenced by Cook Inlet than summer temperatures. These weather systems consist of cool to cold air that is saturated with moisture, resulting in frequent clouds, rain, and snow. Less frequent wintertime incursions of frigid, stable arctic air masses bring shorter periods of clear and very cold conditions to the region. Incursions of very warm air masses from the interior of Alaska can cause atmospheric instability in the summer months, which results in the development of cumulus clouds and thunderstorm activity.

The mean annual temperature in the Project area is just below freezing, with freezing temperatures generally persisting from October through April, and conditions are quite wet, with mean annual precipitation varying throughout the project area but generally ranging from 45 in. to 55 in.

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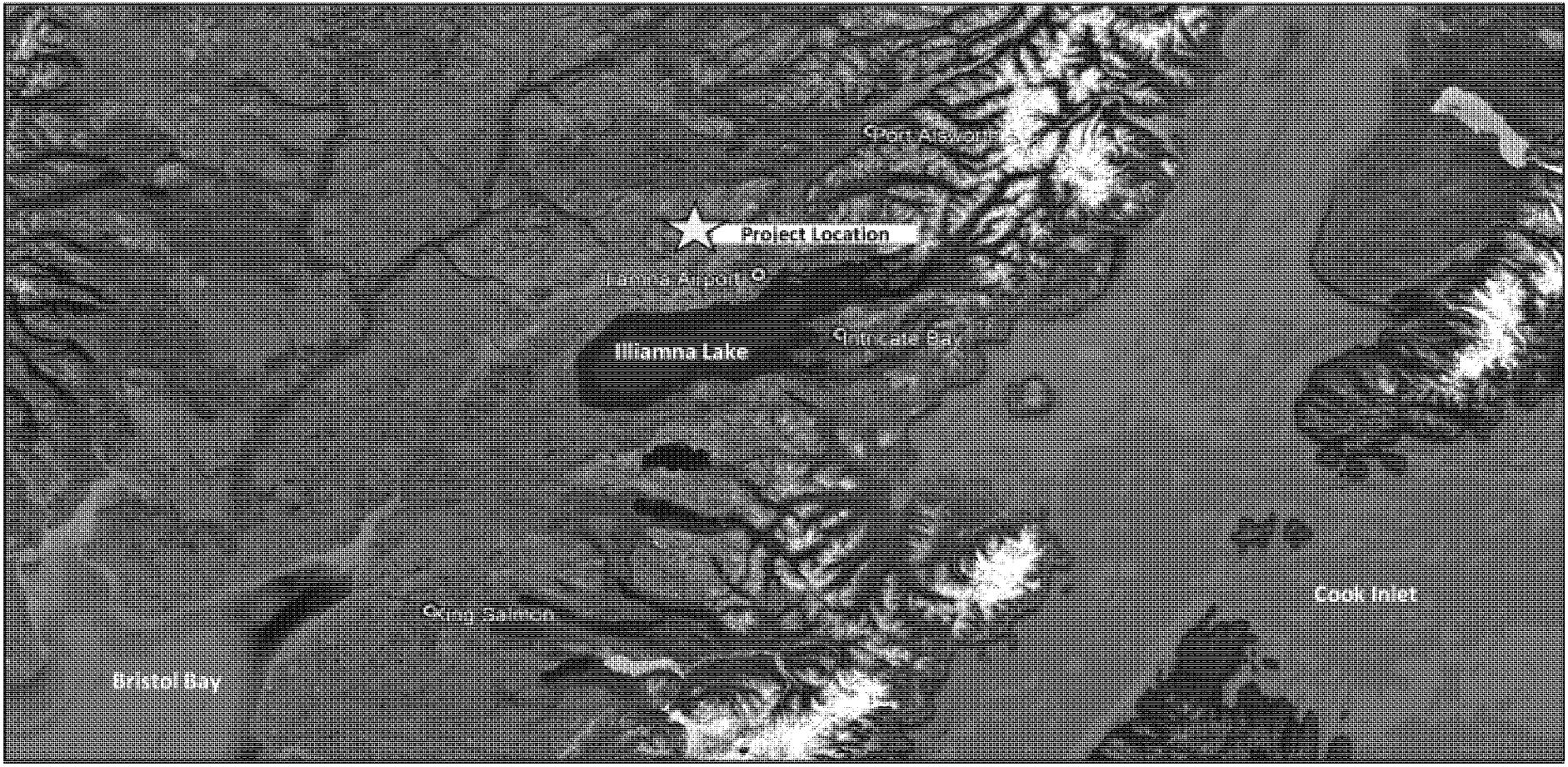

LEGEND:

☆ PROJECT LOCATION

⊙ REGIONAL METEROLOGICAL STATION

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	05JUL'18	ISSUED WITH REPORT	CJN	JGC

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PROJECT LOCATION

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P/A NO. VA101-176/57

REF. NO. 4

FIGURE 2.1

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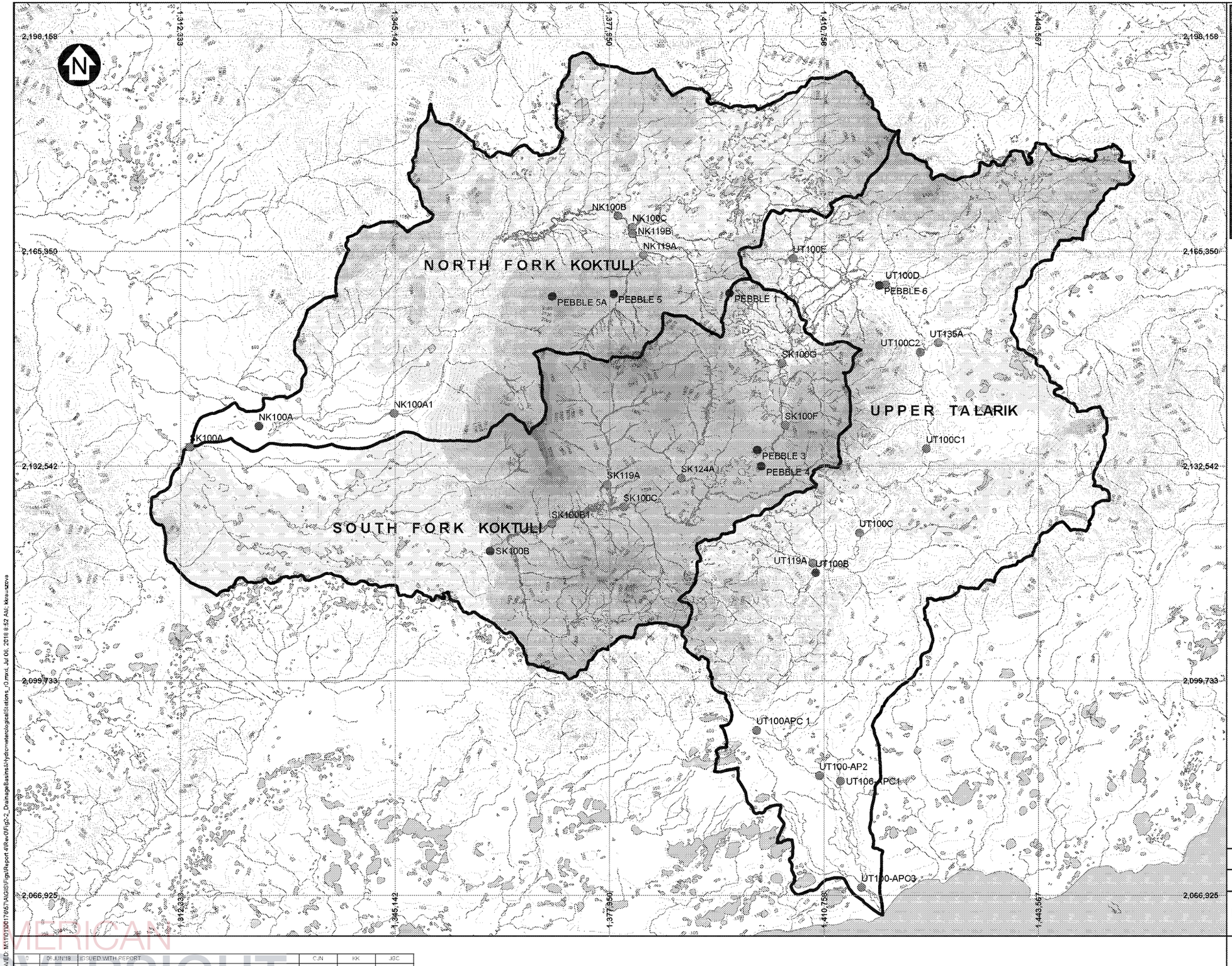

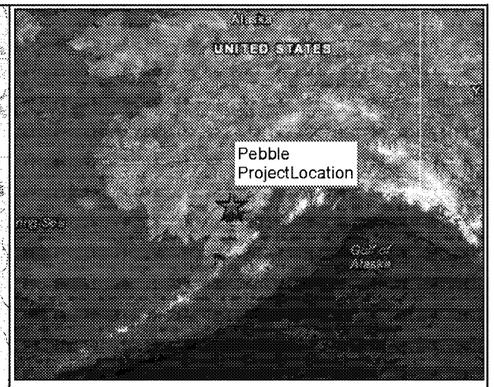

LEGEND:

- PLP METEOROLOGICAL STATION
- PLP STREAMFLOW GAGING STATION
- USGS STREAMFLOW GAGING STATION
- PRIMARY DRAINAGE BASIN
- LAKE/RIVER
- CONTOUR 50FT

MEAN ANNUAL PRECIPITATION (INCHES)

- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 81

NOTES:

1. BASE MAP: USGS BASE MAPPING.
2. COORDINATE GRID IS IN FEET.
   COORDINATE SYSTEM: NAD 1983 STATEPLANE ALASKA 5 FIPS 5005 FEET.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:50,837,317 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.
4. CONTOUR INTERVAL IS FEET.
5. PRECIPITATION VALUES INCLUDE OROGRAPHIC AND LOCATION CONSIDERATIONS AND WERE ESTIMATED USING THE PEBBLE PROJECT WATERSHED MODEL.

2 1 0 2 4 6 8 10 km

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PEBBLE PROJECT

DRAINAGE BASINS AND HYDROMETEROLOGICAL STATION LOCATIONS IN THE PROJECT AREA

REV	DATE	DESCRIPTION	CJN	KK	JGC
			DESIGNED	DRAWN	REVIEWED
0	06-JUN-18	ISSUED WITH REPORT			

Knight Piésold CONSULTING

PJ/NO. VA101-176/57 | REF NO. 4

FIGURE 2.2 | REV. 0

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2.2.2 METEOROLOGICAL STATIONS

Meteorological data have been collected at six monitoring stations in the Project area. The station locations, data collection methods, and the data collected up until 2008 are presented in the Environmental Baseline Data Report (PLP 2011). The station with the longest period of record, and that which is considered most representative of conditions in the mine development area, is Pebble 1 (2005-2013, and re-started in 2017). The Pebble 1 station is situated west of the deposit at an elevation of 1,560 ft. Data collected at Pebble 1 were used for modelling long-term climatic conditions in the mine study area. Temperature and precipitation data recorded at Pebble 1 were correlated with records collected by the US National Weather Service (NWS) at Iliamna Airport, which is situated 17 miles southeast of the Project at an elevation of 190 ft. The derived relationships were used to generate a long-term synthetic series of monthly temperature and precipitation for Pebble 1, for the period 1942-2017 (i.e. for the period of record at Iliamna Airport). Details of the procedures used to generate the long-term temperature and precipitation series are presented in the 2018 Hydrometeorology Report (in progress).

The locations of the Pebble meteorology stations are shown on Figure 2.1. The locations of Iliamna Airport and three other regional meteorology stations are shown on Figure 2.2. Records from the other three regional stations (Port Alsworth, King Salmon, and Intricate Bay) were used to infill gaps in the Iliamna Airport temperature and precipitation records. A regional regression model was developed and used to estimate missing values in the Iliamna Airport record, based on derived scaling relationships and the strength of correlation between stations.

2.2.3 LONG-TERM MONTHLY TEMPERATURES AND PRECIPITATION AT PEBBLE 1

The long-term mean monthly temperature and precipitation values for the Iliamna Airport are presented on Figure 2.3 and Figure 2.4, respectively, and with the corresponding synthetic values developed for Pebble 1.

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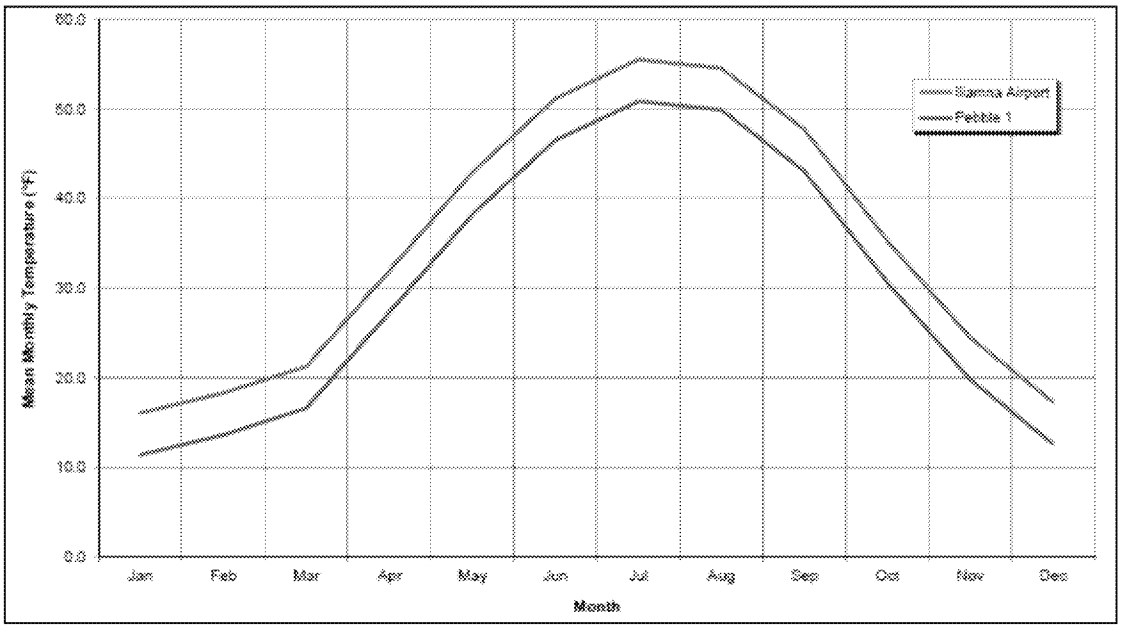

Figure 2.3 Mean Monthly Temperatures for Iliamna Airport and Pebble 1

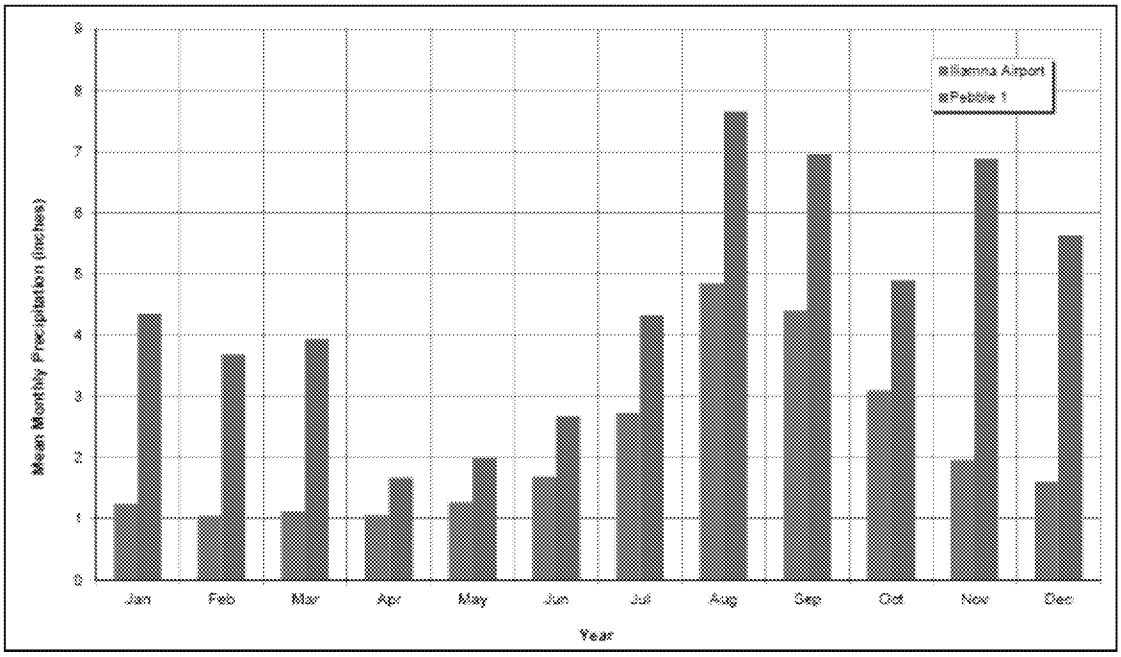

Figure 2.4 Mean Monthly Total Precipitation for Iliamna Airport and Pebble 1

The estimated long-term mean annual temperature at Pebble 1 is 30.1 °F, which is 4.7 °F colder than at Iliamna Airport (34.8 °F), as shown in Table 2.1. The coldest and warmest months at Pebble 1 are January and July, with estimated long-term mean monthly temperatures of 11.4°F and 50.8°F, respectively.

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Table 2.1 Monthly and Annual Temperature Statistics for Pebble 1

	Monthly and Annual Mean Temperature (°F)			
Statistic	**Minimum**	**Mean**	**Maximum**	**St Dev**
Jan	-11.1	11.4	32.4	10.0
Feb	-3.5	13.6	31.4	8.7
Mar	-1.6	16.6	30.6	7.6
Apr	13.4	27.3	37.8	4.6
May	31.4	38.3	44.8	2.9
Jun	42.3	46.5	51.3	2.2
Jul	46.9	50.8	55.1	1.9
Aug	46.5	49.9	54.7	1.9
Sep	36.4	43.0	47.9	2.0
Oct	22.9	30.6	38.8	3.9
Nov	4.8	19.8	32.5	6.1
Dec	-11.2	12.6	30.7	8.9
Annual	23.6	30.1	37.1	2.7

NOTES:
1. STATISTICS OF A SYNTHETIC TEMPERATURE SERIES FOR THE PEBBLE 1 STATION LOCATION, ESTIMATED ON THE BASIS OF THE ILIAMNA AIRPORT RECORD (1942-2017), AS DESCRIBED IN MEMORANDUM VA18-00250 (KP 2018A).

The estimated long-term mean annual precipitation at Pebble 1 is 54.6 in., which is approximately two times greater than the mean annual precipitation recorded at Iliamna Airport (26.0 in.), as shown in Table 2.2. The wettest and driest seasons at Pebble 1 are late summer and early autumn (wettest) and spring (driest), with estimated long-term mean monthly precipitation values ranging from 7.7 in. in August to 1.7 in. in April.

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Table 2.2 Monthly and Annual Precipitation Statistics for Pebble 1

	Monthly and Annual Mean Total Precipitation (in)				
Statistic	**Minimum**	**Mean**	**Maximum**	**St Dev**	**CV**
Jan	0	4.3	14.5	2.9	0.7
Feb	0	3.7	12.8	2.6	0.7
Mar	0	3.9	16.0	3.0	0.8
Apr	0.1	1.7	4.5	1.1	0.7
May	0	2.0	6.4	1.4	0.7
Jun	0	2.7	8.5	1.8	0.7
Jul	0.3	4.3	11.3	2.3	0.5
Aug	1.3	7.7	23.2	3.7	0.5
Sep	1.3	6.9	17.4	3.5	0.5
Oct	0.3	4.9	12.6	2.6	0.5
Nov	0	6.9	27.7	5.2	0.8
Dec	0.2	5.6	19.3	3.7	0.7
Annual	31.3	54.6	89.0	11.6	0.2

NOTES:
1. STATISTICS OF A SYNTHETIC PRECIPITATION SERIES FOR THE PEBBLE 1 STATION LOCATION, ESTIMATED ON THE BASIS OF THE ILIAMNA AIRPORT RECORD (1942-2017), AS DESCRIBED IN KP (2018A).

2.2.4 SPATIAL DISTRIBUTION OF TEMPERATURES AND PRECIPITATION

Monthly temperature and precipitation values were estimated for various locations throughout the Project area by adjusting the Pebble 1 values according to the following factors:

- Temperature was scaled using a lapse rate of -3.4 °F per 1,000 ft rise in elevation, and
- Precipitation was scaled using a combination of orographic and location factors that were derived from the calibration of the Pebble Project Watershed Module.

The orographic scaling factors for precipitation differ between winter months (defined as November through March) and non-winter months (defined as April through October), as described below:

- Winter: 34% increase per 1,000 ft rise in elevation, and
- Non-winter: 19% increase per 1,000 ft rise in elevation.

The different orographic factors reflect the differences between the meteorological conditions that prevail in winter and non-winter periods, as discussed in Section 2.2.1.

The location factors reflect other sources of spatial variability in precipitation and effective precipitation, including proximity to adjacent high-elevation terrain, windward/leeward effects, inter-basin snow drifting, and inter-basin groundwater flow.

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The orographic and location scaling factors were estimated based on comparisons of streamflow station flow records, and then were adjusted as part of Watershed Module calibration to achieve a balance between meteorological inputs and corresponding groundwater and surface water values. The resulting spatial distribution of estimated long-term mean annual precipitation in the Project area is presented on Figure 2.2.

2.2.5 TEMPORAL VARIABILITY OF TEMPERATURE AND PRECIPITATION

The long-term synthetic series of annual precipitation for Pebble 1 is presented on Figure 2.5, and the cumulative departure of annual precipitation from the long-term mean is shown on Figure 2.6.

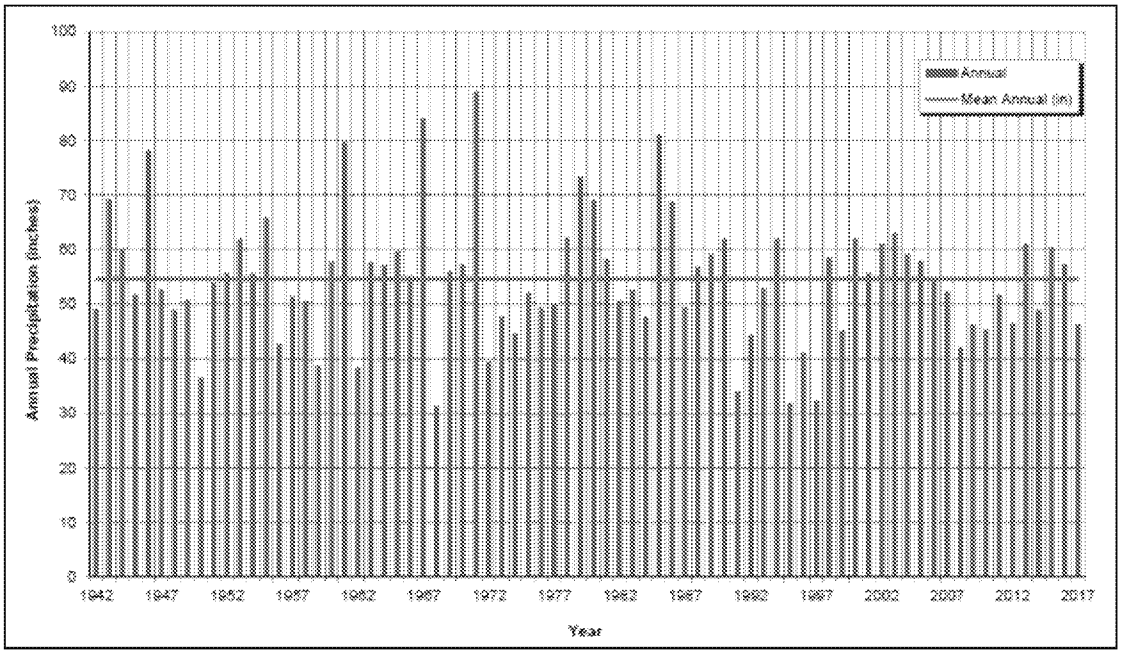

Figure 2.5 Annual Precipitation (estimated) for Pebble 1

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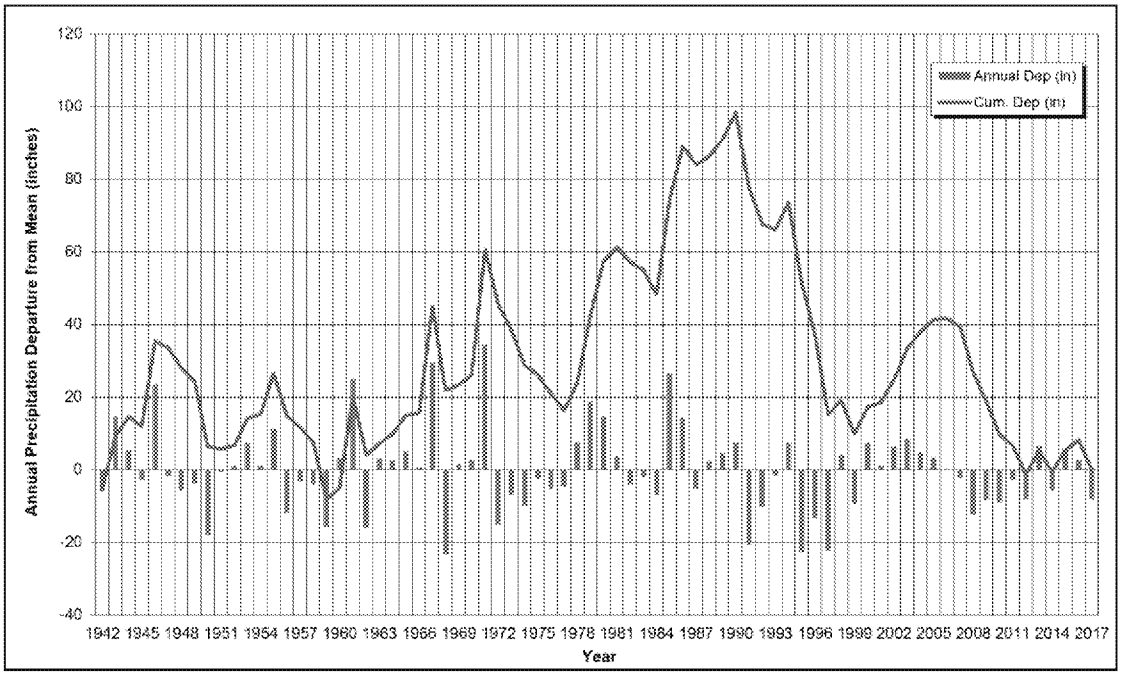

Figure 2.6 Annual Precipitation Departure from Mean Precipitation Conditions for Pebble 1

It is evident on Figure 2.6 that annual precipitation varies quite dramatically in the Project area, with many extended periods of wet and dry conditions. For instance:

- In the 1940s and 1950s, a few years of above average precipitation were followed by a few years of below average precipitation.
- From the 1960s onward, the cycles of high and then low precipitation were typically a little longer.
  - Annual precipitation was predominantly above average from 1960 to 1971, then predominantly below average from 1972-1977.
  - Annual precipitation was predominantly above average from 1978 to 1990, then predominantly below average from 1991 to 1999.
  - Annual precipitation was dominantly above average from 2000 to 2006, then dominantly below average from 2007 to 2012.
- Three of the four largest annual precipitation amounts occurred between the early 1960s and early 1970s; each of these years was followed by below-average precipitation the following year (i.e. dry years tend to occur even within decadal scale periods of dominantly above average annual precipitation).
- The greatest increase in cumulative departure of annual precipitation occurred between approximately 1978 and 1990 (i.e. this was the most pronounced period of predominantly above average precipitation).
- The greatest decrease in cumulative departure of annual precipitation occurred between 1991 and 1999 (i.e. this was the most pronounced period of predominantly below average precipitation).

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2.2.6 EXTREME PRECIPITATION

Extreme precipitation intensity-duration-frequency curves were generated for the Pebble 1 station location and presented in the 2012 Hydrometeorology Report (KP, 2012). The IDF curves were generated according to the NOAA Atlas 14 Volume 7: Precipitation-Frequency Atlas of the United States, Alaska (NOAA, 2012), with adjustments for specific location and orographic effects. The IDF curves are based on annual extreme precipitation data, which includes both rainfall and snowfall.

2.3 SURFACE WATER HYDROLOGY CHARACTERISTICS

2.3.1 OVERVIEW

The Project straddles the headwater areas of the drainage basins of the North Fork Koktuli River (NFK), the South Fork Koktuli River (SFK), and Upper Talarik Creek (UTC), as shown on Figure 2.2.

The NFK and SFK join to form the Koktuli River mainstem approximately 17 miles west of the Project site. The Koktuli River flows into the Mulchatna River, which in turn flows into the Nushagak River. UTC flows into Iliamna Lake, which is drained by the Kvichak River. The NFK, SFK, and UTC drainage basins encompass a combined area of 347 square miles above the lowermost gaging station on each watercourse.

The study area topography is comprised of a series of hills interspersed with wide valleys infilled with glacial fluvial deposits, with elevations ranging from around 2,500 feet on hill peaks to 46 feet at Iliamna Lake. Weathered bedrock is exposed on upland surfaces, while thick sediment deposits are found in bedrock valleys (Hamilton and Klieforth, 2010). Glacial and fluvial sediments of varying thickness cover most of the Project area at elevations below about 1,400 feet and play an important role in surface water runoff and groundwater storage and exchange. Subsurface flows follow former pre-glacial surface drainage pathways in several areas that have since been buried by subsequent sediment deposits, resulting in some cross-basin transfers relative to the current surface topography.

2.3.2 STREAMFLOW GAGING STATIONS

Streamflow gaging stations were operated at 26 locations within the Project area for various periods between summer 2004 and autumn 2015. Three of the gaging stations were operated by the United States Geological Survey (USGS), and the remainder were operated by PLP. The station locations are shown on Figure 2.2. The USGS stations are NK100A, SK100B, and UT100B.

The three USGS gaging stations were operated from August 2004 until September 2015. Station SK100B was re-initiated in 2017. Flows at many PLP stations were found to be well correlated with flows at the USGS stations, allowing gaps in the PLP station records to be infilled using regression analysis. As a result, complete daily records of measured and synthesized flows could be developed for all stations for the period of 2004-2015. This period is referred to as the PLP streamflow gaging period.

The Pebble Project Watershed Module was used to generate long-term monthly streamflow values for each gaging station using climatic inputs from Iliamna Airport (KP 2018a). The streamflow series extend from 1942 to 2017, which is the period of record for the Iliamna Airport climate station.

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2.3.3 STREAMFLOW RECORDS

The streamflow records collected in the Project area are summarized in Table 2.3, which presents mean annual discharge (cfs), mean annual unit discharge (cfs/mi^2), and mean annual unit runoff depth (in./yr.) for each station. The table indicates a huge range of unit runoff values, from 16.8 in/yr at SK100C to 98.1 in/yr at UT119A, which reflects the substantial role that groundwater plays in the runoff at certain gages.

Table 2.3 Mean Seasonal Flow Distribution (2004 – 2015)

Drainage	Station	Drainage Area (mi^2)	Mean Annual Discharge (cfs)	Mean Annual Unit Discharge (cfs/mi^2)	Mean Annual Unit Runoff (in/yr)
South Fork Koktuli River	SK100A	106.92	254.5	2.38	32.3
	SK100B	69.33	179.6	2.59	35.2
	SK100B1	54.41	126.0	2.32	31.4
	SK100C	37.50	46.4	1.24	16.8
	SK100F	11.91	29.6	2.48	33.7
	SK100G	5.49	13.0	2.38	32.2
	SK119A	10.73	34.0	3.17	43.0
	SK124A	8.52	18.6	2.18	29.6
North Fork Koktuli River	NK100A	105.86	243.3	2.30	31.2
	NK100A1	85.34	201.2	2.36	32.0
	NK100B	37.32	82.6	2.21	30.0
	NK100C	24.35	46.7	1.92	26.0
	NK119A	7.76	23.7	3.05	41.4
	NK119B	3.97	4.2	1.06	14.4
Upper Talarik Creek	UT100-APC3	134.16	321.8	2.40	32.6
	UT100-APC2	110.16	292.9	2.66	36.1
	UT100-APC1	101.51	261.4	2.57	34.9
	UT100B	86.24	230.8	2.56	34.8
	UT100C	69.47	157.1	2.26	30.7
	UT100C1	60.37	121.1	2.01	27.2
	UT100C2	48.26	104.2	2.16	29.3
	UT100D	11.96	27.4	2.29	31.1
	UT100E	3.10	8.9	2.86	38.9
	UT106-APC1	14.14	43.2	3.05	41.5
	UT119A	4.05	29.3	7.22	98.1
	UT135A	20.42	44.7	2.19	29.7

Annual hydrographs of mean monthly discharge for the four gaging stations located closest to the mine site are presented on the following Figures 2.7 to 2.10. Hydrographs are presented for both the measured records (including gaps infilled using regression relationships) and for the long-term estimated streamflow series generated using the watershed module.

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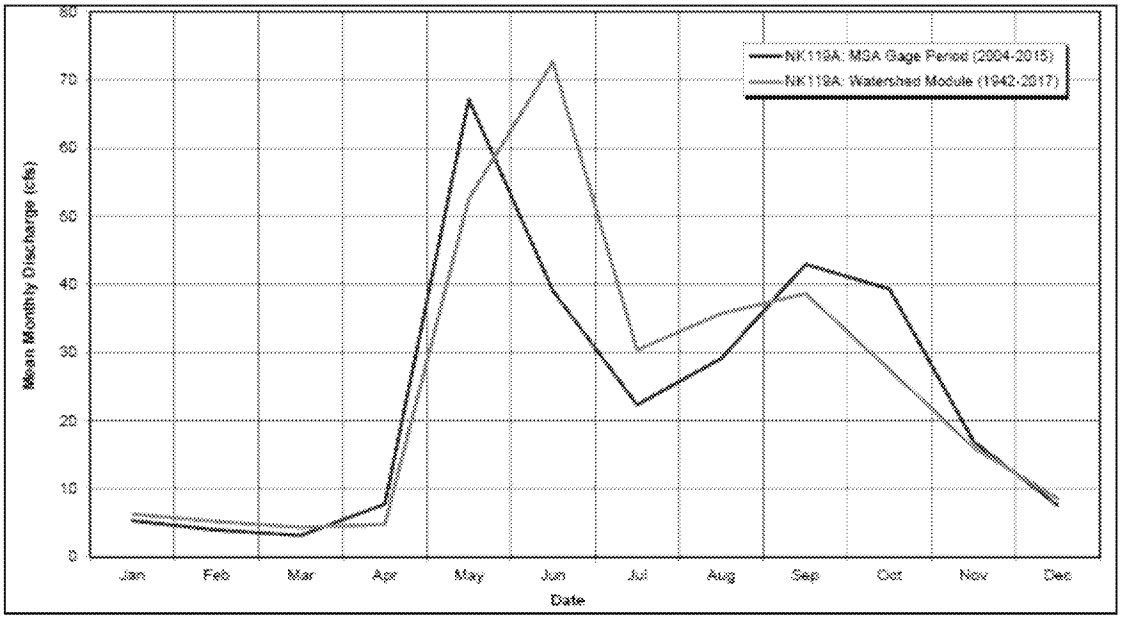

Figure 2.7 Mean Monthly Discharge for NK119A

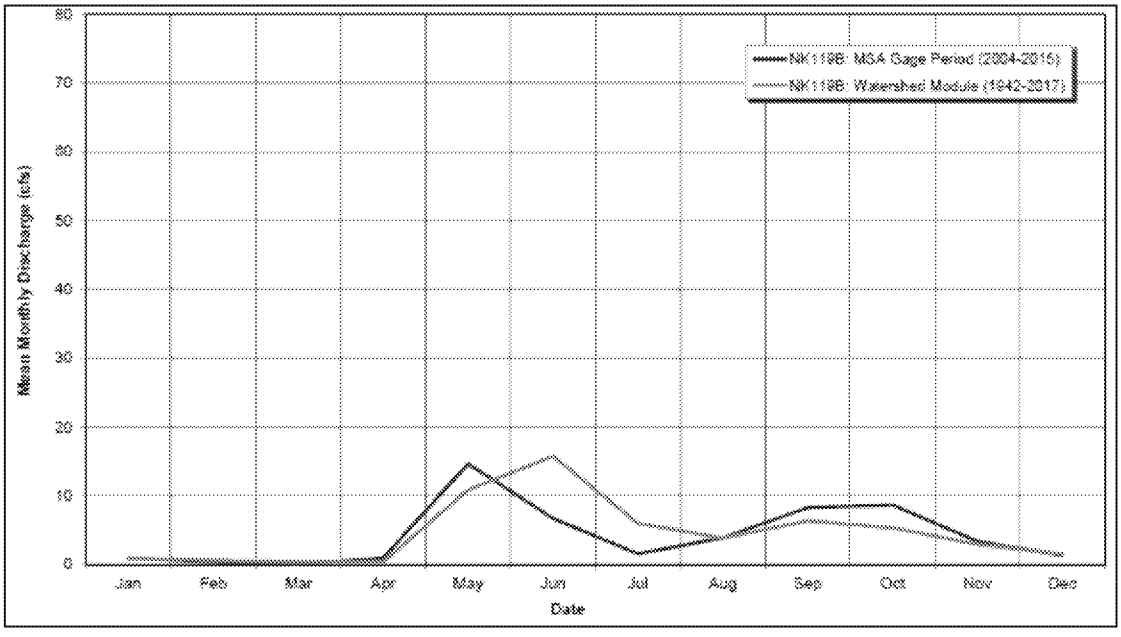

Figure 2.8 Mean Monthly Discharge for NK119B

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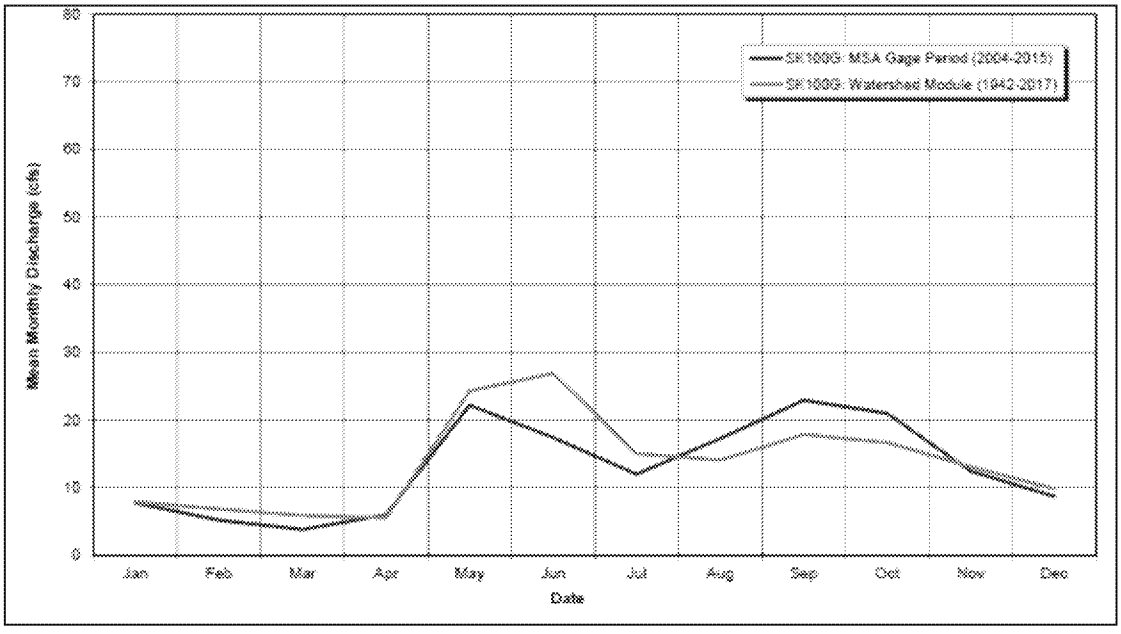

Figure 2.9 Mean Monthly Discharge for SK100G

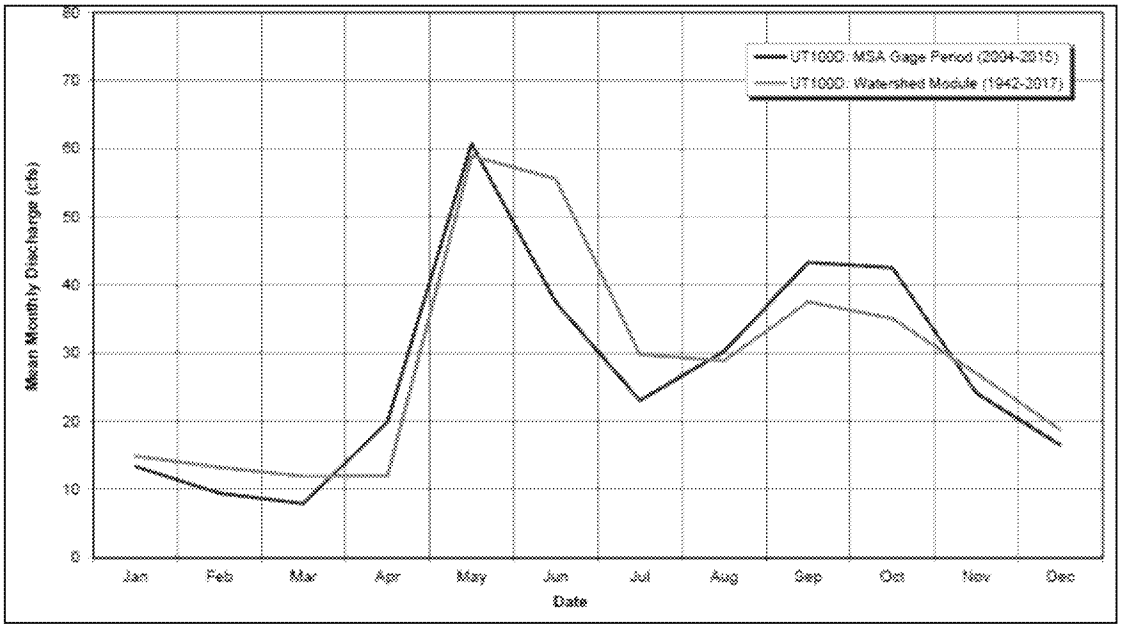

Figure 2.10 Mean Monthly Discharge for UT100D

To illustrate the year to year variability of flows in the Project area, daily discharge hydrographs for station NK119A are shown on Figure 2.11 for the driest year (2011), the wettest year (2013), and the average for the period of gage record.

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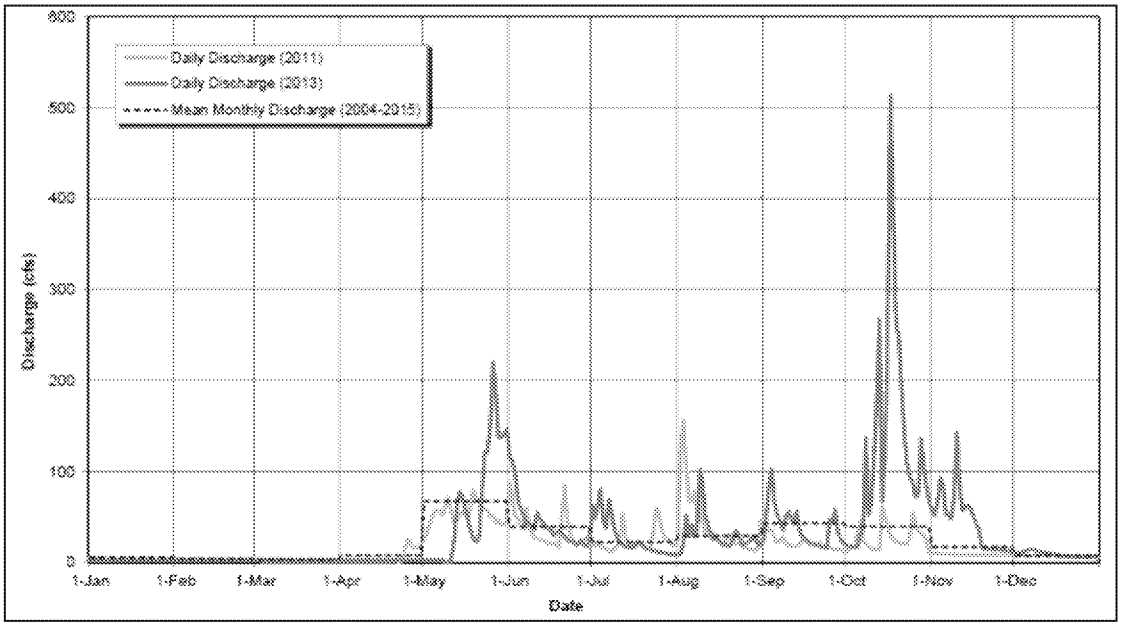

Figure 2.11 Daily Discharge Hydrographs for NK119A for Driest Year (2011) and Wettest Year (2013) on Record

2.3.4 SPATIAL AND TEMPORAL STREAMFLOW PATTERNS

The annual pattern of streamflows in the mine study area is characterized by:

- High flows in spring due to snowmelt
- Lower flows in early to mid-summer
- Another high-flow period in late summer and autumn due to frequent frontal rain storms, and
- Lowest flows in winter when most precipitation falls as snow and streams are fed almost exclusively by groundwater.

These seasonal patterns are apparent on the hydrograph figures presented above (Figure 2.7 through Figure 2.11) and in Table 2.4, which presents the distribution of streamflow by seasons for each gaging station.

At the lowermost gaging stations on the SFK, NFK, and UTC, the mean annual unit runoff was similar at all three stations, at around 2.3 to 2.4 cfs/mi^2. This equates to 31 to 33 in. of runoff depth at each station. The annual unit runoff for the other locations varied from gage to gage because of catchment topography and precipitation, cross-drainage transfers of groundwater, surface and subsurface flow exchanges along stream channels, and seasonal redistribution of snow by wind. In the upland tributaries gaged at NK119A and SK119A, the mean annual unit runoff values were 3.1 cfs/mi^2 and 3.2 cfs/mi^2, respectively, or 41 to 43 in. of runoff depth at each station. The higher unit runoff values at NK119A and SK119A, as compared to the lowermost gaging stations on the SFK, NFK, and UTC, are attributable mainly to catchment elevation and the orographic influence on precipitation.

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Table 2.4 Mean Seasonal Flow Distribution (2004 – 2015)

Drainage	Station	Drainage Area (mi^2)	Mean Seasonal Flow Distribution (% of Annual Volume)					
			Primary Seasons (6 Months)		Non-Winter Seasons (2 Months)			Annual
			Winter (Nov-Apr)	Non-Winter (May-Oct)	Spring (May-Jun)	Summer (Jul-Aug)	Autumn (Sep-Oct)	
SFK	SK100A	106.9	27%	74%	29%	18%	26%	100%
	SK100B	69.3	22%	78%	32%	18%	29%	100%
	SK100B1	54.4	19%	81%	36%	17%	28%	100%
	SK100C	37.5	13%	87%	39%	16%	33%	100%
	SK100F	11.9	21%	80%	32%	19%	29%	100%
	SK100G	5.5	28%	73%	25%	19%	28%	100%
	SK119A	10.7	16%	84%	36%	19%	30%	100%
	SK124A	8.5	12%	89%	42%	16%	30%	100%
NFK	NK100A	105.9	22%	78%	35%	17%	26%	100%
	NK100A1	85.3	21%	80%	35%	18%	27%	100%
	NK100B	37.3	22%	78%	34%	17%	27%	100%
	NK100C	24.4	26%	74%	31%	16%	27%	100%
	NK119A	7.8	16%	85%	38%	18%	29%	100%
	NK119B	4.0	14%	87%	42%	11%	33%	100%
UT	UT100-APC3	134.2	34%	66%	24%	17%	25%	100%
	UT100-APC2	110.2	32%	68%	25%	16%	27%	100%
	UT100-APC1	101.5	33%	67%	24%	17%	26%	100%
	UT100B	86.2	34%	67%	26%	16%	25%	100%
	UT100C	69.5	33%	67%	26%	16%	26%	100%
	UT100C1	60.4	32%	69%	27%	15%	27%	100%
	UT100C2	48.3	28%	72%	30%	15%	27%	100%
	UT100D	12.0	28%	73%	30%	17%	26%	100%
	UT100E	3.1	34%	66%	27%	16%	24%	100%
	UT106-APC1	14.1	35%	65%	22%	18%	25%	100%
	UT119A	4.1	47%	53%	18%	17%	18%	100%
	UT135A	20.4	43%	58%	22%	12%	23%	100%
Average			27%	74%	30%	17%	27%	100%

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2.3.5 PEAK FLOWS

Peak flow curves were generated for mainstem river channels and upland tributaries in the mine study area and presented in the 2012 Hydrometeorology Report (KP, 2012). The peak flow curves were generated based on streamflow gaging records available at that time, combined with regional regression equations generated by the USGS, in accordance with USGS peak flow estimation procedures specified by Curran et al (2003).

2.4 GROUNDWATER CHARACTERISTICS

Baseline groundwater hydrology and groundwater quality studies for the Project area were undertaken between 2004 and 2013. Data for parameters that are subject to seasonal variation, such as water levels and water quality, were collected year round. Data for other parameters that are independent of the seasons, such as aquifer properties, were collected between May and October of each year.

The study included the following elements:

- Collection of surface and subsurface geologic data.
- Examination of drilling logs including an assessment of the consistency to interpreted groundwater conditions.
- Installation of monitoring wells and standpipe piezometers, including multi-level well completions.
- Installation and testing of pumping wells.
- Measurement of hydrogeological parameters such as water levels and hydraulic conductivity
- Characterization of the flow and water quality of seeps.
- Delineation of groundwater recharge and discharge zones.
- Evaluation of sub-basin drainage areas, channel lengths, annual precipitation, topographic relief, flow regimes and stream characteristics.
- Characterization of groundwater quality in the overburden and bedrock groundwater systems.

Details and results of the groundwater hydrology and groundwater quality studies are presented in the 2015 Groundwater SEBD Chapter 8 (Groundwater Hydrology) and SEBD Chapter 9 (Water Quality) reports (PLP 2015a; 2015b). The groundwater conditions as described in PLP (2015a; 2015b) are summarized below.

Bedrock in the study area includes Jurassic and Cretaceous sedimentary and volcanic rocks, intruded by Cretaceous granodiorite to monzonite, and overlain by Tertiary sedimentary and volcanic rocks. Below the upper bedrock zone (upper 50 feet), the hydraulic conductivity generally decreases with depth but includes some elevated-permeability zones that are typically associated with faults. The available data suggest that many of the faults act as flow barriers perpendicular to their strike, while some of the structures demonstrate an enhanced permeability in the direction of strike. The pattern of faulting has resulted in the formation of groundwater compartments in bedrock at depth.

The upper slopes and ridges of the study area include exposures of highly fractured bedrock, talus, rubble, and solifluction deposits. The highly fractured bedrock provides a pathway for elevated rates of groundwater recharge beneath the bedrock ridges. High rates of water return during air-rotary drilling indicate that the

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hydraulic conductivity is usually relatively high in the upper bedrock due to weathering and frost disturbance. The weathered and disturbed zone is typically up to about 50-ft thick.

The lower slopes and valley bottoms are infilled primarily with glacial deposits, with some over-riding alluvial deposits. Several glacial periods have resulted in glacial advances and retreats within the study area. The glacial deposits in the study area were mostly formed during the Kvichak Stade of the Wisconsin Brooks Lake Glaciation and include end, lateral, and recessional moraines, ground moraines, outwash sands and gravels, and glacio-lacustrine deposits. Outwash sands and gravels are typically observed to have the highest hydraulic conductivity. The disturbed and weathered bedrock, up to 50-ft thick, has been documented under the lower slopes and valley bottoms throughout the Project area. The evidence includes intense fracturing observed in drill core, water return during air rotary drilling and hydrogeological testing.

Three permeable and extensive glacial sand and gravel deposits are of particular note in the valley fill sequence. These are:

- Along the SFK River south of Frying Pan Lake ("South Fork Koktuli Flats"). These deposits include a sand and gravel moraine, and sand and gravel outwash deposits.
- In the NFK River Valley downstream of the Kvichak Stade terminal moraines.
- East of UT Creek where there is extensive outwash and glacial contact sand and gravels.

Extensive low-permeability lacustrine deposits underlie the glacial Frying Pan Lake basin. Consistent with this low permeability, the lacustrine deposits are overlain by marshes. Similar low-permeability lacustrine deposits are present within the NFK River and UT Creek drainages.

The groundwater flow system in the study area is generally characterized as follows:

- Most groundwater flow in the study area occurs along local and/or intermediate flow paths. There is limited regional groundwater flow to the surrounding lowlands.
- The overall groundwater flow pattern across the study area is dominated by flow in approximately the upper 50-ft of the bedrock from the margins of the valley towards the valley floor, and groundwater underflow in a downstream direction along the axis of the valley, predominantly within permeable gravels where present and in the disturbed bedrock where overburden is dominated by fine grained deposits.
- Except for some cross-catchment flow between SFK River and UT Creek, the current assessment indicates that the majority of water that recharges the groundwater system within each of the three main drainages discharges within that drainage.
- To varying degrees, continuous permeable overburden units fill the bedrock valleys along each of the three main drainages. In most of the valley reaches, the majority of groundwater flow occurs within the overburden deposits. Groundwater underflow down the valley is much less where lower permeability deposits (silts and clays) are predominate in the alluvium. In these areas, the groundwater system tends to discharge to surface water, leading to gaining streamflow reaches. Conversely, where the alluvial deposits become more permeable downstream, or where the profile of the valley widens, the surface water system tends to infiltrate to groundwater, leading to losing stream reaches. The main reaches of streamflow losses and gains were characterized as part of the baseline study.
- The upper reaches of tributaries tend to have limited groundwater storage capacity, and therefore streamflows in the upper reaches are typically flashy, and late winter baseflows are relatively low.

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- Further downstream, the sustained winter baseflows for the main stems in most parts of the Project area indicate considerable groundwater is contained in storage within the main part of the valleys. Baseflows are mostly higher where a substantial thickness of permeable alluvium is present upstream. The overall nature of the baseflow patterns tends to indicate that most of the groundwater storage on site occurs within the alluvium, and that most bedrock units demonstrate limited groundwater storage potential.
- Within each of the drainages, the surficial geology varies from low-permeability glaciolacustrine deposits to high-permeability glacial outwash and ice-contact deposits. The large differences in the permeability, coupled with variations in the topographic gradient, results in variability in the estimated localized recharge rates within each drainage.

The groundwater quality within the mine study area was assessed based on the collection of samples from 80 groundwater monitoring wells with depths up to about 200-ft and samples collected at drillhole DH-8417 at depths from 640 to 4,050-ft. The results of the groundwater sampling were compared to the most stringent criteria as defined in the Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substance by The Alaska Department of Environmental Conservation and Effluent Limitation Guidelines by the EPA. A summary from the water quality assessment by PLP (2015b) is below.

- Median total dissolved solids (TDS) of less than 80 mg/L for 60% of the wells, 80 to 300 mg/L for 35% of the wells and 400 to 500 mg/L for 5% of the wells.
- Median pH ranged between 5.8 and 9.6 in 79 out of 80 wells.
- Dissolved oxygen greater than 8 mg/L in 50% of the wells and less than 1 mg/L in 25% of the wells.
- Trace element concentrations were within water quality criteria in most cases and most wells with concentrations exceeding the respective criterion were located in proximity to the general deposit area.
- The groundwater was divided into three general classes based on TDS: high TDS close to the general deposit area, intermediate TDS at intermediate distances from the general deposit area, and low TDS at greater distances from the general deposit area.
- The wells with the highest proportion of sulfate were typically located closest to the general deposit area, suggesting the groundwater in this area is influenced by sulfide oxidation, which is typical near copper sulfide deposits.
- Trace element concentrations were generally higher in bedrock than in overburden. Seasonal variations in major ion concentration were observed in 16 wells, most of which were completed at more shallow depths.
- The TDS of deep groundwater samples collected from drillhole DH-8417 at depth intervals ranging from 640 to 4,050 feet increased with depth. Most of the samples collected at greater depths were of type sodium-calcium-sulfate and reached a TDS of 2,000 mg/L. The concentrations of some constituents in the overburden and shallow bedrock ground water wells were similar to the concentrations of the deep bedrock groundwater samples.

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3.0 OPERATIONS WATER MANAGEMENT PLAN

3.1 GENERAL

Groundwater and surface water runoff within the Project mine site footprint has been characterized into the following groups:

- Fresh water: water that has not come into direct contact with mining infrastructure and may be discharged to the environment without treatment in the water treatment plants (WTPs).
- Stormwater: runoff from facilities that does not come into direct contact with mining infrastructure, or is otherwise not classified as mine drainage, and therefore only requires treatment for sediment to meet discharge water quality standards prior to discharge to the environment. Stormwater is defined in 40 CFR 122.26 (b) (13) as "Stormwater runoff, snow melt runoff, and surface runoff and drainage". Stormwater will be discharged under general APDES Stormwater Permits.
- Mine drainage: groundwater or surface runoff that has come into direct contact with mining infrastructure and requires treatment at the water treatment plants to meet discharge water quality standards prior to discharge to the environment.
- Process water: wastewater generated from the Process Plant operations. Process wastewater is defined in 40 CFR 122.2 as "any water which during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product." Process wastewater will include water in the tailings slurry that is discharged to the Bulk TSF and the Pyritic TSF.

A simplified operational water management plan layout, which includes the main water management facilities, is shown on Figure 3.1. The management plan for fresh water, stormwater, mine drainage water, and process water is described in the sections below.

3.2 FRESH WATER AND STORMWATER MANAGEMENT

Diversion channels will direct fresh water around the mining infrastructure, where possible, and directly discharge it to the downstream environment. This will reduce the amount of water collected within the mine site footprint.

Stormwater runoff from the overburden stockpiles, the growth medium stockpiles, the quarries, and the downstream slopes of the OP WMP embankment, the Bulk TSF Main SCP embankment, and the Main WMP embankment, is assumed to not be contaminated and will be collected and treated locally at sediment ponds prior to release to the environment. Quarry A is located within the Bulk TSF impoundment area and will primarily be active during the initial construction of the Bulk TSF. Runoff from Quarry A during the early operations phase of the Project, prior to the quarry being submerged by the bulk tailings, will be collected and managed as part of the Bulk TSF supernatant pond. Surface runoff from Quarry B and Quarry C will be collected and treated within sediment ponds prior to release to the downstream environment. Quarry B

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will drain to a sediment pond that will discharge runoff towards the NFK, while Quarry C will drain to a pond that will discharge to the Pyritic TSF diversion channel, which in turn discharges to the NFK.

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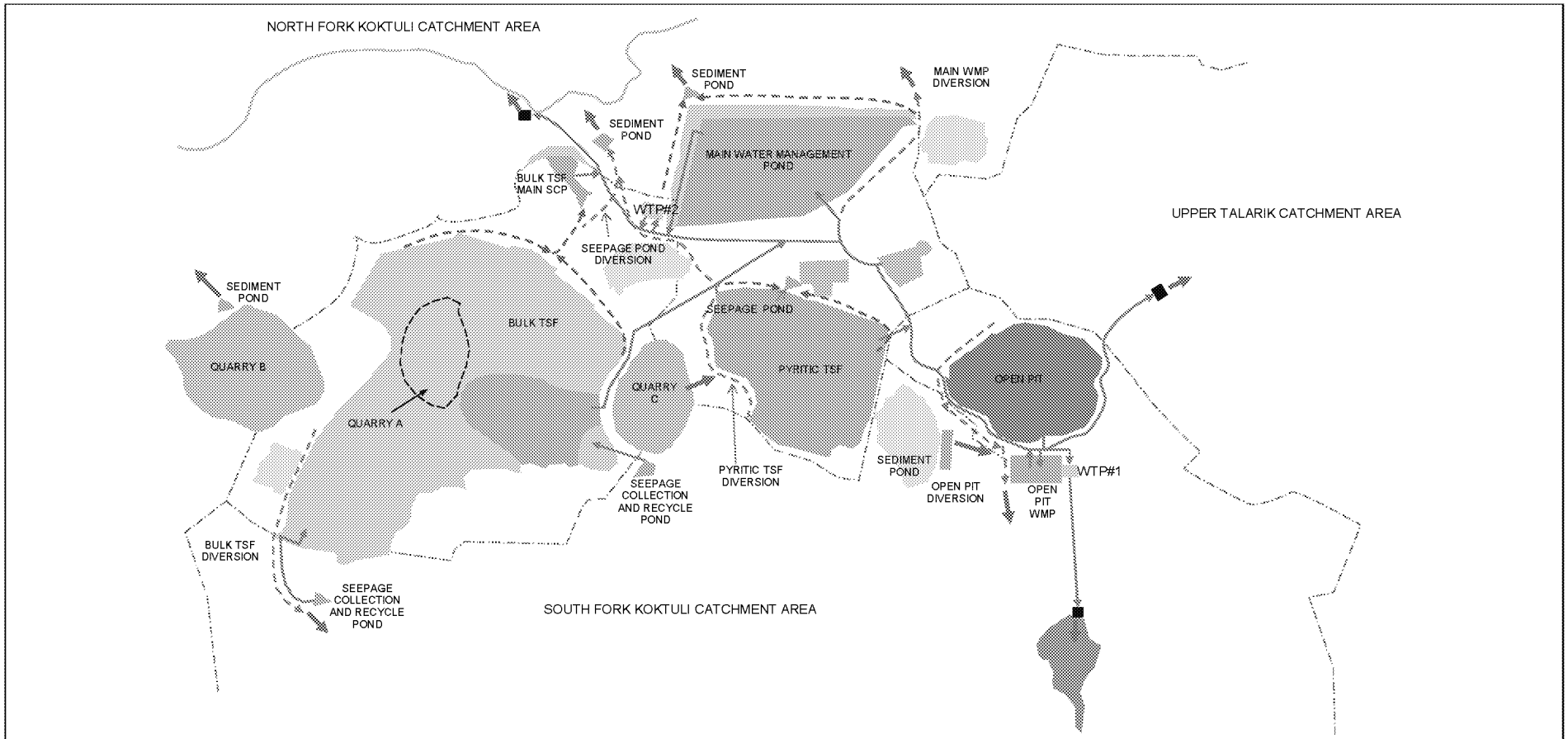

LEGEND:

- WATER MANAGMENT/COLLECTION POND
- WATER TREATMENT PLANT
- MILL SITE
- STOCKPILE
- WTP DISCHARGE POINT

- COLLECTION DITCH
- DIVERSION CHANNEL
- PIPELINE
- CATCHMENT DIVIDE
- WATER COURSE
- DISCHARGE TO ENVIRONMENT

REV	DATE	DESCRIPTION	PREP'D	RVWD
0	05JUL'18	ISSUED WITH REPORT	ELK	AS

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

WATER MANAGEMENT LAYOUT MAXIMUM FOOTPRINT

Knight Piésold CONSULTING

P/A NO. VA101-176/57

REF. NO. 4

FIGURE 3.1

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3.3 MINE DRAINAGE AND PROCESS WATER MANAGEMENT

The mine drainage and process water management strategy for the various water sources is presented in this section. Mine drainage and process water from around the Project site will be collected and managed using various water management facilities, which are further described in Section 3.4.

Groundwater and surface runoff collected in the Open Pit and surrounding area will be directed to the OP WMP, prior to being treated at WTP#1. Treated water from WTP#1 will be released to the environment downstream of the Project mine site.

Mine drainage water and process water from outside of the Open Pit and surrounding area, including surface runoff from the process plant site and power plant site, TSF seepage water, and surplus supernatant water on the TSFs, will be directed to the Main WMP.

The Main WMP will provide surge capacity for runoff from the mine site. Surplus mine drainage and process water from the TSFs, seepage, groundwater, and runoff from the Bulk TSF Main SCP and the seepage pond at the north end of the Pyritic TSF, will be pumped to the Main WMP to minimize the volume of water stored within these facilities. The operating capacity of the Main WMP was sized to manage surplus water from the mine site and to supply water to the process over the full range of historic climate conditions.

Surplus water from the Main WMP will be treated at WTP#2. A small portion of the treated water will be used to satisfy the clean water requirements for the process and power plant, while the remainder will be discharged downstream of the mine site. No fresh water from outside of the mine site footprint will be used to satisfy the processing requirements.

The capacities of the water treatment plants were determined by balancing the storage capacity and the water management ponds with the water treatment rates to provide a reliable source of process water during dry climate conditions and the ability to manage surplus water during wet climate conditions. The maximum treatment capacity of WTP#1 was determined to be 14 cfs, and the maximum treatment capacity of WTP#2 was determined to be 38 cfs.

3.3.1 OPEN PIT DEWATERING

Dewatering of the Open Pit will be required to initiate and maintain mining activities. The development of the ultimate pit dewatering design will be based on a series of interim pit phases that reflect successive deepening and cutback of the pit. The interim pit phases will use perimeter and in-pit wells to collect groundwater. This phased approach will allow the ultimate pit dewatering approach to be based on the operational performance of each preceding phase. Mine dewatering and control of the pore pressures in the pit slopes are interrelated and will therefore be developed coincidently.

Groundwater collected from the Open Pit will be directed toward the OP WMP for temporary storage and then treatment prior to discharge to the environment downstream of the Project mine site. Runoff from areas upslope of active mining areas will be intercepted and diverted around the Open Pit perimeter where possible. Runoff and snowmelt from the Open Pit walls will be collected and pumped using in-pit pumps to the OP WMP for storage and treatment prior to discharge to the environment downstream of the Project

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mine site. The pumping capacity of the dewatering system will be designed to keep active mining areas dry during normal operating conditions, with contingency measures in place to handle periods with higher flow.

3.4 WATER MANAGEMENT FACILITIES

The following sections describe the major water management facilities proposed to execute the water management plan for the Project. The design criteria for the water management structures are outlined in Table 3.1. The maximum operating pond volume and minimum operating pond volume (where applicable) were determined with the climate variable water balance.

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Table 3.1 Design Criteria Table for the Water Management Structures

Water Management Structure	Design Criteria
Fresh Water Diversion Channels	Convey undisturbed surface water runoff around the mine site facilities to the downstream environment.
OP WMP	Maximum operating pond volume of 40 Mft^3 (920 ac-ft) to manage dewatering from the Open Pit. Water in excess of this capacity will be pumped to the Main WMP for management. Storm storage freeboard allowance for the required IDF and a spillway to safely pass larger events with additional freeboard[1]
Main WMP	Minimum operating pond volume of 300 Mft^3 (6,900 ac-ft) to ensure that there is sufficient water available for the process during dry climate conditions. Maximum operating pond volume of 2,450 Mft^3 (56,250 ac-ft) to manage surplus water from the Project mine site during wet climate conditions. Storm storage freeboard allowance for the required IDF with additional freeboard[1]
Bulk TSF	Maximum operating pond volume varies by embankment stage and mine development, but is constrained by the need to maintain a minimum 2,000 ft beach length. Storm storage freeboard allowance for the required IDF without release from the facility with additional freeboard[1]
Bulk TSF Main SCP	Maximum operating pond volume of 130 Mft^3 (3,000 ac-ft) to manage seepage and runoff from the main embankment of the Bulk TSF. Storm storage freeboard allowance for the IDF and a spillway to safely pass larger events with additional freeboard[1]
Pyritic TSF	Minimum operating pond volume varies by embankment stage and mine development, but is constrained by the requirement to maintain a water cover to promote geochemical stability of the pyritic tailings and PAG waste rock. Storm storage freeboard allowance for the required IDF and a spillway to safely pass larger events with additional freeboard[1]
Seepage Collection and Recycle Ponds	Ponds are to be operated with the minimum pond volume required by the pump systems. Storm storage freeboard allowance for the required IDF and a spillway to safely pass larger events with additional freeboard[1]
Sediment Ponds	Treat sediment for all inflows resulting from the 1 in 10-year, 24-hour rainfall event, with no flow passing over the spillway. Spillway to safely pass the peak outflows resulting from the 1 in 200-year, 24-hour rainfall event, with the starting pond level at the spillway invert. Additional freeboard provided.[1]

NOTES:

1. EACH WATER MANAGEMENT POND WILL INCLUDE AN ADDITIONAL FREEBOARD ALLOWANCE FOR WIND-GENERATED WAVE HEIGHT AND POTENTIAL SEISMIC DEFORMATION.
2. IDF: INFLOW DESIGN FLOOD.
3. THE REQUIRED IDF FOR EACH WATER MANAGEMENT POND WILL BE DETERMINED THROUGH THE ALASKA DAM SAFETY PROGRAM (ADSP).

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3.4.1 FRESH WATER DIVERSION CHANNELS

Fresh water diversion channels are proposed to collect and convey surface water runoff from undisturbed ground and directly discharge it to downstream waterways. The channels will be sized to convey the specified design storm and will be constructed at a gradient to promote free-drainage and minimize ponding. The channels will be lined where required to minimize the potential for erosion and sediment entrainment. The assumed efficiency of the channels is 50% for channels situated at elevations above 1,400 fasl, and 80% for channels situation at elevations below 1,400 fasl. The proposed fresh water diversion channels are shown on Figure 3.1 and include the following:

- An Open Pit diversion channel to divert undisturbed runoff from areas north and west of the Open Pit southward to the SFK.
- A Pyritic TSF diversion channel to divert undisturbed runoff from areas west of the Pyritc TSF northward to the NFK.
- A Bulk TSF diversion channel to divert undisturbed runoff from areas southwest of the Bulk TSF southward to the SFK.
- A Bulk TSF Main SCP diversion channel to divert undisturbed runoff from areas east of the Bulk TSF Main SCP northward to the NFK.
- A Main WMP diversion channel to divert undisturbed runoff from areas east of the Main WMP northward to the NFK.

Flows collected in the fresh water diversion channels will be conveyed directly to the downstream waterways. These flows are expected to follow a similar pattern to the pre-mine hydrograph, with high flows occurring during the spring snowmelt season and fall rainy season, and low flows occurring during the late summer period. Minimal flows are expected during the winter when precipitation will mostly fall as snow.

3.4.2 OPEN PIT WATER MANAGEMENT POND

The OP WMP will be a lined facility. The maximum operating pond volume and freeboard criteria for the OP WMP are outlined in Table 3.1. The storm storage freeboard allowance will be provided in addition to the maximum operating pond volume, and the emergency spillway will be set at an elevation above the IDF freeboard and will direct flows towards the SFK. Water in excess of the maximum operating pond volume will be directed to the Main WMP. Collection ditches along the toe of the embankments will direct stormwater runoff to a sediment control pond for treatment prior to release to downstream waterways. Water collected within the OP WMP will be treated for discharge at WTP#1.

3.4.3 MAIN WATER MANAGEMENT POND

The Main WMP will provide water storage surge capacity for the mine site and is a key component of the water management strategy. Water collected in all of the other water management ponds, excluding the OP WMP, will be directed to the Main WMP to minimize the storage requirements of these ponds. The Main WMP will be a lined facility, with underdrains installed below the liner to direct groundwater drainage under the facility and towards the sediment control pond. Collection ditches along the toe of the embankments

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will direct stormwater runoff from the embankments to a sediment control pond for treatment prior to release to the downstream environment.

The operating capacity of the Main WMP was sized using the climate variability water balance model, for purposes of safely managing the surplus water from the mine site and supplying water to the process under the full range of climate conditions. The minimum and maximum pond volumes and freeboard criteria for the Main WMP are outlined in Table 3.1.

Excess water accumulation within the pond that would infringe upon the storm storage requirements, and which is not a result of the IDF inflow, will be directed to the Open Pit for temporary storage. The Main WMP will include an emergency spillway designed to safely convey the peak discharge from the IDF, and will direct flows to the NFK.

3.4.4 BULK TAILINGS STORAGE FACILITY

The Bulk TSF will be used to manage bulk tailings solids and supernatant water prior to pumping surplus water to the Main WMP. The Bulk TSF will provide sufficient storage capacity for the tailings, the operating pond, and a freeboard allowance as outlined in Table 3.1, without release to the downstream environment. The water management strategy for the Bulk TSF is to maintain a minimum supernatant pond with maximum beaches by pumping surplus water to the Main WMP via the reclaim water pumping system.

The main embankment of the Bulk TSF is proposed to operate as a drained facility to promote long-term drainage of the bulk tailings mass. The Bulk TSF Main SCP, located downstream of the main embankment of the Bulk TSF, will collect seepage that drains through the main embankment. Water collected in the Bulk TSF Main SCP will be pumped to the Main WMP. The Bulk TSF south embankment is proposed to include a hydraulic barrier, consisting of a HDPE liner or a low permeability core zone, and a grout curtain installed in the weathered bedrock. A seepage collection pond will be located downstream of the south embankment to collect any potential seepage and embankment runoff. A seepage collection pond will also be constructed on the east side of the Bulk TSF to collect potential seepage and runoff from the east side of the facility. Water collected in the south and east seepage collection ponds will be pumped back into the Bulk TSF.

3.4.5 BULK TSF MAIN EMBANKMENT SEEPAGE COLLECTION POND

The Bulk TSF Main SCP is the main seepage collection system for the Bulk TSF and will be used to manage seepage and runoff flows from Bulk TSF main embankment. Water collected in the Bulk TSF Main SCP will be pumped to the Main WMP. The maximum operating pond volume, storm storage, freeboard, and spillway criteria for the seepage pond are outlined in Table 3.1. Collection ditches along the toe of the Bulk TSF Main SCP embankment will direct stormwater runoff to a sediment control pond for treatment prior to release to the downstream environment.

An emergency spillway will be set at an elevation above the IDF freeboard and will direct discharges towards the NFK.

3.4.6 PYRITIC TAILINGS AND PAG WASTE ROCK STORAGE FACILITY

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The Pyritic TSF will manage pyritic tailings solids, PAG waste rock and supernatant water. The Pyritic TSF will be lined and is a water retaining facility, and will provide sufficient storage capacity for the tailings, PAG waste rock, operating pond, and freeboard allowance as outlined in Table 3.1. The water management strategy for the Pyritic TSF is to maintain a water cover over the surface of the tailings and waste rock to maintain geochemical stability. Surplus water will be directed to the Main WMP via the reclaim water pumping system.

The Pyritic TSF will contain the IDF without release to the downstream environment, and an emergency spillway will be included in the design.

Underdrains will be included below the facility to direct groundwater and seepage to a collection pond downstream of the main Pyritic TSF embankment. The seepage collection pond will also collect stormwater from the main embankment. Water collected in the seepage collection pond will be pumped to the Main WMP. Additional seepage collection and recycle ponds will be constructed around the Pyritic TSF. Flows collected within these facilities will be recycled back into the Pyritic TSF.

3.4.7 SEEPAGE COLLECTION AND RECYCLE PONDS

Seepage collection and recycle ponds will be located downstream of the Bulk TSF south embankment, the Bulk TSF east side, and the Pyritic TSF south embankment.

The operating criteria, storm storage and spillway criteria for the seepage collection and recycle ponds are outlined in Table 3.1. Seepage flows will be pumped back to each respective TSF, as required.

3.4.8 SEDIMENT PONDS

Sediment ponds will be located downstream of various embankment structures throughout the mine site to collect and treat non-mine drainage stormwater from these facilities. Sediment ponds will be located downstream of the overburden stockpiles, growth medium stockpiles, the OP WMP, the Bulk TSF Main SCP, the Main WMP embankments, and the quarries. The operating criteria, storm storage, and spillway criteria for the sediment ponds are outlined in Table 3.1. Releases from the sediment ponds are expected to follow a similar pattern to the pre-mine hydrograph with high flows occurring during the spring snowmelt and fall rainy seasons, and low flows occurring during the late summer period. Minimal flows are expected during the winter when most of the precipitation will fall as snow.

3.4.9 WATER TREATMENT PLANTS

There are two water treatment plants proposed for the project to treat surplus water: WTP#1, which is located near the OP WMP, and WTP#2, which is located near the Main WMP. Variable water treatment rates were required to manage the surplus water from the mine site under the full range of historic climate conditions. Higher water treatment rates will be required during extended wet periods and reduced water treatment rates will be required during extended dry periods. The treatment rates for WTP#1 and WTP#2 are dictated by the volumes of water stored in the OP WMP and the Main WMP, respectively. Trigger volumes in the water management ponds correspond to treatment rates at the water treatment plants, as defined in Table 3.2 for WTP#1 and the OP WMP, and in Table 3.3 for WTP#2 and the Main MWP.

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Table 3.2 WTP#1 Operational Strategy – Open Pit WMP Trigger Volumes and WTP#1 Rates

Case	Open Pit WMP Trigger Volume		WTP#1 Inflow Rate	Description
	(Mft^3)	(ac-ft)	(cfs)	
Low	< 4	< 90	4.7	1 train (33% of total treatment capacity)
Average	4 to 8	90 to 185	9.3	2 trains (66% of total treatment capacity)
High	> 8	> 185	14.0	3 trains (100% of total treatment capacity)

NOTES:
1. SOURCE FOR THE NUMBER OF WATER TREATMENT TRAINS IS HDR (2018A).

Table 3.3 WTP#2 Operational Strategy – Main WMP Trigger Volumes and WTP#2 Rates

Case	Main WMP Trigger Volume		WTP#2 Inflow Rate	Description
	(Mft^3)	(ac-ft)	(cfs)	
Low-Low	< 300	< 6,900	9.5	1 train (25% of total treatment capacity)
Low	300 to 1,200	6,900 to 27,500	19.0	2 trains (50% of total treatment capacity)
High	1,200 to 1,500	27,500 to 34,400	28.5	3 trains (75% of total treatment capacity)
Maximum	> 1,670	38,300	38.0	4 trains (100% of total treatment capacity)

NOTES:
1. SOURCE FOR THE NUMBER OF WATER TREATMENT TRAINS IS HDR (2018A).

The water treatment plants will produce reject sludge. The reject sludge flow rate is assumed to be 0.1% of the inflow rate to the water treatment plants (HDR 2018a). In addition, WTP#2 has an RO reject rate of 2.3% of the inflow rate to WTP#2 (HDR 2018a). The reject sludge and RO reject will be pumped to the mill and will be added to the pyritic tailings slurry pipeline to be disposed of within the Pyritic TSF.

Treated water from WTP#1 and WTP#2 that is not required at the process plant or the power plant will be discharged. Treated water discharge locations are proposed in the NFK, SFK and UT catchments, as shown on Figure 1.1.

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4.0 OPERATIONS WATER BALANCE MODEL

4.1 INTRODUCTION

A water balance model for the operations period of the mine was developed for the Project. The water balance is comprised of three modules: the Watershed Module, the Groundwater Module, and the Mine Plan Module. This section describes the Mine Plan Module (the model) of the water balance and presents the associated inputs, assumptions, and results. The Mine Plan Module is representative of the movement of water within the mine system, and it uses inputs from the Watershed Module and the Groundwater Module. The Mine Plan Module estimates the amount of water to be managed at the mine site during the full operating period of the mine under a full range of historic climate conditions.

4.2 INPUTS AND ASSUMPTIONS

The Mine Plan Module was completed on a monthly basis using GoldSim® software, and was based on the conceptual 20-year life of mine footprint shown on Figure 1.1 and the water management strategy described within this report. The water management strategy incorporated into the Mine Plan Module is shown as a flow schematic on Figure A.1 in Appendix A. The model assumes a constant nominal milling rate of 180,000 tpd and that the maximum mine footprint is applicable to every year of operations.

Climate variability was incorporated into the model by utilizing the 76-year synthetic time-series of monthly temperature and precipitation values developed for the Project site. The time-series data were incrementally stepped by year within the model, for the planned life of the Project, thereby preserving the inherent cyclical nature of the climate record. The model generated 76 unique sets of results of water flow and storage for each month of each year of the model.

Additional inputs and assumptions for the model include:

- The ore, concentrate and tailings properties are as follows (Ausenco 2017a):
  - Ore has a 3% water content and a specific gravity (SG) of 2.6.
  - Concentrate is classified into two types:
    - Copper concentrate with an 8% water content and an SG of 3.1.
    - Molybdenum concentrate with a 12% water content and an SG of 3.2.
  - Bulk tailings has an SG of 2.6.
  - Pyritic tailings has an SG of 2.9.
- The bulk tailings dry density is assumed to be 90 pcf.
- The pyritic tailings dry density is assumed to be 100 pcf.
- The flow-through rate of the Bulk TSF main embankment is assumed to be a constant rate of 8 cfs during operations (KP 2018b).
- A total tonnage of approximately 126 million short tons of PAG waste rock is stored in the Pyritic TSF during operations (approximate volume of 500 million ft3 assuming a density of 120 pcf).

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- Groundwater inflow to the Open Pit is at a constant rate of 2,700 gpm (6 cfs), as provided by Piteau Associates.
- Approximately 3 cfs of treated water from the water treatment plants is required at the mill for processing, (Ausenco 2017b).
- Approximately 3 cfs of treated water from the water treatment plants is required at the power plant cooling towers, and approximately 265 gpm (0.6 cfs) of blow-down water will be directed to the Main WMP (WorleyParsons 2017).
- Treated water to the mill and power plant is sourced from WTP#2.
- WTP#1, which is located near the Open Pit, has a maximum treatment rate of 14 cfs provided by three trains of equal treatment capacity (HDR 2018a). The reject sludge from WTP#1 is assumed to be directed to the Pyritic TSF through the pyritic tailings line.
- WTP#2, which is located near the mill, has a maximum treatment rate of 38 cfs, provided by four trains of equal treatment capacity (HDR 2018a). The reject sludge and reject flow from WTP#2 will be directed to the Pyritic TSF through the pyritic tailings line.

4.3 MINE PLAN MODULE WATER BALANCE RESULTS

4.3.1 ANNUAL AVERAGE BALANCE

The module schematic and corresponding average annual flows are shown on Figure A.1 and in Table A.1, in Appendix A. The values include the average annual inflows and outflows for the water management facilities for three unique model runs (realizations), which were selected from the entire set of 76 model realizations. These selections represent relatively dry, average, and relatively wet conditions, and illustrate the range of potential flows for the mine site. The realizations all have similar average precipitation values, but differ in how the precipitation varies from year to year. The realizations selected are:

- Realization #36 was selected to represent relatively dry conditions because it contains a period that results in low environmental discharge releases. The average annual precipitation for realization #36 is 56 in., but the annual precipitation in the final year of operations is 33 in.
- Realization #5 was selected to represent average conditions because it results in relatively constant environmental discharge releases. The average annual precipitation for realization #5 is 57 in. and the annual precipitation for the final year of operations is 58 in.
- Realization #10 was selected to represent relatively wet conditions because it contains a period that results in high environmental discharge releases. The average annual precipitation for realization #10 is 57 in., but the annual precipitation for the final year of operations is 93 in.

The volume of fresh water, stormwater, and mine drainage water that is managed within the Project mine site is a function of the climate. More water will be collected and managed during wet climate conditions compared to during dry climate conditions. The relatively wet condition (realization #10) in Table A.2 corresponds to more runoff and direct precipitation being collected within the water management facilities than the relatively dry condition (realization #36). The amount of process water managed during the three realizations is the same because this is a function of the processing throughput rate and the tailings

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properties (e.g. the throughput rate and percent solids in the tailings streams dictate the amount of water in the tailings slurries), and is independent of the climate conditions.

Water losses (or water that is not available for the process or for treatment and discharge) include evaporation from the surfaces of the water management ponds and the cooling towers of the Power Plant, water that is lost or trapped in the Bulk tailings voids stored in the Bulk TSF and the Pyritic tailings voids and PAG waste rock voids stored in the Pyritic TSF, and a small amount of water that leaves with the concentrate. The losses are independent of the climate conditions and are a function of the processing throughput rate, the tailings and waste rock properties, and the Power Plant design. The losses are therefore similar under all climatic conditions.

The amount of surplus water at the site is a function of the total amount of water entering the site and the total water losses. The amount of surplus water increases during wet climate conditions since the amount of inflow increases, but the amount of losses are the same as during dry climate conditions. The total site surplus water for the realizations selected to represent relatively dry, average, and relatively wet conditions are summarized in Table 4.1. The site surplus water for the Project will be stored within the water management ponds and then treated and released downstream of the mine site.

Table 4.1 Average Annual Site Wide Surplus Flow for Individual Realizations Representing Relatively Dry, Average, and Relatively Wet Conditions

		Average Annual Flows (cfs)		
		Relatively Dry Conditions (Realization #36)	Average Conditions (Realization #5)	Relatively Wet Conditions (Realization #10)
Inflows				
	Water in Ore	2	2	2
	Groundwater to Open Pit	6	6	6
	Mine Drainage	21	44	81
	Total Inflows	**29**	**52**	**89**
Losses				
	Concentrate	<1	<1	<1
	Tailings Voids	20	20	20
	Pond Evaporation	3	3	3
	Power Plant Evaporation	2	2	2
	Dust Control	<1	<1	<1
	Total Losses	**25**	**25**	**25**
Site Surplus (Inflows - Losses)		**4**	**27**	**64**

NOTES:

1. THE SURPLUS FLOW IS AN INDICATION OF THE AMOUNT OF WATER THAT IS COLLECTED AND MANAGED WITHIN THE PROJECT MINE SITE. THE SURPLUS FLOW IS NOT DIRECTLY RELATED TO THE AMOUNT OF WATER TREATED AND RELEASED DOWNSTREAM OF THE PROJECT SITE AT ANY ONE TIME SINCE THE SITE SURPLUS DOES NOT TAKE INTO ACCOUNT THE CHANGE IN WATER STORED WITHIN THE WATER MANAGEMENT PONDS.

4.3.2 MAIN WMP VOLUMES

Estimated pond volumes for the Main WMP, provided in terms of monthly 1st, 10th, 50th, 90th, and 99th percentile values, are shown on Figure 4.1. These results indicate that the Main WMP will operate below

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the maximum operating pond capacity at all times, and that there is sufficient water available in the pond to satisfy the process reclaim water requirements (the pond does not go dry), even during prolonged dry periods.

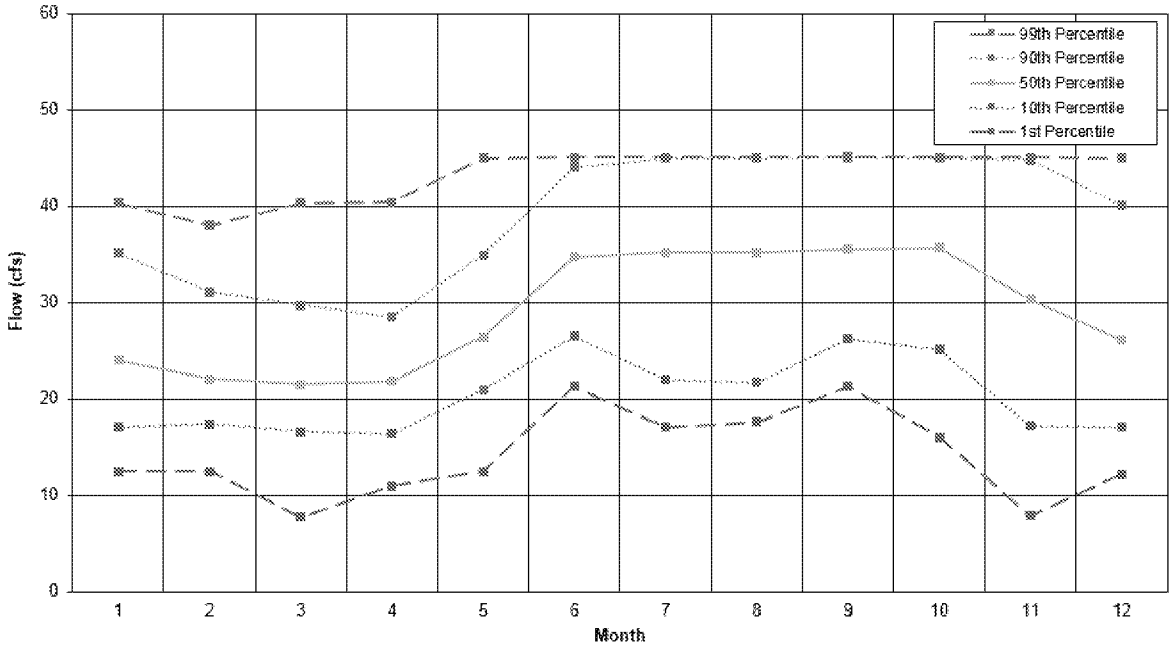

Figure 4.1 Main WMP Volumes Results and Operating Capacity – 1st, 10th, 50th, 90th, and 99th Percentiles

4.3.3 TOTAL RELEASE FROM THE WATER TREATMENT PLANTS

The total flows released downstream of the Project mine site are a combination of fresh water from the diversion channels and quarry runoff, and treated water from the water treatment plants. The water treatment plant flows are expected to vary based on the amount of water captured at the mine site, whereas the flows from the fresh water diversions are expected to vary according to natural flow patterns, with higher flows during the spring melt and fall rainy periods, and lower flows during the late summer and winter months. The total water released from the water treatment plants will be a function of the site surplus water and the change in water management pond storage. During drier climate conditions, the amount of water stored within the water management ponds will decrease, while during wetter climate conditions, the amount of water stored within the water management ponds will increase.

The 1st, 10th, 50th, 90th, and 99th percentile values of total water released from the water treatment plants are summarized on a monthly basis in Table 4.2 and on Figure 4.2. These results, which are based on model inputs of 76 different series of paired monthly temperature and precipitation values over the 20-year mine life, indicate that the total flow releases from the water treatment plants can vary from lows of 8 cfs during the mid and late winter months (1st percentile results) to highs of 45 cfs for much of the year (99th percentile results). The total flow releases from the water treatment plants increase in the spring melt season (approximately April through June) in response to increased runoff throughout the mine site, which

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triggers the requirement to treat and release more water. The total flow releases from the water treatment plants decrease during the winter months (October through March) for all percentiles and during the summer low flow periods (July through September) for the 1st and 10th percentiles.

Table 4.2 Total Release from the Water Treatment Plants to Downstream of the Mine Site - 1st, 10th, 50th, 90th, and 99th Percentiles

Month	Total Release from Water Treatment Plants (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	12	17	24	35	40
Feb	13	17	22	31	38
Mar	8	17	22	30	40
Apr	11	16	22	29	40
May	12	21	26	35	45
Jun	21	27	35	44	45
Jul	17	22	35	45	45
Aug	18	22	35	45	45
Sep	21	26	36	45	45
Oct	16	25	36	45	45
Nov	8	17	30	45	45
Dec	12	17	26	40	45
Annual Average	14	20	29	39	43

NOTES:

1. TOTAL RELEASE FROM WTP IS THE SUM OF THE FLOWS AVAILABLE FOR RELEASE FROM WTP#1 AND WTP#2 AFTER TREATED FLOW REQUIREMENTS TO THE PROCESS ARE SATISFIED.

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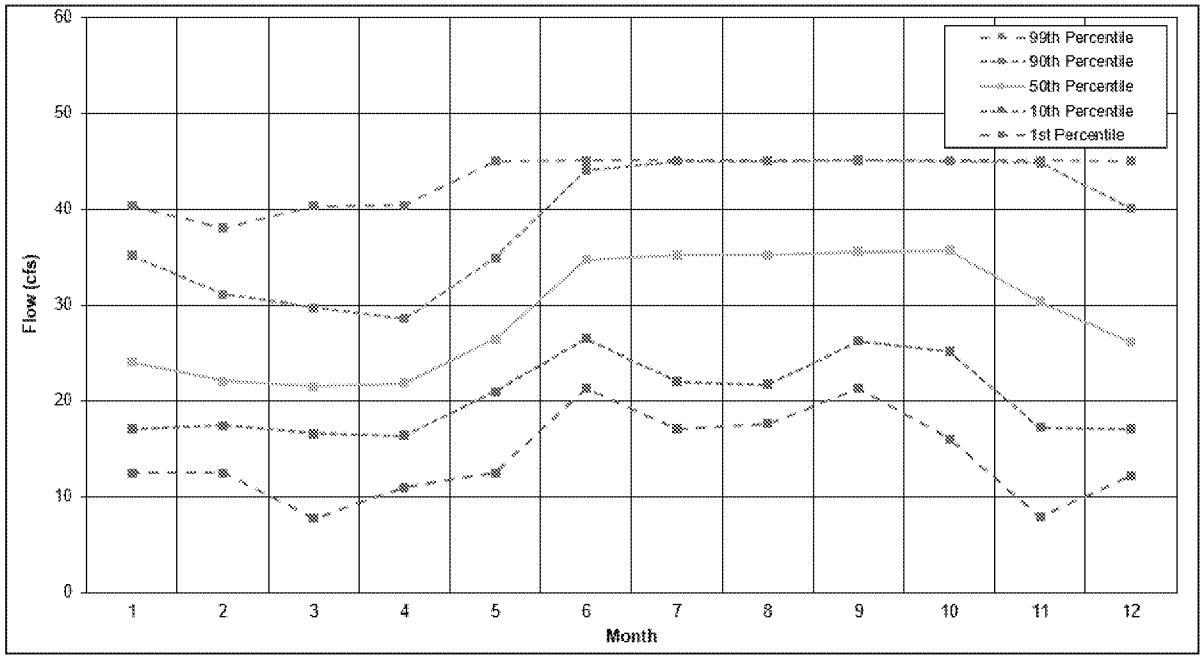

Figure 4.2 Total Flow Releases from the Water Treatment Plants to Points Downstream of the Mine Site: 1st, 10th, 50th, 90th, and 99th Percentile Results

The percentile results shown in Table 4.2 and on Figure 4.2 were calculated based on the full set of 76 model realizations, and do not specifically represent any one individual model realization. Three individual model realizations were selected to show the potential variation in water treatment plant flow releases. These realizations were not selected to match the percentile results shown in Table 4.2 and on Figure 4.2, but rather to represent relatively dry, average, and relatively wet annual climate conditions.

The total flow releases from the water treatment plants for the final years of operations for the three selected realizations are summarized on a monthly basis in Table 4.3 and on Figure 4.3. These results indicate that the total flow releases are similar during the low-flow period from January through April for all three climate scenarios; however, differences in the timing and magnitude of the spring snowmelt runoff dictate that flow releases from the water treatment plants differ during the spring (May through June). For instance, the releases are higher in May for the relatively dry scenario (realization #36) than for both the average (realization #5) and relatively wet scenarios (realization #10), but then the relative differences in flows change according to how the climate and runoff conditions vary throughout the year. On an annual basis, however, the average and relatively wet scenarios had higher total releases from the water treatment plants than the relatively dry scenario.

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Table 4.3 Total Release from the Water Treatment Plants to Downstream of the Mine Site - Individual Realizations Representing Relatively Dry, Average, and Relatively Wet Conditions

Month	Total Release from WTP (cfs)		
	Relatively Dry Conditions (Realization #36)	Average Conditions (Realization #5)	Relatively Wet Conditions (Realization #10)
Jan	22	26	22
Feb	17	17	17
Mar	17	22	17
Apr	22	22	22
May	26	22	22
Jun	27	36	27
Jul	17	36	36
Aug	22	36	45
Sep	22	36	45
Oct	22	36	45
Nov	8	31	45
Dec	12	26	40
Annual Average	20	29	32

NOTES:
1. TOTAL RELEASE FROM THE WTPS IS THE SUM OF THE FLOWS AVAILABLE FOR RELEASE FROM WTP#1 AND WTP#2 AFTER TREATED FLOW REQUIREMENTS TO THE PROCESS ARE SATISFIED.

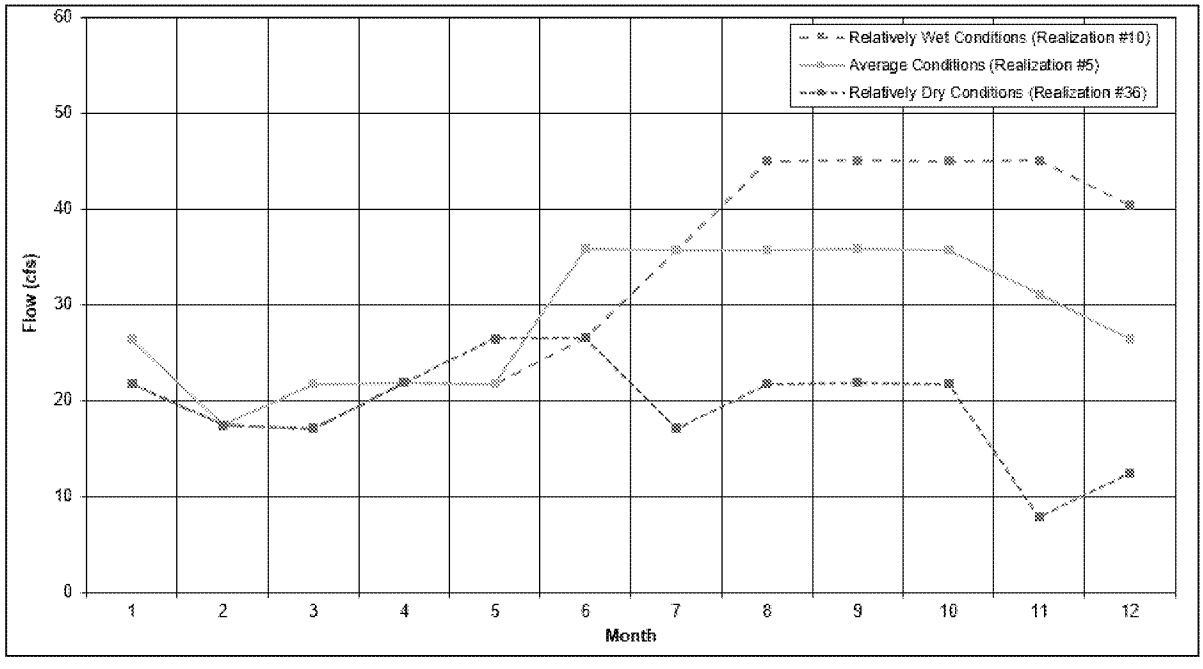

Figure 4.3 Total Release from the Water Treatment Plants to Downstream of the Mine Site for Individual Realizations Representing Relatively Dry, Average, and Relatively Wet Conditions

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5.0 WATER QUALITY MODEL

5.1 GENERAL

A water quality model (WQ model) was developed to predict the influent water quality to the water treatment plants and the water quality within the water management ponds using a mass balance approach. The WQ model developed using Goldsim® and was built on the foundation of the Mine Plan Module, which provided the inflows, outflows, and storage volumes for each pond. Water quality predictions are provided for the following:

- WTP#1
- WTP#2
- OP WMP
- Main WMP
- Bulk TSF
- Bulk TSF Main SCP, and
- Pyritic TSF.

The water quality standards at each of the proposed discharge locations are summarized in Table 5.1. The water treatment plants will be designed to meet the specified discharge water quality standards.

5.2 METHODOLOGY

The mass balance calculations factor in the inflow loads (e.g., undisturbed runoff load, load transfer from other facilities, etc.) and outflow loads (e.g., load transfer to other facilities, loads trapped in the tailings voids, etc.) from the water management ponds. The monthly concentrations are a function of the constituent loads and the flow volumes associated with the inflow, outflow and storage components of the system, and based on the integration of the following:

- The monthly constituent concentrations within a pond are equal to the sum of the previous month's stored load and the current monthly loading divided by the previous month's stored volume plus the current month's inflow volume minus the evaporation.
- Loads removed from each facility by either pumping or seepage losses are determined using the monthly concentrations multiplied by the volumes of water being removed during each time step.
- The stored load for each monthly time step is the sum of the previous month's load and the incoming load minus the outgoing load.

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TABLE 5.1

THE PEBBLE PARTNERSHIP
PEBBLE PROJECT

WATER QUALITY STANDARDS IN RECEIVING WATER BODY

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Parameter	Units	Estimated Limits & Basis	
		Most Stringent	Basis
Aluminum (total)	ug/L	87	WQBEL-ALC
Antimony (total)	ug/L	6	WQBEL-DW
Arsenic (total)	ug/L	10	WQBEL-DW
Barium (total)	ug/L	2000	WQBEL-HH
Beryllium (total)	ug/L	4	WQBEL-HH
Boron (total)	ug/L	750	WQBEL-HH
Cadmium (H) (total)	ug/L	0.08	WQBEL-ALC
Chloride	ug/L	230000	WQBEL-ALC
Total Residual Chlorine	ug/L	11	WQBEL-ALC
Chromium (total)	ug/L	100	WQBEL-DW
Chromium III (H) (total)	ug/L	19.18	WQBEL-ALC
Chromium VI (dissolved)	ug/L	11	WQBEL-ALC
Cobalt (total)	ug/L	50	WQBEL-IR
Copper (H) (total)	ug/L	2.19	WQBEL-ALC
Cyanide (WAD)	ug/L	5.2	WQBEL-ALC
Fluoride	ug/L	1000	WQBEL-IR
Iron (total)	ug/L	1000	WQBEL-ALC
Lead (H) (total)	ug/L	0.39	WQBEL-ALC
Lithium (total)	ug/L	2500	WQBEL-IR
Manganese (total)	ug/L	50	WQBEL-HH
Mercury (total)	ug/L	0.012	WQBEL-ALC
Molybdenum (total)	ug/L	10	WQBEL-IR
Nickel (H) (total)	ug/L	12.87	WQBEL-ALC
Nitrate	ug/L	10000	WQBEL-DW
Nitrite	ug/L	1000	WQBEL-DW
Total Nitrate+Nitrite as N	ug/L	10000	WQBEL-DW
Selenium (total)	ug/L	5	WQBEL-ALC
Silver (H) (total)	ug/L	1.1	WQBEL-ALA
Thallium (total)	ug/L	1.7	WQBEL-HH
Vanadium (total)	ug/L	100	WQBEL-HH
Zinc (H) (total)	ug/L	28.95	WQBEL-ALA
TDS	mg/L	500	WQBEL-HH
pH	-	6.5 - 8.5	WQS-GP
TSS	mg/L	20	ELG-MA
DO	mg/L	> = 7.0	WQS-GP
Turbidity (NTU)	NTU	No greater than 5 NTU above natural turbidity	WQS-WS
Alkalinity	ug/L	> = 20,000	WQBEL-ALC
Ammonia as N	mg/L	4.36	WQBEL-ALC
Hardness	mg/L	100	see note 9 below
Sulfate	mg/L	250	WQS

ABBREVIATIONS:

WQBEL: Water Quality Based Effluent Limit
ELG: Effluent Limitation Guideline
(H): Hardness dependent criterion
(S): Selenite + Selenate dependent criterion
WQS: Water Quality Standards
HH: Human Health
ALA: Aquatic Life, Acute
ALC: Aquatic Life, Chronic
DW: Drinking Water
MA: Monthly Average
GP: Growth and Propagation of Fish
IR: Irrigation water
WS: Water supply

\\KPL\VA-Prj$\1\01\00176\57\A\Report\4 - Water Management Report\Rev 1\Tables\[Estimated Discharge Criteria.xlsx]Table 5.1_WTP_Limits

NOTES:

1. Water quality based effluent limits (WQBELs) are taken from *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* dated December 2008.
2. Water quality standards (WQS) are taken from *Alaska Water Quality Standards* (18 AAC 70) dated April 6, 2018.
3. Technology based effluent limits are take from *Effluent Limitation Guidelines, Subpart J* (40 CFR 440.104) for the Copper, Lead, Zinc, Gold, Silver, and Molybdenum subcategory.
4. Water quality standards for dissolved oxygen, turbidity, and pH are mandatory. Estimated limits are the most stringent of water supply, recreation, or growth and propagation standards. Temperature limits are also required, but dependent on habitat and seasonal considerations.
5. Hardness-dependent criteria (cadmium, copper, chromium III, lead, nickel, silver, zinc) are calculated using the estimated 15th percentile conditions for the receiving streams. The most stringent of the three proposed discharge locations is included in the table.
6. The acute selenium standard is based on the selenite/selenate fraction and was not calculated for this estimate. The chronic standard is used instead.
7. Ammonia: acute criterion is pH dependent; chronic criterion is temperature and pH dependent. Estimate based on pH 7.5 and temperature 14 C. Temperatures below 14C do not change the criterion.
8. The criteria in the table are the applicable regulatory criteria. More stringent discharge criteria may be used by the Pebble Partnership.
9. Based on the lowest 15th percentile hardness of the three proposed discharge locations.

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5.3 WQ MODEL INPUTS AND ASSUMPTIONS

The following inputs and assumptions were used to develop the water quality model;

- Complete mixing under steady state conditions (i.e., no reactions or degradation occurs) for all facilities and flow streams except for the concentrations in the tailings slurry leaving the process plant and the concentrations in the Bulk TSF and Pyritic TSF, as directed by SRK and described below:
  - Solubility limits were applied to the Bulk TSF and Pyritic TSF in the WQ model as a load capping mechanism, whereby loads in excess of constraining solubility concentrations were removed from the available monthly stored loads in the facility and assumed to precipitate out of the solution and therefore no longer be available as an outgoing load.
  - Solubility limits were applied to aluminum, copper, iron, manganese, and sulphate concentrations leaving the process plant and to concentrations in the Bulk TSF and Pyritic TSF. Solubility limits were applied based on the following:
    - If the calculated concentration leaving the process plant, or the concentrations in the TSF supernatant pond, were greater than the solubility limits, then the solubility limits were applied; otherwise, the concentrations were calculated based on the influent load and flow.
    - For all other parameters, the outflow concentrations were calculated based on the influent load and flow.
- 95th percentile source terms were provided by SRK as parameter concentrations or loadings (SRK 2018). The source terms and source term assumptions are outlined in Table B1.1 and Table B1.2 in Appendix B1.
- Nitrate, Nitrite and Ammonia concentrations for the source terms were calculated based on the following equations:
  - Nitrate (ion) = 4.43 x Nitrate concentration (mg/L as N)
  - Nitrite = 0.02 x Nitrate (ion) concentration (mg/L), and
  - Ammonia = 0.01 x Nitrite concentration (mg/L).
- Total dissolved solids (TDS) values were calculated as the sum of alkalinity, chloride, fluoride, sulphate, calcium, magnesium, potassium, sodium and silica.
- Total hardness values were calculated based on the following equation:

$$TH = 2.5 \times Ca + 4.1 \times Mg$$

- Where, TH = total hardness concentration (mg/L as $CaCO_3$)
- Ca = calcium concentration (mg/L)
- Mg = magnesium concentration (mg/L)
- pH values were based on the range of pH indicated in the geochemical source terms (SRK 2018).
- The model assumes that the loading from the PAG waste rock in the Pyritic TSF is flushing term (SRK 2018)
- The following source terms were assumed for the Open Pit wall runoff:
  - Winter months: pre-tertiary non-potential acid generating load, and
  - Summer months: 1.75 Mft^2 area of the Open Pit was assumed as in-pit stockpile load and the remaining as pre-tertiary non-potential acid generating load.
- The water quality predictions represent conditions during the final year of operations.

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- The outflow concentrations from the WTPs are defined in Table B1.3 in Appendix B1.

5.4 WQ MODEL RESULTS AND DISCUSSION

The maximum monthly predicted concentrations for the 50th percentile flow values – in combination with the 95th percentile source term concentrations or leadings – for flows to the water treatment plants and in each facility, for the final year of operations, are shown on Table B2.1 in Appendix B2.

The water quality feeding to the water treatment plants is defined by the OP WMP concentrations for WTP#1 and the Main WMP concentrations for WTP#2. The water quality predications for WTP#1 are dominated by the loading from the Open Pit dewatering activities. The maximum predicted concentrations within the OP WMP occur during the summer months because of the in-pit stockpile loads from the Open Pit.

The Main WMP is the main facility for managing the surplus water from the mine site, and the majority of the loading to the Main WMP is a function of the loading from the Bulk TSF and the Pyritic TSF. The maximum predicted concentrations in the Main WMP are, however, less than in the Bulk TSF and the Pyritic TSF because of the continuous removal of loads from the Main WMP via the reclaim water that is directed to the process and to WTP#2.

The bulk tailings slurry water from the process drives the loading within the Bulk TSF supernatant pond. Similarly, the pyritic tailings slurry water from the process drives the majority of the loading in the Pyritic TSF, with both the sludge reject and RO reject flows from the water treatment plants contributing to the loading. The flushing load from the PAG waste rock into the Pyritic TSF provides loading to the Pyritic TSF supernatant pond; however, the load from the PAG waste rock is not as great as that from the tailings slurry water.

The water treatment plants are being designed by others based on the flow rate results of the water balance model and the water quality predictions from the WQ model. The proposed operations of the water treatment plants and the estimated effluent water quality are not provided as part of this report, and will be completed by others.

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6.0 SUMMARY

The key points presented in this report are summarized as follows:

- The mean annual temperature in the Project area is just below freezing, with freezing temperatures generally persisting from October through April, and conditions are quite wet, with mean annual precipitation varying throughout the project area but generally ranging from 45 in. to 55 in.
- Precipitation and runoff conditions in the Project area vary substantially throughout the year, and from year to year. The Project area experiences extended periods of wet and dry conditions related to climate cycles.
- Groundwater plays a prominent role in the flow patterns of all the creeks and rivers in the Project area.
- The primary objectives of the water management plan are:
  - To minimize mine drainage water by diverting freshwater and stormwater as much as possible.
  - To describe how water will be managed to assure integrity of impoundments in all conditions.
  - To assure adequate water for operation of the Process Plant and associated support facilities.
  - To treat stormwater for sediment to meet effluent limitations.
  - To capture all mine drainage and process water and treat it in water treatment plants to meet water quality standards in the receiving water body.
- Large water management ponds and variable water treatment rates will be used to ensure that the water management objectives can be achieved under the full range of possible climate and runoff conditions.
- All water management facilities will have provisions in place to handle IDF flows either through storage or spillways.
- Treated water in excess of process requirements will be released to the environment at three points downstream of the mine footprint, one each in the NFK River, SFK River, and UT Creek watersheds.

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8.0 CERTIFICATION

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APPENDIX A

Water Balance Flow Schematic And Average Annual Flow Balance

(Pages A-1 to A-3)

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TABLE A.1

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

AVERAGE ANNUAL FLOW BALANCE

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Flow Path Number and Description		Average Annual Flow (cfs)		
		Relatively Dry Conditions (Realization #36)	Average Conditions (Realization #5)	Relatively Wet Conditions (Realization #10)
Open Pit				
Open Pit Inflows				
1	Direct Precipitation	2	3	4
2	Undisturbed Surface Runoff	<1	<1	1
3	Diversion Channel Leakage	<1	1	2
4	Groundwater	6	6	6
5	Additional Snowblow	1	1	1
	Subtotal Inflows	**9**	**11**	**14**
Open Pit Outflows				
6	Dewatering to OP WMP	9	11	14
	Subtotal Outflows	**9**	**11**	**14**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Open Pit Water Management Pond (OP WMP)				
OP WMP Inflows				
7	Direct Precipitation	<1	<1	1
8	Undisturbed Surface Runoff	<1	<1	1
6	Dewatering from Open Pit	9	11	14
	Subtotal Inflows	**9**	**11**	**15**
OP WMP Outflows				
9	Pond Evaporation	<1	<1	<1
10	Dust Suppression	<1	<1	<1
11	Surplus to Main WMP	0	1	5
12	Surplus to WTP#1	9	10	11
	Subtotal Outflows	**9**	**11**	**16**
	Change in Storage	**0**	**0**	**0**
	Balance (Inflows - Outflows - Change in Storage)	**0**	**0**	**0**
Mill/Process				
Process Inflows				
13	Water in Ore	2	2	2
14	Treated Water	3	3	3
15	Reclaim Water from Main WMP	48	48	48
	Subtotal Inflows	**53**	**53**	**53**
Process Outflows				
16	Water in Concentrate	<1	<1	<1
17	Bulk Tailings Slurry Water	46	46	46
18	Pyritic Tailings Slurry Water	7	7	7
	Subtotal Outflows	**53**	**53**	**53**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Power Plant				
Power Plant Inflows				
19	Treated Water for Cooling Towers	3	3	3
	Subtotal Inflows	**3**	**3**	**3**
Power Plant Outflows				
20	Cooling Tower Evaporation	2	2	2
21	Blowdown Water to Main WMP	1	1	1
	Subtotal Outflows	**3**	**3**	**3**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Pyritic Tailings and PAG Waste Rock Management Facility (Pyritic TSF)				
Pyritic TSF Inflows				
22	Direct Precipitation	2	4	7
23	Undisturbed Surface Runoff	<1	1	2
24	Diversion Channel Leakage	<1	<1	<1
25	Seepage Collection Recycle Ponds	<1	<1	1
55 + 57	Reject Flows from WTPs	<1	1	1
18	Pyritic Tailings Slurry Water	7	7	7
	Subtotal Inflows	**9**	**13**	**18**
Pyritic TSF Outflows				
26	Pond Evaporation	1	1	1
27	Pyritic Tailings Void Losses	2	2	2
28	PAG Waste Rock Void Losses	1	1	1
29	Surplus to Main WMP	5	8	8
	Subtotal Outflows	**9**	**12**	**12**
	Change in Storage	**0**	**1**	**5**
	Balance (Inflows - Outflows - Change in Storage)	**0**	**0**	**0**
Bulk Tailings Management Facility (Bulk TSF)				
Bulk TSF Inflows				
30	Direct Precipitation on Supernatnat Pond	1	2	6
31	Undisturbed Surface Runoff	2	5	10
32	Diversion Channel Leakage	<1	<1	<1
33	Recycle from Seepage Collection Recycle Ponds	1	2	3
34	Bulk Tailings Beach Runoff	4	9	16
17	Bulk Tailings Slurry Water	46	46	46
	Subtotal Inflows	**54**	**64**	**81**
Bulk TSF Outflows				
35	Pond Evaporation	1	1	1
36	Bulk Tailings Void Losses	17	17	17
37	Seepage through main embankment	9	9	9
38	Surplus to Main WMP	28	37	50
	Subtotal Outflows	**55**	**64**	**77**
	Change in Storage	**-1**	**0**	**4**
	Balance (Inflows - Outflows - Change in Storage)	**0**	**0**	**0**

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TABLE A.1 (continued)

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

AVERAGE ANNUAL FLOW BALANCE

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Flow Path Number and Description		Average Annual Flow (cfs)		
		Relatively Dry Conditions (Realization #36)	Average Conditions (Realization #5)	Relatively Wet Conditions (Realization #10)
Bulk TSF Main Embankment Seepage Collection Pond (Bulk TSF Main SCP)				
Seepage Pond Inflows				
39	Direct Precipitation	<1	<1	1
40	Undisturbed Surface Runoff	1	3	5
41	Diversion Channel Leakage	<1	<1	1
42	Bulk TSF Main Embankment Runoff	1	1	2
37	Seepage through main embankment	9	9	9
	Subtotal Inflows	**11**	**13**	**18**
Seepage Pond Outflows				
43	Pond Evaporation	<1	<1	<1
44	Surplus to Main WMP	11	13	14
	Subtotal Outflows	**11**	**13**	**14**
	Change in Storage	**0**	**0**	**4**
	Balance (Inflows - Outflows - Change in Storage)	**0**	**0**	**0**
Bulk TSF South Embankment Seepage Collection Pond				
Seepage Pond Inflows				
45	Undisturbed Surface Runoff	1	1	2
46	Diversion Channel Leakage	<1	<1	1
47	Bulk TSF South Embankment Runoff	<1	<1	<1
	Subtotal Inflows	**1**	**1**	**3**
Seepage Pond Outflows				
33	Recycle to Bulk TSF	1	1	3
	Subtotal Outflows	**1**	**1**	**3**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Main Water Management Pond (Main WMP)				
Main WMP Inflows				
48	Direct Precipitation	1	4	7
49	Undisturbed Surface Runoff	1	3	5
50	Diversion Channel Leakage	<1	<1	1
51	Mill Site Runoff	<1	1	1
52	Pyritic TSF Main Embankment Runoff	<1	1	1
11	Surplus from OP WMP	0	1	5
29	Surplus from Pyritic TSF	5	8	8
38	Surplus from Bulk TSF	28	37	50
44	Surplus from Bulk TSF Main SCP	11	13	14
21	Blowdown Water to Main WMP	1	1	1
	Subtotal Inflows	**47**	**69**	**93**
Main WMP Outflows				
53	Pond Evaporation	1	1	1
15	Reclaim Water to Process	48	48	48
54	Water to WTP#2	17	25	28
	Subtotal Outflows	**66**	**74**	**77**
	Change in Storage	**-19**	**-5**	**16**
	Balance (Inflows - Outflows - Change in Storage)	**0**	**0**	**0**
Water Treatment Plant #1 (WTP #1)				
WTP#1 Inflows				
12	Surplus from OP WMP	9	10	11
	Subtotal Inflows	**9**	**10**	**11**
WTP#1 Outflows				
55	Reject Flows	<1	<1	<1
56	Flows Released to Environment	9	10	11
	Subtotal Outflows	**9**	**10**	**11**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Water Treatment Plant #2 (WTP #2)				
WTP#2 Inflows				
54	Surplus from Main WMP	17	25	28
	Subtotal Inflows	**17**	**25**	**28**
WTP#2 Outflows				
57	Reject Flows	<1	<1	1
14	Treated Water to Process	3	3	3
19	Treated Water to Power Plant Cooling Towers	3	3	3
58	Flows Released to Environment	11	19	21
	Subtotal Outflows	**17**	**25**	**28**
	Balance (Inflows - Outflows)	**0**	**0**	**0**
Diverted Flows				
59	Runoff from Quarry B	1	3	5
60	Runoff from Quarry C	1	1	3
61	Diversion Channel Flow	3	6	12
	Total Diverted Flows to Downstream Environment	**5**	**10**	**20**
Flows Released to Downstream Environment				
59 + 60 + 61	Total Diverted Flows to Downstream Environment	5	10	20
56	Treated Flows from WTP#1	9	10	11
58	Treated Flows from WTP#2	11	19	21
	Total Flows Released to Downstream Environment	**25**	**39**	**52**

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NOTES:

1. FLOW PATH NUMBER CORRESPONDS TO FLOW SCHEMATIC PRESENTED ON FIGURE A.1.
2. CHANGE IS STORAGE WITHIN THE PONDS ARE A FUNCTION OF THE WATER MANAGEMENT OPERATING CRITERIA. A CHANGE IN STORAGE INDICATES IF THE POND HAS ACCUMULATED OR DECREASED POND VOLUME FROM THE START OF THE YEAR.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	06JUL'18	ISSUED WITH REPORT	AS	LJG

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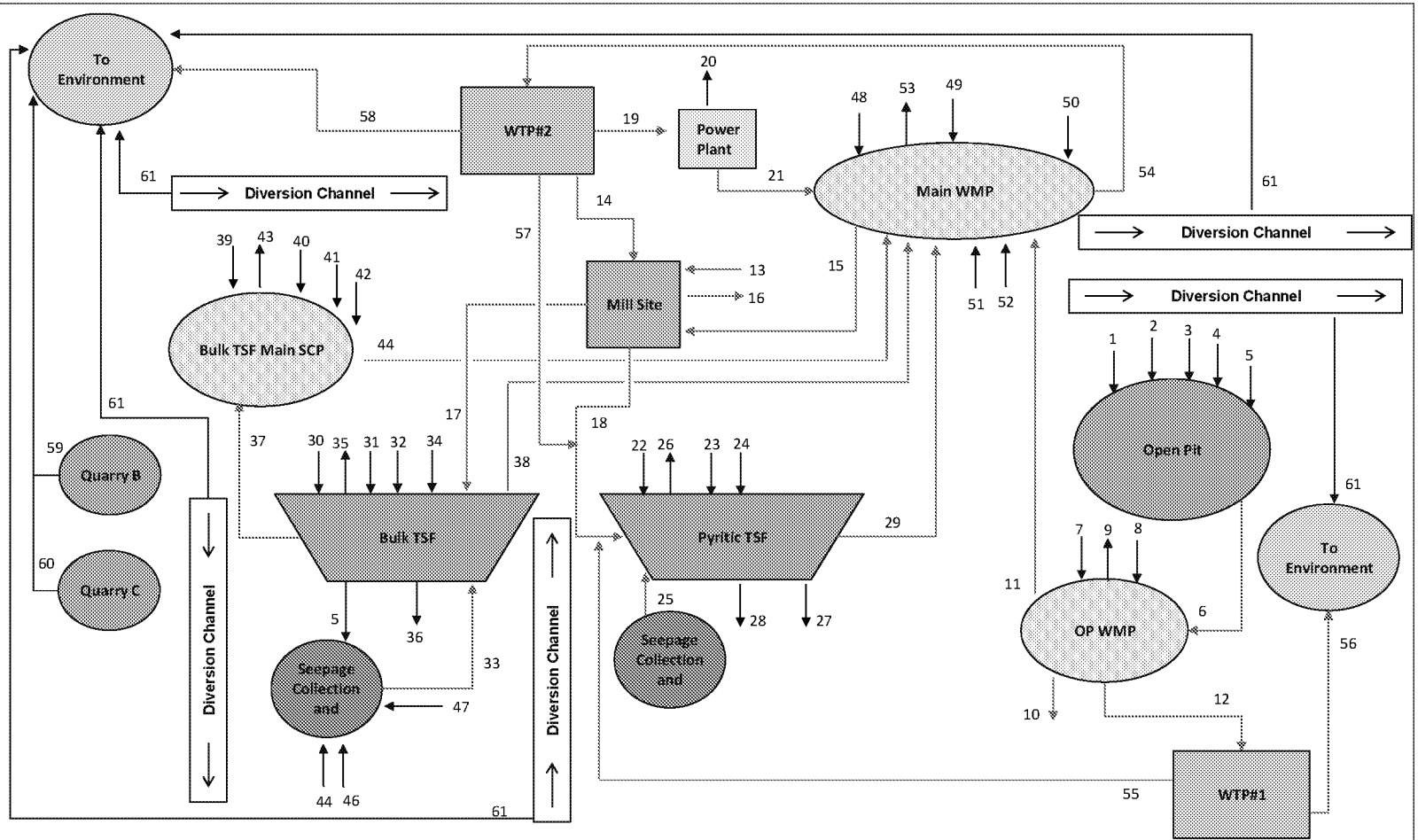
NOTES:
1. FLOW PATH NUMBERS CORRESPOND WITH FLOW VALUES SUMMARIZED IN TABLE A.1.



LEGEND:

3 FLOW PATH NUMBER

RUNOFF, GROUNDWATER, AND SEEPAGE PATHWAY

PUMPED FLOW

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	06JUL'18	ISSUED WITH REPORT	AS	LJG

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

WATER BALANCE FLOW SCHEMATIC - OPERATIONS

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REF. NO 4

FIGURE A.1

REV 0

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APPENDIX B

Water Quality Model Inputs And Results

Appendix B1

Water Quality Model Source Terms and Assumptions

Appendix B2

Water Quality Model Results

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APPENDIX B1

Water Quality Source Terms And Assumptions

(Pages B1-1 to B1-3)

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TABLE B1.1

THE PEBBLE PARTNERSHIP
PEBBLE PROJECT

WATER QUALITY SOURCE TERMS AND ASSUMPTIONS
95TH PERCENTILE GEOCHEMICAL SOURCE TERMS

7/6/2018 9:04

Parameters	Background				Other Rock				Open Pit					Tailings						Area E
	Direct Precipitation	Non-Contact Surface Water	Non-Contact Surface Water	Ground Water	Waste Rock	Waste Rock	Quarried Rock Fill (Dams)	Quarried Rock Fill (Dams)	Wall Runoff	Wall Runoff	Wall Runoff	In-Pit Stockpile	In-Pit Stockpile	Bulk Tailings Water	Fresh Ore Leaching + reagent	Rougher tailings	Ore	Tailings Pond Adjustment	Rougher Tailings Sand Wedge	PAG WR is 17% of facility area
		NFK (NK119A)	SFK SK100F	Pit area	Tertiary	Tertiary	Non-Acidic	Non-Acidic	Pre-Tertiary - Non-Acidic	Pre-Tertiary - Acidic	Tertiary - Non-Acidic	Non-Acidic	Non-Acidic	Supernatant		Runoff	Entrained moisture	Pond	Seepage	Total Load
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/t of new rock	mg/L	mg/t of new rock	mg/L	mg/L	mg/L	mg/L	mg/t of new rock	mg/L	mg/t of ore	mg/m2/week	mg/L	mg/L	mg/L	kg/year
pH	5.5	6.5	6.8	6.7	7.7	-	8.4	-	8.1	3.5	8.2	8.0	-	8.0	-	-	6.7	8.0	8.6	-
TDS	-	31.5	42.6	44.4	2158.0	-	3600.3	-	286.0	453.0	241.0	4473.2	-	198.0	-	378.3	44.4	-	4136.6	1285207.1
Alkalinity	-	14.6	18.0	33.0	26.4	-	490.0	-	49.3	-	69.0	800.0	-	97.4	217086.5	216.3	33.0	-	770.0	23403.9
Acidity	-	2.5	3.8	7.5	5.8	-	-	-	7.1	305.6	0.5	24.9	-	-	-	-	7.5	-	7.5	27760.7
Chloride	-	0.622	0.711	0.804	23.000	-	8.300	-	2.242	6.935	2.260	23.000	-	17.000	2068.840	1.684	0.804	-	9.300	6042.718
Fluoride	-	0.032	0.040	0.072	0.863	-	0.870	-	0.316	0.447	0.112	1.800	-	0.480	-	0.547	0.072	-	0.900	1931.820
Sulfate	-	1.2	7.8	4.9	1456.2	-	2350.1	-	87.5	276.8	29.2	2350.1	-	159.5	921809.6	66.6	4.9	2350.1	2350.1	795940.3
Aluminum	-	0.0363	0.0544	0.0034	0.0487	-	1.3000	-	0.0011	22.9945	0.0015	2.6000	-	0.0109	478.2510	0.3845	0.0034	0.0006	2.5000	980.5286
Antimony	-	0.0001	0.0001	0.0000	0.2000	-	0.1500	-	0.0022	0.0010	0.0183	0.2000	-	0.0025	2.3607	0.0209	0.0000	-	0.2000	76.2858
Arsenic	-	0.0002	0.0004	0.0004	0.1898	-	0.1900	-	0.0196	0.0341	0.0430	0.4000	-	0.0020	3.3020	0.0961	0.0004	-	0.2600	66.5914
Barium	-	0.0025	0.0049	0.0064	6.1823	-	0.1000	-	0.1391	0.0600	1.0025	0.3600	-	0.0226	41.5838	0.0427	0.0064	-	0.1500	374.7911
Beryllium	-	0.00001	0.00001	0.00002	0.00500	-	0.00500	-	0.00002	0.00852	0.00005	0.00500	-	0.00020	33.22308	0.00064	0.00002	-	0.00500	2.41709
Bismuth	-	0.00013	0.00010	0.00002	0.10811	-	0.10000	-	0.00005	0.00005	0.00005	0.20000	-	0.00050	3.06842	0.00160	0.00002	-	0.10000	6.04272
Boron	-	0.00158	0.00153	0.00150	0.73000	-	0.50000	-	0.07779	0.15069	0.19222	0.73000	-	0.02200	175.52728	0.03202	0.00150	-	0.52000	209.65366
Cadmium	-	0.00001	0.00001	0.00002	0.01097	-	0.00550	-	0.00202	0.02638	0.00023	0.22000	-	0.00006	13.57445	0.00017	0.00002	-	0.01000	7.16786
Calcium	-	3.9	6.1	13.8	538.1	-	760.0	-	30.4	9.9	25.3	940.0	-	66.2	153076.1	71.6	13.8	-	770.0	288138.4
Chromium	-	0.0002	0.0003	0.0005	0.0200	-	0.0200	-	0.0008	0.0017	0.0011	0.0200	-	0.0005	3.0684	0.0016	0.0005	-	0.0200	6.1232
Cobalt	-	0.0001	0.0001	0.0001	0.0219	-	0.0490	-	0.0204	0.2515	0.0006	0.8800	-	0.0006	31.4835	0.0003	0.0001	-	0.0500	55.0902
Copper	-	0.0004	0.0021	0.0004	0.0249	-	0.1600	-	0.0064	6.3730	0.0041	1.3000	-	0.0102	29924.1742	0.0174	0.0004	0.0100	0.3700	1395.2035
Iron	-	0.1500	0.5480	0.0200	0.0021	-	1.7000	-	0.0020	38.5700	0.0020	16.0000	-	0.0300	10692.5014	0.1011	0.0200	0.0020	1.8000	366.3925
Lead	-	0.0002	0.0003	0.0001	0.0120	-	0.0500	-	0.0001	0.0081	0.0005	0.0620	-	0.0001	20.5394	0.0002	0.0001	-	0.0500	3.4251
Magnesium	-	0.7340	1.4800	1.0700	48.8700	-	99.0000	-	10.0300	1.9050	2.5080	120.0000	-	15.6000	84592.4968	18.1849	1.0700	-	99.0000	92003.8556
Manganese	-	0.00899	0.0493	0.441	1.492907048	-	2.4	-	1.94842138	13.205	0.14084546	6.2	-	0.56	18431.34201	0.2133745	0.441	2.000	2.9	5251.365439
Mercury	-	0.000001	0.000001	0.000001	0.002170	-	0.000500	-	0.000004	0.000011	0.000003	0.006200	-	0.000010	0.101264	0.000036	0.000001	-	0.000500	0.135523
Molybednum	-	0.000158	0.000509	0.000256	0.445513	-	9.800000	-	0.051323	0.008362	0.150278	7.800000	-	0.038300	7.454516	0.068144	0.000256	-	12.000000	138.326226
Nickel	-	0.000220	0.000354	0.000647	0.109241	-	0.050000	-	0.013449	0.195004	0.002342	0.320000	-	0.002120	91.866767	0.001939	0.000647	-	0.050000	36.247710
Potassium	-	0.206	0.373	0.342	50.000	3282.126	36.000	2597.446	4.692	0.000	4.700	-	2597.446	31.300	34793.196	21.037	0.342	-	36.000	19793.459
Selenium	-	0.000140	0.000413	0.001090	0.217050	-	0.055000	-	0.015695	0.125842	0.016380	0.048000	-	0.006000	19.801217	0.003438	0.001090	-	0.055000	42.301751
Silver	-	0.000005	0.000004	0.000006	0.002210	-	0.010000	-	0.000030	0.000092	0.000042	0.010000	-	0.000017	0.068625	0.000032	0.000006	-	0.010000	0.144415
Sodium	-	2.03	2.40	2.47	487.38	45271.20	110.00	3978.95	8.70	0.01	9.75	-	3978.95	28.40	104093.88	6.89	2.47	-	130.00	30321.02
Thallium	-	0.00001	0.00001	0.00001	0.00100	-	0.00049	-	0.00080	0.00216	0.00046	0.00100	-	0.00007	0.62473	0.00017	0.00001	-	0.00050	1.07323
Silicon	-	5.43000	4.02000	5.88000	32.64000	-	31.00000	-	-	-	-	47.00000	-	2.80000	3520.69974	-	5.88000	-	32.00000	-
Tin	-	0.00006	0.00006	0.00010	0.02296	-	0.19000	-	0.00017	0.00016	0.00020	0.03000	-	0.00010	0.61368	0.00034	0.00010	-	0.20000	32.19700
Vanadium	-	0.00033	0.00035	0.00055	0.03000	-	0.03000	-	0.00081	0.00151	0.01000	0.03000	-	0.00050	3.46735	0.01000	0.00055	-	0.03000	7.62389
Zinc	-	0.00167	0.00317	0.00150	0.24258	-	0.97000	-	0.36342	2.03400	0.00780	8.80000	-	0.00290	1828.50054	0.00458	0.00150	-	1.90000	1267.43960
Nitrate_N	-	-	-	-	-	-	-	4672.5	-	-	-	-	389.4	-	-	-	-	-	-	-
Nitrate	-	-	-	-	-	-	-	20684.2	-	-	-	-	1723.7	-	-	-	-	-	-	-
Nitrite	-	-	-	-	-	-	-	413.7	-	-	-	-	34.5	-	-	-	-	-	-	-
Ammonia	-	-	-	-	-	-	-	467.2	-	-	-	-	38.9	-	-	-	-	-	-	-

M:\1\01\00176\57\A\Report\4 - Water Management Report\Rev 0\Appendix B - Water Quality Model Inputs and Results\[Appendix B1.xlsx]Table 1_WQ_Source_Terms

NOTES:

1. SOURCE TERM VALUES WERE PROVIDED BY SRK (DATED 20 JUNE, 2018).

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	05JUL'18	ISSUED WITH REPORT VA101-176/57-4	KT	AS

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TABLE B1.2

THE PEBBLE PARTNERSHIP
PEBBLE PROJECT

WATER QUALITY SOURCE TERMS AND ASSUMPTIONS
SOURCE TERM ASSUMPTIONS

7/6/2018 9:08

Flow Path	Description	Assigned Water Quality	Ratios	Source
		Open Pit		
1 and 5	Direct Precipitation and Additional Snowblow	Wall Runoff (Pre-Tertiary-Non-Acidic) during winter months, In pit Stockpile (Non-Acidic) during summer months (1.75 Mft^2) and remaining area Pre-Tertiary-Non-Acidic	-	PLP- June 28, 2018
2	Undisturbed Surface Runoff	Non-Contact Surface Water (SFK SK100F)	100%	SRK - June 20, 2018
3	Diversion Channel Leakage	Non-Contact Surface Water (SFK SK100F)	100%	SRK - June 20, 2018
4	Groundwater	Groundwater (Pit area)	100%	SRK - June 20, 2018
		Open Pit Water Management Pond		
7	Direct Precipitation	Direct Precipitation	100%	SRK - June 20, 2018
9	Evaporation	None	100%	-
8	Undisturbed Surface Runoff	Non-Contact Surface Water (SFK SK100F)	100%	SRK - June 20, 2018
10	Dust Suppression	Concentration in the Open Pit Water Management Pond	100%	GoldSim Model Calculation
6	Dewatering from Open Pit	Concentration in the Open Pit	100%	GoldSim Model Calculation
		Water Treatment Plant #1 (WTP#1)		
12	Surplus to WTP#1	Concentration in the Open Water Management Pond	100%	GoldSim Model Calculation
55	Reject Flows	WTP#1 - Sludge and Reject Concentrations	100%	HDR - January 4,2018
		Mill Site		
14	Treated Water	Outflow Concentration from WTP	100%	HDR - January 4,2018
13	Water in Ore	Ore (Entrained Moisture)	100%	SRK - June 20, 2018
16	Water in Concentrate	Combined Concentrations after applying Tailings Pond Adjustment (Pond)	100%	SRK - June 20, 2018
15	Reclaim Water from Main WMP	Concentration in the Main Water Management Pond	100%	GoldSim Model Calculation
		Bulk Tailings Management Facility (Bulk TSF)		
30	Direct Precipitation on Supernatant Pond	Direct Precipitation	100%	SRK - June 20, 2018
35	Evaporation	None	100%	-
31	Undisturbed Surface Runoff	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
32	Diversion Channel Leakage	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
17	Bulk Tailings Slurry Water	Calculated Concentrations in the Mill after applying Tailings Pond Adjustment (Pond)	100%	GoldSim Model Calculation
36	Bulk Tailings Void Losses	Calculated Concentrations in the Mill after applying Tailings Pond Adjustment (Pond)	100%	GoldSim Model Calculation
34	Bulk Tailings Beach Runoff	Rougher Tailings (Runoff)	100%	SRK - June 20, 2018
33	Recycle from Seepage Collection Pond Recycle	Concentration in the Seepage Collection Pond	100%	GoldSim Model Calculation
		Bulk TSF South Embankment Seepage Collection Pond		
45	Undisturbed Runoff	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
46	Diversion Channel Leakage	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
5	Seepage	Concentration in the Bulk TSF	100%	GoldSim Model Calculation
47	Bulk TSF South Embankment Runoff	Quarried Rock Fill (Dams) (Non-Acidic)	100%	SRK - June 20, 2018
		Bulk TSF Main Embankment Seepage Collection Pond (Bulk TSF Main SCP)		
39	Direct Precipitation	Direct Precipitation	100%	SRK - June 20, 2018
2	Evaporation	None	100%	-
40	Undisturbed Surface Runoff	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
41	Diversion Channel Leakage	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
37	Seepage through main Embankment	Rougher Tailings Sand Wedge (Seepage)	100%	SRK - June 20, 2018
42	Bulk TSF Main Embankment Runoff	Quarried Rock Fill (Dams) (Non-Acidic)	100%	SRK - June 20, 2018
		Pyritic Tailings and PAG Waste Rock Management Facility (Pyritic TSF)		
22	Direct Precipitation	Direct Precipitation	100%	SRK - June 20, 2018
26	Evaporation	None	100%	
23	Undisturbed Surface Runoff	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
24	Diversion Channel Leakage	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
18	Pyritic Tailings Slurry Water	Calculated Concentrations after applying Tailings Pond Adjustment (Pond) to the Pyritic Slurry and WTP Sludge/Rejects	100%	GoldSim Model Calculation
	PAG Waste Rock	PAG WR 17% of Facility Area	100%	SRK - June 20, 2018
55+57	Reject Flows from WTP's	WTP's - Sludge and Reject Concentrations	100%	HDR - January 4,2018
27	Pyritic Tailings Void Losses	Calculated Concentrations in the Mill after applying Tailings Pond Adjustment (Pond) to the Pyritic Slurry and WTP Rejects	100%	GoldSim Model Calculation
28	PAG Waste Rock Voids	Calculated Concentrations in the Mill after applying Tailings Pond Adjustment (Pond) to the Pyritic Slurry and WTP Rejects	100%	GoldSim Model Calculation
		Main Water Management Pond (Main WMP)		
48	Direct Precipitation	Direct Precipitation	100%	SRK - June 20, 2018
53	Evaporation	None	100%	-
49	Undisturbed Surface Runoff	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
50	Diversion Channel Leakage	Non-Contact Surface Water (NFK (NK119A))	100%	SRK - June 20, 2018
38	Surplus from Bulk TSF	Concentration in Bulk TSF	100%	GoldSim Model Calculation
29	Surplus from Pyritic TSF	Concentration in Pyritic TSF	100%	GoldSim Model Calculation
44	Surplus Water from Bulk TSF Main SCP	Concentration in the Main Embankment Seepage Collection Pond	100%	GoldSim Model Calculation
21	Blow Down Water to Main WMP	Outflow Concentration from WTP#2	100%	HDR - January 4,2018
51	Mill Site Runoff	Quarried Rock Fill (Dams) (Non Acidic)	100%	SRK - June 20, 2018
52	Pyritic TSF Main Embankment Runoff	Quarried Rock Fill (Dams) (Non-Acidic)	100%	SRK - June 20, 2018
11	Surplus from OP WMP	Concentration in the Open Pit Water Management Pond	100%	GoldSim Model Calculation
		Power Plant		
20	Evaporation	None	100%	-
19	Cooling Tower Evaporation	Outflow Concentration from WTP#2	100%	HDR - January 4,2018
		Water Treatment Plant # 2 (WTP#2)		
54	Surplus Water from Main WMP	Concentration in the Main Water Management Pond	100%	GoldSim Model Calculation
55	Reject Flows	WTP#2 - Sludge and Reject Concentrations	100%	HDR - January 4,2018
		To Environment		
58 and 56	Treated Water to Environment	Outflow Concentration from WTP#1 and WTP#2	100%	HDR - January 4,2018
61	Diversion Channel to Environment	Non-Contact Surface Water (NFK (NK119A)/SFK (SK100F))	100%	SRK - June 20, 2018
59+60	Quarry Diversions to Environment	Quarried Rock Fill (Dams) (Non Acidic)	100%	SRK - June 20, 2018

M:\1\01\00176\57\A\Report\4 - Water Management Report\Rev 0\Appendix B - Water Quality Model Inputs and Results\[Appendix B1.xlsx]Table 2_WQ_Source_Term_Assump

NOTES:

1. FLOW PATH NUMBERING AND DESCRIPTION WERE BASED ON THE FIGURE A.1 AND TABLE A.1.
2. WATER QUALITY WAS BASED ON 95th PERCENTILE SOURCE TERMS PROVIDED BY SRK (2018).
3. MODEL ASSUMES RETURN OF SLUDGE, REJECT AND OUTFLOW CONCENTRATIONS WERE PROVIDED BY HDR (2018a).

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	05JUL'18	ISSUED WITH REPORT VA101-176/57-4	KT	AS

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TABLE B1.3

THE PEBBLE PARTNERSHIP
PEBBLE PROJECT

WATER QUALITY SOURCE TERMS AND ASSUMPTIONS
OUTFLOW CONCENTRATIONS FROM THE WATER TREATMENT PLANT

Parameters	Units	WTP Outflows
pH	-	7
TDS	mg/l	467
Alkalinity	mg/l	21
Acidity	mg/l	0
Chloride	mg/l	4.8
Fluoride	mg/l	0.4
Sulfate	mg/l	151
Aluminum	mg/l	0.0083
Antimony	mg/l	0.0034
Arsenic	mg/l	0.0042
Barium	mg/l	0.058
Berylium	mg/l	0.0012
Bismuth	mg/l	0.000007
Boron	mg/l	5.3
Cadmium	mg/l	0.000049
Calcium	mg/l	45.7
Chromium	mg/l	0.0002
Cobalt	mg/l	0.0038
Copper	mg/l	1.2E-13
Iron	mg/l	0.000045
Lead	mg/l	0.000024
Magnesium	mg/l	5
Manganese	mg/l	0.0016
Mercury	mg/l	0.0000061
Molybednum	mg/l	0.005
Nickel	mg/l	0.0001
Potassium	mg/l	29.4
Selenium	mg/l	0.005
Silver	mg/l	1.9E-10
Sodium	mg/l	183
Thallium	mg/l	0.0000045
Silicon	mg/l	22.1
Tin	mg/l	0.000015
Vanadium	mg/l	0.0048
Zinc	mg/l	0.00032
Nitrate_N	mg/l	7.3
Nitrate	mg/l	1
Nitrite	mg/l	0.01
Ammonia	mg/l	1.1

M:\1\01\00176\57\A\Report\4 - Water Management Report\Rev 0\Appendix B - Water Quality Model Inputs and Results\[Appendix B1.xlsx]Table 3_WTP_Effluent

NOTES:

1. SOURCE HDR 2017.
2. VALUES BASED ON 95TH PERCENTILE SOURCE TERMS AND 50TH PERCENTILE FLOWS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	05'JULY 18	ISSUED WITH REPORT VA101-00176/57-	KT	AS

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APPENDIX B2

Water Quality Model Results

(Page B2-1)

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TABLE B2.1

THE PEBBLE PARTNERSHIP
PEBBLE PROJECT

WATER QUALITY RESULTS FOR OPERATIONS - END OF MINE LIFE
BASE CASE - 50TH PERCENTILE

Print: Jul/06/18 09:14:09

Parameters	Units	WTP#1 Inflows	WTP#2 Inflows	Open Pit Water Management Pond	Bulk TSF	Main Embankment Seepage Collection Pond	Pyritic TSF	Main Water Management Pond
		Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly
pH	-	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8
TDS	mg/l	267	1,677	267	2,493	3,940	2,933	1,677
Alkalinity	mg/l	56	252	56	395	746	234	252
Acidity	mg/l	7.42	2.53	7.42	2.49	7.11	6.09	2.53
Chloride	mg/l	1.98	9.56	1.98	19.79	8.86	12.02	9.56
Fluoride	mg/l	0.21	0.35	0.21	0.49	0.86	0.65	0.35
Sulfate	mg/l	109	973	109	1,415	2,250	1,873	973
Aluminum	mg/l	0.0947	0.2514	0.0947	0.0006	2.4350	0.0006	0.2514
Antimony	mg/l	0.007	0.036	0.007	0.026	0.193	0.061	0.036
Arsenic	mg/l	0.020	0.047	0.020	0.035	0.252	0.073	0.047
Barium	mg/l	0.070	0.058	0.070	0.080	0.145	0.127	0.058
Berylium	mg/l	0.0002	0.0197	0.0002	0.0455	0.0048	0.0250	0.0197
Bismuth	mg/l	0.006	0.019	0.006	0.012	0.096	0.036	0.019
Boron	mg/l	0.05	0.18	0.05	0.26	0.50	0.25	0.18
Cadmium	mg/l	0.0073	0.0099	0.0073	0.0186	0.0097	0.0206	0.0099
Calcium	mg/l	45	228	45	275	737	399	228
Chromium	mg/l	0.001	0.005	0.001	0.005	0.019	0.006	0.005
Cobalt	mg/l	0.034	0.029	0.034	0.044	0.048	0.074	0.029
Copper	mg/l	0.042	0.042	0.042	0.010	0.362	0.010	0.042
Iron	mg/l	0.646	0.212	0.646	0.002	1.707	0.002	0.212
Lead	mg/l	0.002	0.018	0.002	0.028	0.048	0.022	0.018
Magnesium	mg/l	8	69	8	131	94.7	95	69
Manganese	mg/l	1.08	1.30	1.08	2.00	2.80	2.00	1.30
Mercury	mg/l	0.00019	0.00015	0.00019	0.00015	0.00048	0.00041	0.00015
Molybednum	mg/l	0.3	2.1	0.3	1.8	11.6	2.1	2.1
Nickel	mg/l	0.015	0.061	0.015	0.127	0.048	0.090	0.061
Potassium	mg/l	16	45	16	79	17	125	45
Selenium	mg/l	0.008	0.022	0.008	0.033	0.053	0.032	0.022
Silver	mg/l	0.000	0.002	0.000	0.001	0.010	0.002	0.002
Sodium	mg/l	26	92	26	170	65	176	92
Thallium	mg/l	0.00036	0.00047	0.00036	0.00092	0.00048	0.00076	0.00047
Silicon	mg/l	5	9	5	8	21	18	9
Tin	mg/l	0.001	0.037	0.001	0.031	0.192	0.042	0.037
Vanadium	mg/l	0.001	0.009	0.001	0.005	0.029	0.032	0.009
Zinc	mg/l	0.41	1.30	0.41	2.49	1.86	1.97	1.30
Nitrate_N	mg/l	2.2	2.4	2.2	2.7	4.9	2.5	2.4
Nitrate (ion)	mg/l	10	9	10	9	22	8	9
Nitrite	mg/l	0.19	0.19	0.19	0.18	0.43	0.15	0.19
Ammonia	mg/l	0.2	0.4	0.2	0.4	0.5	1.3	0.4
Hardness as $CaCO_3$	mg/l	146	852	146	1,226	2,230	1,388	852
Flows	cfs	14	29	14	100	18	0	29

M:\1\01\00176\57\A\Report\4 - Water Management Report\Rev 0\Appendix B - Water Quality Model Inputs and Results\[Appendix B2.xlsx]Table1_Preliminary_WQ

NOTES:

1. MODEL INPUT CONCENTRATIONS PROVIDED BY SRK CONSULTING (DATED 20 JUNE. 2018).
2. TAILINGS POND ADJUSTMENT VALUES WERE APPLIED FOR Al, SO4, Fe, Cu and Mn IN THE BULK TSF AND PYRITIC TSF.
3. TDS VALUES WERE CALCULATED BY SUMMING ALKALINITY, Cl, F, SO_4, Ca, Mg, K, Na AND Si.
4. MODEL ASSUMES RETURN OF SLUDGE AND REJECT FLOWS FROM WTP#1 AND WTP#2 TO THE PYRITIC TSF VIA THE PYRITIC TAILINGS LINE.
5. WTP EFFLUENT, SLUDGE AND REJECT CONCENTRATIONS WERE PROVIDED BY HDR (DATED 4 JANUARY. 2018).
6. HARDNESS VALUES WERE CALCULATED BASED ON THE EQUATION
   HARDNESS ($CaCO_3$) = CALCIUM CONCENTRATION (mg/L)*2.497+MAGNESSIUM CONCENTRATION (mg/L)*4.118
7. THE PERCENTILE RESULTS BASED ON 76 REALIZATIONS OF MODEL SIMULATIONS.
8. MODEL ASSUMES THE LOADING FROM THE PAG WASTE ROCK IN THE PYRITIC TSF AS A FLUSHING TERM PROVIDED BY SRK CONSULTING (DATED 20 JUNE. 2018).
9. MODEL ASSUMES ADDITIONAL LOADING FROM INPIT STOCKIPLE IN THE OPEN PIT DURING THE SUMMER MONTHS.
10. pH WAS NOT MODELLED AND pH VALUES ARE BASED ON THE RANGE OF pH SOURCE TERMS PROVIDED BY SRK (DATED 20 JUNE. 2018).

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	05JUL'18	ISSUED WITH REPORT VA101-176/57-4	KT	AS

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/20/2018 9:17:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]

Subject: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Tentative

Hello All,
Per my previous email, Patty and I would like to meet with you all to discuss the preliminary alternatives document shared by the Corps.

Join by Phone

Conference Line/Code / Ex. 6

Thank you,
Molly

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/2/2018 5:01:04 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Final scoping letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf; ATT77667; ATT06782; ATT86037; ATT64058

All-
See message from David below and the final EIS scoping letter sent to the Corps.
Thanks for all your work on this.
Patty

From: Allnutt, David
Sent: Friday, June 29, 2018 3:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

Cc's – thanks for your support on this.

Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.

Pebble.062918.S...
Letter FINAL.pdf

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/26/2018 6:45:51 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Tuesday, July 24, 2018 11:25 AM
To: Craig, Bill; bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Subject: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

All,
Please plan on an informational 2 hour meeting August 22, 2018 so that we may present the Chapter 2 Alternatives currently being identified. The draft scoping report should be available by 8/17 or earlier, so it won't be enough time for your agency to process the information and inform alternatives identified in the scoping process. Plan on having a follow up in middle September after screening criteria for the alternatives have been used and the alternatives to be carried forward for analysis are identified.

VR
Shane McCoy

-----Original Appointment-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Tuesday, July 24, 2018 10:12 AM
To: Craig, Bill; POA Special Projects; Bella, Elizabeth; Isaacs, Jon
Subject: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

-- Do not delete or change any of the following text. --

Join Webex meeting

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

Join from a video system or application

Conference Line/Code / Ex. 6

Join by phone

Conference Line/Code / Ex. 6

Global call-in numbers | Toll-free calling restrictions

Can't join the meeting?

If you are a host, go here to view host information.

IMPORTANT NOTICE: Please note that this WebEx service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 7/24/2018 11:05:14 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
CC: Brown, DonaldM [Brown.DonaldM@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: Comment spreadsheet_CE.docx

Hi Molly,
Attached are my comments on Chapter 4.18.
Let me know if you have questions or need further clarification.
Thanks,
Chris

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal Web Address / Ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM

AMERICAN OVERSIGHT

To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]
Sent: 7/18/2018 9:07:01 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Possible schedule conflict

Ellen did not propose any dates, she asked that I email her when I am available. She said she would start planning the trip on her return.

Katie McCafferty
Project Manager
Direct: 907-753-2692

U.S. Army Corps of Engineers-Alaska District
Regulatory Division
P.O. Box 6898
JBER, AK 99506
main office line: 907-753-2712

-----Original Message-----
From: Douglas, Mark [mailto:douglas.mark@epa.gov]
Sent: Wednesday, July 18, 2018 1:03 PM
To: McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: [Non-DoD Source] Possible schedule conflict

Katie,

In an effort to get my calendar in order I reached out to Ellen and found out she returns August 1. I have it in my notes that she seemed to think the week of August 20-24 may work for a joint NS trip. Is that the same week you are anticipating? It also appears a Pebble meeting has been set up for Wednesday August 22nd.

Thanks,

Mark Douglas

Aquatic Resources Unit

Office of Environmental Review & Assessment

U.S. Environmental Protection Agency

Alaska Operations Office

222 W. 7th Avenue, Box 19

Anchorage, AK 99513-7588

Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 11/21/2018 8:36:47 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Sweet!

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Wednesday, November 21, 2018 11:34 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hello All,
We just received word from the Corps that they are extending the deadline for cooperating agency comments on these sections. For all of the sections below, I would now appreciate if you can complete your review and send me any comments you have by COB Monday Dec. 10.
Thank you and Happy Thanksgiving!
--Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

AMERICAN OVERSIGHT

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/21/2018 8:57:05 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: current draft of Pebble scoping letter

Thanks!

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Monday, May 21, 2018 12:57 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: current draft of Pebble scoping letter

Hi Mark – I am still unable to access sharepoint… but in the meantime, here is the current draft of the letter, FYI.
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 10/4/2018 5:29:53 PM
To: Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: FW: EPA Comments on Pebble Preliminary Draft Alternatives Appendix B
Attachments: Pebble Pre-Draft Alternatives EPA Comments 100318.docx

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Thursday, October 04, 2018 9:29 AM
To: Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: EPA Comments on Pebble Preliminary Draft Alternatives Appendix B

Hi All – Thank you for your review of the preliminary Alternatives screening table, and for all of the excellent comments. The attached consolidation of the comments was transmitted to the Corps yesterday. If you have any questions about the way the comments were consolidated, please don't hesitate to ask.
Thanks,
Molly

From: Vaughan, Molly
Sent: Wednesday, October 03, 2018 1:49 PM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: EPA Comments on Pebble Preliminary Draft Alternatives Appendix B

Hello Shane,
Thank you for the opportunity to review the draft Appendix B: Alternatives Development Process. Our comments are attached. Please let me know if you have any questions regarding EPA's recommendations.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19

AMERICAN OVERSIGHT
~~~~~~

Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 7/18/2018 9:03:01 PM
To: 'Katherine.A.McCafferty2@usace.army.mil' [Katherine.A.McCafferty2@usace.army.mil]
Subject: Possible schedule conflict

Katie,

In an effort to get my calendar in order I reached out to Ellen and found out she returns August 1. I have it in my notes that she seemed to think the week of August 20-24 may work for a joint NS trip. Is that the same week you are anticipating? It also appears a Pebble meeting has been set up for Wednesday August 22nd.

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 5/25/2018 12:44:58 PM
To: peterrobertson@peblepartnership.com

Subject: Canceled: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Free

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

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Appointment

From: Shaffer, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47CE854437AF49DAB8AB700A46837FD5-PSHAFFER]
Sent: 6/13/2018 3:26:49 PM
To: Schwab, Justin [Schwab.Justin@epa.gov]

Subject: Pebble Mine Scoping Letter Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-[illegible]-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

Update includes dial-in number

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Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/27/2018 10:59:41 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]
Subject: Re: Pebble Scoping Document

Excellent. Thank you!

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

> On Jun 27, 2018, at 3:50 PM, Neugeboren, Steven <Neugeboren.Steven@epa.gov> wrote:
>
> Allyn - emails crossed. Just sent you their comments.
>
> Sent from my iPhone
>
> Steven Neugeboren
> Associate General Counsel for Water
> U.S. EPA
> 202-564-5488
>
>> On Jun 27, 2018, at 6:48 PM, Stern, Allyn <Stern.Allyn@epa.gov> wrote:
>>
>> Hi David and Justin -
>>
>> Our regional program has vetted the scoping letter with OW and OP. Brittany Bolen has been briefed and I understand there are a few final tweaks to the climate section and then it is ready to go. The 90 day comment period ends on Friday so our program is anxious to get timely comments to the Corps.
>>
>> I'm checking in with you to see if you are ok with the letter or have additional comments. I know you are probably extraordinarily busy but since we're up against the deadline, can you let me know the status as soon as you can?
>>
>> Thanks so much –
>>
>> Allyn Stern
>> Regional Counsel
>> US EPA Region 10
>> 206-553-1223
>> stern.allyn@epa.gov

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Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 11/27/2018 7:55:46 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx; EPA Comments Pebble Pre-Draft EIS Sections 3.1_3.5_4.1_4.5 110918.docx

I have attached the only two sets the Region sent so far.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, November 27, 2018 10:13 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS

Thanks, Heidi. Could you please ask the Region for the three most-recent sets of comments provided to the Corps so I can get a sense of what is being sent?

David Fotouhi

Principal Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Tuesday, November 27, 2018 9:55 AM
To: Fotouhi, David <fotouhi.david@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Follow-up from reg review re: Pebble preliminary draft EIS

Hi David,

We wanted to follow-up on your questions from reg review last week regarding comments Region 10 is providing to the Corps on the preliminary draft EIS chapters. I talked with Carrie, Allison (CCILO) and ORC (Ashley and Cara). The

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please let us know if you need any further information.

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Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 9/12/2018 2:47:04 PM
To: Schwab, Justin [Schwab.Justin@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: RE: USACE pebble scoping released last week
Attachments: Scoping-Report_20180831-1.pdf

Hi Justin -

The report is attached. Let us know if you need anything else.

Best,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Schwab, Justin
Sent: Tuesday, September 11, 2018 8:43 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: USACE pebble scoping released last week

OK, thanks. Please send me the report if you have it handy.

-----Original Message-----
From: Nalven, Heidi
Sent: Tuesday, September 11, 2018 2:01 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: USACE pebble scoping released last week

Hi Justin,

Sorry for the delayed response. I don't think there's much to discuss at this point. The Corps' scoping report summarizes the comments it received during the public comment period. I checked in the Region and I don't think there's an immediate to do at this point but we will let you know if anything changes.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

-----Original Message-----
From: Schwab, Justin
Sent: Tuesday, September 04, 2018 6:01 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: USACE pebble scoping released last week

Anything we should discuss at this stage?

Sent from my iPhone

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US Army Corps of Engineers

Pebble Project EIS

Scoping Report



August 31, 2018

www.PebbleProjectEIS.com

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LIST OF ACRONYMS AND ABBREVIATIONS

BSEE	Bureau of Safety and Environmental Enforcement
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
GHG	greenhouse gas
LIDAR	Light Detection and Ranging
NEPA	National Environmental Policy Act
PLP	Pebble Limited Partnership
TSF	Tailings Storage Facility
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers

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EPA-0135-0000577

1.0 INTRODUCTION

This Scoping Report has been developed for the U.S. Army Corps of Engineers (USACE) to share the types of issues that were received during the scoping period from the general public and the cooperating agencies. It documents outreach efforts during the scoping period and summarizes the primary issues of concern and suggested alternatives from the public. The Scoping Report will be used to develop alternatives for the Environmental Impact Statement (EIS) and identifies issues that are important to the public and should be considered in the analysis of the EIS.

2.0 PROJECT OVERVIEW AND SCOPING PROCESS

2.1 BACKGROUND

The USACE, Alaska District, intends to prepare a Draft EIS to assess the potential social, economic, and environmental impacts associated with the proposed Pebble Project. The EIS will assess potential effects of a range of alternatives.

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The proposed project would require a natural gas-fired power plant supplied by a natural gas pipeline to the Mine Site, and transportation infrastructure including a road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an ice-breaking ferry crossing to a terminal on the south shore of Iliamna Lake, and a road to the proposed Amakdedori Port on Cook Inlet.

2.2 NOTICE OF INTENT

An application for a Department of the Army permit was submitted by PLP pursuant to Section 404 of the Clean Water Act (33 United States Code [U.S.C.] 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017. The application was deemed complete, and was advertised in a Public Notice, Pacific Operations Area (POA) POA–2017–271, on January 5, 2018. On March 29, 2018, the USACE issued a Notice of Intent in the Federal Register to prepare an EIS for the proposed project. The Notice of Intent is included in Appendix A, and the Public Notice is included in Appendix B.

2.3 SCOPING PROCESS

2.3.1 Scoping Process Overview

The scoping period began on April 1, 2018. On March 30, 2018, the USACE issued a press release to announce the opening of the 30-day comment period and to provide information for how to submit comments. On April 6, 2018, their second press release extended the scoping period by 60 days to continue through June 29, 2018. See Appendix B for both press releases.

Scoping is conducted to assist in determining the breadth of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. The Council on Environmental Quality defines scoping as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 Code of Federal Regulation 1501.7). The scoping process provides an opportunity for people potentially

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affected by the project to express their views and concerns and to contribute to the completeness of the EIS.

2.3.2 Public Notice, Press Releases, and Other Media

Prior to the scoping period start, the USACE began organizing public meetings and developing materials related to scoping that were provided to the public.

The project website (www.PebbleProjectEIS.com) went live on March 19, 2018. The website includes information about the project, EIS process, and scoping. The USACE uses the website to disseminate important information to the public, such as the scoping meeting schedule. The website also included a form for the public to submit scoping comments; this online comment form included a map where commenters could mark a point that related to their comment. Comments that have been submitted are available for the public to view. Some individual comments to the website contain multiple documents. Screenshots of the website (dated May 7, 2018) are in Appendix B.

On March 20, 2018, the USACE mailed hardcopies of a Scoping Package to 35 identified Alaska Native Tribal Organizations in the project area. The complete Scoping Package (in Appendix B) was also made available on the project website and includes:

- Information about the scoping process
- A description of the project
- The process for developing alternatives
- A list of resources to be analyzed in the EIS
- Information on the National Environmental Policy Act (NEPA)
- Roles of the various participating organizations
- An EIS schedule and outline
- Information on submitting comments
- A comment form.

To help advertise the scoping period, the USACE began mailing the project's Newsletter #1 on March 29, 2018. The newsletter provided details on the public meeting schedule as well as information on how to submit comments; it was sent to every post office box in 33 communities, and to 140 other organizations and individuals on a mailing list. A total of 3,670 newsletters were mailed. The USACE also ran announcements in the Bristol Bay Times, the Homer News, and the Anchorage Daily News a week prior to relevant meetings. Finally, a flyer was emailed to communities where scoping meetings were scheduled for distribution on April 6, 2018. Newsletter #1, newspaper affidavits, and the flyer can be found in Appendix B.

2.4 PUBLIC SCOPING MEETINGS

Public scoping meetings were held in nine communities, including Anchorage. A total of 914 participants signed in at the public meetings (see Appendix C for sign-in sheets). The primary purpose of the public meetings was to present a project overview, give the public a forum for submitting verbal and electronic comments, and provide an opportunity to talk to the USACE about the EIS and the Department of the Army permit application process. Table 1 shows the meeting locations and the number of people who signed in.

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Table 1: Scoping Meetings

Date	Community	Location and Time	Number Signed In
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM	45
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM	68
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM	223
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM	47
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM	65
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM	46
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM	88
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM	47
April 19, 2018	Anchorage	Dena'ina Center, 11:00 AM-9:00 PM	285

2.4.1 Meeting Description

The format of the public meetings varied depending on the location. A sign-in station with hardcopies of supporting material was set up at all locations. The sign-in sheet was used to update the project mailing list.

In general, a brief introduction by the USACE was given. A 17-minute video describing the project was shown (or was available to be watched), and the public were given multiple ways to comment. Time was allotted for members of the public and media to speak directly with USACE staff, State of Alaska staff, or in some locations, other cooperating agency staff. AECOM (the third party NEPA contractor) staff were also present.

In Naknek, Kokhanok, Newhalen, New Stuyahok, Nondalton, and Igiugig, the USACE provided a microphone ("hot mic") where participants could speak their comments out loud in front of other meeting attendees. Comments were transcribed by a court reporter, either during the hot mic session or individually after the session. In Homer, Dillingham, and Anchorage, two court reporters were available to take comments one-on-one; therefore, no hot mic was provided.

At all meetings, laptop computers were provided for the public to submit comments electronically to the project website. Paper comment forms were available for handwritten or typed comments, which could be submitted to the USACE at a meeting or mailed later.

2.4.2 Meeting Materials Description

The USACE requested that the PLP create a video describing their proposed project and mining process. The resulting 17-minute video gives an introduction to the surrounding environment, project components and footprint, water management and mining process, and reclamation. At some meetings this video was shown after the USACE introduction, and at others it was shown on a repeating loop.

Ten posters prepared by the PLP to describe the project, the mining process, and reclamation were also displayed. The USACE created additional posters describing the NEPA process and how to write effective comments. The Anchorage meeting also included posters on the scoping process, the EIS outline, resources to be discussed in the EIS, and roles of cooperating agencies.

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The USACE also provided the Scoping Package, paper comment forms, and a handout from the Bureau of Safety and Environmental Enforcement (BSEE), a cooperating agency. A screenshot of the video, as well as all posters and handouts, are in Appendix D.

2.4.3 Additional Agency Involvement

A kickoff meeting for cooperating agencies was held on June 6, 2018, where the roles of cooperating agencies for this EIS were discussed. Cooperating agencies will have opportunity to provide input throughout the process, including alternatives development, providing technical expertise for analysis, and suggesting mitigation. In addition, the State of Alaska, BSEE, and the Pipeline and Hazardous Materials Safety Administration attended some scoping meetings to answer questions about their role and expertise.

2.4.4 Government-to-Government Consultation

Federal agencies are charged with engaging in regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications pursuant to Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments (November 6, 2000). The USACE Tribal Consultation Policy (2013) states that "Commands will ensure that all Tribes with an interest in a particular activity that has the potential to significantly affect protected tribal resources, tribal rights (including treaty rights) and Indian lands are contacted and their comments taken into consideration". As the lead federal agency for the development of the EIS, USACE is responsible for government-to-government consultation and coordination with federally recognized tribes that may be impacted by the proposed project.

The government-to-government consultation process for the Pebble Project EIS is designed to provide federally recognized tribes in Alaska that may potentially be impacted by the proposed project with opportunities for meaningful participation in the federal permitting process. Tribes and other Alaska Native stakeholders will have several opportunities throughout the environmental review process to participate and provide input. USACE has developed a list of 35 federally recognized tribes that could be potentially impacted by the proposed project. USACE notified and invited these tribes into government-to-government consultation early in the process. The consultation process was coordinated with the NEPA scoping effort to the extent possible. Information learned through tribal consultation will inform the EIS, as appropriate.

An initial letter was sent to the tribes on the list, including basic project information, how tribes may participate in the development of the EIS and an invitation to formal government-to-government consultation. It is expected that not all tribes will request formal consultation, but USACE will continue to offer opportunities to tribes to participate throughout the project review. Informal consultation will consist of the two-way sharing of information through mailings, teleconferences, and regional meetings with tribes during the NEPA process that are held separate from the public meetings.

2.4.5 Next Steps in the NEPA Process

Scoping is the first opportunity for public involvement under the NEPA process. An additional opportunity for public comment will follow the release of the Draft EIS scheduled for early 2019. A Notice of Availability will be published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment. The Draft EIS comment period will include public meetings in the same communities where scoping meetings were held. The project website will be updated throughout the EIS process.

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Public comments shape the NEPA process by identifying project-related questions and issues of concern. Typically questions are in reference to the project, existing environment, extent of temporal and spatial impacts, or potential consequences to the human environment from the proposed action. Substantive questions and issues of concern, which can inform the scope of analysis and alternatives to be considered in the EIS, are grouped by subject matter in this Scoping Report. This information is used in the alternatives development process, the study of the affected environment, and in the process to analyze environmental consequences (or impacts). Documents that are received from the public during the scoping process via the project website, mail, and email are referred to as submissions during analysis. Each submission can contain many coded comments which are then used to inform the scope of the analysis. Submissions without substantive comments that are not specific to a particular issue are considered non-substantive. These comments did not inform our analytical framework during the scoping period, and include comments in support of or in opposition to the applicant's proposed project without providing rationale.

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3.0 SCOPING COMMENT SUMMARY

This section contains a description of the scoping comment analysis process and a summary of the public scoping comments received. Due to the large number of comments submitted as part of scoping for an EIS, it can be challenging for the EIS preparation team, as well as the general public, to read all the comments and understand all of the issues raised. Standard practice has been to code and enter comments into a database program that captures and summarizes issues and recommendations from scoping comments. However, the EIS team and the general public will continue to have access to comments submitted on the website for reference purposes.

The public comment summary includes the following:

- Description of the scoping comment analysis process (description of the comment database, development of the coding structure, identification and coding of comments, comment summary process).
- A summary of issues identified, categorized by physical environment, biological environment, social environment, or NEPA process.

3.1 SCOPING CONTENT ANALYSIS PROCESS

Public and agency comments submitted by the close of the scoping period were analyzed and categorized using a process called "content analysis." The analysis process included:

1. Import and organization of all comments/submission content into a comment database.
2. Development of a coding structure to analyze the comments.
3. Review of submissions to assign codes to comments.
4. Preparation of a Scoping Report with analysis results.

The goals of the content analysis process are to:

1. Ensure that every submission (every received set of comments, submitted by any means, is defined as a "submission") is considered.
2. Identify the concerns raised by commenters.
3. Represent the breadth and depth of the public's viewpoints and concerns as fairly as possible.
4. Present those concerns in a way that facilitates consideration of comments and conveys the issues raised during scoping.

All comments were treated equally. Emphasis was on the content of a comment, rather than who wrote it or the number of submissions in agreement.

3.1.1 Scoping Comment Database

Names, contact information, and comment text for commenters who submitted comments were entered into an electronic database. Many comments were submitted to the USACE in electronic format through the project website comment form. A large volume of comments were received by the USACE via email and/or postal service. As comments were received, they were made available for the public to view on the project website. Hardcopy comments, including those delivered by postal service or submitted in person at public meetings, were scanned and entered into the database, and also posted to the project website.

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The content of the comments was filtered using various database queries and identifying potential form letters (see form letter discussion below). Any submission identified as having the same commenter information and content, regardless of delivery format (e.g., hardcopy letter, email) or date, was counted as one submission.

3.1.2 Form Letters

Form letters are defined as multiple submissions with the same content. Electronic comments were pre-screened in the database, using various queries to identify similar content and thus potential form letters. If consistent content was identified, a form letter record with that content was created in the database and additional submissions with the same content were placed into that form letter category.

3.1.3 Coding Structure Development

Submission content was sorted into categories to represent commenters' concerns and rationale through a coding structure. Codes provide an efficient and accurate grouping of similar comments; coded concerns are referred to as "comments" in this report.

The aim of the coding structure is to identify applicable Pebble Project facilities and components, environmental resources, and planning processes in submissions. An initial coding structure was developed based on expected issues and concerns; this structure was continuously refined as more submissions were received to identify any additional concerns.

3.1.4 Comment Identification and Coding

Submissions were reviewed to identify substantive comments that will be used to formulate the issues and analysis conducted in the EIS process. Individual statements within a submission were identified as a comment(s) and then assigned to categories/topics.

Submissions may contain more than one comment, each coded based on the issue and the specific rationale. This form of analysis allows for specific comments to be captured and then grouped under the umbrella of a general resource issue. The NEPA process considers the substance of issues but does not consider who wrote the comment or the number of similar comments (like votes).

3.2 PUBLIC COMMENT SUBMISSION SUMMARY

3.2.1 Submissions Received

In total, 174,889 submissions were received through June 29, 2018. A total of 3,653 of these submissions were considered non-form letters. There were several variations of form letters that were received, with a total of 171,236 form letters. The USACE received five petitions with a total of 295,721 signatures that were considered as non-form letter submissions. The validity of these petition signatures has not been verified. Submissions with substantive comments were analyzed for key issues. The top five substantive key issue fields for non-form letters and form letters are shown in Figure 1 and Figure 2.

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Figure 1. Top Five Key Issue Fields (Non-Form Letters)

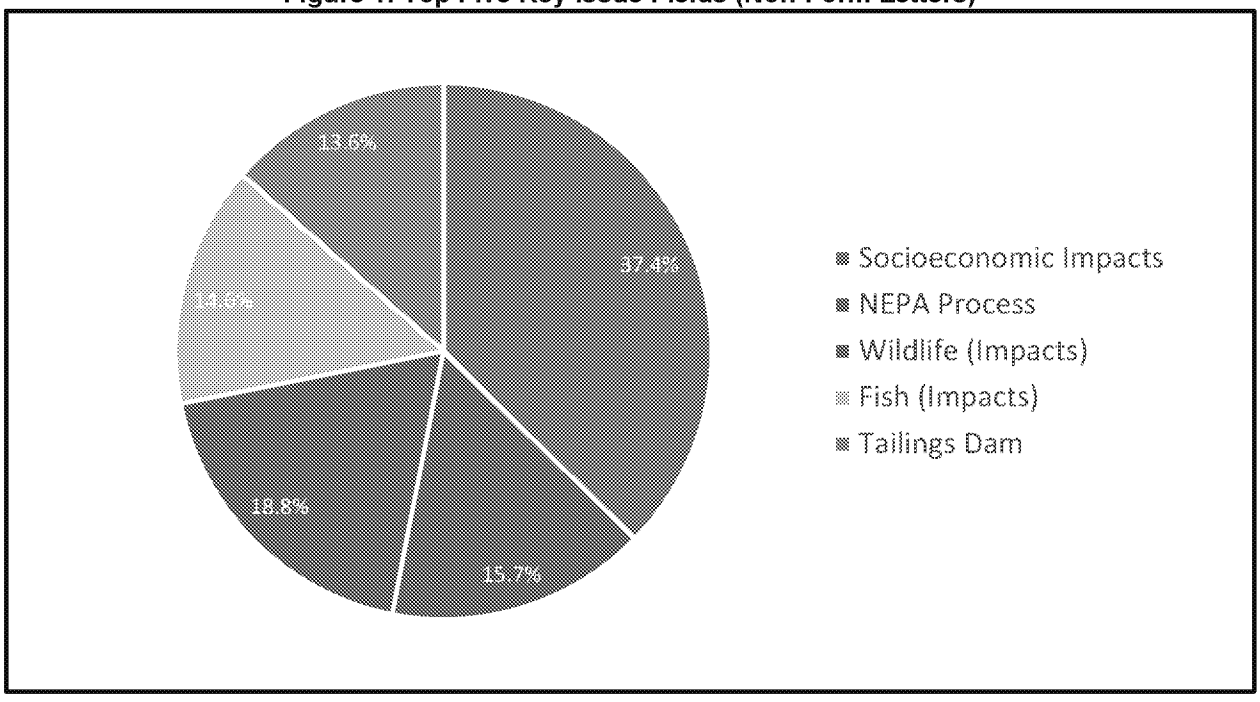
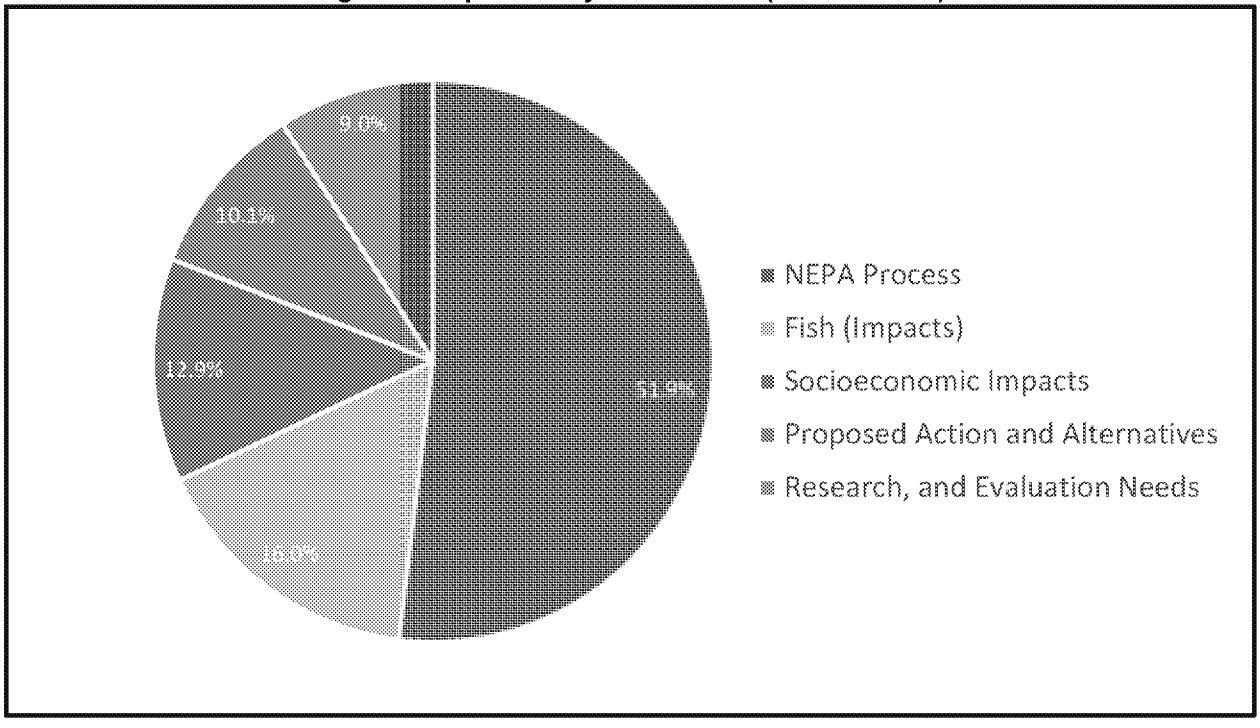


Figure 2. Top Five Key Issue Fields (Form Letters)



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A total of 5,616 substantive comments were received from non-form letter submissions, and 334,351 substantive comments were received from form letters.

3.3 COMMENT SUMMARY PROCESS

The intent of this Scoping Report is to provide representative summaries that capture, with a minimum of repetition, major topic areas or concerns expressed during the public scoping period. The topic areas or concerns contained in the summary of public comment will be used to develop the issues, alternatives, and mitigation strategies that will be analyzed in the EIS process. It will also inform the public of issues that were raised from their scoping comments.

In writing this summary, comment analysts reviewed coded comments to understand the overall content of the comment and to identify topic areas or concerns in similar comments from different respondents. Similar comments were summarized into concise narrative statements and organized by the key issues.

Comments are organized in two broad categories below:

- **Resource Topics**. This section provides issues identified in scoping comments organized by resource topic. Resource-specific comments are grouped, such as comments concerning fish and wildlife habitat loss, loss of recreational access, or dust and emissions along the access roads and at the Mine Site. These topics are divided by the physical environment, the biological environment, and the social environment.
- **NEPA Process and Regulatory Compliance**. This section provides a summary of public comments on the NEPA process and alternatives to the proposed project. Topics include the public involvement process, project purpose and need, other laws and regulations, tribal consultation, cooperating agencies, and the no action alternative. Public comment suggestions for proposed action alternatives and mitigation measures are also included.

3.4 SUMMARY OF PUBLIC COMMENT –RESOURCE TOPICS

3.4.1 General Resources

A variety of general comments were received indicating that the EIS should analyze the direct, indirect, and cumulative impacts on general resources or the environment in the project area.

3.4.2 Physical Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific physical resources, including:

- Air quality
- Climate change
- Geology and seismic activity
- Surface and groundwater hydrology impacts
- Noise impacts
- Spill risks and release
- Hazardous materials stored and transported to and from the mine site
- Natural gas supply and pipeline safety
- Tailings dam

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- Water resources – quality and quantity.

3.4.2.1 Air Quality

Comments were received on impacts to air quality as a result of project construction and mining operations.

- Comments were received regarding impacts to air quality from construction, fugitive dust emissions, vehicle equipment emissions, and mining activities.
- Concerns were made regarding fugitive dust pollution from the mine and roads, and what chemicals may be used to control dust.
- Impacts to air quality including impacts from transporting ore and materials, or loading and shipping ore and concentrate.
- Impacts from air pollutants emitted during mine operations and contribution to greenhouse gas (GHG) emissions from the power plant.
- Address both air quality and air quality related values (e.g., visibility) in the analysis of potential project impacts.
- Characterize existing conditions to set the context for evaluating project impacts, including regional climate and meteorology, air quality and air quality related values, and identification of sensitive receptors in the vicinity.
- Provide an emissions inventory of criteria pollutants, greenhouse gas emissions, and significant hazardous air pollutant (HAP) emissions for all project components and phases.
- Disclose the air quality regulations and permit requirements that apply to the project.

3.4.2.2 Climate Change

Comments were received about the impacts of climate change to the environment and how climate change trends may interact with effects of the proposed project.

- Look at the carbon and GHG additions to the atmosphere from the proposed project.
- Provide a comprehensive emissions inventory of criteria pollutants, GHG emissions, and significant hazardous air pollutant emissions for all project components and phases.
- Create a report and use comparisons to make the units of measure understandable to the public.

3.4.2.3 Geology and Seismic Activity

Comments were received regarding impacts to the geology of the project area, including concerns that major faults occur in the proposed project area and may affect project facilities.

- Include detailed information about seismically active areas, geological faults and tectonic activity, and corresponding design features.
- Analyze impacts to bedrock, surface geology, gravel resources, paleontological resources, and landforms from all proposed project components.
- Describe how the proposed project facilities would withstand earthquakes, particularly the tailings storage facility (TSF).
- Analyze impacts from volcanic activity, especially at Amakdedori Port and along the pipeline from the Augustine Island volcano.

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3.4.2.4 Surface and Groundwater Hydrology

Comments were received on impacts to groundwater systems and aquifers, transportation of groundwater, and how it moves underground. A thorough understanding of the groundwater and surface water hydrology and how they relate to each other should be demonstrated.

- Characterize existing groundwater, surface water, springs, and wetland resources within the area of both the project and alternatives, including groundwater levels, flow direction and gradients.
- Evaluate changes in water volume in the stream areas impacted, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. Include seasonal changes to the different stream segments.
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points. Areas of stream incision as a result of flow changes should be identified, as well as losses of connectivity to floodplains and riparian wetlands currently.
- Address earthquake impacts on hydrology characteristics.
- Explain the water balance model of the project. A complete water management plan based on recent data should be provided before impacts can be assessed.
- Develop of conceptual site models to aid in understanding and predictions of changes to water quantity and quality. Include maps, baseline data, underground sources of drinking water, and a detailed water balance model.

3.4.2.5 Noise

Comments were received on impacts of noise pollution as a result of project construction and mining operations.

- Discuss noise impacts of blasting in the project area, and describe the blasting methods that would be used.
- Consider noise in the water created by the proposed icebreaker ferry and the impacts to fish, bears, and other wildlife.

3.4.2.6 Spill Risks and Releases

Comments were received about the potential for fuel and oil spills or accidental releases from various aspects of the project, including adequate response capacity to clean up spills in various conditions, and potential impacts to natural resources or environment from spills or release.

- Analyze impacts of spills of diesel and natural gas to every resource discussed in the EIS.
- An earthquake could rupture the gas pipeline under the lake when salmon are migrating and impact fish and wildlife.
- Explain who is responsible for spill response on Cook Inlet and Iliamna Lake. Response plans should be developed for all parts of the project.
- The wetlands that surround the mine site would make it difficult to contain contaminated waters if any of the storage or processing sites at the mine or along the transportation corridor were to leak or fail. Therefore, it is essential to ensure that this infrastructure has no possibility of failure during the life of the mine or for decades to centuries after the mine is closed down.

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- There is concern about the number of times the ore slurry/concentrate, fuel, and other supplies must be transferred. Each transfer increases the risk of a spill or release.

3.4.2.7 Hazardous Materials

Comments were received about the potential for hazardous material storage, spills, and impacts to resources or the environment; in particular, to address chemicals associated with mine process and storage of materials (such as arsenic or acids).

- The revised mine plan calls for no cyanide to be brought in to the region.
- Address impacts of hazardous and solid waste generated from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and evaluated into the Draft EIS.
- Describe how blasting agents would be transported and managed, and how much would be used.
- During the copper extraction process, an alcohol is added during the flotation along with a collector chemical called potassium amyl xanthate (or the potassium salt of an alkyl dithiocarbonate), which can be toxic.
- The process chemicals described in the permit application appear to be generic descriptions, rather than descriptions of the specific chemicals to be used. A more complete description of the ore processing is needed. A complete list of process chemicals, by manufacturer, as well as the annual amount to be used, is also required.
- List any herbicides, pesticides, or road de-icing compounds.
- The EIS should describe emergency measures that would be implemented should there be a release of hazardous substances and how potential adverse impacts may be mitigated.

3.4.2.8 Natural Gas: Pipeline and Gas Supply

Comments were received on the impacts of the proposed project on the supply, demand and cost of natural gas in the proposed project area and Cook Inlet.

- There could be lower costs of fuel in rural Alaska as result of potential new gas supply and spur/distribution systems.
- The supply of available natural gas in Cook Inlet may not be sufficient to provide power to the proposed project.
- Explain if the use of natural gas by PLP would affect existing Alaska Railbelt supply and users.

Comments were received on the design, route, construction, and safety and reliability of the natural gas pipeline crossing Cook Inlet and Iliamna Lake.

- That part of Alaska has exceptionally high tides – routinely greater than 20 feet. Please consider this when analyzing an underwater gas pipeline.
- There are safe and secure methods to construct a pipeline that would cross existing submarine cables. The pipeline owner/operators should enter into a cable crossing agreement to ensure the safety and security of both the fiber cables and the gas pipeline.
- There are not any pipelines in Cook Inlet this long. A commenter noted that in Nikiski, the seabed can change rapidly. This can cause unforeseen problems in maintenance.

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While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay experiences challenging winter sea conditions.

- At Iliamna Lake, maintenance could be difficult when the lake is frozen.
- The route for this pipeline would be near the base of Augustine Volcano, which is the most active volcano in Cook Inlet and has erupted eight times since 1812.
- Cook Inlet has huge tides, glacial silt, ice flows, and strong currents and is corrosive to almost everything. Explain who will pay for the maintenance and repair of this pipeline.
- The eastern end of the proposed pipeline route runs along a soft, sandy bluff north of Anchor Point. The bluffs are eroding an average of 1.1 feet/year.

3.4.2.9 Tailings Dam

Comments were received regarding concern for the stability of the tailings dam, potential for tailings dam failure, and impacts of such a failure.

- Describe how the tailings facility and dams are designed and how they would be operated, closed, and monitored to ensure stability. Describe how the tailings dams would comply with state dam safety criteria.
- Describe the impacts of dam failure and recognize the public concern of the stability of the tailings dam. Specifically, consider the impacts to biological and social environments of a dam failure as a result of an earthquake.
- Look at examples of other tailings dam failures (in Spain, Canada, Australia, and others in the United States).
- Analyze impacts from tailings leaks and leaching, not just failures.
- Tailings dam engineering has improved considerably over the decades. Pebble's tailings dam design will have to be approved to adequately protect the environment before the project would be permitted.
- Analyze impacts from rainfall causing overtopping of the tailings dam. Alaska has a propensity for large storms and with climate change and warming effects, risk for large storms is increased.
- It is recommended that large tailings dams use dynamic rather than pseudostatic analysis for potential dam failure under earthquake loading.
- A risk assessment such as a Failure Modes Effects Analysis should be conducted with results summarized in the EIS.
- The EIS should describe how the tailings dams would comply with state dam safety criteria.

3.4.2.10 Water Quality and Quantity

Comments were received concerning a detailed analysis and discussion of the physical and chemical impacts on all water resources.

- Analyze impacts to water quality and quantity from construction, operation, and post-closure.
- Analyze pit water and tailings dam management.

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- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches.
- Analyze erosion, turbidity, temperature changes.
- Ferry crossing concerns, including changes in shoreline erosion and turbidity, and pollution from the proposed ferry.
- Composition of the (potential) contaminants from all project sources, including blasting.
- Prevailing winds will create water surface waves on the pyritic tailings facility which will allow oxidation of the tailings.
- Risks associated with acid rock drainage from mine project components, including the waste rock facility, leaching, and pathways for acid rock drainage. Acid rock drainage was noted as a potential source of impact on many resources, such as water quality, wetlands, fish, and subsistence food resources.
- Describe how acid rock drainage, tailings, and metals leaching would be tested, monitored, and treated during mining and post-closure.
- Analyze the potential for wastewater to enter streams and rivers.
- Project components should be designed for 500-year events, given predictions for wetter spring and summers in this area.
- The EIS should identify the Alaska Pollutant Discharge Elimination System discharge locations, identify applicable water quality standards, and analyze the likelihood of discharges to meet standards.
- The EIS should identify and describe the location of water sources for hydrostatic testing.
- Characterize the existing groundwater and surface water quality.
- Predict concentrations of contaminants of concern in surface and groundwater that reflect a range in climatic settings and compare to water quality criteria and standards.
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability.
- To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste management, the physical and chemical characteristics of the ore, pit walls, waste rock, and tailings should be determined and disclosed in the EIS.
- Evaluation of surface water and groundwater use, including maps and source identification of water supply wells or intakes.

3.4.3 Biological Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific biological resources, including:

- Vegetation and ecosystems.
- Fish and aquatic resources.
- Wetlands and special aquatic sites.
- Wildlife and non-threatened and endangered species birds and mammals.
- Threatened and endangered species.

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3.4.3.1 Vegetation and Ecosystems

Comments were received concerning potential for disturbance from project construction and operations, and from invasive species. Comments were also received concerning terrestrial, lake, and marine habitat impacts from project construction and operations.

- Analyze the potential direct, indirect, and cumulative effects of all components and all phases (including reclamation and restoration) of the proposed project on terrestrial, marine, and freshwater ecosystems.
- Analyze impacts to rare and sensitive plants (including removal).
- Address how fugitive dust would affect vegetation within the project area and beyond.
- Address risk for invasive (non-native) species introduction by marine barges and the ferry; include ballast water management.
- Analyze ecosystems as unique in the Bristol Bay area, in the degree to which they remain unaffected by commercial development and other human technologies. Evaluate how the proposed project could alter the biological and human ecosystems and landscape.

3.4.3.2 Fish and Aquatic Resources

Comments were received related to potential impacts to fish (King Salmon, Sockeye Salmon, Silver Salmon, Pink Salmon, Chum Salmon, Dolly Varden/Arctic char, Rainbow Trout, and Grayling) populations, abundance, diversity, migratory patterns, contamination, and potential for displacement from project components.

- Address effects of ferry traffic on resident and migrating fish in Iliamna Lake: the potential for the ferry to cause erosion of the lake shoreline and the effect of that on fish; the effect of the ferry on salmon spawning and rearing habitat; the effect of increased noise on salmon productivity; the potential for increased turbidity and its effect on salmon; the potential for ferry traffic to cause wave action that could harm the fry on their way to the ocean; the potential for ferry propellers to entrap fish and cause mortality; and the potential for fish to avoid the area around the ferry and not come back to the area.
- Address effects of gravel pits on stream hydrology and fisheries.
- The USACE should understand that a disruption of habitat could affect the nutrients returned to the ecosystem by the salmon when they return to these watersheds.
- Water withdrawal and capture, storage, treatment and release of wastewater associated with the mine could impair the fish habitat functions of streams, wetlands, and aquatic resources.
- Address the potential for fish to become contaminated from sedimentation, metals, toxins, mining chemicals or fuel spills.
- Evaluate how the proposed project road to Iliamna Lake would impact fish species as road traffic will create dust that may contain copper and other heavy metals that could enter the watershed and affect resident aquatic organisms including salmon.
- Dredging off Amakdedori Beach may affect schooling of salmon and/or Dolly Varden before they run up Chenik Creek, McNeil River and Mikfik Creek.
- Analyze the impact of anthropogenic erosion on fish gills from construction and mining. Anthropogenic turbidity has severe impacts on newly emergent fry. Address the effects of constructing the Amakdedori Port and maintenance dredging would have on Cook Inlet herring spawning habitat in Kamishak Bay.

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- The proposed port site has the potential to hinder the recovery of populations that are depressed, such as Tanner, red king, and Dungeness crab species, and to impact crab and weathervane scallop habitats.
- The area that makes up the "headwaters" is full of underwater streams in which small fry/fingerlings swim as they emerge. They sometimes swim into lakes and ponds of the region and often get too big to get out; they are called land-locked salmon.
- The EIS should discuss the species listed and proposed as threatened or endangered under the Endangered Species Act and Essential Fish Habitat within the project area for all components. The EIS should discuss the activities proposed to avoid, minimize, mitigate, and monitor listed and proposed species and Essential Fish Habitat. A biological assessment to evaluate impacts to listed and proposed endangered species and essential fish habitat should be included in the EIS.

Comments were received regarding the impacts of the mine access road crossing streams and anadromous waters, and the impacts of those stream crossings on fish.

- The EIS must include and present all the waters documented in the Alaska Department of Fish and Game Anadromous Waters Catalog at a minimum; however, it should be recognized that the Catalog under-represents waters that actually support anadromous fish on the order of 20 to 40 percent.
- Current plans will impact more than 5 miles of anadromous streams.
- The construction process would build an 80-mile road system with 200 stream crossings impacts that should be analyzed.
- Analyze bridge and culvert impacts to fish, including fish passage and habitat condition change. The proposed 75-mile-long road system would include 222 culverts, 149 of which are not designed for fish passage.
- The proposed road corridor has been designed to minimize impact on wetlands, minimize stream crossings and avoid areas of known for subsistence and recreational use.
- Describe how state protocols regarding fish-bearing streams would be enforced.
- An independent third party needs to verify which streams along the road corridor are fish-bearing. History has shown that PLP and their consultants may have underestimated the number of streams containing fish.

Comments were received regarding the impacts to aquatic resources, including introduction of invasive species.

- Shipping from foreign ports may result in ballast water transporting invasive species such as green crab, which would have a devastating impact on the ecosystem and commercial shellfishery.
- The potential or known effects of a disrupted winter ice regime, lack of ice cover on resident species of fish, birds, and mammals should be investigated. These changes may have contributed to the most recent Kvichak sockeye run decrease. Partial or reduced ice cover may have affected planktonic production, hence food for salmon that may have caused salmon to smolt early.

3.4.3.3 Wetlands and Special Aquatic Sites

Comments were received on filling of wetlands and alternations of wetlands habitat, fragmentation, and loss of wetland habitat as a result of project activities.

- Include delineation of all wetlands that could be affected by the proposed project.

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- The estimated mine site would fill 3,190 acres of wetlands and water bodies, nearly three times the maximum set by the Environmental Protection Agency (EPA) for Bristol Bay in 2014.
- Analyze impacts to wetlands dewatering and hydrological changes, pollution to wetlands, impacts on wetlands functions, clearing and removal of wetland vegetation, degrading wetland vegetation from all proposed Pebble project components and during construction, operation, and closure phases.
- Given the extent of streams, wetlands, lakes and ponds both overlying the Pebble deposit and within adjacent watersheds, excavation of a massive mine pit and construction of large tailing impoundments and waste rock piles would result in discharge of dredged or fill material into these waters.
- Quantify impacts to aquatic resources both in terms of the areal or linear extent of impact and by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.
- Consider both direct and secondary effects, as defined by the CWA 404(b)(1) Guidelines.
- Model and consider how losses of stream reaches and adjacent wetlands from dewatering, as well as changes to downstream reaches and adjacent wetlands, may result in physical, chemical, and biological changes which would impact fishery habitat and habitat support.

3.4.3.4 Wildlife and Non-Threatened and Endangered Birds and Mammals

Comments were received related to potential impacts to wildlife (including terrestrial and marine mammals), and on potential impacts to migratory birds and waterfowl populations; abundance, diversity, migratory patterns and potential for displacement; and attraction of birds to tailing ponds.

- Assess how wildlife can acclimate to construction and operation impacts.
- Analyze how noise levels from construction or large vessel traffic may deter bears from coming to McNeil River Falls, or could affect bear behavior and change or end the use of McNeil River by bears.
- The proposed road and Amakdedori Port could change brown bear migration and result in brown bear mortalities.
- Analyze impacts that habitat fragmentation from Amakdedori Port and the mine access road would have on bear movements.
- Examine how increased contact between bears that use the McNeil River and humans could result in food conditioning of bears or direct bear mortality by humans.
- The proposed ferry could strike marine mammals (seals) in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry. The seals have been considered in the past for Endangered Species Act status.
- Ferries could impact the migration patterns of wildlife.
- The USACE should incorporate traditional knowledge on freshwater seals in Iliamna Lake into the EIS and be aware that there is a Freshwater Seal Commission.
- The transportation of mining materials across Cook Inlet and Iliamna Lake could have potentially negative effects for local marine mammals, particularly underwater noise pollution that impacts marine mammals.

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- The Bristol Bay watershed is unique in that it provides habitat for more than 190 birds. Additionally, there are more than 40 species of water birds here and confirmed breeding sites for more than 22 species.
- There are no Bristol Bay Tribal Multi-Species Conservation and Management Plans for Iliamna Lake, the Nushagak River, Nushagak Bay, Kvichak Bay, and Alaska Peninsula. The USACE should mandate these tribal marine multi-species conservation plans be completed before issuing a permit.
- Describe what steps the developers propose to keep tailings ponds/lakes free from pollutants or physically restrict birds from trying to land on them.
- Analyze impacts from noise, blasting, and other human interference to birds.
- Blast control can mitigate noise impacts to birds, like they do with birds at the airport.
- Address effects of the project on birds and migratory waterfowl.
- Kamishak Bay is home to a large seabird nesting colony that would be impacted by disturbance generated from industrial development at Amakdedori Creek.
- Bald eagles nest and feed along the coast and along all of the major salmon spawning rivers in the Bristol Bay and Cook Inlet regions, with a relatively high number of golden eagles also found here.
- Calving grounds for the Mulchatna caribou herd are in the proposed project area and the EIS should include an analysis of the impact of both mine construction and mine operations on caribou calving in the region.
- Exploration activities at the site have caused caribou to avoid the area.

3.4.3.5 Threatened and Endangered Species

Comments were received on impacts to threatened and endangered species as a result of project construction and operations.

- The proposed port site is designated Critical Habitat for the endangered Cook Inlet beluga whale and the threatened northern sea otter.
- Federally listed threatened northern sea otters and threatened Steller's eiders occur in the waters of Cook Inlet, including Kamishak Bay.

3.4.4 Social Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific social resources, including:

- Socioeconomics
- Subsistence
- Traditional way of life
- Archaeological and cultural resources
- Land ownership, management, and use
- Transportation and navigation
- Recreation
- Environmental justice
- Public health and safety
- Visual resources
- Wilderness characteristics.

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3.4.4.1 Socioeconomic Impacts

Comments were received regarding the economic impacts to local communities, regional economy, and national economy.

- PLP should give the USACE an independently prepared economic feasibility analysis, which is usually done for other mines like Donlin. Without it, the USACE will be unable to take a hard look at all reasonable alternatives in the draft EIS.
- The Pebble Mine would bring much needed economic opportunity to a region by creating jobs during construction and operation. The Lake and Peninsula Borough has an unemployment rate of 16.6 percent. Presently commercial fishing has a very limited effect on some communities' local economy.
- Residents are moving closer to much larger metropolitan regions to seek opportunities that do not currently exist near their homes in the region. New job opportunities could reduce out-migration, which could help maintain rural schools and allow people in the region to participate in subsistence activities.
- Consider that the project would create a boom and bust economic cycle that would ultimately leave people without jobs.
- The mining company will bring their own workers and not train local people to work at the mine.
- The population would increase during construction and heavily impact local communities.
- Consider the socioeconomic impacts to Bristol Bay's recreational fisheries. More than 37,000 angling trips are taken to Bristol Bay each year, which supports dozens of businesses, and a $91 million annual economy. The project could also damage the Bristol Bay wild salmon brand because the watershed would no longer be pristine.
- The commercial salmon fishing economy sustains 20,000 jobs; 20,000 jobs will be lost if this mine goes forward.
- Construction and operation of the Amakdedori Port has the potential to conflict with commercial salmon fishing activities in this area. The EIS should also assess potential impacts of marine traffic into and out of the port that may affect access to fishing grounds, impede fishing operations, and jeopardize fishing gear for some species, including pot fishing for Pacific cod, longline fishing for halibut, and non-commercial fishing with pot gear for Tanner crab.
- The EIS should consider that the currently undisturbed proposed port site could be an important herring fishery in the future.
- Consider that the Kennicott Copper Mine was located in the watershed of the Copper River which did not affect the value of the salmon fishery in that region.
- The impact of the use of Iliamna Lake and the proposed transportation corridors/pipelines on sport fishing and the sport fishing-related economy should be evaluated.
- Analyze impacts on the bear viewing industry near the proposed Amakdedori Port.
- Consider that fish taxes are important to the finances of the Bristol Bay Borough.
- Consider that PLP would not pay its fair share of equity to the state. The actual federal and state income royalty or tax on the production would be 3 to 5 percent of that production's value. In comparison to oil, this is inadequate.
- Review social benefits such as education opportunities, and potential reduction in the high cost of living in the region due to transportation improvements.

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- PLP should consider using regional Native corporations that are already in the pipeline construction and maintenance industry.
- Examine the economic costs and benefits specific to the state of Alaska including scenarios where no environmental disaster occurs and also the worst disaster happens.
- There were inquiries made in comments if there would be compensation to commercial fishermen if there is a disaster and fish prices go down, similar to what was done with Exxon Valdez.
- The risks to the people and environment would outweigh the short-term benefits.
- Examine the potential impacts to the Homer Electric Association ratepayers.
- The socioeconomic analysis in the EIS should include first order losses from habitat, second order losses, and public perception losses. Existence values have been acknowledged as real and quantifiable and should be used.
- The EIS should use a dynamic net economic benefit approach wherever possible in assessing the socioeconomic impact. One commenter noted that discounting future values can be a highly useful tool for comparing economic benefits over time but that this method may also be misapplied. The USACE should consider that a great deal of work has since been performed on existence values.

3.4.4.2 Subsistence

Comments were received related to potential impacts to subsistence resources like harvest, sharing, and traditional use areas. Comments were also received on contamination concerns and/or avoidance of subsistence resources.

- The USACE should study the direct, indirect, and cumulative effects of construction, operation, and closure at all stages of the mine and relating infrastructure to all activities relating to fishing, hunting, and other subsistence practices for the Native Village of Tyonek, the Native Village of Port Graham, the Native Village of Seldovia, the Kenaitze Tribe, the Ninilchik Tribe, the Chikaloon Tribe, and all others near in and around the Cook Inlet regions.
- Consider the importance of the salmon fishery to subsistence and the heavy reliance on fish for all users in the area.
- Analyze impacts on subsistence resources including wildlife migration, habitat for growing food, traditional use areas, fisheries, berries and other edible plants, and the cumulative effects from other mining activity. Consider that impacts to any subsistence resource (e.g., fish, wildlife, vegetation) would impact subsistence as well.
- Analyze impacts of potential contaminants entering into the air or water and affecting subsistence resources, including effects on subsistence resources due to potential accidental spills, and bioaccumulation of toxins in subsistence resources, and effects.
- Consider the impacts to the residents along Iliamna Lake who rely on access to small islands for the harvest of bird eggs in the spring.
- We are in fear for our subsistence way of life. Leave our dinner table alone!
- Helicopter traffic during exploration disrupted subsistence activities and this would occur during construction and operations of the mine. Particularly, helicopter traffic impacts spring waterfowl hunting (geese), displaces caribou, and impacts the Koktuli River.

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- Many species of fish are used for subsistence harvest, not just salmon.
- Analyze potential beneficial impacts to subsistence as cash income earned from jobs could support subsistence activities. Cash income could be available to fund the boats, motors, fuel, and nets necessary to maintain subsistence activities.
- A sudden influx of noise, people, and heavy equipment over ancestral hunting and fishing lands would have an effect on the intangible resources the sustainable subsistence culture has to offer.
- There could be an influx of workers to construct, run, and remove the mine that would want to have fishing and hunting access to the same resources as the local subsistence communities and will generate user conflict.
- The mine and roads might also facilitate access to previously lightly used areas increasing hunting, fishing berry picking and other pressures.
- Be sure to include Kodiak Island to your analysis, as it has important subsistence areas that could be impacted by the project.
- Over 80 edible and medicinal plants grow and are harvested in the project area including several species of berries, wild peas, wild onions, ferns, cow parsnip, rosehips, and many others.

Comments were received on impacts to important locations for subsistence activity from the project, including:

- The road corridor would go through our winter moose hunting area in the Talarik Creek watershed.
- The Nushagak, Mulchatna, and Koktuli watersheds are the hunting and fishing areas for people of New Stuyahok.
- The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
- The mountain behind Nondalton is traditional subsistence area.
- The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.
- The people in Seldovia have a long tradition of subsistence fishing for herring in Kamishak Bay. The herring also support other animals that we subsist on.

3.4.4.3 Traditional Culture and Way of Life

Comments were received related to potential cultural impacts and the desire to maintain traditional practices. Includes comments related to traditional land use areas (cultural continuity), and Traditional Ecological Knowledge.

- There are concerns that the mine would be detrimental to the culture, way of life, and history to the people that live in the area, and have been there for centuries.
- Fully disclose the potential impacts of project-related activities on local Alaska Native traditional ways of life. Local culture and environment has already changed from what it was historically, and this may affect the ability to pass values on to future generations.
- Traditional Ecological Knowledge should be studied and incorporated into the Draft EIS. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants, and other resources of the region.

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- The profit from the mine and "benefits" are not long term, while preserving Native heritage and leaving a legacy for future generations is a cause that is worthy of consideration.
- The EIS must identify and describe the cultural and spiritual uses of water by the human communities of the region.
- The Amakdedori Port area has been used as a site for a cultural camp, subsistence use areas, and school field trips.
- EIS should look at the long term social impacts, such as trapping and lifestyle change impacts. The project will kill the hearts and souls of the people; our subsistence way of life has more than monetary value.

3.4.4.4 Archeological and Cultural Resources

Concerns were expressed about impacts to archaeological and cultural resources subject to Section 106 of the National Historic Preservation Act.

- Analyze impacts to cultural resources (historical and pre-historical sites) and direct destruction of cultural resources from all project components.
- The USACE should study and be informed by traditional ecological knowledge.
- The USACE should require appropriate inventory surveys for the broad range of historic property types that may be present within the Area of Potential Effect. The USACE should also clarify in the Draft EIS where it is in the Section 106 review and when the proponent will be carrying out the needed inventory surveys for identification of historic properties that may be affected by the undertaking.
- Determinations of eligibility and effect, and appropriate steps to resolve adverse effects must be informed by the traditional knowledge of Indian tribes who ascribe significance to such properties, as gathered from ethnohistoric data, oral history, and other types of research.
- The project proponent must be sensitive to concerns of the Indian tribes regarding the confidentiality of information they share about properties of religious and cultural significance.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- There are ancestral burial grounds at/near the proposed Amakdedori Port, along the road route on the south side of Iliamna Lake, and on the road route to the south ferry dock.
- Analyze impacts to irreplaceable Native Alaskan rock art sites. This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.

3.4.4.5 Land Ownership, Management and Use

Comments were received about land status (ownership), land management, and land use for the project area.

- The proposed mine site and many project components including the port site and a majority of the transportation corridor are proposed on state-owned lands. Mine

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construction, operation, and closure would limit any access to these lands and transportation corridor to private entities only.

- Ensure that activities are consistent with land use plans and goals of all landowners, including the State of Alaska, and Alaska Native corporations.
- The Pebble Mine will be built on state land set aside decades ago in Western Alaska specifically for mining.
- Although the area is classified in the State's area plan as "mineral," a classification is nothing more than recognition of the resource reasonably believed to exist in a particular management unit. The management intent is neutral as to whether mineral development should occur in these units.
- Disclose any impacts to Native Allotments and Native Corporation lands in the project area.
- A pattern of land use change would occur in the region that could be a long-term pattern with additional mining deposits explored for development.
- Analyze the effect of project components on the public use of the surrounding area with regards to trails and waterfront usage.
- Explain the security status of the ferry terminals, the mine access road, and Amakdedori Port, including when and how the public may or may not access or cross project facilities.
- Explain if local Tribal governments have included the mine access road in their Indian Reservation Roads Program that would make it public, versus private roads as stated by PLP.

3.4.4.6 Transportation and Navigation

Comments were received regarding the impacts to transportation systems, including airports, roads, rivers, and trails as a result of the project.

- Evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts at Iliamna Lake, Kamishak Bay, and Cook Inlet. The Draft EIS should evaluate how the ferry crossing and vessel traffic could disrupt schedules, local access and local boaters.
- An ice-breaking ferry across Iliamna Lake would create difficulties and hazardous situations for people travelling across the ferry route on snowmachines.
- No depths are recorded on navigation charts for Iliamna Lake. Some rocks on the chart do not exist; others are not where the charts show them to be. Some are not on the charts at all. There are places where the depth goes from 400 feet to 30 feet.
- Consider the impact of travel restrictions from road and ferry and who is benefiting.
- The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
- The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 mph.
- A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.
- The Amakdedori Port location experiences very strong onshore winds that could be hazardous. It is also in an area that could be impacted by a tsunami.
- It will be difficult to maintain the Amakdedori Port dredged channel due to sediment transport in that area.

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- The plans for the Amakdedori Port have been changed since the original permit application. The change may reduce maintenance and operation cost, however barge lightering of concentrate to the bulk cargo ships may increase risk and safety in the poor weather conditions Kamishak Bay is famous for.
- The port site may present a variety of fishing hazards to the commercial fishing fleet, including port related marine traffic, the natural gas pipeline landfall, navigational markers, the 2,000-foot earthen causeway, as well as ore loading infrastructure.
- Analyze impacts from increased air traffic during all project phases.
- Concerns were expressed about additional traffic on the Sterling Highway.
- The mine access road would ascend a mountain pass before descending to Iliamna Lake. Has PLP submitted a design and specific route for the road? For perspective on what this road will look like, consider the Pile Bay-Williamsport road where rock slides and falling boulders are a constant threat.

3.4.4.7 Recreation

Comments were received on impacts to recreation and tourism; recreational hunting and fishing usage near the mine, along river systems, and in transportation/pipeline corridor during construction and operation. This includes comments on disruption of recreational experiences (bear viewing, sport fishing).

- Consider the effects of project components on recreational hunting and existing guided hunting operations (e.g., changes to access, disturbance of wildlife from helicopters or vehicle traffic).
- Concerns about impacts to fish, and how impacts to species could be detrimental to the sport fishing community and businesses.
- The proposed project would bring an influx of the number of people in the Iliamna area that would want to recreate, sport fish and hunt, including mine employees and support industry personnel.
- Displacement of wildlife would impact the experience of people, throughout the proposed project area but would specifically impact the recreationists at McNeil State Game Refuge.
- The mine itself and the proposed tailings dam could not be in a worse location to threaten the trophy rainbow fishing that the many fly-out lodges rely on. The lodges provide long term employment for many in the Iliamna and Lake Clark areas.

3.4.4.8 Environmental Justice

Comments were received relating to disproportionate, adverse impacts to low income and minority communities as result of the proposed project.

- Identify low income, minority, and Alaska Native communities that may be impacted by the project.
- Analyze impacts related to environmental justice include food security and subsistence resources, health impacts from pollution and exposure to increased industrial activities and noises, increased risk of injury and exposure to hazardous materials, increased exposure to outsiders and the cascading social and psychological problems that brings.
- The economic benefits will not be for the people of the region but the impacts will.
- The environmental justice risk outweighs the benefits.

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- Describe efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts.
- Concisely explain how environmental justice impacts have been avoided, minimized, and/or mitigated.

3.4.4.9 Public Health

Comments were received on impacts to local communities' public health and infrastructure as a result of the project (disease, contaminants, lifestyle changes, behavioral health, and physical health), as per EO 12898.

- An analysis of health effects, such as a Health Risk Assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health.
- Analyze public health concerns related to development and infrastructure development in rural communities.
- Discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations that may be exposed to these emissions.
- The short- and long-term impacts from all stages of the project include increased risks of accidents and injuries, exposure to hazardous materials, negative impacts on food, nutrition, and subsistence, increased potential for infectious diseases, and risks to health and human services from population-stressed infrastructure and services
- It is important for the EIS to consider the social and psychological impacts the stress of this project has already put on people and the communities who live in the project area.
- Evaluate the potential impacts of development on indigenous women, and increased rate of violence as a result.
- Fully discuss the potential that the proposed project could be associated with behavioral health impacts, such as increased use of drugs and alcohol. More disposable income in communities may increase the use of alcohol and drugs.
- An influx of people could bring diseases to an area with minimal healthcare available that may not be able to handle large capacities of patients.
- Potential health impacts to local communities or other project area users should be identified, as well as any strategies employed to communicate risks or actual emergencies.

3.4.4.10 Visual Resources and Aesthetics

Comments were received on visual impacts that included:

- Consider visual impacts of the mine, roads, and Amakdedori Port to recreation, and secondary industries like flightseeing operators and wildlife viewing guides.
- The project will have permanent and significant impacts on the appearance of the landscape as viewed from key observation points, planes, etc. and will in turn impact use and enjoyment of the area by many.

3.4.4.11 Wilderness Characteristics

Comments were received related to wilderness characteristics and values.

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- This area has wilderness characteristics, and is adjacent to a national park.
- The potential impact on the Koktuli and Nushagak rivers and tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake have an undeniable wilderness quality that could be impacted by the proposed project. Impacts to the Gibraltar, Talarik, and Koktuli drainages should be considered and, when possible, quantified
- The project would mean the loss of pristine wilderness throughout the area.

3.5 SUMMARY OF PUBLIC COMMENT—NEPA PROCESS AND REGULATORY COMPLIANCE

Comments were received on the NEPA process and need for compliance with regulations including:

- The general NEPA process
- The purpose and need of the proposed project
- The proposed action and project alternatives
- Cumulative effects analysis
- Mitigation measures
- Monitoring and adaptive management
- Bonding and reclamation
- Data and available information
- Research and evaluation needs.

3.5.1 The NEPA and EIS Process

Comments were received about the overall NEPA and EIS process, the permit application to the USACE, due process, and the scoping meetings. These types of comments generally do not inform preparation of the EIS as to the project purpose and need, resources/level of impacts to be analyzed, or alternatives to the proposed action that should be considered. A summary of the general NEPA process comments includes the following:

- The Pebble Mine application is incomplete. The USACE should suspend its NEPA process/ not release a Draft EIS without more information from PLP. Foundational information for major parts of Pebble's proposal, including the proposed transportation corridor, port or use of Iliamna Lake, are lacking from their application. The data PLP supplied is more than 10 years old and thus is not reliable for analyzing project impacts.
- The Pebble Mine application is not incomplete. The Pebble Mine plan and application has recently been revised to satisfy EPA guidelines.
- There should be opportunities at each public hearing for oral comments in an open public forum. Everyone should have the opportunity to hear the comments of fellow concerned citizens. Open oral comments provide new information and learning opportunities not only for USACE and their contractors, but for all attendees. Please change your scoping format for future meetings to include an opportunity to express concerns through an open oral comment period.
- The limited number of scoping hearings and failure to host scoping hearings in communities within the Nushagak and Kvichak River drainages means that the opinions and voices of local populations have not been accounted for.

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- Consider additional scoping meetings in Washington and Oregon.
- Extend the scoping period beyond 30 days. Tribes in Bristol Bay are requesting at least 120 days for this scoping period.
- A 30 day scoping process is sufficient. Few projects have been talked about for as long and with such passion as the Pebble Mine and at this point, no new information about possible adverse effects will come to light.
- Changing the mining plan in the middle of the scoping period means the scoping comment period should be extended and new meetings held.
- The USACE should compare PLP's plans to the EPA's analysis before moving forward with permitting.
- PLP should get a fair permitting process.
- The EIS process is being rushed; the USACE took more time to prepare the Donlin Gold EIS. The USACE cannot take the 'hard look' required by NEPA in this timeframe.
- With the loss of funding, the USACE should reject this application as insufficient, since this is no longer a financially viable project.
- The Pebble Project has changed some of their plans to accommodate concerns of Alaskans. The State of Alaska has a strong track record of regulating responsible mineral development for projects of all sizes and complexities. The Pebble Project will be no exception.
- The USACE evaluation should include the already defined types of authorizations required for a mine like Pebble and the proven scientific and technical information required to support these decisions.
- To manage the high volume of public comments the USACE should consider using software that uses Near-Duplicate Detection.
- The scope of the EIS should include impacts to federally protected units near the project site, including National Parks and National Wildlife Refuge units.

Comments were received that the USACE should initiate formal consultation and coordination with tribal governments. This includes comments on formal consultation and coordination under EO 13175.

Coordination with other agencies is an important part of the NEPA process. Comments were received on how the USACE should seek and promote full- and broad-scope participation by federal and state resource agencies and tribal government entities as cooperating agencies, and undergo comprehensive formal consultation with appropriate entities (for example, consulting with the National Marine Fisheries Service regarding Essential Fish Habitat). Comments were also received on how the USACE should extend cooperating agency invitations to interested tribal governments, as well as local, state, and federal agencies with special expertise and involve cooperating agencies on the full scope of the proposed Pebble Project.

3.5.2 Purpose and Need of the Action and USACE Permits

Comments were received regarding the purpose and need of the action, and the public interest of the project for the purpose of USACE permitting.

- The Pebble EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing

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regulations for NEPA. This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

- Explain how an EIS process can proceed without more commitment from financial backers.
- PLP says their project would help with mineral independence but they will export all of the mined minerals.
- The USACE should accept the purpose and need statement contained in the permit application from PLP.
- The Draft EIS should reflect not only the purpose and need of the project proponent, and the USACE, but also the broader public interest and need based on the scoping comments.
- Describe the permit process. Specifically note if there is a time limit for the applicant to act on a permit before it becomes invalid.
- The lack of a feasibility analysis makes the project as planned un-practicable in regards to NEPA requirements.
- Wrong mine, wrong place.

3.5.3 Proposed Action and Alternatives

Comments requested more detailed information on the proposed project plans, such as the water management plan, transportation plans, and spill response plans.

- The design and operational plans for the proposed project and alternatives should be evaluated. This should include the water management plans and cover all phases of the project. The EIS should evaluate the adequacy, reliability, effectiveness, and operational uncertainty of the plans.
- Because PLP changed their plans in the middle of the scoping period, the project design is still fluctuating and is not ready for an environmental review.
- The proposed project design and the modern environmental safeguards it incorporates, as well as the significant economic potential it represents for the State of Alaska, should be fairly considered and incorporated into the EIS based solely on the scientific data presented to the USACE in this proposal.

Commenters suggested that a wide range of alternatives should be analyzed for mine pit and tailings locations, types of tailings facilities, tailings dam construction, mine rate and strip ratio, waste rock segregation methods, gold recovery methods, support facility locations, energy sources, pipeline routes, water discharge locations, road alignments, types of water crossings, and ferry routes. Specific alternatives to the proposed project that were suggested include:

- The EIS range of alternatives should include the practicable alternatives developed for the CWA 404(b)(1) Guidelines analysis.
- The USACE must look at a range of alternatives beyond Pebble's mine site and include alternatives for mining copper and gold somewhere other than Bristol Bay.
- The USACE does not need to explore alternatives to Pebble's proposed mine site as being somewhere other than Bristol Bay because it already 100 miles from the bay and should be deemed a reasonable distance.
- Apply a realistic scope to assess mine impacts. The timeframe of analysis is small at 20 years; the applicant's website notes that the mine can operate for 200 years and could have 11 billion tons of ore. The USACE should consider alternatives to permit 50 percent or 100 percent of the current known resources to be mined.

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- There should be an alternative that restricts the size of the mine to what the EPA found appropriate in its Watershed Assessment.
- All of the pyritic tailings should be removed and not stored on the land in perpetuity.
- There should be an alternative that includes full treatment of pyritic tailings at the time of mine closure, before or instead of dumping them in the mine pit.
- Tailings would be thickened, possibly to 55 percent solids. Alternatives (slurry, thickened tails, paste tails) need to be analyzed in the EIS.
- The EIS needs to provide an alternative that uses dry stack tailings. Dismissal of such an alternative needs to provide examples of where dry stack is currently used successfully and why this can or cannot be replicated.
- As an alternative to a tailings ponds dam for waste storage, all waste should be trucked to Canada and stored in Canada, since the company is Canadian.
- Measures to reduce contact between mine waste materials and surface water and groundwater should be considered, such as diversions and liners.
- Different covers for the reclaimed tailings area, including "store and release" and impermeable covers, need to be assessed as alternatives in the EIS.
- Consider an alternative where the tailings pond is constructed at a location that will not impair surface waters, block fish passage, or have the potential to contaminate ground or surface waters.
- The EIS needs to include alternatives that provide water storage areas where excess water can be moved out of the TSF and out of the seepage pond in the event of extreme precipitation.
- The EIS should produce an alternative in which all embankments except the internal one are downstream construction.
- Modern pro-active mine design suggestions, including not placing tailings dams where a failure would put sensitive habitat at risk, should be assessed as alternatives in the EIS.
- Consider including a combination of simultaneous open pit and underground mining, a larger open pit mine, or a longer lived open pit mine. It may be possible to mine with open pits for the shallower portions, and mine by underground mining the deeper or eastern portions of the Pebble Deposit.
- The USACE should consider finding an alternative location to take the ore for processing.
- The EIS needs to analyze whether gravity concentration as a recovery method for gold recovery is viable at this deposit. This appears to be a method used in placer deposits.
- The USACE should consider the possibility of having cyanide processing at the mine site and transporting cyanide by truck or pipeline North and West toward the Nushagak Hills where pits would be out of range of the creeks and rivers flowing into the salmon spawning areas.
- An alternative of running mining operations and ore trucks on natural gas or electricity needs to be included in the EIS.
- The EIS should examine an alternative that treats water for discharge to meet the water quality of the natural receiving waters, if they are of higher quality than Alaska most stringent criteria. Studies have shown that where natural waters are very low in copper and cadmium, discharges above those background levels can have potentially toxic effects.

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- The EIS needs to include an alternative for water treatment that will result in zero discharge of metals to the watershed.
- In order to contain gases that may contain acid rock drainage from getting into the air in the project area, the USACE should develop an alternative that covers the development with an air tight structure and the fumes should be cleaned before release into the atmosphere.
- The previous plan for a road along the northeastern side of Iliamna Lake, and the new proposed roads and a ferry across Iliamna Lake both put different communities at risk.
- The EIS should consider identifying alternative ferry terminal locations if the proposed sites are found to contain valuable spawning and/or rearing habitats for sockeye salmon.
- The two ferry terminal locations are both at the mouths of blue ribbon trout streams (Upper Talarik Creek and Gibraltar River). Alternative sites closer to populated areas should be considered if possible. The village of Kokhanok airstrip would be an alternative on the south side; a location closer to Newhalen, but away from the mouth of the river is an alternative on the north side.
- The mine access road would follow a branch of Upper Talarik Creek. An alternative that places a dock in Iliamna and uses the proposed Iliamna Spur Road to access the mine needs to be considered in the EIS to reduce potential impacts on Upper Talarik Creek.
- A better alternative is to use the existing road and resources at Pile Bay and Williamsport.
- Running an ore concentrate pipeline around Iliamna Lake to the existing road between Pile Bay and Williamsport is a safer alternative to ferrying ore concentrate across Iliamna Lake in the winter to address concerns about the potential for contamination of surface water in Iliamna Lake.
- Consider having only seasonal (summer) barge transport across Iliamna Lake to avoid impacts to winter transportation options for residents of nearby villages.
- As an alternative to the Iliamna Lake crossing, consider a haul road that would stay north of this lake, then head south from Pedro Bay to the Amakdedori port.
- The road system would cross numerous anadromous streams. It would be best to require bridges at all of these crossings. Oregon and Washington states have been working for many years to bring back their salmon runs. Recreating salmon habitat including headwaters has proven to be extremely hard.
- A port at Diamond Point in Iliamna Bay should be evaluated against the proposed Amakdedori Port.
- Alternative port sites should be evaluated due to the potential ecological impact from the project.
- There is no need to dredge the proposed port to -50 feet; a shallower depth should be evaluated.
- The EIS should assess the whole breadth of dredging activities when determining the possible impacts to aquatic organisms and consider practicable alternatives that would avoid and minimize impacts.
- The range of dredged material management alternatives should include beneficial uses such as beach nourishment or construction material, a disposal site in internal

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waters landward of the Kamishak Bay closing line, and an ocean disposal site seaward of the Kamishak Bay closing line.

- The EIS should consider alternative methods for delivering natural gas to the project area, given the risk of natural gas entering the marine environment, the impact it would have on marine resources, and how gas line leaks or ruptures would be contained.
- The EIS should review potential alternative alignments for the pipeline route, such as an alignment north of Augustine Island.
- Include an alternative pipeline route that goes north to connect with the planned natural gas pipeline to support the development and operation of the Donlin Mine.
- Alternative fuel sources should be evaluated in an effort to eliminate the potential long term consequences that a subsea pipeline can have on the environment.
- Alternative energy sources should be examined. Many of the minerals to be mined will go into solar panels, wind turbines, and hydro turbines. The PLP could support the industries they will be supplying by utilizing alternative, renewable energy sources.
- The EIS should consider alternatives to laying the pipeline directly on the seafloor bottom (unburied) and evaluate the effects of an unburied pipeline's impact on crab movements, access to important habitat, and direct mortality.
- The EIS should evaluate practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the Alaska Department of Transportation and Public Facilities.

3.5.4 Cumulative Effects Analysis Process

Comments were received on how the cumulative effects analysis should be thorough, well-defined, and complete.

- Describe how the Draft EIS process considers cumulative effects, and identify the geographic scope and timeframe for the cumulative effects analysis.
- The cumulative effects analysis should consider past and current exploration activities conducted at the Pebble project site and current and future exploration activities occurring the watershed region.
- Consider long term and cumulative effects, keeping in mind the potential long duration of the project, potential expansions of the project beyond what is currently proposed for permit review, and the potential that this project may facilitate and encourage a number of other largescale active mining claims in the Bristol Bay watershed by providing transportation and power infrastructure that they can utilize.
- The USACE needs to acknowledge that the current permit application could be the initial phase in a much broader mine development plan. Pebble Limited Partnership has repeatedly said, as recently as September 2017, their project is, "a multi-generational opportunity. Its size and scale will lead to a very, very long life mine." Based on statements such as this, and official records indicating they plan to mine up to 11 billion tons of ore, it is reasonably foreseeable that Pebble intends to expand its mine far beyond what is currently proposed. Reviewing just phase one of the project unlawfully segments environmental review, shortchanges the public interest, and risks untold impacts to the Bristol Bay region's world-class fisheries.
- There are 20 large-scale active mining claims in the Bristol Bay watershed that this project could encourage by providing the transportation and power infrastructure. The

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EIS scope should include looking at the impacts of the potential of creating a mining district in the area.

- The EIS needs a cumulative effects analysis on culture.
- Additional large-scale landscape and infrastructure development, facilitated by the initial road, pipeline, and barge and ferry ports is a reasonably foreseeable impact. The EIS should discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.
- The EIS should include an assessment of the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- The EIS should include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure.

3.5.5 Mitigation Measures

Comments were received related to the need for project mitigation, and suggestions for mitigation measures.

- EIS should identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this project. Identify whether implementation of each measure is required by the USACE or any other governmental entity and which entity will be responsible for implementing the measure.
- Use scientific data that details what damage is anticipated and determines whether and how such damage can be mitigated, including whether such mitigation is even possible.
- Tribes and the public should be involved in the mitigation planning, and monitoring of the proposed project.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- Consider and recognize the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- The measures suggested by PLP will not work.
- PLP has not given any mitigation plans for sociocultural impacts; sociocultural impacts cannot be mitigated.
- PLP has not provided a plan for compensatory mitigation. The Draft EIS should describe such a plan and reasonable alternatives to it. The USACE should consider mitigation banks, or at a minimum, in-lieu fee programs, not less reliable permittee-responsible mitigation.
- Water takes the path of least resistance, so rainfall will attempt to make its way to the river bodies, but this can be mitigated with runoff ponds and filtrated release.
- Consider bilge water treatment that is capable of more than oil-water separation to protect Iliamna Lake's ecology.
- Require that the tailings pond be lined in such a way as to prevent any interaction between tailings waste and groundwater.

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- This EIS should address the timing of ferry traffic across Iliamna Lake with regard to the movement of commercial fishing boats across the lake, both before and after the salmon season, and during salmon spawning.
- The ice-breaker ferry should be constructed and assembled at an alternate location to allow for naval architectural oversight and engineering support.
- Construct the natural gas pipeline in the winter to reduce environmental impacts.
- Suggested mitigation measures for the road corridor include chip sealing, winter maintenance plans, monitoring culverts, plans for vehicle emergency response, clear policy on use of the road by non-mining personnel.
- All culverts should be required to be designed for fish passage at all times, and monitored and corrected to ensure fish passage for the lifespan of the project and closure.
- The culverts should be designed with software that can better predict stress and deflection in heavily-loaded, complex soil structures interaction dependent culvert structures.
- All upland water crossings should be designed for all impacts above the 1.5 times stream width at ordinary high water.
- Take measures to decrease whale strikes by ships.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.
- There should be no fly zones, to address caribou hunting impacts.
- Consider measures to reduce or minimize adverse impacts to environmental resources in development of alternatives.

3.5.6 Monitoring and Adaptive Management

Comments were received in regards to the need for monitoring plans during operations and after closure of the mine.

- The history of multiple open pit mining sites has shown that the open reservoirs put in place to hold contaminated water and processing liquids have routinely been compromised by leaking and/or by drastic failure of containment levees. While they highlight the measures taken to put these toxins in containment, they fail to address the long term maintenance and mitigation of the toxins to make them inert.
- Explain what oversight and monitoring would be applied to meet minimum detrimental environmental conditions, by whom, and under what authority.
- Explain if there would be a fund for additional environmental monitoring while the project is ongoing.
- Describe how and by whom the tailings dam will be monitored during project operations and then at the end of the mining period.
- The EIS should utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy should include ecological benchmarks or observations that would set follow-up actions into motion. This strategy or plan should be described so that reviewers may comment on its adequacy.

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3.5.7 Bonding and Reclamation

Comments were received related to reclamation activities, bonding, and setting up an escrow fund for restoration. Comments asked the USACE to explain in the EIS the mechanisms for treatment in perpetuity and post-closure (i.e., plan for permanent water treatment, the entity that would pay post closure costs and secure financing in perpetuity).

- Alaska regulatory requirements require a financial assurance to cover the costs of premature closure of the mine and the costs of post-closure water treatment. Calculating this cost is an essential part of the economic analysis EIS.
- Local communities would be hooked up to the gas line, as well as a maintenance crew watching over the hazardous tailing piles and dams. Describe bonding to cover these costs if something happens to PLP.
- The reclamation bond amount needs to be enough to fix any damage. This needs to be a permanent interest bearing fund that will supply enough funds in perpetuity, to cover unexpected future disasters, not just planned monitoring and reclamation.
- The project should have the ability to self-fund, and/or any third-party financial assurance mechanisms, should be disclosed. Disclosure of the financial assurance amount and mechanism is particularly important for this project given that the proposal includes long term water management and treatment.

3.5.8 Data and Available Information

Comments were received that suggested specific, documents, articles, or other information that should be utilized when developing the Draft EIS.

- Review research on fiber optics cable placement on tundra by Rorik Peterson at the University of Alaska Fairbanks. In addition, the USACE should review mapping provided by GCI regarding fiber optic cable placement of the TERRA-Southwest and Kodiak Kenai Fiber Link cable crossings in Cook Inlet and Iliamna Lake that would intersect with the proposed natural gas pipeline.
- Acknowledge how Traditional Ecological Knowledge information may be used and how to ensure that sensitive information is protected and follow a set of protocols for use of this information.
- Regarding impacts to shellfish populations, review the following:
  - Alaska Department of Environmental Conservation: Cook Inlet Subarea Contingency Plan (CISCP) sensitive areas section. Available from https://dec.alaska.gov/spar/ppr/plans/scp_ci/CISCP_DSensitive_Areas_Jan2017.pdf.
  - Collapsed or recovering shellfish fisheries in the state of Alaska. Preliminary Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1 1J02-06, October 1999.
- Review spills in Cook Inlet. In a study by the Cook Inlet Regional Citizen's Advisory Council, 70 of the 88 were caused by structural or mechanical failures.
- "After leaks, Cook Inlet's aging oil and gas pipelines get an unprecedented review." *Anchorage Daily News*, May 2, 2018.
- Woodson, Ross D. 1990. Offshore Pipeline Failures. University of California, Berkeley, Department of Civil Engineering, Hydraulic and Coastal Engineering.

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- Alaska Department of Fish and Game, Division of Commercial Fisheries news release: 2018 Bristol Bay Sockeye Salmon Forecast.
- *The Economic Importance of the Bristol Bay Salmon Industry*. Prepared for the Bristol Bay Regional Seafood Development Association by Gunnar Knapp Mouhcine Guettabi Scott Goldsmith. April 2013.
- There is a recent text book edited by Dr. Carol Anne Woody that should be a resource for the EIS.
- *Review of Pebble Limited Partnership's Environmental Baseline Document, Geochemical Characterization.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- *Critique of Pebble Limited Seismic Hazard Assessment.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- Regarding salmon and fish habitat, review the following:
- Limpinsel, D. E., Eagleton, M. P., and Hanson, J. L, 2017. *Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska.* EFH 5 Year Review: 2010 through 2015. U.S. Dep. Commer., NOAA Tech.
- Review certified fish habitat areas found here: https://extra.sf.adfg.state.ak.us/
- Ching, Jason S., Curry J. Cunningham, and Thomas P Quinn. *Iliamna Lake Spawning Ground Habitat Assessment and Data Access*. Final Report to the Bristol Bay Regional Seafood Development Association, December 2014. School of Aquatic and Fishery Sciences University of Washington.
- Brennan and Daniel E. Schindler and Diego P. Fernandez, 2017. *Using strontium in otoliths to determine the natal origin and habitat use of sockeye salmon in the Nushagak River.* University of Washington, School of Aquatic and Fishery Sciences, University of Utah, Department of Geology and Geophysics.
- Hauser, William J. 2007. Potential Impacts of the Proposed Pebble Mine on Fish Habitat and Fishery Resources of Bristol Bay. Fish Talk Consulting.
- Pebble Project Freshwater, Marine Fish and Instream Flow Technical Working Groups: Development of Study Objectives and Agency Recommendations.
- Bristol Bay Fish Facts. Prepared for United Fishermen of Alaska Salmon Habitat Information Program, for Pebble Mine EIS Scoping—2018. See also Additional Anadromous Cataloged Waterbodies (attached to public comment submitted by United Fishermen of Alaska).
- In incorporating potential human health effects of the proposal and environmental impacts, apply the four components of the precautionary principle, as described in Kriebel et al., 2001: *Environmental Health Perspectives*. Available from https://www.ncbi.nlm.nih.gov/pubmed/11673114.
- Sharma, R. P., & Kumar, A. 2013. *Case histories of earthen dam failures*. International Conference on Case Histories in Geotechnical Engineering, 8, 6. Available from

  https://scholarsmine.mst.edu/cgi/viewcontent.cgi?article=3092&context=icchge.
- It has been reported that PLP has Light Detection and Ranging (LIDAR) data that covers the project area. LIDAR should provide a good indication of surface faulting. The LIDAR data could be very helpful in addressing the question of whether the Lake Clark fault may extend farther to the southwest.
- "Suncor investigating after more than 100 birds die at new oilsands mine". *Financial Post*, September 19, 2017.

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- Bristol Bay Tribal Multi-Species Conservation and Management Plans. Currently there are none for Iliamna, Nushagak River, Nushagak Bay, Kvichak Bay, and Peninsula, but they should be incorporated into the EIS when complete.
- Cederholm, C. J., D. H. Johnson, R. E. Bilby, L.G. Dominguez, A. M. Garrett, W. H. Graeber, E. L. Greda, M. D. Kunze, B.G. Marcot, J. F. Palmisano, R. W. Plotnikoff, W. G. Pearcy, C. A. Simenstad, and P. C. Trotter. 2000. "Pacific Salmon and Wildlife: Ecological Contexts, Relationships, and Implications for Management." Special Edition Technical Report, Prepared for D. H. Johnson and T. A. O'Neil (Managing directors), Wildlife-Habitat Relationships in Oregon and Washington. Washington Department of Fish and Wildlife, Olympia, Washington.
- *Where Water is Gold: Life and Livelihood in Alaska's Bristol Bay.* By Carl Johnson, with a foreword by Sandra Day O'Connor. Copyright 2016 by Braided River and the Mountaineers Foundation.
- *From the Hinterlands to Tidewater: A Grassroots Pictorial 1885-1965.* By John B. Branson, 1998. The National Park Service, Lake Clark National Park and Preserve.
- Kokhanok portion of the Katmai Project Jukebox program. Judy Nelson/Shirley Nielsen. http://jukebox.uaf.edu/Katmai/Kokhanok/html/main.html
- H W McCurdy. 1966. Marine History of the Pacific Northwest. Pg 344. http://alaskashipwreck.com/shipwrecks-by-area/south-central-alaska-shipwrecks/south-central-alaska-wrecks/
- Bristol Bay Seasonal Subsistence Gathering Cycle. (Attached to comment submitted by Curyung Tribal Council).

3.5.9 Research and Evaluation Needs

Comments were received regarding the lack of baseline research, monitoring, and evaluation needs, or data gaps for the project.

- The USACE should suspend its NEPA process until the PLP presents sufficient environmental baseline and economic data about its proposal so as to reasonably inform the NEPA process.
- No new baseline documents or data were submitted with PLP's application to the USACE in December 2017. The only publicly available baseline documents compiled by PLP are now more than a decade old, with data collected from 2004 to 2008. Those baseline studies failed to include newly proposed project components such as the transportation corridor, Iliamna Lake, and the proposed port site.
- Study the Montana mining industry (e.g., Berkeley Mine) and how often that state has experienced a negative environmental pollution outcome from a mine which was not cleaned up properly.
- There is a lack of baseline studies on newly added mine components for an informed permit process, such as wastewater discharges to Frying Pan Lake.
- An ecotoxicology assessment needs to be conducted for the pit lake, and it needs to be conducted when the pit first rebounds to its full level, and where pit lake stratification turns over and pit lake water mixes.
- Predictive modeling be used, based on a site-specific conceptual model that describes the system boundaries, spatial and temporal scales, hydraulic and chemical characteristics, and the mathematical relationships used to describe processes. The water quality model, in particular, should be capable of predicting both whole water and dissolved fractions of metals/metalloids.

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- Baseline data for the proposed Amakdedori Port and Kamishak Bay may be lacking in terms of what is known about water currents, shifting sands/silts and ice and how these physical conditions may affect trenching. The mud at Amakdedori Bay provides and important ecological function and habitat.
- No baseline data exists for the proposed port and use of Iliamna Lake, or the 83-mile transportation corridor making it impossible to analyze the potential impacts these activities would have on sensitive salmon habitat, tributaries, and adjacent wetlands.
- There are no relevant studies of Iliamna Lake. Frissell and Shaftel's spawning data are more than 7 years old.
- The Alaska Department of Fish and Game lacks assessment tools for the shellfish that live in Cook Inlet. Current baseline studies for these species do not exist. In light of the possible increase in sediment deposition rate resulting from dredging in the area of the Pebble Project, the USACE should require a shellfish population baseline assessment and impact statement regarding the dredging project prior to any dredging work beginning in Amakdedori Bay.
- An extensive and thorough baseline study on bear populations including numbers, movement, diet, and feeding areas should be done.
- More studies are needed to understand freshwater seals and all other animals in the Iliamna Lake area.
- There needs to be more baseline data on all species in the Bristol Bay river mouths and estuaries and the species in the Amakdedori Port area of Kamishak Bay.
- Require appropriate inventory survey for the broad range of historic property types that may be present in the Area of Potential Effect, including archeological sites/districts, properties of cultural and religious significance to Tribes, cultural landscapes, standing structures, and Historic Districts.
- Stream courses should be accurately documented using best available technology. The application relies largely on National Hydrography Dataset which is outdated and overlooks important tributary habitat.
- Evaluate all streams crossed by the road corridor for fish presence (including documentation of species, life stages, and abundance).
- Quantify salmon populations in the North Fork Koktuli, South Fork Koktuli, Upper Talarik Creek, and their tributaries, as well as all stream crossings in the transportation corridor, with at least five years of data.
- The effects of ice breaking on winter lake ecology are not known; study is required to determine the width of the ice-free corridor and the impacts of changes in light, current, and lake surface albedo on spring melt date, phyto- and zooplankton bloom timing, and lake food webs.

3.5.10 Non-Substantive Comment

Submissions without substantive comment that are not specific to a particular issue or do not inform the analysis conducted in the EIS are considered non-substantive. These include comments in support of, or in opposition to, the applicant's proposed project.

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APPENDIX A – NOTICE OF INTENT

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com.*

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. *Description of the Proposed Project.* Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

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APPENDIX B – PUBLIC NOTICES

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US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: January 5, 2018

REFERENCE NUMBER: POA-2017-271

WATERWAY: Multiple

An application has been received in this office from Pebble Limited Partnership (applicant) to discharge fill material into and perform work within waters of the United States. The project site is located in Southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough. The project consists of four primary project elements: a mine site, a port at Amakdedori, transportation corridor, and natural gas pipeline. The submitted application is available on the Corps website at www.poa.usace.army.mil/Missions/Regulatory/Permitting-Section-Homepage/Department of the Army Permit Application POA-2017-271 submitted by Pebble Limited Partnership.

The Corps has determined and notified the applicant that an environmental impact statement level of analysis will be required for the review of the Department of the Army Permit application. As such, the Corps will conduct public scoping after publishing a Notice of Intent to develop an EIS in the federal register. The Notice of Intent will include a list of public scoping locations. Times and dates for these locations will subsequently be advertised via Corps Public Notice and website as well as local media outlets.

Please contact Sheila Newman, Regulatory Division Program Manager at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at poaspecialprojects@usace.army.mil if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

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NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

For Immediate Release:
March 30, 2018
Release No. 18-006

Contact:
John Budnik, 907-753-2615
John.P.Budnik@usace.army.mil

Scoping for Department of the Army Permit Application 2017-271-Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District requests public input regarding the scope of the environmental impact statement level of analysis for Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership.

The Pebble Project has been in the public eye for many years and there have been multiple public input and comment opportunities from other agencies. This public body of information has helped to inform the Corps' preliminary scope for the environmental impact analysis.

The Corps is now asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures.

Since Jan.5, the permit application has been publically available on the Alaska District's website. On Jan.12, the application was mailed via CD to 35 federally recognized Alaska Native Tribes alongside invitations for government-to-government consultation throughout the entire evaluation process including the EIS. The Corps maintains the application as well as additional scoping information at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska, 99506-0898

Beginning April 1, scoping input can be entered directly into the project website at www.pebbeprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

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Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

Meeting locations and times are indicated below. A video explaining major project components will be available for viewing. The Corps will have representatives available to answer questions regarding the Department of the Army permit application review process. Individuals may come in at any time during open hours and to provide scoping input. A Yupik translator will be available at the meetings.

Naknek
Monday, April 9
Naknek School
3:30 PM – 7:30 PM

Kokhanok
Tuesday, April 10
Tribal Hall
3:30 PM – 7:30 PM

Homer
Wednesday, April 11
Homer High School,
5:00 PM – 9:00 PM

Newhalen
Thursday, April 12
Newhalen School
3:30 PM – 7:30 PM

New Stuyahok
Friday, April 13
Community Building
1:00 PM to 4:30 PM

Nondalton
Monday, April 16
Tribal Center
3:30 PM – 7:30 PM

Dillingham
Tuesday, April 17
Dillingham Middle School
5:00 PM – 9:00 PM

Igiugig
Wednesday, April 18
Community Building
3:30 PM – 7:30 PM

Anchorage
Thursday, April 19
Dena'ina Center
11:00 AM – 9:00 PM

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
April 6, 2018
Release No. 18-007

Contact:
John Budnik, 907-753-2615
Public.affairs3@usace.army.mil

Corps extends public scoping period for Department of Army permit application 2017-271 Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District has allotted more time for the public scoping period for the environmental impact statement level of analysis for Department of Army permit application 2017-271 submitted by Pebble Limited Partnership.

An additional 60 days has been added to the original 30-day public scoping period that began on April 1. Therefore, interested parties that would like to provide scoping input have until June 29 to submit.

The Corps is asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures. The permit application is available on the project website at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Scoping input can be entered directly into the project website at www.pebbleprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter. Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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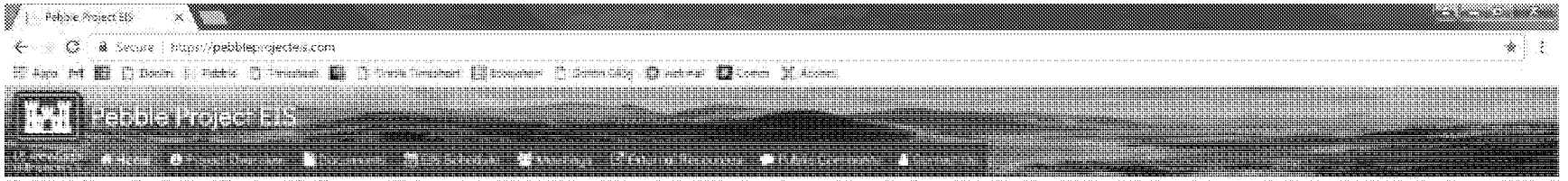

Welcome

The U.S. Army Corps of Engineers invites you to participate in the Pebble Project Environmental Impact Statement (EIS) process. Pebble Limited Partnership proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska, approximately 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton. A 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Kline Site is proposed as the energy source for the mine. The Transportation Corridor includes an 18-mile crossing of Lake Iliamna and an Amakdedori Port facility on the western shore of Cook Inlet.

The proposed mine requires many federal and state permits. The EIS provides the basis for the U.S. Army Corps of Engineers and other federal agencies to evaluate federal permit applications.

Your input can make a real difference in understanding:

- Issues and concerns that should be addressed in the EIS
- The way in which land and resources might be affected by the project
- Ideas on alternatives and ways to minimize impacts

We hope this website will answer your questions and make it easy for you to participate. Please add your name to our mailing list if you would like to be mailed our newsletters. If you have any questions that are not answered on the website, please contact us.

This site is being continually updated. Check back often for updates.

What's New?

Monday, April 30, 2018
Scoping meeting transcripts now available

Thursday, April 19, 2018
Applicant Video Available

Friday, April 6, 2018
USACE extends scoping public comment period by 60 days.

Sunday, April 1, 2018
Submit your Scoping Comments

Wednesday, March 28, 2018
Newsletter #1 Available

Friday, March 23, 2018
Scoping Package is Available

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Contact Us

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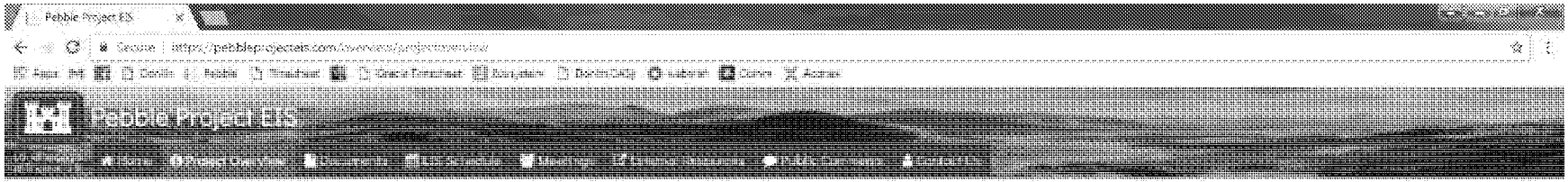


Project Overview | Mine Site | Transportation Corridor | Amakdedori Port | Natural Gas Pipeline | Applicant Video

Project Overview

Pebble Limited Partnership (Applicant) has applied for permits to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure. The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. In addition to the Mine Site, the project would have three other major components: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline.

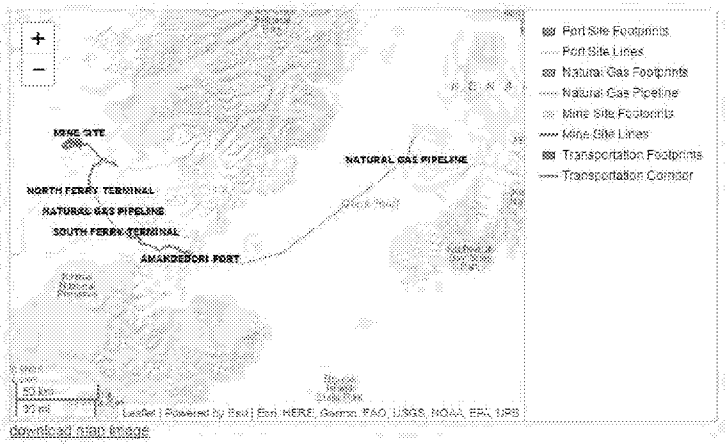
The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of the applicant and by a subsidiary of the applicant's parent company, Northern Dynasty. Neither the applicant nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Rights to develop on State of Alaska land may be acquired when necessary locations for mine development have been determined and permits awarded. The Transportation Corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act.

The proposed project would have a mine life of approximately 20 years. During that time, there would be:

- a total of 1.2 billion tons of material mined over the life of the project;
- mining rate up to 90 million tons per year;
- milling rate up to 58 million tons per year;
- annual copper-gold concentrate production of 600,000 tons; and
- annual molybdenum concentrate production of 15,000 tons.

The project would have an operating schedule of two 12-hour shifts per day for 365 days per year, and employ approximately 2,000 personnel for construction and 850 for operations.

A more detailed project description from the the applicant to the U.S. Army Corps of Engineers can be found here.



Download map image

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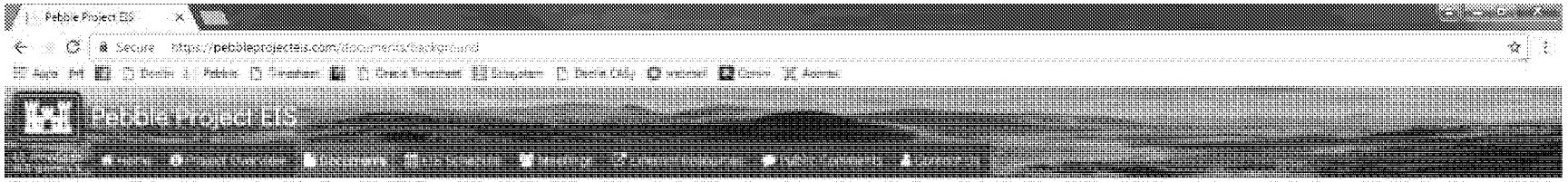

Documents

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Background Documents | Scoping Documents | EIS Documents | Newsletters | Project Library

Permit Application Documents

	Title ▲	Date
Download	Department of the Army Permit Application	12/01/2017
Download	Department of the Army Permit Application CRM Upload Consolidated Replaces	12/01/2017
Download	Department of the Army Permit Application, Attachment A1	12/01/2017
Download	Department of the Army Permit Application, Attachment A2	12/01/2017
Download	Department of the Army Permit Application, Attachment A3	12/01/2017
Download	Department of the Army Permit Application, Attachment A4	12/01/2017
Download	Department of the Army Permit Application, Attachment A5	12/01/2017
Download	Department of the Army Permit Application, Attachment A6	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs_Optimized	12/01/2017
Download	Department of the Army Permit Application, Attachment C	12/01/2017
Download	Department of the Army Permit Application, Attachment D	12/01/2017

Federal Register Notices

	Title ▲	Date
Download	Federal Register Notice of Intent	03/30/2018

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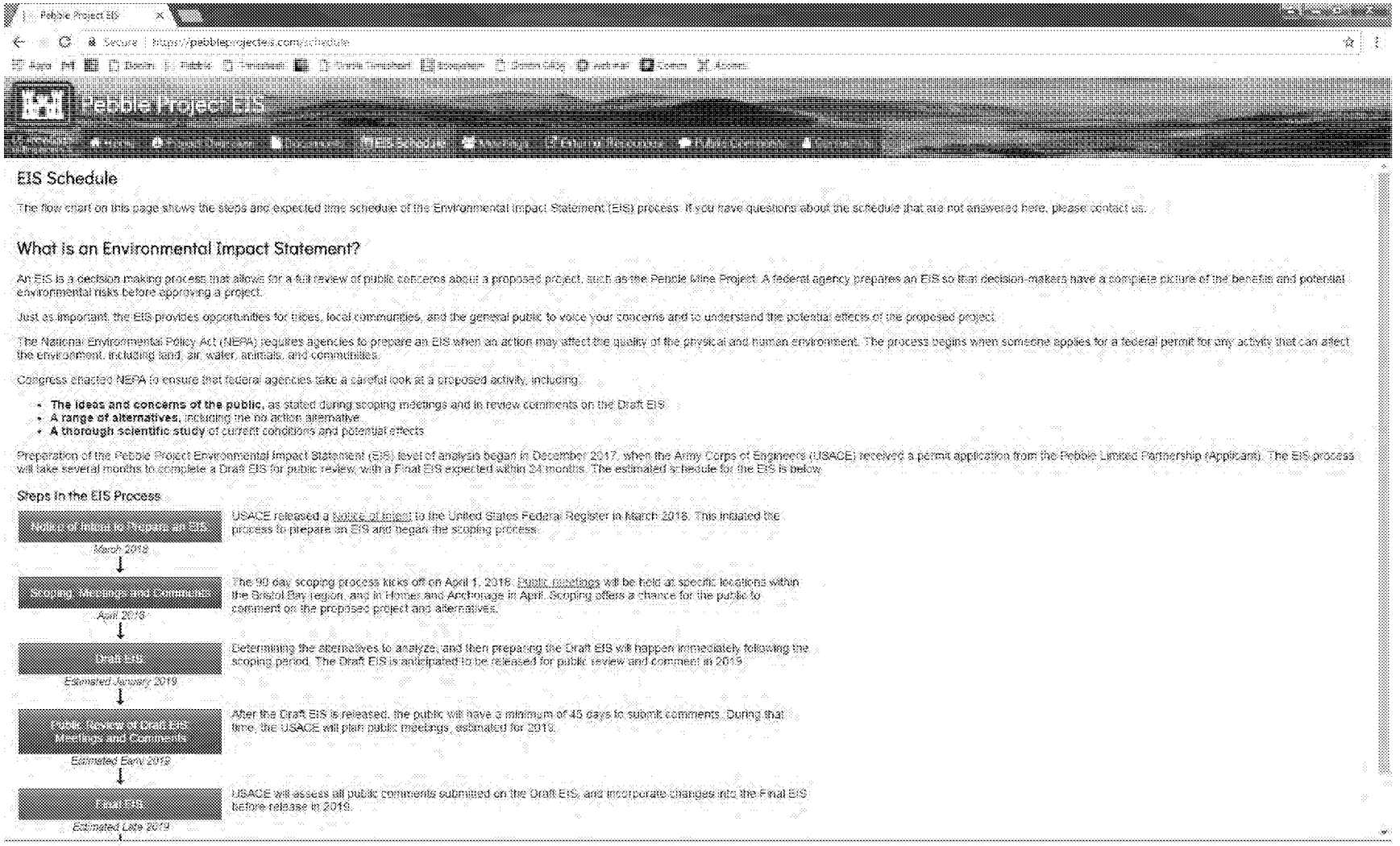

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Scoping Meeting Schedule

The U.S. Army Corps of Engineers hosted public meetings in nine communities to give a presentation on USACE's role in permitting for the Project and the Environmental Impact Statement (EIS) process. The purpose was to inform communities about the EIS and gather comments from the public about concerns. Full transcripts are located here. You can view all comments as they are submitted here.

Community	Date & Time	Location
Naknek	Monday, April 9, 2018 3:30 PM - 7:30 PM	Naknek School
Kokhanok	Tuesday, April 10, 2018 3:30 PM - 7:30 PM	Community Hall
Homer	Wednesday, April 11, 2018 5:00 PM - 9:00 PM	Homer High School
Newhalen	Thursday, April 12, 2018 3:30 PM - 7:30 PM	Newhalen School
New Stuyahok	Friday, April 13, 2018 1:00 PM - 4:30 PM	Community Building
Nondalton	Monday, April 16, 2018 3:30 PM - 7:30 PM	Tribal Center
Dillingham	Tuesday, April 17, 2018 5:00 PM - 9:00 PM	Middle School
Igiugig	Wednesday, April 18, 2018 3:30 PM - 7:30 PM	Community Building
Anchorage	Thursday, April 19, 2018 11:00 AM - 5:00 PM	Denali'ca Center

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Public comments during this scoping phase will be accepted during the scoping period, scheduled to run from April 4, 2018 to June 29, 2018.

Submit your comment

There will be an additional public comment period in January 2019 when the Draft EIS is released.

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External Resources

This site provides external links as a convenience to our users. The appearance of external links on this site does not constitute endorsement by USACE of the external sites/documents or the information, products or services contained therein.

Council of Environmental Quality: Citizen's Guide to NEPA

Alaska Department of Natural Resources: Permitting Large Mine Projects in Alaska

Alaska Department of Natural Resources: Pebble Project

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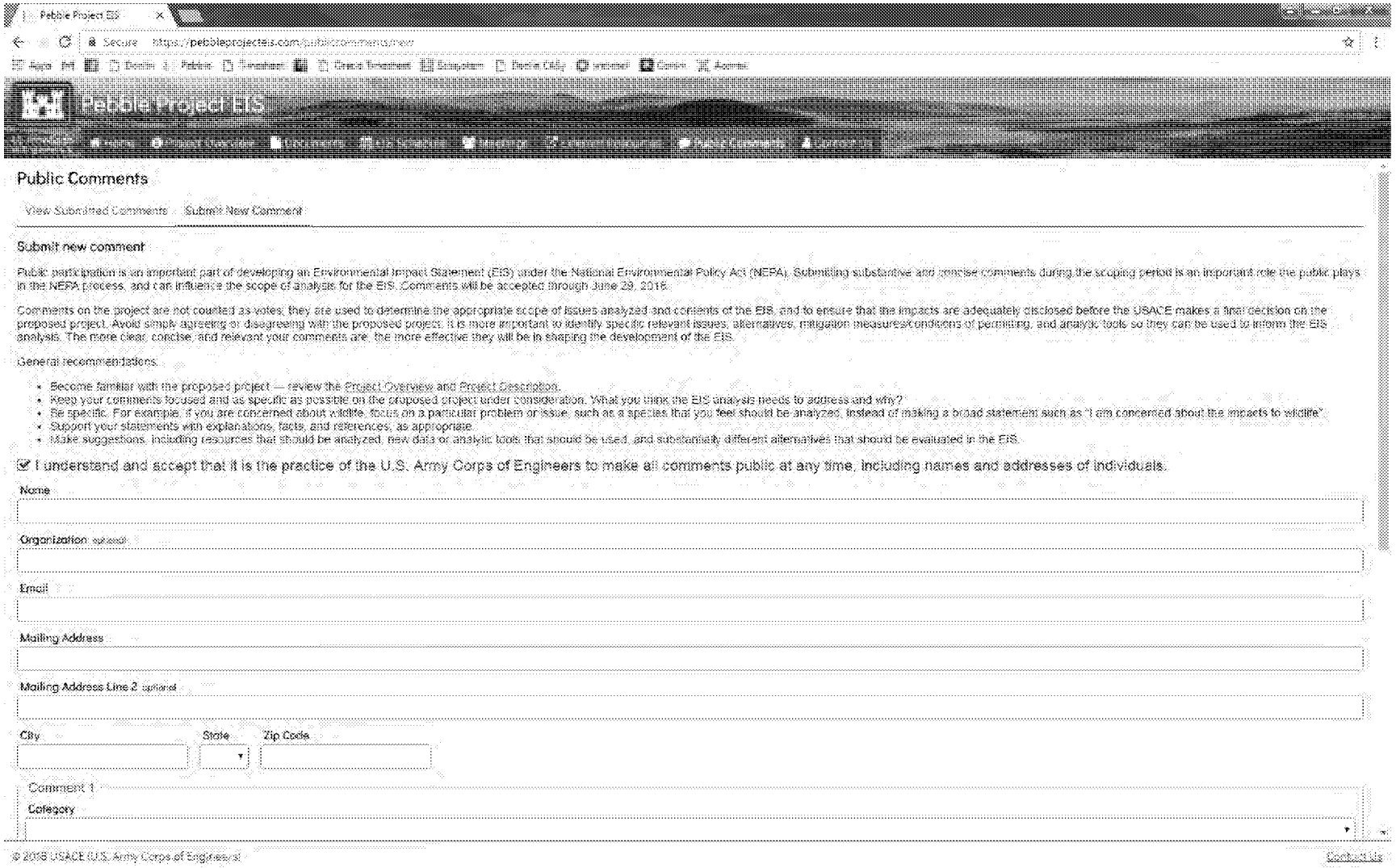

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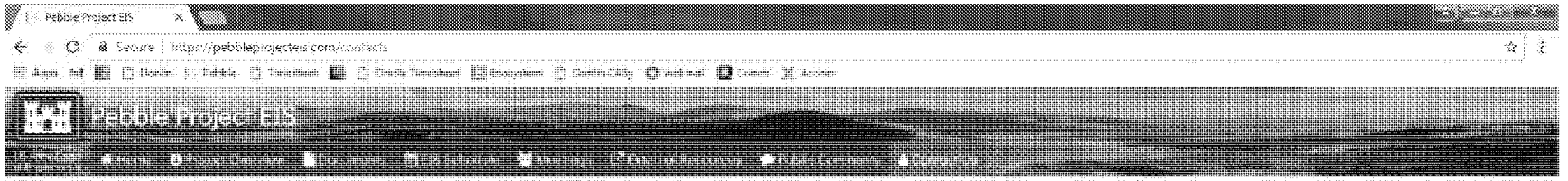

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Lead Agency

U.S. Army Corps of Engineers
http://www.poa.usace.army.mil

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DEPARTMENT OF THE ARMY PERMIT APPLICATION POA-2017-271, SCOPING PACKAGE

SCOPING PACKAGE CONTENTS

1. Public Scoping for the Pebble Project EIS
2. Pebble Limited Partnership (Applicant) Project Description
3. How Alternatives will be Developed
4. What Resources will be Analyzed in the EIS?
5. What is NEPA?
6. Roles and Responsibilities
7. EIS Schedule
8. EIS Outline
9. How to Comment
10. Pebble Project Comment Form
11. Frequently Asked Questions

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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action to express their views and concerns, and to offer suggestions on the scope of analysis. Public input may include ideas for alternatives to the proposed action that could have lesser environmental impacts.

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be avoided or lessened.

Public meetings will tentatively be held during the scoping period of April 1st to June 29th, 2018, in the following communities:

- Anchorage*
- Dillingham*
- Homer*
- Igiugig
- Kokhanok
- Naknek
- Newhalen
- New Stuyahok
- Nondalton

* To avoid long wait times, an open public testimony format will not be used.

Please check our website for the current meeting schedule.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to come to a scoping meeting and give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Scoping comments can be submitted through June 29, 2018.

*Comments received/postmarked after June 29 will be considered, but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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PEBBLE PROJECT DESCRIPTION

Pebble Limited Partnership (PLP), proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. The Pebble Deposit is located approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit, and Kokhanok, which is located 3 miles to the northeast of the proposed road from the port site to the south ferry terminal on Lake Iliamna (see Figure 1).

PEBBLE PROJECT COMPONENTS

The Pebble Project as proposed consists of four facility and operations components:

Mine Site and Associated Facilities (see Figure 2)

- **Open pit mine**, developed in stages, with each stage expanding the area and deepening the previous stage. Final dimensions of the open pit would be approximately 6,500 feet long and 5,500 feet wide, with depths between 1,330 and 1,750 feet.
- **Mine site mineral processing facilities** include a crushing plant, coarse ore stockpile, grinding plant, froth flotation circuits to produce concentrates, and concentrate filters to remove moisture before shipment.
- **Copper-gold concentrate** would be loaded into covered bulk shipping containers and transported by truck to the Amakdedori Port. **Molybdenum concentrate** would be bagged and containerized before shipping to Amakdedori Port.
- **Tailings Storage Facility** located within the North Fork Koktuli watershed:
  - 1.1 billion tons storage volume.
  - separate cells for bulk and pyritic (lined) tailings.
  - four embankments: main (600 feet high), south (350 feet high), and east (60 feet high) perimeter embankments and an internal embankment (420 feet high) separating the bulk and pyritic tailings cells.
- **Low Grade Ore Stockpile** up to 330 million tons of mineralized material, segregated by relative value, and PAG waste rock, placed on an engineered liner to control seepage losses through the stockpile.
- **Waste rock** – Non-potentially acid generating (NPAG) waste rock would be used to construct various mine site structures, including the TSF embankments and mine site roads. PAG waste rock would be stored within the LGO stockpile until mine closure, and then back-hauled into the open pit.
- **Overburden Stockpile** segregated to the southwest of the open pit, and surrounded by a berm of non-mineralized rock to contain the material and increase stability.
- **Water Supply, Management and Treatment** consists of five components:
  - potable water well field and treatment plant.
  - two water management ponds (open pit and LGO/main).
  - sediment ponds.
  - three seepage ponds (south, west, and main embankment).
  - two water treatment plant/three discharge locations (north, south and east).

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- **Personnel camps** include a main construction camp to accommodate 1,700 workers, later refurbished for 850 rooms for operations.
- **Power generation** capacity and distribution infrastructure: 230 megawatt delivery capacity fired by natural gas and a 69-kilovolt distribution system.

Amakdedori Port Site (See Figure 3)

- **Ore carrier vessels** up to 40,000 dead weight tons and 700 feet in length, up to **25 Handysize ships will be required annually** to transport concentrate.
- Up to **30 marine line-haul barge loads of supplies and consumables** will be required annually. **Two ice-breaking tug boats** will be used to support marine facility operations.
- **2000 foot earthen access causeway** extending out to a marine jetty located in 15 feet of natural water depth.
- **Access channel and turning basin,** dredged to 50 foot depth.
- **Shore-based facilities** to receive and store containers and fuel, two, 2-MW natural gas power generators with an emergency diesel generator, a natural gas compressor station, maintenance facilities, employee accommodations, and offices.
- **Fuel storage** consisting of four 1.25 million gallon tanks inside a lined and bermed area

Transportation Corridor (see Figure 3)

Road System Connecting Amakdedori Port to the Mine Site

- **Private, double-lane road extending 30 miles south from the Mine Site to North ferry terminal** on the north shore of Iliamna Lake.
- **Private, double-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port** on Cook Inlet.
- **Eight bridges**, six of which would be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There would be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River.
- Daily transportation of concentrate, fuel, reagents and consumables would require **up to 35 truck round trips per day for each leg of the road**, including three loads of fuel per day.
- **Village surface road connections** from the Transportation Corridor to Iliamna, Newhalen, and Kokhanok.

Ferry Service and Terminals on Lake Iliamna

- **18 mile ferry crossing of Lake Iliamna.**
- **All-season icebreaking ferry** with 12 crew members.
- **Inbound supplies from the Amakdedori Port to the Mine Site** and **outbound copper-gold and molybdenum concentrates, backhauled waste, and empty containers.**
- **Average of one round trip ferry per day.**
- **Two ferry terminals** with 40 foot rock/aggregate causeway, container handling and storage facilities, office and maintenance buildings, and local power supply.

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Natural Gas Pipeline System (see Figure 1)

- **188 mile 10-12 inch diameter natural gas pipeline**, buried 3 feet deep onshore, in five segments:
  - starts on the eastern shore of Cook Inlet at Happy Valley near Anchor Point along the Sterling Highway.
  - 94 mile subsea pipeline crosses Cook Inlet to the Amakdedori Port Site.
  - 35 mile buried pipeline adjacent to the road from port site to south ferry terminal.
  - 18 mile pipeline across Lake Iliamna.
  - 30 mile buried pipeline adjacent to the road from north ferry terminal to Mine Site.
- **Two gas fired compression stations**, one on the eastern end at Anchor Point, and one at the Amakdedori Port.
- **Buried fiber optic cable** adjacent to pipeline.

PROJECT CONSTRUCTION

- **The project would take approximately four years to construct,** on four main project components – Mine Site, Amakdedori Port, Transportation Corridor, and Pipeline.
- **Transportation infrastructure to access the site is the first step**, along with Pre-production Phase environmental protection systems and temporary facilities that support construction crews (camps at port site, mine site, ferry terminals).
- **Initial access to the mine site within one year,** followed by earthworks, plant facilities, tailings storage embankments, stockpile foundations/liners, and water treatment facilities.
- **Natural gas line installation** will occur during the second and third construction years.
- **Completion of Pre-production Open Pit, power plant and processing facilities** in year 4.
- **Construction employment** estimated at 2,000 workers.

PROJECT OPERATIONS

- **Project operating life of 20 years**, **three mining phases** – pre-production, production and stockpile reclaim.
- **Conventional open pit mine** – drill, blast, truck and shovel operation.
- **Blasting events** – once to twice a day.
- **Tailings Storage Facility water management** – Control, collection, and recovery of tailings water for recycling or treatment prior to discharge; seepage collection system below impoundment structures; freeboard to contain inflow design flood.
- **Total material mined** – 1.2 billion tons over the life of the project.
- **Mining rate** up to 90 million tons per year, **milling rate** up to 58 million tons per year.
- **Annual concentrate production** – 600,000 tons copper gold, 15,000 tons molybdenum.
- **Operations employment** estimated at 850 workers, two shifts per day, 365 days/year.

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PROJECT CLOSURE

- **Reclamation and closure jurisdiction** – Alaska Department of Natural Resources Division of Mining, Land, and Water, and Alaska Department of Environmental Conservation.
- **Design for Closure** – early consideration of requirements for Closure and post-Closure site management.
- **Segregation of the bulk and pyritic tailings storage cells** to facilitate Tailings Storage Facility closure.
- **Potentially Acid Generating waste rock** backhauled to mine pit for subaqueous storage.
- **Comprehensive water management plan** that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of flow changes on stream flow and fish habitat.
- **Removal of mill and other infrastructure** not required for closure and reclamation.
- **Reclamation of disturbed areas** through grading, use of top soil as need and revegetated.
- **Road system retained** as needed for post-Closure activities and monitoring.
- **Pit lake water quality will be monitored;** water will be treated and discharged before levels approach elevation where groundwater flows outward from the open pit.

For more details, see Attachment D Project Description, Department of Army Application for Permit (POA-2017-271) on www.PebbleProjectEIS.com.

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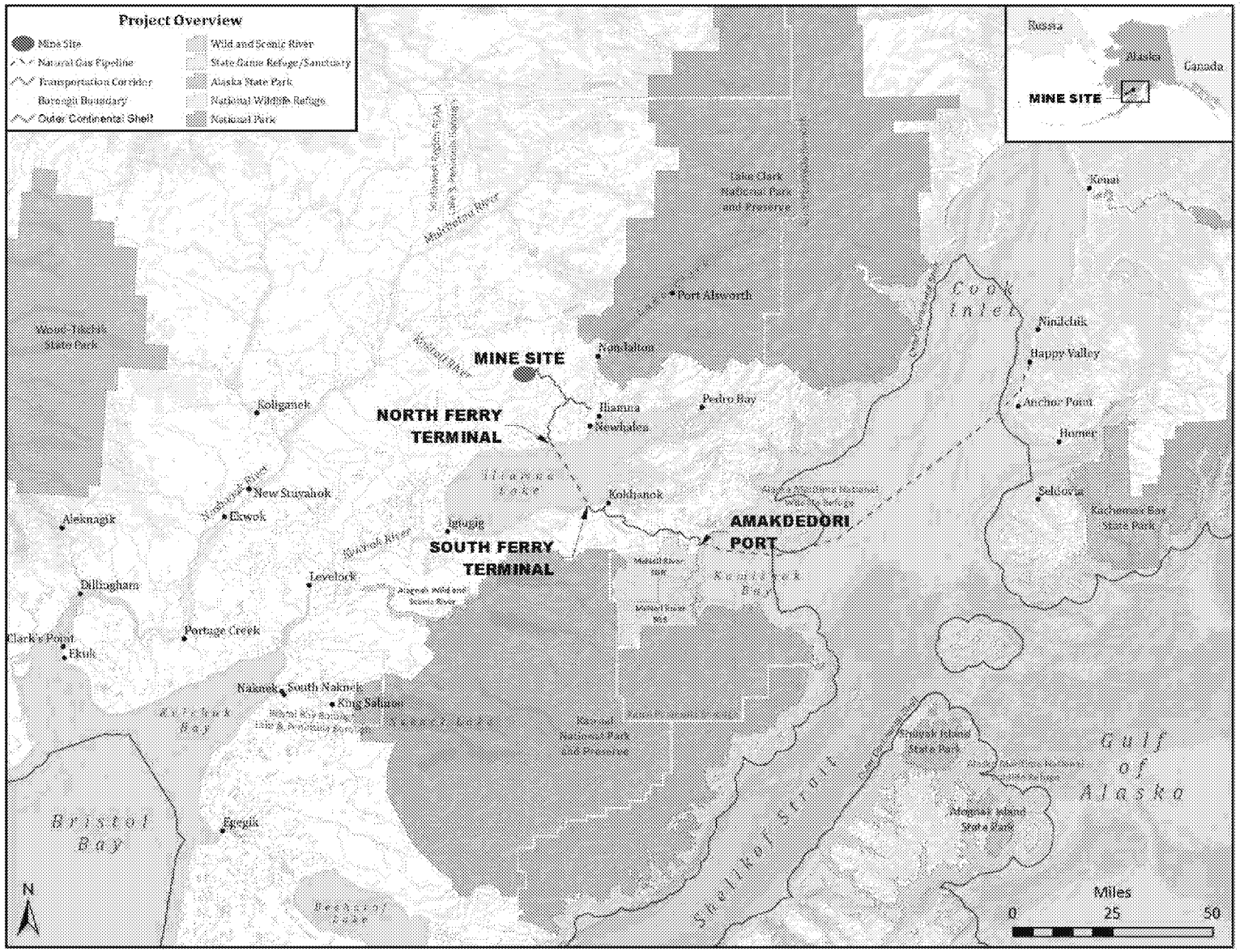

Figure 1. Project Overview

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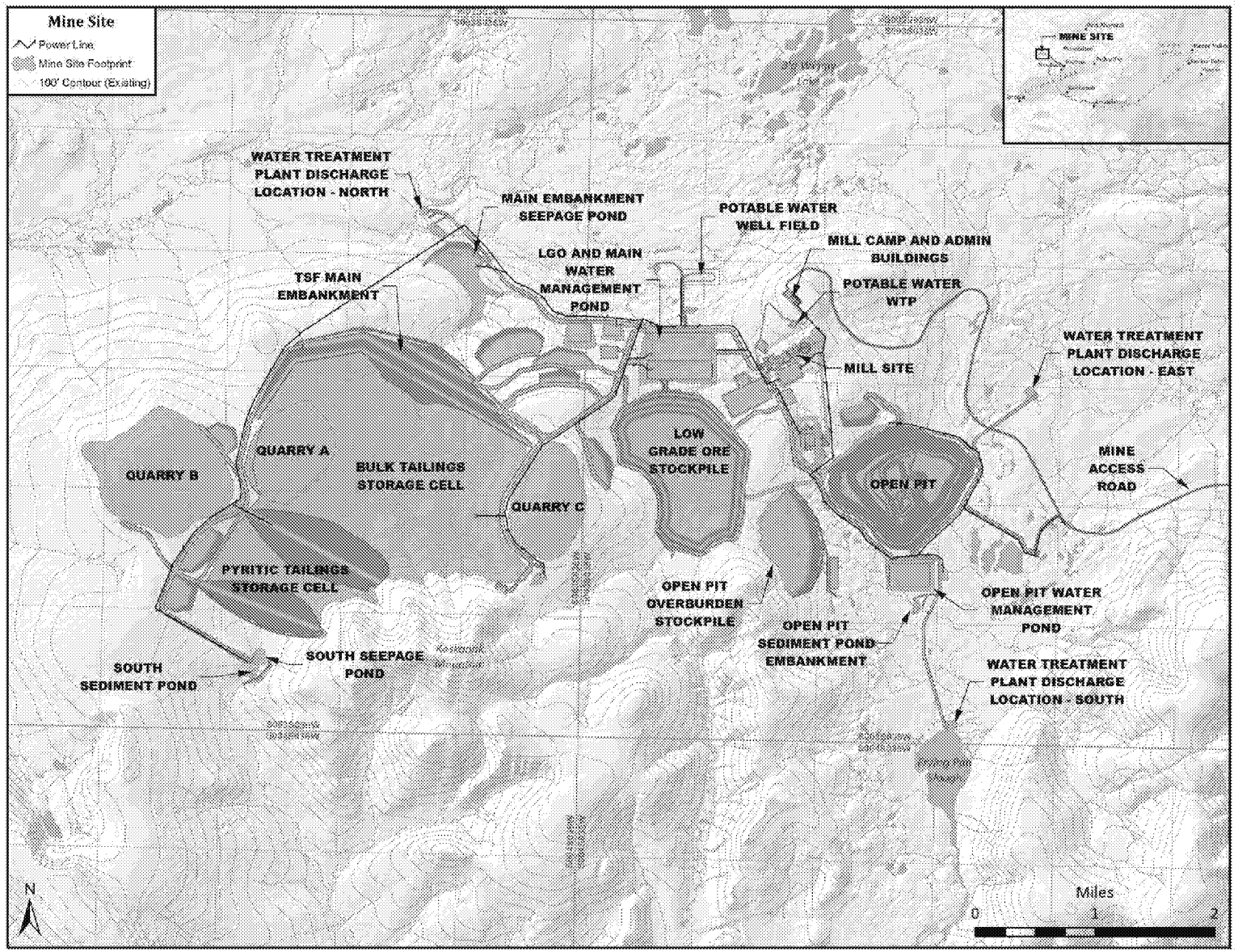

Figure 2. Mine Site and Associated Facilities

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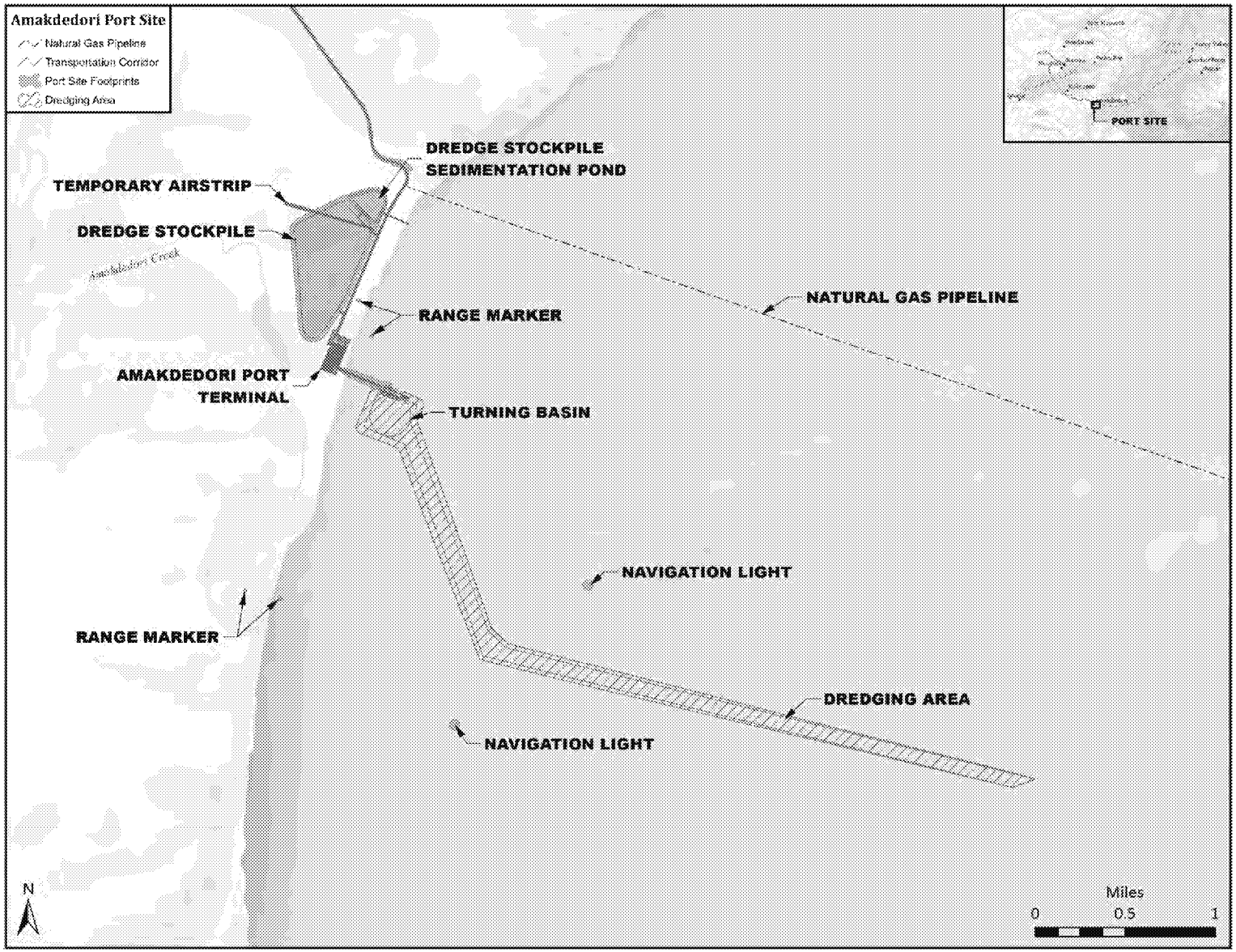

Figure 3. Amakdedori Port Site

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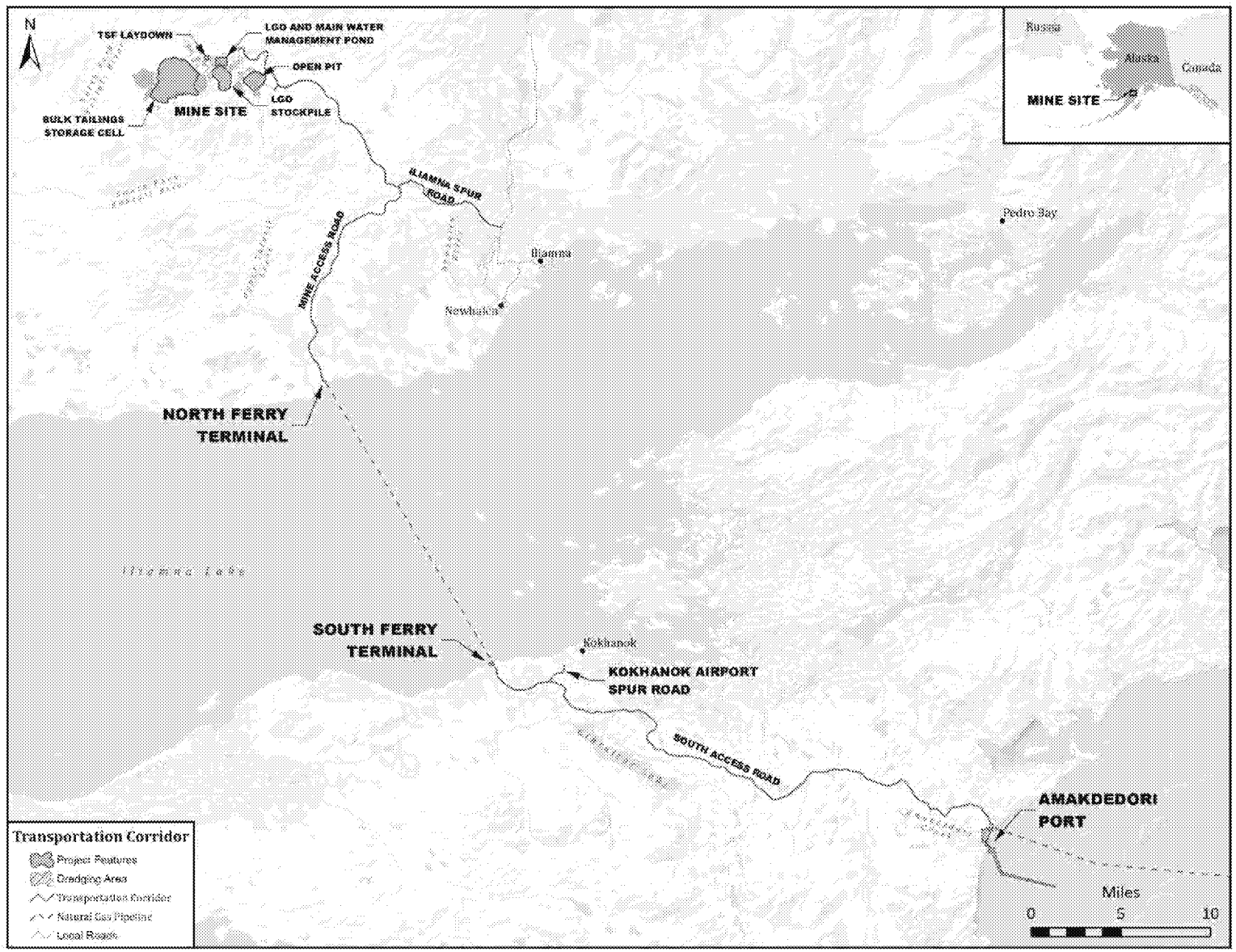

Figure 4. Transportation Corridor

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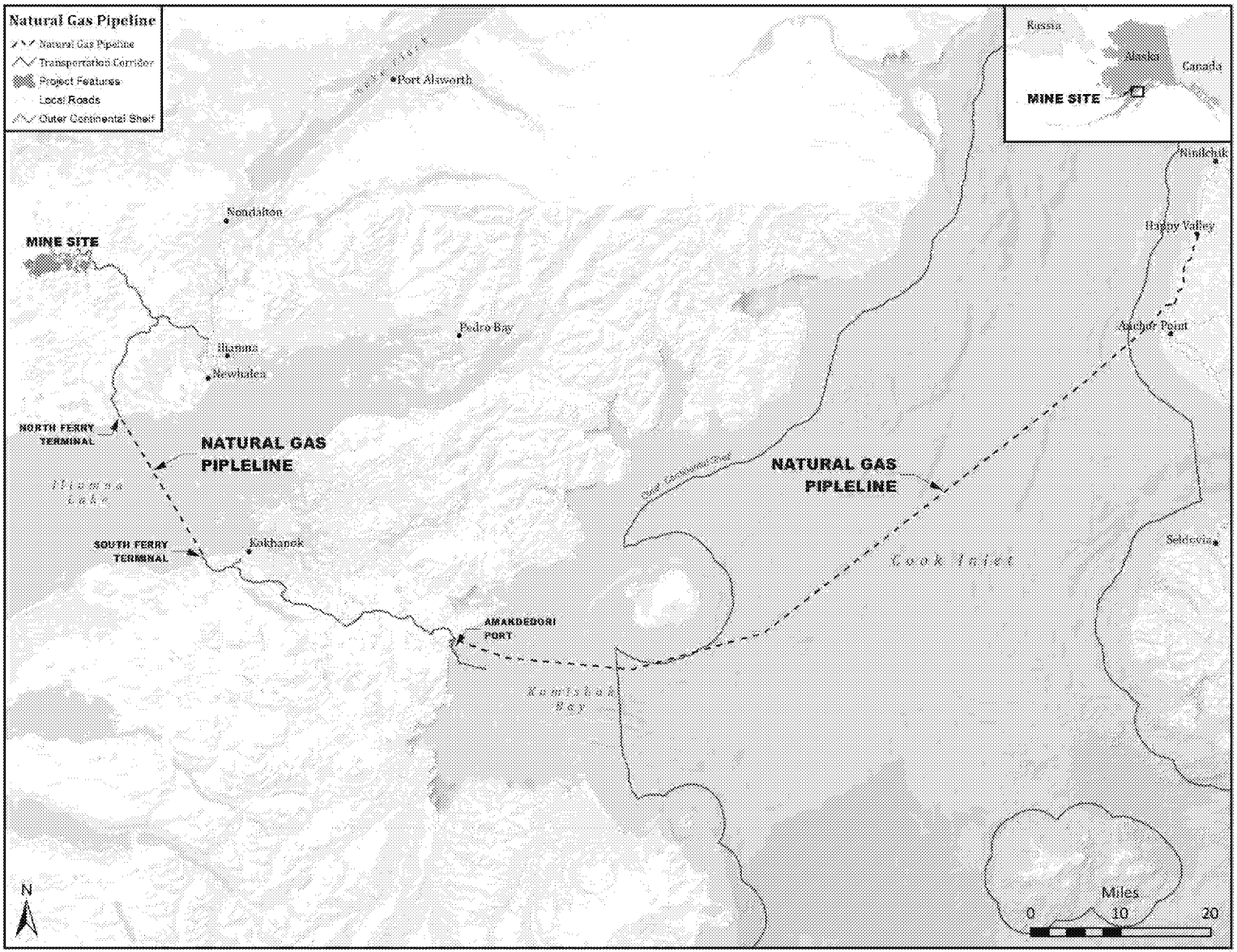

Figure 5. Natural Gas Pipeline

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How Alternatives will be Developed for the Pebble Project Environmental Impact Statement (EIS)

1. Identify need to which the United States Army Corps of Engineers (USACE) – Alaska District is responding and identify the overall project purpose. State the applicant's objectives for the project.
2. Compile a range of alternatives to be considered that meet the overall project purpose with consideration of the applicant's objectives. The alternatives compilation will include the no action alternative, any alternatives considered by the applicant, and alternatives suggested during the scoping process.
3. Determine whether identified alternatives are reasonable in accordance with the National Environmental Policy Act.
    a. Reasonable is based on the consideration of the overall project purpose including stated objectives as well as technology, economics, and common sense.
    b. Determine whether an alternative meets the overall project purpose inclusive of objectives.
        i. Alternatives that do not meet the overall project purpose will be eliminated at this stage.
        ii. Alternatives that meet the overall purpose will move forward.
    c. Alternatives that meet the overall project purpose will be reviewed to determine whether the alternative was available to the applicant during project planning (past 10 years).
        i. Alternatives identified as reasonable but were not available to the applicant will be removed at this time.
        ii. Alternatives that were available will move forward.
    d. Alternatives will be reviewed for technical feasibility (can these alternatives be accomplished using existing technology and equipment?).
        i. Alternatives determined to not be technically feasible will be removed at this stage.
        ii. Alternatives determined to be technically feasible will move forward.
    e. Alternatives will be reviewed for economic feasibility.
        i. Any alternative claimed to not be economically feasible by the applicant will require an economic analysis to support statement.
        ii. An alternative proven to not be economically feasible will be removed at this time.
        iii. Alternatives determined to be economically feasible will move forward.
    f. Alternatives will be reviewed using common sense.
        i. Alternatives that increase adverse environmental impacts will be removed at this time.
        ii. Alternatives will also be reviewed for logistical feasibility. Alternatives that are not logistically feasible will be removed at this time.

Identified REASONABLE ALTERNATIVES with significantly LESSER impacts will be evaluated in the EIS along with the NO ACTION alternative and the applicant's PROPOSED alternative.

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How Alternatives are Screened for Practicability

Due to the USACE specific authorities, alternatives must also be screened for practicability. The practicability determination is described below. Ultimately, the USACE must identify the **least environmentally damaging practicable alternative (LEDPA)** in the Record of Decision prior to making a decision under Section 404 of the Clean Water Act.

1. From the identified reasonable alternatives, further identify practicable alternatives in accordance with Clean Water Act Section 404(b)(1) of the Clean Water Act (the Guidelines). The Guidelines state practicable means the project is available and capable of being done after taking into consideration **cost**, **existing technology** and/or **logistics** in light of the overall project purpose including the applicant's objectives. Logistics and existing technology have at this point been screened in our determination of reasonable alternatives and are included below only for completeness and explanatory purposes. *An alternative needs to fail only one practicability factor to be determined not practicable*.
    a. Costs – Cost is analyzed in the context of the overall scope/cost of the project and whether it is unreasonably expensive. This determination is typically made in relation to comparable costs for similar actions in the region or analogous markets. Cost is to be based on an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost must be current with respect to the time of the alternatives analysis. Because one alternative costs more than another does not mean that the more expensive alternative is impracticable. It is important to note that in the context of this definition, cost does not include economics.
    b. Existing Technology – The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available.
    c. Logistics – The alternatives evaluated may incorporate an examination of various logistics associated with the project (e.g., placement of facilities within a specified distance to major thoroughfares, utilization of existing storage or staging areas, and/or safety concerns that cannot be overcome).
    d. Availability – The Guidelines state that if an alternative is otherwise practicable, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, the fact that an applicant does not own an alternative parcel, does not preclude that parcel from being considered as a practicable alternative. This factor is normally a consideration as a logistics and possibly cost limitation.
    e. Two tests are specified in the Guidelines for alternatives when the basic purpose of a project does not require siting within special aquatic sites such as wetlands. The basic purpose of this project is mining. The type of mining proposed (transitional metal-copper, gold, molybdenum) does not require siting within special aquatic sites. Therefore:
        i. It is presumed that alternatives that do not affect special aquatic sites such as wetlands are available

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ii. It is presumed that alternatives in sites that are not special aquatic sites will have a LESSER ADVERSE impact on the aquatic ecosystem

Once an otherwise practicable alternative has been identified, the applicant (Pebble Limited Partnership) will be required to clearly demonstrate to the USACE that both of these presumptions have been rebutted or the alternative will be considered in the determination of the LEDPA.

**All practicable alternatives are also reasonable alternatives.

2. The final step in developing alternatives is to construct detailed descriptions for the reasonable alternatives that have been retained and carried forward for evaluation in the EIS.

How the Public Can Provide Useful Guidance on Alternatives that should be Considered in the EIS

The purpose of scoping is to determine the alternatives that should be considered in the analysis and determine the extent and nature of issues by which each alternative should be evaluated.

Scoping is an important opportunity for all citizens to provide specific suggestions for alternatives that should be considered in preparing the EIS, and issues that should be addressed in that process. The following guidelines may be useful in submitting comments during the scoping period (*examples shown in italics*):

1. Keep in mind the reasonable alternative screening criteria described above – any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (*mining methods, water treatment, tailings management*), the port site, the transportation corridor and modes (*rail*), and the natural gas pipeline.
3. You can suggest changes in location of project components (*road, port site, mine components*).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (*construction of a rail connection may eliminate truck traffic and reduce dust levels*).

The USACE will make the results of the scoping process publically available by publishing the Scoping Report on the project website (pebbleprojecteis.com) and will also communicate information for newsletters.

How Alternatives will be evaluated in this EIS

Once reasonable alternatives have been identified for evaluation as above, the USACE will evaluate each alternative in relation to the following:

- Conservation
- Economics
- Aesthetics

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- General environmental concerns
- Wetlands
- Historic properties (inclusive of sacred sites or areas of community and/or spiritual significance)
- Fish and wildlife values (inclusive of endangered species, marine mammals, fisheries and wildlife)
- Flood hazards
- Floodplain values
- Land use (inclusive of transportation corridors)
- Navigation
- Shore erosion and accretion
- Recreation
- Water supply and conservation
- Water quality
- Energy needs
- Safety
- Food and fiber production (this would include subsistence activities)
- Mineral needs
- Considerations of property ownership
- The needs and welfare of the people

In the EIS, we will develop a framework to analyze each of these issues with emphasis on issues that rise to the highest level of importance.

During scoping, we are also asking you to help us determine which of these factors are of highest concern to you, to provide information of specific concern regarding any factor listed, and to identify any other specific issues that are not listed. As with your comments related to alternatives, please be as specific as possible when identifying other issues or expanding on issues identified above. This will help us develop the analytical framework moving forward.

For alternatives identified as practicable, the USACE will ultimately make the following determinations:

1) Whether the alternative is the least environmentally damaging practicable alternative,

2) Whether the LEDPA will cause or contribute to the violation of applicable state or federal laws, such as water quality standards or the Endangered Species Act,

3) Whether the LEDPA will result in significant degradation of waters of the United States

4) Whether the LEDPA includes appropriate and practicable steps have been taken to minimize the adverse impacts of the project on wetlands and other waters.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.
For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.
For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects.
For example: wetland fill from one project, combined with the wetland fill from a separate project.

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What is NEPA?

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA's goal is to help the federal government make decisions with full understanding of the potential environmental consequences associated with federal projects or authorizations. A thorough understanding of consequences allows us to identify potential actions that can be taken to protect, restore, or enhance the environment.

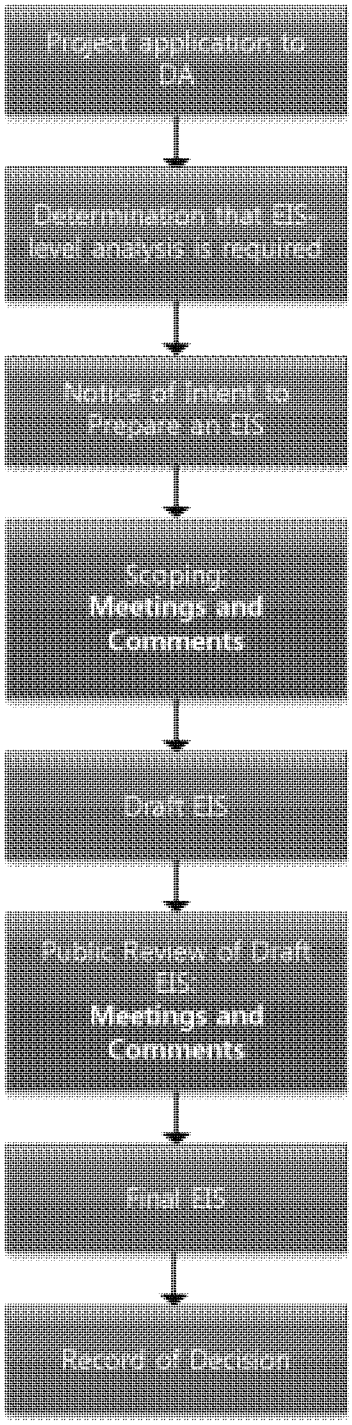
As the USACE prepares to review the submitted permit application, it must conduct a detailed study of:

- how the project will be built,
- the consequences of the project (good or bad) on the environment and for communities,
- alternative ways to develop the project that still meet the project's purpose and needs while better protecting people and the environment, and
- measures that can be taken to avoid or lessen any harmful impacts of the project.

Transparency

Before a decision is made and throughout its analysis, the federal government must ask citizens to voice concerns and suggest alternatives to ensure decisions on federal actions are well informed.

Steps in the EIS Process



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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of anlaysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. As lead agency, the USACE is responsible for identifying, inviting, and assigning roles to cooperating agencies including agencies that also have permitting decisions to make for the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisiplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide the interdisciplinary team that will develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, developing the Draft and Final EIS, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

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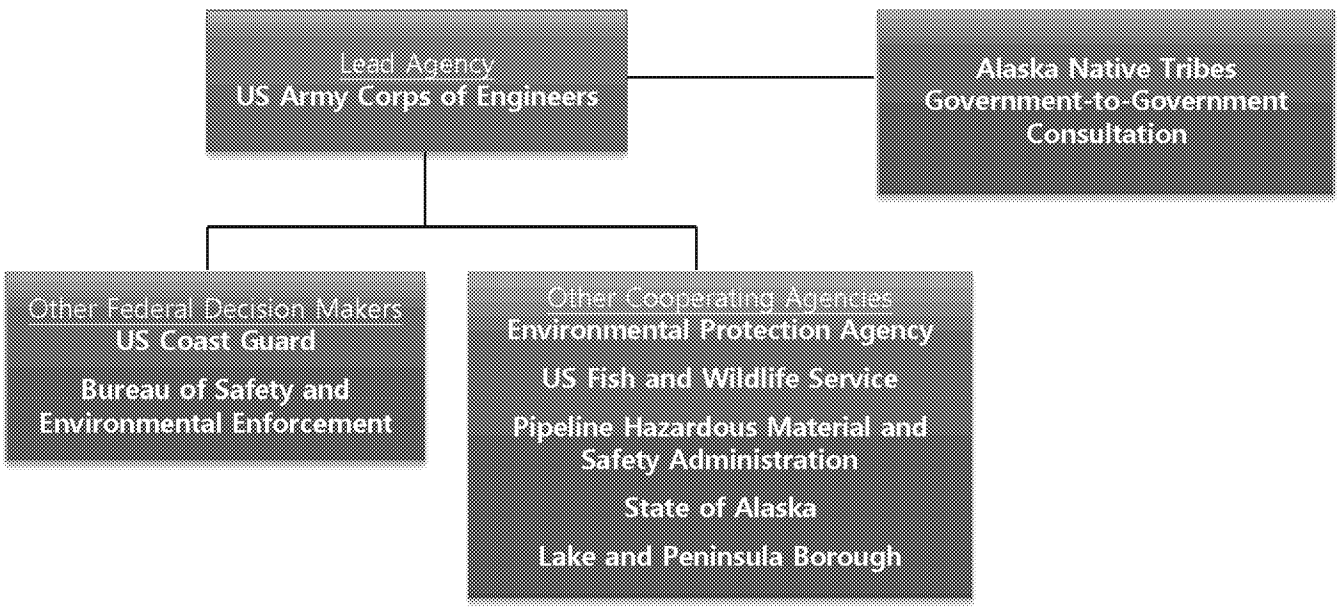
Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirity of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Lead and Cooperating Agencies



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EIS Schedule

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began in December 2017, when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership (Applicant). The EIS process will take several months to complete a Draft EIS for public review, with a Final EIS expected within 24 months. The estimated schedule for the EIS is below.

Steps in the EIS Process

Notice of Intent to Prepare an EIS
March 2018

The USACE released a Notice of Intent to the United States Federal Register in March 2018. This initiated the process to prepare an EIS and began the scoping process.

Scoping: Meetings and Comments
April 2018

The 30 day scoping process kicks off on April 1, 2018. Public meetings will be held at specific locations within the Bristol Bay region, and in Homer and Anchorage in April. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Draft EIS
Estimated Jan. 2019

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period. The Draft EIS is anticipated to be released for public review and comment in 2019.

Public Review of Draft EIS: Meetings and Comments
Estimated early 2019

After the Draft EIS is released, the public will have a minimum of 45 days to submit comments. During that time, the USACE will plan public meetings, in the same locations that occurred during scoping, estimated for 2019.

Final EIS
Estimated late 2019

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release in 2019.

Record of Decision
Estimated early 2020

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application. This is estimated to be released in 2020.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. The EIS will be organized into chapters to address the specific requirements in the National Environmental Policy Act (NEPA). By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and providing comments.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consiquences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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How to Comment

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

General recommendations

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings. The website for the Pebble Project EIS is www.PebbleProjectEIS.com.
- **Learn about the steps in the NEPA process** and opportunities for submitting to the U.S. Army Corps of Engineers (USACE). Public comment periods are during scoping, and at the draft EIS.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through April 30.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed before the USACE makes a final decision on the permit application. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS. For a citizen's guide to NEPA, visit https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.

Tips for Writing Effective Comments

- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Support your statements** with explanations, facts, and references, as appropriate.
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29, 2018.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publically available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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From:

Please place first-class postage here.

Program Manager
US Army Corps of Engineers Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK 99506-0898

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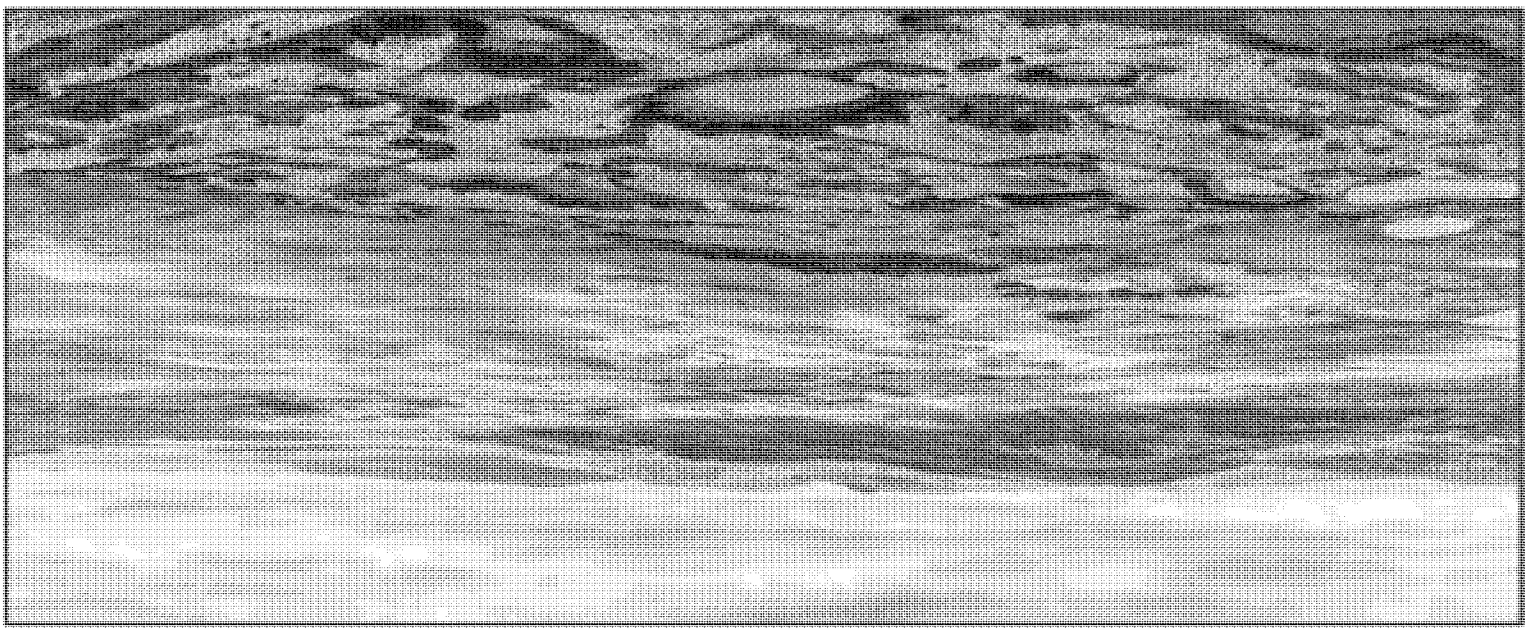

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Frequently Asked Questions

What is the U.S. Army Corps of Engineers' relationship with the applicant?

The U.S. Army Corps of Engineers (USACE) has no relationship with the applicant and is neither for or against the project. The USACE has a responsibility to review the applicant's proposed project with the same objectivity as it would any permit application and make a permit decision under the USACE statutory authorities.

Is the Pebble Project already approved and going to be built?

No.

What is the USACE's role in reviewing this project?

The applicant has applied for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. It is the USACE's responsibility to evaluate their application and ultimately make permit decisions (approval or denial) under the USACE's Clean Water Act and Rivers and Harbors authorities.

Why is the USACE conducting an EIS for this project?

The National Environmental Policy Act (NEPA) mandates an EIS-level of analysis should be conducted for review of any potential federal authorizations that could "significantly affect the quality of the human environment." The USACE has reviewed the permit application and has determined that the proposed project could "significantly affect the quality of the human environment."

Are any other federal decisions required based on the applicant's submittal of the permit application?

Two additional federal agencies have federal decision making authority: the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement, and the U.S. Coast Guard.

Will the USACE seriously consider the No Action Alternative and what factors might lead to its selection?

The USACE cannot be pre-decisional, therefore, the process will be required to analyze and consider the No Action Alternative. In the context of USACE's evaluation, the No Action Alternative constitutes an action that would not include the discharge of fill material into waters of the United States.

What is the role of cooperating agencies that do not have federal decisions to make?

The role of cooperators invited due to specific expertise is to support the lead agency in developing the environmental analysis and providing technical assistance at the request of the lead agency.

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What is the role of federally recognized Alaska Native Tribes in the EIS process?

Thirty five federally recognized Alaska Native Tribes have been asked to consult directly with the USACE as lead agency throughout the entire decision making process to include the development of the environmental impact statement.

When and how will my comments be considered in preparing the EIS?

Public comments can be submitted at any time during the preparation of an EIS. Formal requests for comment occur during two important phases of an EIS:

- During the Scoping Period, the public is asked to comment on the issues and potential impacts that should be addressed in the EIS. The public is also asked to suggest alternatives to the proposed action that should be considered for evaluation in the EIS.
- Once the Draft EIS is released for public review and comment, the public is given the opportunity to submit comments in written form via the project website and orally at public meetings on the Draft EIS.
- All comments submitted will be put into the record, analyzed, and considered in determining the scope and potential impacts within the EIS and in making changes to the Draft EIS during the preparation of the Final EIS.
- The USACE is required to prepare responses to comments submitted on the Draft EIS; comments submitted and response will be included in the Final EIS.

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Pebble Project EIS

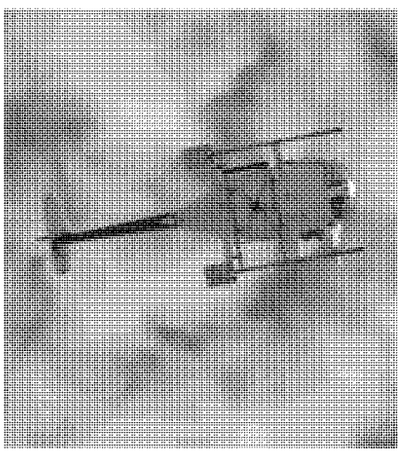
NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.

2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.

3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

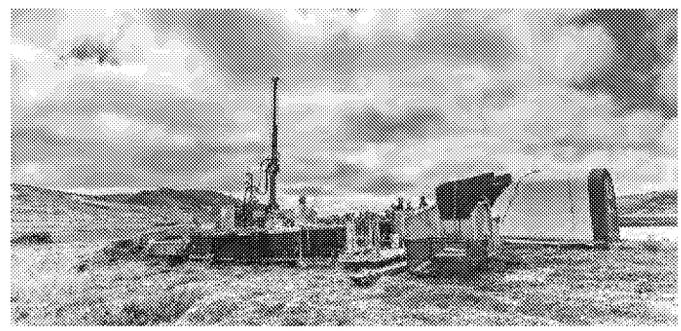
ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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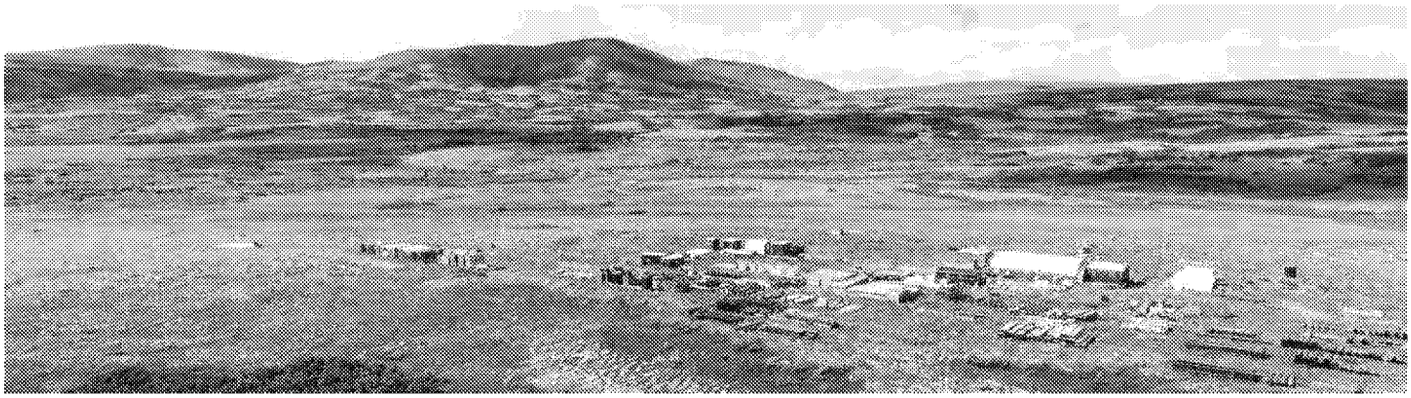

Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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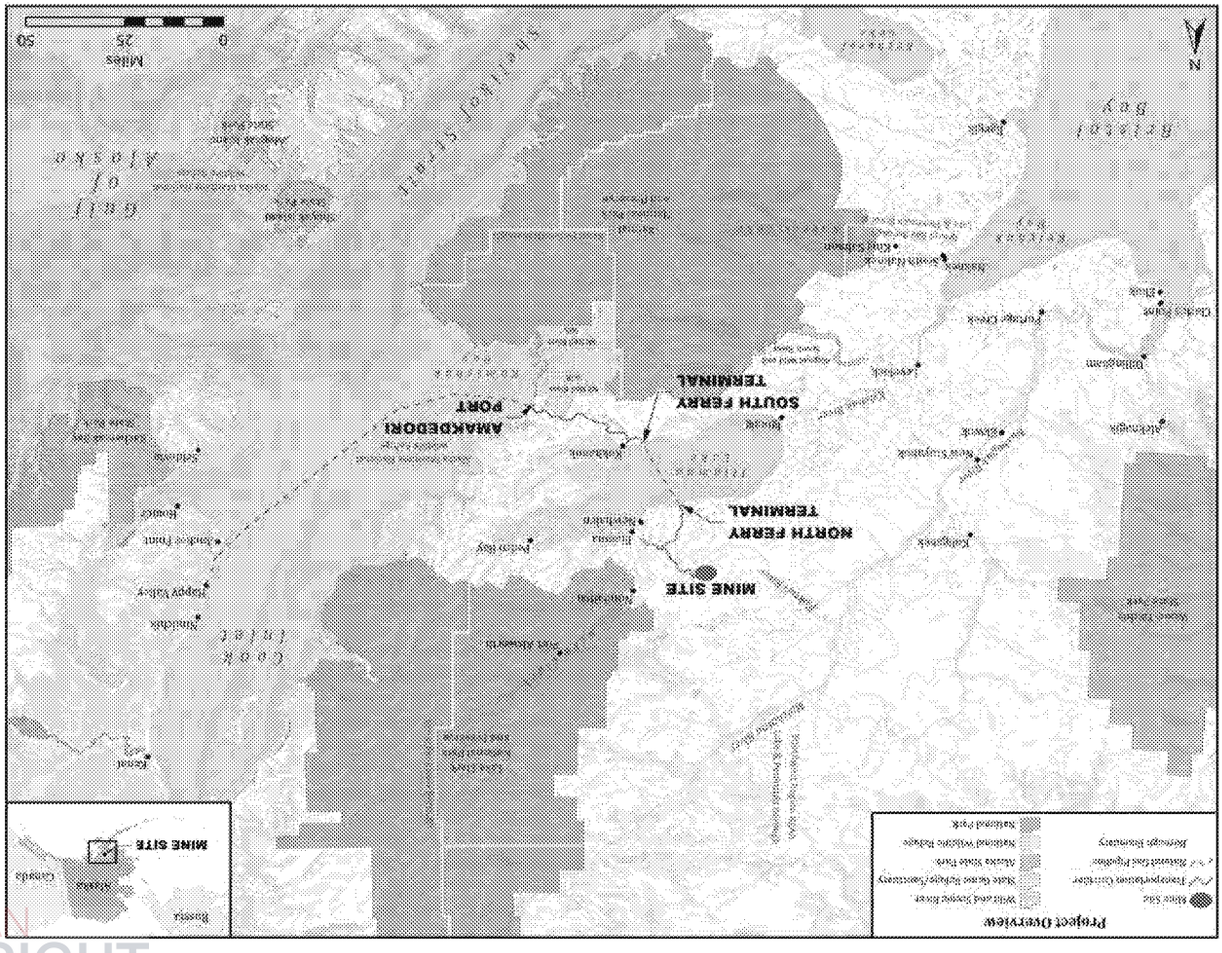
EPA-0135-0000659

Program Manager
Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson AK 99506-0898



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ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 08, 2018, April 09, 2018

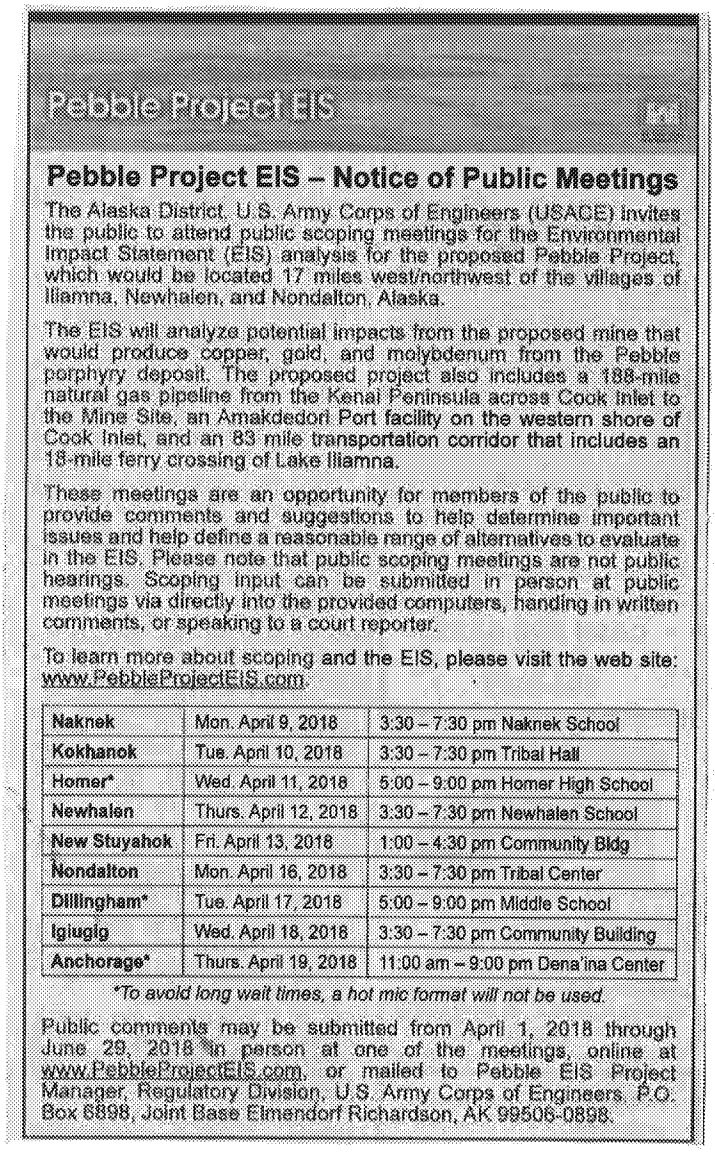
and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed _____
Joleesa Stepetin

Subscribed and sworn to before me
this 9th day of April, 2018

_____
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019



Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS. Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Naknek	Mon. April 9, 2018	3:30 – 7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30 – 7:30 pm Tribal Hall
Homer*	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30 – 7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00 – 4:30 pm Community Bldg
Nondalton	Mon. April 16, 2018	3:30 – 7:30 pm Tribal Center
Dillingham*	Tue. April 17, 2018	5:00 – 9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30 – 7:30 pm Community Building
Anchorage*	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 15, 2018, April 16, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin
Joleesa Stepetin

Subscribed and sworn to before me
this 16th day of April, 2018

Britney Thompson
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

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Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

AFFP

Notice of Public Meetings

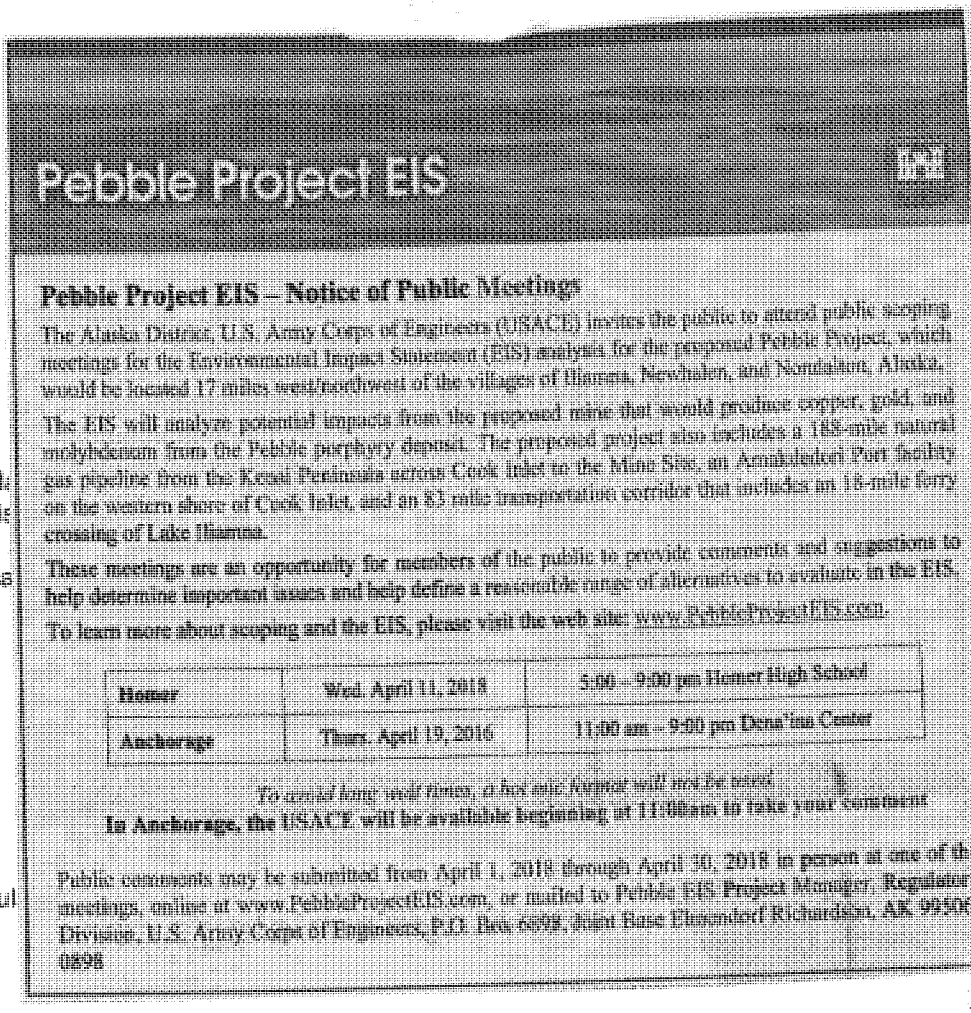
Affidavit of Publication

STATE OF ALASKA }
COUNTY OF KENAI } SS

Denise Reece, being duly sworn, says:

That she is Principal Clerk of the Homer News, a da
newspaper of general circulation, printed and publis
Homer, Kenai County, Alaska; that the publication,
of which is attached hereto, was published in the sa
newspaper on the following dates:

April 05, 2018, April 12, 2018



Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

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Homer	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Anchorage	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

To avoid long wait times, a box size keypad will not be used.

In Anchorage, the USACE will be available beginning at 11:00am to take your comments.

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of th meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulator Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506 6898

That said newspaper was regularly issued and circul
on those dates.
SIGNED:

Denise Reece
Principal Clerk

Subscribed to and sworn to me this 12th day of April 2018.

Mary Von Beaudion, Notary Public, Kenai County, Alaska

My commission expires: August 29, 2020

MARY VON BEAUDION
Commission Expires
NOTARY
PUBLIC
AUGUST 29, 2020
STATE OF ALASKA

00001218 13002507

Jessica Evans
AECOM
700 G. Street, Suite 500
ANCHORAGE, AK 99501

AMERICAN OVERSIGHT

US Army Corps of Engineers

Invites You to Attend Public Scoping

for the

Pebble Project EIS

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Newhalen	Thurs. April 12, 2018	3:30—7:30 pm Newhalen School
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Anchorage*	Thurs. April 19, 2016	Comments accepted beginning 11:00 am—9:00 pm Dena'ina Center

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The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the Pebble Limited Partnership's proposed project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts, benefits, and alternatives from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

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Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter

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APPENDIX C – MEETING SIGN-IN SHEETS

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1.	Maureen Knutsen	self/~~husband~~	(b) (6)
2.	HENRY F. Fischer Jr	Self employed	
3.	William REGAN	RETIRED	
4.	Dorothy M Larson	BBNC	
5.	Marilyn A Hanson	housewife	
6.	Paul Hansen Sr	Subsistence/Fisherman	
7.	~~Sharon~~ Thompson	resident	
8.	~~Alex~~ Williams	PLP/Self	
9.	Richard Russell	formerly ADFG but now just for myself	
10.	Peter Andrew	BBNC	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Henry		(b) (6) [redacted]
12. Ted Shangin		
13. Joe Chythlook	BBNC	
14. Quickley	BBNC	
15. Daniel S. O'Hara	Bristol Bay Borough	
16. Everett Thompson	Bristol Bay Fisherman Local	
17. Dylan Manuso	Bristol Bay Fisherman	
18. Mellisa Manuso	BB resident	
19. Lindsay Layland	BB resident	
20. Russell Phelps	BBNC	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. George Wilson Jr	BBFA/personal	(b) (6)
22. Russell Nelson	BBNC	
23. John Christensen	Native Village of Port Heiden	
24. Jodie Hasenbag	Naknek	
25. Cody Lawson	D. Mayhan	
26. MegAnna Schlais	Naknek	
27. Pete Cavasso	KS/Naknek	
28. CaroLAnn Hester	Naknek Set Gillnet Fisher	
29. Beth Hill		
30. Anna Hoover	Egegik Drifter	

Peter Andrews

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Eddie Clark	Egegik Setnetter	(b) (6)
32.	Dale Peters	NO MINE! NO WAY!! NAKNEK SETNETTER LOCAL BUSINESS OWNER	
33.	Veronica Wood	Naknek Resident	
34.	Eseta Sherman	Small Business	
35.	Joshua Gumlickpak	Alushagak Drifter	
36.	Paul Hansen Jr	Fisherman Driftnet	
37.	Rose Chr Hansen	Naknek Resident	
38.	Annette CARLSON	Naknek resident	
39.	Josey Wood	Resident	
40.			

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. William Weatherby		(b) (6)
42. Kate Conley	Lake & Peninsula Borough	
43. John Wise		
44. BECKY SAVO	resident BBB	
45.		
46.		
47.		
48.		
49.		
50.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Wesley Foster		(b) (6) [redacted]
52.		
53.		
54.		
55.		
56.		
57.		
58.		
59.		
60.		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61.		(b) (6) [redacted]
62.		
63.		
64.		
65.		
66.		
67.		
68.		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Gerald Andrew		(b) (6)
2. David McAlister		
3. Paul Chukwak	chukwak	
4. Joe Chythlook		
5. John Nelson Jr	self	
6. Sheila M. Hobson		
7. Jim Tilly	self	
8. Michelle Ravenmoon	Lake & Penn Borough Assembly	
9. Steve Nowatok		
10. Joe Hyde		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Agnes Mike		(b) (6) [redacted]
12. Marlene Tilly		
13. Rickterff Marsha Rickterff		
14. Matt Matt Rickterff		
15. Kimberly Williams		
16. NATHAN HILL	LAKE + PENINSULA BOROUGH	
17. Trofim Wassillie		
18. Mariana Eknaty		
19. Diedre Hill	B.B.N.C. / land owner	
20. Mollie Gatzke		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Viola Paul		(b) (6)
22. Greg Andrew Jr.		
23. Sergie Chukwak	Levelockville	
24. Luke Zackar		
25. Gustie Tallekpalek	Levelock AK	
26. Gilbert Andrew	Kokhanok AK	
27. Laura Evan-Andrew	Kokhanok, AK	
28. Nicll Newyaka Jr.	Kokhanok AK	
29. Avery. Gill	KDLG	
30. Cynthia Olympic-Andrew	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Alesia Newyak	Kokhanok	(b) (6)
32. Mary Nelson	Kokhanok	
33. Fran Andrew	Kokhanok	
34. Jimmy Ekuty	Kokhanok	
35. Natalia Wassillie	Kokhanok	
36. Marisa Hobson	Kokhanok	
37. Isaiah Mike	Kokhanok	
38. Joseph Zackar	Kokhanok	
39. John Chukwak	Levelock	
40. Martha Kernak	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Alice Cobb	Kokhanok	(b) (6)
42. John F. Gust	Kokhanok	
43. Gregory Wassillie	Kokhanok	
44. Samuel Madrid	Kokhanok	
45. Gerri Heath (Hester)	Kokhanok	
46. Joe A Paine	Kokhanok	
47. Alexander Tallekpalek		
48. Joe Woods	Kokhanok	
49. Raymond Apokedak	Levelock	
50. Nicholas Chocknok	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Brittany Bush		(b) (6) [redacted]
52. Evangaline Chunak		
53. Sonia Delkittle		
54. ~~Megan Kloff~~		
55. SAMMARA chunak	Kokhanok	
56. Helen chunak	Kokhanok	
57. Cara Pellegrino	Kokhanok	
58. Shelby Gallio	Kokhanok	
59. Jordan Pufka	Kokhanok	
60. Charlene Roehl	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Test.ify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marlene Nielsen		(b) (6) [redacted]
62. Sharolyn Chocknok		
63. Tootsie Roehl	handed in	
64. Troy Anderson		
65. Kathy Wassillie		
66. Nancy Wassillie		
67. Jesse Davis		
68. Loney Moses		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. DAN BOONE	[redacted] NONE	(b) (6) [redacted]
2. JACK POLSTER	"	
3. Eileen Sheridan	Cook Inlet Keepers	
4. Gary Sheridan	"	
5. Wilma Williams	me	
6. Royce Page	none	
7. JACK ALLARDICE	NONE	
8. JOHN WHITTIER	NONE	
9. Amanda Kelly	none	
10. Janet Fink	none	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Sera Baxter		(b) (6) [redacted]
12. John Allardice		
13. MICHELLE MICHAUD		
14. Chris Perry		
15. Milli Martin		
16. BRYAN ZAK		
17. SHIRLEY EVANS		
18. Georgeanna Heaverley		
19. Shlomo Gherman		
20. [illegible]		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Bern Levine	none	(b) (6)
22. Linda Layland	n/A	
23. Emilie Springer	UAF	
24. Martha Crow	fisherwoman	
25. Charles Crampton	farmer-none	
26. Barbara Reilly		
27. Larry Shone	None	
28. Mili Lundgren	Fisherman	
29. Mike Lundgren	Fisherman	
30. Clyde Bogard	Interested Alaskan to save our fishery	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Jeff Middleton		(b) (6) [redacted]
32. Dennis Andrews		
33. Shelley Gill	Eye of the Whale.org	
34. Michael Yourkowski		
35. Rae Lewis	Salmon Lover	
36. George Matz		
37. John Mcall	BBG	
38. MATT HAKALA		
39. Lorena Brown	Salmon State	
40. Jessie Nelson	Cook Inlet Aquaculture Lower Inlet Setnet	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Beaver Nelson	Cook Inlet Setner	(b) (6) [redacted]
42. Brad Cameron	Sportsfisherman	
43. Janette Latimer	Nurse	
44. Lisa Krebs	Bristol Bay Fisherman	
45. Tricia Carran	Tender owner in B. B.	
46. George Smallwood	Keeper	
47. Marika Carey		
48. Shine Carey		
49. Kyle Schneider	Sportfisherman/Educator	
50. Donna Adarhold	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Charlie Franz		(b) (6) [redacted]
52. Claire Neaton	comfish	
53. Jim PLYMIRE	BEAR COVE FISHERIES LLC	
54. Jinky Handy		
55. Malcolm Milne	North Pacific Fisheries Assoc.	
56. Revelle Russell	North Pac Fisheries Assoc UCIDA	
57. Jennifer Hakala	NPFA	
58. GARY AULT		
59. Andrew Snegirev		
60. Jaime Gable		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Jon James Sharp	human	(b) (6)
62. Chessie Sharp		
63. Laura McIntoe		
64. MARK MASSION		
65. Reba Temple	fisherman	
66. Ron KEFFER	CAN	
67. Carolyn Maolerd	teacher/salmon advoca	
68. STEVE BAIRD		
69. Jane Mile		
70. Catie Bursch	Fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Wendy Wayne		2435 Paradise Ct Homer AK 99603
72. Lolita Brache		(b) (6)
73. Tess Daly		
74. Charles Lindsay	VCIOA	
75. Renie Cannava		
76. Peter Cannava		
77. Joey Kraszeski		
78. Solstice Kraszeski		
79. LOGAN SANDER		
80. Barb Ryzenkiewicz		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. PAT & Lyle Bellamy		(b) (6) [redacted]
82. Cheryl Rykaczewski	MARICULTURE OYSTER FARMER – ASSN.	
83. McKIBBEN JACKINSKY	HOMER NEWS / PREVAILING WRITER	
84. Sharon Brooks	resident	
85. Laura Luttrell		
86. ROB LUND	RESIDENT	
87. Karen Murdock	resident	
88. Thomas McDonough	resident	
89. Wesley & Sharon Henry	resident	
90. LuAnne M. Nelson	resident	

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. Brandon Hill	Cook Inletkeeper	(b) (6)
92. Tim Scheffel DO	Private-Healthcare	
93. Stu Schmutzler	Private	
94. Amanda Campbell		
95. Sean Campbell		
96. Kathryn Carssow	private	
97. MAKO HAGGERTY	self	
98. Amy Christiansen	self	
99. Shevawn Miller	Self	
100. Amy Woodruff	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Brenda Dolma	Alaskan (self)	(b) (6) [redacted]
102. DENE SMITH	ALASKAN	
103. Erin Knudtson	"	
104. Patricia Cue	Kachemak Bay Conservation Society	
105. DINA CHEEMAN	ALASKAN	
106. Tim Steinberg	Alaskan	
107. Laurie Daniel	Alaskan	
108. Katie Dawson	Alaskan	
109. Tammy Cornwell	Alaskan / tours	
110. David Schaible	Alaskan	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Philip Brudie	local fisherman	(b) (6) [redacted]
112. Joe Symbersky	Local fisherman	
113. Drue Symbersky	business owner	
114. Roberta Highland	Kachemak Bay Conservation Society	
115. Ernest Sveja	Local	
116. Bill Wiehe	Local	
117. Leon Smith		
118. Trisha J. Davis	Superfund Site Survivor	
119. Mark Munro	Fisherman Bear View Air Taxi	
120. Matthew Martushev	Commercial fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. NATACIA MCCANN		(b) (6)
122. John Mink		
123. SARAH ROBERTSON	HOMER BIRTH & WELLNE	
124. GLENN CALDWELL		
125. Jeff Dean		
126. Skywalker Payne		
127. Daniel Laylands	COOK INLET RESIDENT 35yr Bristol Bay Summer	
128. DAVE BACHRACH		
129. Doug Reid		
130. Deborah Smith	Cook Inlet Keeper Supporter	

AMERICAN OVERSIGHT

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Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Lynn Temple		(b) (6) [redacted]
132. MARY FEISCHE		
133. KARA CLEMENS		
134. AndreaVanDinther	Bear Guide	
135. Sofia Loboy		
136. Isabella Loboy		
137. Hudson Loboy		
138. Joe Loboy		
139. Jeanne Parker	teacher	
140. Russell Miller		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Alison O'Hara		(b) (6)
142. Miranda Weiss	Citizen voter mother	
143. GREGORY FRIES	VOTER/CITIZEN	
144. Morgan Edminster	Fisherman/voter/citizen	
145. EDWIN O. KILCHER	COMMERCIAL BARGE & BUSINESS	
146. Charlotte Adamson	Farmer	
147. Francie Roberts	Citizen	
148. LACEY VERSKO	COMMERCIAL FISH	
149. Penelope Haas	ADF&G/Commercial fishing	
150. Todd Gustafson		

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Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Mark Schollenberger		(b) (6)
152. RICHARD HARNESS	SEASIDE ADVENTURE	
153. TORREY SHORT	Wildland Firefighter	
154. Elaine Burgess		
155. Dorla Harness	citizen	
156. Cynthia Morelli	fish eater	
157. Lynn Takeeda Spence		
158. SHERYL BAECHLER	HOMER CITIZEN LANDOWNER BRES	
159. Tim Whip		
160. JACK CUSHING	HOMER CITIZEN	

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Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Susan Cushing	Homer Resident	(b) (6) [redacted]
162. Ivan Wood Bed	Homer Resident	
163. Shannon McBride-Morin	Kachemak Bay Wilderness Lodge. Homer	
164. Lars	Homer Resident	
165. Ben	Homer Resident	
166. Maggie Goedeke	Homer Resident	
167. Robert Johnson	Alaska resident, fisheries biologist, tribal employee	
168. Monica Zappa	Ninilchik, AK setnetter	
169. Peter Andrew	BBNC	
170. Rika Mouw	resident	

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Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. Jennifer Dickson	Homer	(b) (6)
172. Sherri Burt	Seldovia	
173. Peggy Paver	Homer	
174. Aaron Ford	Homer	
175. Nicole Arevalo	myself	
176. JUDY GONSALVES	BRISTOL BAY FISHERMA HOMER RESIDENT	
177. Charlie Christoffersen	Kenai	
178. Zenovia Prokopief-Talleknalek	Levelock	
179. Jordan Jackinsky		
180. Brad Thorenburgh	Homer	

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Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181. Betty Siegel	-	(b) (6) [redacted]
182. Daniel Del Missier		
183. Stephanie Zuniga	—	
184. Wes Schacht	Homeroid	
185. Jodi Andrews		
186. Christine Kulcheski		
187. Mikee Flora	Bristol Bay Fisherman	
188. Taylor Andrade	Homer Resident employed in Tourism.	
189. Kyla Dammann		
190. Anne Wieland	—	

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Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191. Bob Moore	AK Resident 48 yrs.	(b) (6) [redacted]
192. Mercedes Becker	Ak resident 21 yrs	
193. Karen Northrop	AK resident 21+yrs	
194. Ruby Haigh	AK resident 66yr	
195. Carrie Oats	Ak resident 19yrs.	
196. Cal Loomer	AK Resident	
197. Pete Beck	AK RESIDENT	
198. TRISH BOYER	AK RESIDENT	
199. Michael Mosley	Ak Resident	
200. Tim Osmar	Ak Resident	

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Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201. Beverly Cronen		(b) (6)
202. Louis Dupree		
203. Amanda Miotke		
204. Diedre Hill	B.B.N.C.	
205. Karen Schmidt		
206. Kim McNett	Kachemak Bay Conservation Society	
207. NANCY HILLSTRAND	PIONEER ALASKAN FISHERIES	
208. Jeffrey Lee		
209. Joey Allred		
210. Karianna Derr	Homer	

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Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211. Timothy Gervais	fisherman	(b) (6) [redacted]
212. Ruby		
213. Margaret		
214. Meghan		
215. Eileen Mullen	fisherwoman	
216. Martin Renner		
217. Sue Mauger		
218. WAYNE ANDERSON	—	
219. Anders Gustafson	Bristol Bay Heritage Land Trust Homer Local Guide	
220. Leah Evans	Homer	

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Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
221. Mary Edminster	Homer	(b) (6) [redacted]
222. Scott Bartlett	Homer	
223. Aimee Sulczynski		
224.		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
231.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
241.		(b) (6) [redacted]
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Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Raymond Wassille		(b) (6) [redacted]	
2. Tasha Hobson	Student		
3. Wyatt Wassilie			
4. Lem Batchelder		Lem Bat	
5. Greg Anelon	self	greganelon@	
6. Myrtle Anelon	INL		
7. Ethel Adcox	Ili	eadcox/	
8. James R Lamont Sr.			
9. Verna Kolyaha	Pedro Bay	vjkolyah	
10. Wade	Student		

AMERICAN OVERSIGHT

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Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ben Foss	Pedro Bay	b.foss@pedro-bay.com	OK
12. Avery Lill	KDLG	avery@kd	
13. Keith Jensen	Pedro Bay	darthlice@	
14. Kara Jensen	Pedro Bay Tribe	Shavelasurfer	
15. Wynn Knighton	Pedro Bay	Knighton 9	
16. Molly Dischner	NTBB		
17. Drew Nickoli	none	—	
18. Terry Wassillie	Nondalton Tribal Council		
19. Samantha Herrick	Pedro Bay	Samantha.f	
20. Mike Clark	Iliamna	clarks 4 H	

(b) (6)

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Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Joey T. Hill			
22. RANDY ALVAREZ			
23. Heather Hase			
24. Marvel Anelon			
25. Kim Williams			
26. Anelon Charity			
27. Alex Wassillie			
28. Lisa Reimers			
29. Drew Wassillie			
30. Lovere Anelon			

(b) (6)

[redacted]

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Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Nathan Kilbrike	—	nate k[redacted]	
32. Maxine Wassillie			
33. Lydia Olympic	—	Ohlydia53[redacted]	
34. Joe Chythlook	BBNC		
35. Russell Nelson	Resident of BB	russell@[redacted]	
36. Norman Van Vactor	Bristol Bay Economic Dev. Corp	/ [redacted]	
37. Margie Olympic	Newhalen	molympic[redacted]	
38. Agnes Ryshinsky	Newhalen	aj772@ya[redacted]	
39. Chip Embretson	Iliamna	chipco5@[redacted]	
40. Harvey Anderson	Iliamna Natives		

(b) (6) [redacted]

AMERICAN OVERSIGHT

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Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Bill Cornell		Newhalen, [redacted]	
42. Joanne Wassille		Newhalentr[redacted]	
43. Annie Wassille		Newhalen[redacted]	
44. Cathleen Gust		mybabyange[redacted]	
45. Sheena Ishmoda		sishmoda@ya[redacted]	
46. Sarah Armstrong		Sarmstron[redacted]	
47. Tim Anela!		[redacted]	
48.			
49.			
50.			

(b) (6)

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

Father Alexie YES ✓

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. John Hanson Sr.	NSTC	N/A [redacted]	
2. (Wally) Wassilie Gust Sr	New Stuyahok Traditional Council	wgust 2015 [redacted]	
3. Stephan Blunka Blunka		new Stu[redacted] Box 1[redacted]	
4. Randal A Hastings	community member	P.O. Box 61 New Stuyahok[redacted]	
5. Adrian Wonhola Wonhola	community member	P.O Box 55 New Stuya[redacted]	
6. Timothy Wonhola	" "	" P.O B[redacted]	
7. Mike Oyaluk	" "	P.O. Box 12 New Stuyaho[redacted]	
8. John Hanson Jr	" "	Box 95 New Stuyaho[redacted]	
9. Kim Williams			
10. Tatianna Oyaluk		Box 73 New Stuyaho[redacted]	

(b) (6)

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Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Gustie Kusma		PO Box 82 New Stuya	
12. Moxie Andrew Jr.		mandrewjr@	
13. Matrona Gust		P.O. Box 168 New Stuyaho	
14. MaryAnn Gust		P.O Box 92 New Stuyah gustmaryann	
15. Evan Kusma Sr.		P.O. Box 82 New Stuyah	
16. DENNIS Andrew2		New Stu	
17. Bobby Larson		Box 5028 Kollgeu	
18. Thomas Tilden		tildenthom	
19. Tatianna Gumlickpuk		Box 26 New Stuy	
20. Charlie & Gumlickpuk		11	

(b) (6) [redacted]

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Myrtice Evan	Nunamta Aulukestai	myrticeev	
22. Joe Chythlook	BBNC		
23. Gusty S Blunka Sr		P.O. Box 32	
24. Wass Nketa Sr.			
25. Mary Workola		P.O. Box 77 Church Road New Stuyaha	
26. Andrew Wyason		P.O. Box 93 New Stuya	
27. Peter Christopher Sr.	Stuyahok Ltd.	P.O. Box 85 New Stuya	
28. Lucas Bava	pupil	"	
29. Marie Paul	BBNC	mpaul@	
30. Hannah Hurley	UTBB	ahurle	

(b) (6) [redacted]

Hannah Hurley

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Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	~~Are you planning to comment?~~
31. Lindsay Layland	NTBB	/layland	[redacted]
32. Frances A. Nelson	New Koliganek Village Council	P.O. Box 50 Koliganek	
33. Jent McBrown Jen tell	New Koliganek Villiage council	P.O. Box 5043 Koliganek	
34. Mary Ann Wassilie	New Stuyahok		
35. Michael Gust			
36. Matrona Andrew			
37. Ivan Wonhola		P.O. Box 51 New Stuya	
38. Natalia Christopher	New Stuyahok	P.O. Box 115 New Stuy	
39. Natalia Osyaluk	New Stuyahok	P.O. BOX 73 New Stuyaho	
40. Glen Olympic			

Glen Olympic

(b) (6)

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Natalia Wassilliey		P.O. Box 3 New Stuy	(b) (6) [redacted]
42. Blunka Wassilliey Sr		"	
43. Bjorn Olson	~~[illegible]~~	fatbikeb	
44. Wassilie Andrews		wassilieand	
45. Harvey Demantle		hdemantl	
46. SERGIE NALUK			
47. Annie Chunak		Bx 124 KNW AK	
48. Ivan Blunka		"	
49. Thomas Weedman		P.O. Box New Sta	
50. L. Alexie Asteroda			

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Pebble Project Environmental Impact Statement

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Nina P. Gust			
52. James Andrew			
53. mike yuraluk		New Stu	
54. Phillip Pavella		New Stuyah	
55. Michael P Gumlickpuk			
56. Gustie Hanson Sr		New Stuyah	
57. Peter Ayaluk		New Stuye	
58. Dimitri Gust		dimitrigust@	
59. John Wonhola		John Wonhola	
60. Wassillie Blunka		blunka_c	

(b) (6)

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Public Scoping Meeting

New Stuyahok ~~Newhalen~~ – April ~~12~~ 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
~~51.~~ 61 Nancy Waskey		P.O. Box 13 New Stuyahok	
~~52.~~ 62 Delores Larson		PO Box 5015 Kolignek,	
~~53.~~ 63 Tim Pavella			
~~54.~~ 64 Faith Andrew		fandrew@	
~~55.~~ 65 Mary Olympic		PO Box 13 New Stuy	
~~56.~~ 66			
~~57.~~ 67			
~~58.~~ 68			
~~59.~~ 69			
~~60.~~ 70			

(b) (6)

[redacted]

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Luther E. Hobson Jr.	R	[redacted]	
2. Charlotte Beaude			
3. Christina Salmon	Lake & Penn ~~Bo~~ Borough Assembly		
4. Jackie C Hobson		TPCRPR6	
5. John B Branson			
6. Michelle Ravenmoon	Lake & Penn & Borough Assembly		
7. Tim Vogel			
8. Darcelle Balluta	Lake Pen		
9. Paul Hobson Hobson SR.			
10. June Tracey			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ventura Samaniego	Kijik Corp.	ventura@Ki[redacted]	
12. Billy Trefon Jr	Nondalton Tribal Council	billytrefonjr[redacted]	
13. Timothy Hobson	None Nondalton	Timmi Ho[redacted]	
14. George Allen Alexie	" "		
15. Natalia Marttila Marfila	Nondalton Tribal	—	
16. Elizabeth A. Rachuta	" "	[illegible]	
17. Virginia Delkittie	Nondalton		
18. Melvin Trefon	NONDALTON		
19. Clara Trefon	Nondalton	ctrefon@b[redacted]	
20. Louis Weedman Weedman	Nondalton		

(b) (6) [redacted]

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Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Clarence Delkittie	Tribe		(b) (6) [redacted]
22. Bjorn Olson	UTBB	fatbikeb[redacted]	
23. Alannah Hurley	UTBB	ahurley@[redacted]	
24. Wesley Sunnie Furlong	NARF	wfurlong@[redacted]	
25. Molly Dischner	UTBB	mdischner[redacted]	
26. EVANOFF Will Evanoff	Tribal Council		
27. Kristy Jeffries	Nondalton Tribal Council	c-ballut[redacted]	
28. Sarah O'Neal	UW	sarahlouiseon[redacted]	
29. Briana Delkittie	Nondalton Tribal Council		
30. nenita Wilson		wilsonnenita@[redacted]	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Michelle Wilson	Nondalton Tribal Council	ntcsecretary	(b) (6) [redacted]
32. Sunflower Delkittie	Nondalton Tribal Council	ntcttp@y	
33. Darlene Molan	NND T. Member		
34. Randy Kakaruk	Nondalton Tribal Member	midianptg@g	
35. Fawn Silas	———	Fawnsilas	
36. Teresa Rickteroff	P.O. Box 73	↓	
37. Illeah Aaberg	PO Box 43	ileahaaberg	
38. Chris Crookham	Po. Box 43	Chris Croo	
39. Rob Kakaruk	PO Box 116		
40. Harry Karshakoff	PO Box 35 Kijik		

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Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Kim William	BBNC	(b) (6) [redacted]	
42. Ivon Washington			
43. Eric Tallekpalek			
44. Myrtice Evalt	Nunamta Aulukestai		
45. Mark Noden	[illegible]	mnode[redacted]	
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Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Alannah Hurley	Yup'ik	(b) (6)	
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Marie Paul	BBNC	(b) (6) [redacted]
2. Bertha Parian-Lockuk	UTBB	
3. Myrtle Ishnook (Ishnook)		
4. William P Johnson		
5. Helen Adermen	BBNA Marine Mammals	
6. Wassiliisia Bernis	BBNA -CAO	
7. Wassiliisia Bernis	self	
8. Dave Bowker	~	
9. Patricia Treydte	Self	
10. Everette Hyderson	BBNC	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Karl Hill		(b) (6)
12. Sam Eveslage		
13. Tom Eveslage		
14. Deborah McLean		
15. Katherine Carscallen		
16. Jimmy Coppenrath		
17. Susie Jenkins-Baito		
18. Courtenay Carty		
19. Violet King		
20. Ted Larson		

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Deven Hisac		(b) (6) [redacted]
22. Elaine Phillips		
23. Stephen Boyd		
24. Myra Olsen		
25. David Wetter		
26. Morgan Allen		
27. Christopher Manos	BBNA	
28. Shannon Clouse		
29. Wain Clouse		
30. Kathi Clouse		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Avery Lill	KDLG	(b) (6) [redacted]
32. Betty Gardiner	CPVC	
33. Annalee Carty		
34. Charlene Savo		
35. Harry Wassily SR.	Clark's Pt. Tribal.	
36. LaRhae Angasan		
37. Cory Angasan	N	
38. [illegible]		
39. Andy Aderman		
40. Alisha Folsom		

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Bruce Ilutsik	Aleknagik Traditional Council	(b) (6) [redacted]
42. Jean Barrett	City of DLG	
43. Hailey Carty		
44. Lara Collis		
45. Nicole Krause		
46. Susanna Henry	U.S. Fish & Wildlife Service	
47. Malcolm Wright		
48. Bernina Venua		
49. Cory Howard		
50. Steve Wassily		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Keyton Woods		(b) (6)
52. Andrea Hurley		
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Cate Gomez		(b) (6) [redacted]
132. Robert Himschoot		
133. Doug Johnson		
134. Gayla Hoseth		
135. Terry D. Mann		
136. Valencia Mann		
137. Thomas Tilden		
138. Dan Dunaway	me	
139. Gary Cline	Self	
140. Thomas Woods	Self	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
251. Mark Nolen		(b) (6)
252.		
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
371. Ethel J. Nelson		(b) (6) [redacted]
372. George L. Nelson		
373.		
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
481. Kim Williams	BBNC Curyung Tribe	(b) (6) [redacted]
482. Cody Larson		
483. Diane Wetter		
484. Jackie Nelson		
485. Chanice Johnson		
486. Norman Van Vactor	Bristol Bay Economic Dev. Corp	
487. Mike Davis	UAF	
488. Ingrid Andrew	interested	
489. Wassillie Tikden	BB	
490. Moses L Kritz III	BB	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
491.	Sharon Clark	self nonprofit	(b) (6)
492.	Mark Lisac	Self	
493.	Alannah Hurley	UTRB	
494.	Glen Szymoniak	schol Dist	
495.	Izzy Ross	Self	
496.	Susan Flensburg	self	
497.	Frederick Angasan III	Self	
498.	Greyy Maxmiller	Self	
499.	Richard Alt	Self	
500.	Page O'connell	Self	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
501. Hannah Hendrickson		(b) (6) [redacted]
502. Rebekah Fonkert		
503. Holly Wyatt		
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

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Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Betsy Hostetter		betshoss@h[redacted]	
2. Andy Smith		asmith.p[redacted]	
3. Nick Smith			
4. [illegible]	JTBB		
5. Christina Salmon		Christinasa[redacted]	
6. Keilansalmon			
7. Karl Hill	IVC	karlhill907@y[redacted]	
8. Glen R. Alsworth Sr. Glen R. Alsworth Sr	LPBoro	grasjr@hot[redacted]	
9. Everette Anderson		eanderson[redacted]	
10. Renae Zackar		rzackar(a)y[redacted]	

(b) (6)

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Lindsay Laykind	VTBB		
12. RANDY ALVAREZ		PO Box 901 IGIUGIG AK	
13. Dannikak Salmon	NA	NA	
14. JON Alvarez			
15. Audra Gooden		agooden@ joedogcole	
16. Michelle Ravenmoon	[redacted]		
17. Charlie Gifford		gbtrout@ y	
18. Whit Gooden			
19. John Chukwak			
20. Gregory Zacker			

(b) (6) [redacted]

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Jeff Bringhurst	Self	jeffbringhur	
22. Olga Zackar		Bx 4034 Iguig	
23. Anna Perino	Self		
24. Avery Wilson			
25. Tayne Salmon	Self	salmon_tayn	
26. Jem Gooden			
27. Annie Wilson			
28. Julie Salmon	self	juliasalmon57	
29. Alicia Zackar	self	alicia_zacke	
30. Olivia Sinyon	self		

(b) (6)

[redacted]

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Alice Zackar	self		
32. Dallia Andrew	self		
33. Ruth Simon	self		
34. Sharolynn Zackar	self		
35. Yako Nicholi	Self		
36. Sandra Alvarez	Self	sjalvarez	
37. Daniel Chythlook Jr	Self	chythlook	
38. Dennis Andrew Sr	self		
39. Sherry Nelson	self	sdnelson	
40. Alexanna Salmon	self	alexannas	

(b) (6)

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US Army Corps of Engineers

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Lydia Olympic	—	~~ohlydia@~~ ohlydia53	(b) (6) [redacted]
42. Ida Nelson	Self	nelsonida	
43. Tatyana Zachar	Self	zachar24@g	
44. Terek Anelon	own	anelonterek	
45. Sheryl Wassillie	own	slwassillie@g	
46. Steve Routh			
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US Army Corps of Engineers

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Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Myrtice Evalt	Nunamta Aulukestai	myrticenoa[redacted]	
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Mischa E Wanns	BBNC	(b) (6) [redacted]
2. Gene M. Wardell		
3. Charles McKee c/o P.O. # 243053	self	
4. Taryn Kiekow Heimer	NRDC	
5. Rick Delkittie Sr.	Nanwalek tribe	
6. Kerry Adler	self	
7. Kim Williams	BBNC / Curyung Tribe	
8. Joseph James	Pan-American Invest mts.	
9. Joe Blogs		
10. Dana Stewart	DES.IT	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Mark McCullough		(b) (6) [redacted]
12. RAINBOW AZURE	Turtle Mtn Chippewa & Yakama Tribe	
13. Jill Burke	Bloomberg BNA	
14. Sue Bauer	–	
15. Adriane Christensen	Pedro Bay	
16. RAYN ABBERA	PEDRO BAY	
17. Nelli Williams		
18. Daniel J. Michels	Crystal Creek Lodge King Salmon	
19. Chris Bruns	None	
20. Jenny Weis		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Tim Sohn	Journalist	(b) (6) [redacted]
22. Ron Benkert	ADF&G	
23. Doug Griffin	Southwest Alaska Municipal Conference - (SWAMC)	
24. Ryan Hostetter		
25. Meussa Thayne	Alaskan	
26. Gerald Roteman		
27. Howard I. Grey		
28. Don Perrin		
29. Mariah Oxford	Pebble Watch	
30. MARC LESTER	ANCH. DAILY NEWS	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Anna Kohl		(b) (6)
32.	Marilyn Houser	None	
33.	Emily Fehrenbacher	Salmon State	
34.	Eric Booton	Trout Unlimited	
35.	Brooke Merrell	NPS	
36.	Jim Posey	PA LAC	
37.	Phil Walczak	KTUU	
38.	Carl Portman	RDC	
39.	Leslie Tose	USACE	
40.	Beth Verga	KTVA-TV	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Elwood Brehmer	ASOC	(b) (6) [redacted]
42. Mary Romero	—	
43. Jeremy Graut	—	
44. Alex DeMarBan	Anchorage Daily News	
45. Jennifer Worabec	Alaska Miners Assoc.	
46. Terry L Levy	Alaskan	
47. Nicole O'Hara	ABC/Fox Alaska	
48. MARIANNA MAH	RDC	
49. Abe Williams	Bristol Bay Fisher	
50. Deantha Crockett	Alaska Miners	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Emily Carlson	KTVA	(b) (6) [redacted]
52. John Thompson	KTVA	
53. Nick Hubbard		
54. Jason Brune		
55. Emily Vullo		
56. Jack Colonell		
57. KRISTEN ULLERY		
58. BRIAN KRAFT		
59. Charlotte MacG		
60. George Edwardson	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Maryann K. Johnson	Portage Creek	(b) (6) [redacted]
62. Charlie Johnson	Portage Creek	
63. Gayla Hoseth	Dillingham	
64. Myrtice Evalt	Dlg	
65. Sheyna Wisdom	Fairweather Science	
66. Stephanie Patton	—	
67. Lance Powell	—	
68. John Holman	—	
69. Sherry Dugan	—	
70. Carrie Cecil	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Myra Olsen		(b) (6) [redacted]
72. Thomas Pebler		
73. Destinee Holstrom		
74. George Holstrom Jr		
75. Ceara Mishlee		
76. Molly Vaughan	EPA	
77. Dennis Hyppolite	TY	
78. Agnes Rychnovsky		
79. Marina Barner		
80. Jalen Konukpeok	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Barbara Hood	NA	(b) (6) [redacted]
82. Nancy Pfeiffle	Human	
83. Brian Baeck		
84. Frank Wake	None	
85. JESS HILYER	NONE	
86. Pat Abney	None	
87. Jamie Dithmas	—	
88. Sheldon Wardell	None	
89. CHRIS WIITA	N/A	
90. NICK Hansen		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. MARIUS PANZARELLA		(b) (6) [redacted]
92. Cathe Heroy		
93. Leila Pyle		
94. Karlene Leeper		
95. Kate Sweeney		
96. Russ Miller		
97. Kay Heafner		
98. Glen M. Gustafson		
99. MIKE COOPER		
100. Julian & Jean		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Kerry Wilkins		(b) (6) [redacted]
102. Kim Ansakuck		
103. Vivian Mendenhall		
104. Andria Agli		
105. Elijah Good-Farm		
106. Travis Rector		
107. Janice Stamper		
108. [illegible]		
109. Jessica Speed		
110.		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Johanna Grasso		(b) (6)
112. Cecilia Kleinkauf		
113. Barbara Crews		
114. Libby Roderick		
115. Kate Nilsson		
116. Rich Stromberg		
117. Laura Sherman		
118. Lucy Terry	Eskimo	
119. Bill Jaso		
120. & Susan Hooker		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. Thomas Tilden	self	(b) (6) [redacted]
122. BROOKS LARSON	self	
123. Tyler Heregan	Self	
124. RYAN PETERSON	—	
125. Francesca DeBrock	—	
126. Laura Muller	Self	
127. PAMELA TESCHE	self	
128. Daniel McIntosh	Self	
129. Jessi Thornton	Cook Inletkeeper	
130. Victoria Lytle	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Ronda Pokupec		(b) (6) [redacted]
132. [illegible]	—	
133. Julie K Wahl	Citizens Climate Lobby Sierra Club AK Center	
134. Barbara Norris	AK Center	
135. Rachelle Griffitts	student - UAA Environmental Engineering	
136. DAVE COOLIDGE	—	
137. Jeanette LeClair		
138. Wassiliisia Gumlickpuk		
139. Dr. Stephanie Quinn-Davidson, PhD	self - Salmon/fisheries scientis	
140. [illegible] Dunn	Student ES APU	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Michelle Leffingwell	Self / Bear Trail Lodge Local fisherman Yoga@AK	(b) (6)
142. Margaret M. Anderson	Alaskan	
143. Thomas Harman	Fisherman	
144. Brenda I Waitman	Iguigig Lodge LLC	
145. Norman Straub	Intricate Bay Lodge	
146. Spencer waitman	Iguigic Lodge LLC	
147. Becky Bitter	Alaskan	
148. David Theriault	Fisherman	
149. Rasched Galimba		
150. Ann James	Born & raised Alaskan	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Karen Button	resident	(b) (6)
152. CHRIS KLOSTERMAN	TRYCA FOR ALASKA	
153. Micaela Hogan	volunteer	
154. Susan NIMAN	Resident	
155. Bill Shermont	self (AK resident)	
156. RICHARD KNIGHT	RESIDENT	
157. Carolyn E. Phillips	None	
158. George Pletnikoff, Jr	Unangax̂	
159. Jessica Barnes	Resident	
160. Brian Coyle	Resident	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

US Army Corps of Engineers

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Laura Chartier	N/A	(b) (6) [redacted]
162. KAREN GONNEHARIELL		
163. THOMAS A. SCHWARTZ	N/A	
164. Myranda Walso		
165. Jeff Parker	Attorney for BBFA/EC	
166. Su Chon	N/A	
167. Dayle Sanborn		
168. Gerard Farkas	Alaska Resident	
169. Steven Silber	Chulitna Lodge -Lake + Penn Burrough Resident	
170. Andrew Conrad	N/A	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. LARRY RUNDQUIST		(b) (6) [redacted]
172. Steven McNicholas		
173. Derek Hansen		
174. Diane E. Osterhaus		
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Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
381. James Wilson	Mat Su. Borough	(b) (6) [redacted]
382. Mary Kay Ryckman	Self	
383. Rochelle Harrison	self griezyskins fak	
384. Verna Kolyaha	Pedro Bay	
385. Mark Newman	self	
386. Kelly Kass	Self	
387. Neverley Wake	EPA Tribal Coordinator	
388. Everette Anderson	BBNC	
389. Myrtle J. Lonsdale	CDOK Inlet	
390. Ron Tenny	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391. Sarah E Anderson		(b) (6) [redacted]
392. Harry M. Walker		
393. C. Steffens		
394. S Rooth		
395. Jennifer Wardell		
396. Brian Kortl		
397. Jeanne Hanson		
398. Sylvia Panzacella	No Pebble Mine!	
399. Lindsey Kenyon	ERM	
400. Oleksandr Lushchyk		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
401. Carolyn Brodie		(b) (6) [redacted]
402. Erik Koppervd		
403. W. R Hamme		
404. Kathrine Consenstein		
405. CAMILLE COLLINS		
406. MARK Miller		
407. Felicia Miller		
408. Vincent Vek		
409. Riki Lebman		
410. SUE WARD		

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411. Barbara Loutrel		(b) (6) [redacted]
412. Peter F Alward	Ak citizen/resident	
413. Kristen Collins		
414. Sophie Tidler		
415. Shirley Kelly	Bristol Bay Fisher	
416. Christopher John Eberhardt	Bristol Bay Fisherman	
417. Paul Creus	Individual	
418. P. Derochick	Individual	
419. Dawnell Smith	Individual	
420. Jan Whitsett	Individual	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421. Lisa Alexia		(b) (6)
422. Michael Alexia		
423. Susan Terwilliger		
424. Jenna DiFolco		
425. Maria Tahenakos		
426. Bryce Niver	No Pebble!	
427 Brian Canter		
428. JACK FOSTER		
429. Art Allen		
430. Ryan VanderBie		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431. Lindsey Diamond		(b) (6)
432. Raymond Koegser		
433. Oliver Garrett		
434. Elijah Kahula	Save Bristol Bay	
435. R. Lytle		
436. Evan Anderson		
437. STEPHAN C. PALIWODA	RETIRED ARCHITECT (former Corps of Engineers emplo	
438. Kayla Muller		
439. Kenneth Ahmaogak		
440. Paul Frost		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441. Judy Caminer		(b) (6)
442. Lenny Anderson		
443. David J. Haamaid	Sons	
444. Richard L. Anderson	"	
445. Brad Waitman	Igiugig Lodge	
446. Ming Stephens	None	
447. Regis Pappert	Self	
448. Austin Quinn-Davidson		
449. Rebecca King	Alaskan	
450. Alex Nelsen	Ak Resident	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
451. Kori Blake	Save Bristol Bay	(b) (6)
452. James Affone	Save the Earth	
453. Suzanne Stewart	Beluga Whale Alliance	
454. DAVID FARCY	NONE	
455. Erin Borowski	none	
456. Angelica Whitley		
457. Ryan Witten	None	
458. Maya Heubner	none	
459. Darla Munguia	None	
460. Christina Harwell	None	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461.	Kassidy O'Connell		(b) (6) [redacted]
462.	William J. Schreck	NA	
463.	Robert Wiy	—	
464.	Keenan	—	
465.	Yasuhiro Ozuka	—	
466.	Sam Magee		
467.	Kelly Drummond	—	
468.	Andrea Anderson	—	
469.	[illegible]	—	
470.	Merle Jerue	—	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
611. Jeremy Tayhi		(b) (6)
612. Bradley Michael Welsch		
613. Joel Hadley		
614. Elizabeth Welsh		
615. Gracee Hadley		
616. Carl Johnson		
617. M. Ska. Alexa		
618. Bernhard Richert		
619. Sera Schroeder		
620. Sammie Ellsworth		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
621. Carissa Churchill		(b) (6) [redacted]
622. STEVEN CALLAGHAN		
623. Adan Kurr		
624. Breena Weller		
625. Jessica Henderson		
626. Abraham Henderson		
627. Vickie Harman		
628. Levi Oyster		
629. E. Morris		
630. M. Ammann	ne Pebble	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
631. Makenna Hanson	UAA- alumni	(b) (6) [redacted]
632. Rachel James		
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Public Scoping Meeting

Anchorage – April 19, 2018

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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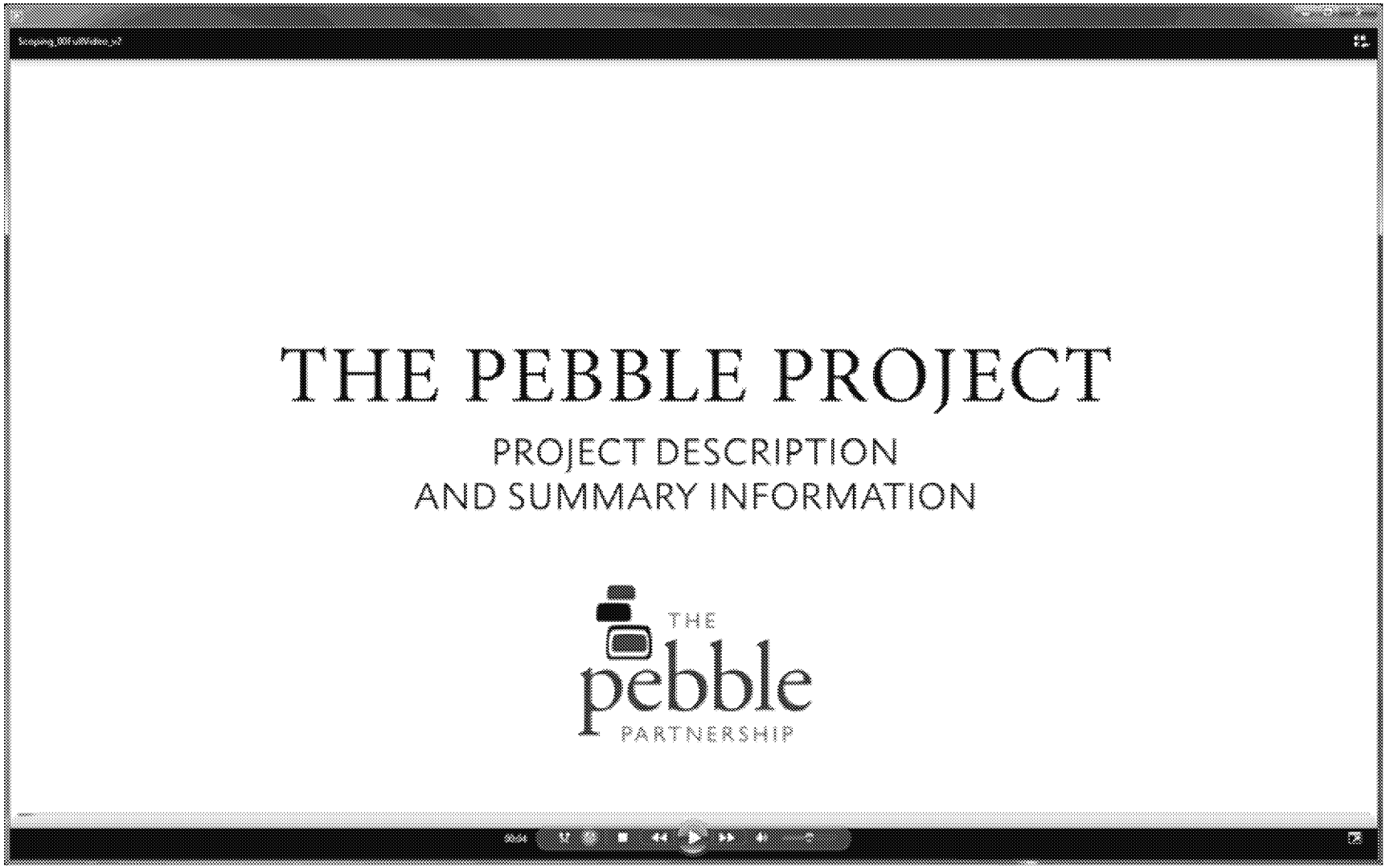
AMERICAN OVERSIGHT

APPENDIX D – MEETING MATERIALS

AMERICAN OVERSIGHT



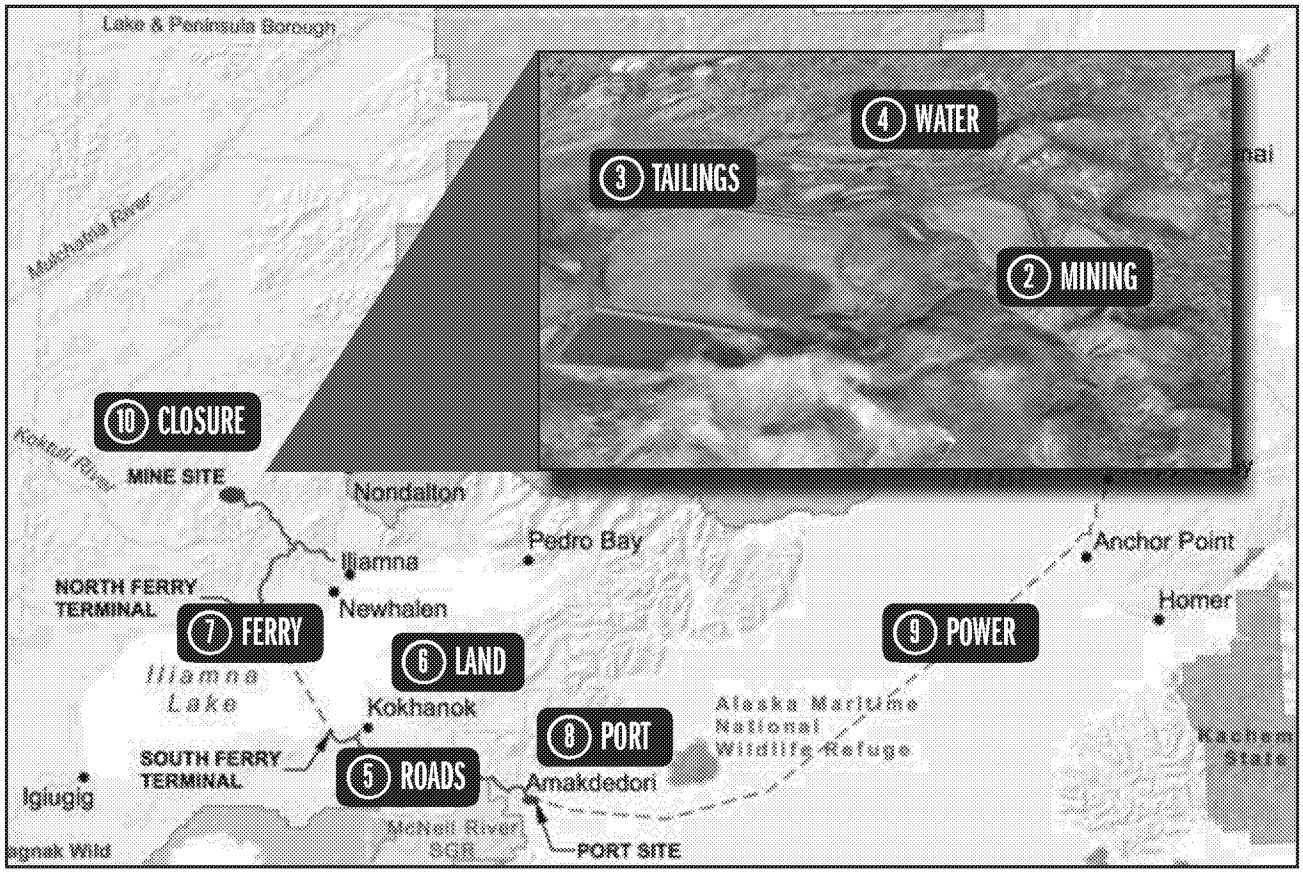
AMERICAN OVERSIGHT

THE PEBBLE PROJECT

1 OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) in southwest Alaska as an open-pit mine, with associated infrastructure.

PROJECT DESCRIPTION DETAILS



SUMMARY INFORMATION

- Located on state of Alaska land
- Project operating life of 20 years
- Employment of 2,000 people for construction and 850 for operation
- Gas pipeline from Anchor Point and gas-fired power plant at site
- Road and lake ferry to Cook Inlet
- Segregated storage of bulk and pyritic tailings

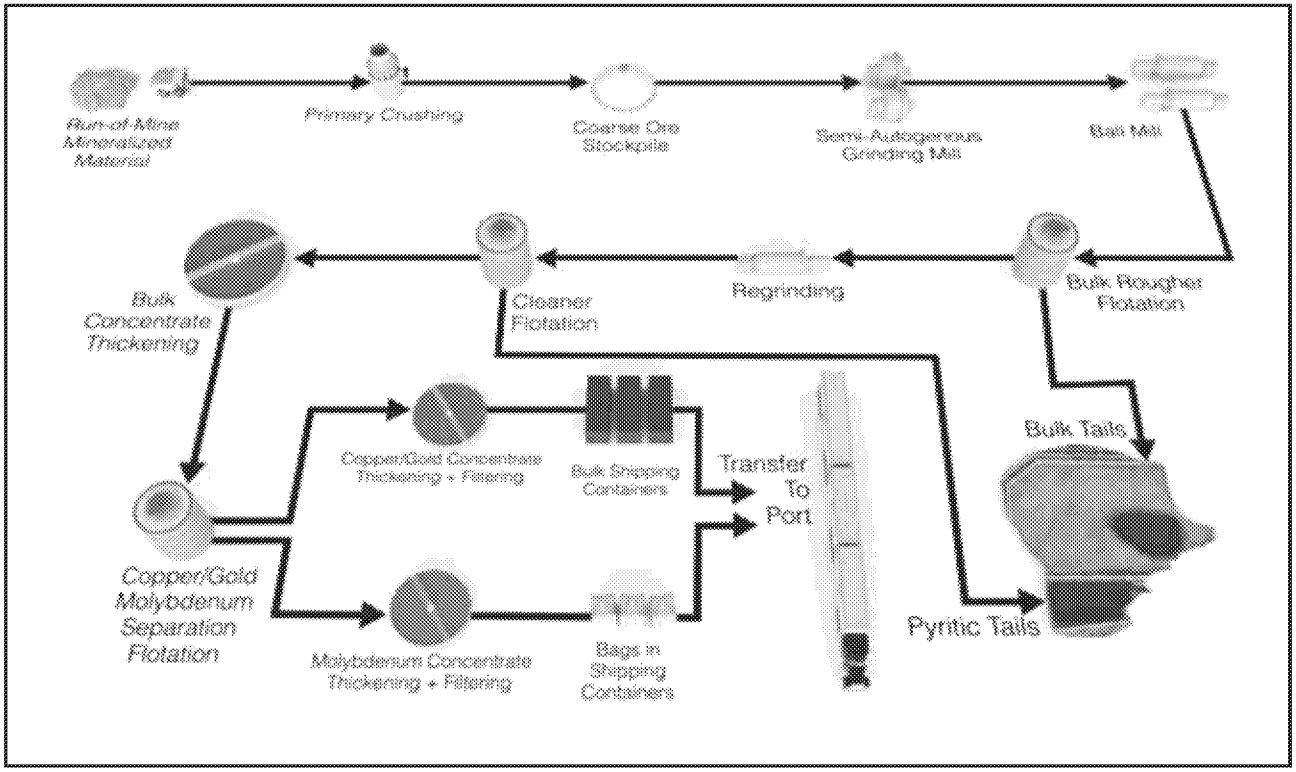
THE pebble PARTNERSHIP

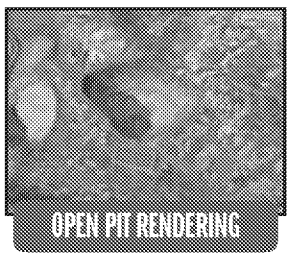
AMERICAN OVERSIGHT

MINING & PROCESSING

The Project will mine approximately 1.1 billion tons of mineralized material throughout the 20-year mine life.

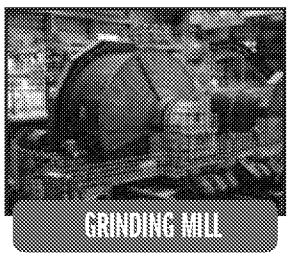
AN OVERVIEW OF MINERAL PROCESSING




OPEN PIT RENDERING


DRILLING & BLASTING


HEAVY EQUIPMENT


GRINDING MILL

SUMMARY INFORMATION

- Mining rate up to 90 million tons per year
- Milling rate up to 58 million tons per year
- Annual copper/gold concentrate production of 600,000 tons
- Annual molybdenum concentrate production of 15,000 tons

THE pebble PARTNERSHIP

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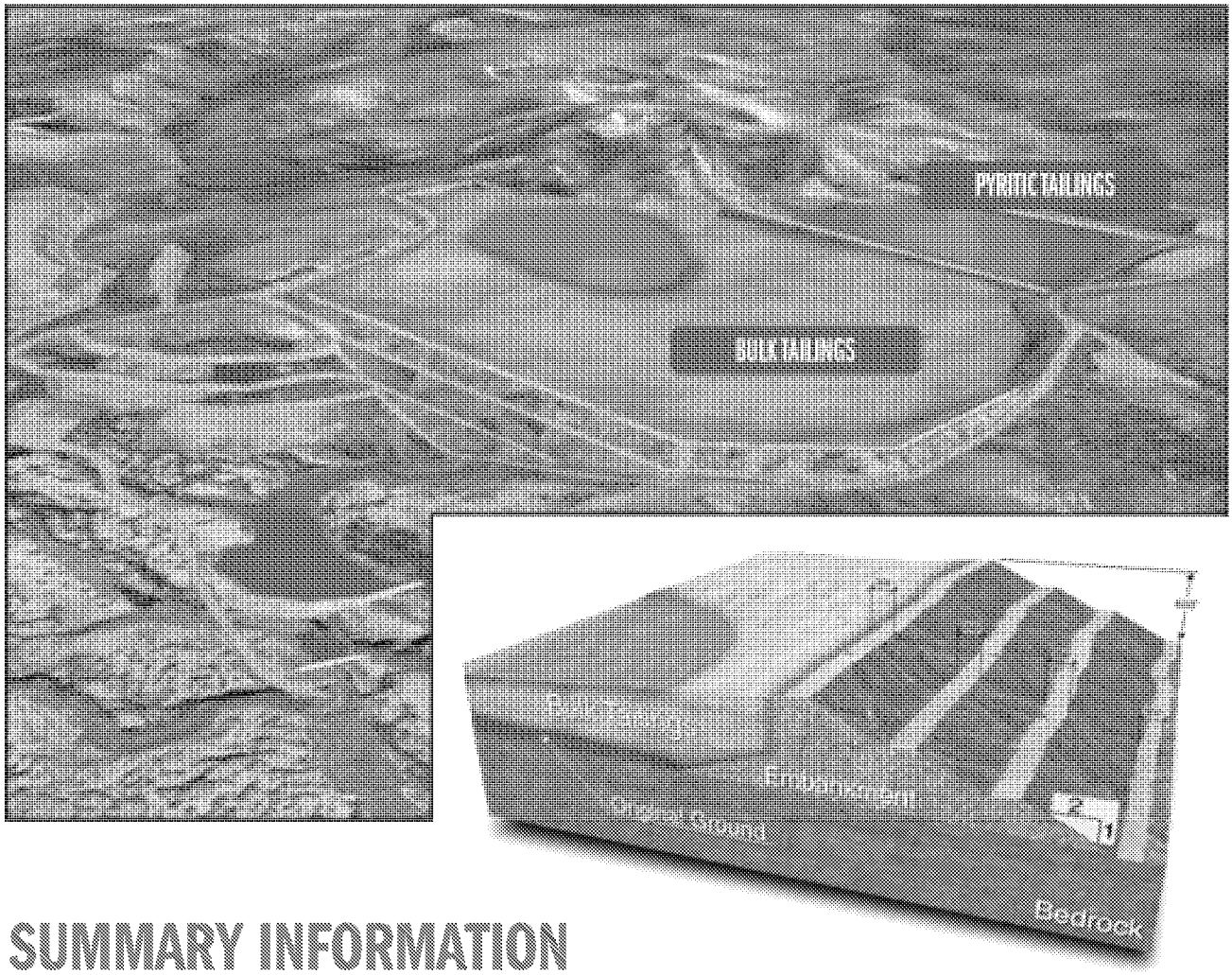
TAILINGS STORAGE

③ TAILINGS

Pebble Limited Partnership (PLP) conducted a multiyear, multidisciplinary evaluation to select a Tailings Storage Facility (TSF) location that meets all engineering and environmental goals. It will store ground-up material after minerals have been extracted.

TAILINGS STORAGE FACILITY



SUMMARY INFORMATION

- Designed to meet Alaska Dam Safety Program standards
- Separate cells for bulk and pyritic tailings
- Minimize water storage in bulk tailings to keep water away from embankment
- Fully-lined cell for pyritic tailings with water cover
- Rock-filled embankments (600' high at main embankment)
- Seepage collection facilities for all embankments

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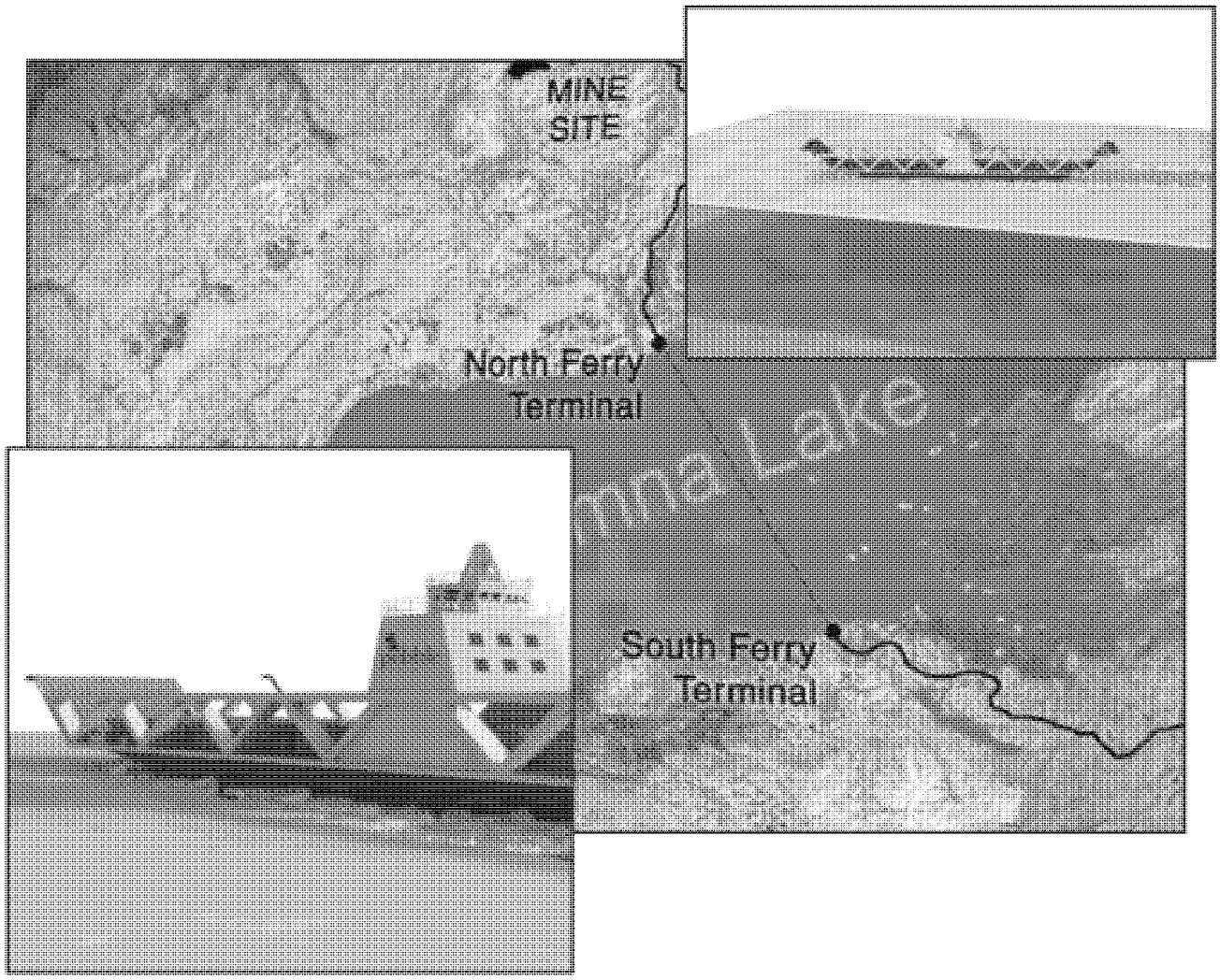
FERRY & TERMINALS

A custom-built ice breaking ferry will transit Iliamna Lake year round, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates.

ILIAMNA LAKE CROSSING



SUMMARY INFORMATION

- The one-way ferry trip across Iliamna Lake is about 18 miles
- An average of one round trip per day will be required
- Vessel is designed to operate year-round, in all ice conditions
- Symmetrical forward and aft with two ice-breaking bows
- 12 crew members may be accommodated on the ferry

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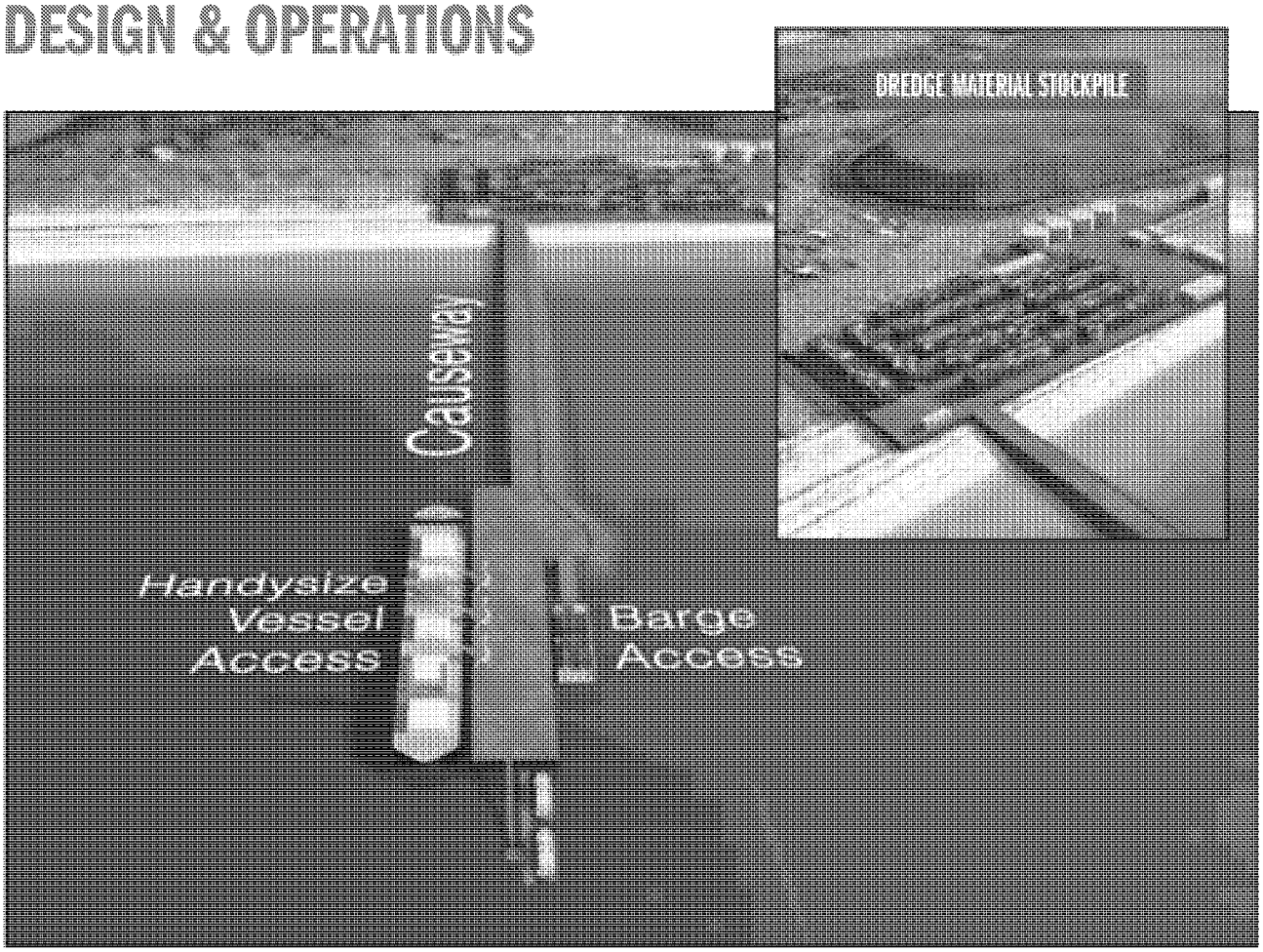
AMAKDEDORI PORT

PORT

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site.

DESIGN & OPERATIONS



SUMMARY INFORMATION

- 50-foot deep channel dredged to provide access for Handysize bulk carriers
- Mineral concentrate will be direct-loaded from the containers onto the vessels
- Equipment and supplies delivered by barge
- Shore-based facilities will receive and store containers and fuel
- Up to 25 concentrate shipments annually
- Up to 30 marine barge loads annually

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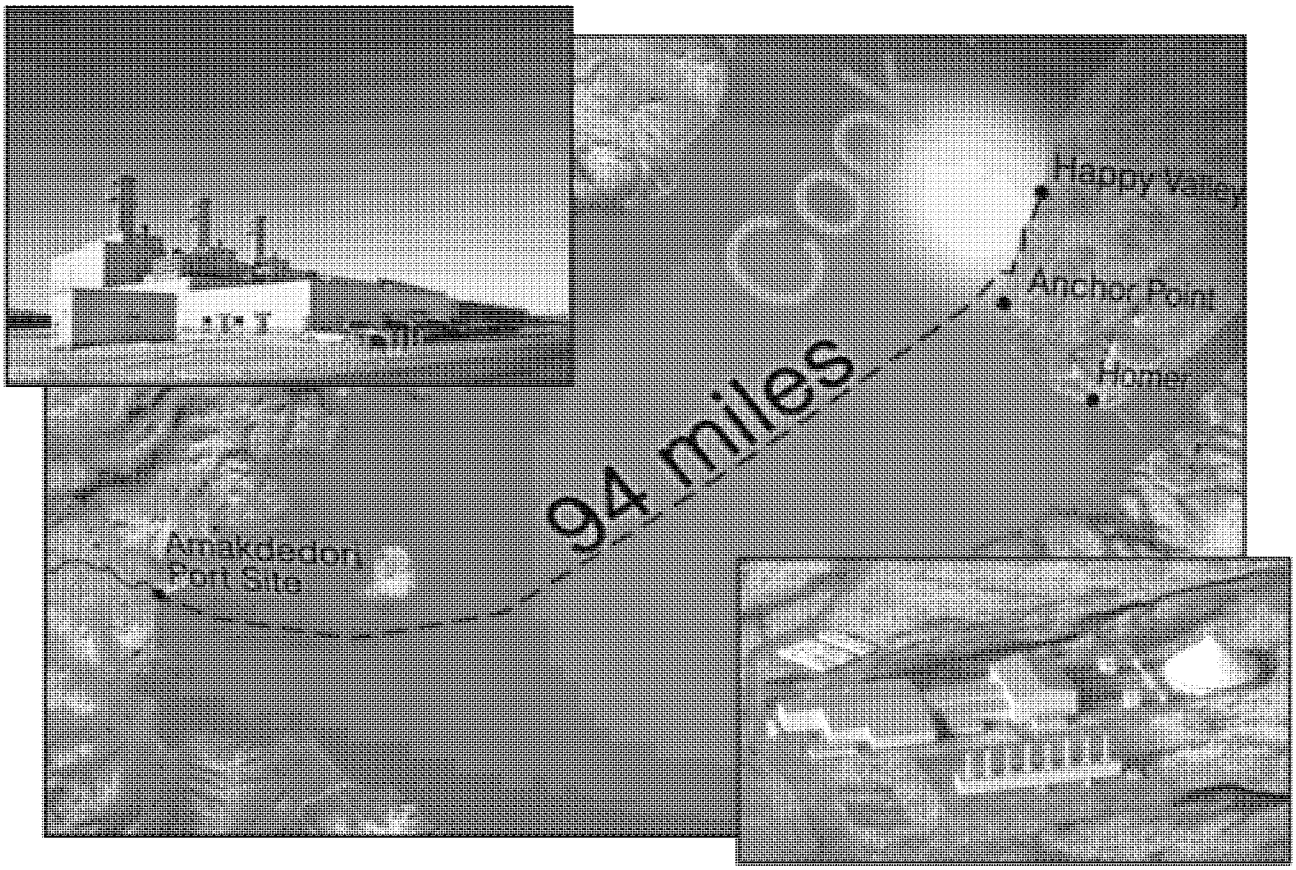
POWER GENERATION

The power plant will be sized to meet the anticipated load of 230 megawatts using high-efficiency turbine or reciprocating engine generators operating in a combined-cycle configuration.

NATURAL GAS PIPELINE + POWER PLANT



SUMMARY INFORMATION

- Pipeline will connect to existing gas supply infrastructure near Happy Valley
- Buried pipe will transport gas to a compressor station near Anchor Point
- 94-mile subsea pipeline across Cook Inlet will come ashore near port site, follow road to site, and cross the bed of Iliamna Lake
- Gross flow rate of 50 million standard cubic feet per day
- 10" pipeline on land, 12" pipeline for water crossings
- Emergency backup power provided by diesel generators

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CLOSURE & RECLAMATION

10 CLOSURE

Pebble Limited Partnership (PLP) is committed to conducting all mining operations, including reclamation and closure, in accordance with all local, state, and federal regulations.

PEBBLE: DESIGNED FOR CLOSURE

RECLAMATION

AFTER...

5 YEARS

Most buildings removed

Terrain resculpted

Native plants resown

20 YEARS

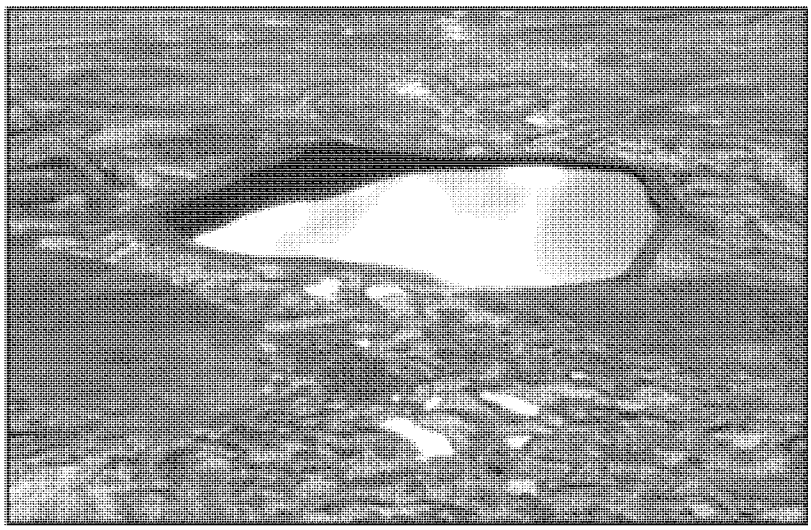
Vegetation well-established in reclaimed areas

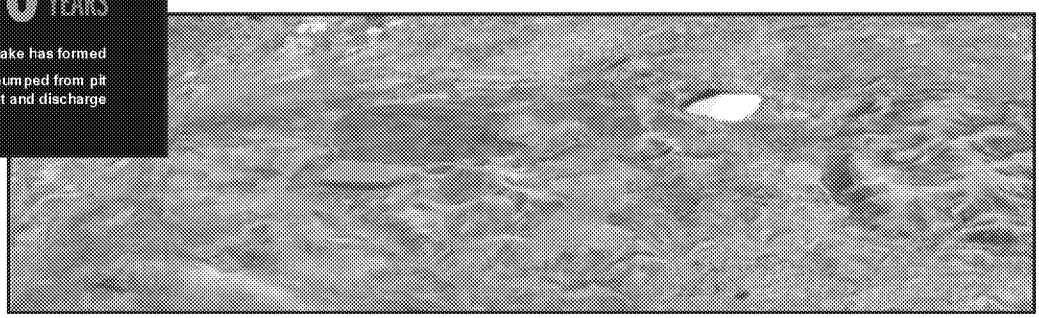
Pit continues to fill with water

30 YEARS

Pit lake has formed

Water is pumped from pit for treatment and discharge





SUMMARY INFORMATION

- Removal of mill and other facilities not used after closure
- Hauling of PAG waste rock into the open pit for under water storage
- Recontouring and placement of overburden for revegetation
- Plan and infrastructure for long term water management and treatment
- Financial assurance for closure and long term site management is required before construction

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Tips for Writing Effective Comments

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings.
- **Learn about the steps in the NEPA process** and opportunities for submitting comments to the U.S. Army Corps of Engineers.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through June 29.
- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS.

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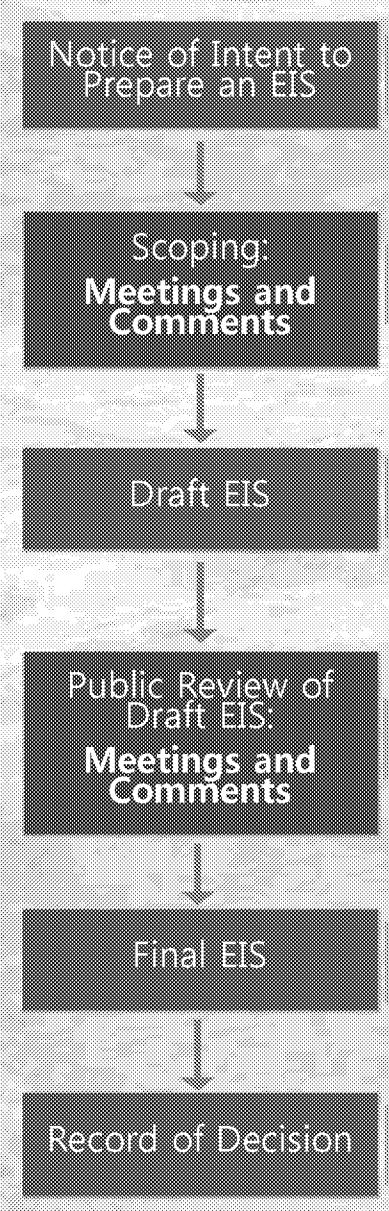
The National Environmental Policy Act

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership. The EIS process will take several months to complete a Draft EIS for public review, and several months to incorporate public comments into the draft to develop the Final EIS.

Steps in the EIS Process



The USACE released a Notice of Intent to the United States Federal Register. This initiated the process to prepare an EIS and began the scoping process.

The scoping process kicks off on April 1, 2018. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period.

After the Draft EIS is released, the public will have a chance to submit comments. During that time, the USACE will plan public meetings to collect comments.

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release.

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application.

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How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and commenting on.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consequences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.

For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.

For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. For example: wetland fill from one projects.

For example: wetland fill from one project, combined with the wetland fill from a separate project.

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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of analysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS.

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisciplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide an interdisciplinary team to develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirety of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

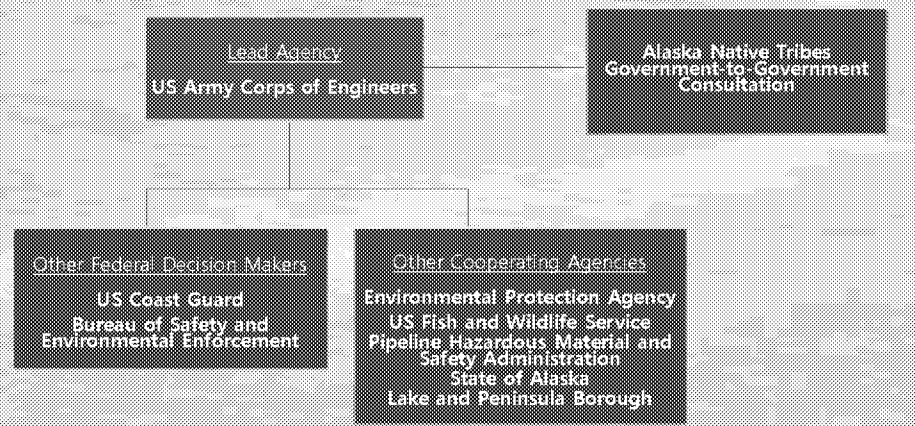
- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

Lead and Cooperating Agencies



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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action that could have lesser environmental impacts.

In addition to Anchorage, Public meetings were held in April in the following communities:

- Naknek
- Kokhanok
- Homer
- Newhalen
- New Stuyahok
- Nondalton
- Dillingham
- Igiugig

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods-ways in which potential negative impacts could be avoided or lessened.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Let us know what aspects of the proposed project are important to you!

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to give your comment orally to a dedicated court reporter or electronically submit using one of the dedicated laptop computers. You can also submit hand-written comments, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson
AK 99506-0898

Scoping comments can be submitted through June 29, 2018.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publicaly available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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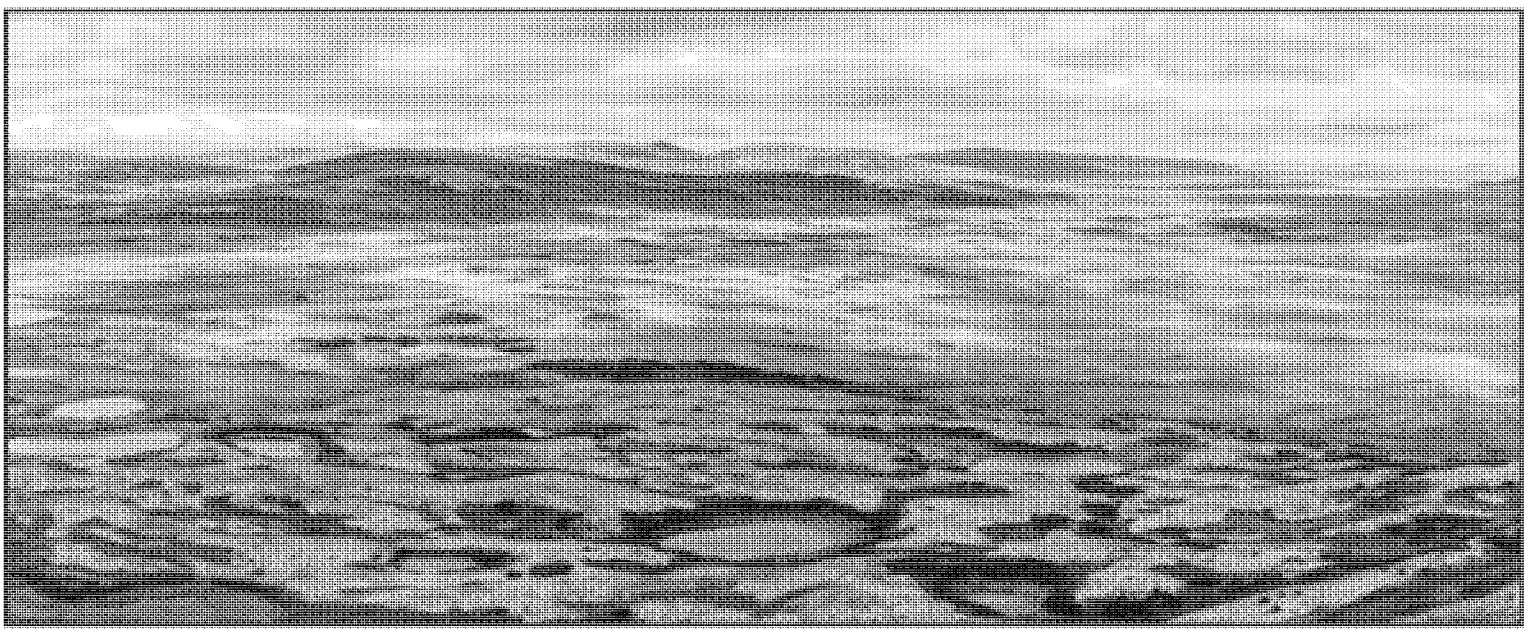

fold here

Program Manager
US Army Corps of Engineers
Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

Please place first-class postage here.

From:

AMERICAN OVERSIGHT

FACT SHEET

Pebble Limited Partnership Project Proposed Natural Gas Pipeline

Background

The Bureau of Safety and Environmental Enforcement (BSEE) is a cooperating agency on the Environmental Impact Statement that the United States Army Corps of Engineers, Alaska District, is preparing for the Pebble Limited Partnership project.

The Pebble Limited Partnership is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The proposed project infrastructure will include an approximately 230-megawatt power plant that will be fueled using natural gas. Natural gas would be supplied to the site using a roughly 190-mile pipeline that would connect to the project site from a tie-in on the Kenai Peninsula near Happy Valley.

While BSEE has no regulatory oversight of onshore mining, our role will include a Pipeline Right-of-Way grant approval process for the proposed pipeline crossing federal waters of the Outer Continental Shelf in Cook Inlet.

Proposed Pipeline

The gas pipeline alignment, as currently proposed, would start near Happy Valley on the Kenai Peninsula and travel south paralleling the Sterling Highway for approximately 9 miles to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the proposed Pebble port site near the mouth of Amakdedori Creek. A second compressor station and offtake point is located at the port site. The pipeline then follows the proposed road alignment from the port to the mine site, including crossing Iliamna Lake on the lake bed for approximately 18 miles. BSEE's jurisdiction for the proposed pipeline will likely only cover 63 miles, the portion that crosses federal waters of Cook Inlet.

The pipeline, as currently proposed, would be constructed of steel and designed to have a gross flow rate of 50 million standard cubic feet of natural gas per day. The onshore portions of the pipeline would be 10-inch diameter, while the offshore portion would be constructed using heavy wall 12-inch diameter pipe with negative buoyancy. All appropriate federal regulations would be followed in the design, construction, and operation of the pipeline.

Right-of-Way Decision Process

Pipeline right-of-way requirements for permitting are detailed in the 30 Federal Code of Regulations Part 250—Oil And Gas And Sulphur Operations In The Outer Continental Shelf Subpart J—Pipelines and Pipeline Rights-of-Way.

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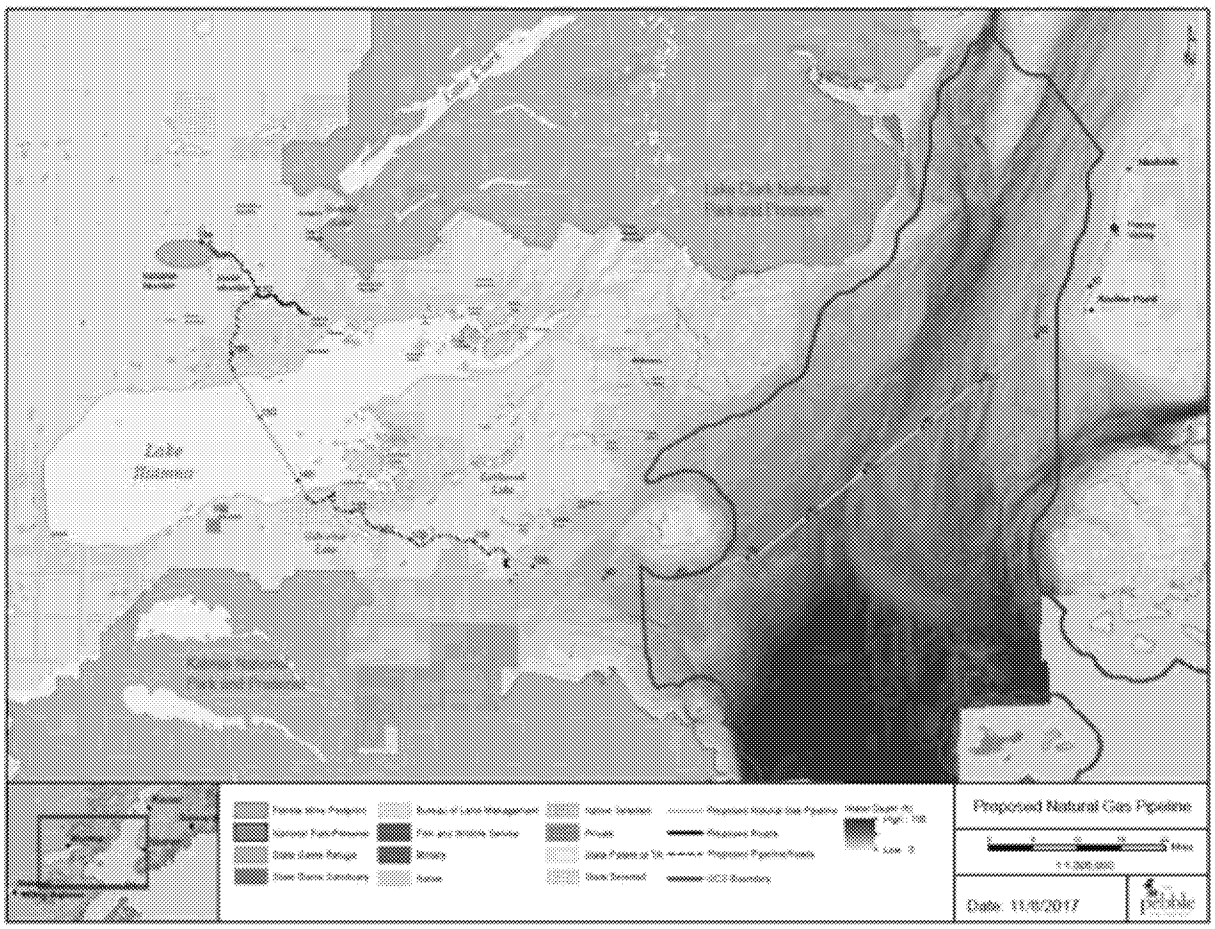
Applications for permits must be submitted to the BSEE Regional Supervisor and will include detailed information about the right of way, including consideration of effects from water currents, storm or ice scouring, soft bottoms, mudslides, earthquakes, permafrost, and other relevant environmental factors.

While the pipeline in this case will ultimately be regulated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, BSEE's interest is to have the requisite level of information that enables a well-informed right-of-way decision process, with the knowledge that environmental and safety factors have been considered and addressed.

Pebble Project Proposed Natural Gas Pipeline



-- BSEE --

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Message

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 6/29/2018 1:09:25 AM
To: Marshall, Tom [marshall.tom@epa.gov]
CC: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fotouhi, David [Fotouhi.David@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
Subject: Re: Pebble scoping letter

Thanks to everyone for all their hard work on this.

Sent from my iPhone

On Jun 28, 2018, at 8:37 PM, Marshall, Tom <marshall.tom@epa.gov> wrote:

> Drew forwarded this as a good-to-go comments version for the Regional folks. (I left the bubble comments in since you all already had them.) Note that there's new language on p. 17 that does not appear to be redlined. Thanks all, and good luck to the Region finalizing.
>
> ---
> 202.564.5549
>
> <EDIT 06272018 Pebble Project Scoping OGC .docx>

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/29/2018 12:55:19 AM
To: Schwab, Justin [Schwab.Justin@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: RE: Pebble scoping letter

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Tom Marshall
Assistant General Counsel
Cross-Cutting Issues Law Office
Office of General Counsel
US EPA, Room 7340C WJCN
202.564.5549

From: Schwab, Justin
Sent: Thursday, June 28, 2018 8:47 PM
To: Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: Re: Pebble scoping letter

On phone - what is the new language?

Sent from my iPhone

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>
> <EDIT 06272018 Pebble Project Scoping OGC .docx>

AMERICAN OVERSIGHT

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From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/29/2018 12:37:23 AM
To: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
Subject: RE: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping OGC .docx

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202.564.5549

AMERICAN OVERSIGHT

Message

From: Hoppe, Allison [hoppe.allison@epa.gov]
Sent: 6/28/2018 6:14:19 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]; Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Scheraga, Joel [Scheraga.Joel@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
Subject: RE: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping OGC.docx

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>;

AMERICAN OVERSIGHT

Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/28/2018 12:27:59 AM
To: Schwab, Justin [Schwab.Justin@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]; Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Scheraga, Joel [Scheraga.Joel@epa.gov]
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/11/2018 1:54:26 PM
To: Schwab, Justin [schwab.justin@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: Pebble Project Scoping 060518 draft.docx

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 9/14/2018 12:45:20 PM
To: McDonough, Owen [mcdonough.owen@epa.gov]

FYI, Matt, Lee, and I are meeting with Henry at 9:30 on Bristol bay, so I' ll be delayed to our working meeting.

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/6/2018 3:07:24 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]; Harrington, Rachel [harrington.rachel@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: FW: Pebble Mine Scoping Letter for HQ Review

John/Brian/Russ

OWOW, OGC, and OFA have been provided R10's draft scoping letter (2-page cover letter plus 25 pages of detailed comments) for concurrent review by all three HQ offices with a June 12 deadline to provide comments back to R10.

We have a few staff here in OWOW who are reviewing the letter. We plan to have our staff review completed by Friday and can report up to you our thoughts, comments on the draft letter. That gives you until June 12 to conclude your review and decide how to coordinate with Lee. I'm assuming Lee would just want to know your reaction and that we are fulfilling our public commitment to work with the Corps to ensure a robust NEPA process.

Let me know if you have questions.

Thanks, Palmer

From: Barnhart, Megan
Sent: Wednesday, June 06, 2018 10:43 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble Mine Scoping Letter for HQ Review

Good Morning,

I set up a OneDrive File with the scoping letter to facilitate version control and sending the Region all of HQ comments on a single track change document. I have granted access to everyone on this email. If there are others that should be included, let me know and I will send invites. Please provide your comments on the OneDrive File using track changes.

The deadline for scoping comments is June 29th. The comments require additional review from management at both the Regional and HQ level, so we have a tight deadline to get our comments back to the Region by COB June 12th.

Please feel free to contact me with any questions.

Regards,

Megan

……..
Megan Barnhart
U.S. Environmental Protection Agency

AMERICAN OVERSIGHT

Office of Federal Activities, NEPA Compliance Division
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

Message

From: Huber, Patrick [Huber.Patrick@epa.gov]
Sent: 6/26/2018 12:40:22 PM
To: Goodin, John [Goodin.John@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: URGENT: Need Lee's comments on the Pebble EIS scoping letter

John,

I will add this and remind you before the AK meeting at 10:45 AM.

Patrick

From: Goodin, John
Sent: Monday, June 25, 2018 5:08 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Huber, Patrick <Huber.Patrick@epa.gov>
Subject: RE: URGENT: Need Lee's comments on the Pebble EIS scoping letter

Patrick – please add this to my list for the ODs Brown Bag tomorrow. We'll also try to remind him at the AK trip download meeting.
John

From: Hough, Palmer
Sent: Monday, June 25, 2018 4:13 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: URGENT: Need Lee's comments on the Pebble EIS scoping letter
Importance: High

John/Brian/Russ

Please follow-up with Lee ASAP to secure his comments on the Pebble EIS scoping letter. R10 is trying to finalize the letter as it is due this week.

I reminded Lee about his comments last Wednesday night in Anchorage and he said he is still working on them – but R10 really needs to wrap this letter up now.

Looping in Megan Barnhart from OFA who is shepherding getting HQ comments back to R10

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW

AMERICAN OVERSIGHT

Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/11/2018 8:13:52 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
CC: Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: FW: OWOW staff comments on Pebble Mine Scoping Letter

Megan

Can you add Brian Frazer, Russell Kaiser and John Goodin to the onedrive file for the Pebble scooping letter?

Thanks, Palmer

From: Frazer, Brian
Sent: Monday, June 11, 2018 4:12 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>
Subject: RE: OWOW staff comments on Pebble Mine Scoping Letter

Yes, that would be helpful. Thanks.

From: Hough, Palmer
Sent: Monday, June 11, 2018 2:43 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>
Subject: RE: OWOW staff comments on Pebble Mine Scoping Letter

Brian – Megan Barnhart created the one drive file and shared it with me, Tim, Clay and Rachel. I'm not sure you, Russ or John have access to it.

If you don't have access, would you like me to request that Megan add the three of you?

From: Frazer, Brian
Sent: Monday, June 11, 2018 2:28 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>
Subject: RE: OWOW staff comments on Pebble Mine Scoping Letter

Thanks, Palmer. I'm forwarding the one drive link directly to John.

John – Russ and I haven't reviewed this, but I know you want Lee to have it today. Please let us know if you have any questions or concern. I will review the letter later this afternoon.

bf

From: Hough, Palmer
Sent: Monday, June 11, 2018 2:11 PM

AMERICAN OVERSIGHT

To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>
Subject: OWOW staff comments on Pebble Mine Scoping Letter

Brian/Russ:

Tim, Clay, Rachel H, and I have reviewed the draft R10 scoping letter for the Pebble EIS. The 27-page letter (2-page cover letter and 25 pages of detailed comments) is in very good shape. We have only a few comments and they are in redline on the attached draft.

As you know, EPA has made public commitments to work closely with the Corps to ensure this project undergoes a through NEPA review and this letter is consistent with those commitments.

Let me know if you have any questions.

Thanks, Palmer

From: Barnhart, Megan
Sent: Wednesday, June 06, 2018 10:43 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble Mine Scoping Letter for HQ Review

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The deadline for scoping comments is June 29th. The comments require additional review from management at both the Regional and HQ level, so we have a tight deadline to get our comments back to the Region by COB June 12th.

Please feel free to contact me with any questions.

Regards,

Megan

Megan Barnhart
U.S. Environmental Protection Agency
Office of Federal Activities, NEPA Compliance Division
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/11/2018 6:11:23 PM
To: Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
CC: Landers, Timothy [Landers.Timothy@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]; Harrington, Rachel [harrington.rachel@epa.gov]
Subject: OWOW staff comments on Pebble Mine Scoping Letter
Attachments: Pebble Project Scoping 060518 draft HQ Review_OWOW staff comments.docx

Brian/Russ:

Tim, Clay, Rachel H, and I have reviewed the draft R10 scoping letter for the Pebble EIS. The 27-page letter (2-page cover letter and 25 pages of detailed comments) is in very good shape. We have only a few comments and they are in redline on the attached draft.

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Let me know if you have any questions.

Thanks, Palmer

From: Barnhart, Megan
Sent: Wednesday, June 06, 2018 10:43 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble Mine Scoping Letter for HQ Review

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Please feel free to contact me with any questions.

Regards,

Megan

.....

Megan Barnhart
U.S. Environmental Protection Agency
Office of Federal Activities, NEPA Compliance Division

AMERICAN OVERSIGHT

William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/8/2018 11:14:59 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review

FYI – please see Tim's reaction to the Pebble scoping letter. I will follow-up with you on Monday regarding overall reaction.

From: Landers, Timothy
Sent: Friday, June 08, 2018 10:26 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review

Palmer,
I have reviewed Region 10's draft NEPA scoping letter. I found it very thorough and well-written. I do not have any suggested changes. I wanted to let you know since there actually very few comments on the document in One Drive.

From: Hough, Palmer
Sent: Wednesday, June 06, 2018 9:22 AM
To: Miller, Clay <Miller.Clay@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Here is the letter but put any comments in the onedrive file that Megan will be sending

From: Barnhart, Megan
Sent: Tuesday, June 05, 2018 3:50 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

AMERICAN OVERSIGHT

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/11/2018 9:08:53 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Goodin, John [Goodin.John@epa.gov]
Subject: Re: Barnhart, Megan has shared 'Pebble Project Scoping 060518 draft HQ Review'

Thanks, Megan.

****

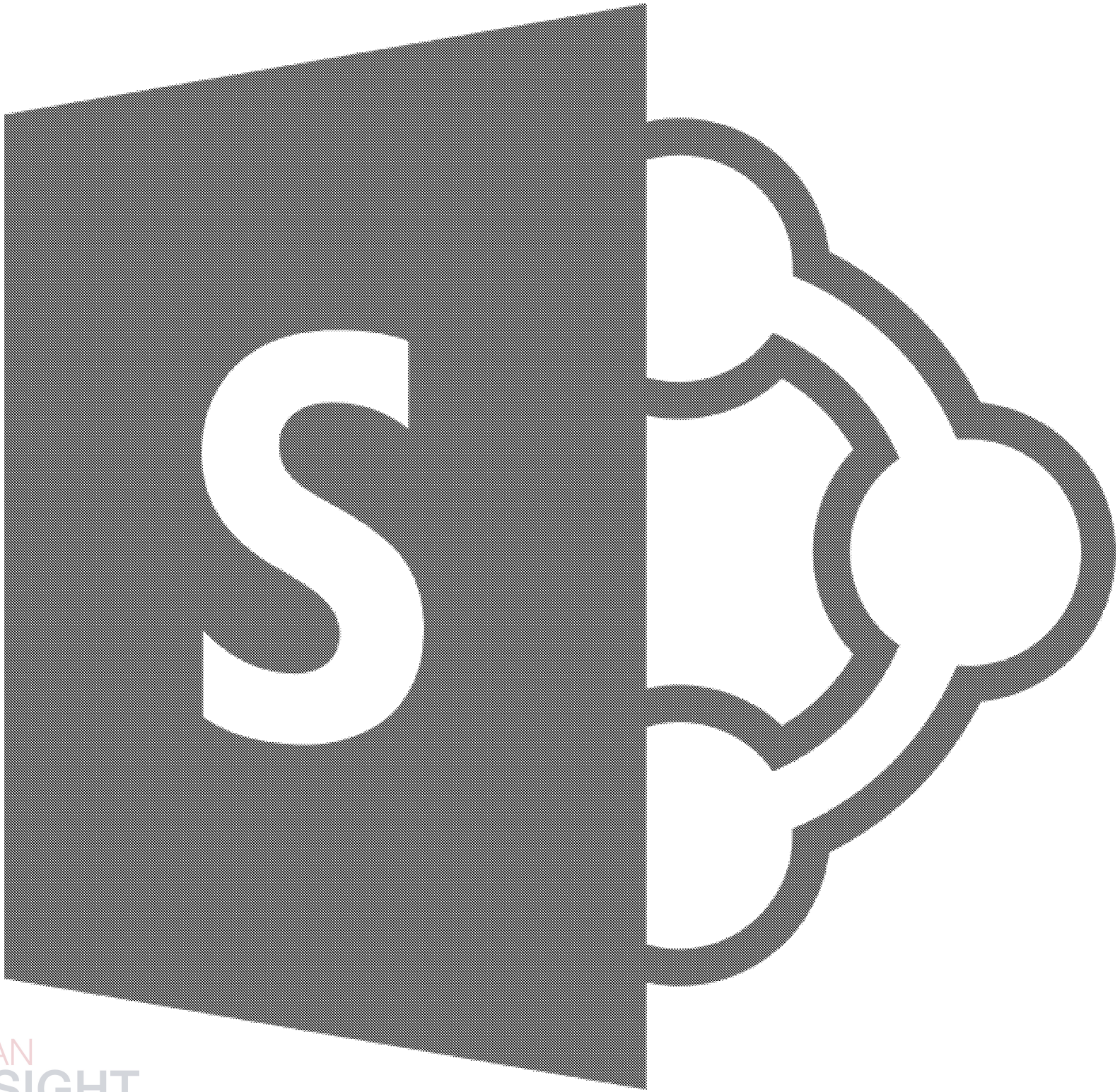
Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

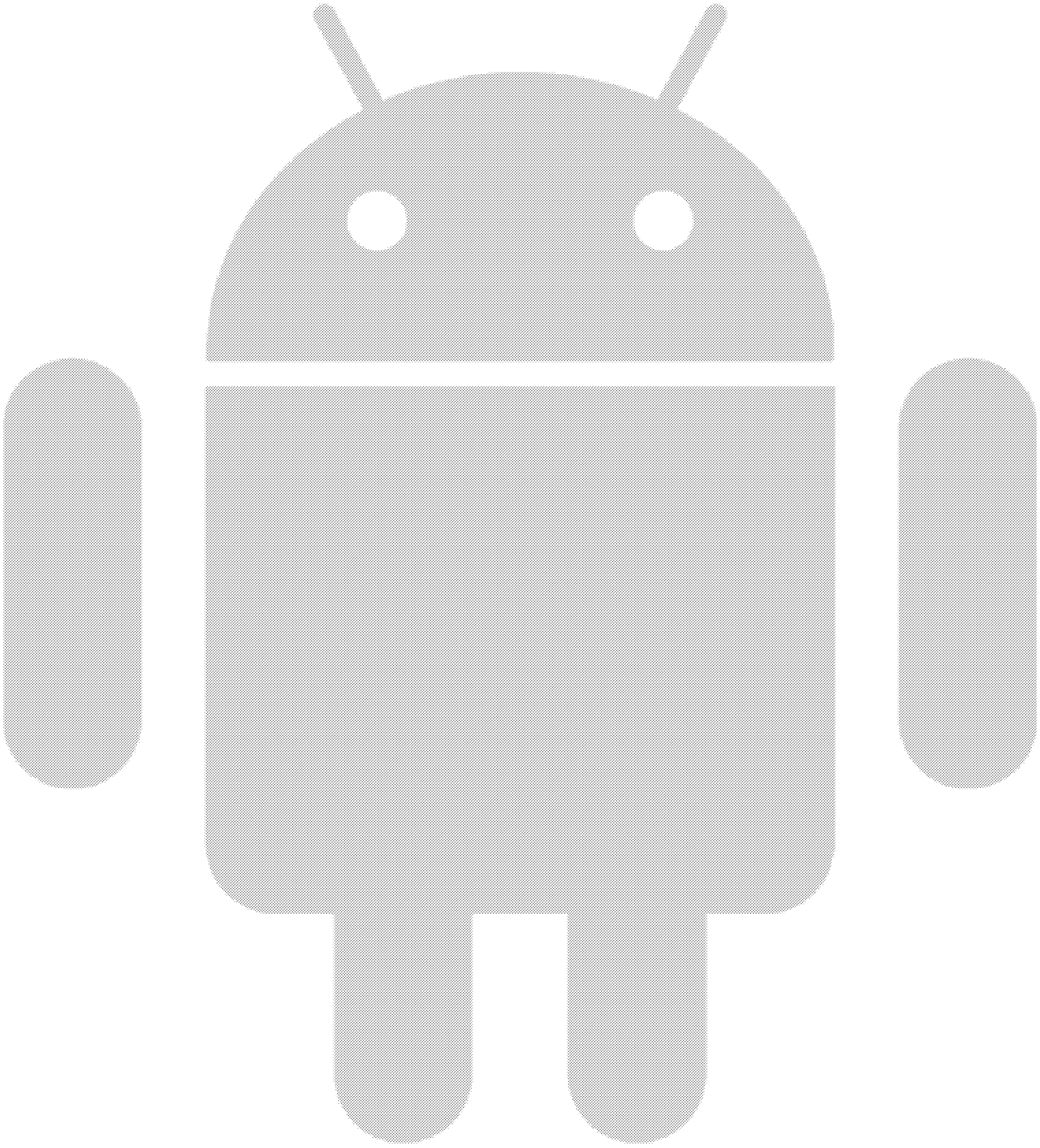
On Jun 11, 2018, at 4:30 PM, Barnhart, Megan <no-reply@sharepointonline.com> wrote:

> Here's the document that Barnhart, Megan shared with you.
>
> Open Pebble Project Scoping 060518 draft HQ Review.docx
>
> See more related to Barnhart, Megan in Delve.
>
> <mime-attachment.png> Get the SharePoint mobile app! <mime-attachment.png> <mime-attachment.png> <mime-attachment.png>

AMERICAN OVERSIGHT



AMERICAN OVERSIGHT



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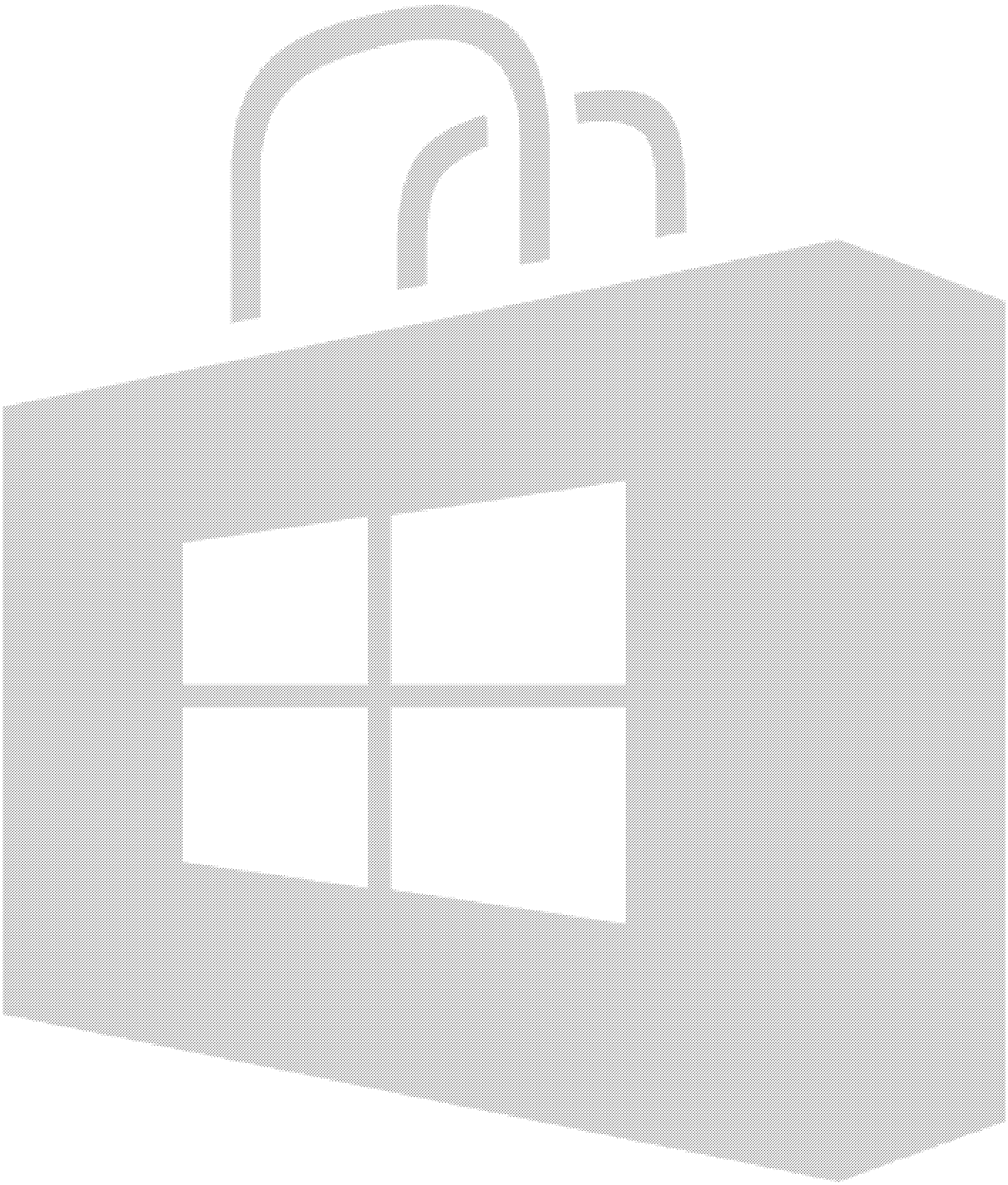

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/30/2018 12:23:28 PM
To: Goodin, John [Goodin.John@epa.gov]; Connors, Sandra [Connors.Sandra@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Topping, Brian [Topping.Brian@epa.gov]
Subject: Fwd: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf; ATT00001.htm

FYI.

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

Begin forwarded message:

> **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> **To:** "Tomiak, Robert" <tomiak.robert@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>
> **Subject: Fwd: Pebble EIS - EPA scoping comments**
>
> Phew.
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> > **To:** "Allnutt, David" <Allnutt.David@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> > **Cc:** "Vaughan, Molly" <Vaughan.Molly@epa.gov>
> > **Subject: FW: Pebble EIS - EPA scoping comments**
> >
> > FYI. Scoping comment submittal to the Corps.
> > Patty
> >
> > **From:** McGrath, Patricia
> > **Sent:** Friday, June 29, 2018 3:46 PM
> > **To:** 'POA Special Projects' <poaspecialprojects@usace.army.mil>
> > **Cc:** McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
> > **Subject:** Pebble EIS - EPA scoping comments
> >
> > Hello Shane-

AMERICAN OVERSIGHT

Attached are EPA's scoping comments on the Pebble EIS.
We appreciate the opportunity to provide comment and look forward to working through these issues with the Corps.
Please let me know if you have questions.

Best Regards-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/30/2018 12:21:40 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Tomiak, Robert [tomiak.robert@epa.gov]
Subject: Re: Pebble EIS - EPA scoping comments

Thanks, Dave.

****
Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

> On Jun 29, 2018, at 11:19 PM, Allnutt, David <Allnutt.David@epa.gov> wrote:
>
> Shane-

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 5/23/2018 4:47:39 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Schedule for OFA/OWOW review of draft Pebble EIS Scoping letter

Yes.

From: Hough, Palmer
Sent: Wednesday, May 23, 2018 12:32 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: FW: Schedule for OFA/OWOW review of draft Pebble EIS Scoping letter

Can we talk quickly about this schedule today? Need some quick feedback.

From: Hough, Palmer
Sent: Monday, May 21, 2018 3:40 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Bennett, Brittany <bennett.brittany@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Laabs, Chris <Laabs.Chris@epa.gov>
Subject: Schedule for OFA/OWOW review of draft Pebble EIS Scoping letter

Folks:

R10 has indicated that the internal review schedule for the draft Pebble EIS scoping letter has OFA/OWOW review scheduled for 6/4-6/12. The current version of the letter has a 2-page cover letter and approximately 23 pages of detailed comments organized by major topic areas.

Based on my role in the BBWA and the PD, I provided comments on an early draft. ORD staff who worked on the BBWA and PD were also consulted on early drafts of the letter.

Let me know if you have any questions or concerns.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 6/12/2018 9:12:30 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]
Subject: Re: Pebble Scoping Letter for HQ Review

Thanks

Sent from my iPhone

On Jun 12, 2018, at 2:07 PM, Stern, Allyn <Stern.Allyn@epa.gov> wrote:

> OGC has seen the document but we have not received any comments. That could mean they don't have any. Ashley is discussing with OGC tomorrow.
>
> Allyn L. Stern
> Regional Counsel
> U.S. EPA, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> 206-553-1223
>
> **From:** Allnutt, David
> **Sent:** Tuesday, June 12, 2018 1:30 PM
> **To:** Hladick, Christopher <hladick.christopher@epa.gov>
> **Cc:** Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
> **Subject:** FW: Pebble Scoping Letter for HQ Review
>
> Chris – at Michelle's request, I'm sending you the latest version of the Pebble scoping letter that I have access to. This version has already undergone legal and management review here in R10 and was sent to HQ (OW, OP, and OGC) for their consolidated review one week ago. We expect to get written comments back today or tomorrow. Based on conversations I've had with HQ staff, I don't anticipate that the HQ comments will be very extensive or substantive.
>
> In response to some of the questions that Michelle asked me, I can report that Lee has asked to see a near-final version of the letter before it's sent; he has declined the offer of a briefing. I'm not certain whether he's seen a draft yet. This draft was shared with Drew Feeley (a political appointee in OP); he has not requested a briefing. I'm not as certain of the status within OGC (many of our ORC and OGC attorneys are out of the office this week – Allyn may have heard something).

Deliberative Process / Ex. 5

<image001.png>
<image002.png> <image003.png> <image004.png>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

From: Palomaki, Ashley
Sent: Tuesday, June 05, 2018 1:34 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 10:42 AM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT



AMERICAN OVERSIGHT



AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:14:40 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Untitled Attachment; Canceled: Bristol Bay Check-in; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Toll number: Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Tentative

Recurrence: (none)

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Toll number: Conference Line/Code / Ex. 6
Conference ID: Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/10/2018 8:14:47 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble Scoping - Wetland comments strategy meeting
Location: R10AOO-ConfLnO365-Restricted-2051053; R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Tentative

Hello,
The extension of the comment period now provides some time for strategy discussion on what to include in the scoping comments. The purpose of the meeting will be to discuss how, if at all, the PD is integrated into the NEPA scoping letter, particularly with regard to alternatives analyzed.

→ **Join by Phone**

Conference Line/Code / Ex. 6

I have also reserved the Raven Room in AOO and the Chinook Room in Seattle.

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/3/2018 9:00:35 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]

Subject: Pebble Scoping

Start: 4/17/2018 7:30:00 PM
End: 4/17/2018 8:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Sent: 5/23/2018 3:25:51 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Pebble Scoping Letter

You might find this helpful too…so if it comes up again you won't have to comb through your gargantuan Pebble email folders…

From: Skadowski, Suzanne
Sent: Wednesday, May 23, 2018 8:04 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Scoping Letter

Hi Ashley,

Deliberative Process / Ex. 5

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

AMERICAN OVERSIGHT

From: Palomaki, Ashley
Sent: Tuesday, May 22, 2018 7:58 PM
To: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Pebble Scoping Letter

Hi –

Deliberative Process / Ex. 5

Thanks!

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

Appointment

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/14/2018 12:48:31 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]

Subject: Prep for Pebble scoping letter meeting
Location: DCRoomARN7500/DC-Ariel-Rios-OGC; OGC-WLO-O365- **Conference Line/Code / Ex. 6**

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 5:00:00 PM
Show Time As: Tentative

I thought it would be helpful for folks to talk through David's comments. Sorry for the lunch time meeting. I couldn't find any other time to get a critical mass and I know not everyone is available. If there are critical folks that can't make this time, just let me know. Also, let me know if you think there are others that should be added.

+++

Adding call in number for Region 10 folks:

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/11/2018 8:33:18 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Barnhart, Megan has shared 'Pebble Project Scoping 060518 draft HQ Review'

To keep you in the loop- Brian, Russ and John now have access

From: Barnhart, Megan [mailto:no-reply@sharepointonline.com]
Sent: Monday, June 11, 2018 4:30 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Goodin, John <Goodin.John@epa.gov>
Cc: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: Barnhart, Megan has shared 'Pebble Project Scoping 060518 draft HQ Review'

Here's the document that Barnhart, Megan shared with you.

Open Pebble Project Scoping 060518 draft HQ Review.docx

See more related to Barnhart, Megan in Delve.



Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/1/2018 4:03:13 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Subject: FYI - Scoping transcripts now available

Hello Pebble NEPA Team. Several of you have inquired about transcripts for the public scoping meetings. Those transcripts are now available on the Pebble EIS website at:
https://www.pebbleprojecteis.com/documents/scoping

--Molly

AMERICAN OVERSIGHT

Message

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: 5/4/2018 6:34:34 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Your edits look good to me Palmer.
Thanks,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: Hough, Palmer
Sent: Friday, May 04, 2018 11:20 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Folks

In the attached, I respond to the questions that Joe asked in his comments and in some places suggest edits to address

Deliberative Process / Ex. 5

Let me know if you have questions.

-Palmer

From: Ebersole, Joe
Sent: Tuesday, May 01, 2018 7:57 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Patty and Molly,
I've attached the marked-up copy with my comments added. See comments on page 7 in particular, as they may or may not be on mark depending on the intended emphasis of the fishery analysis.
Best regards,
Joe

AMERICAN OVERSIGHT

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Monday, April 30, 2018 10:04 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Hi Joe-
We have been trading voice mails regarding this. Please add your comments to this version of the letter and send response back to myself and Molly Vaughan.
Look forward to talking to you soon.
Thanks-
Patty

Ps. Kate and Palmer – thanks for your input.

From: Hough, Palmer
Sent: Friday, April 27, 2018 2:20 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly/Patty:

As I mentioned yesterday, I shared the draft scoping letter with Joe Ebersole and Kate Schofield. Attached are comments from Kate. Your draft letter incorporated all of the input that I provided earlier in the development process but I have a few additional suggestions that I added on top of Kate's comments.

Have a great weekend.

-Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:
https://usepa.sharepoint.com/sites/R10_Work/pebble_project_po_nr_team/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2FR10%5FWork%2Fpebble%5Fproject%5Fpo%5Fnr%5Fteam%2FShared%20Documents%2FSco

AMERICAN OVERSIGHT

ping&FolderCTID=0x012000ED283061EF40A24EA7CBACD185680DDD&View=%7B42B3A007%2D064D%2D4BFE%2D9EA9%2DC93CF3F5EBE7%7D

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Miller, Clay [Miller.Clay@epa.gov]
Sent: 6/6/2018 12:26:12 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Fwd: Pebble Scoping Letter for HQ Review

Include Tim in review.

Begin forwarded message:

> **From:** "Landers, Timothy" <Landers.Timothy@epa.gov>
> **Date:** June 5, 2018 at 10:31:58 PM EDT
> **To:** "Miller, Clay" <Miller.Clay@epa.gov>
> **Subject: RE: Pebble Scoping Letter for HQ Review**
>
> By noon Friday shouldn't be a problem.
>
> ---
>
> **From:** Miller, Clay
> **Sent:** Tuesday, June 05, 2018 7:42 PM
> **To:** Landers, Timothy <Landers.Timothy@epa.gov>
> **Subject:** Fwd: Pebble Scoping Letter for HQ Review
>
> Based your work load could you also review and comment on the scoping letter based on the timing. If not do not worry. Clay
>
> Begin forwarded message:
>
> > **From:** "Hough, Palmer" <Hough.Palmer@epa.gov>
> > **Date:** June 5, 2018 at 5:42:35 PM EDT
> > **To:** "Barnhart, Megan" <barnhart.megan@epa.gov>
> > **Cc:** "Bennett, Brittany" <bennett.brittany@epa.gov>, "Miller, Clay" <Miller.Clay@epa.gov>, "Harrington, Rachel" <harrington.rachel@epa.gov>
> > **Subject: RE: Pebble Scoping Letter for HQ Review**
> >
> > Megan
> >
> > That would be great. When you send the onedrive file of the Pebble scoping letter can you include the folks cc'ed on this email (I also may add one more person tomorrow)?
> >
> > I will ask for the OWOW folks to include their comments in the file by NLT noon on Friday, so that we have time to brief up the chain in OWOW before our 6/12 deadline for getting comments back to Region 10.
> >
> > Thanks, Palmer
> >
> > ---
> >
> > **From:** Barnhart, Megan
> > **Sent:** Tuesday, June 05, 2018 3:50 PM
> > **To:** Hough, Palmer <Hough.Palmer@epa.gov>
> > **Subject:** FW: Pebble Scoping Letter for HQ Review

AMERICAN OVERSIGHT

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/25/2018 8:38:01 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: URGENT: Need Lee's comments on the Pebble EIS scoping letter

Thank you Palmer! Also, still waiting on OGC…

From: Hough, Palmer
Sent: Monday, June 25, 2018 4:13 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: URGENT: Need Lee's comments on the Pebble EIS scoping letter
Importance: High

John/Brian/Russ

Please follow-up with Lee ASAP to secure his comments on the Pebble EIS scoping letter. R10 is trying to finalize the letter as it is due this week.

I reminded Lee about his comments last Wednesday night in Anchorage and he said he is still working on them – but R10 really needs to wrap this letter up now.

Looping in Megan Barnhart from OFA who is shepherding getting HQ comments back to R10

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/24/2018 10:58:20 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: TM Comments on PreDraft Sec4.16 SW Hydrology 7-24-18.docx; TM Comments on PreDraft Sec4.17 HydroGeo 7-24-18.docx

Attached are my review notes for Prelim Chapter Sections 4.16 (SW Hydro) and 4.17 (HydroGeo).

I'm still reviewing Section 4.18 (Water&Sed Quality) and will provide my comments by mid-day tomorrow.

tm

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro - Molly
- 4.5 Recreation - Molly
- 4.11 Aesthetics - Molly
- 4.14 Soils - Mark/Palmer
- 4.16 Surface Water Hydrology - Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology - Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality - Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites - Mark/Palmer
- 4.26 Vegetation - Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:
https://usepa.sharepoint.com/sites/R10_Work/pebble_project_po_nr_team/Shared%20Documents/Scoping/Pebble.062918.Scoping%20Letter%20FINAL.pdf

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]

AMERICAN OVERSIGHT

Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Miller, Clay [Miller.Clay@epa.gov]
Sent: 6/5/2018 11:40:02 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Re: Pebble Scoping Letter for HQ Review

On Jun 5, 2018, at 5:42 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> Megan
>
> That would be great. When you send the onedrive file of the Pebble scoping letter can you include the folks cc'ed on this email (I also may add one more person tomorrow)?
>
> I will ask for the OWOW folks to include their comments in the file by NLT noon on Friday, so that we have time to brief up the chain in OWOW before our 6/12 deadline for getting comments back to Region 10.
>
> Thanks, Palmer
>
> ---
>
> **From:** Barnhart, Megan
> **Sent:** Tuesday, June 05, 2018 3:50 PM
> **To:** Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** FW: Pebble Scoping Letter for HQ Review
>
> Palmer,
>
> I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?
>
> ---
>
> **From:** Vaughan, Molly
> **Sent:** Tuesday, June 05, 2018 1:42 PM
> **To:** Barnhart, Megan <barnhart.megan@epa.gov>
> **Cc:** Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
> **Subject:** Pebble Scoping Letter for HQ Review
>
> Hello Megan,
> Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.
>
> We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.
>
> Please let me know if you have any questions, and thank you for your review.

AMERICAN OVERSIGHT

--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 4/25/2018 7:09:40 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]
CC: Hagerthey, Scot [Hagerthey.Scot@epa.gov]; Bierwagen, Britta [Bierwagen.Britta@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh_ks.docx

Hi Palmer,

Attached are my comments on the scoping letter. I did not weigh in on the fish data question – I will entrust that to Joe's capable hands.

Just give me a call at **Personal Phone / Ex. 6** if you have any questions.

Hope all is well with you and that we can catch up soon.

Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov **| 202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Tuesday, April 17, 2018 5:16 PM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Joe/Kate

I hope you both are well. I've been working with the R10 NEPA shop to develop its EIS scoping letter for the Pebble EIS process. Scoping letters are our opportunity to lay out what kind of information and analysis we feel should be in an EIS.

Attached is the latest draft of the Pebble EIS scoping letter. You might recognize some language in the Cumulative Impacts and the Direct and Secondary Effects sections from the PD. If you have the time I would be very grateful for any thoughts you might have regarding edits to this letter. In particular I was wondering if you have thoughts on the question I raise on page 7 regarding suggesting collection of additional fishery related data.

My deadline for providing comments is May 2. Please call if you have questions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

AMERICAN OVERSIGHT

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:
https://usepa.sharepoint.com/sites/R10_Work/pebble_project_po_nr_team/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2FR10%5FWork%2Fpebble%5Fproject%5Fpo%5Fnr%5Fteam%2FShared%20Documents%2FScoping&FolderCTID=0x012000ED283061EF40A24EA7CBACD185680DDD&View=%7B42B3A007%2D064D%2D4BFE%2D9EA9%2DC93CF3F5EBE7%7D

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 8/20/2018 10:14:47 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Please Review: Pebble EIS: Preliminary Alternatives Screening
Attachments: 08_17_2018_Preliminary_Alternatives_Screening.pdf

Hi Palmer,

If possible, could we touch base before the call on the Wednesday - maybe Wed morning? I'd like to get your thoughts on what's needed, etc., before talking with the larger group. I haven't looked at the document yet, but will try to tomorrow (am technically on vacation this week, but this will provide a great escape excuse...).

Hope your summer is going well!
Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, August 20, 2018 5:17 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review: Pebble EIS: Preliminary Alternatives Screening

Hello Kate, Barb and Palmer,
We have received a preliminary list of alternatives and description of screening criteria used in developing alternatives for the Pebble EIS. Given your experience in developing mine scenarios for the Watershed Assessment, we would appreciate if you can review this preliminary document. We would appreciate any input you may have by COB Friday, so that we can compile all comments in time to meet the Corps deadline. I will also follow this email with an invite to discuss later this week. Please don't hesitate to call if you have any questions about this document or the review request prior to the scheduled conference call.
Thank you,
Molly

~~~~~~
Molly Vaughan
U.S. Environmental Protection Agency Region 10 Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, August 17, 2018 3:53 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Pebble EIS: Preliminary Alternatives Screening for Aug 22; Comments by 8/31/2018

All,

AMERICAN OVERSIGHT

Attached is the PRELIMINARY list of alternatives and the screening criteria used for considered by not analyzed in depth. This is the document we will discuss August 22, 2018 (1300-1500 AST). Please review for our meeting next wed. Please submit written comments by Friday 8/31/2018.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/28/2018 3:21:05 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Pebble scoping letter

Any accuracy edits to the responses in blue? I am planning to send to my management ASAP.

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 11:09 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

Attorney Client / Ex. 5

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>

---

[1] 40 C.F.R. § 230.10(d).

AMERICAN OVERSIGHT

Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client / Ex. 5

[1] 40 C.F.R. § 230.10(d).

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/5/2018 7:49:45 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/11/2018 4:53:42 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]

Subject: Pebble Scoping

Start: 4/17/2018 7:30:00 PM
End: 4/17/2018 8:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/21/2018 4:51:43 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: revised HQ review schedule for Pebble Scoping letter
Attachments: Pebble Project Scoping 051418 draft.docx

Hello Megan and Palmer. Thank you for your replies, I am glad the schedule will work out. In response to Palmer's question on the current form of the letter, it has changed a bit since the first draft, including quite a bit of reorganization of the aquatic resources section. I have attached the most current draft here in case either of you want to take a look, to get a sense of how it is shaping up. This letter is undergoing R10 management review now, so will likely change further before I send it to you for review. I am not seeking any edits from you at this time. Though, if you have any major concerns or questions, feel free to give me a call.
Thank you,
Molly

-Palmer

From: Vaughan, Molly
Sent: Thursday, May 17, 2018 6:48 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: revised HQ review schedule for Pebble Scoping letter

Hi Megan and Palmer,
I have been asked by my management to revise the internal review schedule for Pebble a bit, and I now have the OFA/OWOW review scheduled for 6/4-6/12. If you anticipate any issues with this schedule, please let me know.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/7/2018 10:30:03 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]
Subject: RE: Bristol Bay 404(c) Team Meeting - No meeting 9/11/18

Hello BB 404(c) Team,

I propose we cancel for 9/11. And, I would like to meet on 9/18.

As an update, I'm sharing the Bristol Bay Teams update for David Allnutt that Patty McGrath and I sent him and the BB check-in list today. See below.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation
- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- It is not clear whether we will be provided with another opportunity to review these chapters before the draft EIS. The Corps has indicated that there will be technical meetings in October/November to discuss comments and the impact assessment.

Alternatives

AMERICAN OVERSIGHT

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule

- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

404(c) Team

FOIA

- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response

- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA

- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings

- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file

- An OGC clerk has completed a summary of court decisions on challenges to agencies withdrawing proposals.

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 7/2/2018 5:13:50 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Final scoping letter

Thanks Ashley. If either of you get a copy of AK's letter, can you send that my way? Thanks!

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Palomaki, Ashley
Sent: Monday, July 02, 2018 12:57 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: FW: Final scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Allnutt, David
Sent: Friday, June 29, 2018 3:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

AMERICAN OVERSIGHT

Cc's – thanks for your support on this.

Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.
<< File: Pebble.062918.Scoping Letter FINAL.pdf >>

<< OLE Object: Picture (Device Independent Bitmap) >>
<< OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/24/2018 10:23:27 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; R10Sea-ConfLineMM-206-224-0052 [R10Sea-ConfLineMM-206-224-0052@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]

Subject: Pebble Scoping

Start: 5/2/2018 8:00:00 PM
End: 5/2/2018 9:00:00 PM
Show Time As: Tentative

Moving so that Carrie Wehling can join.

Hi –

We were originally planning on talking about the interaction between the PD and the scoping letter tomorrow during the biweekly. But, talked to Palmer after talking to MaryAnne and then Cara today, and we think a separate meeting on this is best. Heidi likely can't call in tomorrow and also I think we may want a full hour. Schedules are busy so this is the first available.

Conference Line/Code /

Hopefully this works.

Thanks,

Ashley

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/2/2018 4:57:20 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Final scoping letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf; ATT11398; ATT27145; ATT83259; ATT67235

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Allnutt, David
Sent: Friday, June 29, 2018 3:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

Cc's – thanks for your support on this.

Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.



Pebble.062918.S...
Letter FINAL.pdf

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10

AMERICAN OVERSIGHT

1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/13/2018 12:36:29 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client / Ex. 5

Please advise R10 that the draft should be raised to OW (Lee) and OA (Byron) if R10 has not already done so.

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,

AMERICAN OVERSIGHT

Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/10/2018 8:14:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble Scoping - Wetland comments strategy meeting
Location: R10AOO-C**Conference Line/Code**; R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Tentative

Hello,
The extension of the comment period now provides some time for strategy discussion on what to include in the scoping comments. The purpose of the meeting will be to discuss how, if at all, the PD is integrated into the NEPA scoping letter, particularly with regard to alternatives analyzed.

→ Join by Phone

Conference Line/Code / Ex. 6

Local numbers: **Conference Line/Code / Ex. 6**

I have also reserved the Raven Room in AOO and the Chinook Room in Seattle.

Thank you,
Molly

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/24/2018 3:48:49 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Thursday, May 24, 2018 6:22 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 8:21 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Wednesday, May 23, 2018 4:22 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 6:55 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 3:28 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

We categorized mine expansion (and development of other deposits) as a NEPA indirect effect. NEPA doesn't define secondary impacts – that's a b1 guidelines term.

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Attorney Client / Ex. 5

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Wednesday, May 23, 2018 2:33 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 4:56 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101

AMERICAN OVERSIGHT

206-553-8582

From: Hough, Palmer
Sent: Wednesday, May 23, 2018 12:29 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Attorney Client / Ex. 5

From: Palomaki, Ashley [mailto:no-reply@sharepointonline.com]
Sent: Wednesday, May 23, 2018 2:34 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Here's the document that Palomaki, Ashley shared with you.

Open Pebble Project Scoping 051418 draft_ACP.docx

See more related to Palomaki, Ashley in Delve.

Get the SharePoint mobile app!

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Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/15/2018 5:59:01 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Heidi. Sorry to jam you w mere comments, but please feel free to delete those if it makes sense to get him something vs hand out.

From: Nalven, Heidi
Sent: Friday, June 15, 2018 1:48 PM
To: Marshall, Tom; Hough, Palmer; Neugeboren, Steven; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie; Hoppe, Allison; Nogi, Jill; Koslow, Karin; Palomaki, Ashley; Allnutt, David
Subject: RE: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Thanks Tom. Given the nature of some of the comments, I am not planning to share the sharepoint version with David Fotouhi yet. We can send him the mark-up after we talk him through some of the bigger issues at 2:30 eastern today.

Adding David Allnut and Ashley to this distribution. I shared access to the letter with them separately.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Friday, June 15, 2018 1:33 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Note proposing policy tweaks to adaptation, of course, but whether Region thinks that may make sense bc will be elevated here, it seems, to Brittany, who may ask for breakdown of potential impacts, etc., I have no idea.

From: Nalven, Heidi <no-reply@sharepointonline.com>
Sent: Friday, June 15, 2018 10:28 AM
To: Hough, Palmer; Neugeboren, Steven; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie;

AMERICAN OVERSIGHT

Hoppe, Allison; Marshall, Tom; Nogi, Jill
Cc: Nalven, Heidi
Subject: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Here is a link to the version of the scoping letter with responses to Justin and David's substantive edits/comments.

We were hoping to share this with David prior to our 2:30 meeting today. Please let us know if you have any concerns by 1:00 eastern/10:00 pacific if possible.

Thanks,
Heidi

Open EDIT DF edits to Pebble Project Scoping 060518 draft.docx

See more related to Nalven, Heidi in Delve.

 Get the SharePoint mobile app!

  

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Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/15/2018 5:31:17 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
Subject: Re: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

Attorney Client / Ex. 5

This issue should be elevated to OA. Is it required under current regs/guidance? CEQ has withdrawn its guidance on this issue.
My understanding is that Joel in the AO's office has reviewed this language. OFA reviewed this language and did not have any comments.
Joel is the career Agency's Senior Climate Resilience Adviser in OP. Note that Samantha supported Agency-wide climate resilience work, including an Agency-wide Climate Resilience Working Group with Regional representation. The Agency's 2019 budget submission included climate resilience work, albeit focused on non-fed partners (States, Tribes, local gov'ts, and communities) as I recall.

From: Nalven, Heidi <no-reply@sharepointonline.com>
Sent: Friday, June 15, 2018 10:28 AM
To: Hough, Palmer; Neugeboren, Steven; Steiner-Riley, Cara; Stern, Allyn; Vaughan, Molly; Wehling, Carrie; Hoppe, Allison; Marshall, Tom; Nogi, Jill
Cc: Nalven, Heidi
Subject: Nalven, Heidi has shared 'EDIT DF edits to Pebble Project Scoping 060518 draft'

1[1] See http://nca2014.globalchange.gov/.

2[2] See https://www.snap.uaf.edu/.

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We were hoping to share this with David prior to our 2:30 meeting today. Please let us know if you have any concerns by 1:00 eastern/10:00 pacific if possible.

Thanks,
Heidi

Open EDIT DF edits to Pebble Project Scoping 060518 draft.docx

See more related to Nalven, Heidi in Delve.

 Get the SharePoint mobile app!

  

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/9/2018 11:56:29 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: POA-2017-271, Special Public Notice scoping extension

Hello Associate Reviewers,
As noted in Patty's email below, I have re-worked the schedule for completing the scoping letter based on the extension to the comment period. This has included extending time for each stage of the drafting and review of the letter. I now expect to have a first draft of the letter ready to share with you by the middle to end of this week, and will be able to provide approximately 3 weeks for your technical input into the letter. I appreciate your assistance with the scoping letter, and am glad that we will now have sufficient time for thoughtful and complete comments.
Thank you,
Molly

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, April 06, 2018 11:10 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: POA-2017-271, Special Public Notice scoping extension

All-

The Corps has issued a special public notice extending the Pebble EIS scoping period an additional 60 days to end on June 29, 2018 (see link in the email below).
Molly had developed a schedule for our scoping letter based on the original 30 day comment period and was working with many of you on drafting an initial letter. A revised schedule will be developed based on the extended time period. This will give us all more time to provide technical, legal, and management input into our scoping letter.

Also, the Corps has added an additional public scoping meeting in New Stuyahok on April 13. This information can be found on the Corps' Pebble EIS website.

Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, April 6, 2018 11:52 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: POA-2017-271, Special Public Notice scoping extension

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: April 6, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

CONTACT: For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy

AMERICAN OVERSIGHT

Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

AMERICAN OVERSIGHT

Message

From: Butler, Barbara [Butler.Barbara@epa.gov]
Sent: 8/23/2018 12:41:34 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble preliminary alternatives review
Attachments: Tailings comment 1.pdf; Tailings comment 2.pdf; Box 4-7.pdf

Sounds good, thanks for the update, Patty. Thanks also for the file with the newer layout.

Deliberative Process / Ex. 5

Cheers,
Barb

From: McGrath, Patricia
Sent: Wednesday, August 22, 2018 7:42 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble preliminary alternatives review

Hi Palmer, Barb, and Kate –

Based on the alternatives discussion at todays cooperating agency (CA) meeting, the Corps and AECOM will be developing a revised version of the 8/17 preliminary alternatives memo. The Corps said that CAs do not need to send written comments on the memo, but could wait and send comments on the revised version (expected around 9/1). Therefore, you do not need to send Molly written comments on the 8/17 version by the end of this week. We will send you the revised version for comment when it is available.

Thanks for your reviews to-date and the discussion today. Most of the points were discussed during the CA meeting. Stay tuned for the next version of the memo and in the meantime, feel free to call if you have questions.

Best regards-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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2005, Koerner et al. 2011). In general, longer lifespans are expected at lower temperatures and exposures to light (Rowe 2005, Koerner et al. 2011). Breakdown of the liner material and punctures by equipment or rocks may limit the effective life of liners (Rowe 2005). Overly steep slopes also may put stresses on geomembranes and cause them to fail. Service life data for other types of geomembranes are anecdotal and based on field performance, since no laboratory studies have been conducted (Koerner et al. 2011).

If seepage is expected or observed, mitigation or remedial measures such as interception trenches or seepage recovery wells can be installed around the perimeter and downstream of the TSF to capture water and redirect it to a treatment facility. Precipitation runoff from catchment areas up-gradient of the TSF is typically diverted away from the impoundment to reduce the volume of stored liquid.

Dry stack tailings management, in which tailings are filtered and "stacked" for long-term storage, is a newer, less commonly used tailings disposal method. Dry stacked tailings require a smaller footprint, are easier to reclaim, and have lower potential for structural failure and environmental impacts (Martin et al. 2002) (Box 4-7). Dry stack technology has found greatest acceptance in arid regions where water is scarce or expensive, although dry stacks are also used in wet climates or in cold regions where water handling is difficult (Martin et al. 2002). Currently, the only mines in Alaska that use dry stack tailings disposal are underground mines with high-grade ore and relatively low quantities of tailings (e.g., Greens Creek, a lead, silver, zinc mine in southeast Alaska; Pogo, a gold mine in eastern interior Alaska; and Nixon Fork, a gold mine in west-central Alaska).

BOX 4-7. DRY STACK TAILINGS MANAGEMENT

In a dry stacking operation, tailings are dried using filter presses or vacuum technologies such that water content typically falls below 20%. The dewatered tailings are either loaded into trucks or transported by conveyer to the tailings storage facility (TSF), where they are spread in lifts and compacted, similar to a traditional earth-moving operation.

The compacted tailings have a higher in-place bulk density than tailings placed using more conventional slurry methods. We estimate that dry stacking would reduce the required volume for tailings storage by approximately 15%. The lower water content of dry stack tailings means that less water is captured in the void spaces between solid tailings particles, reducing the amount of water "lost" to the TSF by approximately one-third. The additional water that is not captured in the TSF is available for treatment and release, potentially reducing streamflow losses in local streams. The higher density and lower water content of the tailings also increase their stability. In many cases, the need for a confining embankment and the risk of a tailings dam failure and tailings liquefaction can be eliminated with dry stack management.

The additional capital costs for dewatering equipment and the high energy cost of dewatering have often been barriers to adopting dry stack tailings management for low-grade ores such as porphyry copper. However, higher production costs may be at least partially offset by cost savings in other areas. For example, the increased stability of a dry stacked TSF may reduce closure costs, post-closure monitoring costs, and post-closure financial assurance requirements.

Dry stacked tailings are typically placed in unsaturated conditions, which can increase the exposure of tailings to oxygen. Thus, this type of storage may be less appropriate for potentially acid-generating tailings or may require additional engineering controls to limit, collect, or treat acid drainage. Where TSFs are typically used to store water as well as tailings, the use of dry stack tailings may not eliminate the need for construction and operation of a separate water impoundment facility.

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VAN ZYL RESPONSE: The author agrees that from a regulatory perspective "best management practices" (BMPs) is typically used for non-point source runoff. However, the term is also in much broader use in practice to refer to other activities and this is somewhat recognized. Addition of Box 4-1 helps to clarify this point.

EPA FINAL RESPONSE: No response required.

Mine scenarios. The executive summary indicates (p. ES-11): "The mine scenario includes minimum and maximum mine sizes, based on the amount of ore processed (2 billion metric tons vs. 6.5 billion metric tons), and approximately corresponding mine life spans of 25 to 78 years, respectively". This seems to indicate that the mine life cycle in the first case consists of 25 years of operational life followed by closure and, similarly for the second case, 78 years of operational life followed by closure. However, a careful review of the water management section (section 4.3.7) indicates that this is not the case. The EPA water balance calculations are simplified to a set of deterministic values in Table 4-5 for four water management stages during the overall mine life cycle: start-up, operations minimum mine (25 years), operations maximum mine (78 years), and post-closure. For post-closure, only the 78-year mine life numbers are used. It therefore seems that EPA is not considering that the 25-year mine will close, but that its life will automatically be extended to 78 years. Does this mean that the EPA really does not evaluate the minimum mine size completely, i.e. the 25-year mine life followed by closure? It is important that this be clarified as it would be inconsistent not to evaluate closure of the 25-year mine. It is possible that additional evaluations, or at least additional explanations, will be required to clarify this.

EPA RESPONSE: The reviewer is correct. Our water balance calculations only explicitly present the closure of the Pebble 6.5 scenario. The water balance for the Pebble 0.25 and the Pebble 2.0 scenarios would be similar, but in those scenarios there would be no water captured in TSF 2 or TSF 3 and the amounts captured in the pit would be proportionally smaller, as they are in the operating scenarios. While the pit is filling in each of the three scenarios, the total amount of water captured is slightly less than the amount captured during operations, and about 35% to 45% of the water captured is available for reintroduction to the streams. Once the pit is full, the amount captured at the nine pit area drops substantially and 100% of the captured water is reintroduced. Post closure flows for the three mine scenarios are presented in Table 6-8.

Tailings management technologies. Ongoing technology development has resulted in a broader range of tailings management options than only slurry tailings disposal. Filtered dry stack tailings can be considered as a realistic option, even for mines with higher production rates. Flotation of remaining sulfides in the tailings before deposition is also a realistic option for mines; it has been done successfully at the Thompson Creek Mine in Idaho for the last 18 plus years. While these technologies are mentioned, they are not selected for reasons such as technology not being appropriate for the climatic conditions and concerns with disposal of pyrite waste. Both of these are not insurmountable technical issues and adopting such management options will reduce failure probabilities and potential impacts following a failure. The failure mode of a filtered dry stack facility not containing sulfides will be completely different from a slurry impoundment and the potential environmental impacts of these other tailings management options will definitely be far smaller than those for the selected mine scenario using slurry tailings disposal.

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*EPA RESPONSE: Selective flotation to lower the pyrite content has been added to the discussion of processing in Chapter 4 and referenced in Chapter 6 as being done in the assessment scenarios. How tailings are managed within the impoundment can affect water chemistry and a dry stack with sulfides removed may produce the best water quality results after reclamation if the fate of the sulfide tailings is never considered. According to Ghaffari et al. (2011), 14% of the tailings produced would be pyritic (with the selective flotation method used), which equates to an average of 28,000 tons/day in a 200,000 tons/day mining operation, or over 255 million tons during a 25-year estimated lifetime for that scenario. These tailings need to be managed in such a manner that oxidation does not lead to acidic drainage and the most effective way is to deposit them subaqueously. Additionally, a "rule of thumb" for design of dry stack tailings is to allot 25 acres for every thousand dry tons of tailings per day over the life of a 20-year operation (SME Mining Engineering Handbook 1973). Assuming our scenario of 200,000 tons per day processed and that 99% of this material was waste tailings, this would amount to 4900 acres (25 *200,000 *.99/1000) or 19.8 km^2 over 20 years. This exceeds the internal surface area taken up by the TSF for tailings deposited over 25 years for the same mass of material processed per day by 5.6 km^2; thus, even if there were not a risk of the PAG tailings acidic leaching potential, dry stack tailings disposal at this site would create additional surface area loss versus the scenario's traditional dam.*

VAN ZYL RESPONSE: The response refers to a "rule of thumb" from the SME Mining Engineering Handbook (1973) about allotment of space for dry tailings. The author is not aware of any hard rock dry tailings management projects in the 1970's, these really came to being in the 1980's and 1990's. It is therefore not clear what experience base was used to establish this "rule of thumb". The author has not reviewed the reference, however assuming 100 pcf density for the dry tailings the rule indicates a height of tailings stack of about 130 ft. This clearly is dependent on the topography and there is no reason not to construct stacks that are higher. There is no reason why the overall area covered by dry tailings should be larger than the footprint of a slurry tailings deposit as the dry density of placed and compacted tailings will be higher than that of slurry tailings. The statement that "*dry stack tailings disposal at this site would create additional surface area loss versus the scenario's traditional dam*" contained in the present response is not correct and should be reconsidered as a reason to dismiss this option.

Please also note that the comments in the responses are inconsistent with that in the Second Draft on p. 4-18:

> **Dry stack tailings management in which tailings are filtered and "stacked" for long-term storage, is a newer, less commonly used tailings disposal method. Dry stacked tailings require a smaller footprint, are easier to reclaim, and have lower potential for structural failure and environmental impacts (Martin et al. 2002). However, the high-energy cost of dry stack technology remains a barrier for mining low-grade ores such as porphyry copper. In addition, this type of storage is inappropriate for acid-generating tailings and is less feasible in larger operations, where tailings impoundments serve to store water as well as tailings. It is most applicable in arid regions, although dry stacks are also used in wet climates or in cold regions where water handling is difficult (Martin et al. 2002). Currently, the only mines in Alaska that use dry stack disposal of tailings**

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are underground mines with high-grade ore and relatively low quantities of tailings (e.g. Greens Creek, a lead, silver, zinc mine in southeast Alaska; and Pogo, a gold mine in eastern interior Alaska).

It should also be noted that it is not only higher energy costs but also capital and other operating costs that make this technology more expensive. However, if this tailings management method results in lower environmental risks then it should be seriously considered and potentially included in project considerations, even if only to enumerate the lower risks, e.g., the tailings failure scenario will not occur because there is no fluid stored and all surface water can be diverted. This issue of acid drainage can also be addressed in the design of the facility, note that acid drainage collection and treatment from the tailings impoundment is included in the present assessment.

EPA FINAL RESPONSE: We agree with the commenter that the statement "dry stack tailings disposal at this site would create additional surface area loss versus the scenario's traditional dam" is not correct and should be removed from our initial response. Information on dry stack tailings management has been expanded in the final assessment (Box 4-7), and this information clarifies that dry stack tailings management would not result in a larger tailings storage footprint.

Waste rock management. The waste rock management plan on p. 4-13 calls for the potentially acid generating (PAG) waste rock to be separated from the rest of the waste rock and states that the "PAG waste rock might be placed in the open pit at closure to minimize oxidation of sulfide minerals and generation of acid drainage". However, on p. 4-33 it is stated that: "PAG waste rock will be processed through the flotation mill prior to mine closure, with tailings placed into the TSF (tailings storage facility) or the mine pit." These two alternatives represent completely different management, economic and environmental conditions and are not consistent. Milling the PAG waste rock represents a higher cost than placing the PAG rock in the pit and placing the PAG waste rock tailings in the TSF will increase the size of the TSF. Placing the PAG tailings in the pit will set up a completely different management scenario than placing the PAG waste rock in the pit. The EPA should clarify which option or range of options they select for evaluation and use that consistently in the assessment.

EPA RESPONSE: These statements have been made consistent. The revised assessment scenarios include processing the PAG waste rock over the course of operations to minimize the length of time a PAG waste rock pile would be on the surface, and thus minimize its potential for oxidation and subsequent release of acidic leachate. There is no longer mention of PAG rock being disposed in the pit at closure (Section 6.3.3).

Water balance and management – waste rock. Mine site water balance and management is a very complex issue as recognized by the EPA on p. 4-27: "…water balance development is challenging and requires a number of assumptions". Because of these uncertainties, complex probabilistic dynamic models are employed at mines where the site details are better defined than that of the EPA hypothetical mine scenario. The information in Box 4-2 indicates that the "captured flows include water captured at the mine site and the TSFs (Table 4-5). The total amount of water captured at the mine site includes net precipitation (precipitation minus evapotranspiration [footnote: during operations most of these areas will not be covered with vegetation and the correct terminology here is

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Mitigation: Complete Tailings Storage Facility (TSF) Failure. In some ways, some of the failures reviewed herein are not really subject to mitigation. For example, if a Tailings Storage Facility (TSF) completely fails, options for mitigation become limited very quickly. With a complete failure, it is "game over", with toxic sediments flowing into the Nushagak River all the way to Bristol Bay, thereby destroying the entirety of salmonid spawning habitat in this river by redirecting the channel and inundating the gravel/cobble steam bed with sediment (meters in depth). Mitigation under these circumstances is impossible, in my view. Given this scenario, I was surprised that the impacts were only assessed 30 km downstream of the TSF failure; is this realistic? I think not, given what we know of other mines.

EPA RESPONSE: We acknowledge the limitations of the hydrologic modeling. We now emphasize more clearly the potential for the effects of TSF failure to extend to Bristol Bay. The potential for remediation (and associated risks) are discussed in Section 9.7.

The amount of text dedicated to a TSF failure is large (36 pages) as compared to other failures. I suggest this section be shortened to bring it more in line with other sections. Briefly summarizing impacts would focus the text and help the reader appreciate what it would mean to have a TSF failure without having to wade through so much text.

EPA RESPONSE: We have revised this section of the assessment. However, given its importance to stakeholders, local communities, and decision makers, it was not significantly shortened. Other accidents and failures are now addressed in more detail.

Dry Stacking Mine Tailings: Appendix I, page 9. Given the horrific impact of a TSF dam failure, should mine operators consider a relatively new technique incorporating "paste tailings technology"? Here, tailings are thickened by water removal (down to 20% water) and filtering; tailings are then dry stacked onto a lined disposal site. These stacks "have a lower potential for structural failure and environmental impacts" (Martin et al. 2002). I would encourage the authors to argue for this substitute for the more traditional TSF for this solves at least two problems: 1) eliminates the possibility of a TSF failure (a huge gain!) and 2) reduces the amount of monitoring and maintenance of the waste tailings "In Perpetuity" (another major gain). Finally, what does "Best Management Practices" have to say about these two approaches to the storage of tailings waste?

EPA RESPONSE: We agree that dry stack storage and paste storage are options for mine proponents to consider. Although the option of using paste tailings is one that might be explored, the type of tailings disposal that operators propose is generally based on two things: the type of mine and the quantity of tailings. A balance would need to be considered between the low risk/high impact of a tailings dam failure and the certainty of increased area of disposal and the increased cost of tailings handling for paste tailings. A "rule of thumb" for design of dry stack tailings is to allot 25 acres for every thousand dry tons of tailings per day over the life of a 20 year operation (SME Mining Engineering Handbook 1973). This would amount to 4,900 acres (25 *200000 *.99/1000). Since paste tailings are more voluminous than dry and the scenario contains a 25 year mine life rather than 20 years, the area of a paste tailings facility would exceed the calculated amount resulting in over a 1/3 increase in the area occupied by tailings than

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contemplated in the current mine scenario. With a paste tailings facility, the monitoring and maintenance of a large dam is removed but that is replaced by the monitoring and perhaps treatment of the leachate draining through the tailings pile (that contains 20% water) as well as the long-term maintenance of the cap that is placed over the tailings at the end of the mine life. The choice of a tailings disposal methodology may be affected by the need to avoid or minimize effects to wetlands or the technical feasibility of constructing the structural components of the project.

Mitigation: Partial TSF Failure. If a TSF partially fails or is discovered beginning to fail, then I believe mine operators have a chance to save the dam and thereby protect the river, but only if: 1) the appropriate Standard Operating Procedures (SOP) for an emergency response are in place, 2) the necessary equipment (my presumption here is that heavy, earth-moving equipment would be required), materials, and supplies are onsite near the facility, and 3) trained personnel (meaning that they have practiced these repair SOPs in the preparation for such an event) are available for immediate action. One might argue that these procedures are more proactive than mitigating and I would agree, reflecting the near impossibility of invoking any mitigation measures associated with TSF failure.

EPA RESPONSE: Our scenarios presuppose that there are mitigation measures in place, but examines the effects of a failure of those measures. EPA agrees that SOPs are part of a mining operation and plan; however, inclusion of SOPs and details for emergency responses to a failing dam were outside the scope of this assessment. No change suggested or required.

Dredging: Post TSF Failure. In the text (pages 6-1 to 6-2), a reference is made to dredging materials out of the river post spill. I can't imagine this would mitigate any losses of spawning substrate for salmon. Indeed, because only 5% fines in gravel substrates compromise salmon reproductive success (and perhaps even selection of these areas for spawning in the first place), removal of meters of sediment with a dredge doesn't seem to be a solution. Whereas dredging might, in a best-case scenario, reduce the time to recovery of the substrate, I don't believe it will hasten recovery significantly. Dredging also serves to bring toxic sediments up into the water column perhaps compromising all organisms in the system. By not dredging, we allow the natural system to recover, which, in my view, would be preferable to any sort of "dredging mitigation". Some reflection by the authors on this issue would be valuable.

EPA RESPONSE: Agreed. Adverse effects of dredging are discussed in Section 9.7.

Mitigation: Pipeline Failure. With automatic shut-off valves stationed along all four pipelines, we would expect to know precisely just how much effluent will be spilled during any single event. With this information in hand, mine operators can easily anticipate spill size, toxicant characteristics and thereby judge what equipment, materials, and supplies would be necessary for mitigating any spill. As with the TSF failure, mine operators should have in place: 1) the appropriate Standard Operating Procedures (SOP) for an emergency response, 2) the necessary equipment, materials, and supplies onsite near the pipeline (given the length of the road, these items should be cached at several locations along the road, such that response time is minimized), and 3) trained personnel (meaning that they have practiced these mitigation SOPs in the preparation for such an event) are available for

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Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 4/17/2018 10:44:55 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Dean, Heather [Dean.Heather@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Scoping Comments

<!--[if lte mso 15 || CheckWebRef]-->

Thiesing, Mary has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Project Scoping 041118 draft MAT.docx

<!--[endif]-->

DRAFT CONFIDENTIAL –DELIBERATIVE AND PREDECISIONAL

Matt, Palmer, Heather,

I took a look at the scoping comment draft comments. You guys have given it a pretty thorough look—unbelievable given the original turnaround; my congratulations.

I suggested some language in the early part of the draft scoping comments up front. I would appreciate the opportunity to talk to you about this before we make this final. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Thanks.

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

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Unextractable file placeholder

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Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 4/17/2018 9:15:47 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Automatic reply: Pebble Scoping Letter - Review Requested

I will be out of the office until Monday (4/24), and may not be able to respond to your message until I return. Thank you for your patience.

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/5/2018 12:08:41 AM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble - Wetlands Scoping Comments
Attachments: Aquatic Resources Scoping_pfh.docx

Hi Mary Anne-
You had asked about the Pebble EIS scoping comments.
Matt and Palmer are leads on developing the comments from the 404 program. We assumed that they would reach out to others in the 404 program, as needed. Attached is the latest email from Palmer.
If you want to add or revise comments, please work from this draft and send revisions to Molly (see Molly's original email below).

I will be out of the office next week, Monday – Thursday, so please contact Molly with questions.

Thanks - Patty

From: Hough, Palmer
Sent: Tuesday, April 3, 2018 2:00 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Thanks for sending the file. I integrated my earlier comments into it. I welcome additional edits from others.

-Palmer

From: Vaughan, Molly
Sent: Tuesday, April 03, 2018 4:01 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Hi Palmer,
Thank you so much for your work on the scoping comments, and sorry the OneDrive link is not working correctly. (There have seemed to be a lot of issues OneDrive lately). I've attached the "standard" language here as a Word doc in case that is helpful for you or others on this email chain.
Thanks,
Molly

From: Hough, Palmer
Sent: Tuesday, April 03, 2018 11:47 AM

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To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Yesterday I was able to access and read your "standard" NEPA scoping language for aquatic resources in the sharepoint file you sent and I think it is a good starting point.

I tried to log in and edit it today but am unable to access the file. I think it needs to be supplemented to reflect some of the specific areas of focus from our previous work on this case. I've taken a first cut at what needs to be added to your standard text in the attached. It has three sections: direct and secondary effects, cumulative effects, and accidents and failures.

Personal Matters / Ex. 6 I look forward to continuing to work with you on this letter when I return.

I'm cc'ing Ashley and Heidi as they will likely recognize some of this language from the PD.

Please let me know if you have any questions regarding my suggestions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 3:13 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble - Wetlands Scoping Comments

Hello Matt and Palmer,
As I know you are very aware, our timeline for preparing scoping comments is very tight. Because there are a lot of project-specific concerns with regard to what would constitute an appropriate wetland impact analysis in the Draft EIS, I want to give you as much time as possible to help develop the wetland scoping comments. I have attached some "standard" NEPA scoping language for aquatic resources as a starting point. Please edit, expand, etc. as appropriate to convey the needed information for Pebble.

In order to meet the April 30th deadline, we have to meet a very aggressive letter writing schedule. Please provide your edits/additions to this scoping language **by COB April 9.**

I will begin working simultaneously on the remainder of the letter, so apologize that I don't have that for you to see now for context. My schedule for preparing the scoping comments is to have a first draft of the rest of the letter by COB on the 5th, and I'll share it with you at that time.

If you have any questions or concerns about the scoping comments or the timeline, please let me know.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office

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~~~~~~

222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 9:27:11 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Pebble - Wetlands Scoping Comments

Thanks so much, Palmer! I haven't had a chance to read your comments yet as I am scrambling to pull together the other pieces of the letter right now, but your early input before you are out of the office is much appreciated.
--Molly

From: Hough, Palmer
Sent: Tuesday, April 03, 2018 1:00 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Thanks for sending the file. I integrated my earlier comments into it. I welcome additional edits from others.

-Palmer

From: Vaughan, Molly
Sent: Tuesday, April 03, 2018 4:01 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

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Thanks,
Molly

From: Hough, Palmer
Sent: Tuesday, April 03, 2018 11:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
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standard text in the attached. It has three sections: direct and secondary effects, cumulative effects, and accidents and failures.

Personal Matters / Ex. 6 I look forward to continuing to work with you on this letter when I return.

I'm cc'ing Ashley and Heidi as they will likely recognize some of this language from the PD.

Please let me know if you have any questions regarding my suggestions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 3:13 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble - Wetlands Scoping Comments

Hello Matt and Palmer,
As I know you are very aware, our timeline for preparing scoping comments is very tight. Because there are a lot of project-specific concerns with regard to what would constitute an appropriate wetland impact analysis in the Draft EIS, I want to give you as much time as possible to help develop the wetland scoping comments. I have attached some "standard" NEPA scoping language for aquatic resources as a starting point. Please edit, expand, etc. as appropriate to convey the needed information for Pebble.

In order to meet the April 30th deadline, we have to meet a very aggressive letter writing schedule. Please provide your edits/additions to this scoping language **by COB April 9.**

I will begin working simultaneously on the remainder of the letter, so apologize that I don't have that for you to see now for context. My schedule for preparing the scoping comments is to have a first draft of the rest of the letter by COB on the 5th, and I'll share it with you at that time.

If you have any questions or concerns about the scoping comments or the timeline, please let me know.

Thank you,
Molly

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 8:00:35 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Pebble - Wetlands Scoping Comments
Attachments: Aquatic Resources Scoping.docx

Hi Palmer,
Thank you so much for your work on the scoping comments, and sorry the OneDrive link is not working correctly. (There have seemed to be a lot of issues OneDrive lately). I've attached the "standard" language here as a Word doc in case that is helpful for you or others on this email chain.
Thanks,
Molly

From: Hough, Palmer
Sent: Tuesday, April 03, 2018 11:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Yesterday I was able to access and read your "standard" NEPA scoping language for aquatic resources in the sharepoint file you sent and I think it is a good starting point.

I tried to log in and edit it today but am unable to access the file. I think it needs to be supplemented to reflect some of the specific areas of focus from our previous work on this case. I've taken a first cut at what needs to be added to your standard text in the attached. It has three sections: direct and secondary effects, cumulative effects, and accidents and failures.

Personal Matters / Ex. 6 I look forward to continuing to work with you on this letter when I return.

I'm cc'ing Ashley and Heidi as they will likely recognize some of this language from the PD.

Please let me know if you have any questions regarding my suggestions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 3:13 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
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AMERICAN OVERSIGHT

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If you have any questions or concerns about the scoping comments or the timeline, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/25/2018 9:36:47 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Will do

From: Schofield, Kate
Sent: Wednesday, April 25, 2018 5:34 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Yep. Personal Matters / Ex. 6 whenever. I've got a call from 12-1, but otherwise open right now.

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | **202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Wednesday, April 25, 2018 5:19 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Thanks Kate.

Do you have any time tomorrow to talk?

From: Schofield, Kate
Sent: Wednesday, April 25, 2018 3:10 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Bierwagen, Britta <Bierwagen.Britta@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Palmer,

Attached are my comments on the scoping letter. I did not weigh in on the fish data question – I will entrust that to Joe's capable hands.

Just give me a call at Personal Phone / Ex. 6 if you have any questions.

Hope all is well with you and that we can catch up soon.

Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | **202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency

AMERICAN OVERSIGHT

From: Hough, Palmer
Sent: Tuesday, April 17, 2018 5:16 PM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Joe/Kate

I hope you both are well. I've been working with the R10 NEPA shop to develop its EIS scoping letter for the Pebble EIS process. Scoping letters are our opportunity to lay out what kind of information and analysis we feel should be in an EIS.

Attached is the latest draft of the Pebble EIS scoping letter. You might recognize some language in the Cumulative Impacts and the Direct and Secondary Effects sections from the PD. If you have the time I would be very grateful for any thoughts you might have regarding edits to this letter. In particular I was wondering if you have thoughts on the question I raise on page 7 regarding suggesting collection of additional fishery related data.

My deadline for providing comments is May 2. Please call if you have questions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:
https://usepa.sharepoint.com/sites/R10_Work/pebble_project_po_nr_team/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2FR10%5FWork%2Fpebble%5Fproject%5Fpo%5Fnr%5Fteam%2FShared%20Documents%2FScoping&FolderCTID=0x012000ED283061EF40A24EA7CBACD185680DDD&View=%7B42B3A007%2D064D%2D4BFE%2D9EA9%2DC93CF3F5EBE7%7D

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

AMERICAN OVERSIGHT

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/6/2018 1:02:22 PM
To: Barnhart, Megan [Barnhart.Megan@epa.gov]
CC: Bennett, Brittany [bennett.brittany@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]; Harrington, Rachel [harrington.rachel@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review

Megan - also please include Tim Landers on the onedrive file

From: Hough, Palmer
Sent: Tuesday, June 05, 2018 5:43 PM
To: Barnhart, Megan <Barnhart.Megan@epa.gov>
Cc: Bennett, Brittany <bennett.brittany@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Harrington, Rachel <harrington.rachel@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review

Megan

That would be great. When you send the onedrive file of the Pebble scoping letter can you include the folks cc'ed on this email (I also may add one more person tomorrow)?

I will ask for the OWOW folks to include their comments in the file by NLT noon on Friday, so that we have time to brief up the chain in OWOW before our 6/12 deadline for getting comments back to Region 10.

Thanks, Palmer

From: Barnhart, Megan
Sent: Tuesday, June 05, 2018 3:50 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

AMERICAN OVERSIGHT

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/6/2018 12:53:22 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

From: Barnhart, Megan
Sent: Tuesday, June 05, 2018 3:50 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Palmer,

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From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
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Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

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Please let me know if you have any questions, and thank you for your review.
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT
~~~~~~

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/4/2018 6:19:47 PM
To: Ebersole, Joe [Ebersole.Joe@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh_ks_jle_pfh.docx

Folks

In the attached, I respond to the questions that Joe asked in his comments and in some places suggest edits to address

Deliberative Process / Ex. 5

Let me know if you have questions.

-Palmer

From: Ebersole, Joe
Sent: Tuesday, May 01, 2018 7:57 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Patty and Molly,
I've attached the marked-up copy with my comments added. See comments on page 7 in particular, as they may or may not be on mark depending on the intended emphasis of the fishery analysis.
Best regards,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Monday, April 30, 2018 10:04 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Hi Joe-

AMERICAN OVERSIGHT

We have been trading voice mails regarding this. Please add your comments to this version of the letter and send response back to myself and Molly Vaughan.
Look forward to talking to you soon.
Thanks-
Patty

Ps. Kate and Palmer – thanks for your input.

From: Hough, Palmer
Sent: Friday, April 27, 2018 2:20 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly/Patty:

As I mentioned yesterday, I shared the draft scoping letter with Joe Ebersole and Kate Schofield. Attached are comments from Kate. Your draft letter incorporated all of the input that I provided earlier in the development process but I have a few additional suggestions that I added on top of Kate's comments.

Have a great weekend.

-Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

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Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

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AMERICAN OVERSIGHT

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Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/27/2018 9:19:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Ebersole, Joe [Ebersole.Joe@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh_ks.docx

Molly/Patty:

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Have a great weekend.

-Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

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Internal Website / Ex. 6

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AMERICAN OVERSIGHT

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Thank you,
Molly

Molly Vaughan
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Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/21/2018 1:50:19 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Please Review: Pebble EIS: Preliminary Alternatives Screening

I'm free tomorrow morning anytime after 9 AM. Let me know what time works for you and I will block it off

-----Original Message-----
From: Schofield, Kate
Sent: Monday, August 20, 2018 6:15 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Please Review: Pebble EIS: Preliminary Alternatives Screening

Hi Palmer,

If possible, could we touch base before the call on the Wednesday - maybe Wed morning? I'd like to get your thoughts on what's needed, etc., before talking with the larger group. I haven't looked at the document yet, but will try to tomorrow Personal Matters / Ex. 6

Personal Matters / Ex. 6

Hope your summer is going well!
Kate

_____
Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640 National Center for Environmental Assessment | US Environmental Protection Agency Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, August 20, 2018 5:17 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review: Pebble EIS: Preliminary Alternatives Screening

Hello Kate, Barb and Palmer,
We have received a preliminary list of alternatives and description of screening criteria used in developing alternatives for the Pebble EIS. Given your experience in developing mine scenarios for the Watershed Assessment, we would appreciate if you can review this preliminary document. We would appreciate any input you may have by COB Friday, so that we can compile all comments in time to meet the Corps deadline. I will also follow this email with an invite to discuss later this week. Please don't hesitate to call if you have any questions about this document or the review request prior to the scheduled conference call.
Thank you,
Molly

~~~~~~
Molly Vaughan
U.S. Environmental Protection Agency Region 10 Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, August 17, 2018 3:53 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia

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<mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Pebble EIS: Preliminary Alternatives Screening for Aug 22; Comments by 8/31/2018

All,
Attached is the PRELIMINARY list of alternatives and the screening criteria used for considered by not analyzed in depth. This is the document we will discuss August 22, 2018 (1300-1500 AST). Please review for our meeting next wed. Please submit written comments by Friday 8/31/2018.

VR

Shane McCoy
Program Manager

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/5/2018 11:19:39 PM
To: Barnhart, Megan [Barnhart.Megan@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review

Also I've worked with Heidi Nalven in OGC for many years and she is great. She has been my primary contact in OGC for Pebble for many years – so I highly recommend that you coordinate with her.

From: Barnhart, Megan
Sent: Tuesday, June 05, 2018 3:50 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 11/6/2018 5:05:24 PM
To: Frithsen, Jeff [Frithsen.Jeff@epa.gov]
Subject: FW: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Jeff – got your vmm. Kate and I have been included in the effort led by R10 to provide comments on early draft pieces of the Corps' DEIS. You can see the other folks on this group listed in the TO line in the email below. I've been swamped and will need to start devoting more time to this.

Let me know if you would like to be included in this group.

-Palmer

From: Vaughan, Molly
Sent: Monday, October 29, 2018 6:29 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hello All,
I have created a new folder on the Sharepoint Site where I will begin storing all of the sections of the preliminary Draft EIS as we receive them: "Preliminary Draft EIS Sections Oct-Nov 2018"

In addition to the documents previously shared (the Revised Project Description and powerpoint presentation on Alternatives), this folder now contains the draft text of Chapter 1 and Chapter 2 (with additional folder containing figures). Comments are not requested on these sections, however, they have been provided for our review as context for review of the analysis in Chapter 3 and 4, so I do recommend reading when you get a chance.

As previously mentioned, we will be receiving the sections of Ch. 3 and 4 on a rolling basis between now and the first week of November. A few sections (the intros to 3 and 4 as well as Recreation sections) have already been received and are also available in the new folder.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/13/2018 4:12:09 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client/Deliberative Process / Ex. 5

From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 8:36 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client/Deliberative Process / Ex. 5

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Attorney Client/Deliberative Process / Ex. 5

Please advise R10 that the draft should be raised to OW (Lee) and OA (Byron) if R10 has not already done so.

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/8/2018 2:38:12 PM
To: Landers, Timothy [Landers.Timothy@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review

Thanks Tim. Very pleased that you think the letter is in good shape. Thanks for making time to look it over.

From: Landers, Timothy
Sent: Friday, June 08, 2018 10:26 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review

Palmer,
I have reviewed Region 10's draft NEPA scoping letter. I found it very thorough and well-written. I do not have any suggested changes. I wanted to let you know since there actually very few comments on the document in One Drive.

From: Hough, Palmer
Sent: Wednesday, June 06, 2018 9:22 AM
To: Miller, Clay <Miller.Clay@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Here is the letter but put any comments in the onedrive file that Megan will be sending

From: Barnhart, Megan
Sent: Tuesday, June 05, 2018 3:50 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Palmer,

I spoke with Alisson Hoppe in OGC and was going to give you a call. Should I set up a OneDrive file so we can all edit for version control?

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

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We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/2/2018 8:08:25 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: FW: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh_ks_jle.docx

FYI

From: Ebersole, Joe
Sent: Tuesday, May 01, 2018 7:57 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Patty and Molly,
I've attached the marked-up copy with my comments added. See comments on page 7 in particular, as they may or may not be on mark depending on the intended emphasis of the fishery analysis.
Best regards,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Monday, April 30, 2018 10:04 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Hi Joe-
We have been trading voice mails regarding this. Please add your comments to this version of the letter and send response back to myself and Molly Vaughan.
Look forward to talking to you soon.
Thanks-
Patty

Ps. Kate and Palmer – thanks for your input.

From: Hough, Palmer
Sent: Friday, April 27, 2018 2:20 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly/Patty:

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As I mentioned yesterday, I shared the draft scoping letter with Joe Ebersole and Kate Schofield. Attached are comments from Kate. Your draft letter incorporated all of the input that I provided earlier in the development process but I have a few additional suggestions that I added on top of Kate's comments.

Have a great weekend.

-Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

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907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/27/2018 1:19:53 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Re: Pebble Pre-Draft Ch 3 materials

Molly I am slammed and will not have time to review the materials. I'm leading a training course this week in WV. Sorry I missed you in Anchorage.

Sent from my iPhone

On Jun 26, 2018, at 6:50 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:

> Hi Palmer,
> I haven't received any comments from you on the preliminary materials we received for review. I know you have been very busy with travel, and see from your automated response that you are still travelling. Do you expect to send any comments on the Draft Chapter 3 sections? The Corps has requested our response as soon as possible.
> I have received comments from Mark and others on the team, so I think bases are covered, just wanted to check before responding to the Corps.
>
> By the way, I am sorry that our paths didn't cross while you were in Anchorage last week, it would have been nice to meet in person!
>
> Thanks,
> Molly
>
> ~~~

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/17/2018 9:15:46 PM
To: Ebersole, Joe [Ebersole.Joe@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: FW: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh.docx

Joe/Kate

I hope you both are well. I've been working with the R10 NEPA shop to develop its EIS scoping letter for the Pebble EIS process. Scoping letters are our opportunity to lay out what kind of information and analysis we feel should be in an EIS.

Attached is the latest draft of the Pebble EIS scoping letter. You might recognize some language in the Cumulative Impacts and the Direct and Secondary Effects sections from the PD. If you have the time I would be very grateful for any thoughts you might have regarding edits to this letter. In particular I was wondering if you have thoughts on the question I raise on page 7 regarding suggesting collection of additional fishery related data.

My deadline for providing comments is May 2. Please call if you have questions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

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Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

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versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/17/2018 9:05:22 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh.docx

Attached is the current draft of the 22-page scoping letter. I welcome your suggestions before my May 2 deadline.

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

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Internal Website / Ex. 6

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(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10

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Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/3/2018 7:47:02 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Pebble - Wetlands Scoping Comments
Attachments: Additions to aquatic resources section of NEPA scoping letter.docx

Molly

Yesterday I was able to access and read your "standard" NEPA scoping language for aquatic resources in the sharepoint file you sent and I think it is a good starting point.

I tried to log in and edit it today but am unable to access the file. I think it needs to be supplemented to reflect some of the specific areas of focus from our previous work on this case. I've taken a first cut at what needs to be added to your standard text in the attached. It has three sections: direct and secondary effects, cumulative effects, and accidents and failures.

Personal Matters / Ex. 6 I look forward to continuing to work with you on this letter when I return.

I'm cc'ing Ashley and Heidi as they will likely recognize some of this language from the PD.

Please let me know if you have any questions regarding my suggestions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 3:13 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble - Wetlands Scoping Comments

Hello Matt and Palmer,
As I know you are very aware, our timeline for preparing scoping comments is very tight. Because there are a lot of project-specific concerns with regard to what would constitute an appropriate wetland impact analysis in the Draft EIS, I want to give you as much time as possible to help develop the wetland scoping comments. I have attached some "standard" NEPA scoping language for aquatic resources as a starting point. Please edit, expand, etc. as appropriate to convey the needed information for Pebble.

In order to meet the April 30th deadline, we have to meet a very aggressive letter writing schedule. Please provide your edits/additions to this scoping language **by COB April 9.**

I will begin working simultaneously on the remainder of the letter, so apologize that I don't have that for you to see now for context. My schedule for preparing the scoping comments is to have a first draft of the rest of the letter by COB on the 5th, and I'll share it with you at that time.

If you have any questions or concerns about the scoping comments or the timeline, please let me know.

Thank you,

AMERICAN OVERSIGHT

Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Kaiser, Russell [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=222DA99956D24CA197DC6F8BF4AE1FF5-KAISER, RUSSELL]
Sent: 4/25/2018 5:47:55 PM
To: Lopez Ortiz, Myrna I CIV USARMY CEHQ (US) [Myrna.I.Lopez-Ortiz@usace.army.mil]
CC: Moyer, Jennifer A CIV USARMY CEHQ (US) [Jennifer.A.Moyer@usace.army.mil]
Subject: RE: Alaska North Slope Permitting Initiative

Myrna: Just curious ... are you participating in the meeting on May 9th with Lee and Ryan?

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

-----Original Message-----
From: Lopez Ortiz, Myrna I CIV USARMY CEHQ (US) [mailto:Myrna.I.Lopez-Ortiz@usace.army.mil]
Sent: Wednesday, April 25, 2018 9:19 AM
To: Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Moyer, Jennifer A CIV USARMY CEHQ (US) <Jennifer.A.Moyer@usace.army.mil>
Subject: RE: Alaska North Slope Permitting Initiative
Importance: High

Good morning Russ, can you advice the EPA Region to reach out and discuss these ideas with the Alaska District directly? It seems our suggestion to have the Region work directly with the District is not getting traction and I don't understand why. The big group discussion proposed below may not work for the purpose of further fleshing out these ideas in preparation for briefings to leadership. Before any further engagement we'd like to see the Region and the District working together on this effort based on a mutually agreed scheduled. The Alaska District POC has her hands full with the Pebble Mine project, so setting time aside for this discussion needs to be coordinated directly with her. Therefore, I cannot guarantee that she will be available for the meeting tomorrow.

Please give me a call if you would like to discuss or have questions on my request above.

Thanks
Myrna

-----Original Message-----
From: Topping, Brian [mailto:Topping.Brian@epa.gov]
Sent: Wednesday, April 25, 2018 8:22 AM
To: Bennett, Brittany <bennett.brittany@epa.gov>; Laabs, Chris <Laabs.Chris@epa.gov>; Frazer, Brian HQ02 <Frazer.Brian@epa.gov>; Barnhart, Megan <barnhart.megan@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Darden, Richard L CIV USARMY CEHQ (US) <Richard.L.Darden@usace.army.mil>; Hoppe, Allison <hoppe.allison@epa.gov>; Lopez Ortiz, Myrna I CIV USARMY CEHQ (US) <Myrna.I.Lopez-Ortiz@usace.army.mil>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: [Non-DoD Source] RE: Alaska North Slope Permitting Initiative

Attached are the updated option papers for RGP and Pre-application reflecting all comments received and including the notes from Corps. Myrna - thanks for consolidating and sending comments yesterday. Thanks also for the context on Corps processing times for permits, that will be helpful shaping the conversation going up the chain.

I have also attached a brief context setting introduction / background paper OFA put together, which depending on the final use may want to include more of the existing resources identified on the RIBITS site for the Alaska District - Assessment Tools - Watershed-Plans/Tools.

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Please review the following for discussion on Thursday:

* Pre-App Option
* RGP Option
* Watershed Plans (option 6) from Corps shared yesterday
* Updated options 1-5 coming soon from Matt
* Intro-Background Paper

And remember we are looking for everyone's final comments and thoughts by Friday.

Thanks,

Brian

Brian Topping

Office: 202-566-5680

-----Original Appointment-----
From: Bennett, Brittany
Sent: Thursday, April 05, 2018 3:34 PM
To: Bennett, Brittany; Topping, Brian; Laabs, Chris; Frazer, Brian; Barnhart, Megan; Nalven, Heidi; Thiesing, Mary; Allnutt, David; Palomaki, Ashley; Fordham, Tami; Kaiser, Russell; Knight, Kelly; LaCroix, Matthew; Curtis, Jennifer; Marshall, Tom
Cc: Darden, Richard L CIV USARMY CEHQ (US; Hoppe, Allison; Myrna.I.Lopez-Ortiz@usace.army.mil; Newman, Sheila M CIV USARMY CEPOA (US)
Subject: Alaska North Slope Permitting Initiative
When: Thursday, April 26, 2018 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest7301/DC-CCW-OWOW; Conference Line: Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

Sent: 6/27/2018 1:25:30 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
Subject: RE: Pebble Scoping Letter

If that's Drew's only availability,

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 9:23 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Pebble Scoping Letter

I am OK with you including her in our meeting. Does 12:45 work for you?

From: Knight, Kelly
Sent: Wednesday, June 27, 2018 9:08 AM
To: Tomiak, Robert <tomiak.robert@epa.gov>
Subject: RE: Pebble Scoping Letter

Rob,

You may want to consider Megan attending the meeting. She has been the one coordinating the HQ comments, as well as directly interfacing with Molly (R10) on the progress of the letter.

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 8:59 AM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Pebble Scoping Letter

Drew, can we all meet at 1? That will give us a bit of time this morning to receive some general feedback on the issues that OGC are looking at. Also, Kelly has a conflict at 11:30, so 1 would work better for both of us.

Thanks, Rob

From: Feeley, Drew (Robert)
Sent: Wednesday, June 27, 2018 6:48 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Cc: Tomiak, Robert <tomiak.robert@epa.gov>
Subject: Re: Pebble Scoping Letter

That's fine. Is there a recent draft that I could look at to see what's been done so far?

Sent from my iPhone

On Jun 27, 2018, at 6:24 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> Drew,
>
> Recommend that you just work off of the copy you have. Version control has gone out the window as comments from HQ have been tardy in getting to the region and they have been trying to incorporate the changes on a piecemeal basis.

AMERICAN OVERSIGHT

R,
Kelly

From: Feeley, Drew (Robert)
Sent: Tuesday, June 26, 2018 7:19 PM
To: Tomiak, Robert <tomiak.robert@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: Re: Pebble Scoping Letter

Also, if you have an electronic version of the latest draft with updated comments, please send. I can add mine to that. Thanks!

Sent from my iPhone

On Jun 26, 2018, at 5:29 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:

> No need to include Justin. I just wanted to do a policy review. If you have an updated draft, please bring it. Thanks!
>
> ---
>
> **From:** Tomiak, Robert
> **Sent:** Tuesday, June 26, 2018 5:26 PM
> **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
> **Subject:** Re: Pebble Scoping Letter
>
> Looping Kelly in. OGC has had extensive comments as well. Would you like to also include Justin, or anyone from his staff?
>
> Thanks, Rob
>
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>
> > That works. Just want to go over the draft before it goes out Friday. I'll send the invite. Thanks.
> >
> > ---
> >
> > **From:** Tomiak, Robert
> > **Sent:** Tuesday, June 26, 2018 5:21 PM
> > **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
> > **Subject:** Re: Pebble Scoping Letter
> >
> > Sure; should be free at 11:30....does that work?
> >
> > Thanks, Rob
> >
> > On Jun 26, 2018, at 4:58 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
> >
> > > Hi Rob – Let me know if you have a few minutes tomorrow, maybe after 10:30, to discuss the Pebble scoping letter due this Friday. I looked it over and have some comments.

AMERICAN OVERSIGHT

Thanks,
Drew

AMERICAN OVERSIGHT

Message

From: Knight, Kelly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47FC4B0C90F94826A1D9A48381F4009F-KNIGHT, KEL]
Sent: 6/26/2018 10:03:18 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
Subject: Fw: Pebble Scoping Letter

FYSA

From: Feeley, Drew (Robert)
Sent: Tuesday, June 26, 2018 5:29 PM
To: Tomiak, Robert; Knight, Kelly
Subject: RE: Pebble Scoping Letter

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From: Tomiak, Robert
Sent: Tuesday, June 26, 2018 5:26 PM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: Re: Pebble Scoping Letter

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> **Sent:** Tuesday, June 26, 2018 5:21 PM
> **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
> **Subject:** Re: Pebble Scoping Letter
>
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>
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AMERICAN OVERSIGHT

Thanks,
Drew

AMERICAN OVERSIGHT

Message

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/30/2018 11:51:30 AM
To: Knight, Kelly [knight.kelly@epa.gov]; Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Subject: Fwd: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf; ATT00001.htm

FYI

Thanks, Rob

Begin forwarded message:

> **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> **To:** "Tomiak, Robert" <tomiak.robert@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>
> **Subject: Fwd: Pebble EIS - EPA scoping comments**
>
> Phew.
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> > **To:** "Allnutt, David" <Allnutt.David@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>,
> > "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> > **Cc:** "Vaughan, Molly" <Vaughan.Molly@epa.gov>
> > **Subject: FW: Pebble EIS - EPA scoping comments**
> >
> > FYI. Scoping comment submittal to the Corps.
> > Patty
> >
> > ---
> >
> > **From:** McGrath, Patricia
> > **Sent:** Friday, June 29, 2018 3:46 PM
> > **To:** 'POA Special Projects' <poaspecialprojects@usace.army.mil>
> > **Cc:** McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>;
> > McCafferty, Katherine A CIV USARMY CEPOA (US)
> > <Katherine.A.McCafferty2@usace.army.mil>; Molly Vaughan (Vaughan.Molly@epa.gov)
> > <Vaughan.Molly@epa.gov>
> > **Subject:** Pebble EIS - EPA scoping comments
> >
> > Hello Shane-
> >
> > Attached are EPA's scoping comments on the Pebble EIS.
> > We appreciate the opportunity to provide comment and look forward to working
> > through these issues with the Corps.
> > Please let me know if you have questions.
> >
> > Best Regards-
> > Patty
> >
> > **Patty McGrath |Mining Advisor**

AMERICAN OVERSIGHT

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/29/2018 3:23:48 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]; Knight, Kelly [knight.kelly@epa.gov]
Subject: RE: Pebble scoping letter

Allison,

Please note that the version OGC was working from is not the region's most recent draft which includes OW comments and a change of tone in places in response to Lee. Since David was not working off the SharePoint document which included OW comments, there are additional changes not in this draft. The region knows they will have to merge the two, but an FYI.

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 5:46 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: FW: Pebble scoping letter

Just FYI, this is the last of the email communication I've seen but I know Heidi has been on the phone with Ashley in the Region and they are working on things now. I'm attaching the version I shared in the email chain below. Also FYI, I have

Attorney Client/Deliberative Process/ Ex. 5

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

I am an EPA LGBTQ+ Ally. Learn more and take the pledge here.
Pronouns: She/Her/Hers

From: Feeley, Drew (Robert)
Sent: Thursday, June 28, 2018 3:20 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Thanks! We can work from this version, assuming it's the most recent one.

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 2:14 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel

AMERICAN OVERSIGHT

<Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here incorporates some clarification on the distinction between air quality considerations for NEPA purposes and what the project may ultimately be subject to under the CAA. I've pulled out the relevant section below:

Attorney Client/Deliberative Process/ Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,
Heidi

AMERICAN OVERSIGHT

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client/Deliberative / Ex. 5

AMERICAN OVERSIGHT

Attorney Client/Deliberative/ Ex. 5

AMERICAN OVERSIGHT

Message

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/28/2018 2:44:47 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]; Knight, Kelly [knight.kelly@epa.gov]
Subject: FW: Pebble scoping letter

Here's Tom's advice to Joel re the NEPA paragraph.

Deliberative Process / Ex. 5

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

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Sent: Wednesday, June 27, 2018 6:16 PM
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Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client/Deliberative / Ex. 5

AMERICAN OVERSIGHT

Attorney Client/Deliberative / Ex. 5

AMERICAN OVERSIGHT

Message

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/28/2018 2:43:40 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]; Knight, Kelly [knight.kelly@epa.gov]
Subject: FW: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client/Deliberative / Ex. 5

AMERICAN OVERSIGHT

Message

From: Knight, Kelly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47FC4B0C90F94826A1D9A48381F4009F-KNIGHT, KEL]
Sent: 6/18/2018 6:57:25 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
Subject: R10 Scoping Letter

Rob,

Since we did not meet with Brittany last Friday, we didn't have the opportunity to ask about the Pebble letter. We anticipate getting OGC's consolidated comments back by COB today, and we understand that Lee Forsgren will also be providing comments. Megan is responsible for consolidating all HQ comments and need to know if we should be expecting anything from the OP front office.

Please advise.

Thanks

Kelly Knight
Director, NEPA Compliance Division
Environmental Protection Agency
202-564-2141 (office)
202-594-6391 (cell)

AMERICAN OVERSIGHT

Message

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/27/2018 3:50:25 PM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: RE: Pebble Scoping Letter

I let Drew know that you'll be bringing Megan with us.

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 9:23 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Pebble Scoping Letter

I am OK with you including her in our meeting. Does 12:45 work for you?

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Thanks, Rob

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Sent from my iPhone

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> Drew,

AMERICAN OVERSIGHT

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R,
Kelly

From: Feeley, Drew (Robert)
Sent: Tuesday, June 26, 2018 7:19 PM
To: Tomiak, Robert <tomiak.robert@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: Re: Pebble Scoping Letter

Also, if you have an electronic version of the latest draft with updated comments, please send. I can add mine to that. Thanks!

Sent from my iPhone

On Jun 26, 2018, at 5:29 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:

> No need to include Justin. I just wanted to do a policy review. If you have an updated draft, please bring it. Thanks!
>
> ---
>
> **From:** Tomiak, Robert
> **Sent:** Tuesday, June 26, 2018 5:26 PM
> **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
> **Subject:** Re: Pebble Scoping Letter
>
> Looping Kelly in. OGC has had extensive comments as well. Would you like to also include Justin, or anyone from his staff?
>
> Thanks, Rob
>
> On Jun 26, 2018, at 5:22 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
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> >
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> >
> > **From:** Tomiak, Robert
> > **Sent:** Tuesday, June 26, 2018 5:21 PM
> > **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
> > **Subject:** Re: Pebble Scoping Letter
> >
> > Sure; should be free at 11:30....does that work?
> >
> > Thanks, Rob
> >
> > On Jun 26, 2018, at 4:58 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
> >
> > > Hi Rob – Let me know if you have a few minutes tomorrow, maybe after 10:30, to discuss the Pebble

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scoping letter due this Friday. I looked it over and have some comments.

Thanks,
Drew

AMERICAN OVERSIGHT

Message

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/27/2018 2:48:22 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]
Subject: RE: Pebble Scoping Letter

Sounds good.

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 9:31 AM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Pebble Scoping Letter

12:45 works better

From: Feeley, Drew (Robert)
Sent: Wednesday, June 27, 2018 9:03 AM
To: Tomiak, Robert <tomiak.robert@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>
Subject: Re: Pebble Scoping Letter

12:30/45 work?

Sent from my iPhone

On Jun 27, 2018, at 8:59 AM, Tomiak, Robert <tomiak.robert@epa.gov> wrote:

> Drew, can we all meet at 1? That will give us a bit of time this morning to receive some general feedback on the issues that OGC are looking at. Also, Kelly has a conflict at 11:30, so 1 would work better for both of us.
>
> Thanks, Rob
>
> **From:** Feeley, Drew (Robert)
> **Sent:** Wednesday, June 27, 2018 6:48 AM
> **To:** Knight, Kelly <knight.kelly@epa.gov>
> **Cc:** Tomiak, Robert <tomiak.robert@epa.gov>
> **Subject:** Re: Pebble Scoping Letter
>
> That's fine. Is there a recent draft that I could look at to see what's been done so far?
>
> Sent from my iPhone
>
> On Jun 27, 2018, at 6:24 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:
>
> > Drew,

AMERICAN OVERSIGHT

Recommend that you just work off of the copy you have. Version control has gone out the window as comments from HQ have been tardy in getting to the region and they have been trying to incorporate the changes on a piecemeal basis.

R,
Kelly

From: Feeley, Drew (Robert)
Sent: Tuesday, June 26, 2018 7:19 PM
To: Tomiak, Robert <tomiak.robert@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: Re: Pebble Scoping Letter

Also, if you have an electronic version of the latest draft with updated comments, please send. I can add mine to that. Thanks!

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> **Sent:** Tuesday, June 26, 2018 5:26 PM
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> **Subject:** Re: Pebble Scoping Letter
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> On Jun 26, 2018, at 5:22 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
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> > **From:** Tomiak, Robert
> > **Sent:** Tuesday, June 26, 2018 5:21 PM
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> >
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> > Thanks, Rob
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> > On Jun 26, 2018, at 4:58 PM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
> >
> > > Hi Rob – Let me know if you have a few minutes tomorrow, maybe after 10:30,

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to discuss the Pebble scoping letter due this Friday. I looked it over and have some comments.

Thanks,
Drew

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Message

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/27/2018 11:00:06 AM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: Re: Pebble Scoping Letter

Please send Tom and Allison a note, copy me, requesting OGC comments by 9am so that we can share with Drew.

If you think I need to elevate, let me know.

Thanks, Rob

On Jun 27, 2018, at 6:58 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> We don't have them. This whole process has been completely unacceptable. The Region provided their letter to us on 5 June and they are still waiting for HQ comments. We have really boxed them into a corner in getting the letter out on Friday.
>
> **From:** Tomiak, Robert
> **Sent:** Wednesday, June 27, 2018 6:55 AM
> **To:** Knight, Kelly <knight.kelly@epa.gov>
> **Subject:** Re: Pebble Scoping Letter
>
> I do think sharing the OGC comments for awareness would be good.
>
> Thanks, Rob
>
> On Jun 27, 2018, at 6:47 AM, Feeley, Drew (Robert) <Feeley.Drew@epa.gov> wrote:
>
> > That's fine. Is there a recent draft that I could look at to see what's been done so far?
> >
> > Sent from my iPhone
> >
> > On Jun 27, 2018, at 6:24 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:
> >
> > > Drew,
> > >
> > > Recommend that you just work off of the copy you have. Version control has gone out the window as comments from HQ have been tardy in getting to the region and they have been trying to incorporate the changes on a piecemeal basis.
> > >
> > > R,
> > > Kelly
> > >
> > > **From:** Feeley, Drew (Robert)
> > > **Sent:** Tuesday, June 26, 2018 7:19 PM
> > > **To:** Tomiak, Robert <tomiak.robert@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
> > > **Subject:** Re: Pebble Scoping Letter

AMERICAN OVERSIGHT

Also, if you have an electronic version of the latest draft with updated comments, please send. I can add mine to that. Thanks!

Sent from my iPhone

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> >
> > > Hi Rob – Let me know if you have a few minutes tomorrow, maybe after 10:30, to discuss the Pebble scoping letter due this Friday. I looked

AMERICAN OVERSIGHT

it over and have some comments.

Thanks,
Drew

AMERICAN OVERSIGHT

Message

From: Knight, Kelly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47FC4B0C90F94826A1D9A48381F4009F-KNIGHT, KEL]
Sent: 7/2/2018 2:46:16 PM
To: Barnhart, Megan [Barnhart.Megan@epa.gov]
Subject: FW: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf; ATT00001.htm

From: Tomiak, Robert
Sent: Saturday, June 30, 2018 7:52 AM
To: Knight, Kelly <knight.kelly@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Fwd: Pebble EIS - EPA scoping comments

FYI

Thanks, Rob

Begin forwarded message:

> **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> **To:** "Tomiak, Robert" <tomiak.robert@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>
> **Subject: Fwd: Pebble EIS - EPA scoping comments**
>
> Phew.
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> > **To:** "Allnutt, David" <Allnutt.David@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> > **Cc:** "Vaughan, Molly" <Vaughan.Molly@epa.gov>
> > **Subject: FW: Pebble EIS - EPA scoping comments**
> >
> > FYI. Scoping comment submittal to the Corps.
> > Patty
> >
> > **From:** McGrath, Patricia
> > **Sent:** Friday, June 29, 2018 3:46 PM
> > **To:** 'POA Special Projects' <poaspecialprojects@usace.army.mil>
> > **Cc:** McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
> > **Subject:** Pebble EIS - EPA scoping comments
> >
> > Hello Shane-
> >
> > Attached are EPA's scoping comments on the Pebble EIS.

AMERICAN OVERSIGHT

We appreciate the opportunity to provide comment and look forward to working through these issues with the Corps.
Please let me know if you have questions.

Best Regards-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Knight, Kelly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47FC4B0C90F94826A1D9A48381F4009F-KNIGHT, KEL]
Sent: 7/11/2018 5:37:44 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]
Subject: FW: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf; ATT00001.htm

From: Tomiak, Robert
Sent: Saturday, June 30, 2018 7:52 AM
To: Knight, Kelly <knight.kelly@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Fwd: Pebble EIS - EPA scoping comments

FYI

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> **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> **To:** "Tomiak, Robert" <tomiak.robert@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>
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>
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>
> > **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> > **To:** "Allnutt, David" <Allnutt.David@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> > **Cc:** "Vaughan, Molly" <Vaughan.Molly@epa.gov>
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AMERICAN OVERSIGHT

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M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/27/2018 11:50:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
BCC: R10Sea-Room-14A-OEA/R10-Rooms-Restricted [R10Sea-Room-14A-OEA@epa.gov]

Subject: Pebble alternatives meeting
Location: R10Sea-Room-14A-OEA/R10-Rooms-Restricted

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 11/27/2018 10:14:34 PM
To: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects (poaspecialprojects@usace.army.mil) [poaspecialprojects@usace.army.mil]; Urlich, Cecil [cecil.urlich@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Forland, Sasha [sasha.forland@aecom.com]; Fueg, James (jfueg@DonlinGold.com) [jfueg@DonlinGold.com]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Moselle, Kyle W (DNR) (kyle.moselle@alaska.gov) [kyle.moselle@alaska.gov]; eli.ward@alaska.gov

Subject: Pebble EIS Alternatives
Location: AECOM - 700 G Street Suite 500, Anchorage/Teleconference

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM
Show Time As: Busy

Recurrence: (none)

Draft Agenda –

1. Overview by PLP of proposed Bulk TSF design with permeable embankment and no liner
2. Overview by PLP of Dry Stack option
3. Agency discussion (PLP attendance to be determined)

a. 35 alternative TSF locations
b. Dry Stack option
c. Liner under Bulk TSF
d. Effluent outfall locations
e. Throughput scenarios

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You can also dial Conference Line/Code / Ex. 6 and enter your meeting number.

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1 Conference Line/Code / Ex. 6 US Toll Free
Global call-in numbers | Toll-free calling restrictions

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Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/27/2018 12:16:29 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble PDEIS comments

Start: 12/14/2018 4:00:00 PM
End: 12/15/2018 1:00:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/31/2018 8:47:49 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6
Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 7/24/2018 7:25:20 PM
To: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]
CC: John Eddins [jeddins@achp.gov]; Douglass Cooper [douglass_cooper@fws.gov]; Joan Kluwe [joan_kluwe@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; McCall, John [john.mccall@bsee.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Forland, Sasha [sasha.forland@aecom.com]

Subject: Pebble EIS: Agency Meeting on Alternatives
Attachments: CA Meeting Agenda 080222018.docx
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Busy

Recurrence: (none)

Agenda is attached.

-- Do not delete or change any of the following text. --

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1 Conference Line/Code / Ex. 6 US Toll Free
Global call-in numbers | Toll-free calling restrictions

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Pebble Project EIS

Cooperating Agency Meeting Agenda
August 22, 2018; 1:00 to 3:00 pm
AECOM Conference Room
700 G Street, Suite 500
Host: Bill Craig (907) 261-6703

Teleconference Dial In: 1 Conference Line/Code / Ex. 6 access cod Conference Line/Code / Ex. 6

1. **Introductions**
2. **Corps Status Report**
    a. **Reminder that cooperating agency comments on early drafts of Chapters 3 and 4 are due August 31.**
3. **Alternatives Development Update**
    a. **Purpose – update cooperating agencies on alternatives development and request feedback on range of alternatives/preliminary screening**
    b. **Review of Four Step Alternatives Development Process – see AECOM memo dated August 17**
        Step 1 – Define Screening Criteria
        Step 2 – Compile Full Range of Options
        Step 3 – Apply Screening Criteria to Full Range (we are here)
        Step 4 – Package Options into Alternatives
    c. **Review of the alternative options (Table 1 in August 17 memo)**
    d. **Agency questions and feedback**

AMERICAN OVERSIGHT

Appointment

From: Wright, Cara [cara.wright@aecom.com]
Sent: 7/17/2018 8:11:03 PM
To: Wright, Cara [cara.wright@aecom.com]; Craig, Bill [bill.m.craig@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Mills, Ryan (Burnaby) [Ryan.Mills@aecom.com]; Henry, Richard [richard.henry@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Meeting before EPA Pebble site visit
Location: CR.ANC-700.5th-Large-Conference-Room

Start: 7/30/2018 10:00:00 PM
End: 7/31/2018
Show Time As: Busy

Recurrence: (none)

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1 Conference Line/Code / Ex. 6 US Toll Free
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AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 10/17/2018 9:40:27 PM
To: Craig, Bill [bill.m.craig@aecom.com]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA [linda.daugherty@dot.gov]; David Seris [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; Forland, Sasha [sasha.forland@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]; Urlich, Cecil [cecil.urlich@aecom.com]; Frownfelter, Jennifer [jennifer.frownfelter@aecom.com]
CC: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]

Subject: Pebble Cooperating Agency Meeting
Attachments: 20181024 Cooperating Agency Meeting.pdf
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: 10/24/2018 8:30:00 PM
End: 10/25/2018 12:30:00 AM
Show Time As: Busy

Recurrence: (none)

Attached are slides for today's cooperating agency meeting.

Shane will be providing additional information on the meeting next week but asked that I send the teleconference and WebEx information. Additional materials/handouts will be distributed before the meeting for those calling in.

Draft Agenda:
1. Review of alternatives to be analyzed in detail
2. Format and level of detail for Chapter 2
3. Update on Appendix B (addressing USACE/CA comments, next version will be Draft EIS)
4. Review of select alternatives:

a. Filtered tailings (dry stack)
c. Other mine locations
d. Underground mining

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/19/2018 7:22:19 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Pebble Scoping letter round 2
Location: Conference Line/Code / AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/19/2018 7:25:44 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping letter
Location: Conference Line/Code / AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 6/26/2018 7:30:00 PM
End: 6/26/2018 8:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

Ashley and Patty – this is the earliest time I could find that the three of us are available on Tuesday (but please propose an earlier time if there is an additional time you are free that currently appears blocked off).

Jill – I have included you just in case your sediment team workload meeting wraps up early

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/13/2018 5:09:34 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble scoping letter
Location: Conference Line/Code / Ex. 6 Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Busy

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Ashley and Patty, I understand that this time works for both of you to discuss today. Jill, your schedule looks busy, but I've included you in case.
Thanks,
Molly

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Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 5/24/2018 9:36:58 PM
To: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Isaacs, Jon [jon.isaacs@aecom.com]; Evans, Jessica [jessica.evans@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Cornelison, Wes [wes.cornelison@aecom.com]; Wright, Cara [cara.wright@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; John Eddins (jeddins@achp.gov) [jeddins@achp.gov]
CC: Kevin Pendegast [kevin.pendergast@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglass Cooper [douglass_cooper@fws.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Nathan Hill [manager@lakeandpen.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; McCall, John [john.mccall@bsee.gov]; Matthew Newman [mnewman@narf.org]

Subject: Pebble EIS - Cooperating Agency Meeting
Attachments: 06_06_2018_Federal_State_Meeting_Agenda.docx; 06_01_2018_Revised_Draft_Cooperating_Agency_Plan.docx
Location: AECOM - 5th Floor, Large Conference Room 500 G Street, Suite 500 Anchorage

Start: 6/6/2018 4:00:00 PM
End: 6/7/2018 1:00:00 AM
Show Time As: Busy

Recurrence: (none)

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United States Army Corps of Engineers
Alaska District-Regional Regulatory Division
Cooperating Agency Coordination Plan
DA Permit Application POA-2017-271,
Requiring Environmental Impact Statement Level of Analysis

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INTRODUCTION

This document describes the roles and responsibilities of the various cooperating agencies (CA) in order to establish a protocol for communication, early identification and resolution of issues, and to resolve issues that could delay completion of the environmental impact statement (EIS) and respective records of decision (ROD) for action agencies

LEAD AGENCY

The U.S. Army Corps of Engineers (USACE) is the lead federal agency for completion of the EIS. The responsibility of the lead agency is to ensure compliance with applicable laws and regulations (i.e. National Environmental Policy Act (NEPA), Clean Water Act (CWA), etc.). USACE is responsible for managing the process, schedule, and final content of the EIS; identifying and selecting CA; and involving the public in the process. USACE will select a third party contractor in accordance with Regulatory Guidance Letter No. 05-08 for preparation of the EIS. The Council of Environmental Quality (CEQ) regulations for the implementation of the NEPA govern the CA relationship for all Federal agencies preparing EISs under the NEPA. The USACE's regulations and policies regarding CA are in agreement with those of CEQ.

DETERMINATION OF ELIGIBILITY FOR COOPERATING AGENCY STATUS

State agencies, local governments, Tribal governments, and other Federal agencies may be eligible to serve as CA. Other than its provisions for Tribes (see subsection Eligibility of Tribes), CEQ regulations recognize two criteria for CA status: jurisdiction by law and special expertise.

DEFINING ELIGIBILITY 40 CFR 1508.5 (CEQ)

"Cooperating Agency" means any federal agency other than a lead agency, which has "jurisdiction by law" or "special expertise" with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment.

…A state or local agency of similar qualifications or, when the effects are on a reservation, an Indian tribe, may by agreement with the lead agency become a cooperating agency.

JURISDICTION BY LAW 40 CFR 1508.15 (CEQ)

"Jurisdiction by law" means agency authority to approve, veto, or finance all or part of the proposal.

Jurisdiction by law offers a very specific basis for CA status and clearly states its statutory obligation to assist in EIS development and implementation. Special expertise 40 CFR 1508.26 (CEQ)

"Special expertise" means statutory responsibility, agency mission, or related program experience.

Special expertise provides a broader window for CA status, emphasizing the relevant capabilities or knowledge that a Federal, Tribal, State, or local governmental entity can contribute to the EIS stemming from its statutory responsibilities or agency mission.

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ELIGIBILITY OF TRIBES 40 CFR 1508.5 (CEQ)

The CEQ regulations specify that a Tribe is eligible for CA status "when the effects [of an undertaking] are on a reservation". No Tribe has been identified with jurisdiction by law nor has any land ownership associated with the proposed action. Subsequent CEQ guidance indicates that inviting Tribes for specific purposes may be appropriate if the Tribe has special expertise identified by the lead agency as needed to help meet their statutory responsibility.

IDENTIFYING AND INVITING POTENTIAL CA

CEQ regulations permit a lead agency to invite other eligible agencies and governments to assume a CA role "at the earliest possible time" (40 CFR 1501.6). Project Managers are expected to make a reasonable effort to identify Federal, Tribal, State and local entities possessing jurisdiction by law or special expertise concerning the area potentially affected by the project. Conversely, when a government entity requests CA status, the request must be evaluated against CA eligibility criteria. If either of the criteria (jurisdiction by law or special expertise) is met, CA status can be granted at the discretion of the Lead Agency.

USACE will identify and invite agencies in accordance with the above definitions. The proposed project is located on state owned and privately owned land. USACE has identified four federal agencies (USACE, US Coast Guard (USCG), US Bureau of Safety and Environmental Enforcement (BSEE), Pipeline and Hazardous Materials Safety Administration (PHMSA) that have jurisdiction by law and are required to produce records of decision for activities associated with the proposed project, two federal agencies that have jurisdiction by law with required consultations (National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS)), and two federal agencies that have been invited for specific special expertise (US Environmental Protection Agency (USEPA) and the Advisory Council on Historic Preservation (ACHP)). In addition USACE has invited the State of Alaska for multiple approval authorities and special expertise, and the Lake and Peninsula Borough because of jurisdiction by law. Two Tribes, Nondalton and Curyung, have expressed interest in CA status. USACE, as lead agency, has determined that the Tribes have special expertise in subsistence practices and land uses with regard to their specific region and cultural resources specific to their Tribe, and as such have been invited to participate as a CA.

> [The CA relationship is not a replacement or substitution for the government to government relationship with a Tribal government. The USACE has responsibilities under other laws, regulations, and policies to consult with Tribes when privately proposed projects requiring federal authorization affect resources important to Tribes. The USACE has extended government to government consultation invitations to 35 federally recognized tribes. Additional information about the Tribal consultation process for the projects requiring DA authorization under the regulatory program can be found in the Tribal Consultation Plan.]

To establish Federal, State, and local CA status, the USACE will send a Letter of Invitation to the eligible government entity. The Letter of Invitation will include a brief outline of the role(s) of the specific CA in the EIS and invite the agency to an agency scoping meeting prior to the agency providing response to the invitation. To establish the formal CA relationship, the eligible Federal, State, or local government entity will send a written response back to the USACE stating their intent to serve as a CA in the EIS along with their ability to fulfill responsibilities identified in the USACE invitation letter.

USACE will systematically identify other entities that may bring special expertise to the EIS analysis and will invite those entities based on identified need.

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SEE APPENDIX A FOR COOPERATING AGENCY IDENTIFICATION AND SPECIFIC ROLES IDENTIFIED IN COOPERATING AGENCY INVITATION LETTERS

ROLES AND RESPONSIBILITIES OF LEAD AND CA

The CEQ regulations call for early and significant involvement by CA in the preparation of an EIS. Both lead and CA assume significant obligations in offering and accepting the CA relationship. As the lead agency, the USACE is expected to use the analysis and proposals of a CA "to the maximum extent possible consistent with its responsibility" (40 CFR 1501.6 (a) (2)).

CAs agree to contribute staff to the CA team, develop analyses for which they have particular expertise, and fund their own participation. Once becoming a CA partner, the agency remains a CA throughout the entire NEPA process, unless they withdraw due to exhausted resources or funding.

ROLES OF LEAD AND CA 40 CFR 1501.6 (CEQ)

a) The lead agency shall:

1. Request the participation of each CA in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of CA with "jurisdiction by law" or "special expertise," to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a CA at the latter's request as deemed necessary.

b) Each CA shall:

1. Participate in the NEPA process at the earliest possible time.
2. Participate in the scoping process.
3. Agencies with "jurisdiction by law" will provide their agency's required screening criteria for alternatives development.
4. On request of the lead agency, assume responsibility for developing or providing information and preparing environmental analyses for the portions of the EIS of which the CA has "special expertise", and provide specific jurisdiction language to be included in the sections of EIS regarding their authorities, as applicable.
5. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability (Normally use its own funds).

The roles and responsibilities for each CA will be formalized when the CA team is formed, scoping is completed, and the team is aware of potential gaps in CA team knowledge.

USACE's intent is to involve CA early and identify specific roles to be fulfilled by cooperators to allow for the agency to focus their efforts, keep relevant information familiar, and assist in timely work product and reviews.

The USACE will provide reasonable timelines for CAs to complete their responsibilities, and USACE may approve extensions to specific timelines upon reasonable request of a CA where sufficient justification is provided by the CA. It will be the responsibility of each CA to inform USACE in writing if their respective agency does not

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have adequate resources to participate in the process, produce requested analysis, and/or meet the required review periods.

GENERAL COOPERATING AGENCY EXPECTATIONS

THE FOLLOWING INFORMATION IS DESIGNED TO GIVE AN OVERVIEW OF EXPECTATIONS OF CA FROM EIS INITIATION THROUGH COMPLETION.

EIS INITIATION. The USACE will compile all relevant scientific research and ecological models that exist, develop a preliminary scope for the EIS, draft our agency purpose and need statement (why USACE is required to develop EIS) and develop a set of communication tools (website, meeting points). At this stage of the process, informal discussions with potential CA will occur, followed by an agency scoping meeting, and formal invitations for CA status.

***Roles for CAs**:* Determine agency capabilities to enter into CA relationship. Appoint a member (and potentially alternate) to serve on the CA management team and coordinate all internal resource efforts specific to the agency.

See Appendix B for agency designated personnel to serve as point of contact for this project.

DEFINE PURPOSE AND NEED & ASSESS THE AFFECTED ENVIRONMENT

This phase includes all activities required to initiate preparation and development of an EIS. It includes notifying the public of the project by publishing a Notice of Intent in the Federal Register and initiating the public scoping process; defining the project purpose, need, and objectives statements through public scoping meetings for incorporation into the draft EIS; developing a conceptual ecological model; and succinctly describing the existing environmental conditions and resource baselines in the Affected Environment Section of the draft EIS.

Roles for CAs: Federal agencies required to develop a record of decision should identify the specific purpose and need to which the agency is responding (Agency is required to make X permit decision under Y authority). These agencies should also identify any required alternatives screening criteria. For example, USACE has screening criteria associated with Practicability and the Guidelines. All CA will be asked to participate in identifying the NEPA purpose and need for the proposed project; participate in scoping and collaborate in assessing scoping comments; participate in identifying data needs, along with providing data and technical analyses within CA's expertise; and to provide information (such as local monitoring and baseline data) for affected resource modeling and draft affected environment section of the EIS and help interpret model results as appropriate.

CONSIDER ALTERNATIVES WITH SCOPING (PUBLIC) INPUT

The EIS lead and CA team will utilize public input to formulate a suite of reasonable alternatives to achieve the purpose and need of the proposed project. The information gathered during this phase will be used to prepare the Alternatives Chapter of the draft EIS.

Roles for CAs: Review alternatives proposed by public and suggest potential alternatives. For agencies with jurisdiction by law, ensure proposed alternatives take into consideration agency required screening criteria.

ANALYZE IMPACTS

CAs will be assigned to technical teams based on special expertise and jurisdiction by law. The CA will assist in analyzing the impacts (adverse and beneficial) and the significance of impacts on the environment

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of the area(s) to be affected or created by the alternatives under consideration. These impacts will be documented in the Environmental Consequences Chapter of the draft EIS.

Roles for CAs: Suggest models and methods for impact analyses. Provide effects analysis within CA's expertise; identifying direct, indirect, and cumulative effects within CA's expertise. Suggest mitigation measures for adverse effects.

WRITE/REVIEW/COMMENT/RESOLVE

This phase will consist of consolidating all prepared draft chapters and appendices into a complete draft EIS and release of the document to all interested parties. Public hearings will be conducted and comments will be solicited.

Roles for CAs: Collaborate with the USACE in evaluating alternatives. Provide information for draft EIS. Resolve agency comments within jurisdiction by law or special expertise prior to public release of draft. Participate in hearings. Work with the USACE to understand and evaluate public comments.

Dispute Resolution:

Should significant differences exist between the USACE and any CA regarding EIS content, process or procedures, every effort will be made to resolve these differences, including using available approaches to dispute resolution. Issues that cannot be resolved at the staff level may be elevated to the Regional Regulatory Division Chief and appropriate level for CA (GS-15 or equivalent). The Regional Regulatory Division Chief will render final decisions on all elements of USACE's EIS. If the Regional Regulatory Division Chief's decision is contrary to the position of a CA, the USACE will determine if the differing positions can be clearly presented in the EIS. If so, the differing positions will be included in the EIS for the public to review and comment.

CONSIDER COMMENTS AND FINALIZE EIS

This phase includes all the activities necessary to consider and respond to comments received on the draft EIS; revise (especially changes to alternatives or impact analysis conclusions) and finalize EIS; prepare the document for printing and print the required copies; and prepare and publish a Notice of Availability for the final EIS.

Roles for CAs: Review comments and assist with interpreting, and understanding public comments that relate to the agency jurisdictions or special expertise and assist USACE in preparing responses. Suggest changes to alternatives or analysis as appropriate when comments dictate.

Please see Appendix C for specific Coordination Points, Information Requirements, and Responsibilities for this project.

NOTE: There is no expectation that any CA will participate in review outside of agency jurisdiction by law or special expertise. Agencies that would like to comment more broadly should anticipate doing so during the scheduled public review and comment.

The schedule will include major EIS milestones consistent with statutory and regulatory requirements, in order to encompass the full environmental review process. The USACE will provide details in the schedule that are applicable to CA responsibilities. The USACE will use its discretion as lead agency in deciding the level of detail for the CA schedule with the objective of communicating clear expectations for the overall effort. The USACE will provide reasonable timelines for CAs to complete their responsibilities. A draft schedule has been provided to facilitate discussion. A final schedule will not be produced until after public scoping has occurred and the agencies have had opportunity to identify data gaps and any additional requirements identified as a result of scoping.

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AGENCY WRITING AND REVIEW TIME

Agencies will be actively involved in the development of the Draft EIS within their respective areas jurisdiction by law or special expertise. Specific development and revision periods will be identified in the project schedule.

The CA will identify their point of contact(s) for the technical analysis for the areas of special expertise or jurisdiction by law identified below. The third party contractor' team lead will form the analytical framework for the analysis and will engage the CA's when needed to perform the analysis and writing of the relevant sections.

CA have been invited to participate in the development of the analysis for the applicant's proposed project because that agency has been identified as having jurisdiction by law and/or special expertise. Accepting the role of a CA has inherent responsibilities associated with the development of the unbiased, scientifically defensible analysis of their specific jurisdiction or expertise, as defined in the invitation to participate as a CA. During the development of the analysis, the applicant's current information shall be used as the primary basis for the analysis. It is understood that during the analysis, additional data may be needed to inform the EIS. When additional data is determined to be needed, USACE will submit requests for additional information to the applicant.

ALL PUBLIC REVIEW AND CIRCULATION PERIODS WILL BE IDENTIFIED IN THE PROJECT SCHEDULE AND WILL BE CONSISTENT WITH NEPA REQUIREMENTS.

COOPERATING AGENCY GUIDANCE ON PROJECT COMMUNICATIONS

CAs are encouraged to engage in robust discussion and debate during CA meetings and topical discussions on affected resources. These meetings ensure that all cooperating voices are heard throughout the EIS process and that multiple views can be thoroughly discussed. The USACE will not use the exchange that occurs within these meetings as a substitute for agency position or comments. The USACE requires that formal CA comments on work products of the EIS be submitted on agency letterhead, signed by the agency's designated official, within the time frames agreed upon in the approved project schedule; a lack of response by an agency by the required date will be presumed that the agency has no comment/questions. All correspondence submitted electronically should be sent to the designated project email address: poaspecialprojects@usace.army.mil.

All agency correspondence will be made part of the public record upon receipt.

APPENDIX A – ENTITIES IDENTIFIED TO PARTICIPATE IN THE EIS PROCESS AND SENT COOPERATING AGENCY INVITATION LETTERS

Unless specified, listed agencies were invited and accepted Cooperating Agency Status by USACE

Federal Lead Agency and agencies invited to participate due to Federal Decision Making Authority.

PERMIT: Discharge of Fill Material in Wetlands
USACE Environmental Impact Statement used to inform Agency Record of Decision (Yes/No): Yes
Decision Agency: United States Army Corps of Engineers (Lead Agency)
Authority: Section 404 of the CWA

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PERMIT: Activities in Navigable Waters
USACE Environmental Impact Statement used to inform Agency Record of Decision (Yes/No): Yes
Decision Agency: United States Army Corps of Engineers (Lead Agency)
Authority: Section 10 of the Rivers and Harbors Appropriation Act of 1899
PERMIT: Bridge or Pipeline Crossing Navigable Waters
USACE Environmental Impact Statement used to inform Agency Record of Decision (Yes/No): Yes
Decision Agency: United States Coast Guard
Authority: General Bridge Act of 1946 as amended by 33 USC 525-533
RIGHT OF WAY: Natural Gas Pipeline through outer Continental Shelf
USACE Environmental Impact Statement used to inform Agency Record of Decision (Yes/No): Yes
Decision Agency: United States Bureau of Safety and Environmental Enforcement
Authority: 30 CFR 250 Subpart J

Federal Agencies Invited due to jurisdiction by law with required consultations and special expertise:

Endangered Species Act (Section 7 Consultation-Terrestrial Species)
Consulting Agency: United States Fish and Wildlife Service
Biological Assessment(s) to be included in EIS: Yes
Section 9 Permit required: Unknown at this time
Species:
Authority: Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)
Special Expertise requested: Fish and Wildlife Resources
Endangered Species Act (Section 7 Consultation-Marine Species)
Consulting Agency: National Marine Fisheries Service
Biological Assessment(s) to be included in EIS: Yes
Section 9 Permit required: Unknown at this time
Species:
Authority: Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

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Special Expertise requested: Marine Mammals, Fisheries
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat
Consulting Agency: National Marine Fisheries Service
Essential Fish Habitat Assessment to be included in EIS: Yes
National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.)
Advising Agency: Advisory Council on Historic Preservation
Draft Programmatic Agreement to be included in EIS: Yes
Special Expertise requested: Historic Properties, Section 106 compliance
Consulting Agency: Alaska State Historic Preservation Office
Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.)
Consulting Agencies: Fish and Wildlife Service, National Marine Fisheries Service (Declined Cooperating Agency Status), Alaska Department of Fish and Game
United States Department of Transportation Pipeline and Hazardous Materials Safety Administration
SPECIAL PERMIT: variations from current regulations for pipeline design/construction. NOT PROPOSED AT THIS TIME, however will participate as a CA.

State of Alaska and Local Governments Invited due to jurisdiction by law and special expertise (abbreviated due to extent of involvement)

Alaska Department of Environmental Conservation
Wastewater discharge, CWA Sections 401 and 402 permits, air quality permit jurisdiction
Alaska Department of Fish and Game
Title 16 Fish Habitat Permitting (any activity occurring below the ordinary high water mark in an anadromous fish stream or any fresh waterbody with the potential to block fish passage, emergency permits, and field permits) Hazing permits Special Area Permits/assessments Fish Collection Permits for monitoring.

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Alaska Department of Natural Resources State Historic Preservation Office
Cultural Resources, Historic Properties, Section 106 consultation
Alaska Department of Natural Resources Department of Mine, Lands, and Water
Mine Permitting (reclamation & closure and Plan of Operations approvals, mill site lease, upland mining lease, material sales, certificate to construct a dam, certificate to operate a dam, mining license, miscellaneous land use permit, right-of-way, tideland lease, general mine design, temporary water use authorization, permit to appropriate water)
Alaska Department of Health and Social Services
Needs and welfare of the people, health risk assessment
Alaska Department of Natural Resources State Pipeline Coordinator's Office
Pipeline Right of Way
Lake and Peninsula Borough
Special Expertise: Needs and Welfare of the People of the Lake and Peninsula Borough, Economics, and Land Use
Local Government Land Use Permit

Agencies and government entities invited for Special Expertise

United States Environmental Protection Agency
Special Expertise: 404(b)(1)guidelines of Section 404 CWA
Curyung Tribal Council
Special Expertise: Subsistence Practices and Land use within the Nushagak River Drainage
Nondalton Tribal Council
Special Expertise: Subsistence Practices and Land use within the Kvichak River Drainage

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National Marine Fisheries Service declined CA invitation on February 9, 2018, due to lack of resources.
Other government entities to be invited at the discretion of USACE as the need for special expertise is identified.

APPENDIX B. AGENCY COOPERATING AGENCY TEAM MEMBER CONTACT INFORMATION

MANAGEMENT CONTACTS FOR AGENCIES

Agency	Contact Person/Title	Phone	E-mail
USACE	Shane McCoy Katherine McCafferty	907-753-2715 907-753-2692	POASpecialProjects@usace.army.mil
BSEE	John McCall Kevin Pendergast	907-334-5300	John.mccall@bsee.gov Kevin.pendergast@bsee.gov
USCG	David Seris	907 463-2267	David.M.Seris@uscg.mil
USDOT-PHMSA	Linda Daugherty David Hassell	816-329-3821 907-271-6519	linda.daugherty@dot.gov david.hassell@dot.gov
State of Alaska	Kyle Moselle	907-465-6849	Kyle.moselle@alaska.gov
ACHP	Charlene Dwin Vaughn John Eddins	202-517-0207	cvaughn@achp.gov jeddins@achp.gov
USFWS	Mary Colligan Douglas Cooper	907-786-3505	mary_colligan@fws.gov douglass_cooper@fws.gov
Lake and Peninsula Borough	Nathan Hill Bob Laughler	907-246-3421 907-250-4621	manager@lakeandpen.com bobl@jadenorth.com

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Agency	Contact Person/Title	Phone	E-mail
US National Parks Service	Brooke Merrell		Brooke_merrell@nps.gov
USEPA	Patty McGrath Molly Vaughan	206-553-6113 907-271-1215	Mcgrath.patricia@epa.gov vaughan.molly@epa.gov
Curyung Tribal Council	Tom Tilden Courtenay Carty	907-842-2384/3578	courtenay@curyungtribe.com
Nondalton Tribal Council	George Alexie Wesley Furlong	907-294-2257	nondaltontribe@yahoo.com wfurlong@narf.org

APPENDIX C. COORDINATION POINTS, INFORMATION REQUIREMENTS AND RESPONSIBILITIES

The following coordination points are key meeting collaboration points to ensure an efficient process.

Coordination Point	Meeting Purpose	Deliverables	Agency Involvement
Notice of Intent EIS	Send CA a copy of the NOI; Invite agencies to agency scoping meeting		USACE
Agency Scoping Meeting	Overview of project; Draft purpose and need and applicant prepared alternatives; CA Coordination Plan	Agencies Respond to Cooperating Request within specified timeframe	Each invited Agency to provide response
Conduct Public Scoping	Solicit public input on Project, Alternatives, socio and environmental concerns	Any Agency Scoping Comments due at same time as public comments	All Agency
Post Scoping Collaboration			

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	Purpose and Need	Agency Purpose and Need Statement/Purpose and Need for development of EIS	Action Agencies/all agencies
	Develop Alternatives Screening Criteria	Criteria for Reasonable Criteria for Practicable	All Agencies
	Breadth of Environmental Resources to be analyzed	List of environmental resources. Finalize EIS outline	All Agencies
Collaboration on impact assessment methodologies	Technical expertise by topic to determine the appropriate context and method for evaluating impacts to specific environmental resources	Report out from each group	Agencies as assigned based on jurisdiction and special expertise
Review of Environmental Baseline and Consequences	Review comments by agencies with technical experts	Resolve agency comments on document sections	Agencies as assigned based on jurisdiction and special expertise
Post Circulation of DEIS	Review public comments within assigned areas	Address/Resolve Public Comments	Agencies as assigned based on jurisdiction and special expertise
I.D. the Applicant's Preferred Alternative iaw AppB	Agencies with Federal actions – identify preferred alternative and identify differences based on program authorities	USACE in accordance with Appendix B, PHMSA as fits their agency.	Action Agencies
I.D. LEDPA	Review all relevant information to LEDPA determination	Preliminary LEDPA	USACE/USEPA
Circulation of FEIS	Agency involvement closeout	Document	USACE

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REFERENCES

1. Council on Environmental Quality NEPA regulations
http://www.nepa.gov/nepa/regs/ceq/toc_ceq.htm

2. Forty Most Asked Questions Concerning CEQ's NEPA
Regulations http://www.eh.doe.gov/nepa/tools/guidance/volume1/4-1-40_questions.html

3. The Corps Environmental Quality Procedures for Implementing NEPA
http://www.usace.army.mil/publications/eng-regs/er200-2-2/entire.pdf

4. Regulatory Guidance Letter 05-08. Subject: Environmental Impact Statements-Third Party Contracting
http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-08.pdf

5. Appendix B to Part 325-NEPA Implementation Procedures for the Regulatory Program
http://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part325.pdf

6. January 30, 2002, Memorandum for the Heads of Federal Agencies. Subject: CA in Implementing the Procedural Requirements of the National Environmental Policy Act

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/14/2018 5:28:11 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble Scoping Letter
Location: Molly will call Patty

Start: 5/14/2018 7:30:00 PM
End: 5/14/2018 8:00:00 PM
Show Time As: Busy

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Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/24/2018 7:48:18 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
BCC: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center [R10Sea-Room-14WallaWalla@epa.gov]

Subject: meeting room for Pebble scoping indirect/cumulative impacts call
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

This invite is for a Seattle conference room for the Pebble scoping comments indirect/cumulative impacts call

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/10/2018 8:00:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble scoping - indirect/cumulative impacts
Location: Conference Line/Code / Ex. 6 eet-Me-Ln/R10-AOO-Eqpt

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

Given the extra time for preparing scoping comments, and following an excellent suggestion from Ashley, I propose a strategy conversation regarding how to address potential indirect/cumulative effects of a future expanded mine or opening up the area to other developers in the scoping letter.

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/4/2018 4:21:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble Scoping letter check-in
Location: Molly will call Patty

Start: 4/4/2018 11:00:00 PM
End: 4/4/2018 11:30:00 PM
Show Time As: Busy

Hi Patty – I plan to have a first take at a scoping letter to you by the end of today. I'd like to take a few minutes to go over the letter and next steps, as well as check in on anything else we need to before you are out next week (such as expectations for scoping meeting participation).
Thanks,
Molly

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Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 9:12:14 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Scoping letter round 2

Vaughan, Molly 1:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

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Appointment

From: Wright, Cara [cara.wright@aecom.com]
Sent: 7/24/2018 11:12:20 PM
To: Craig, Bill [bill.m.craig@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Mills, Ryan (Burnaby) [Ryan.Mills@aecom.com]; Henry, Richard [richard.henry@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Meeting before EPA Pebble site visit
Location: CR.ANC-700.5th-Large-Conference-Room

Start: 7/30/2018 10:00:00 PM
End: 7/31/2018
Show Time As: Tentative

Recurrence: (none)

-- Do not delete or change any of the following text. --

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/29/2018 2:58:57 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter

Sounds good

From: Allnutt, David
Sent: Friday, June 29, 2018 6:48 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Re: Pebble scoping letter

Patty - I hope to end confusion by speaking with some subset of ORC this morning. Ask that everyone please put pens down until I can have that conversation.

Sent from my iPhone

On Jun 28, 2018, at 8:48 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

> This will need to be compared to the letter that Molly sent to David earlier. We need to work off of Molly's letter since it incorporated the OFA and OW edits and most of the OGC edits. Does this OGC version have new/different comments from the one that we saw earlier today and that Molly worked from?
> Let me know if you want me to do that comparison in the a.m.
>
> **From:** Stern, Allyn
> **Sent:** Thursday, June 28, 2018 5:44 PM
> **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
> **Subject:** FW: Pebble scoping letter
>
> Does this look good to go or are there issues we still need to work out?
>
> Allyn L. Stern
> Regional Counsel
> U.S. EPA, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> 206-553-1223
>
> **From:** Marshall, Tom
> **Sent:** Thursday, June 28, 2018 5:37 PM
> **To:** Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
> **Cc:** Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>;

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Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Drew forwarded this as a good-to-go comments version for the Regional folks. (I left the bubble comments in since you all already had them.) Note that there's new language on p. 17 that does not appear to be redlined. Thanks all, and good luck to the Region finalizing.

202.564.5549

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Appointment

From: R10Sea-Room-14C-OEA/R10-Rooms-Restricted [R10Sea-Room-14C-OEA@epa.gov]
Sent: 11/27/2018 11:50:49 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Tentative: Pebble alternatives meeting
Location: R10Sea-Room-14C-OEA/R10-Rooms-Restricted

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM

Recurrence: (none)

Your request was received and is pending approval.

Sent by Microsoft Exchange Server 2016

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/24/2018 4:14:03 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: EPA Comments on Pebble Pre-Draft Section 3.16 and 3.26
Attachments: EPA Comments Pebble Pre Draft 3.16 and 3.26 072418.docx

Hello Shane,
Please find our comments on preliminary sections 3.16 Surface Water Resources and 3.26 Vegetation attached. Thank you for the opportunity to review. Please let me know if you have any questions.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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EPA Cooperating Agency Review Comments
Pebble Project EIS Preliminary Draft Chapter 3
Sections 3.16 and 3.26
7/24/18

Thank you for the opportunity to review the early versions of Sections 3.16 Surface Water Resources and 3.26 Vegetation, in accordance with our defined role as a Cooperating Agency for the Pebble Project EIS. If you have any questions regarding the EPA's comments below, please contact Molly Vaughan at 907-271-1215 or vaughan.molly@epa.gov, and she can provide clarity or put you in touch with the appropriate technical expert for that comment as needed.

We look forward to working with you on updates to Chapter 3.

3.16 Surface Water Resources

Section 3.16, General: This section mentions mine facility features that may not be part of the current project description (e.g., low grade ore stockpile) or may be at different locations (e.g., the pyritic tailings storage facility). We assume that revisions to this section and figures will be made consistent with the current project description.

Section 3.16, General: The section provides existing surface water hydrologic resource conditions, within approximately the past decade, for areas directly impacted by the project which are the Mine Site, Amakdedori Port, Iliamna Lake, Transportation Corridor, and Natural Gas Pipeline Corridor. Because of the scale of the project and the potential for indirect and cumulative impacts, we recommend that Section 3.16 also provide existing condition information for the broader Bristol Bay watershed to encompass potential areas of indirect and cumulative impacts. We recognize that it would not be feasible to provide detailed information for each gauging station within the watershed, but recommend providing representative or summary information to allow characterization of existing surface water resource conditions.

Section 3.16, General: We recommend that the EIS discuss of the representativeness of the approximately decadal historical assessment of water resources, and whether the data are sufficient to characterize existing baseline surface water quality and quantity.

Page 3, Section 3.16.1.2, Streamflow: The document provides the conclusion that, "subsurface flows follow former pre-glacial surface drainage pathways that were eventually buried by sediment deposits, resulting in cross-drainage transfer of subsurface flow relative to surface topography." We recommend inclusion of a figure displaying these features.

Page 3, Section 3.16.1.3, Gaging Stations and Figure 3.16-3, Surface Water Hydrology Stations: We recommend that Section 3.16.1.3 discuss which of the stations in Figure 3.16-3 would be most affected by the mine operations, including whether there are any stations located immediate adjacent to proposed mine components (e.g., open pit or wastewater discharge locations). In addition, we recommend that the figure identify the party responsible for monitoring each of the stations (e.g., by utilizing a different symbol to differentiate between USGS and PLP monitoring stations).

Page 5, Table 3.16-2: The table includes a column displaying the years of stream flow estimated by regression. We recommend that the EIS provide the regression equation used to estimate the flow, as

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well as discuss the reason for using this equation versus other available methods, and any uncertainties associated with the estimates.

Pages 7-15, Table 3.16-3 and Table 3.16-4: Tables 3.16-3 and 3.16-4 report both discharge (cfs) and unit runoff (cfs/mi^2), and annual discharge by water year (cfs) and annual unit runoff by water year (cfs/mi^2), respectively. We note that it would be sufficient to report discharge and annual discharge by water year, as long as drainage area is provided, and recommend that this would reduce crowding in the tables.

Page 18, Section 3.16.1.4, Meteorological Inputs to Water Balance Modeling: The document mentions development of surface water and groundwater balance models, however, it does not provide a detailed summary of the models. We recommend that the EIS provide the details of the model and important equations, which are crucial to reviewing the merits of the model. We also recommend discussing how calibration and validation years were determined. We note that calibration usually accounts for the seasonal and annual variability of streamflow to address low, average, and peak flow periods or dry, average, and wet years, and recommend that these conditions be used in the model and discussed in the EIS. Please also provide additional explanation for the statement, "changes in storage calculated by the water balance model were consistent with the observed changes in groundwater elevation."

See also our comments on section 3.17.1.3/4 related to water modeling including recommendations that the EIS discuss the sufficiency of the models to meet objectives (characterization of baseline and use for predicting changes) and any limitations and uncertainties associated with model input parameters, assumptions, and outcomes.

Page 19, Section 3.16.1.5 Surface Water Use: According to the document, some residents of local communities "likely collect surface water for personal use" within and near the mine site. We recommend that the EIS include additional information, to the extent available, characterizing the areas of frequent surface water use. Other cooperating agencies, including the Curyung Tribal Council, Nondalton Tribal Council, or Lake and Peninsular Borough may have local knowledge to assist.

Page 20, Section 3.16.1.6, Flood Magnitude and Frequency: We recommend that this section include possible flood predictions related to the project at different scenarios, such as minimal, average, and maximum impacts.

Page 21, Section 3.16.2.5, Marine Water: The document states that, "Because site-specific meteorological and oceanographic information pertinent to Amakdedori was not included in either EBD [environmental baseline data] or SEBD [supplemental environmental baseline data], the following discussion was developed based on data available in publicly available sources, as well as relevant anecdotal descriptions provided by residents and others who have personal familiarity with the region." Given the potential for significant impacts to the marine environment from construction of the proposed Amakdedori Port, we strongly recommend the collection of site-specific information for inclusion in the EIS to ensure accurate modeling and analysis. Additional detailed comments follow pertaining to specific sub-sections.

Page 21, Section 3.16.2.5, Marine Water – Meteorology and Wave Climate: Regarding available information, the document states that "Data provided from this station are well-suited for evaluating Amakdedori's exposure to winds from the northeast and east, but not to exposure to winds from the southeast," and "The extent to which waves would affect the immediate vicinity of the Amakdedori Port

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site will require a detailed analysis of wave interaction with the complex seabed topography, as well as refractive effects of Augustine Island and the southern shore of Kamishak Bay. A more detailed statistical analysis of data from both NOAA buoys would provide an evaluation of probabilities and consequent risks associated with extreme conditions of wind and waves." As noted above, we recommend that this information be collected prior to completion of the EIS, to ensure an adequate and complete analysis of potential impacts.

In addition, the document includes a statement from Mr. Chester Passic (Commander in the U.S. Coast Guard) regarding the conditions of Kamishak Bay, which could present a challenge to maintaining navigation aids for vessel traffic. We recommend that the document include additional data on Kamishak Bay to enable analysis of the safety considerations.

Page 23, Section 3.16.2.5, Marine Water – Marine Water Properties: The document provides some general statements on likely seabed and turbidity conditions based on limited available information, but states that, "Further inferences cannot be reliably made without knowledge of seabed composition at the proposed site." Site-specific information on the seabed composition is necessary for accurate characterization of baseline conditions and analysis of potential impacts. As the EIS states, "the amount of suspended solids and accompanying turbidity in waters adjacent to the proposed Amakdedori Port site would be a function of seabed composition." We note that suspended solids could also result from materials (e.g., fill) used in construction of the port, which would likely impact hard habitat types more severely when they settle out. We recommend that the EIS discuss the types of habitat that could be impacted in the vicinity of the port. We recommend that site-specific information be collected using bathymetry or sediment profile imaging camera techniques, and that subsequent modeling be conducted to determine how far afield turbidity will extend and the depth of potential settled solids.

Pages 26-27, 3.16.3.3, Lake Water Properties: The document discusses collection of water samples from five "deeper-water" stations in the lake, and lists water quality, sediment, and zooplankton parameters analyzed; however, no measurement results are provided here or in Section 3.18 Water Quality. We recommend that the EIS provide a summary table including data for all measured parameters in Section 3.18, and refer to that table in this section. In addition, we recommend that the document provide addition explanation supporting the statement that, "only only a few ions (copper, lead, aluminum, iron, manganese, and alkalinity) had concentrations outside benchmarks established by the ADEC for freshwater."

Page 30, Section 3.16.4.2, Streamflow: Regarding "The Mine Access Road would cross multiple small tributaries…" and "Drainages in the project area south of Iliamna Lake have not been the focus of any known hydrologic studies to date…" We recommend that the EIS state how many tributuaries will be crossed by each of the access roads (the tributaries could be listed in a table) and provide any available data. In addition, this section should desribe whether additional data collection will occur to ensure sufficient baseline characterization for assessing impacts due to road use.

Page 30, Section 3.16.4.2, Streamflow: We recommend that subsections be added to describe any streams and surface water hydrology in the areas of the north and south Lake Illiamna ferry terminals.

Page 31, Section 3.16.4.3, Surface Water Use: The document notes that "the Kohkanok Water System extracts surface water from Iliamna Lake for drinking water supplies." We recommend that the document discuss existing quality (in Section 3.18) and quantity of water extracted for the Kokhanok

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Water System, as well as show the location of the drinking water intake, and source water protection area if applicable, on a figure as it relates to the proposed project infrastructure.

Page 31, Section 3.16.4.4, Surface Water Extraction Sites: We recommend that the EIS include a map/figure showing where surface water is being used near the proposed project area.

3.26 Vegetation

Figures 3.26-2 to 3.26-6: We found it difficult to distinguish vegetation types in the figures at the current map scale. We recommend increasing the scale of the maps depicting to the vegetation type. This may result in multiple maps for each area of the project, or an appendix of detailed maps, to supplement or replace the current single-sheet maps.

Page 3.26-2, Section 2.36.1 Analysis Methodology: We recommend providing additional explanation of the methodology used to group the 48 vegetation types in the mapping area into 10 vegetation structure types for mapping, including addressing whether the groupings considered predominant occurrence in wetlands versus uplands.

Page 4, Table 3.26-1: We recommend providing additional detail to the definition of the vegetation types in the table, to provide clarity and context for interpreting the figures and information presented in this section.

Page 20, Table 3.26-8: The column headings for the common and scientific name appear to be transposed. We recommend correcting this error and confirming the accuracy of the information in the table.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/15/2018 10:32:15 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: EPA Comments on Pebble Preliminary Ch. 4 Sections
Attachments: Pebble Preliminary Ch. 4 EPA Comments 081518.docx

Hello Shane,
Please find EPA's comments on Preliminary Draft Chapter 4 Sections 4.1 Introduction, 4.5 Recreation, 4.11 Aesthetics and Visual Resources, 4.14 Soils, 4.16 Surface Water Resources, 4.17 Hydrogeology, 4.18 Water Quality and Geochemistry, 4.22 Wetlands / Special Aquatic Sites and Waterbodies and 4.26 Vegetation attached. Please let me know if you have any questions on these comments.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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EPA Cooperating Agency Review Comments
Pebble Project EIS Preliminary Draft Chapter 4
Sections 4.1, 4.5, 4.11, 4.14, 4.16, 4.17, 4.18, 4.22, 4.26
8/15/18

Thank you for the opportunity to review early versions of Sections 4.1 Introduction, 4.5 Recreation, 4.11 Aesthetics and Visual Resources, 4.14 Soils, 4.16 Surface Water Resources, 4.17 Hydrogeology, 4.18 Water Quality and Geochemistry, 4.22 Wetlands / Special Aquatic Sites and Waterbodies, and 4.26 Vegetation of the Preliminary Draft Chapter 4, in accordance with our defined role as a Cooperating Agency for the Pebble Project EIS. Our comments are provided for each section in the table below. We note that these versions include many placeholders that indicate that text will be updated following receipt of additional information from the Project Applicant. In addition, these versions do not include analysis of impacts of action alternatives to the Applicant's project or discussion of cumulative effects. In order to provide additional detailed input to the Corps within our area of special expertise, we request the opportunity to review revised, more complete, versions of these sections that incorporate the additional information and alternatives.

If you have any questions regarding the EPA's comments below, please contact Molly Vaughan at 907-271-1215 or vaughan.molly@epa.gov, and she can provide clarity or put you in touch with the appropriate technical expert for that comment as needed.

We look forward to working with you on updates to Chapter 4.

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Page	Section	Existing text (if applicable)	Recommendation
4.1 Introduction			
4.1-2	4.1.1.1	For this analysis, reasonably foreseeable future actions (RFFAs)…to occur in the next 30 years.	We recommend adding a brief explanation of the basis for the 30-year outlook.
4.5 Recreation			
4.5-2	4.5.2.1	Project-related noise and activities would not be likely to affect recreational settings or activities in Lake Clark National Park and Preserve, the nearest regional recreation destination and known recreation use area to the Mine Site.	We recommend adding text to this sentence or an additional sentence that provides the distance from the mine site to Lake Clark National Park.
4.5-3	4.5.2.2	Boat traffic to and from the port would be minimal: up to 27 concentrate vessels and 33 supply barges per year during operations. Therefore, activities at Amakdedori Port would result in minimal adverse impacts on recreational boat traffic, and thus, on boating experiences and opportunities around the port site and in Cook Inlet.	We recommend that the EIS provide information on how long the concentrate vessels and supply barges would stay at the port during loading/unloading. While the number of vessels may seem low, the amount of time that they spend at the port site should be factored into the impact assessment.
4.5-3	4.5.2.3	The volume of recreation use is likely low in numbers along the north and south mine access road corridors, the Kokhanok Airport spur road, and the Iliamna spur road.	We recommend that the EIS provide a basis for the "likely low" volume determination, including whether it is based on a survey of recreational users or other information.
4.14 Soils			
4.14-1	4.14.2	Evaluation of soil impacts assumes … that proposed earthwork would sufficiently meet necessary conditions required for approval of an ADEC Clean Water Act Section 402 Stormwater Construction and Operation Permit and a Stormwater Discharge Pollution Prevention Plan prior to construction.	We recommend adding a section discussing the minimum requirements included in ADEC's 402 NPDES Stormwater permit. In addition, we recommend that the EIS include the Applicant's plans for stormwater control strategies, best management practices and the Pollution Prevention Plan in appendices or as reference documents in order to support the assumption that the proposed earthwork would meet permit and Plan conditions. It will be useful for agency decision makers and the public to understand the specific BMPs and control strategies that would be used (and the locations where they would be used).
4.14-2	4.14.2.1	Bulleted section	We recommend listing additional soil types in this section, if present. As written, the text leads the reader to believe there are only two soil types within the entire mine site footprint.
4.14-2	4.14.2.1	Bulleted section	We recommend adding the percent composition of soil types for context as provided in other project components, such as Table 3.14-1.

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4.14-3	4.14.2.1	Second full paragraph	We recommend adding a discussion of the minimum required reclamation standards and additional potential practices, if any. These could include BMPs, success criteria, and adaptive management efforts that are going to be included in the project design and operation.
4.14-3	4.14.2.1	… each would be reclaimed to conform to designated post-mining land use, as administered by the ADNR.	There are multiple references to post-mining land use in the document. We recommend disclosing the plans for post-mining land use, if known, or discussing acceptable uses for the area, as established by ADNR, in the EIS.
4.14-3	4.14.2.1	Paragraph beginning with 'The intensity…'	We recommend adding discussion of maximum disturbance in each watershed.
4.14-4 4.14-7 4.14-9	4.14.2.1 4.14.2.2 4.14.2.3	Dust Deposition on Soils	Pending response to RFI 009 and information provided, we recommend also adding the results of deposition modeling to Section 4.22 Wetlands and Section 4.26 Vegetation. We recommend that the discussion of the results include figures that show the geographic extent of both direct impacts and indirect impacts (i.e., fugitive dust deposition) for all project components (i.e., mine, port, transportation corridor, etc.).
4.14-4	4.14/4.18	General	Based on information provided in this section regarding fugitive dust and runoff concerns, we recommend that Section 4.18 Water Quality include a discussion of potential water quality issues, if any, from the resulting total suspended solids loading. This discussion and analysis would appropriately include localized stream impacts and the removal of vegetation as well as wetland flood and nutrient abatement functions resulting from the project.
4.14-6	4.14.2.1	The Mine Site would be reclaimed per an ADNR-approved reclamation plan that establishes requirements for designated post-mining land use.	There are references to reclamation efforts and what is presumed organic soil segregation throughout Section 4.14. Please discuss if the organic soils will be segregated for reclamation and provide references to studies, if any, which demonstrate the particular type of soils found on site and the success of removal, mixing, stockpiling for life of the proposed project, and reapplying for vegetative growth. We recommend that a draft reclamation plan be provided in the EIS or as an appendix or that it is referenced such that stakeholders can review it. It will be important that the reclamation commitments are understood by decision makers and the public.
4.14-9	4.14.2.3	Bulleted list of project components	We recommend adding maps and tables providing additional information of bulleted

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			project components, including the size/length of each component, for context. The material sites could also display the amount of fill excavated from each site.
4.14-12	4.14.2.3	Table 3.14-1	Please provide a description of soil type HY4.
	4.14	General	We recommend adding a discussion of the potential maximum ground disturbance during construction and operations (a table would be helpful) and, as mentioned above, the specific BMPs that would be put in place to minimize impacts from ground disturbance.
4.16 Surface Water			
4.16-1	4.16	Planned mitigation may not be specified but is considered typical or standard engineering practice. In cases where planned mitigation is unknown, unclear, or an uncommon situation is encountered, mitigation recommendations are provided.	The meaning of this statement is unclear to the reader, and we recommend revising for clarity in the EIS. If "planned mitigation" is not specified in a project plan submitted by the Applicant then it is not certain that it is indeed "planned." In accordance with NEPA, we recommend that mitigation measures to address potential adverse impacts be disclosed and analyzed in the EIS. We also recommend that appropriate mitigation measures necessary to reduce anticipated adverse impacts be incorporated into the project design and implemented. We recommend that the EIS clearly describe the specific mitigation that is planned/proposed by the Applicant, additional mitigation that would be required by agencies (e.g., in permits or project approvals), and any other mitigation that is recommended as a result of the NEPA process to reduce adverse impacts.
4.16-2	4.16.2.1	… all water not meeting water quality standards would be treated before release.	We recommend that the EIS provide details regarding how the water not meeting State of Alaska water quality standards will be treated before release to ensure that standards are met, and how water quality will be monitored over time to ensure that standards are being met into the future. Any discharge to waters of the U.S. from a point source will need to be authorized by the state through an APDES permit, and the terms and conditions of the permit regarding concentrations in the discharge and monitoring requirements must be met.
4.16-3	4.16.2.1	"The average annual water surplus during the maximum Mine Site footprint is estimated to be 39 cubic feet per second (cfs)…"	Here and/or elsewhere in the EIS, we recommend adding a discussion that describes the basis for the 39 cfs estimated, including the range of uncertainty around the estimate.

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4.16-4	4.16.2.1	Underdrains would be constructed beneath the entire TSF to convey seepage flow to collection and recycling systems below each embankment, and to help minimize water buildup behind the main embankment	We recommend the EIS include additional information regarding the seepage recycling pond embankments below the TSF, including how and where low-permeability core zones and grout curtains will be incorporated to control seepage and enhance embankment stability. We recommend that the EIS assess the success of these measures in collecting and conveying seepage and discuss whether there would be discharges to groundwater.
4.16-5	4.16.2.1	This temporary, fully lined stockpile would be located in an unnamed tributary east of Tributary 1.190.	We recommend that the EIS discuss what provisions will be made to assure that this temporary stockpile will not leak, and how any runoff from the stockpile will be monitored.
	4.16.2.1	General Comment	Section 4.16.2.1 summarizes aspects of the project description related to water management and tailings and waste storage. We recommend that the description in this section be included earlier in the EIS in Chapter 2 and referenced here, so that section 4.16.2.1 focuses on impact assessment. Our review finds that there is no discussion of estimated impacts to stream hydrology due to mining activities (or access corridor in 4.16.2.4). We understand that this information is under development and request the opportunity to review an updated version that includes predicted impacts to stream flow due to mine site and transportation activities during construction, operations, and closure. We recommend that figures be added that depict the extent of changes to hydrology during operations and closure.
4.16-5	4.16.2.2	Port infrastructure would be built above the 100-year floodplain of Amakdedori Creek, although the floodplain is not well defined in current literature.	We recommend that the EIS clarify how the Corps will ensure that the port infrastructure is built is above the 100-year floodplain, including obtaining additional site-specific information if needed.
4.16-6	4.16.2.2	No detailed hydrologic data or stream gauge data are available for Amakdedori Creek. The estimated average flow is some 400 cfs in summer and 35 cfs in winter.	We recommend that a stream gauge be established to collect hydrologic data for Amakdedori Creek. If actual gauge data is not used then in this section, or earlier in Section 3.16, we recommend that the EIS describe the basis for these flow estimates (given the lack of stream gauge data).
4.16-6	4.16.2.2	A detailed analysis of the impact on streamflow or the streambed caused by the annual extraction of 5 million	We recommend that additional information be provided in the EIS to support the conclusion that streamflow reduction may not be measurable,

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		gallons from Amakdedori Creek is not practical, because the streamflow reduction may not be measurable and the impact would likely be of low intensity and temporary	given the plans to extract 5 million gallons annually. We note that the last sentence of the paragraph seems to refer to extraction from the creek during winter months/ low-flow conditions. Please also clarify in the EIS exactly when stream flow extraction would occur.
4.16-6	4.16.2.2	Before water extraction, PLP would be required to demonstrate that proposed water extraction volumes and rates are within permissible limits.	Please describe how PLP will demonstrate that proposed water extraction volumes and rates are within permissible limits. For example, if there is a permit authorization required, the EIS should discuss that permit.
4.16-6	4.16.2.2	During placement of fill material for causeway construction, increased concentrations of suspended sediment would occur in Kamishak Bay for the duration of construction, and would persist for days to weeks after completion. The duration of increased suspended sediment concentrations would depend on the amount of fine sediment in the fill material. Suspended sediment would be transported within Kamishak Bay under the influence of tidal and wind-driven currents before settling on the seabed. The duration and geographic extent of suspended sediment plumes can be estimated when the grain size distribution of fill material is made available.	We recommend that the EIS include details regarding the type and volume of materials that are proposed for use in causeway construction, as well as include a modeling analysis to demonstrate the anticipated impact of suspended sediment (duration, geographic extent, depth).
4.16-7	4.16.2.2	Removal of the causeway at the end of the project would cause substantial increases in suspended sediment in Kamishak Bay that would persist for days to weeks after decommissioning is completed.	We recommend that the EIS disclose the volume of material that would need to be removed, where the material would be disposed of, and include modeling analysis of the anticipated water quality impacts of suspended sediment during the decommissioning process.
4.16-7	4.16.2.3	Establishment of suitable BMPs for ferry operations should be sufficient to avoid or minimize adverse impacts; namely, BMPs should include specifications for management of ferry speed (minimizing wakes) and engine power settings (minimizing bottom erosive stress) during approach and departure from the terminals.	We recommend that the EIS clarify whether these BMPs are included in the Applicant's plans and, if so, provide reference to the particular plan(s) where this information can be found.
4.16-8	4.16.2.3	Section on Offshore Anchoring and Concentrate Transfer and text	We recommend that specific mitigation measures be developed in the EIS and required

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		"Although some damage to seabed flora and fauna could result from each ship anchoring, a BMP could be developed to avoid excessive damage by directing ship masters not to anchor in the same location(s) each time."	as part of the project operating plan to avoid and/or minimize the excessive damage to seabed flora and fauna as a result from each ship anchoring. Note: It appears this text may be incorrectly inserted in Section 4.16.2.3 and would be more appropriately located in 4.16.2.2.
4.16-11	4.16.2.4	With only limited hydrologic data estimates available on other water bodies across the Transportation Corridor, determining the consequences of water extraction is not practicable at this time.	We recommend that hydrologic data on the water bodies that will be used for water extraction within the Transportation Corridor be obtained and disclosed/analyzed to help enable analysis and discussion of impacts of the water extraction activities for inclusion in the EIS.
4.16-12	4.16.2.5	General Comment	We recommend that this section include additional discussion of potential impacts to watersheds intersected by the pipeline corridor during project construction, operations and closure.
4.16-12	4.16.2.5	Surface water extraction during pipeline construction would likely have consequences to watersheds intersected by the pipeline corridor	We recommend that the EIS provide information that describes the nature and extent of consequences to watersheds during surface water extraction pipeline construction.
4.17 Hydrogeology			
4.17-2	4.17.2.1	Groundwater discharge to seeps, springs, streams, ponds, or lakes in or adjacent to the proposed pit may cease or be reduced, resulting in lower surface water base flows or pond or lake levels. Some stream segments, ponds, or lakes in the immediate pit area may be eliminated as the water table is lowered in the immediate pit area during construction and mining operation.	We understand that groundwater modeling results will be included in a revised version of this section. We support additional analysis, including modeling, to better define the potential for elimination of streams and ponds during both operations and closure/post-closure. We recommend that figures be added to depict these changes. If elimination is anticipated, we recommend the inclusion of mitigation measures as part of the range of alternatives to help reduce this adverse impact.
4.17-2	4.17.2.1	It would likely take tens of years for the groundwater in the pit to attain the level at which the groundwater would then be maintained to create a permanent groundwater sink to prevent potentially acidic pit lake water from discharging to the environment. The presence of a permanent groundwater sink at the pit would locally influence groundwater flow in the immediate vicinity of the pit.	We note that these statements imply that a negative gradient of pit level water would be maintained in perpetuity, which would result in permanent impacts to hydrology in the area. We recommend that the potential impacts of this design feature be described in detail in the EIS, with discussion of mitigation measures to address the anticipated impacts.

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4.17-3	4.17.2.1	The WMPs are expected to have no adverse impact on groundwater flow, because they would be lined to prevent leakage of water to the subsurface.	We recommend that the EIS discuss the type of liner that would be used for the WMPs and describe how the WMPs will be monitored to detect potential leakage. We also recommend modeling and discussion of potential leakage scenarios and inclusion of contingency plans as mitigation in the event of unanticipated leakage.
4.17-3	4.17.2.1	The WMPs may help restore downgradient groundwater flow to existing conditions as surplus water is treated and discharged downstream of the Mine Site.	We recommend that additional information be provided to describe the extent to which treated water that is discharged to streams (as described in the Project Description) would result in changes to groundwater flow.
4.17-3	4.17.2.1	Construction of the TSF would locally impact surface water features at the site, and potentially impact groundwater/surface water interactions; this impact is expected to be small in extent (e.g., near the vicinity of TSF) but permanent.	We recommend that the EIS include additional detailed analysis that provides a basis for this conclusion.
4.17-3	4.17.2.1	Although the underdrain system is expected to minimize vertical seepage into native materials below the TSF, the largest potential impact to groundwater beneath the TSF would result from tailings seepage with elevated constituent concentrations that is not captured, and is released to the underlying groundwater, thereby impacting local groundwater quality.	We recommend that the EIS provide additional analysis of the potential impacts to the underlying aquifer, and discuss monitoring and mitigation measures that will be implemented to avoid or minimize those impacts.
	4.17.2.1	General Comment	This section discusses impacts to hydrogeology due to certain mine site activities (pit dewatering, drinking water use, WMPs, and TSF). The use of surface water diversions around mine site features could also potentially impact groundwater flow. We recommend adding a subsection that discusses the use of diversions.
4.17-4	4.17.2.4	Potential contamination of groundwater could occur during pipeline construction, when heavy machinery and trenching equipment would likely be operating in close proximity to the water table.	We recommend that potential contamination be discussed in Section 4.18 (Water Quality) and that the EIS include, in an appendix, a draft Spill Prevention Control and Countermeasures Plan that describes steps that would be taken to prevent and respond to potential spills and releases during construction and operations.
4.18 Water and Sediment Quality			
General			We recommend that Section 4.18 discuss potential impacts to the public and private drinking water sources identified in Chapter 3,

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			including groundwater and surface water sources.
4.18-1	4.18.1	Background water and sediment quality in the vicinity of the Mine Site would not change, and would still contain certain constituents in amounts exceeding regulatory levels because of natural mineralization and geochemical weathering processes.	Please disclose in the EIS whether site-specific background levels have been established by the state and incorporated into the groundwater and/or surface water quality standards. If not, we recommend that the EIS explain how site-specific background levels will be established and utilized throughout site performance monitoring in order to determine if those levels are being exceeded due to operations.
4.18-1	4.18.2.1	Non-acid-generating waste rock would be used in construction of the tailings embankments and Mine Site roads.	We recommend that the EIS discuss how waste rock will be evaluated to assure that it is non-acid generating and suitable for construction of embankments and roads. The EIS should also discuss the criteria that would be used to distinguish between acid generating and non-acid generating waste and plans for management of acid generating waste rock during life of mine operations and beyond.
4.18-1	4.18.2.1	A primary design consideration is to ensure that all contact water requiring treatment before release to the environment would be effectively managed.	We recommend that details on management of contact waters be included in the Water Management Plan and provided in the EIS to assess how water diversion, collection, reuse, and treatment will be implemented during the construction, operations, and closure phases. We recommend that the EIS include figures that depict the water balance (flowlines, mine site features, quantities, etc.) for each phase. Please also define the term "contact water".
4.18-2	4.18.2.1	Water collected from the pit dewatering wells would be discharged to the environment if it meets water quality criteria; otherwise, this water would be treated in a modular water treatment plant (WTP) before discharge.	We recommend that the EIS clarify that this discharge would need an APDES permit, and would therefore have to meet permit requirements, which would prescribe limits, and monitoring and reporting requirements. Also, please describe the type of water treatment and discharge locations.
4.18-2	4.18.2.1	Runoff and associated sediment control measures would be managed with BMPs and adaptive management control strategies.	We recommend that the specific BMPs and Adaptive Management Plans that will be employed to prevent adverse impacts from sediment runoff be disclosed in the EIS and that the EIS discuss the effectiveness of the BMPs.
4.18-3	4.18.2.1	Bulk and pyritic tailings slurry from the mill would be directed to the bulk tailings storage facility (TSF) and the pyritic TSF, respectively.	We have not received Chapter 2 for review. We recommend that the Chapter 2 description of the Applicant's Proposed Alternative define what is meant by bulk tailings and, either here or in Chapter 2, describe the geochemical testing that has occurred on simulated tailings.

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			We also recommend that the EIS clarify in this discussion that the bulk TSF would be unlined and the pyritic TSF would be lined. We recommend that a liner for the Bulk tailing facility be considered as a mitigation measure and incorporated into the discussion of alternatives if the geochemical testing and water quality models predict adverse impacts from TSF seepage.
4.18-3	4.18.2.1	Water collecting in the bulk TSF would flow through the embankment to the main embankment's seepage collection pond. From there, water would be directed either to the main WMP for use in the mill or to the main WTP for treatment and discharge. Excess surface water in the bulk TSF would be similarly managed.	We recommend that the discussion of water management associated with the bulk and pyritic TSF be clarified. A figure or flowsheet would be helpful to show management of water associated with the surface ponds on the bulk and pyritic TSFs and management of water that flows through the embankments. We also recommend that the TSF pond sizes be discussed and compared to freeboard to prevent overtopping. We recommend that the probability of spills or overtopping be estimated and a discussion of whether the collection pond would be sized/managed to handle such occurrences.
4.18-3	4.18.2.1	A water surplus is anticipated during the operations phase under normal and wetter than normal climatic conditions.	Please provide a reference to the document or chapter where definitions/calculations of normal and wetter than normal climatic conditions are explained.
4.18-3	4.18.2.1	The volume of water available for discharge would be less than pre-mine flows within the mine footprint, because some water would be consumed in the tailings voids and some would be lost to evaporation and other minor uses.	We recommend revising this sentence to provide additional key details as follows: "The volume of water available for discharge would be X% less than pre-mine flows within the mine footprint, because X% would be consumed in the tailings voids and X% would be lost to evaporation and other minor uses (Reference to document or chapter with these calculations)."
4.18-3	4.18.2.1	The annual average surplus is estimated at approximately 39 cubic feet per second for the maximum mine footprint. Surplus water would be treated and discharged throughout the year.	Please also disclose the pre-mine flow in cfs, to enable comparison of how much water is getting to the downstream reaches. Also discuss how the 39 cfs was determined or provide a reference to the document that provides the information.
4.18-3	4.18.2.1	Runoff from excavation for site infrastructure such as the process plant, camps, power plant, or storage areas would be routed to settling ponds before release.	Please note that some or all these discharges may require authorization from ADEC under the APDES Mine Site General Permit for Stormwater, and we recommend that the EIS explain the applicable permit coverage, including the terms and conditions of the authorization and any monitoring requirements.

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4.18-3	4.18.2.1	During the production phase, the Mine Site would have two WTPs: the main WTP and the open pit WTP.	We recommend that the EIS discuss how these units will be monitored, as well as discuss contingency plans that will be implemented should an exceedance occur.
4.18-4	4.18.2.1	Main Water Treatment Plant and Open Pit Water Treatment Plant sections.	It would be helpful to provide references of examples where the same WTP technology has been used at other mine sites, particularly when it comes to the removal of more difficult constituents, like selenium. We also recommend that the EIS document whether the WTP technology being used is new or has been widely utilized in other similar situations.
4.18-4	4.18.2.1	To prevent overloading the mine water balance with sulfate, some sulfate must be removed from the reject before its disposal in the TSF. Sulfate would be removed with a multi-stage calcium sulfate precipitation process. Precipitated calcium sulfate solids would be disposed of in the TSF.	We recommend that the EIS provide additional explanation of this process. It seems that sulfate will be removed from the reject, and then disposed of in the same place as the reject, which is confusing if the goal is to prevent overloading the mine water with sulfate. We recommend that the EIS evaluate the disposal of water treatment residuals and whether redissolution of these residuals would occur and could compromise water treatment.
4.18-5		Water from the sulfide reaction tanks would be filtered to remove precipitated metals. The filtered water would be suitable for discharge.	It would seem that a pH adjustment step might be necessary or an "alkalinity adjustment" as is stated on the previous page. Please describe all appropriate steps in the process in the EIS in order to evaluate the impacts and provide the appropriate mitigation where necessary. We additionally recommend that the EIS discuss the requirements that would be used to determine that the filtered water is suitable for discharge, i.e., meets state water quality standards prior to discharge.
4.18-5	4.18.2.1	"…until the runoff is determined to be suitable for direct discharge."	Please include in the EIS the time-frame over which this suitability for direct discharge is predicted to occur.
4.18-5	4.18.2.1	Surface runoff into the pit lake could cause metals to leach from the pit walls. Water quality in the pit lake would be expected to be acidic, with elevated concentrations of some metals caused by the oxidation of sulfide compounds in the pit walls and the natural concentrations of metals found in the mineralized rock.	We recommend that the EIS provide the details of specific metals and concentrations that exceed water quality criteria.
4.18-5	4.18.2.1	Once the level of the pit lake has risen to about 890 feet above mean sea level, water would be pumped from the pit,	We recommend that the EIS describe how long it will take for the pit to fill to 890 feet and the

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		treated as required, and discharged to the environment.	basis for that estimate. Also, please provide the location of the treated water discharge.
4.18-5	4.18.2.1	Process-related (contact) water would not be considered waters of the United States or subject to the Alaska Pollutant Discharge Elimination System (APDES) permitting program while such water is retained within the water management facilities.	We recommend that the EIS further explain this statement, and its meaning in terms of handling of contact water.
4.18-5	4.18.2.1	Contact water would be treated to ensure compliance with the most stringent applicable water quality standards before being discharged.	Please also discuss any applicable APDES permit limits and monitoring requirements on the authorization of this discharge.
	4.18.2.1	General comment	We note that water will be treated to meet water quality standards, but will still need to be compared to baseline (background conditions). We recommend that this section: - identify the water quality constituents of concern at the mine site (metals, sulfate, nitrates, pH,TSS, etc.) during each phase; - include tables that provide the predicted concentrations of these constituents in the TSF pond, WMPs, and open pit dewatering water during operations and the pit lake water at post-closure; -include tables that provide the predicted concentrations after water is treated (operations and closure); - include a discussion how these water quality predications were made and uncertainties; -describe where the treated water would be discharged and describe changes to surface water quality due to these discharges (during construction, operations, and closure); -discuss impacts of contaminated groundwater (see comments below) on surface water quality, where groundwater contributes to surface water flows; and -discuss impacts of fugitive dust at the mine site on surface water quality and plans proposed by the Applicant to mitigate impacts.
4.18-6	4.18.2.1	With an effective water management and water treatment program, impacts on groundwater quality would be limited to discrete portions of the project area.	This statement implies that contaminants would be released to groundwater regardless of efforts to avoid/minimize impacts. We recommend that the EIS include additional details regarding potential impacts, including predicted concentrations of constituents in seepage from the TSF, WMPs, and open pit, discussion of how these predictions were made, comparison to baseline conditions and regulatory standards,

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			and geographic extent (lateral and vertical) of impact on groundwater. As recommended above, the use of tables and figures will be helpful to aid in the reader's understanding.
4.18-6	4.18.2.1	Groundwater that could be contaminated by vertical seepage from the unlined bulk TSF would flow north down the North Fork Koktuli River (NFK) west drainage and would be captured by the main embankment seepage collection pond.	We recommend providing a reference to the details regarding this groundwater flow and capture. Information on the depth of groundwater captured by the seepage pond should be included in the EIS as well as information on the specific metal concentrations predicted.
4.18-6	4.18	The spatial extent of these impacts is expected to be limited to shallow groundwater between the TSFs and seepage collection facilities.	We recommend that the EIS discuss the potential presence of underlying fractured bedrock and whether any fractures could result in greater extent of groundwater impacts.
4.18-6	4.18	The TSFs and PAG storage facilities are not expected to result in impacts on downgradient groundwater quality outside of the Mine Site, based on understanding of current seepage collection design features.	We recommend that the EIS discuss the specific seepage design features and discuss how the effectiveness in reducing impacts to downgradient groundwater quality was determined.
4.18-6	4.18	However, impacts on local groundwater could be sufficient to exceed water quality regulatory criteria, and could persist through the life of the mine and well into post-closure, until monitoring at seepage collection systems indicates that water quality meets the approved criteria for discharge. Inputs of contaminated water from the pit to groundwater after the cessation of pit depressurization could potentially exceed regulatory limits for water quality. Impacts on groundwater quality from Mine Site activities proposed under Alternative 1 would likely be limited to effects on local groundwater in the near vicinity of mine facilities and would remain within the Mine Site boundaries.	Again, a release of contaminants impacting groundwater quality is implied by these statements. We recommend that the EIS further characterize this potential and discuss monitoring, mitigation, and contingency plans to detect and prevent impacts.
4.18-7	4.18.2.1	The redox state of the overburden is not expected to change during mine operations	We recommend that the EIS provide text that would clarify if the drawdown of groundwater would result in a change in the overburden redox conditions within the footprint of the dewatered area. Switching from saturated to unsaturated conditions would likely affect redox conditions.

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4.18-7	4.18.2.1	However, concentrations of metals in shallow groundwater may increase because of disruption of wetlands and increased sedimentation.	We recommend that the EIS provide additional explanation of these impacts. Specifically, please provide details on the cause of the increase in metal concentrations due to wetland disruption, information on the mechanism by which this disruption increases metals, and information on the cause of the increased sedimentation.
4.18-7	4.18.2.2	Port infrastructure should be built above the 100-year floodplain of Amakdedori Creek, although the floodplain is not well defined.	As mentioned above, we recommend that the EIS clarify how it will be ensured that the infrastructure is above the 100-year floodplain, including obtaining additional site-specific information if needed.
4.18-7	4.18.2.2	The WTP at Amakdedori Port	We recommend that the EIS include information on the expected sources of contamination at the Port and list the constituents of concern. Please also describe the location of the WTP discharge. We also recommend that the EIS address whether similar sources of contamination would also be present at the two ferry terminals on Lake Iliamna. This water treatment facility design is different from the others that are on-site. We recommend that the EIS discuss the different WTP designs and how they were determined to fit the specific contaminant characteristics of the three sites, to make the differences clear for decision makers and the public.
4.18-8	4.18.2.2	The solids removed would be thickened and disposed of appropriately.	We recommend that the EIS provide additional detail on how and where the solids would be disposed.
4.18-8	4.18.2.2	…however, such impacts could be mitigated, and possibly eliminated, by implementing BMPs to prevent the dust from entering the water. The nature and extent of dust-related impacts at the port site, and the efficacy of proposed mitigation measures will be analyzed in greater detail as more information becomes available.	We recommend that the EIS provide specific details on which BMPs will be utilized to prevent dust/metals entering Cook Inlet, and that information necessary for selection of mitigation measures be included in the EIS analysis.
4.18-8	4.18.2.2	No impacts on groundwater quality are expected to occur at the port site.	Please provide additional discussion to support this statement, including addressing whether there will be monitoring to assure that impacts do not occur.
4.18-8	4.18.2.2	Sediments in waterbodies at the port site could potentially be affected by erosion, dust deposition, and overland runoff, especially during construction.	We recommend that the EIS list the waterbodies that could be affected and the extent of potential effects. As recommended above, please also list the BMPs that would be used to avoid or

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		BMPs would be in place to avoid or minimize the effects of construction of the port facilities.	minimize impacts and reference the Applicant plans that include the specific BMPs as they are considered to help avoid or minimize impacts, and should be part of the environmental review process.
4.18-8	4.18.2.3	Impacts on surface water quality in the Transportation Corridor could result from occasional barge/tug-induced suspended sediment, or from erosion effects at construction sites.	Please provide information for the potential of high concentration copper and molybdenum (and other metals found in the concentrates) dust on the trucks using the transportation corridor to impact the surrounding environment, including waterways, and the mitigation measures that would be put in place to prevent and address surface water contamination from the corridor.
4.18-8	4.18.2.3	If PAG is identified during the site evaluation before use, the material site would not be used.	We recommend including a mitigation measure requiring appropriate reclamation of the site, in the event that PAG rock is not identified until it has been exposed during project construction.
4.18-8	4.18.2.3	Erosion and sedimentation would continue for the life of the unpaved roads.	For clarity, please discuss the anticipated life of the unpaved roads in this section. Please also describe the BMPs that would be used and discuss the effectiveness of the BMPs in reducing environmental impacts.
4.18-9	4.18.2.4	Isolated occurrences of impacts above this standard could occur (e.g., during high-precipitation periods along summer construction segments), but are expected to be reduced within a short time frame because of planned redundancies in BMPs, erosion and sediment control measures, and reclamation/cleanup crew functions.	We recommend that the EIS provide additional detail to characterize potential impacts to surface water quality during natural gas pipeline construction, and provide the specific BMPs and other mitigation measures that will be employed to prevent adverse impacts.
4.22 Wetlands			
4.22-1	4.22	Bulleted list	We recommend adding “placement of fill in wetlands” and “conversion of wetland type” to the list of potential direct and indirect effects to wetlands.
4.22-1	4.22	Magnitude would be less for disturbance areas below five percent, and would be greater for disturbance areas above five percent, with greatest intensity for disturbance areas above 25 percent.	We recommend discussing and citing the scientific research that provides the basis for the 5% disturbance area threshold for determining the magnitude/intensity of impacts to wetlands.
4.22-1	4.22	The duration of impacts would be temporary, meaning wetland functions would be reduced during the construction phase;	We recommend discussing the length of time over which impacts would be considered temporary.
4.22-1	4.22	To assess the relative magnitude and extent of impacts, the relative proportion of	It is EPA’s understanding that the Applicant is currently having consultants perform field work to re-verify wetlands in the field. We recommend

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		common wetland types in each watershed was estimated.	that this site specific, field verified information be included in the EIS to avoid using estimates once the site-specific information is available.
4.22-2	4.22	Vegetation classes mapped in the watersheds were assigned to one of the following types in a crosswalk for comparison with wetlands mapped for the project: upland, forested wetland, shrub wetland, herbaceous wetland, aquatic bed wetland, or waterbody.	We recommend that these same vegetation grouping types are also listed and discussed in the Chapter 3 vegetation section.
4.22-2	4.22.2.1	Throughout	The discussion primarily relies on overall number of impacts within the footprint and % of impacts within the watershed. We recommend that the document also provide the context of the interconnected ecosystem within the watershed and footprint area, in addition to the adjacent areas. We also recommend that the document analyze the results of the localization of impacts resulting from the direct placement of fill, altering of hydrology and segmenting of ecosystems. If these impacts are to be analyzed in the wetland functional assessment, we recommend that the discussion of these impacts be incorporated in this section rather than referenced.
4.22-2	4.22.2.1	Bulleted List	We recommend adding "altering hydrology" and "segmenting of ecosystem" to the list of primary direct construction-related impacts to wetlands, and addressing these impacts in the analysis.
4.22-3	4.22.2.1	Second full paragraph starting with Excavation…	We recommend summarizing the relevant discussion points regarding surface water hydrology impacts in this section, rather than referencing Section 4.16.
4.22-3	4.22.2.1	Third full paragraph staring with Construction…	If the potentially impacted wetlands also provide habitat, we recommend adding a habitat discussion here or in a separate paragraph (before the overall watershed impact % discussion).
4.22-3	4.22.2.1	Last 2 paragraphs	As recommended above, please include the scientific rationale for the % threshold discussion and its relevance for this project when analyzing localized and watershed impacts.
4.22-6	4.22.2.1	Table 4.22-1	We recommend updating this table with the most accurate available information resulting from the ongoing wetlands field work.
4.22-7	4.22.2.1	Reclamation discussion "During the permitting phase, a reclamation plan would be developed that would include reclamation of wetlands	Because of the conceptual nature of the reclamation discussion, it is difficult to discern which areas would be reclaimed as wetlands, methods that would be used for such

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		where feasible. The discussion below is based on generally accepted wetland reclamation practices for mine sites in Alaska. PLP has also provided some conceptual-level information on reclamation in its application." "Material sites constructed in valley bottoms or lowland sites are candidates to be reclaimed to create new ponds with emergent wetlands where sufficient water quality and hydrology are available."	reclamation, and the criteria/monitoring that would be used to measure reclamation success. We recommend that more specific information on reclamation (e.g., a draft reclamation plan) be provided so that it is clear how much of the site will be reclaimed as wetlands during mining (concurrent reclamation) and post mining. We also recommend that the EIS assess the effectiveness of the specific reclamation methods proposed.
4.22-8	4.22.2.1	3rd full paragraph starting with "The pit lake….	Based on the information provided in this section, we recommend the impact analysis include direct and indirect impacts during construction, operation and reclamation/closure phases, since this paragraph states that the hydrologic equilibrium may take decades to occur, post closure. We recommend that the EIS include the results of hydrologic modeling of the area, including a discussion of the potential impacts to wetlands outside of the mine footprint resulting from the alteration of flow from the watershed and surrounding wetlands to fill the created pit lake. We additionally recommend that the EIS discuss the downstream impacts resulting from this alteration of flow while the pit lake is filling for decades. Finally, to enhance readability, we recommend that the EIS incorporate the discussions from 4.17 rather than referencing them here.
General	4.22	All reclamation discussions	Please identify if and where the applicant plans to segregate soils for reclamation purposes.
4.26 Vegetation			
	4.26	General	We recommend including an overall vegetation reclamation discussion in this section providing required minimums, success criteria and adaptive management.
4.26-1	4.26	Bullet list	We recommend also including conversion of vegetation, if any, in the analysis.
4.26-2	4.26.2.1	Vegetation Removal - General	We recommend adding a discussion of what happens to the removed vegetation (e.g., grubbed, burned, etc.)
4.26-2	4.26.2.1	Last paragraph	We recommend adding additional information to the discussion of vegetation succession for context, including proposed reclamation efforts

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			and potential length of time for succession based on vegetation type present and soils.
4.26-5 4.26-9	4.26.2.2 4.26.2.6	Fugitive Dust Discussion	We recommend discussing source and type of material used for roadbed contributing to fugitive dust.
4.26-5 4.26-8 4.26-9	4.26.2.2 4.26.2.4 4.26.2.6	Fugitive Dust Discussion for all project components	We recommend adding discussion and analysis of factors contributing to fugitive dust including activities that contribute to fugitive dust (ore crushing, transportation, loading/unloading, etc.) and for road-related activities, length of roads traveled, number of trips per day, type of vehicles, etc.
4.26-5 4.26-8 4.26-9	4.26.2.2 4.26.2.4 4.26.2.6	Fugitive Dust Discussion for all project components	We recommend adding discussion of the maximum extent of fugitive dust impact areas near each source. This could include the anticipated modeling discussed in Section 4.14.
4.26-5 4.26-8 4.26-9	4.26.2.2 4.26.2.4 4.26.2.6	Fugitive Dust Discussion throughout the section	We recommend that the EIS discuss the potential different types of effects that the fugitive dust will have on the diverse vegetative communities within the mine site and other project components. Additionally, we recommend the document provide an analysis and discussion quantifying the amount of impacts to the various vegetation communities resulting from fugitive dust.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/14/2018 11:44:41 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

No he hasn't. Perhaps we will see that section when we see the Wetlands section, as there is a note in Ch 5 that they are still waiting on the Compensatory Mitigation Plan. It does appear in the schedule of deliverables, so I think that means we will be receiving it at some point.

From: McGrath, Patricia
Sent: Wednesday, November 14, 2018 2:40 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hi Molly-
Has Shane submitted Appendix M – which was referred to in Ch 5?
Patty

From: Vaughan, Molly
Sent: Wednesday, November 14, 2018 3:04 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation
Importance: High

Hello All,
The Corps has just distributed Chapter 5 Mitigation for review as well, and I have loaded it onto the Sharepoint site. When reviewing the analysis of Environmental Consequences for each resource, please also take a look at the mitigation measures that have been proposed for that resource, and provide any additional recommendations where mitigation is not sufficient, including revisions to proposed mitigation language or additional measures recommended.
Thank you,
Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

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Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/23/2018 6:34:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Patty - I think that Barb raises a lot of good points, and don't have any further comments to add. I will defer to your expertise as to whether these comments warrant submitting something in writing, versus discussing at the meeting on the 24th, so please let me know if I should work to finalize these comments for submission to the Corps.

Deliberative Process / Ex. 5

Thanks,
Molly

-----Original Message-----
From: Butler, Barbara
Sent: Monday, October 22, 2018 5:32 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Patty and Molly,

Deliberative Process / Ex. 5

I hope these comments are helpful and please let me know if you have any questions.

Thanks,
Barb

Ps. So you're aware, I will be out of the office the 24th through the 31st.

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, October 17, 2018 6:35 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Barb and Cindi-
I have not had an opportunity to review this memo yet, but plan to do so tomorrow. If you have time, can you also review and send Molly and I any comments that you have by COB 10/22? If you do not have time, please let me know. I have reviewed dry stack analyses for other EISs so I am pretty comfortable with this, but would also appreciate a second (or third!) set of eyes.
This memo will be discussed at a meeting with the Corps and other agencies on October 24. We have not decided whether to submit written comments - that will depend on our review.
Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]

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Sent: Thursday, October 11, 2018 12:00 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/27/2018 6:39:07 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pre-DEIS Comments
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx; EPA Comments Pebble Pre-Draft EIS Sections 3.1_3.5_4.1_4.5 110918.docx

Hi Ashley – Here are the comments we've sent so far.
--Molly

From: Palomaki, Ashley
Sent: Tuesday, November 27, 2018 9:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pre-DEIS Comments

Hi Molly – Can you send me the final copies of the comments that we've sent to eth Corps so far? Thanks.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/23/2018 8:36:50 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]
Subject: 3.22 and 4.22 with figures for review (UNCLASSIFIED)
Attachments: Sec3.22_Wetlands_reviewdraft_2018.11.21.docx; 3_22_01_Project Mapping Areas.pdf; 4_22_02_Mine Site Wetland Impacts.pdf; 4_22_03_Mine Site Expanded Development.pdf; 4_22_01_Watersheds HUC10.pdf; Sec4.22_Wetlands_reviewdraft_2018.11.21.docx

CLASSIFICATION: UNCLASSIFIED

Good Morning,

Attached are the review drafts for Sec3.22 and Sec4.22, Wetlands. There are no technical appendices with these sections.

Sec 3.22 has one standalone PDF figure (attached) and 7 embedded figures. Sec 4.22 has three standalone PDF figures (attached).

Cooperating agencies with special expertise on this section are USACE and EPA. Suspense date for comments will be provided on Monday.

v/r,

Katie McCafferty
Project Manager
Direct: 907-753-2692

U.S. Army Corps of Engineers-Alaska District
Regulatory Division
P.O. Box 6898
JBER, AK 99506
main office line: 907-753-2712

CLASSIFICATION: UNCLASSIFIED

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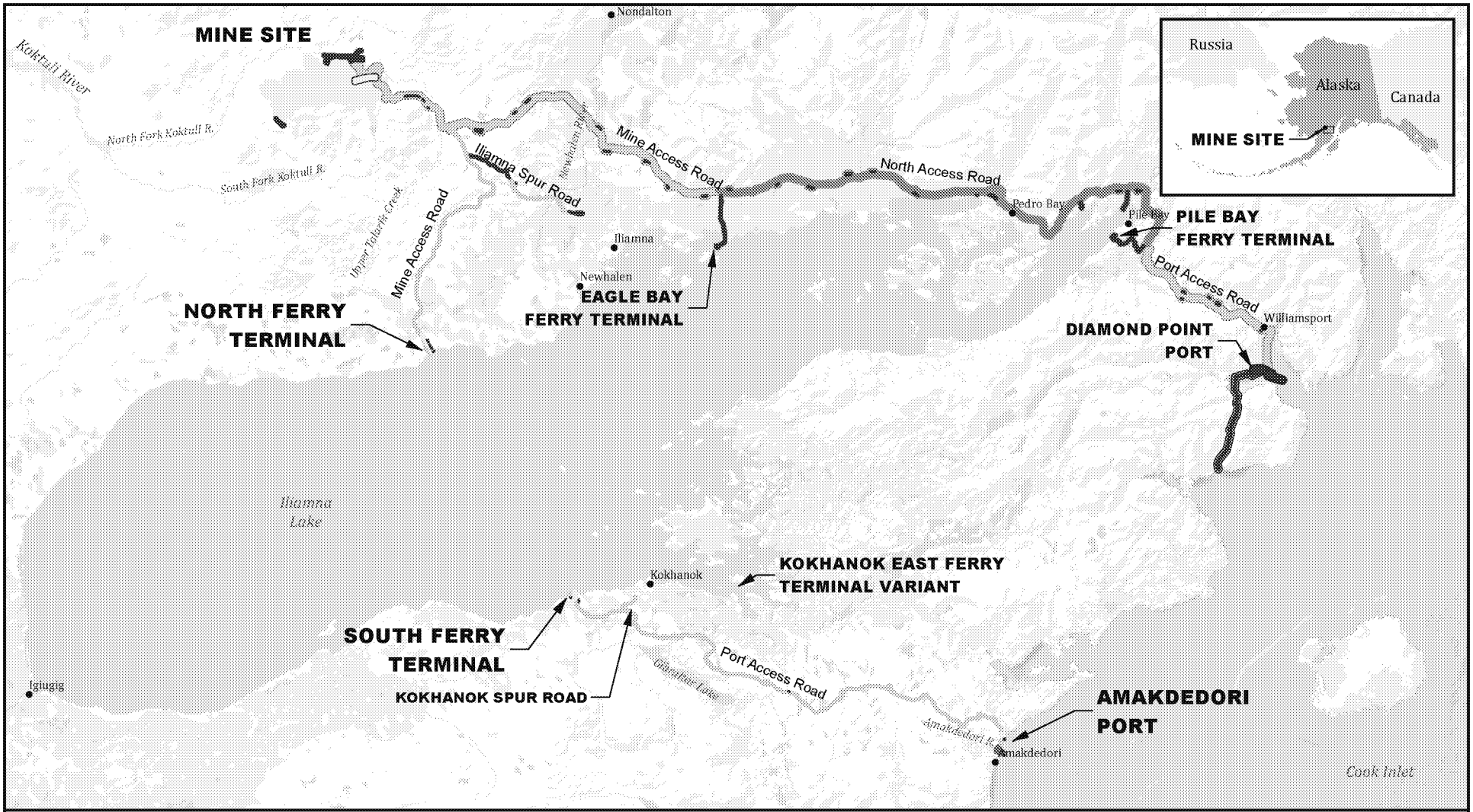

Sources: PLP 2018; ADNR

US Army Corps of Engineers

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Miles

Analysis Areas
- All Alternatives: Mine Site
- Alternative 1: Transportation
- Alternative 1: Natural Gas Pipeline
- Alternative 1: Port
- Alternative 2: Transportation
- Alternative 2: Natural Gas Pipeline
- Alternative 2 & 3: Port
- Alternative 3: Transportation
- Alternative 3: Natural Gas Pipeline
- Data Gap

Alternative 1
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

ANALYSIS AREAS

PEBBLE PROJECT EIS

FIGURE 3.22-1

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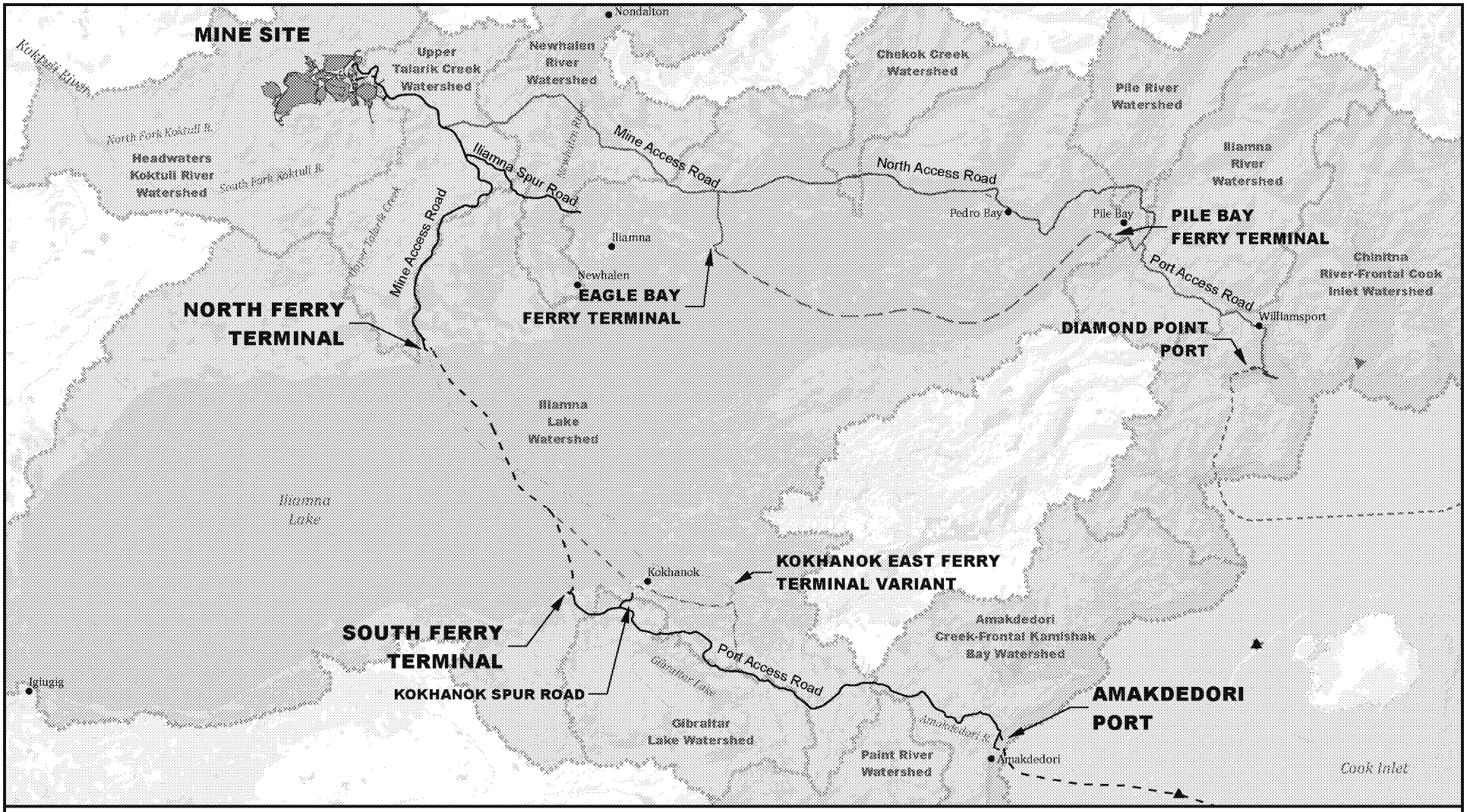

Sources: PLP 2018; USGS

US Army Corps of Engineers

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HUC10 Watershed

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

WATERSHEDS

PEBBLE PROJECT EIS

FIGURE 4.22-1

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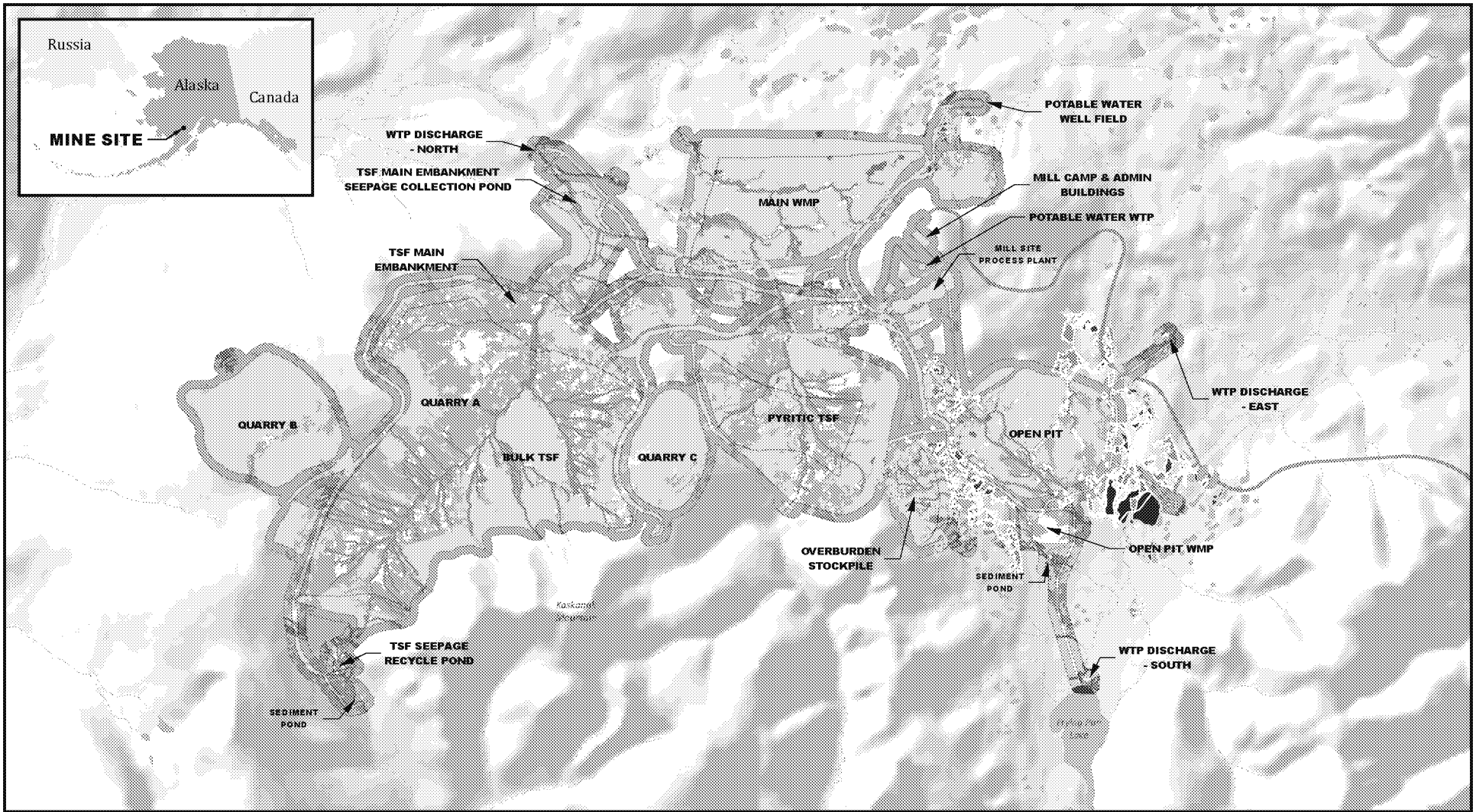

Sources: PLP 2018; FWS; USGS

US Army Corps of Engineers

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Mine Site Impact Type
- Direct
- Indirect
- Drawdown (End of Mining)
- Drawdown (Post-Closure)

NWI Classification
- Aquatic Bed
- Broad Leaved Deciduous Shrubs
- Herbaceous
- Lakes
- Ponds
- Rivers/Streams (Intermittent)
- Rivers/Streams (Perennial)
- Upland

MINE SITE WETLAND IMPACTS

PEBBLE PROJECT EIS

FIGURE 4.22-2

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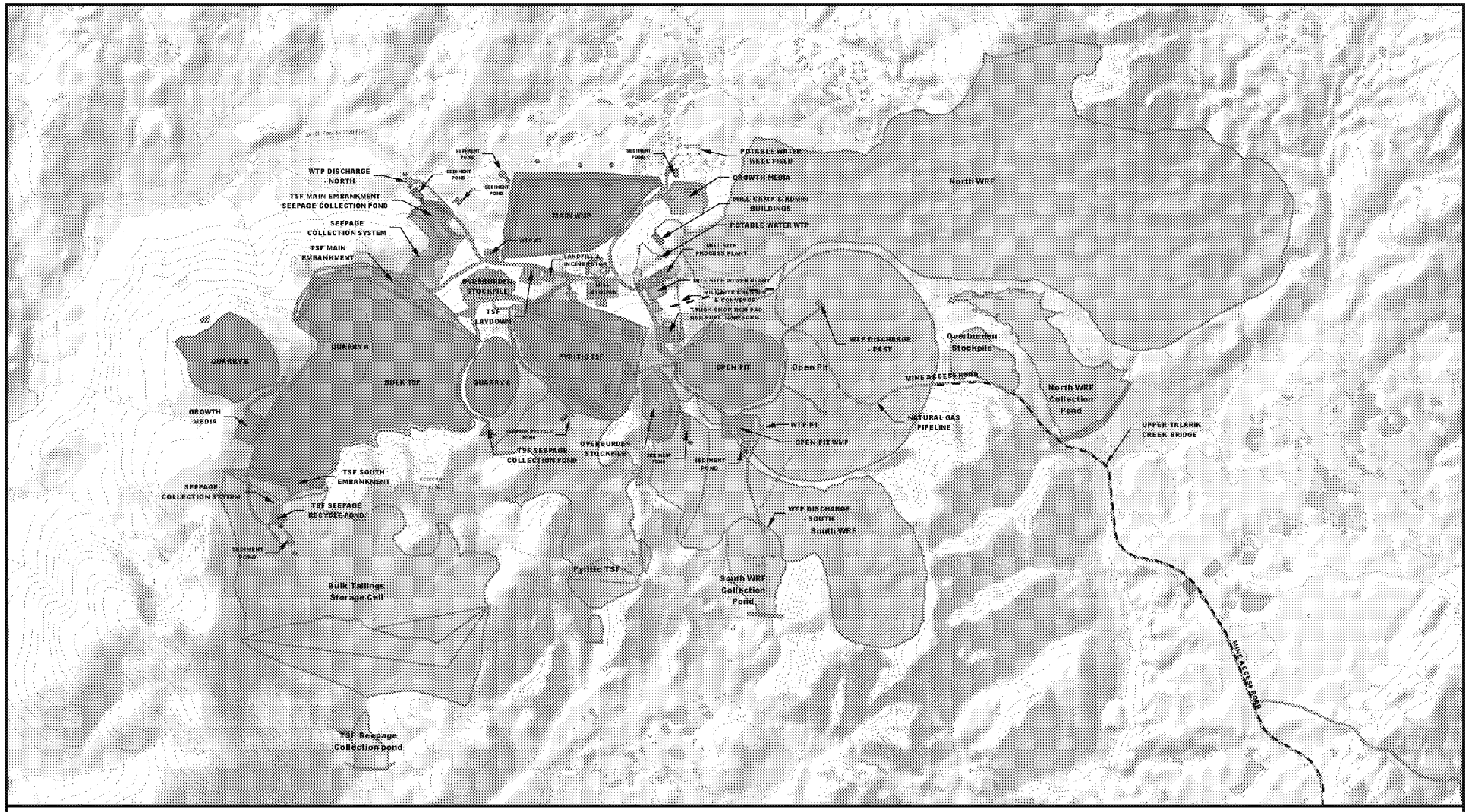

Sources: PLP 2018; USGS; ADNR

US Army Corps of Engineers

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Expanded Development
Alternative 1
Monitoring Wells
Natural Gas Pipeline
Mine Site Footprint

Other Features
River/Stream
Lake/Pond
100' Contour (Pre-Mine)

EXPANDED DEVELOPMENT MINE SITE

PEBBLE PROJECT EIS

FIGURE 4.22-3

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3.22 WETLANDS/SPECIAL AQUATIC SITES

The affected environment for wetlands and waterbodies includes vegetated wetlands, ponds, lakes, streams, rivers and marine and estuarine waters that may be directly or indirectly affected by all project alternatives and components. The EIS analysis area collectively includes areas for all four components (mine site, transportation corridor, ports, and natural gas pipeline). The analysis area for the mine site includes a 330-foot buffer around the direct disturbance footprint and potential drawdown zone from the open pit. The analysis area for the transportation corridor and ports includes a 330-foot buffer around the direct disturbance footprint. The analysis area for the stand-alone sections of the natural gas pipeline is a 30-foot corridor through Cook Inlet and Iliamna Lake, and a 100-foot corridor through overland areas. The analysis areas includes potential direct and indirect impacts from construction and operations. See Figure 3.26-1 in Section 3.26, Vegetation, for a general overview of the analysis area for wetlands/special aquatic sites, which is similar to that of vegetation.

Wetlands and waterbodies are described in terms of the extent and characteristics of predominant types found in the analysis area. The descriptions are primarily based on information provided in Chapters 14 and 39 of the Environmental Baseline Document (EBD) (3PPI and HDR 2011, HDR and 3PPI 2011), as well as more recent information provided in the Preliminary Jurisdictional Determination (PJD) Report (HDR 2018) and the associated Geographic Information System (GIS) database, which reflects changes in the project area since publication of the EBD.

3.22.1 Wetland/Special Aquatic Site and Waterbody Terms

Wetlands and other special aquatic sites are regulated by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) (33 US Code [USC] 1344). Pebble Limited Partnership (PLP) has prepared a PJD report (HDR 2018) for Alternative 1 identifying wetlands and other waters of the US (WOUS) under the USACE's regulatory jurisdiction; the USACE signed Department of the Army PJD is provided in Appendix J.

Special Aquatic Sites – Special aquatic sites are a subset of jurisdictional WOUS, which are large or small areas possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values (40 CFR 230.3). Special aquatic sites present in the analysis area include mudflats, vegetated shallows, and riffle and pool complexes.

Sanctuaries and Refuges – There are no sanctuaries and refuges that occur in the analysis area. See Section 3.2, Land Ownership, Management, and Use, for details on land ownership and land designations in the analysis area.

Wetlands – Wetlands are WOUS defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b]). Wetlands are transitional between terrestrial and aquatic ecosystems. Unvegetated areas such as streams, ponds, and lakes are not considered "wetlands" under this definition. Wetlands in the project area occur on a variety of mineral and organic soil substrates. Information on soils is provided in Section 3.14, Soils.

Wetland determinations followed guidance from the USACE. Wetland determinations from 2004 through 2008 were based on the 1987 Wetland Delineation Manual (USACE 1987), while determinations after 2013 were based on the 1987 Manual in conjunction with the 2007 Alaska Regional Supplement (USACE 2007). Detailed descriptions of the field indicators used for

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wetland determinations in the project area are provided in Chapters 14 and 39 of the EBD (3PPI and HDR 2011, HDR and 3PPI 2011), and in the PJD Report (HDR 2018).

Mudflats – Mudflats occur in certain intertidal portions of Cook Inlet. They are composed of fine sediments and organic material, and are either unvegetated or vegetated only by algal mats. They have not been documented in the project area for Alternative 1, as the intertidal zone is composed mostly of sand and gravel. They have been identified in upper Iliamna Bay near the project area for Alternatives 2 and 3. The extent of mudflats in this area was determined to include tidal waters below mean higher high water and above mean lower low water.

Vegetated Shallows – Vegetated shallows are permanently inundated areas that support rooted aquatic vegetation. They include some of the aquatic bed types defined by the National Wetland Inventory (NWI) system (described below) occurring in freshwater ponds and lake margins. These are of very limited extent in the analysis area, and are described together with other vegetated wetlands. Eelgrass beds are a relatively common type of vegetated shallows that do occur in parts of the nearshore environment of Cook Inlet. Eelgrass is known to occur in patchy beds in Iliamna and Cottonwood bays, as well as south of the project area around reefs associated with Nordyke Island and Chenik Head, but outside of the analysis area for Alternatives 2 and 3.

Coral Reefs – There are no coral reefs identified in the analysis area.

Riffle and Pool Complexes – Riffle and pool complexes occur in steep gradient sections of streams in the analysis area. Riffles are defined by rapid flow over a coarse substrate that produces high levels of dissolved oxygen in the water. Pools are deeper, slower sections of water with a finer substrate. Major streams in the analysis area have been characterized for habitat types, including riffle and pool habitats and associated fish resources (R2 Resource Consultants et al. 2011). Baseline mapping of streams did not specifically identify riffle and pool complexes in the project area. Streams were characterized mainly by flow regime (lower perennial, upper perennial, and intermittent). Riffle and pool complexes would be expected to occur most frequently in the upper perennial and intermittent zones where stream beds are predominantly gravel or coarser. Stream morphology and associated fish habitat in the analysis area is addressed in Section 3.24, Fish Values; surface water quality is addressed in Section 3.18, Water and Sediment Quality.

Waterbodies – Waterbodies, as used in this section, include all non-wetland waters. Most of these areas are deepwater habitats characterized by permanent water and non-soil substrates. In the analysis area, these include marine waters, both subtidal (continuously submerged) and intertidal (exposed during low tides), lakes, ponds, and streams. Streams are characterized as either perennial or intermittent. Perennial streams are further subdivided as either upper perennial or lower perennial. Upper perennial streams tend to have higher gradients, faster flows, coarser substrates, and little floodplain development compared to lower perennial streams (Cowardin et al. 1979).

Intermittent streams are present in headwater positions in the project area, and typically have flow during the spring snowmelt period (May to June), then may go dry or subsurface during July and August until sufficient rainfall begins again in September. Flow again gradually declines during winter as snow accumulates. These streams are typically dry during February to early April (Knight Piésold et al. 2011). The duration of flow in these streams is related to catchment area and characteristics, and to the relative contribution of groundwater to base flows.

Intermittent streams are differentiated from ephemeral streams based on duration, timing and sources of flow, which may vary year to year. Ephemeral streams flow for brief periods (hours to a few days) during and immediately after rainfall events, and do not receive groundwater inputs.

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Intermittent streams flow seasonally (several weeks or more), with inputs from groundwater, snow melt, and rainfall. According to the baseline stream mapping, all non-perennial streams have been classified as intermittent (3PPI and HDR 2011).

Navigable waters of the US (NWUS) are regulated by the USACE under Section 10 of the Rivers and Harbors Act of 1899 (RHA) (33 USC 403); the USACE maintains a list of navigable waters in Alaska that have been determined to be NWUS by the district engineer. All waters that are subject to the ebb and flow of the tide are also considered NWUS. Navigable waters in the analysis area that are regulated under Section 10 of the RHA include Iliamna Lake and Cook Inlet. Navigable waters of the state are addressed in Section 3.12, Transportation and Navigation.

3.22.2 Wetland Mapping and Classification

A GIS database was constructed for the project's environmental baseline study program that incorporated existing NWI data, USGS topographic data, land use and land cover data, existing vegetation data, soil survey data from the Natural Resources Conservation Service (NRCS), and several sources of aerial and Light Detection and Ranging (LIDAR) imagery.

Field surveys were conducted over several growing seasons (2004 to 2008, 2013, and 2017). A total of 684 wetland determination field plots were surveyed. Detailed information on vegetation, soils, and hydrology was collected at each plot. Additional photo and data points were collected at waterbodies and stream crossings. Mapping was digitized on aerial photography at a scale between 1:1,200 and 1:1,500 for wetlands, and 1:400 for open water. Additional data was collected in 2018 as part of PLP's summer field 2018 program.

Wetland mapping included interpretation of "photographic signatures" associated with vegetation types (see Appendix C in HDR 2018) and interpretation of topography. Topographic depressions, toe slopes, and flat areas were often associated with wetlands, while convex slopes were indicative of potential uplands. Topography was also used to assess potential hydrologic connections between wetlands and surface waters, and to determine potential locations of groundwater seeps.

Many of the wetland polygons mapped for the project contain inclusions of uplands. These "mosaics" occur in landscapes with often complex microtopography where wetland and upland components are too closely associated to be easily mapped separately (USACE 2007). Wetland scientists estimated the proportion of wetland versus upland in each mosaic polygon, ranging from 10 to 90 percent wetland. Approximately half of the wetland polygon area in the analysis area was mapped as mosaics. Scrub-shrub and forested wetlands were more often mapped as mosaics compared to emergent wetlands. For this analysis, all mosaics have been calculated as 100 percent wetland.

Each mapped wetland and waterbody polygon was further characterized using vegetation and wetland classification systems. All polygons were first assigned a vegetation type based on the Alaska Vegetation Classification (Viereck et al. 1992), supplemented by Wibbenmeyer et al. (1982); see Section 3.26, Vegetation, for detailed vegetation classification information. Wetland and waterbody polygons were then classified by NWI class (Cowardin et al. 1979) and assigned a hydrogeomorphic (HGM) class (Brinson 1993).

Wetland Data Gaps – For Alternative 1, project-specific wetland mapping through 2018 covers the entire project footprint except for the pipeline crossing of Cook Inlet, and the 0.5-mile pipeline corridor and compressor station near Anchor Point on the Kenai Peninsula. For these areas, the Cook Inlet Lowlands wetland project prepared by the Kenai Watershed Forum (Gracz 2013) was applied. Wetland and waterbody data was confirmed in the PJD (see Appendix J).

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The analysis area for the Kokhanok east ferry terminal variant of Alternative 1 also lacks project-specific mapping, and NWI data is not available for this area. Wetland mapping for this area was obtained from publically available synthetic aperture radar satellite data (the Advanced Land Observing Satellite Phased Array type L-band Synthetic Aperture Radar, also referred to as ALOS PALSAR) (Clewley et al. 2015). Wetlands were mapped at 100-meter resolution. This data provides a coarse estimate of wetland boundaries compared to either project-specific mapping or NWI mapping.

The analysis areas for Alternatives 2 and 3 include areas that lack complete project-specific wetland mapping. These include the natural gas pipeline corridor from Ursus Bay to Diamond Point, most of the area of the Diamond Point port site, sections of the Williamsport-Pile Bay road, the Pile Bay ferry terminal and access road, and the Eagle Bay ferry terminal and access road. For these areas, NWI data was analyzed (NWI 2018). The NWI maps provide a reconnaissance-level depiction of the location, type, and size of wetlands; NWI data do not provide the level of detail of project-specific mapping. For purposes of this analysis, NWI wetland types have been grouped to match the project units used for the environmental baseline study program.

[Note: A wetlands mapbook of the project-specific wetlands mapping, incorporating any wetlands data updates that are received prior to production of the draft EIS, will be included as technical appendix K3.22 to the draft EIS].

3.22.3 Wetland Functions and Values

This section provides a qualitative overview of wetland functions in the analysis area based on the NWI classifications, and a description of high quality wetlands. High quality wetlands provide a variety of ecosystem functions for various resources. Most of the wetlands and their basins have very little to no anthropogenic disturbance to reduce function or quality. Wetland function varies based on position in the watershed and linkages to other habitats, so a particular wetland polygon of a given class may not provide the same level of functions as others in the same class.

3.22.3.1 NWI Classes

Primary wetland functions generally associated with each NWI wetland class are described below.

Forested Wetlands – depending on their position in the landscape and water regime, they provide modification of flood flows, shoreline stabilization, water quality improvement, organic matter production and export, wildlife cover and browse, and fish habitat through cover and shade. Forests are mostly confined to well-drained lowland areas, and forested wetlands are relatively scarce, especially at the mine site (Carlson et al. 2018).

Scrub-Shrub Wetlands – tall shrubs provide water quality and shoreline stabilization functions similar to forested wetlands, and high quality wildlife browse (willows [*Salix* spp.]) for moose and beavers. Small and dwarf shrub wetlands provide fewer habitat functions, but are relatively abundant in the analysis area. Most scrub-shrub wetlands in the analysis area are on slopes and have a saturate water regime. Seasonally flooded tall shrub wetlands occur in floodplains and depressions.

Emergent and Aquatic Bed Wetlands – persistent herbaceous vegetation provides removal of sediments and nutrients, production and export of organic matter, and habitat for aquatic invertebrates, fish, waterfowl and wetland-associated mammals (e.g., beavers and river otters). Bird species of concern associated with these wetlands include tundra swan, long-tailed duck,

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harlequin duck, common loon, and others (ABR 2011a). Many of these wetlands are seasonally to semi-permanently flooded or ponded. Aquatic bed wetlands are relatively scarce in the analysis area.

3.22.3.2 High Quality Wetlands

High quality or high-functioning wetlands in the analysis area are considered to be associated with the following characteristics:

- Providing habitat for sensitive or regionally important fish, wildlife, birds, or plant species. For example, many riparian or riverine wetlands provide critical habitat functions for ecologically, economically and culturally important anadromous and resident fish species in the analysis area. Most of these functions are related to the contribution of the woody riparian canopy, through inputs of coarse woody debris and nitrogen (alders); sediment and streambank stabilization; provision of shading and cover; and food chain support. Therefore, riparian wetlands with forest or shrub vegetation classes are considered high quality wetlands for purposes of analyzing environmental consequences of the project in Chapter 4, Environmental Consequences. Riparian herbaceous wetlands are also considered high quality due to their relatively high species richness. (ABR 2011a).
- Regional scarcity, or rare and high quality, within a given region. For example, forested wetlands cover a very small portion of the analysis area, but provide important food and cover for wildlife such as beavers and moose, and woody inputs important for fish habitat and stream dynamics. Aquatic bed wetlands also cover a very small portion of the analysis area, but provide important habitat for wildlife such as wood frogs.
- Undisturbed and difficult or impossible to replace, such as bogs or fens. Some bog types have relatively high species richness for bird and mammals species of concern (ABR 2011a). Bogs have also been shown to contribute substantially to stream base flows (Gracz 2017), and are sensitive to disturbance.
- In addition to the ecosystem functions provided by wetlands, certain wetland types and locations are valued by Alaska Natives for their subsistence value (Hall et al. 1994; Jernigan n.d.). Some culturally important plants found mainly in wetlands include blueberries (*Vaccinium* spp.), cranberries (*Vaccinium* or *Oxycoccus* spp., Labrador tea (*Ledum* spp.), and willows.

3.22.4 Waterbody Functions and Values

Non-wetland aquatic habitats in the analysis area also provide numerous ecosystem functions, including support for a wide array of anadromous and resident fish, aquatic invertebrates, birds, and mammals. Detailed assessments are provided in the baseline reports (ABR 2011a; R2 Resource Consultants et al. 201l) and Section 3.23, Wildlife, Section 3.24, Fish Values, and Section 3.25 Threatened and Endangered Species.

Marine/Estuarine Waters – Cook Inlet provides habitat for many marine mammals, including Steller's sea lion, harbor seal, northern sea otter, beluga whale, and gray whale; and various bird species (see Section 3.23, Wildlife and Section 3.25, Threatened and Endangered Species, for details on marine mammals and birds analysis area). Nearshore and estuarine habitats have been investigated in the vicinity of the analysis area (Pentec Environmental/Hart Crowser 2011a, 2011b). Several habitat types including mudflats were identified, which provide resources for varying life stages of numerous fish and invertebrate species. Intertidal waters represent a small portion of marine waters in the analysis area.

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Lakes/Ponds – Waterbodies in the analysis area range from very small ponds to large lakes (approximately 150 acres) and Iliamna Lake 1,000 square miles). The majority of waterbodies in the analysis area are less than 2.5 acres in size (ABR 2011a). There is a great variety in depth and hydrologic regime, shoreline complexity, and connectivity to drainages, all of which influence functions and values.

In general, these habitats have been identified as having relatively high species richness for bird and mammal species of concern (ABR 2011a). Some species associated with these habitats include tundra swan, long-tailed duck, common loon, arctic tern, river otter, and moose. Iliamna Lake also provides habitat for harbor seals. The wood frog is the only amphibian that occurs within the analysis area, and is highly associated with deeper lakes and ponds (>5 feet). Some of the larger lakes provide spawning habitat for sockeye salmon. Water impounded by lakes and ponds is also important for maintaining summer flows and downstream aquatic habitat (R2 Resource Consultants et al. 2011).

Rivers/Streams – Functions and values of these habitats very greatly in the analysis area depending on hydrologic regimes, bed and bank structure, floodplain interactions and other fluvial processes. Rivers in the analysis area support five species of anadromous Pacific salmon, at least four species of non-anadromous salmonids, and numerous non-salmonid fishes (R2 Resource Consultants et al. 2011). These habitats also have high value for bird and mammal species of concern including harlequin duck, bald eagle, arctic tern, river otter, brown bear, and beaver.

3.22.5 Action Alternative 1 – Applicant's Proposed Alternative

WOUS, including wetlands, comprise 32 percent of the Alternative 1 analysis area. A description by major project components is provided below.

3.22.5.1 Mine Site

The mine site analysis area occurs within the upper watersheds of both the North Fork and South Fork Koktuli River, which flows into Bristol Bay via the Mulchatna and Nushagak rivers. It also includes a small portion of the Upper Talarik Creek watershed. The analysis area is composed of glaciated, volcanic-ash influenced, hills and valleys free of permafrost. Given the complexity of the mine site area, a figure depicting project-specific mapping is provided for reference (Figure 3.22-1).

Over half (59 percent) of the mine site analysis area is comprised of uplands and the remaining (41 percent) is comprised of WOUS (Figure 3.22-2). Wetlands represent 39 percent of the WOUS in the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub (PSS1) (30 percent). These occur predominantly on slopes with both mineral and organic soils. The water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Shrub wetlands also occur along the north and south forks of the Koktuli River and their floodplains, as well as several smaller streams. Although dominated by a deciduous shrub layer (willows, birches (*Betula* spp.), blueberries), they can also include small evergreen shrubs, with or without herbaceous wetland species. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats. Based on project vegetation mapping, these shrub wetlands comprise approximately 5 percent of the analysis area.

Herbaceous wetlands (PEM1) make up approximately 9 percent of the mine site analysis area. These occur in seasonally to semi-permanently flooded depressions and shorelines, and on wetter positions of slopes and flats. Some 30 species of wetland sedges were observed in the mine site area and provide the dominant cover. Some of these sedges, along with

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cottongrasses (*Eriophorum sp.*), form pronounced tussocks communities. Bluejoint reedgrass (*Calamagrostis canadensis*) and horsetails (*Equisetum sp.*) are other locally common herbaceous wetland species.

Aquatic bed wetlands occurred in depressions and ponded areas of slopes, accounting for less than 0.1 percent of the analysis area. Forested wetlands are absent at the mine site.

Waterbodies make up 2 percent of the mine site analysis area. Waterbodies include both perennial and intermittent stream channels, lakes, and ponds. Streams make up of the analysis area Most streams at the mine site are perennial. Lakes and ponds combined make up 1 percent of the analysis area.

Human-caused soil or vegetation disturbance in the mine site area was minimal and appears to be limited to four-wheeler trails or campsites (3PPI and HDR 2011). Drill pads and other temporary disturbance from project exploration were not observed to alter wetland status or characteristics (AECOM 2018h).

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Figure 3.22-1: Map of Wetlands and Waterbodies at the Mine Site

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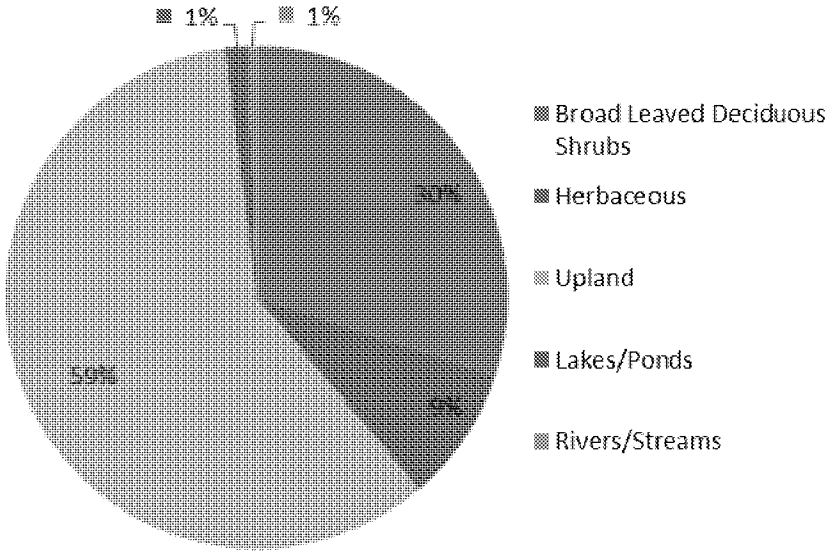
Figure 3.22-2: NWI Wetland and Waterbody Groups at the Mine Site Analysis Area



3.22.5.2 Transportation Corridor

The transportation corridor analysis area crosses the Bristol Bay and Cook Inlet drainage basins. The major Bristol Bay watersheds include Upper Talarik Creek (UTC), Newhalen River on the northern side of Iliamna Lake, Gibraltar Lake on the southern side, and Iliamna Lake watershed on both sides of the lake. The Amakdedori Creek-Kamishak Bay watershed is the only major watershed in Cook Inlet drainage basin crossed by the transportation corridor. The transportation corridor area is dominated by glaciated, volcanic ash-influenced, mountains, hills, plains and valleys that are free of permafrost.

Uplands dominate the transportation corridor analysis area (87 percent) and the remaining (13 percent) is comprised of WOUS. Wetlands comprise 10 percent of the WOUS in the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub (PSS1) (7 percent) (Figure 3.22-3). These occur predominantly on slopes with both mineral and organic soils. The water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Seasonally flooded shrub wetlands also occur along stream channels, primarily UTC and Newhalen River and their floodplains. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats.

Herbaceous wetlands (PEM1) comprise 2 percent of the analysis area. These occur in seasonally to semi-permanently flooded depressions and shorelines, and on wetter positions on slopes and flats. Some 30 species of wetland sedges were observed in the area and provide the dominant cover. Some of these sedges, along with cottongrasses, form pronounced tussocks communities. Bluejoint and horsetails are other locally common herbaceous wetland species.

Forested wetlands and aquatic bed wetlands each accounted for less than 0.1 percent of the analysis area.

Waterbodies account for 3 percent of the transportation corridor analysis area. Perennial and intermittent stream channels combined account for less than 1 percent of the area. Most of these streams are upper perennial (R3). Lakes and ponds combined account for approximately 3 percent of the area.

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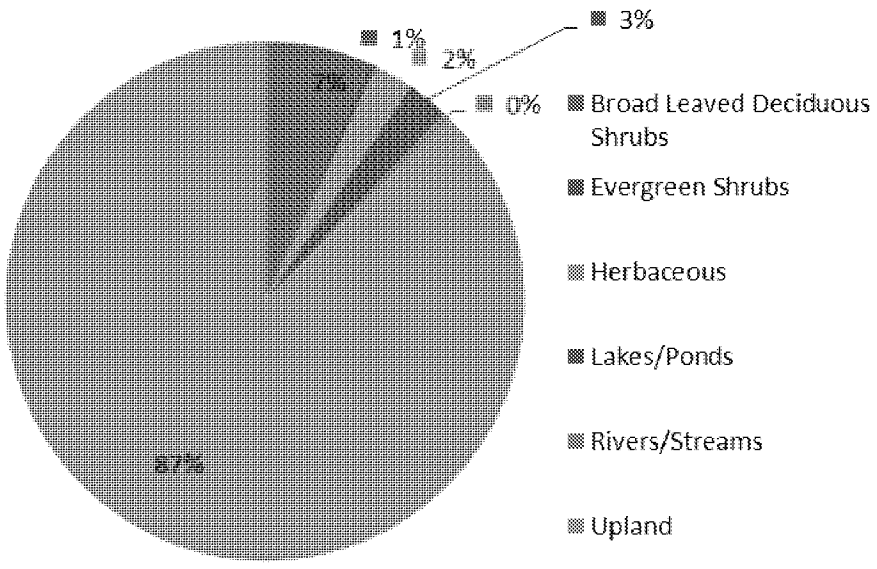
Human-caused soil or vegetation disturbance in the transportation corridor area was minimal and appeared to be limited to ATV trails, roads and building pads near the village of Iliamna, Kokhanok Airport, and the shore of Iliamna Lake.

Figure 3.22-3: NWI Wetland and Waterbody Groups at the Alternative 1 Transportation Corridor Analysis Area



Kokhanok East Ferry Terminal Variant

Project-specific wetland mapping is not available for this area, as described above. ALOS PALSAR data (Clewley et al. 2015) was used for the variant portion of the analysis area for this variant.

Within the area of the variant, the dominant NWI wetland type is herbaceous.

[Note: It is expected that project-specific mapping data would be acquired in field season 2019, and included in a final EIS].

3.22.5.3 Amakdedori Port

The Amakdedori port analysis area is located on the shore of Kamishak Bay, Cook Inlet, near Amakdedori Creek. Uplands account for over half (66 percent) of the analysis area with the remaining area (34 percent) composed of WOUS. Wetlands comprise 3 percent of the WOUS in the analysis area. NWI wetland types include herbaceous (PEM1) (1 percent) and broad leaved deciduous shrub (PSS1) (2 percent) (Figure 3.22-4). Both types occur almost exclusively on slopes.

Waterbodies comprise 34 percent of the WOUS in the analysis area. The majority of the area (23 percent) is marine subtidal waters (M1). Marine intertidal waters (M2) comprise 5 percent of the area. Most of these intertidal waters have cobble or gravel substrates that are exposed at low tide. Lower perennial streams (R2) comprise approximately 3 percent of the analysis area. Lakes or ponds are not present in the area.

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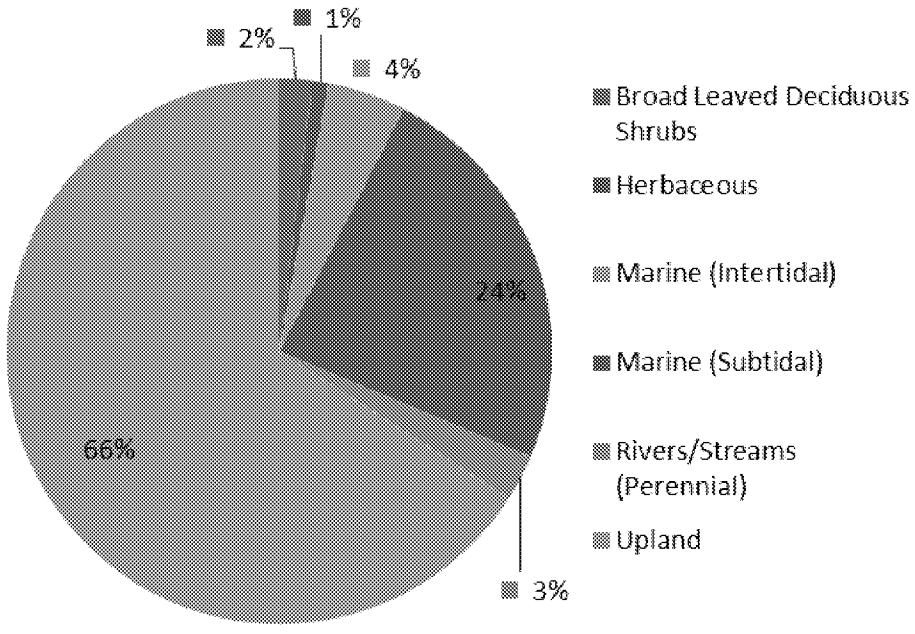
Figure 3.22-4: NWI Wetland and Waterbody Groups at the Alternative 1 Port Analysis Area



3.22.5.4 Natural Gas Pipeline Corridor

The natural gas pipeline corridor analysis area includes segments of the natural gas pipeline that do not follow the transportation corridor as described above. These include the segment from the compressor station near Anchor Point on the Kenai Peninsula, across Cook Inlet to Amakdedori port, and the segment across Iliamna Lake.

WOUS dominate the natural gas pipeline analysis area (92 percent) and the remaining area (8 percent) is composed of uplands. Wetlands account for 1 percent of the WOUS in the analysis area (Figure 3.22-5). NWI wetland types include deciduous shrubs (PSS1), evergreen shrubs (PSS3) and herbaceous (PEM) occurring in depressions and on slopes.

Waterbodies comprise 91 percent of the WOUS in the analysis area. The majority of the area (80 percent) is marine subtidal waters (M1) in Cook Inlet. Marine intertidal waters (M2) account for less than 1 percent of the area. The natural gas pipeline corridor across Cook Inlet is approximately 104 miles long. Cook Inlet is characterized by nearshore and deep water habitats with unconsolidated sediments on a smooth bottom and strong tidal currents. Numerous tributary basins with active glaciers contribute to high suspended sediment load in portions of Cook Inlet. The natural gas pipeline corridor area occurs predominantly in subtidal waters with an unconsolidated cobble-gravel bottom (M1UBL).

Iliamna Lake accounts for 11 percent of the WOUS in the analysis area. This is almost entirely deepwater habitat with an unconsolidated bottom (L1UBH). The natural gas pipeline corridor across the lake is approximately 18 miles long.

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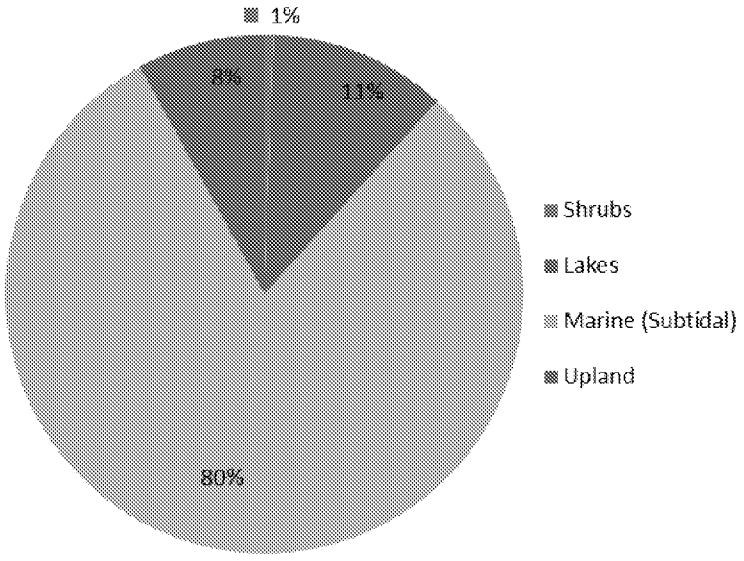
Figure 3.22-5: NWI Wetland and Waterbody Groups at the Alternative 1 Natural Gas Pipeline Analysis Area



3.22.6 Action Alternative 2 – North Road and Ferry

WOUS, including wetlands, comprise 33 percent of the Alternative 2 analysis area. A description by major project components is provided below.

3.22.6.1 Mine Site

The mine site analysis area is the same for all alternatives. See description above under Alternative 1.

3.22.6.2 Transportation Corridor

The analysis area for the Alternative 2 transportation corridor includes 31 miles of the mine access road (5 miles of this road falls in the mine site analysis area) from the mine site to the Eagle Bay ferry terminal, a 29-mile crossing of the lake to the Pile Bay ferry terminal, and the port access road (18 miles) between the lake and Diamond Point port on Cook Inlet. The transportation corridor analysis area includes segments of the natural gas pipeline that fall within the transportation corridor. Project-specific mapping is available for approximately 78 percent of the analysis area.

The transportation corridor analysis area is characterized by uplands (84 percent). Approximately 16 percent of the transportation corridor analysis area is WOUS. Wetlands comprise 11 percent of the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub (PSS1) (7 percent) (Figure 3.22-6). These occur predominantly on slopes with both mineral and organic soils. The water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Seasonally flooded shrub wetlands also occur along stream channels, primarily in the Iliamna River and Newhalen River watersheds. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats. Evergreen shrub wetlands (PSS4) account for less than 1 percent of the analysis area.

Herbaceous wetlands (PEM1) comprise 2 percent of the analysis area. These occur primarily on wetter positions on slopes, and in seasonally to semi-permanently flooded depressions in

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floodplains. Numerous species of wetland sedges were observed in the project area and provide the dominant cover. Some of these sedges, along with cottongrasses, form pronounced tussocks communities. Bluejoint and horsetails are other locally common herbaceous wetland species.

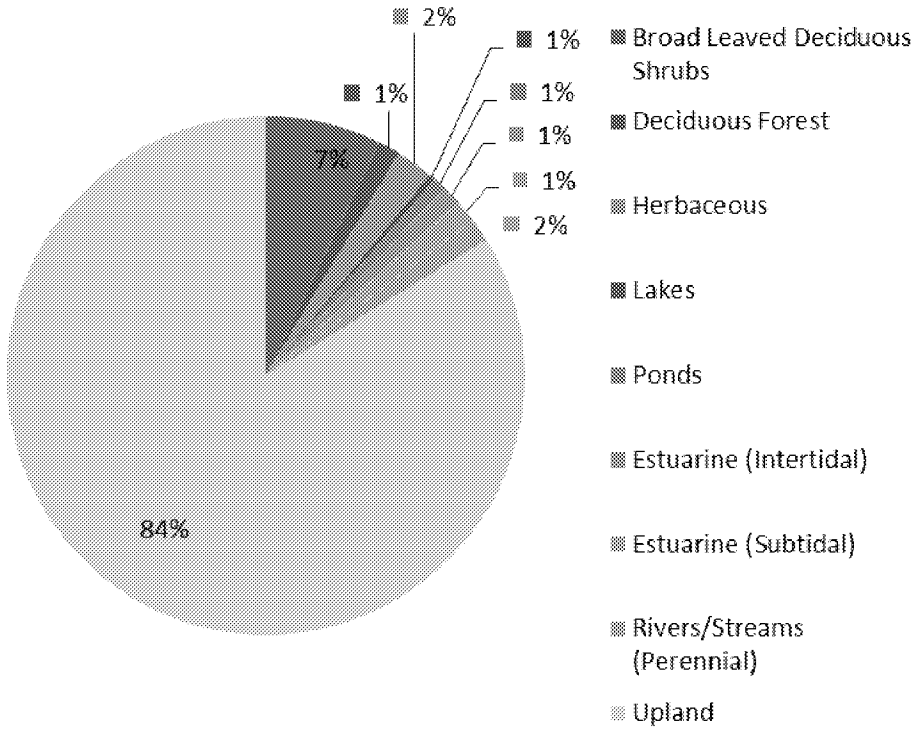
Deciduous forested wetlands (PFO1) comprise 1 percent of the analysis area. They occur equally on seasonally saturated slopes and in seasonally flooded areas along streams and adjacent floodplains. The tree canopies are generally open, and consist of alders, birches, willows, and cottonwoods, with or without black or white spruce.

Aquatic bed wetlands account for less than 0.1 percent of the analysis area.

Waterbodies account for 5 percent of the transportation corridor analysis area. Lakes and ponds combined account for approximately 1 percent of the area. Lakes are primarily deepwater habitats (L1UBH). Streams comprise approximately 1 percent of the area, and are primarily mapped as upper perennial systems (R3).

Estuarine waters are mapped in Iliamna and Cottonwood bays (Cook Inlet), and comprise approximately 3 percent of the analysis area. These include both subtidal (E1UBL) (2 percent) and intertidal (E2USN, E2USP) (1 percent) waters. Approximately 3 percent of the intertidal waters are vegetated wetlands (E2EM1P). These areas are dominated by mostly open stands of salt-tolerant herbs that are inundated by high tides at least a few times per month.

Figure 3.22-6: NWI Wetland and Waterbody Groups at the Alternative 2 Transportation Corridor Analysis Area



3.22.6.3 Diamond Point Port

The Diamond Point port analysis area is located along Iliamna and Cottonwood bays in Cook Inlet. Project-specific wetland mapping is not available for the majority of this area, as described above. NWI mapping was used for the entire analysis area for this component (NWI 2018).

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Approximately 65 percent of the analysis area is WOUS. Estuarine waters comprise approximately 65 percent of the analysis area. Subtidal waters (E1) represent most of this area (60 percent). Perennial rivers make up <1 percent of the analysis area.

[Note: It is expected that project-specific mapping data would be acquired in field season 2019, and included in a final EIS].

3.22.6.4 Natural Gas Pipeline Corridor

The analysis area for the Alternative 2 natural gas pipeline is comprised of segments of the natural gas pipeline that do not follow the transportation corridor: from the mine access road cut-off to Eagle Bay to the port access road cut-off to Pile Bay; from the Diamond Point port to Ursus Cove; and from Ursus Cove across the Cook Inlet to the compressor station near Anchor Point on the Kenai Peninsula. The analysis area also encompasses construction access roads to the natural gas pipeline corridor on the north side of Iliamna Lake. Segments of the natural gas pipeline adjacent to access roads are addressed under the transportation corridor analysis area. Project-specific mapping was available for approximately 53 percent of the onshore portion of this component.

Approximately 37 percent of the analysis area is a WOUS. Wetlands comprise 3 percent of the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub (PSS1) (2 percent) (Figure 3.22-7). These occur predominantly on slopes with both mineral and organic soils. The water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Seasonally flooded shrub wetlands also occur along stream channels and their floodplains. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats.

Herbaceous wetlands (PEM1) comprise 1 percent of the analysis area. These occur in seasonally to semi-permanently flooded depressions and shorelines, and on wetter positions on slopes and flats. Some 30 species of wetland sedges were observed in the area and provide the dominant cover. Some of these sedges, along with cottongrasses, form pronounced tussocks communities. Bluejoint and horsetails are other locally common herbaceous wetland species.

Deciduous forested wetlands accounted for less than 1 percent of the analysis area.

WOUS make up 34 percent of the analysis area. The majority of the area (27 percent) is marine subtidal waters (M1) in Cook Inlet. Marine intertidal waters (M2) make up <1 percent of the area. The natural gas pipeline corridor across Cook Inlet is approximately 104 miles long. Cook Inlet is characterized by nearshore and deep water habitats with unconsolidated sediments on a smooth bottom and strong tidal currents. Numerous tributary basins with active glaciers contribute to high suspended sediment load in portions of Cook Inlet. The natural gas pipeline corridor area occurs predominantly in subtidal waters with an unconsolidated cobble-gravel bottom (M1UBL).

The analysis area includes portions of Iliamna and Cottonwood bays which are mapped as estuarine habitats. This includes intertidal (4 percent) percent) and subtidal (1 percent) habitats. The intertidal zone is characterized as unconsolidated shore. It is more or less equivalent to mudflats, which are a special aquatic site according to the CWA.

Freshwater aquatic habitats in the analysis area include lakes and ponds (1 percent) and upper perennial rivers (1 percent).

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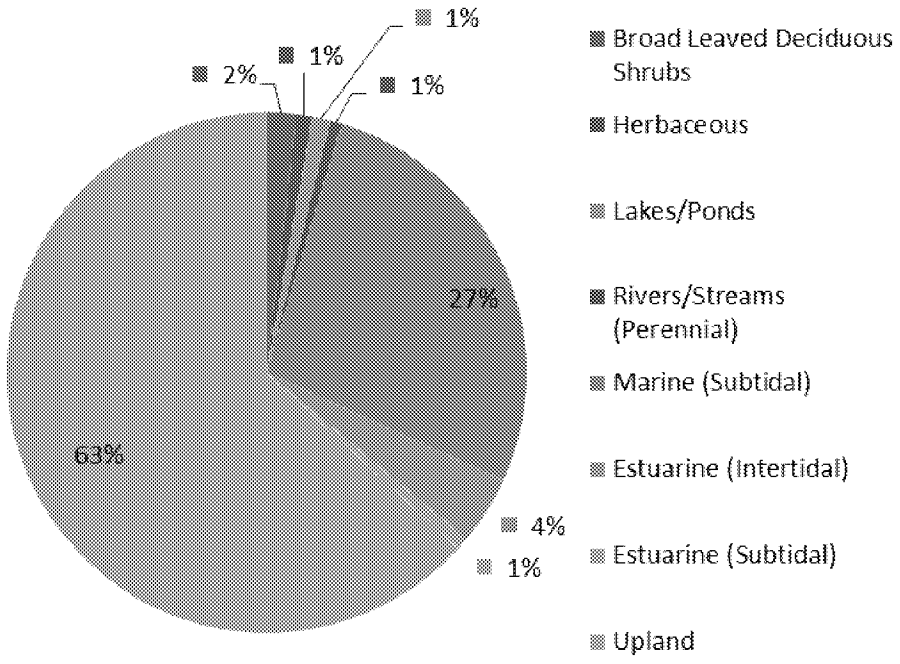
Figure 3.22-7: NWI Wetland and Waterbody Groups at the Alternative 2 Natural Gas Pipeline Corridor Analysis Area



3.22.7 Action Alternative 3 – North Road Only

WOUS, including wetlands, comprise 30 percent of the Alternative 3 analysis area. A description by major project components is provided below.

3.22.7.1 Mine Site

The mine site analysis area is the same for all alternatives. See description above under Alternative 1.

3.22.7.2 Transportation Corridor

The analysis area for the Alternative 3 transportation corridor includes 77 miles of the north access road (5 miles of this road falls in the mine site project area), from the mine site to the Diamond Point Port on Cook Inlet. The analysis area includes segments of the natural gas pipeline that fall within the transportation corridor. Project-specific mapping is available for approximately 92 percent of the analysis area.

The transportation corridor crosses numerous streams that feed into Iliamna Lake, which is connected to Bristol Bay via the Kvichak River. The major Bristol Bay watersheds include UTC, Newhalen River, Chekok Creek, Pile River, Iliamna River, and Iliamna Lake. The major watershed draining to Cook Inlet is the Chinitna River-Frontal Cook Inlet. The transportation corridor analysis area is dominated by glaciated, volcanic ash-influenced, mountains, hills, and valleys that are free of permafrost.

Uplands are common in the analysis area, comprising 87 percent of the area. Approximately 13 percent of the analysis area is WOUS. Wetlands comprise 9 percent of the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub wetlands (PSS1) (6 percent) (Figure 3.22-8), occurring predominantly on slopes, but also in river valleys and on flats. Bogs

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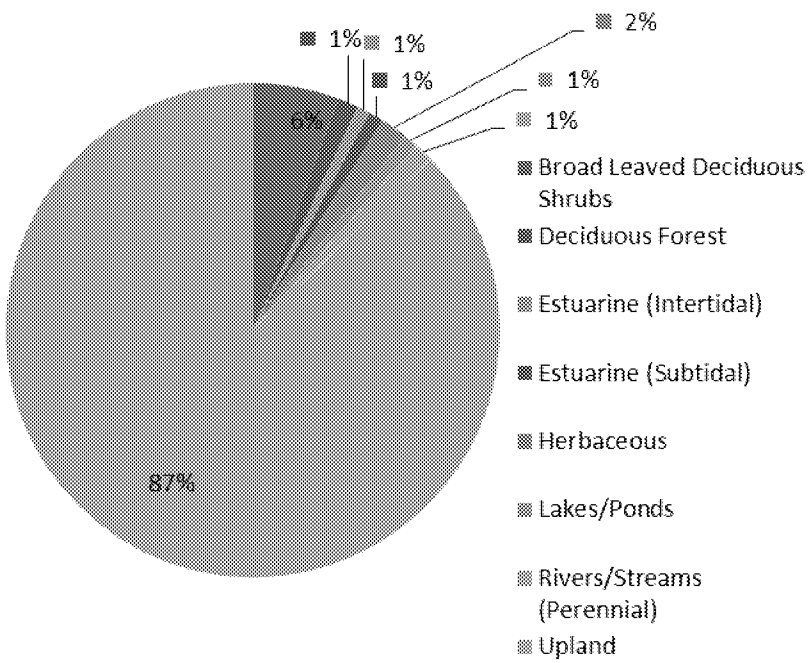
and fens co-dominated by ericaceous shrubs occur on slopes and organic flats. Evergreen shrub wetlands (PSS4) account for less than 1 percent of the analysis area.

Herbaceous wetlands (PEM1) account for 2 percent of the analysis area. These occur primarily on wetter positions on slopes, and in seasonally to semi-permanently flooded depressions in floodplains.

Deciduous forested wetlands (PFO1) comprise 1 percent of the analysis area. They occur equally on slope and riverine HGM classes. The riverine stands occur mainly in the Iliamna and Newhalen River valleys. The tree canopies are generally open, and consist of alders, birches, willows and cottonwoods, with or without black or white spruce.

Waterbodies account for approximately 4 percent of the analysis area. Lakes and ponds combined account for 1 percent of the area. Perennial streams comprise 1 percent of the area. Estuarine waters are included along Iliamna Bay; these include intertidal (1 percent) and subtidal (1 percent) waters. A very small proportion of the intertidal waters are vegetated (E2EM1P). These areas are dominated by mostly open stands of salt-tolerant herbs that are inundated by high tides at least a few times per month. Unvegetated portions of the intertidal waters are considered mudflats.

Figure 3.22-8: NWI Wetland and Waterbody Groups at the Alternative 3 Transportation Corridor Analysis Area



3.22.7.3 Diamond Point Port

The Diamond Point port analysis area is the same for alternatives 2 and 3. See description above under Alternative 2.

3.22.7.4 Natural Gas Pipeline Corridor

The analysis area for the Alternative 3 natural gas pipeline comprises segments of the natural gas pipeline that do not follow the access road corridors: from the Diamond Point port to Ursus Cove; and from Ursus Cove across the Cook Inlet to the compressor station near Anchor Point on the Kenai Peninsula. Segments of the natural gas pipeline adjacent to access roads are

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addressed under the transportation corridor analysis area. Project-specific mapping was available for less than 5 percent of the onshore portion of the analysis area, as described above, so a pie chart is not provided. NWI mapping was used (NWI 2018).

Approximately 62 percent of the analysis area is WOUS. Wetlands comprise 1 percent of the analysis area. The dominant NWI wetland type is broad leaved deciduous shrub wetlands (PSS1) (1 percent). Evergreen shrub wetlands (PSS3) and herbaceous wetlands (PEM1) each account for less than 1 percent of the analysis area.

Estuarine waters are mapped in Cottonwood Bay. These include intertidal (8 percent) and subtidal (1 percent) waters. Marine subtidal waters (51 percent) account for almost all of the Cook Inlet crossing. Marine intertidal is less than 1 percent. Ponds and perennial streams each account for less than 1 percent of the analysis area.

[Note: It is expected that project-specific mapping data would be acquired in field season 2019, and included in a final EIS].

3.22.8 Climate Change

Climate change is currently affecting vegetation and wetlands in the EIS analysis area. Current and future effects on wetlands are tied to changes in physical resources and vegetation. Changes in wetland trends observed in the Bristol Bay region due to warmer and wetter conditions include rapid tree growth and expansion and new coastal wetlands. Over the past few decades, the tundra and shrub environment in the vicinity of the project area has been replaced by alder and willow trees.

Climate models predict that the Bristol Bay region will experience rapid ecological change during the next 100 years. Computer models for climate change consider future "cliomes," areas where temperature and precipitation reflect certain kinds of wildlife and vegetation. Bristol Bay's current cliome "boreal forest with coastal influence and intermixed grass and tundra," is expected to shift north and largely disappear by 2090 (ANTHC 2018). It may be replaced by "prairie and grasslands," a cliome that does not currently occur in Alaska, and is characteristic of southeastern Alberta in Canada (SNAP and EWHALE 2012).

Impacts associated with climate change would be similar for all three action alternatives. Potential effects of climate change on wetlands in the EIS analysis area include changes in wetland quality or quantity. With predicted climate change effects discussed above, vegetation types or wetlands may not have the same composition, structure, or function compared to current conditions. An overall warming/drying trend would tend to convert some wetlands to uplands and tend to increase the cover of shrubs and trees in previously open areas. Higher transpiration, less available water, and a lower albedo caused by woody vegetation increase contributes to a drier landscape with fewer or smaller waterbodies compared to current conditions. Large scale hydrological changes may occur throughout the landscape.

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4.22 WETLANDS/SPECIAL AQUATIC SITES

The project has the potential to result in the following direct and indirect impacts to wetlands/ special aquatic sites and waterbodies:

- Direct impacts from:
  - Clearing and removal of wetland vegetation
  - Excavation or removal of soil and vegetation
  - Placement of fill materials
  - Dredging and discharges of dredged materials
  - Alteration of stream channels
- Indirect impacts from:
  - Disruption of wetland hydrology
  - Conversion of wetland type
  - Water quality and quantity changes
  - Erosion and sedimentation
  - Fugitive dust

Impacts to Waters of the United States (WOUS) are assessed here from a NEPA perspective, which may differ from how they are treated under the Clean Water Act (CWA) Section 404(b)(1) guidelines. The USACE Section 404(b)(1) Analysis, included in Appendix F, accounts for impacts from the CWA perspective.

The magnitude of impacts to wetlands and waterbodies was assessed relative to their perceived importance and extent within a watershed. The disturbance area thresholds used here are similar to those used for other recent Environmental Impact Statements (EISs) in Alaska (Donlin Gold Project EIS 2018 [USACE 2018], Point Thomson Project EIS 2012 [USACE 2012]). Impacts to high value wetlands, such as riverine wetlands, were deemed to be of greater magnitude even when a relatively small proportion (greater than 5 percent) of these wetlands would be disturbed within a particular watershed. Impacts to less than 1 percent of high-value wetlands would be considered minimal magnitude, and impacts to 1 to 5 percent would be considered intermediate. Conversely, a higher proportion (greater than 25 percent) of non-high value wetlands, such as most deciduous shrub wetlands, would need to be disturbed within a watershed to be considered a greater magnitude impact. Impacts to these wetlands are considered to be of lesser magnitude when they represent less than 5 percent of the watershed, and of an intermediate magnitude when they represent 5 to 25 percent of the watershed.

Impacts were also assessed in terms of duration, as some wetlands or waterbodies would be partially or fully reclaimed during or after the construction phase and others would not. The duration of impacts is considered temporary when wetland or aquatic functions would be reduced during the construction phase only and the area would be restored to pre-construction contours. The total construction phase is expected to last for 4 years, but individual temporary impacts are likely to last for only one or two growing seasons. Reduction or elimination of wetland or aquatic functions occurring after the construction phase, through the operations and into the closure and post-closure phases, would be considered permanent.

[Note: It is expected that a detailed reclamation and closure plan would be developed for the project after the publication of the draft EIS with details on reclamation location, type, and success metrics; at this time the duration (temporary or permanent) of disturbance would be further assessed].

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The extent of impacts would be limited to areas of the project area where wetlands or waterbodies would be removed or disturbed, or would affect wetlands outside of the project area in one or more HUC 10 watersheds (Figure 4.22-1).

To assess the relative magnitude and extent of impacts within an ecological context, project impacts were compared to the relative proportion of common wetland types in each watershed. US Geological Survey Hydrologic Unit Code Tenth Level (HUC 10) watersheds were used for this purpose. Impacts were assessed from the perspective of regional wetland types and extents.

The EIS analysis area collectively includes areas for all four components (mine site, transportation corridor, ports, and natural gas pipeline). The analysis area for the mine site includes a 330-foot buffer around the direct disturbance footprint and potential drawdown zone from the open pit. The analysis area for the transportation corridor and ports includes a 330-foot buffer around the direct disturbance footprint. The analysis area for the stand-alone sections of the natural gas pipeline is a 30-foot corridor through Cook Inlet and Iliamna Lake, and a 100-foot corridor through overland areas. The analysis area includes potential direct and indirect impacts from construction and operations. See Figure 3.26-1 in Section 3.26, Vegetation, for a general overview of the analysis area for vegetation, which is similar to that for wetlands/special aquatic sites.

Project wetland mapping areas only cover a small proportion of each watershed. The National Wetland Inventory (NWI) mapping covers only about one-fourth of some of the watersheds, and was therefore not sufficient for this effort. The uniform vegetation mapping provided by the Alaska Center for Conservation Science (ACCS) provided the best available spatial data for estimating wetland coverage for the HUC 10 watersheds. Vegetation class descriptions from the Vegetation Map and Classification guidebooks (Boggs et al. 2016) were reviewed. Vegetation classes mapped in the watersheds were assigned to one of the following types in a crosswalk for comparison with wetlands mapped for the project: upland, forested wetland, shrub wetland, herbaceous wetland, aquatic bed wetland, or waterbody.

The descriptions of herbaceous vegetation classes included wetland status; therefore, these vegetation classes were directly crosswalked to herbaceous wetland or upland. The woody vegetation classes lacked wetland status, so it was not possible to directly crosswalk types. Forest and shrub vegetation classes were assigned to wetland or upland based on a review of environmental site characteristics described for each map unit. Facultative tree and shrub species were common to several vegetation types, meaning that these species/communities may occur in both wetlands and uplands. The dwarf shrub vegetation class, for instance, can occur on both wet and dry sites, but is not differentiated in the mapping. Because of this, the acreages and percentages of wetland types for each watershed should be considered an approximation for comparison purposes only.

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Figure 4.22-1: HUC 10 Watersheds

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4.22.1 No Action Alternative

Under the No Action Alternative, the development of the project as proposed would not be authorized. Any existing or new land use activities at the mine site, such as exploration or cessation of field activities, would occur in accordance with the requirements of the State of Alaska as the landowner. Such activities may result in a reversion of use (i.e., cessation of activity) or continuation of the existing use (i.e., exploration). Land ownership and management of the mine site, Amakdedori port, transportation corridor, and natural gas pipeline corridor would remain the same. Because the project would not be implemented, the No Action Alternative would have no additional impacts on wetlands/special aquatic sites beyond activities that would be permitted.

4.22.2 Action Alternative 1 – Applicant's Proposed Alternative

Alternative 1 would permanently discharge dredged or fill material into 3,562 acres of WOUS and temporarily discharge dredged or fill material into 515 acres of WOUS. An additional 1,837 acres of WOUS would be indirectly impacted by fugitive dust, and 448 acres of WOUS would be indirectly impacted by dewatering from the mine pit. The discharge would permanently impact 3,445 acres of wetlands, 66 acres of open waters, and 50 acres of streams along 32.5 miles of stream channels. The discharge would temporarily impact 51 acres of wetlands, 462 acres of open waters, and 3 acres of streams along 2.7 miles of stream channels. Figures showing impacts for all project components are in Appendix K4.22.

Navigable waters of the US (NWUS) permanently affected by the Alternative 1 include Iliamna Lake and Cook Inlet. Alternative 1 includes a port with a causeway and wharf, which combined is 1,900 feet long by a maximum of 500 feet wide, below the high tide line (HTL) of Cook Inlet. The project would also include two lighted navigation buoys, and two 1,700 by 2,300 feet mooring spreads in approximately 80 feet of water, each consisting of 10 anchors and six mooring buoys.

The south ferry terminal on Iliamna Lake includes a landing ramp that is 155 feet long with a maximum of 115 feet in width and 10 feet thick below the ordinary high water mark (OHWM) of the lake. The north ferry terminal would be 105 feet long by a maximum of 85 feet wide and 10 feet thick below the OHWM of Iliamna Lake. The project would also include two mooring buoys attached to anchors at both the north and south ferry terminals; and a 200 feet wide by 160 feet long and up to 2 feet thick wide ferry construction ramp with five launching rails, each 15 inches high and extending 36 feet waterward of the OHWM, and to a water depth of up to 35 feet in Iliamna Lake. A total of approximately 13 acres of NWUS would be permanently filled for the port and ferry terminals.

Special aquatic sites that would be permanently or temporarily impacted include mudflats, vegetated shallows, and riffle and pool complexes. These habitats were not specifically mapped during the environmental baseline study program. Mudflats may occur in the impacted Marine Intertidal waters (1 acre permanent and 1 acre temporary impacts). Vegetated shallows are similar to aquatic bed wetlands (less than 1 acre permanent and temporary impacts). Eelgrass beds are not known to occur in the impact area. Riffle and pool complexes occur in an undetermined portion of the upper perennial and intermittent riverine channels. Permanent and temporary impacts to these channels total 44 acres and 2 acres, respectively.

[Note: A wetlands mapbook of the project impacts, incorporating any wetlands data updates that are received prior to production of the draft EIS, will be included as technical appendix K4.22 to the draft EIS. Stream miles for this version were calculated using NHD data for perennial streams, and project mapping for intermittent streams. This will be revised for the draft EIS to incorporate project mapping for perennial streams].

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4.22.2.1 Mine Site

Most project-related direct impacts to WOUS would be initiated during the construction phase and would result in temporary or permanent loss of wetlands or alteration in wetland functions. Facilities would be sited to avoid and minimize wetland impacts where possible, and allow efficient reclamation of disturbed areas.

Primary direct construction-related impacts to wetlands and waterbodies would include:

- Clearing and removal of wetland vegetation
- Placement of fill in wetlands and waterbodies
- Excavation that eliminates wetlands and waterbodies
- Altering hydrology of wetlands and waterbodies
- Compaction, rutting, and mixing of wetland soils

Excavation of the open pit, quarries, and sediment ponds and filling in the tailings storage facility (TSF) and stockpiles would occur throughout the active life of the mine. The maximum extents of all surface disturbance impacts were used to evaluate direct wetlands impacts for the mine site. All impacts in the direct disturbance footprint were considered permanent, although some wetland reclamation would begin shortly after the start of construction and would continue throughout operations and closure.

A total of 3,458 acres of WOUS would be directly affected by the proposed mine site facilities (Table 4.22-1) (Figure 4.22-2). The maximum extents of all surface disturbance impacts were used to evaluate direct wetlands impacts for the mine site. The greatest impacts would occur from the bulk TSF cell (1,562 acres), Area E embankment, tailings and waste rock storage facility (560 acres), the TSF and associated facilities (363 acres), and the open pit and associated facilities (346 acres).

In the mine site, almost all of the WOUS direct impacts (3,450 acres) would occur in one of the HUC 10 watersheds, the Headwaters Koktuli River watershed. Only 9 acres of impacts would occur in the Upper Talarik Creek (UTC) Watershed (Table 4.22-1). Approximately 3,364 acres of wetlands would be directly impacted, consisting primarily of broad leaved deciduous shrub wetlands (2,671 acres) and herbaceous wetlands (693 acres). These occur predominantly on slopes. A total of 94 acres of waterbodies would be impacted, primarily ponds (47 acres) and perennial streams (47 acres). A total of 24.1 miles of perennial stream channel would be directly impacted.

Excavation, filling, and clearing of wetlands would alter or remove their capacity to provide hydrologic, biogeochemical, and biological functions. Construction-related disturbances may alter wetland modification of groundwater functions (recharge and discharge), and would decrease stormwater and floodwater storage and modification of streamflow functions by decreasing the wetlands' potential to dissipate energy and reduce peak flows. These altered hydrologic functions would extend to the streams connected to or downstream from the affected wetlands. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Construction on or through wetlands would decrease or remove the wetlands' potential to improve water quality by preventing erosion and settling sediments. Sediment barriers and erosion control planning would mitigate the loss of this wetland function. Vegetation clearing with no soil disturbance reduces wetlands' ability to modify water quality and contribution to the abundance and diversity of wetland fauna. It also may reduce the export of detritus and contribution to the abundance and diversity of wetland flora functions, depending on the extent of vegetation being cleared.

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Figure 4.22-2: Mine Site Impacts

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Construction on or through wetlands would result in habitat loss, fragmentation, and degradation. Temporary and permanent habitat modifications would occur as existing vegetation is disturbed or removed and replaced with mine site facilities and infrastructure. See Section 4.23, Wildlife Values, Section 4.24, Fish Values, and Section 4.26, Vegetation, for discussion of habitat-related impacts.

The headwaters of the Koktuli River watershed are approximately 171,000 acres. Based on vegetation mapping, the headwaters are estimated to contain approximately 56,000 acres of WOUS, which is roughly 33 percent of the watershed. Approximately 45,000 acres (26 percent of the watershed) are shrub wetlands, and 9,000 acres (5 percent) are herbaceous wetlands. Forested wetlands (39 acres) and aquatic bed wetlands (132 acres) each cover less than 1 percent of the watershed. Mine site activities would directly affect 2,665 acres of shrub wetlands and 691 acres of herbaceous wetlands within the headwaters Koktuli River watershed (Table 4.22-1). This represents approximately 6 percent and 8 percent, respectively, of shrub and herbaceous wetlands in the watershed. No forested wetlands and less than 0.1 acre of aquatic bed wetlands would be affected.

Riverine wetlands are considered high-value in the watershed based on their connections to important fish and wildlife species. A total of 236 acres of riverine HGM class wetlands in the Koktuli River watershed would be directly affected by activities at the mine site. The extent of riverine wetlands in the watershed is not known. They account for approximately 3 percent of the mine site analysis area. Using this percentage for the entire watershed, there would be roughly 5,000 acres of riverine wetlands. Therefore, the extent of impacts to riverine wetlands from mine site activities would represent approximately 5 percent of all riverine wetlands in the watershed. Less than 1 acre of riverine HGM class wetlands in the UTC watershed would be affected by activities at the mine site.

Based on vegetation and wetland mapping for the project, 378 acres of bog vegetation would be directly affected by activities at the mine site in the headwaters Koktuli River watershed. The extent of bog vegetation in the watershed is not known. Approximately 485 acres of bog vegetation was mapped in the analysis area for this watershed, which represents 5 percent of the analysis area. Assuming 5 percent of the entire watershed has bog vegetation, this would be roughly 8,500 acres. Therefore, the 378 acres of impacts would represent roughly 4 percent of all bog vegetation in the watershed.

Table 4.22-1: Alternative 1 Mine Site WOUS Direct Impacts (Acres)

NWI Group	Watershed		
	Headwaters Koktuli River	Upper Talarik Creek	Combined Watershed Area
Deciduous Shrub Wetlands	2,665	6	2,671
Herbaceous Wetlands	691	2	693
Aquatic Bed Wetlands	<0.1	0	<0.1
Ponds	47	<1	47
Lakes	<0.1	0	<0.1
Perennial Streams	44	<0.1	44
Intermittent Streams	3	<0.1	3
Uplands	4,617	11	4,627
Total Area	8,067	19	8,086
WOUS Totals	3,450	9	3,458

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Table 4.22-1: Alternative 1 Mine Site WOUS Direct Impacts (Acres)

NWI Group	Watershed		
	Headwaters Koktuli River	Upper Talarik Creek	Combined Watershed Area
WOUS (%)	43%	42%	43%
Wetlands Totals	3,356	8	3,364
Wetlands (%)	42%	42%	42%
Waterbodies Totals	94	<1	94
Waterbodies (%)	1%	<1%	1%
Perennial Streams (Miles)	-	-	24.1
Intermittent Streams (Miles)	-	-	3.8

Summer-Only Ferry Operations Variant

This variant would add to the mine site direct footprint for a container yard and sewage storage tank. The increased footprint would directly impact 6 acres of deciduous shrub wetlands, and 1 acre of herbaceous wetlands.

Reclamation

Pebble Limited Partnership (PLP) has incorporated requirements for mine closure and long-term water management into the design of the project. During the permitting phase, a reclamation plan would be developed that would include reclamation of wetlands where feasible. The discussion below is based on generally accepted wetland reclamation practices for mine sites in Alaska. Additionally, PLP has provided some conceptual-level information on reclamation in its application.

PLP has identified some of the design elements that would facilitate successful reclamation during and after the closure phase (PLP 2017, PLP 2018-RFI 024):

- Quarried and waste rock would be geochemically tested prior to being used in construction to avoid the potential for contaminated drainage during operations and post-closure.
- Topsoil and overburden would be salvaged during construction for use as growth medium during reclamation.
- TSF embankment slopes would be designed to provide long-term stability and facilitate the placement of growth medium.
- The overall project footprint would be minimized to facilitate physical closure and post-closure water management.

Material sites constructed in valley bottoms or lowland sites are candidates to be reclaimed to create new ponds with emergent wetlands where sufficient water quality and surface hydrology are available. Final contouring around created ponds could focus on providing habitat at the water's edge and a complex interspersion between wetland and upland vegetation. Moderate to steeply sloping wetland or upland mosaics with wetland inclusions would be less feasible to restore to wetlands because of the marginal hydrology, and some fills may not be removed in these areas. Marginal wetland hydrology would be expected in areas where excavations and road cuts through colluvium and rock have reduced overland sheet flow.

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Shrub wetland successional processes, generally initiated by natural disturbances such as wildland fires, gradually reestablish typical vegetation and eventually hydrologic characteristics. When construction disturbs wetlands, successional processes may be prolonged or may not occur. Construction disturbances differ from natural disturbances in that the organic mat and organic soil horizons are often removed completely, which removes seedbeds, and reduces surface and subsurface water storage capacity. The timing and extent of recovery likely depend on the intensity, extent, and duration of the disturbance. The time required for wetlands to return to pre-disturbance soil moisture and original vegetation cover has not been well documented in western Alaska.

Development of self-sustaining wetland plant communities on previously disturbed Alaska wetlands may occur in 10 to 30 year duration, but may be slowed in gravelly or sandy soils, or during years with failed seedling establishment or seed production. Revegetation success may be enhanced by conducting careful planning and management; minimizing disturbance; segregating and protecting materials to be used during reclamation; using the appropriate seed mixture and seeding rates; and monitoring for erosion and revegetation success.

Reclamation of wetland conditions may be complicated in areas where less permeable layers have been breached or removed. This would alter surface hydrology, causing previous wetland areas to drain. In these situations, restored wetlands are likely to differ in type and functional capacity from the original wetlands for decades to centuries, if reestablishment is possible.

Surface water resources available to wetlands would continue to be altered in distribution and abundance, with a return of an undetermined percentage of pre-development streamflows at the downstream end of the mine development (see Section 4.16, Surface Water Hydrology). These changes in surface water distribution and abundance could cause some wetlands to dry up, while others would be inundated or become wetter.

The pit lake would continue to fill for a period of several decades post-closure. Once the water level reaches elevation 890 feet, water would be pumped from the pit. This elevation is at least 50 feet below the elevation at which groundwater flow would be directed outward from the open pit. As a result, a new equilibrium groundwater level would become established around the pit. Wetlands and streams above the pit lake level would potentially lose groundwater to the cone of depression created by the pit lake. This may result in long-term wetland and streamflow effects. Groundwater modeling would be used to assess potential wetland and stream dewatering, and to identify those wetlands and functions that are likely to be affected (see Section 4.17, Groundwater Hydrology, for details).

Summary of Direct Impacts at the Mine Site

The mine site will directly and permanently impact 3,458 acres of WOUS during construction and operations. During closure, WOUS would be reestablished wherever practicable. Direct and indirect effects would occur in two HUC 10 watersheds. The majority of the impacts (3,450 acres) would be in the Headwaters Koktuli River watershed. Most impacts would be to regionally common shrub and herbaceous wetland types. The direct impacts represent roughly 6 percent of shrub wetlands and 8 percent of herbaceous wetlands in the watershed. No forested wetlands and less than 0.1 acre of aquatic bed wetlands would be impacted. Approximately 236 acres of riverine wetlands, identified as high-quality wetlands, would be directly impacted by the mine site. This represents roughly 5 percent of the riverine wetlands within the watershed. Approximately 378 acres of bog vegetation would be directly impacted, which represents roughly 4 percent of bog vegetation in the watershed.

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Fugitive Dust

Fugitive dust emissions are a byproduct of construction and operations activities. Dust would be caused by vehicle travel on the mine roads and other unpaved surfaces in the mine, as well as by mining activities at the pit. This dust has the potential to collect on vegetation in the vicinity of the dust sources. Windblown dust could affect wetland vegetation well beyond the source, but the effect diminishes with distance and is influenced by prevailing winds and topography. Dust deposition impacts wetlands primarily by reducing vegetation productivity and altering species composition. Fugitive dust impacts to vegetation are described in Section 4.26, Vegetation; impacts to soils are described in Section 4.14, Soils.

A dust dispersion model was developed to predict air quality impacts of particulate matter (PM_{10}) from mine site operations and construction activities (PLP, October 2018). Prevailing winds are to the northwest and southeast at the mine site. Maximum annual modeled PM_{10} deposition was 1.5 grams/m^2/year due to construction. Deposition values as high as 30 g/m^2/year were recorded near the mine site ambient air quality boundary (see Figure 4.14 in Section 4.14, Soils).

Research on dust emissions and its impact on vegetation in Alaska has shown that most dust generated from mining operations and roads is deposited within 330 feet (Petavratzi et al. 2005; Walker and Everett 1987). Therefore, a potential indirect impact area was calculated using a 330-foot buffer on all direct disturbance footprints. This follows methods used by recent EISs in Alaska (Donlin Gold 2018 [USACE 2018]; Point Thompson 2012 [USACE 2012]). A total of 957 acres of wetlands and waterbodies are anticipated to be affected by dust deposition at the mine site during the construction and operations phases. The dust would primarily affect deciduous shrub (641 acres) and herbaceous (258 acres) wetlands. The greatest effects on wetland functions are expected to occur within 33 feet of the disturbance. Note that there is overlap between the WOUS indirectly impacted by dust, and the WOUS affected by groundwater drawdown from the open pit.

A fugitive dust control plan would be developed for the project and the project would use Best Available Control Technology (BACT) and Best Management Practices (BMPs) for fugitive dust management (see Chapter 5, Mitigation).

Dewatering

Hydrology of wetlands and waterbodies at the mine site would be altered in the drawdown cone associated with dewatering of the open pit during mining operations. To predict the area of wetlands and waterbodies potentially affected by lowering of the groundwater, a model was developed that incorporates groundwater flow, wetland HGM class, and surficial geology permeability (PLP 2018-RFI 009a). Impacts were calculated for the end of mine phase, when drawdown is at its maximum extent, and for the post-closure phase, when the pit lake has reached its long-term, maximum level. Impacts to wetlands were characterized in the model as either high, meaning wetland hydrology would be lost; or moderate, meaning hydrology would be altered, but not enough to eliminate wetland functions.

At the end of operations, approximately 154 acres of wetlands and waterbodies would be highly impacted by the groundwater drawdown at the open pit; this includes 55 acres of shrub wetlands, 34 acres of herbaceous wetlands, and 65 acres of lakes and ponds. Another 294 acres would be moderately impacted; this includes 187 acres of shrub wetlands, 65 acres of herbaceous wetlands, and 41 acres of ponds.

At the post-closure phase, approximately 48 acres of the highly impacted wetlands would be expected to recover wetland hydrology. The remaining 106 acres of highly impacted wetlands

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are not expected to recover. Likewise, approximately 121 acres of the moderately impacted wetlands would be expected to recover, leaving 173 acres of wetlands that would remain moderately impaired.

4.22.2.2 Transportation Corridor

Construction of the transportation corridor from Amakdedori port to the mine site would directly and permanently affect 88 acres of WOUS (Table 4.22-2), including 76 acres of wetlands and 11 acres of waterbodies. The south (port) access road between the port and the south ferry terminal at Iliamna Lake would affect 44 acres of WOUS. The mine access road from the north ferry terminal to the mine site would affect 39 acres of WOUS. The remaining 5 acres of impacts would be from the Iliamna and Kokhanok Airport spur roads, material sites, and ferry landings.

Impacts would be permanent in duration since the road would remain to facilitate long-term post-closure water treatment and monitoring. Previous disturbance to wetlands in this area is minimal. The corridor has been sited to avoid and minimize wetland impacts and allow for efficient reclamation of disturbed areas.

A total of 4.6 miles of streams would be directly affected by construction, including 0.6 miles of perennial streams and 4.0 miles of intermittent streams (Table 4.22-2). The larger streams with a width at ordinary high water (OHW) of 16 feet or greater would be bridged. Site-specific designs have been developed for bridges. Smaller stream crossings would use a series of standardized, conceptual culvert design categories based on stream width and fish presence. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Within the transportation corridor, the natural gas pipeline would follow the access road and is accounted for in the direct impacts for the access roads; except for the Iliamna Lake crossing where it would be would be installed in a trench out into waters that are deep enough to avoid navigation hazards and then laid on the lake bottom, and anchored or supported as required.

Construction impacts to wetlands outside of the permanent road footprint would be avoided or minimized where possible. However, to account for temporary construction-related impacts, a 30-foot zone on either side of the permanent road footprint was assumed to be temporarily impacted. These impacts are anticipated to be restored within 2 years of construction (PLP 2018-RFI082). Temporary impacts would affect approximately 65 acres of WOUS within the transportation corridor, including 51 acres of wetlands, and 14 acres of waterbodies.

Impacts associated with the natural gas pipeline not adjacent to a road footprint are discussed below.

Activities in the transportation corridor would permanently affect WOUS in five HUC 10 watersheds. The highest number of acres impacted (39 acres) would occur in the UTC watershed (Table 4.22-2). Direct impacts in this watershed would affect primarily deciduous shrub wetlands (33 acres), primarily on slopes.

The UTC watershed is approximately 88,000 acres. Based on vegetation mapping, it is estimated to contain approximately 34,000 acres of WOUS, which is roughly 39 percent of the watershed. Approximately 31,000 acres (35 percent of the watershed), are shrub wetlands and 1,200 acres (1 percent) are herbaceous wetlands. Forested wetlands (636 acres) and aquatic bed wetlands (8 acres) each cover less than one percent. Activities in the transportation corridor and in a small portion of the mine site would affect 39 acres of shrub wetlands and 6 acres of herbaceous wetlands in the UTC watershed. This represents less than 1 percent of all shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be affected.

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Riverine wetlands are considered high value in the watersheds based on their connections to important fish and wildlife species. A total of 6 acres of riverine HGM class wetlands in the Koktuli River watershed would be directly affected by activities in the transportation corridor and a small part of the mine site. The extent of riverine wetlands in the watershed is not known. They account for approximately 2 percent of the transportation corridor analysis area. Using this percentage for the entire watershed, there would be roughly 1,760 acres of riverine wetlands. Therefore, the area of impacts to riverine wetlands from transportation corridor and mine site activities would represent less than 1 percent of all riverine wetlands in the watershed.

Based on vegetation and wetland mapping for the project, 8 acres of bog vegetation would be affected by activities in the transportation corridor and the small portion of the mine site within the UTC watershed. The extent of bog vegetation in the watershed is not known. Approximately 61 acres of bog vegetation were mapped in the analysis area for this watershed, which represented 2 percent of the analysis area. Assuming 2 percent of the entire watershed has bog vegetation, this would be roughly 1,760 acres. Therefore, the 8 acres of impacts would represent less than 1 percent of all bog vegetation in the watershed.

Wetland and waterbody impacts in the other four watersheds would be relatively low from a watershed perspective. The Iliamna Lake watershed, excluding the lake itself, has an estimated 180,000 acres of wetlands and waterbodies (33 percent of the watershed). The project would result in direct impacts on 11 acres of shrub wetlands and 8 acres of herbaceous wetlands (Table 4.22-2). The Newhalen River watershed has an estimated 35,000 acres of wetlands and waterbodies (29 percent of the watershed); 1 acre of shrub wetlands would be directly affected. The Gibraltar Lake watershed has an estimated 34,000 acres of wetlands and waterbodies (41 percent of the watershed); 5 acres of shrub wetlands and 3 acres of herbaceous wetlands would be directly affected. The Amakdedori Creek-Frontal Kamishak Bay watershed has an estimated 77,000 acres of wetlands and waterbodies (44 percent of the watershed); 6 acres of shrub wetlands and 5 acres of herbaceous wetlands would be directly affected (Table 4.22-2). The transportation corridor does enter the Paint River watershed for a very short distance, but no wetland or waterbody impacts are anticipated.

Kokhanok East Ferry Terminal Variant

This variant would replace a portion of the regular Alternative 1 transportation corridor. The net change in direct permanent impacts would be an additional 6 acres of shrub wetlands and 42 acres of herbaceous wetlands. Two acres of lakes and ponds would not be impacted. The net change in temporary impacts would be an additional 3 acres of shrub wetlands and 16 acres of herbaceous wetlands. The net change in indirect impacts from dust would be an additional 5 acres of shrub wetlands and 145 acres of herbaceous wetlands. There would be 79 acres of fewer dust impacts to lakes and ponds.

Reclamation

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. Once no longer needed, the road system would be reclaimed. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation. The Iliamna Lake ferry facilities would be removed during closure. Once energy is no longer required at mine site, the pipeline would be pigged and cleaned and either abandoned in place or removed, subject to regulatory review and approval at the decommissioning stage of the project. Surface facilities associated with the pipeline would be removed and reclaimed. During closure and post-closure, wetlands would be reestablished wherever practicable.

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Table 4.22-2: Alternative 1 Transportation Corridor WOUS Direct Impacts (Acres)

NWI Group	Watershed					
	Upper Talarik Creek	Newhalen River	Iliamna Lake	Gibraltar Lake	Amakdedori Creek–Frontal Kamishak Bay	Combined Watershed Area[1]
Deciduous Shrub Wetlands	33	1	10	3	6	54
Evergreen Shrub Wetlands	0	<1	1	2	<1	3
Herbaceous Wetlands	4	<1	8	3	5	20
Aquatic Bed Wetlands	0	0	<1	0	0	<1
Ponds	<1	0	2	1	3	6
Lakes	0	0	2	<1	<1	2
Perennial Streams	2	<1	1	<1	<1	3
Intermittent Streams	<1	<1	<1	<1	<1	<1
Upland	343	51	395	132	166	1,092
Total Area	382	52	417	142	182	1,180
WOUS Totals	39	1	22	9	16	88
WOUS (%)	10	2	5	6	9	7
Wetlands Totals	37	1	18	8	12	76
Wetlands (%)	10	2	4	6	7	6
Waterbodies Totals	2	<1	3	1	4	11
Waterbodies (%)	1	<1	1	1	1	1
Perennial Streams (Miles)						0.6
Intermittent Streams (Miles)						4.0

[1]Includes 5 acres of uplands in the Headwaters Koktuli River Watershed

Summary of Direct Impacts in the Transportation Corridor

The Alternative 1 transportation corridor will directly and permanently impact 88 acres of WOUS during construction. Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Direct and indirect effects would occur within 5 HUC 10 watersheds. The majority of the impacts (39 acres) would be within the UTC watershed. Most impacts would be to regionally common shrub and herbaceous wetland types. The direct impacts represent less than 1 percent of shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be impacted. Approximately 6 acres of riverine wetlands, identified as high-quality wetlands, would be directly impacted by the transportation corridor. This represents less than 1 percent of the riverine wetlands within the watershed. Approximately 8 acres of bog vegetation would be directly impacted, which represents less than 1 percent of bog vegetation in the watershed.

Fugitive Dust

Fugitive dust emissions would be caused by road construction and vehicle travel on unpaved surfaces. This dust has the potential to collect on vegetation in the vicinity of the dust sources. Windblown dust could affect wetland vegetation well beyond the source, but the effect diminishes with distance and is influenced by prevailing winds and topography. The heaviest dust deposition would be anticipated to occur within 35 feet of the road (Walker and Everett

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1987); however, dust has been documented at distances of 330 feet from the most heavily traveled roads in Prudhoe Bay (Walker et al. 1987a). Dust deposition impacts wetlands primarily by reducing vegetation productivity and altering species composition. Fugitive dust impacts to vegetation are described in Section 4.26, Vegetation; impacts to soils are described in Section 4.14, Soils.

With application of a 330-foot buffer on all permanent road footprints (as previously described), a total of 877 acres of WOUS would potentially be affected by dust deposition. The dust would primarily affect shrub (49 acres) and herbaceous (164 acres) wetlands. The greatest effects on wetland functions are expected to occur within 33 feet of the roads. Note that there is overlap between the 330-foot dust zone, and the 30-foot temporary construction impact zone within the transportation corridor.

A fugitive dust control plan would be developed for the project and the project would use BACT and BMPs for fugitive dust management (see Chapter 5, Mitigation).

4.22.2.3 Amakdedori Port

Construction of Amakdedori port would permanently and directly affect 11 acres of marine waters in the Amakdedori Creek-Frontal Kamishak Bay watershed (Table 4.22-3). The port terminal and associated facilities would be sited and designed to avoid all almost all vegetated wetlands and other waters. Temporary construction-related impacts would affect 4 acres of marine waters. Fugitive dust impacts from construction would potentially affect 3 acres of wetlands. Previous disturbance to wetlands or waterbodies in this area is minimal.

The Amakdedori port facilities would be removed during closure, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation.

Table 4.22-3: Alternative 1 Port WOUS Direct Impacts

NWI Group	Direct Impacts (acres)
Herbaceous Wetlands	<1
Marine (Intertidal)	1
Marine (Subtidal)	10
Uplands	19
Total Area	30
WOUS Totals	11
WOUS (%)	37%
Wetlands Totals	<1
Wetlands (%)	<1%
Waterbodies Totals	11
Waterbodies (%)	37%

Summer-Only Operations Variant

This variant would have roughly the same area of direct permanent and temporary impacts to WOUS. The area of wetlands potentially affected by fugitive dust is slightly more (6 acres) compared to the regular port.

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Pile Supported Dock Variant

Under this variant, the total offshore footprint of the port would be reduced substantially. There would be less than 1 acre of permanent direct impacts to marine waters.

4.22.2.4 Natural Gas Pipeline Corridor

Impacts for stand-alone sections of the natural gas pipeline are assessed here. Where the pipeline is being constructed adjacent to roads in the transportation corridor, impacts are assessed above. Stand-alone sections include primarily the 94-mile crossing of Cook Inlet, between Anchor Point and Amakdedori port, and the 18-mile crossing of Iliamna Lake. Onshore areas include the compressor station and pipeline near Anchor Point (Kenai Peninsula), access roads, and smaller sections where the pipeline leaves the transportation corridor.

For onshore sections of the stand-alone natural gas pipeline, a 100-foot wide impact corridor has been assessed: 40 feet to account for the trench and side-cast material, and 60 feet for construction access. All of this area is being considered permanent impacts at this time, since a restoration plan has yet to be developed. It is likely that much of this area would be restored within 2 years of construction.

The onshore sections of the natural gas pipeline would permanently impact approximately 5 acres of WOUS. The impacts are broken out in Table 4.22-4 by "Fill" and "No Fill." "Fill" refers to the 40-foot section of the corridor that includes the trench and side-cast material. Approximately 2 acres of WOUS would be filled for the pipeline. "No Fill" refers to the 60-foot section of the corridor that will be impacted for construction access. Approximately 3 acres of WOUS would be impacted. Temporary mats would be placed in wetlands to facilitate construction access. No direct fill in WOUS would be anticipated in these areas.

Impacts from offshore sections of the pipeline would be considered temporary. A 30-foot wide construction corridor is used to assess these impacts. Approximately 378 acres of marine (subtidal) waters in Cook Inlet would be temporarily impacted. Approximately 68 acres of Iliamna Lake would be temporarily impacted.

Table 4.22-4: Alternative 1 Natural Gas Pipeline WOUS Direct Permanent Impacts (Acres)

NWI Group	Watershed									
	Headwaters Koktuli River		Upper Talarik Creek		Iliamna Lake		Amakdedori Creek–Frontal Kamishak Bay		Combined Watershed Area	
	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill
Deciduous Shrub Wetlands	<1	<1	1	1	<1	1	0	0	1	2
Herbaceous Wetlands	0	0	<1	1	<1	1	<1	<1	1	1
Lakes	0	0	0	0	<1	<1	0	0	<1	<1
Perennial Streams	0	0	<1	<1	0	0	0	<1	<1	<1
Marine (Intertidal)	0	0	0	0	0	0	<1	<1	<1	<1
Upland	1	2	4	7	5	7	1	2	12	18
Total Area	1	2	5	8	6	9	2	2	14	21
WOUS Totals	-								2	3
WOUS (%)	-								14	14
Wetlands Totals	-								2	3
Wetlands (%)	-								14	14

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Table 4.22-4: Alternative 1 Natural Gas Pipeline WOUS Direct Permanent Impacts (Acres)

NWI Group	Watershed									
	Headwaters Koktuli River		Upper Talarik Creek		Iliamna Lake		Amakdedori Creek–Frontal Kamishak Bay		Combined Watershed Area	
	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill
Waterbodies Totals	-								<1	<1
Waterbodies (%)	-								<1	<1
Perennial Streams (Miles)	-								<0.1	<0.1
Intermittent Streams (Miles)	-								0	0

Kokhanok East Ferry Terminal Variant

Changes in the natural gas pipeline corridor for this variant would result in a net addition of 11 acres of permanent impacts to shrub wetlands, and 6 acres of temporary impacts to Iliamna Lake waters.

4.22.3 Action Alternative 2 – North Road and Ferry

Alternative 2 would permanently discharge dredged or fill material into 3,714 acres of WOUS and temporarily discharge dredged or fill material into 403 acres of WOUS. An additional 1,890 acres of WOUS would be indirectly impacted by fugitive dust, and 448 acres of WOUS would be indirectly impacted by dewatering from the mine pit. The discharge would permanently impact 3,451 acres of wetlands, 148 acres of open waters, and 54 acres of streams along 35.4 miles of stream channels. The discharge would temporarily impact 49 acres of wetlands, 348 acres of open waters, and 4 acres of streams along 2.0 miles of stream channels. Maps showing impacts for all project components can be found in Appendix K 4.22.

NWUS permanently affected by Alternative 2 include Iliamna Bay (Cook Inlet) and Iliamna Lake. Alternative 2 includes a port at Diamond Point with a causeway extending out to a marine jetty, which combined would be 2,100 feet long by a maximum of 200 feet wide, below the HTL of Cook Inlet. The shallow approach at this port site would require dredging. The dredge footprint would be approximately 5,500 feet long by a maximum width of 900 feet wide, below the HTL of Cook Inlet. The south ferry terminal at Pile Bay includes a landing ramp that is 140 feet long by a maximum of 120 feet wide below the OHWM of the Iliamna Lake. The north ferry terminal at Eagle Bay would be 190 feet long by a maximum of 80 feet wide below the OHWM of Iliamna Lake. A total of approximately 71 acres of NWUS would be permanently impacted for the port and ferry terminals. Another 21 acres of NWUS in Iliamna Bay would be permanently impacted by the Alternative 2 transportation corridor.

Special aquatic sites that would be permanently or temporarily impacted include mudflats, vegetated shallows, and riffle and pool complexes. These habitats were not specifically mapped during the environmental baseline study program. Mudflats occur within the estuarine intertidal waters of Iliamna Bay and Cottonwood Bay (23 acres permanent and 48 acres temporary impacts). Vegetated shallows are similar to aquatic bed wetlands (less than 1 acre permanent and temporary impacts). Eelgrass beds are not known to occur in the impact area. Riffle and pool complexes occur in an undetermined portion of the upper perennial and intermittent stream channels. Permanent and temporary impacts to these channels total 53 acres and 4 acres, respectively.

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4.22.3.1 Mine Site

Direct impacts would be the same as in Alternative 1, except that there would be an additional 60 acres of direct impacts to wetlands associated with a bulk tailings storage cell, embankments, and haul road. Impacted wetlands include 49 acres of deciduous shrub wetlands, and 11 acres of herbaceous wetlands, almost all on slopes. Fugitive dust and dewatering impacts would be the same as in Alternative 1.

Summer-Only Ferry Operations Variant

Impacts would be the same as described for this variant in Alternative 1.

4.22.3.2 Transportation Corridor

Construction of the transportation corridor from Diamond Point port to the Pile Bay ferry terminal, and from the Eagle Bay ferry terminal to the mine site, would directly and permanently affect 101 acres of WOUS (Table 4.22-5), including 67 acres of wetlands and 34 acres of waterbodies. Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Previous disturbance to wetlands in this area is minimal. The corridor has been sited to avoid and minimize wetland impacts and allow for efficient reclamation of disturbed areas.

A total of 4.7 miles of streams would be directly affected by construction, including 2.3 miles of perennial streams and 2.4 miles of intermittent streams (Table 4.22-3). The larger streams with a width at OHW of 16 feet or greater would be bridged. Site-specific designs have been developed for bridges. Smaller stream crossings would use a series of standardized, conceptual culvert design categories based on stream width and fish presence. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Within the transportation corridor, the natural gas pipeline would follow the access road and is accounted for in the direct impacts for the access roads. Impacts associated with the natural gas pipeline outside of the transportation corridor are discussed below.

Construction impacts to wetlands outside of the permanent road footprint would be avoided or minimized where possible. However, to account for temporary construction-related impacts, a 30-foot zone on either side of the permanent road footprint was assumed to be temporarily impacted. These impacts would be anticipated to be restored within 2 years of construction (PLP 2018-RFI082). Temporary impacts would affect approximately 64 acres of WOUS within the transportation corridor, including 46 acres of wetlands, and 18 acres of waterbodies.

Activities in the transportation corridor would permanently affect WOUS in five HUC 10 watersheds. The highest number of acres impacted (33 acres) would occur in the UTC watershed (Table 4.22-3). Direct impacts in this watershed would affect primarily deciduous shrub wetlands (27 acres), primarily on slopes. The UTC watershed is approximately 88,000 acres. Based on vegetation mapping, it is estimated to contain approximately 34,000 acres of WOUS, which is roughly 39 percent of the watershed. Approximately 31,000 acres (35 percent of the watershed), are shrub wetlands and 1,200 acres (1 percent) are herbaceous wetlands. Forested wetlands (636 acres) and aquatic bed wetlands (8 acres) each cover less than 1 percent. Activities in the transportation corridor and in a small portion of the mine site would affect 33 acres of shrub wetlands and 6 acres of herbaceous wetlands in the UTC watershed. This represents less than 1 percent of all shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be affected.

Approximately 27 acres of WOUS would be permanently impacted in the Chinitna River-Frontal Cook Inlet watershed. Almost all of this area is in estuarine waters. Direct impacts to estuarine

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intertidal waters total 20 acres. This impact is within Iliamna Bay (Cook Inlet). This area is also considered a special aquatic site (mudflats). This habitat is relatively scarce in the project vicinity, and provides multiple habitat functions for marine and terrestrial fish and wildlife. For these reasons, estuarine intertidal waters are considered high-quality for purposes of the environmental effects determination. Based on NWI mapping of Iliamna Bay, Estuarine intertidal waters cover 543 acres of the bay. The project impacts of 20 acres represent roughly 4 percent of intertidal waters in the bay.

Wetland and waterbody impacts in the other four watersheds would be relatively low from a watershed perspective. The Iliamna Lake watershed, excluding the lake itself, has an estimated 180,000 acres of wetlands and waterbodies (33 percent of the watershed). The Alternative 2 transportation corridor would result in direct impacts on 3 acres of shrub wetlands and 4 acres of forested wetlands (Table 4.22-3). The Newhalen River watershed has an estimated 35,000 acres of wetlands and waterbodies (29 percent of the watershed); 13 acres of shrub wetlands, 3 acres of forested wetlands, and 1 acre of herbaceous wetlands would be directly affected. Approximately 11 acres of wetlands would be impacted within the Iliamna River watershed, including 5 acres of shrub wetlands, 4 acres of herbaceous wetlands, and 2 acres of forested wetlands (Table 4.22-3).

Riverine wetlands are considered high value in the watersheds based on their connections to important fish and wildlife species. Since the entire Alternative 2 transportation corridor does not have project mapping with HGM classification, it is not possible to determine the exact area of riverine wetlands that will be directly impacted. For the 82 percent of the impact area with project mapping, there are a total of 10 acres of impacts to riverine wetlands across all watersheds (5 acres in Iliamna River watershed; 3 acres in Newhalen River watershed; and 2 acres in UTC watershed).

A relatively small area of bog vegetation would be directly impacted across all watersheds. Most of the impacts would be within the UTC and Newhalen River watersheds. For the 82 percent of the impact area with project vegetation mapping, there are 5 acres of impacts to bog vegetation.

Table 4.22-5: Alternative 2 Transportation Corridor WOUS Direct Impacts (Acres)

NWI Group	Watershed					
	Upper Talarik Creek	Newhalen River	Iliamna River	Iliamna Lake	Chinitna River–Frontal Cook Inlet	Combined Watershed Area[1]
Deciduous Shrub Wetlands	27	13	5	3	<1	48
Herbaceous Wetlands	4	1	4	<1	0	9
Deciduous Forest Wetlands	0	3	2	4	0	9
Ponds	<1	0	2	1	0	4
Lakes	0	<1	0	0	0	<1
Perennial Streams	2	0	1	<1	1	4
Intermittent Streams	<1	0	0	0	<1	<1
Estuarine (Intertidal)	0	0	0	0	20	20
Estuarine (Subtidal)	0	0	0	0	7	7
Upland	272	388	186	176	65	1,091
Total Area	305	405	200	185	92	1,192
WOUS Totals	33	17	14	9	27	101

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Table 4.22-5: Alternative 2 Transportation Corridor WOUS Direct Impacts (Acres)

NWI Group	Watershed					
	Upper Talarik Creek	Newhalen River	Iliamna River	Iliamna Lake	Chinitna River–Frontal Cook Inlet	Combined Watershed Area[1]
WOUS (%)	11	4	7	5	29	8
Wetlands Totals	31	17	11	7	<1	67
Wetlands (%)	10	4	6	4	<1	6
Waterbodies Totals	2	<1	3	2	27	34
Waterbodies (%)	1	<1	2	1	29	3
Perennial Streams (Miles)	-	-	-	-	-	2.3
Intermittent Streams (Miles)	-	-	-	-	-	2.4

[1]Includes 5 acres of uplands in the Headwaters Koktuli River Watershed

Summer-Only Ferry Operations Variant

This variant would include the addition of a container storage yard at Williamsport, north of Diamond Point port. This would result in 9 acres of additional direct permanent impacts to estuarine intertidal waters in Iliamna Bay.

Summary of Direct Impacts in the Transportation Corridor

The Alternative 2 transportation corridor will directly and permanently impact 101 acres of WOUS during construction. Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Direct and indirect effects would occur within 5 HUC 10 watersheds. The majority of the impacts would be within two watersheds. Most impacts would be to regionally common shrub and herbaceous wetland types.

In the UTC watershed, 33 acres of shrub and 6 acres of herbaceous wetlands would be directly impacted. The direct impacts represent less than 1 percent of shrub and herbaceous wetlands within the watershed. No forested or aquatic bed wetlands would be impacted.

Within the Chinitna River-Frontal Cook Inlet watershed, 27 acres of estuarine waters would be directly impacted. Approximately 20 acres of these waters are in the intertidal zone of Iliamna Bay, and would be considered mud flats, a special aquatic site. This impact represents roughly 4 percent of the estuarine intertidal waters within Iliamna Bay.

Fugitive Dust

Fugitive dust emissions would be caused by road construction and vehicle travel on unpaved surfaces. This dust has the potential to collect on vegetation in the vicinity of the dust sources. Windblown dust could affect wetland vegetation well beyond the source, but the effect diminishes with distance and is influenced by prevailing winds and topography. Dust deposition impacts wetlands primarily by reducing vegetation productivity and altering species composition. Fugitive dust impacts to vegetation are described in Section 4.26, Vegetation; impacts to soils are described in Section 4.14, Soils.

Research on dust emissions and its impact on vegetation in Alaska has shown that most dust generated from roads is deposited within 330 feet (Petavratzi et al. 2005; Walker and Everett 1987). Therefore, a potential indirect impact area was calculated using a 330-foot buffer on all permanent road footprints. This follows methods used by recent EISs in Alaska (Donlin Gold

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2018; Point Thompson 2012). A total of 875 acres of WOUS would potentially be affected by dust deposition. The dust would primarily affect deciduous shrub (384 acres), herbaceous (127 acres), and deciduous forest (75 acres) wetlands. The greatest effects on wetland functions are expected to occur within 33 feet of the roads. Note that there is overlap between the 330-foot dust zone, and the 30-foot temporary construction impact zone within the transportation corridor.

A fugitive dust control plan would be developed for the project and the project would use BACT and BMPs for fugitive dust management (see Chapter 5, Mitigation).

4.22.3.3 Diamond Point Port

Construction of Diamond Point port would directly and permanently affect 71 acres of estuarine waters (Table 4.22-6). Most impacts are to subtidal waters (68 acres) within Iliamna Bay (Cook Inlet). The port terminal and associated facilities would be sited and designed to avoid direct and indirect impacts to wetlands, streams and ponds. Construction would temporarily impact 13 acres of estuarine subtidal waters, and 2 acres of estuarine intertidal waters.

The Diamond Point port facilities would be removed during closure, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation.

Table 4.22-6: Alternative 2 Port WOUS Direct Impacts

NWI Group	Direct Impacts (acres)
Perennial Streams	<1
Estuarine (Intertidal)	3
Estuarine (Subtidal)	68
Uplands	41
Total Area	112
WOUS Totals	71
WOUS (%)	63
Wetlands Totals	0
Wetlands (%)	0
Waterbodies Totals	<1
Waterbodies (%)	<1

Pile Supported Dock Variant

Under this variant, the total offshore footprint of the port would be reduced significantly. There would be less than 1 acre of permanent direct impacts to marine waters.

4.22.3.4 Natural Gas Pipeline Corridor

Impacts for stand-alone sections of the natural gas pipeline are assessed here. Where the pipeline is being constructed adjacent to roads within the transportation corridor, impacts are assessed above.

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The onshore sections of the natural gas pipeline would permanently impact a total of 24 acres of WOUS (Table 4.22-7). Approximately 11 acres of WOUS would be filled for the pipeline. Another 13 acres of WOUS would be impacted for construction access.

Impacts from offshore sections of the pipeline, between Anchor Point and Ursus Cove, and across Cottonwood Bay, are considered to be temporary. A 30-foot wide construction corridor is used to assess these impacts. Approximately 271 acres of marine (subtidal) waters in Cook Inlet would be temporarily impacted. The pipeline corridor across Cottonwood Bay would impact 39 acres of estuarine intertidal waters, and 11 acres of estuarine subtidal waters. An additional 3 acres of wetlands would be temporarily impacted for construction access roads. Fugitive dust from roads and material sites would potentially affect 23 acres of deciduous shrub and herbaceous wetlands.

Table 4.22-7: Alternative 2 Natural Gas Pipeline WOUS Direct Permanent Impacts (acres)

NWI Group	Watershed									
	Upper Talarik Creek		Iliamna Lake		Chekok Creek		Chinitna River-Frontal Cook Inlet		Combined Watershed Area	
	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill	Fill	No Fill
Deciduous Shrub Wetlands	1	1	2	3	<1	1	3	2	6	7
Herbaceous Wetlands	<1	1	<1	1	0	0	0	0	1	2
Deciduous Forest Wetlands	0	0	2	2	0	0	0	0	2	3
Perennial Streams	<1	<1	<1	1	<1	<1	1	1	1	2
Upland	4	7	139	209	7	10	48	62	221	322
Total Area	5	8	144	216	7	11	51	65	232	335
WOUS Totals									11	13
WOUS (%)									5	4
Wetlands Totals									9	11
Wetlands (%)									4	3
Waterbodies Totals									1	2
Waterbodies (%)									<1	1
Perennial Streams (Miles)									0.5	0.7
Intermittent Streams (Miles)									0.7	0.9

4.22.4 Action Alternative 3 – North Road Only

Alternative 3 would permanently discharge dredged or fill material into 3,645 acres of WOUS and temporarily discharge dredged or fill material into 403 acres of WOUS. An additional 2,017 acres of WOUS would be indirectly impacted by fugitive dust, and 448 acres of WOUS would be indirectly impacted by dewatering from the mine pit. The discharge would permanently impact 3,445 acres of wetlands, 146 acres of open waters, and 54 acres of streams along 35.5 miles of stream channels. The discharge would temporarily impact 50 acres of wetlands, 347 acres of open waters, and 4 acres of streams along 3.8 miles of stream channels.

Because Alternative 3 does not include a ferry crossing of Iliamna Lake, the only NWUS permanently affected by this alternative would be Cook Inlet. Alternative 3 includes the same port location (Diamond Point) and design as Alternative 2, with a total of approximately 71 acres

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of NWUS permanently impacted. Another 24 acres of NWUS in Iliamna Bay would be permanently impacted by the Alternative 3 transportation corridor.

Special aquatic sites that would be permanently or temporarily impacted include mudflats, vegetated shallows, and riffle and pool complexes. These habitats were not specifically mapped during the environmental baseline study program. Mudflats occur within the estuarine intertidal waters of Iliamna Bay and Cottonwood Bay (23 acres permanent and 48 acres temporary impacts). Vegetated shallows are similar to aquatic bed wetlands (less than 1 acre permanent and temporary impacts). Eelgrass beds are not known to occur in the impact area. Riffle and pool complexes occur in an undetermined portion of the upper perennial and intermittent stream channels. Permanent and temporary impacts to these channels total 52 acres and 4 acres, respectively.

4.22.4.1 Mine Site

Under Alternative 3, the mine site footprint would be the same as Alternative 1, described above. Therefore, both direct and indirect effects would be the same.

Concentrate Pipeline Variant

No additional impacts to WOUS would be associated with this variant.

4.22.4.2 Transportation Corridor

Construction of the Alternative 3 transportation corridor from Diamond Point port to the mine site would directly and permanently affect 108 acres of WOUS (Table 4.22-8), including 75 acres of wetlands and 33 acres of waterbodies. Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Previous disturbance to wetlands in this area is minimal. The corridor has been sited to avoid and minimize wetland impacts and allow for efficient reclamation of disturbed areas.

[Note: WOUS impacts may be underestimated in the Alternative 2 transportation corridor, as project-specific mapping in this area appears to have missed numerous stream channels and possibly other WOUS. It is expected that project-specific mapping data would be acquired in field season 2019 to collect additional data in these areas, and included in a final EIS].

A total of 7.5 miles of streams would be directly affected by construction, including 3.3 miles of perennial streams and 4.2 miles of intermittent streams (Table 4.22-8). The larger streams with a width at OHW of 16 feet or greater would be bridged. Site-specific designs have been developed for bridges. Smaller stream crossings would use a series of standardized, conceptual culvert design categories based on stream width and fish presence. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Within the transportation corridor, the natural gas pipeline would follow the access road and is accounted for in the direct impacts for the access roads. Impacts associated with the natural gas pipeline outside of the transportation corridor are discussed below.

Construction impacts to wetlands outside of the permanent road footprint would be avoided or minimized where possible. However, to account for temporary construction-related impacts, a 30-foot zone on either side of the permanent road footprint was assumed to be temporarily impacted. These impacts would be anticipated to be restored within 2 years of construction (PLP 2018-RFI082). Temporary impacts would affect approximately 68 acres of WOUS in the transportation corridor, including 50 acres of wetlands, and 17 acres of waterbodies. Wetland impacts are primarily to shrub wetlands (34 acres). Waterbody impacts are primarily to estuarine waters (12 acres).

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Activities in the transportation corridor would permanently affect WOUS in five HUC 10 watersheds. The highest number of acres impacted (33 acres) would occur in the UTC watershed (Table 4.22-8). Direct impacts in this watershed would affect primarily deciduous shrub wetlands (27 acres), primarily on slopes. The UTC watershed is approximately 88,000 acres. Based on vegetation mapping, it is estimated to contain approximately 34,000 acres of WOUS, which is roughly 39 percent of the watershed. Approximately 31,000 acres (35 percent of the watershed), are shrub wetlands and 1,200 acres (1 percent) are herbaceous wetlands. Forested wetlands (636 acres) and aquatic bed wetlands (8 acres) each cover less than one percent. Activities in the transportation corridor and in a small portion of the mine site would affect 33 acres of shrub wetlands and 6 acres of herbaceous wetlands in the UTC watershed. This represents less than 1 percent of all shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be affected.

Approximately 27 acres of WOUS would be permanently impacted in the Chinitna River-Frontal Cook Inlet watershed. Almost all of this area is in estuarine waters. Direct impacts to estuarine intertidal waters total 20 acres; this impact is in Iliamna Bay (Cook Inlet). This area is also considered a special aquatic site (mudflats). This habitat is relatively scarce in the project vicinity and provides multiple habitat functions for marine and terrestrial fish, as well as wildlife. For these reasons, estuarine intertidal waters are considered high quality for purposes of the environmental effects determination. Based on NWI mapping of Iliamna Bay, estuarine intertidal waters cover 543 acres of the bay. The project impacts of 20 acres represent roughly 4 percent of intertidal waters in the bay.

Wetland and waterbody impacts in the other four watersheds would be relatively low from a watershed perspective. The Iliamna Lake watershed, excluding the lake itself, has an estimated 180,000 acres of wetlands and waterbodies (33 percent of the watershed). The Alternative 3 transportation corridor would result in direct impacts on 6 acres of shrub wetlands, 8 acres of forested wetlands, and 1 acre of herbaceous wetlands (Table 4.22-8). The Newhalen River watershed has an estimated 35,000 acres of wetlands and waterbodies (29 percent of the watershed); 13 acres of shrub wetlands, 3 acres of forested wetlands, and 1 acre of herbaceous wetlands would be directly affected. Approximately 9 acres of wetlands would be impacted within the Iliamna River watershed, including 5 acres of shrub wetlands, 3 acres of herbaceous wetlands, and 2 acres of forested wetlands (Table 4.22-8).

Riverine wetlands are considered high-value in the watersheds based on their connections to important fish and wildlife species. Since the entire Alternative 3 transportation corridor does not have project mapping with HGM classification, it is not possible to determine the exact area of riverine wetlands that will be directly impacted. For the 92 percent of the direct impact area with project mapping, there is a total of 11 acres of impacts to riverine wetlands across all watersheds (2 acres in Iliamna Lake watershed, 3 acres in Iliamna River watershed; 3 acres in Newhalen River watershed; and 2 acres in UTC watershed).

A relatively small area of bog vegetation would be directly impacted across all watersheds. Most of the impacts would be in the UTC and Newhalen River watersheds. For the 92 percent of the impact area with project vegetation mapping, there are 6 acres of impacts to bog vegetation.

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Table 4.22-8: Alternative 3 Transportation Corridor WOUS Direct Impacts (Acres)

NWI Group	Watershed					
	Upper Talarik Creek	Newhalen River	Iliamna River	Iliamna Lake	Chinitna River–Frontal Cook Inlet	Combined Watershed Area[1]
Deciduous Shrub Wetlands	27	13	5	6	<1	53
Herbaceous Wetlands	4	1	3	1	0	9
Deciduous Forest Wetlands	0	3	2	8	0	13
Ponds	<1	0	2	<1	0	3
Lakes	0	<1	0	<1	0	<1
Perennial Streams	2	0	1	<1	1	4
Intermittent Streams	<1	0	0	0	<1	<1
Estuarine (Intertidal)	0	0	0	0	20	20
Estuarine (Subtidal)	0	0	0	0	7	7
Upland	272	388	182	654	65	1,701
Total Area	305	405	194	670	92	1,809
WOUS Totals	33	17	13	16	27	108
WOUS (%)	11	4	7	2	29	6
Wetlands Totals	31	17	9	16	<1	75
Wetlands (%)	10	4	5	2	<1	4
Waterbodies Totals	2	<1	3	<1	27	33
Waterbodies (%)	1	<1	2	<1	29	2
Perennial Streams (Miles)	-	-	-	-	-	3.3
Intermittent Streams (Miles)	-	-	-	-	-	4.2

[1]Includes 5 acres of uplands in the Headwaters Koktuli River Watershed, 62 acres of uplands in the Chekok Creek watershed, and 74 acres of uplands in the Pile River watershed.

Summary of Impacts in the Transportation Corridor

The Alternative 3 transportation corridor will directly and permanently impact 108 acres of WOUS during construction. Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Direct and indirect effects would occur within 5 HUC 10 watersheds. The majority of the impacts would be in two watersheds. Most impacts would be to regionally common shrub and herbaceous wetland types.

Within the UTC watershed, 33 acres of shrub and 6 acres of herbaceous wetlands would be directly impacted. The direct impacts represent less than 1 percent of shrub and herbaceous wetlands within the watershed. No forested or aquatic bed wetlands would be impacted.

In the Chinitna River-Frontal Cook Inlet watershed, 27 acres of estuarine waters would be directly impacted. Approximately 20 acres of these waters are in the intertidal zone of Iliamna Bay, and would be considered mud flats, a special aquatic site. This impact represents roughly 4 percent of the estuarine intertidal waters in Iliamna Bay.

Fugitive Dust

Fugitive dust emissions would be caused by road construction and vehicle travel on unpaved surfaces. This dust has the potential to collect on vegetation in the vicinity of the dust sources.

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Windblown dust could affect wetland vegetation well beyond the source, but the effect diminishes with distance and is influenced by prevailing winds and topography. Dust deposition impacts wetlands primarily by reducing vegetation productivity and altering species composition. Specific effects are described in Section 4.26, Vegetation, and Section 4.14, Soils.

With application of a 330-foot buffer on all permanent road footprints (as previously described), a total of 1,044 acres of WOUS would potentially be affected by dust deposition, including 716 acres of wetlands. The dust would primarily affect shrub (455 acres), herbaceous (151 acres), and forested (111) wetlands. The greatest effects on wetland functions are expected to occur within 33 feet of the roads. Note that there is overlap between the 330-foot dust zone, and the 30-foot temporary construction impact zone within the transportation corridor.

A fugitive dust control plan would be developed for the project and the project would use BACT and BMPs for fugitive dust management (see Chapter 5, Mitigation).

Concentrate Pipeline Variant

No additional impacts to WOUS would be associated with this variant.

4.22.4.3 Diamond Point Port

Under Alternative 3, the Diamond Point port footprint would be the same as Alternative 2, described above. Therefore, both direct and indirect effects would be the same. Note that Alternative 3 does not include a pile-supported dock variant.

4.22.4.4 Natural Gas Pipeline Corridor

Impacts for stand-alone sections of the natural gas pipeline are assessed here. Where the pipeline is being constructed adjacent to roads within the transportation corridor, impacts are assessed above. Refer to the previous discussion, above, for a description of how impacts were assessed for the pipeline corridor.

The onshore sections of the natural gas pipeline would permanently impact a total of 8 acres of WOUS (Table 4.22-9). Approximately 4 acres of WOUS would be filled for the pipeline. Another 4 acres of WOUS would be impacted for construction access.

Impacts from offshore sections of the pipeline, between Anchor Point and Ursus Cove, and across Cottonwood Bay, are considered to be temporary. A 30-foot wide construction corridor is used to assess these impacts. Approximately 271 acres of marine (subtidal) waters in Cook Inlet would be temporarily impacted. The pipeline corridor across Cottonwood Bay would impact 39 acres of estuarine intertidal waters, and 11 acres of estuarine subtidal waters.

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Table 4.22-9: Alternative 3 Natural Gas Pipeline WOUS Direct Permanent Impacts (Acres)

NWI Group	Watershed					
	Upper Talarik Creek		Chinitna River-Frontal Cook Inlet		Combined Watershed Area	
	Fill	No Fill	Fill	No Fill	Fill	No Fill
Deciduous Shrub Wetlands	1	1	3	2	3	3
Herbaceous Wetlands	<1	1	0	0	<1	1
Perennial Streams	<1	<1	1	1	3	1
Upland	4	7	48	62	53	71
Total Area	5	8	51	65	58	75
WOUS Totals	-				4	4
WOUS (%)	-				7	5
Wetlands Totals	-				4	3
Wetlands (%)	-				7	4
Waterbodies Totals	-				1	1
Waterbodies (%)	-				2	1
Perennial Streams (Miles)	-				<0.1	0.1
Intermittent Streams (Miles)	-				0	0

4.22.5 Summary of Key Impacts

Table 4.22-10 summarizes the key issues for WOUS across all three alternatives and variants. The No Action Alternative is not included because there would be no project-related WOUS impacts. When possible, acreages of WOUS that would be directly or indirectly impacted are included.

Table 4.22-10: Summary of Key Issues for Wetlands and Waterbodies

Impact-Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Total Direct Permanent WOUS Impacts (excavation, fill, vegetation clearing)	**3,562 acres**	**3,714 acres**	**3,645 acres**
Total Direct Temporary WOUS Impacts (construction access)	**515 acres**	**403 acres**	**403 acres**
Total Potential Indirect WOUS Impacts (dust/dewatering)[1]	**1,837 acres/ 448 acres**	**1,890 acres/ 448 acres**	**2,017 acres/ 448 acres**
Mine Site			
Direct WOUS Impacts	Permanent loss of 3,458 acres of WOUS and 24.1 miles of streams. Summer-only operations variant. Permanent loss of 3,465 acres of WOUS and	Permanent loss of 3,518 acres of WOUS and 24.1 miles of streams. Summer-only operations variant. Permanent loss of 3,525 acres of WOUS and	Same as Alternative 1. Concentrate pipeline variant: no additional impacts.

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Table 4.22-10: Summary of Key Issues for Wetlands and Waterbodies

Impact-Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	24.1 miles of streams.	24.1 miles of streams.	
Fugitive Dust	Impacts to 957 acres adjacent to the mine site throughout the life of the mine.	Same as Alternative 1.	Same as Alternative 1.
Dewatering	Impacts to 448 acres adjacent to the mine site throughout the life of the mine.	Same as Alternative 1.	Same as Alternative 1.
Transportation Corridor			
Direct WOUS Impacts	Permanent loss of 88 acres of WOUS and 4.6 miles of streams. Temporary impacts to 65 acres of WOUS. Kokhanok east variant: Permanent loss of 134 acres of WOUS and <0.1 miles of streams.	Permanent loss of 101 acres of WOUS and 4.7 miles of streams. Temporary impacts to 64 acres of WOUS. Summer-only ferry operations variant: Permanent loss of 110 acres of WOUS and 4.7 miles of streams.	Permanent loss of 108 acres of WOUS and 7.5 miles of streams. Temporary impacts to 68 acres of WOUS. Concentrate pipeline variant: no additional impacts.
Fugitive Dust	Impacts to 877 acres adjacent to the transportation corridor throughout the life of the mine.	Impacts to 875 acres adjacent to the transportation corridor throughout the life of the mine.	Impacts to 1,044 acres adjacent to the transportation corridor throughout the life of the mine.
Port			
Direct WOUS Impacts	Permanent loss of 11 acres of WOUS Temporary impacts to 4 acres of WOUS. Summer-only operations variant: no additional impacts. Pile-supported dock variant: Permanent loss of 1 acre of WOUS.	Permanent loss of 71 acres of WOUS and <0.1 miles of streams Temporary impacts to 15 acres of WOUS. Pile-supported dock variant: Permanent loss of 1 acre of WOUS and <0.1 miles of streams.	Same as Alternative 2 (but with no pile supported dock variant). Concentrate pipeline variant: No additional impact.
Fugitive Dust	Impacts to 3 acres of vegetated wetlands adjacent to the port mainly during construction. Summer-only operations variant: Impacts to 6 acres of vegetated wetlands adjacent to the port mainly during construction.	No impacts to vegetated wetlands. Summer-only operations variant: No impacts to vegetated wetlands.	Same as Alternative 2.
Natural Gas Pipeline			
Direct WOUS Impacts	Permanent loss of 5 acres of WOUS	Permanent loss of 24 acres of WOUS and 2.8	Permanent loss of 8 acres of WOUS and 0.1 miles of

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Table 4.22-10: Summary of Key Issues for Wetlands and Waterbodies

Impact-Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Temporary impacts to 446 acres in Cook Inlet and Iliamna Lake. Kokhanok east ferry variant: Permanent loss of 16 acres of WOUS and <0.1 miles of streams.	miles of streams. Temporary impacts to 324 acres of WOUS.	streams. Temporary impacts to 320 acres of WOUS.
Fugitive Dust	Onshore section of pipeline is mostly associated with transportation corridor, so few pipeline-only dust impacts.	Impacts to 58 acres of WOUS from construction access and material sites mainly during construction.	Impacts to 16 acres of WOUS from material sites mainly during construction.

[1]There is some overlap at the mine site between WOUS potentially impacted by dust and those impacted by dewatering.

4.22.6 Cumulative Effects

The cumulative effects analysis area for wetlands encompasses the nine HUC 10 watersheds that could be directly or indirectly affected by the project, with a total area of approximately 6,420,000 acres (see Figure 4.22-1). Potential cumulative impacts to wetlands include incremental loss of wetlands, fragmentation of habitat, changes in wetland types, and loss or degradation of wetland functions.

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact analysis area have the potential to contribute cumulatively to impacts on wetlands. Section 4.1 details the past, present, and RFFAs considered for evaluation. Several of the RFFAs detailed in Section 4.1, Introduction to Environmental Consequences, are considered to have no potential for cumulatively impacting wetlands in the analysis area. These would include off-shore based developments such as oil and gas lease sales and non-industrialized point source activities that are unlikely to result in any appreciable impact beyond a temporary basis (e.g., tourism, recreation, fishing, and hunting). Other RFFAs removed from further consideration include those outside the analysis area (e.g., Donlin Gold, Copper Joe).

RFFAs that could contribute cumulatively to wetland impacts, and are therefore considered in this analysis, are those activities that would occur in the analysis area. The following were identified in Section 4.1, Introduction to Environmental Consequences, carried forward in this analysis based on their potential to impact wetlands in the analysis area:

- Pebble project buildout – develop 55 percent of the resource over 78-year period
- Pebble South/PEB*
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Diamond Point Rock Quarry
- Lake and Peninsula Transportation and Infrastructure

**Indicates exploration activities only.*

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4.22.6.1 Past and Present Actions

Past and present actions that have, or are currently, affecting wetlands in the analysis area are minimal. Current development consists of a small number of towns, villages and roads. Present activities include mining exploration and non-mining related projects, such as transportation, oil and gas development, or community development actions. These actions have resulted in a loss of some wetlands. While these actions affected localized areas, they are additive to other actions, increasing the total acreage of wetlands affected. Dust effects can also be additive, as more dust-producing actions are implemented a greater area of wetlands can be affected.

4.22.6.2 Reasonably Foreseeable Future Actions

Pebble Mine Expanded Development Scenario – An expanded development scenario for this project would include an additional 58 years of mine life and involve a substantially larger mine site footprint. The mine site footprint would have a larger open pit and new facilities to store tailings and waste rock (Figure 4.22-3). An additional compressor station at Amakdedori port and concentrate and diesel pipelines from the mine site to a deep water loading facility in Iniskin Bay would also be developed under this scenario. This development may or may not include a road access to Diamond Point, which would increase the amount of wetlands impacted. It is expected that the two pipelines would be of similar length and parallel the transportation corridor as described under alternative 1. Similar wetland types are expected to be affected by the new pipeline corridors.

The Pebble mine expanded development scenario project footprint would impact approximately 34,790 acres compared to 12,371 acres under Alternative 1. The total number of wetlands potentially affected under this scenario would amount to an additional 9,415 acres[1]. This calculation assumes that 42 percent of the new affected area (22,419 acres) is wetlands based on the alternative 1 wetlands analysis. This additional 9,415 acres of potential wetlands disturbance represents 0.3 percent of the estimated 2,696,000 acres of wetlands in the analysis area. Predominate wetland types potentially impacted under this scenario include herbaceous and broad leafed shrubs.

Project construction activities would continue to disturb soil, alter surface water flow and physically injure wetland vegetation. In areas of high proportion of wetlands or during the construction of new mine site facilities and pipelines, wetlands could be excavated or filled. Excavation, filling, and clearing of wetlands would alter or remove their capacity to provide hydrologic, biogeochemical, and biological functions. Construction on or through wetlands would result in increased habitat loss, fragmentation, and degradation. The placement of gravel to construct project facilities could alter local hydrologic regimes resulting in adverse effects on wetlands. Erosion from construction activities could result in sedimentation of wetland communities and alter functional capacity. These impacts would be additive to those of the proposed project. The expansion would increase the magnitude, duration and geographic extent of the wetland impacts described under Alternative 1.

Exploration Projects – Mineral exploration is likely to continue in the analysis area. Exploration activities would result in small areas of wetlands disturbance related to core sampling and exploration facilities. Impacts to wetlands are expected to be limited in extent and minor in magnitude.

[1] Wetland calculations assume 42 percent of the area is wetlands. This assumption is based on wetland mapping and field delineation data for Alternative 1 in the analysis area and the Alaska Wetlands Initiative Summary Report (EPA 1994).

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Community Development Projects – Anticipated road improvement projects in the region include new transportation corridors currently being studied in the Lake and Peninsula Borough, such as the Williamsport-Pile Bay road upgrade, Nondalton-Iliamna River Road Corridor and Bridge, and the Kaskanak Road/Cook Inlet to Bristol Bay. The latter two projects have been identified as concepts, but there are no plans, funding, or permit applications that make them reasonably foreseeable. The strategic plan for Iliamna includes a road connection to all villages in lake area for safer travel. Roads affect wetlands through direct removal and fill, and indirectly through dust deposition and potential disruption of wetland hydrology. The construction of linear features, such as gravel roads perpendicular to the predominant hydraulic gradient, has a greater potential to alter or impound sheet flow and water moving through the active layer. Sedimentation could alter or destroy wetlands, thus reducing functional capacity.

Additional RFFAs that have the potential to affect wetlands in the region include mineral and oil and gas exploration and development, energy and utility projects, the Diamond Point rock quarry, and various village infrastructure development projects. Depending on final design and permitting, these projects could impact wetlands, which when added to the past and present wetland loss, increases the total acreage affected.

4.22.6.3 Cumulative Effects Summary

The effects of the project on wetlands would be additive to the similar effects of past, present, and RFFAs. The proposed project would be distant from other developments, so its effects would be mostly in watersheds that have seen little other disturbance, and affected areas would generally not overlap with areas already affected by developments. The areal extent of impacts to wetlands from these actions is a small proportion compared to the distribution of wetlands in the analysis area and even smaller at the regional level. The ongoing or future similar activities would likely induce little overall change to regional wetland types in the EIS analysis area. Climate change may result in large-scale biome shifts to wetlands, including a loss of wetlands and changes in wetland functions. Impacts to wetlands from these development activities are regulated by Section 404 of the CWA, which provides an avenue for continued avoidance, minimization, and compensation of unavoidable impacts on a project-by-project basis. Permits issued for wetland fill activities would generally require restoration of the affected site and revegetation efforts, or other means of compensatory mitigation.

Overall, the cumulative impacts on wetlands from the project and the past, present and RFFAs are expected to be measureable, but geographically limited.

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Figure 4.22-3: Expanded Development of the Mine

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Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 9/24/2018 5:23:54 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Correct version of the Alternatives memo
Attachments: Alternatives comments.docx

Molly,

Patty and I have talked and I revised my comments to reflect it.

-----Original Message-----
From: Vaughan, Molly
Sent: Thursday, September 20, 2018 1:59 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: RE: Correct version of the Alternatives memo

Thanks Cindi!

-----Original Message-----
From: Godsey, Cindi
Sent: Thursday, September 20, 2018 11:50 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Correct version of the Alternatives memo

Molly,

Here are my comments on the Alternatives. There is one that I need to discuss with Patty and we'll get back to you on it before the 26th.

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, September 17, 2018 3:52 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Correct version of the Alternatives memo

Hello All,
The Corps has distributed the updated, more detail, discussion on Alternatives development for cooperating agency review. Per the below email, comments are welcome if we would like to provide any. I would appreciate your review of the attached, if you have time (I realize this is later than originally anticipated). If you do have any comments, please send them to me by COB Wednesday 9/26.
Thank you,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, September 17, 2018 1:32 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Bill Craig <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Correct version of the Alternatives memo

All,
Attached is the correct version. My apologies for sending previous email.

Attached is the more robust discussion on alternatives. We are not requesting comments, however if your agency has comments and can provide them NO LATER THAN Close of Business October 3, we will incorporate

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as much as possible. Comments received after October 3 will be considered after the release of the draft EIS.

Thanks

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/14/2018 7:55:18 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections
Attachments: Comment spreadsheet Erik Peterson.docx

Molly,

I'm attaching one comment on the Corps' Introduction to Environmental Consequences for your consideration.

I could flesh it out more if you think it is helpful. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 anyhow, a quick comment at this point and if you'd like I could add more. Otherwise food for thought.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

From: McGrath, Patricia
Sent: Tuesday, November 13, 2018 3:50 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hi All –

Some of these sections include reference to other EIS sections or documents. The other EIS sections should be on our SharePoint site. The reference documents should all be on the Corps Pebble EIS website. However, please let Molly or I know if you are having trouble finding a document.
I know this is a tight review schedule. Thanks very much in advance for your review.

Patty

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/6/2018 1:23:33 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 103118_ACP.docx

Hi Molly –

Thanks for the opportunity to review. My calendar was full on Thursday and I was at a conference on Friday so I started to review yesterday.

Attorney Client / Deliberative/Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Wednesday, October 31, 2018 1:58 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Ashley,
As we discussed, here are our draft comments on the first round of Pre-DEIS sections distributed by the Corps for our review. I would appreciate if you can review and send me any comments or edits by Tuesday 11/6. Please also feel free to call with any questions about these comments.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:03:03 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures of Append K Section 4.10 (UNCLASSIFIED)
Attachments: 11_03_2018_Fig_K4.10-2.pdf; 11_03_2018_Fig_K4.10-1.pdf

CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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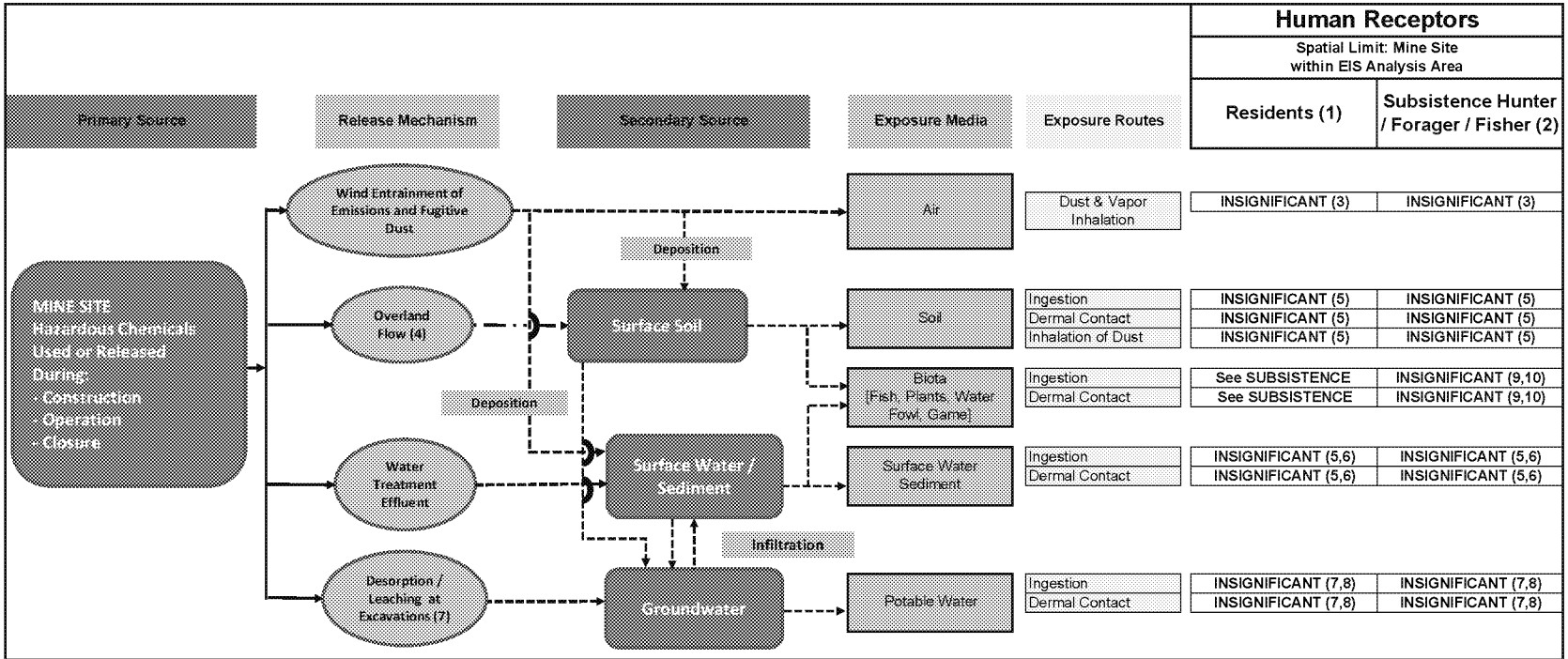

LEGEND

The CSM is based on Alternative 1 and does not evaluate exposure pathways based on unanticipated scenarios (accidents, spills, or failures of mitigation measures) or health impacts to the project-related workforce at the mine site.

Exposure Pathways: "Complete" refers to a potential exposure pathway resulting in receptor exposure of project related hazardous constituents in various media during any of the project phases.
"Incomplete" refers to a potential exposure pathway with a break in the path that prevents receptors from exposure to project related hazardous constituents.

Transport Pathway is incomplete
Transport pathway is complete, but insignificant
Transport pathway is complete

Notes:

(1) The closest communities to the mine site are Iliamna, Newhalen, and Nondalton (within the Lake and Peninsula Borough), each of which are approximately 17 miles from the deposit. An additional five Lake and Peninsula Borough communities are within the EIS analysis area but are further from the mine site (Kokhanok, Port Alsworth, Pedro Bay, Levelock, and Igiugig). In addition, three Nushagak/Bristol Bay communities in the Dillingham Census Area were also identified as geographically close to the of the EIS analysis area (New Stuyahok, Koliganek, and Ekwok). Residential exposure to harvested biota shared by subsistence users is captured and evaluated under subsistence receptors. Likewise, residential direct exposure during recreational activities is captured and evaluated under direct media exposure for subsistence receptors.
(2) Twenty communities, including the eight in Lake and Peninsula Borough and two in Nushagak/Bristol Bay (Ekwok data insufficient), are known to use the EIS analysis area for subsistence (see Section 3.9, Subsistence).
(3) Mine site construction and operations emissions would be in compliance with permitting requirements and air quality standards. Total annual HAPs for all phases would be below Title V permit thresholds. During closure, fugitive PM emissions would be expected to meet air quality standards. In addition, mitigation measures would be used to limit vehicle idling and control dust generation. (i.e., insignificant)
(4) Mine site overland flow would not occur, non-contact and contact water would be captured and sent to the Water Treatment Plant (WTP) for appropriate treatment (i.e., incomplete).
(5) Mine site dust deposition modeling and estimated media (soil, sediment, surface water) impacts indicate that increases would be negligible, with increases of < 3.2% for antimony and < 1% for all other metals. Therefore, risks/hazards would be expected to be indistinguishable from baseline (i.e., incremental increase insignificant).
(6) Mine site non-contact and contact water would be treated at the WTP and effluent would meet permitting requirements prior to discharge (i.e., insignificant).
(7) During the life of the mine, mine site operations and tailings impacts to groundwater would remain within the mine site boundaries (i.e., incomplete). During post-closure, once groundwater monitoring indicates water quality criteria are met, then direct discharge would occur (i.e., insignificant).
(8) Mine site dust deposition modeling and estimated soil concentrations at the boundary are less than migration to groundwater criteria (i.e., insignificant).
(9) Since soil, sediment, and surface water impacts from mine site dust deposition would be negligible relative to baseline (see Note 5), impacts to wild foods would similarly be expected to be negligible to slight relative to baseline. Therefore, risk/hazards from ingesting impacted wild foods would be expected to be indistinguishable from baseline (i.e., insignificant).
(10) There would be a potential for waterfowl to be exposed to mine site standing water bodies (i.e., TSF, ponds, open pit lake), be impacted by contamination, and then harvested and ingested by the affected communities. However, waterfowl and shorebirds are not likely to be attracted to these features because they are not anticipated to provide vegetated cover or food resources and would be characterized by mining activities during operations. PLP would implement mitigation measures to deter wildlife use of the mine site standing water features. Therefore, substantive exposure to wildlife would not be expected (i.e., insignificant).

Mine Site Conceptual Site Model

Figure K4.10-1

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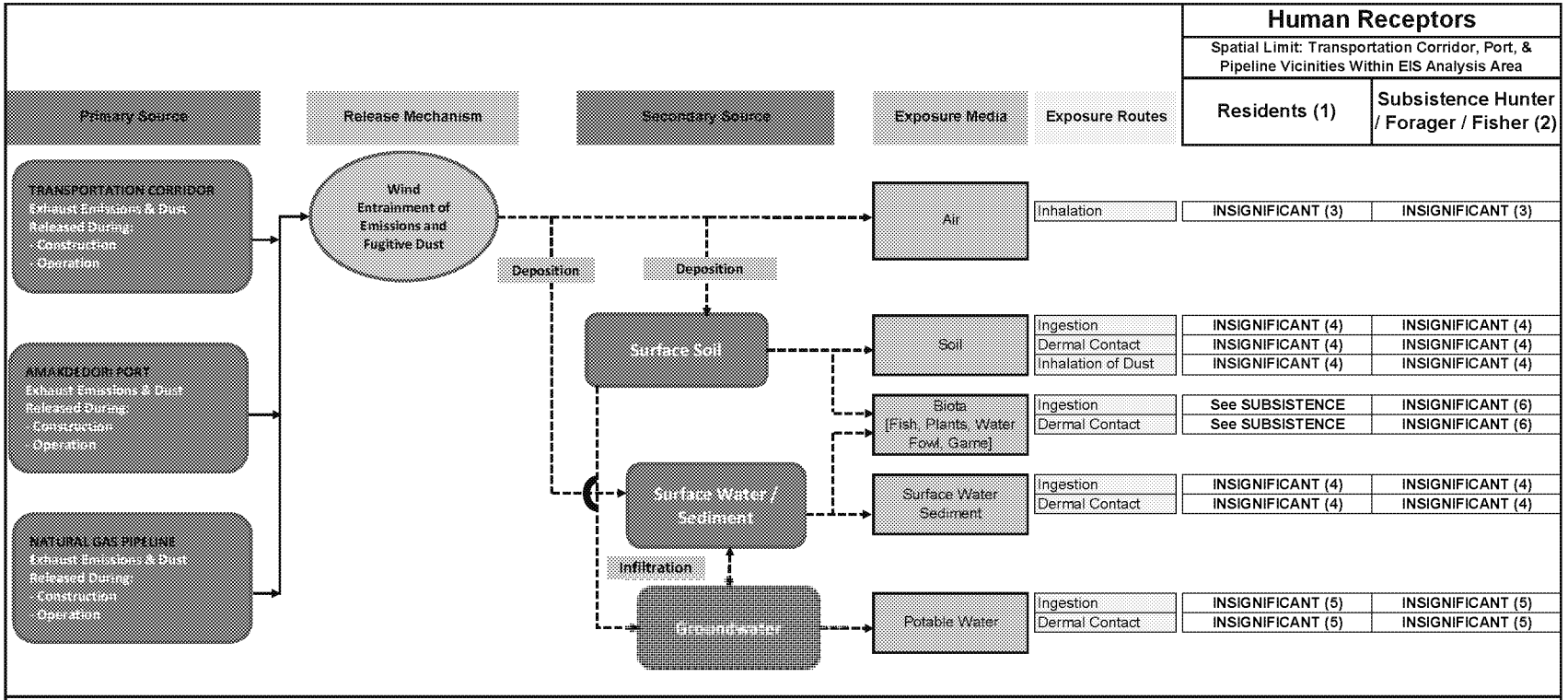

LEGEND

The CSM is based on Alternative 1 and does not evaluate exposure pathways based on unanticipated scenarios (accidents, spills, or failures of mitigation measures) or health impacts to the project-related workforce at the mine site.

Exposure Pathways: "Complete" refers to a potential exposure pathway resulting in receptor exposure of project related hazardous constituents in various media during any of the project phases.
"Incomplete" refers to a potential exposure pathway with a break in the path that prevents receptors from exposure to project related hazardous constituents.

- Transport Pathway is incomplete
- Transport pathway is complete, but insignificant
- Transport pathway is complete

Notes:

(1) The same eleven affected communities evaluated for mine site were evaluated for these components given geographic proximity to the EIS analysis area (see Figure K4.10-1). The eight Lake and Peninsula Borough communities are closest to the transportation corridor, while Kokhanok is the closest community to Amakdedori port (25 miles away). Residential exposure to harvested biota shared by subsistence users is captured and evaluated under subsistence receptors. Likewise, residential direct exposure during recreational activities is captured and evaluated under direct media exposure for subsistence receptors.

(2) Twenty communities are known to use the EIS analysis area for subsistence, including ten of the affected communities evaluated for residential impacts (Ekwok data insufficient) (see Section 3.9, Subsistence).

(3) The transportation corridor ferry terminals, the Amakdedori port, and the natural gas pipeline compressor station on the Kenai Peninsula operational emissions would be in compliance with permitting requirements and air quality standards. Total annual HAPs for all phases would be below Title V permit thresholds. Fugitive PM emissions would be expected to meet air quality standards. In addition, mitigation measures would be used to limit vehicle idling and control dust generation (i.e., insignificant), but a 35-foot buffer on both sides of the transportation corridor would be impacted by snow plow spray, gravel spray, and road dust. Based on distance from these features, the air inhalation exposure pathway would be expected to be insignificant for residents and subsistence receptors .

(4) Transportation corridor, Amakdedori port, and the natural gas pipeline activities could result in dust deposition onto soil, surface water, sediment, and vegetation. Since baseline soils would be disturbed during construction and local rock sources would be used for construction of the roadways, dust deposition would not be expected to increase metal concentrations above baseline conditions. Therefore, any potential impacts would be expected to be indistinguishable from baseline (i.e., insignificant).

(5) Since dust depostion would not be expected to increase metals concentrations above baseline (see Note 4), any subsequent leaching to groundwater would not be expected to result in concentrations above baseline (i.e., insignificant).

(6) Since air emissions would be expected to meet permit requirements and/or air quality standards (Note 3) and dust deposition would not be expected to increase metals concentrations above baseline (see Note 4), impacts to wild foods above baseline would not be expected (i.e., insignificant).

Transportation Corridor, Amakdedori Port, & Pipeline Conceptual Site Model

Figure K4.10-2

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 7/13/2018 12:13:03 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble site visit

Thanks Patty,
I will convey this to my third party contractor.

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Wednesday, July 11, 2018 3:28 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: [Non-DoD Source] Pebble site visit

Hello Shane-

Per our last conversation, I just want to remind you that four of us from EPA will be visiting the Pebble project site on July 31. Our hydrogeologist, geochemist, and myself will be traveling from Seattle and will be available the afternoon of July 30 and the morning of August 1 and could meet with the Corps and AECOM's technical folks during those times. I know that you are planning technical meetings for later in August, but wanted you to be aware of this opportunity as well in case it makes sense to meet sooner in person. Please let me know if you would like to do that.

Thanks –

Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

AMERICAN OVERSIGHT

Message

From: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Sent: 7/12/2018 11:22:22 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Draft Chapter 4 comments due 7/31/2018
Attachments: Sec4.18_Water&SedQual_FINAL.docx; Sec4.22_Wetlands_FINAL.docx; Sec4.26_Vegetation_FINAL.docx; Sec4.1_Intro_FINAL.docx; Sec4.5_Recreation_FINAL.docx; Sec4.11_Aesthetics_FINAL.docx; Sec4.14_Soils_FINAL.docx; Sec4.16_SurfaceWater_FINAL.docx; Sec4.17 Hydrogeology_FINAL.docx

For your agency review.

Vr

Shane McCoy

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 7/12/2018 10:16:59 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: additional schedule information
Attachments: Pebble Timeline 07062018.pdf

All,
Here is a visual of some of the schedule engagements.

Shane

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:15:32 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_13_StreamGagingStationsTransAlt2.pdf

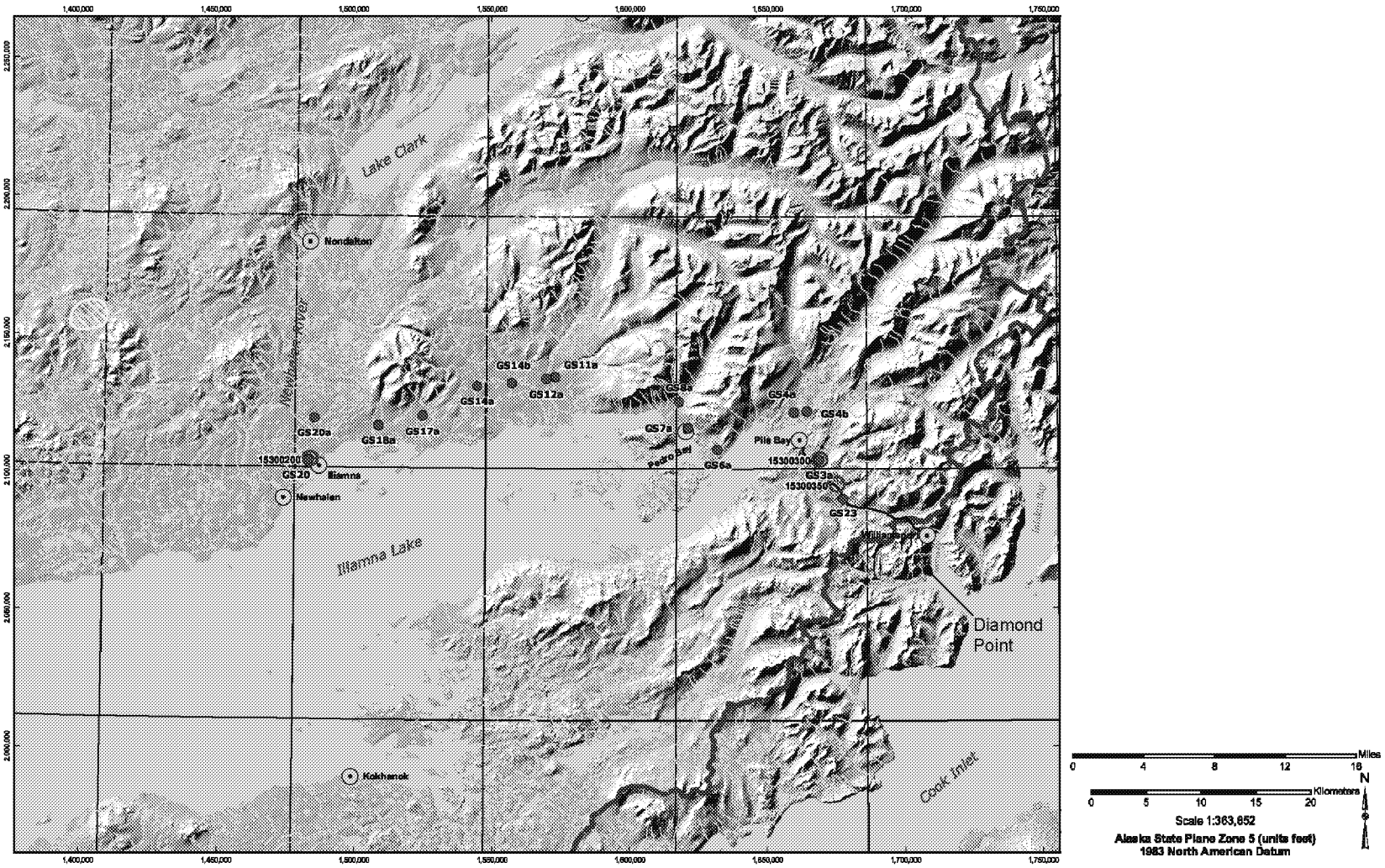
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Source: Knight Piesold et al. 2011a

US Army Corps of Engineers

Legend

- Surface Water Gage Station (USGS)
- Surface Water Gage Station (Pebble Project)
- Communities
- Existing Roads
- General Deposit Location
- Bristol Bay/Cook Inlet Hydrologic Divide

GS18a: Example of Pebble Project Surface Water Gage Station Identification Number.

15300300: Example of USGS Surface Water Gage Station Identification Number.

STREAM GAGING STATIONS - TRANSPORTATION CORRIDOR, ALTERNATIVE 2

PEBBLE PROJECT EIS

FIGURE 3.16-13

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 9/7/2018 7:27:16 PM
To: Wesley Furlong [wfurlong@narf.org]; POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: RE: Project website changes

The problem has been fixed.

Shane

-----Original Message-----
From: Wesley Furlong [mailto:wfurlong@narf.org]
Sent: Thursday, September 06, 2018 3:56 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>; Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; Pres William Evanoff <nondaltontribe@yahoo.com>
Cc: Craig, Bill <bill.m.craig@aecom.com>
Subject: [Non-DoD Source] RE: Project website changes

Shane.

The website function described below does not work. The Native American Rights Fund and the Nondalton Tribal Council are unable to register for updates from the project website. Please fix this issue as soon as possible.

Thank you.

Wesley James Furlong
Staff Attorney
Native American Rights Fund
745 West 4th Avenue, Suite 502
Anchorage, AK 99501
(907) 276-0680 w.
(907) 276-2466 f.
Blockedwww.narf.org

Alaska Bar Association No. 1611108
State Bar of Montana No. 42771409

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-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]

AMERICAN OVERSIGHT

Sent: Thursday, September 6, 2018 1:37 PM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Project website changes

This email is to inform you of a recent change in the Pebble project website: pebbleprojecteis.com. I had received a request to add a function to the site that would allow notification when the information is added to the site. As of Tuesday, that option has been created. You may add an email address and begin receiving weekly updates regarding the site, as appropriate. You will find the registration site at: Blockedhttps://www.pebbleprojecteis.com/emailnotifications

I hope this feature is helpful.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Sent: 4/17/2018 4:28:46 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Andraschko, Amanda M CIV USARMY CEPOA (US) [Amanda.M.Andraschko@usace.army.mil]
CC: Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: EPA's Pebble tribal coordinator

Patty,
I believe that having Amanda and Neverley in contact would be beneficial to all involved. Please have Neverly reach out to Amanda when available.

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, April 17, 2018 8:11 AM
To: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>
Cc: Wake, Neverley <wake.neverley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: [Non-DoD Source] EPA's Pebble tribal coordinator

Hi Shane-

As you know EPA has put together a team of folks to accomplish our cooperating agency and permit review and oversight responsibilities. Neverley Wake is the EPA tribal coordinator assigned to our Pebble team. We think it would be beneficial for Neverley to meet with the Corps' tribal coordinator/advisor. I am assuming that is Amanda. The purpose would be to meet & greet so that Amanda knows she can chat with Neverley as needed or if questions come up related to tribal issues. Are you okay with Neverley reaching out to Amanda or vice versa? I believe that Neverley will be attending at least part of the Anchorage scoping meeting.

Below is Neverley' s contact information and she is cced on this email.

Wake.neverley@epa.gov

(907) 271-3206

Thanks-

Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 7/24/2018 7:11:39 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: Site visit Late August

All,
The Corps is planning on a helicopter site visit to the port area and the transportation corridor(s) in late August 2018. I am coordinating with PLP to determine when cultural surveys will be completed, when work is planned, etc., but if your agency would like to participate, I know we all need lead time. Please let me know if we need to consider additional personnel for our logistics. We intend on a one day visit.

Vr

Shane

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 9/7/2018 2:17:38 PM
To: Wesley Furlong [wfurlong@narf.org]; POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: RE: Project website changes

Mr. Furlong,
Thanks for the information. I will have someone look into fixing it.

VR
Shane McCoy

-----Original Message-----
From: Wesley Furlong [mailto:wfurlong@narf.org]
Sent: Thursday, September 06, 2018 3:56 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>; Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; Pres William Evanoff <nondaltontribe@yahoo.com>
Cc: Craig, Bill <bill.m.craig@aecom.com>
Subject: [Non-DoD Source] RE: Project website changes

Shane.

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Thank you.

Wesley James Furlong
Staff Attorney
Native American Rights Fund
745 West 4th Avenue, Suite 502
Anchorage, AK 99501
(907) 276-0680 w.
(907) 276-2466 f.
Blockedwww.narf.org

Alaska Bar Association No. 1611108
State Bar of Montana No. 42771409

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-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, September 6, 2018 1:37 PM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Project website changes

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I hope this feature is helpful.

VR

Shane McCoy
Program Manager

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 10/11/2018 7:00:21 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)
Attachments: 10_11_2018_Pebble_EIS_Dry Stack_Memo.pdf

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

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Date: **September 24, 2018**

To: **Shane McCoy, USACE**

From: **Jim Scott, PE; Steve Denton, PE; Cecil Urlich, PE; Bill Craig, AECOM**

Subject: **Pebble Project – RFI 054 Technical Report Review**

1.0 INTRODUCTION

The Pebble Limited Partnership (PLP) plans to produce tailings at a throughput of 180,000 tons per day (tpd) at the proposed Pebble Mine. Approximately 86 percent of the tailings (155,000 tpd) will be relatively inert bulk tailings, the remainder will be pyritic tailings. The Proposed Action for bulk tailings is to produce and store thickened tailings with solids content of approximately 55 percent. Thickened tailings are drier than conventional slurry tailings that have solids contents of 20 to 40 percent.

A bulk tailings option is being considered to produce filtered (dry stack) tailings using filtration dewatering technology. The pyritic tailings are not considered for filtration because they need to remain inundated to reduce the potential for acid rock drainage. Bulk tailings filtration would require filter presses to mechanically dewater the tailings to a solids content of 80 to 85 percent.

This technical memorandum (memo) summarizes our review of the PLP technical report on the filtered (dry stack) tailings deposition option. Specifically, the memo addresses several technical considerations. In AECOM's professional opinion, filtered (dry stack) tailings is not practicable, both technically and economically, for the Pebble Project for the reasons described below.

2.0 INFORMATION REVIEWED

The following PLP reports/documents were reviewed for this technical memo and are attached:

- PLP RFI 054 dated September 5, 2018.
- PLP RFI 076 dated September 11, 2018.

3.0 TECHNICAL CONSIDERATIONS

3.1 TAILINGS GRADATION IMPACT

The nature of the ore, particle sizes, and mineralogy are important when considering filtered and dry stack of tailings operations. High percentages of clay minerals and clay-size particles can create challenges for the filtration plant operations. Filter clogging necessitating shutdown, separate or emergency storage area(s) during down time, and additional filter units can occur. The center of filter cakes can also become wet, sloppy and sticky, which can result in transportation difficulties of the "dry" tailing. The filter process is generally more efficient when the clay content is low. High specific gravity and lower "active" clay minerals are better for filtration.

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The thickening and filtration performance of dry stack tailings is mostly directly related to the tailings fines content, or specifically the clay content. The clay content for the Pebble tailings has been determined to be mostly in the form of aluminosilicate which is a colorless crystalline mineral that is a combination of silicate and aluminate, also known as kaolin or china clay. The aluminosilicate groups represent approximately 30% of the samples on average which is very high for tailings filtration. The Pebble bulk tailings will have a relatively high clay content for a successful tailings filtration application because of the following reasons:

- The Pebble tailings product produced by the grinding circuit test work shows a cumulative 80 percent passing (P80) size of 135 microns. The approximate tailings grind sizes are as follows:
  - 60 percent passing 74 microns (fines content)
  - 50 percent passing 50 microns
  - 33 percent passing 20 microns
  - 13 percent passing 2 microns (clay-size fraction)
- The Pebble filtered tailings production rate of 155,000 tpd is 4.4 times higher than that of Karara Mine, an iron ore mine in arid Western Australia, which produces 35,000 tpd of filtered tailings. Karara is the largest filtered tailings producer in the world. Tailings production was challenged by higher than expected fractions of fine tailings that could not be filtered because of insufficient dewatering capacity.
- The Pebble filtered tailings production rate of 155,000 tpd is roughly 10 times higher than that of La Coipa Mine, a copper mine in the Atacama Desert of Chile that operated at a capacity of 16,500 to 20,000 tpd. In 2010, a high concentration of clay in the La Coipa ore blend resulted in a complete overhaul of the filter plant.
- The proposed Pebble tailings grind has a relatively high fines content and clay-size fraction for copper tailings and could result in filter clogging, necessitating mill and / or filter plant operations shutdown and / or the need for an emergency bulk TSF.
- The relatively high fines content and clay fraction of the bulk tailings may also result in the filter cakes becoming wet and sticky, which could result in difficulties in transporting and stacking the “dry” tailings.

3.2 CONSUMABLES ESTIMATE

Bulk tailings filtration would require an unprecedented number of filter presses in parallel to mechanically dewater the tailings to a solids content of 80 to 85 percent. The estimates of consumables such as fuel, natural gas, flocculant, filter cloths, piping, valves, etc., provided by PLP for the filter and dry stack operations appear to be reasonable as follows:

- The bulk tailings production rate of 155,000 tpd is beyond precedent for a filtered tailings project as shown by the largest worldwide dry stack operations being 35,000 tpd at Karara Mine and 20,000 tpd at La Coipa Mine, both in arid climates.
- Maintaining a consistent production of suitable filtered tailings for dry stack is unprecedented as shown by the Karara and La Coipa project histories and might not be possible especially in the wet climate at Pebble.
- No known project, proposed or operating, has been designed using eight lines of eight filters each, for a total of 64 filters.
- Hudbay’s proposed Rosemont Project in Arizona is currently (as of 2017) planning a tailings production rate of 90,000 tpd using a total of 20 filters (AFP IV automatic filter

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presses) with additional space allowed for the installation of four additional filters, if necessary.

- It has never been proven that even a planned filtered tailings production rate of 90,000 tpd is attainable and sustainable, let alone a rate of 155,000 tpd as planned at Pebble.
- PLP estimated an average electrical load of 19 to 23 megawatts and additional natural gas consumption for power generation of 5,000 million cubic feet per day. This represents an approximate heat rate 9,000 Btu per kilowatt hour, which is reasonable.
- The PLP estimates of diesel and natural gas consumption for plant support equipment and HVAC seems reasonable for a 155,000 tpd dry stack operation.

3.3 PERSONNEL REQUIREMENTS

PLP has estimated that the operating crew for the filter plant would number 250 personnel and that 400 personnel would be required for the filtered tailings distribution. This estimate of personnel to operate and maintain the filter plant and to operate the dry stack appears to be reasonable.

3.4 FILTER PLANT UTILIZATION

The PLP assumption of 75 percent utilization for the filter plant (Section 1.2 of RFI 054) is reasonable when considering the following worldwide dry stack operations experience:

- The Karara filter and dry stack operation was challenged by higher than expected fractions of fine tailings that could not be filtered because of insufficient dewatering capacity, requiring a back-up slurry TSF. Ongoing dewatering limitations resulted in filter refurbishment, a backup slurry TSF, and thickener and cyclone installations.
- The high concentration of clay in the La Coipa ore blend resulted in a complete overhaul of the filter plant. In 2013, the facility was closed; it is no longer operating. La Coipa's TSF consisted of two storage areas: a dry stack TSF; and an emergency slurry TSF for when the filter plant or mobile stacker were not working effectively.
- At Pogo Mine in Alaska, filtered tailings placement fell below 80 percent of the target tailings design density during winter. It is reasonable to expect a greater target deficiency at Pebble because the Pebble operation is so much larger than Pogo.

3.5 ADDITIONAL SLURRY TSF NEED

For the filtered and dry stack tailings option, PLP has assumed a filter plant utilization of 75 percent to allow for maintenance, downtime, filter cloth replacement, and/or filtration issues with the high clay content bulk tailing, and to mitigate the impacts of inclement weather. This assumption will require that the bulk tailings be disposed of as slurry tailings in a separate conventional tailings storage facility (TSF) during the 25 percent utilization loss of the filter plant. It is reasonable to assume that the tailings would need to be directed to a conventional TSF 25 percent of the time for the following reasons:

- Typical Alaska wet conditions will prevail each year during the spring freshet (1 to 2 months) and late summer to autumn rainy season (3 to 4 months). This can create a

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challenge for achieving filtered tailings placement and compaction because of trafficability issues that will impact haul trucks and support equipment access.

- This challenge has been managed at Greens Creek Mine in Alaska by use of a temporary covered tailings storage area near the ore processing facility during wet weather to minimize additional moisture absorption from rain and snow, and during warm weather to minimize excess drying. The tailings are then spread and compacted when weather conditions allow. Greens Creek produces about 2,200 tpd of total tailings, which are split with roughly half, or 1,100 tpd, being filtered tailings for the dry stack, and the other half being used as underground mine backfill.
- Filtered moisture and tailings density targets will be challenging to achieve during sub-zero winters due to surface freezing, and snow becoming embedded in the compacted tailings, further reducing their compacted density. This challenge has been managed at Pogo Mine in Alaska where filtered tailings placement fell below 80 percent of the target tailings design density during winter. The Pogo Mine produces about 2,600 tpd of total tailings, that are roughly split with about half, or 1,300 tpd, being filtered tailings for the dry stack, and half being used as underground mine backfill.
- Karara tailings production was challenged by higher than expected fractions of fine tailings that could not be filtered because of insufficient dewatering capacity, requiring a backup slurry TSFand adding a thickener and cyclones.
- The La Coipa TSF consisted of two storage areas: a dry stack area (Rahco), and an emergency storage area (Rakito) for when the filter plant or mobile stacker were not working effectively. About 100 million tons of tailings exist at the site.
- The challenges of precipitation and winter conditions at the significantly smaller Greens Creek and Pogo dry stack operations, along with fine tailings and dewatering challenges at the larger Karara and La Coipa dry stack operations, justify the assumption of some of the Pebble bulk tailings needing to be directed to a slurry TSF, which would need to be built in addition to a dry stack TSF.
- It is reasonable to assume the Pebble tailings would need to be directed to a slurry TSF 25 percent of the time.

3.6 DRY STACK OPERATIONS LAYOUT

Directing bulk tailings 25 percent of the time to a slurry TSF would require a dry stack TSF and a slurry TSF for 116,250 tpd and 38,750 tpd, respectively. PLP presented two alternate scenarios: Scenario 1 is the dry stack TSF at Site G (current bulk TSF site) and slurry TSF at Site K (northeast of Main Water Management Pond {WMP} site); Scenario 2 is reversed with the dry stack TSF at Site K and the slurry TSF at Site G. Both conceptual layouts are reasonable. The PLP conceptual layout of facilities appears to be reasonable and necessary. The facilities as shown do not appear to be oversized. Justifications for this conclusion are as follows:

- The dry stack TSF and slurry TSF would store 75 percent and 25 percent of the bulk tailing, respectively. Site K is flatter than Site G. Therefore, the Scenario 1 Site G dry stack TSF and Site K slurry TSF would have similar footprint areas despite the difference in storage capacities. However, the Scenario 2 Site K dry stack TSF would have a much larger footprint than the Site G slurry TSF. Both sites would require ancillary facilities and infrastructure.

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- The dry stack TSF would also require perimeter embankments to enhance stability, but the embankments would not need to be as high and robust as for a slurry TSF. Site G embankments for a Scenario 1 dry stack TSF or for a Scenario 2 slurry TSF would be at the existing south and main embankments locations. Site K embankments would be along three sides of a Scenario 1 slurry TSF and five sides of a Scenario 2 dry stack TSF.
- A slurry TSF would be required to store 25 percent of the bulk tailings during filter plant unavailability and when tailings cannot be filtered. These events will not be able to be predicted except for planned preventative maintenance, so the mill and operations personnel will need to continually coordinate and be prepared around the clock to change from a dry stack operation to a slurry operation.
- An additional slurry TSF would have embankments that would need to be raised as the tailings and water levels rise in the TSF, and would require support facilities including tailings conveyance pipelines and discharge spigots/cyclones, supernatant water decant and return systems, seepage collection and return systems, diversion ditches, access roads, etc.
- Special care will be needed in maintaining a slurry TSF in operations mode at all times during the dry stack operations, especially in winter when deposition pipeline and spigot/cyclone components that are not being used could freeze, thereby rendering them inoperable when suddenly they might be needed with no warning. Special insulation techniques and monitoring will be needed to ensure the slurry TSF components are kept operational at all times.
- A separate water management pond (WMP) would be required to store runoff and seepage from the dry stack TSF. This pond would be larger than the current proposed main WMP because there would be no water storage available in the dry stack TSF and it would have a much smaller supernatant pond than in the slurry TSF. An alternative would be to increase the size of the current proposed main WMP.
- Water trucks would be required to suppress dust from the exposed dry stack tailings. Bulldozers, loaders, and trucks will be required for clearing snow off the exposed dry stack tailings. This snow would be considered as mine contact water and would be managed by stockpiling and treatment. This snow could be dumped in the pyritic TSF, but not in the main WMP (due to the fact that it will contain soil and rock particles), and not in the slurry TSF with inert tailings.
- Seepage from the dry stack TSF and slurry TSF would need to be collected and routed to seepage collection ponds, located downstream of each TSF embankment. The collected seepage and runoff would need to be pumped to the main WMP for recycle to the mill, or for treatment and release.
- A TSF in Site K would require more seepage controls than in Site G because of the additional challenges posed by the Site K topography. Site K seepage control measures could require a lined TSF basin and/or a slurry cutoff wall downstream of the TSF. Seepage and runoff collection ponds would be required north and south of Site K to reduce the potential for the discharge of contact water to the North Fork Koktuli and Upper Talarik drainage areas.

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- Dry stack TSFs in Site G and Site K would allow for ongoing concurrent reclamation of the dry stack downstream faces and shell zones during operations. The slurry TSF reclamation strategy would be consistent with the currently proposed strategy.
- The total volume of water managed for a dry stack TSF would be similar to, but more complex than, the current proposed bulk TSF. The current bulk TSF will entrain transient water in the TSF as tailings settle and water seeps through the main embankment. Dry stack transient water will immediately report to the water management system. Therefore, the WMP would be larger than the current WMP to accommodate this transient water and store the supernatant water in the current TSF. Dry stack tailings at Site K would require additional WMPs to the north and south.
- The conceptual Scenario 1 and 2 layouts of facilities appear to be reasonable; all of the facilities that are shown in the Scenario 1 and 2 layouts are needed and appear to be reasonable in size at this conceptual level of alternatives analysis.

3.7 DRY STACK OPERATIONS REQUIREMENTS

PLP appears to have assumed and estimated an appropriate amount and mix of equipment, operating hours, diesel consumption, and labor to haul and place the filtered tailings into a dry stack TSF.

- PLP specified 100-ton trucks for hauling filtered tailings. It is assumed these would be rigid frame trucks similar to a Caterpillar model 777. These trucks are commonly used in mining and earthmoving applications, though their ability to negotiate poor ground conditions is limited. 60-ton articulated trucks have lower ground pressure and may be more suitable for the application, though more trucks would be needed to handle the anticipated volume of tailings and therefore, cost would increase.
- The center of the disposal sites is about a four-mile haul from the mill. Depending on grade, road condition, loading time, and tailings stack surface conditions, trucks would be expected to make one to two round-trips per hour. PLP's estimate of 70 trucks, including spares, represents the one trip per hour case and thus is in the reasonable range for truck productivity.
- The estimate of fuel consumption by PLP is consistent with the use of a 70 truck fleet and a haul productivity of one round-trip per hour.
- The mix of support equipment for spreading, compacting and maintaining the dry stack facility appears reasonable.
- About 50 to 60 truck drivers will be needed for the hauling operation using a fleet of 70 haul trucks. Assuming there will be four crews rotating in and out of the mine, 200 to 240 truck drivers will be needed. PLP's estimate of 400 employees to cover operation of support equipment, maintenance, supervision and technical / administrative positions appears reasonable.

3.8 CAPITAL AND OPERATING COST ESTIMATES

The approximate capital and operating cost estimates developed by PLP as presented in Table 1.1 and Table 1.2 appear to be reasonable.

- The costs, factors, and fuel usage in Table 1.1 and Table 1.2 appear reasonable.

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- The general nature of the disposal facilities appears reasonable and appropriate for the disposal task.
- The equipment compliment and cost estimates provided by PLP appear to be on the upper end of the range to be expected for transport of the estimated volume of filtered tailings.
- In general, the PLP estimates appear to be conservative and reasonable.

4.0 FILTERED TAILINGS (DRY STACK) ASSESSMENT SUMMARY

In AECOM's professional opinion, filtered (dry stack) tailings is not practicable, both technically and economically, for the Pebble Project for the following reasons.

- The proposed bulk tailings high fines content and clay-size fraction could result in filter clogging necessitating mill and / or filter plant operations shutdown and / or the need for emergency tailings storage areas.
- The fine bulk tailings gradation may also result in the filter cakes becoming wet and sticky, which could result in transportation and placement difficulties of the "dry" tailings.
- The planned bulk tailings production rate is both unprecedented and unproven, and is significantly higher than the world's largest dry stack operations which have experienced operation difficulties resulting in the need for backup slurry TSFs.
- Filtration and dry stack operations are generally utilized when arid region water supply challenges drive the economic requirements. Most dry stack operations are located in arid climates or regions. Two relatively small Alaska dry stack operations were selected because of site-specific reasons.
- In high precipitation and cold environments, the "dry" tailings may become overly moist or wet; necessitating additional efforts (with related costs) to transport, place, and compact the tailings in the surface disposal facility. Mitigation during operations could reduce throughput and slow production.
- Filtered tailings may require additional pre- and post-processing beyond that required for the Proposed Action of thickened tailings to achieve desired moisture contents. This can include thickening prior to filtration, or reworking the tailings post deposition.
- Due to cold temperatures during the winter, operations may need to be curtailed if the tailings become overly wet and freeze, as has and is continuing to occur at the two current Alaska relatively small dry stack operations.
- Wet or sloppy tailings from process upset conditions will require separate or emergency areas for slurry tailings deposition which would include a slurry TSF and its associated tailings discharge, water return, seepage collection, etc. facilities.
- Filtered tailings operations typically have high capital and operating costs. The estimates PLP provides for the incremental increases in capital and operating costs appear reasonable and make it clear the dry stack method would render the project uneconomic.

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5.0 STATEMENT OF PROFESSIONAL RESPONSIBILITY

Assessment comments on the feasibility of the filtered (dry stack) tailings alternative for the Pebble Project are presented in this memo. They are based partly on the evaluation of technical information provided by PLP, and partly on the understanding of the characteristics of the planned mine facilities, tailings properties, and site conditions in the area. The comments expressed are limited by the information available and the inherent limitations of existing investigations and analyses used to evaluate proposed tailings dewatering technologies. AECOM does not guarantee the performance of the project in any respect, only that our engineering work and judgments rendered meet the standard of care of the profession.

AECOM represents that our services are performed within the limits prescribed by the client, in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation to Client, expressed or implied, and no warranty or guarantee are included to intended.

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RFI 054
Pebble Project EIS

Request for Information

Title/Subject:	**Dry Stack Tailings**
Requestor:	**Bill Craig/Nancy Darigo/Cecil Urlich, AECOM**
Date Transmitted:	**7/9/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**7/20/18**
Rationale:	**Scoping comments raised concern that the tailings storage facility dams could fail. To address the concern for dam failures, some commenters suggested that a "dry stack" tailings disposal alternative should be analyzed and recent mining NEPA documents such as Donlin Gold EIS analyzed dry stack as a reasonable alternative. Additionally, the Mount Polley Panel Report suggests surface storage using filtered tailings technology (dry stack) is a prime candidate for best available tailings technology.** **Additional information is needed to evaluate the technical and economic feasibility of this option for NEPA purposes. The information will be used to develop and screen a reasonable range of alternatives for Chapter 2 of the EIS.**
Describe the Information Requested and Level of Detail:	**1) What equipment and energy input would be needed to filter the processed tailings at the proposed Pebble throughput rate of 180,000 tons per day?** **2) What would the confidence be in maintaining continuous dry stack operations year round in consideration of filtering, handling and disposal, given seasonal weather and possible clay content changes?** **3) Would there be fine tailings with high clay content that might not be efficiently filterable; what percentage of the total would these be; and where would they be disposed?** **4) Would there be different issues with filtering, handling, and disposal of the bulk vs pyritic tailings?** **5) What major support facility and operation additions would need to be considered under a dry stack scenario (e.g., embankments, water retention ponds, back-up slurry tailings storage facility, seepage collection systems, dust control, ongoing reclamation)?** **6) What would be the ultimate volume differences: 1) between dry stack tailings and the currently proposed bulk and pyritic tailings; and 2) between onsite water storage requirements of a dry stack scenario and the currently proposed water management ponds?** **7) What would be the type/quantity of mobile equipment and/or conveyors needed to transport and place tailings in a dry stack? How would material handling change during winter versus summer?** **8) How would waste rock storage be different under a dry stack scenario than the currently proposed plan?** **9) How would interim reclamation and final closure be different than the currently proposed plan under a dry stack scenario?** **10) How would the dry stack cost compare with the current plan in terms of full life cycle through to closure and post-closure including design,**

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	construction, operations, maintenance and surveillance?

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	Click here to enter text.
List Number and Type of Response Attachments:	**RFI 054 – Tailings_Filtration_Technical_Report.pdf**
Date Returned to USACE:	Click here to enter text.

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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THE pebble PARTNERSHIP

From: James Fueg, Pebble Limited Partnership

To: Shane McCoy, US Army Corps of Engineers

Date: September 5th, 2018

PLP staff and consultants have prepared the following responses to the AECOM Request for Information (RFI) 054 on the Environmental Impact Statement (EIS) for the Pebble Project (Pebble).

A summary of RFI 054 is presented below:

Rationale: *Scoping comments raised concern that the tailings storage facility dams could fail. To address the concern for dam failures, some commenters suggested that a "dry stack" tailings disposal alternative should be analyzed and recent mining NEPA documents such as Donlin Gold EIS analyzed dry stack as a reasonable alternative. Additionally, the Mount Polley Panel Report suggests surface storage using filtered tailings technology (dry stack) is a prime candidate for best available tailings technology.*

Additional information is needed to evaluate the technical and economic feasibility of this option for NEPA purposes. The information will be used to develop and screen a reasonable range of alternatives for Chapter 2 of the EIS.

Information Requested and Level of Detail:

1. *What equipment and energy input would be needed to filter the processed tailings at the proposed Pebble throughput rate of 180,000 tons per day?*
2. *What would the confidence be in maintaining continuous dry stack operations year round in consideration of filtering, handling and disposal, given seasonal weather and possible clay content changes?*
3. *Would there be fine tailings with high clay content that might not be efficiently filterable; what percentage of the total would these be; and where would they be disposed?*
4. *Would there be different issues with filtering, handling, and disposal of the bulk vs pyritic tailings?*
5. *What major support facility and operation additions would need to be considered under a dry stack scenario (e.g., embankments, water retention ponds, back-up slurry tailings storage facility, seepage collection systems, dust control, ongoing reclamation)?*
6. *What would be the ultimate volume differences: 1) between dry stack tailings and the currently proposed bulk and pyritic tailings; and 2) between onsite water storage requirements of a dry stack scenario and the currently proposed water management ponds?*
7. *What would be the type/quantity of mobile equipment and/or conveyors needed to transport and place tailings in a dry stack? How would material handling change during winter versus summer?*
8. *How would waste rock storage be different under a dry stack scenario than the currently proposed plan?*

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9. *How would interim reclamation and final closure be different than the currently proposed plan under a dry stack scenario?*
10. *How would the dry stack cost compare with the current plan in terms of full life cycle through to closure and post-closure including design, construction, operations, maintenance and surveillance?*

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1.0 RFI RESPONSE

1.1 RFI 054 – 1

"What equipment and energy input would be needed to filter the processed tailings at the proposed Pebble throughput rate of 180,000 tons per day."

Tailings will be produced at the Pebble Project at a throughput of 180,000 tons per day (tpd). Approximately 86% (~155,000 tpd) of tailings will be produced as bulk tailings, with the remainder being produced as pyritic tailings. Only the bulk tailings have been considered eligible for filtration due to the high percentage of fines and geochemical properties of the pyritic tailings.

Filtration of the bulk tailings would require a number of filter presses working in parallel to mechanically dewater the tailings to the desired solids content (assumed 80-85% solids content by material weight).

Only commercially available filter presses have been assumed for filtered tailings operations at Pebble for the purposes of this RFI. Figure 1.1 compares Pebble to a range of operational filtered tailings projects and studies. Operations with production rates less than 30,000 tpd and those in cold climates typically use trucking and placement to dispose of filtered tailings rather than conveyors. High throughput operations in warmer climates such as La Coipa and Karara use mobile stacking equipment (i.e. conveyors) to reduce the operating cost.

Filtered tailings stacks are in operation at cold region mines including Pogo and Greens Creek in Alaska and Raglan in Quebec. Filtered tailings stacks at Minto and Bellekeno in the Yukon are in closure.

High throughput filtration and studies currently in development include Peñasquito, Kisladag and Rosemont. These large-scale operations are in warm climates and use mobile stacking conveyors, spreaders and trippers to place material within the filtered tailings facility. Filtered tailings will be co-disposed with coarse waste rock at Peñasquito, while Kisladag and Rosemont filtered tailings will be placed and compacted, and subsequently contained within coarse waste rock buttresses. Dozers are used to spread the filtered tailings as required.

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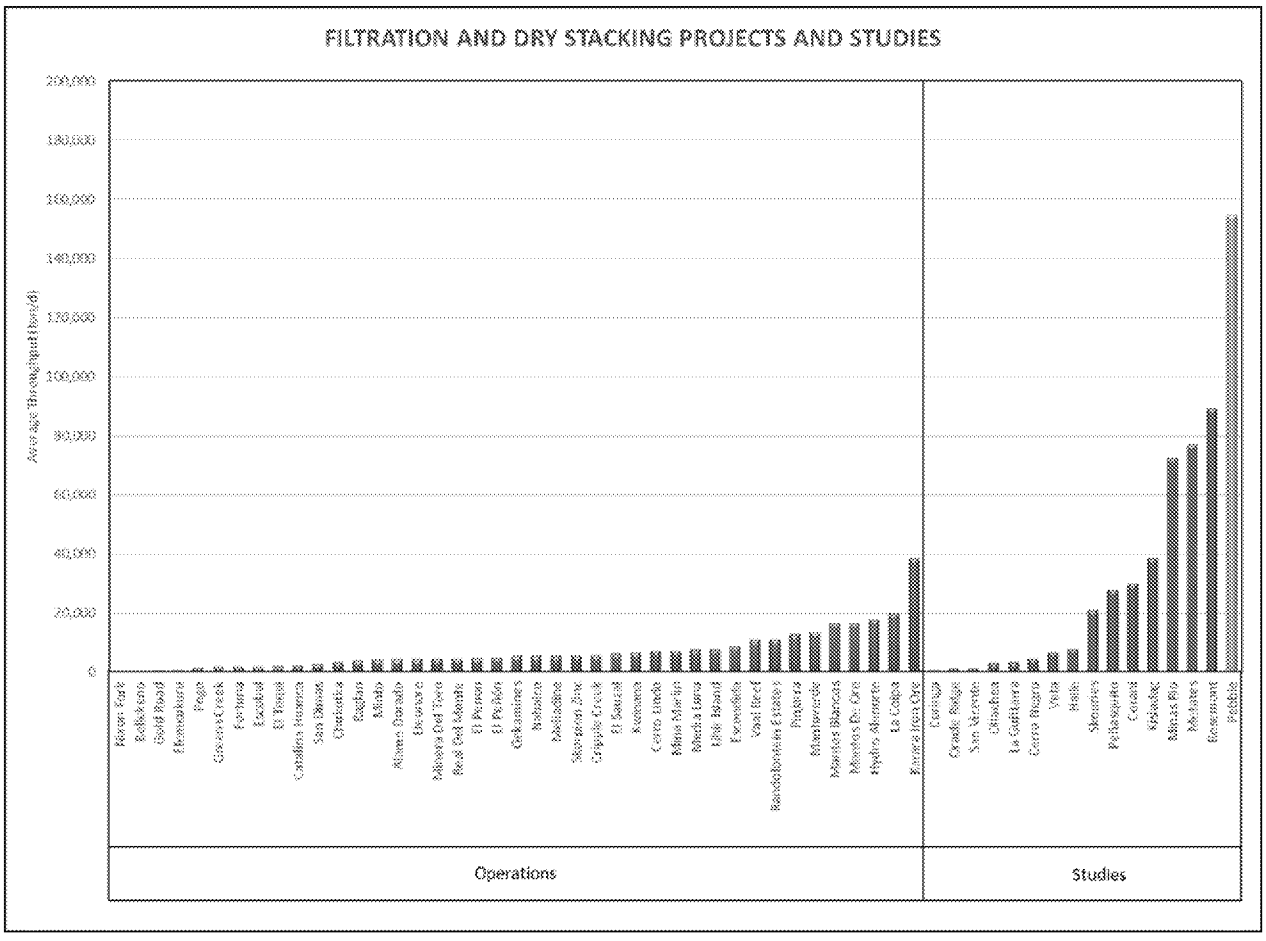

Figure 1.1 Filtered Tailings Operational Projects and Proposed Projects

Thickening and filtration performance is typically directly related to the aluminosilicate content. Figure 1.2 presents the mineralogy for the Pebble West samples. The aluminosilicate groups represent approximately 30% of the samples on average which is very high for a tailings filtration application.

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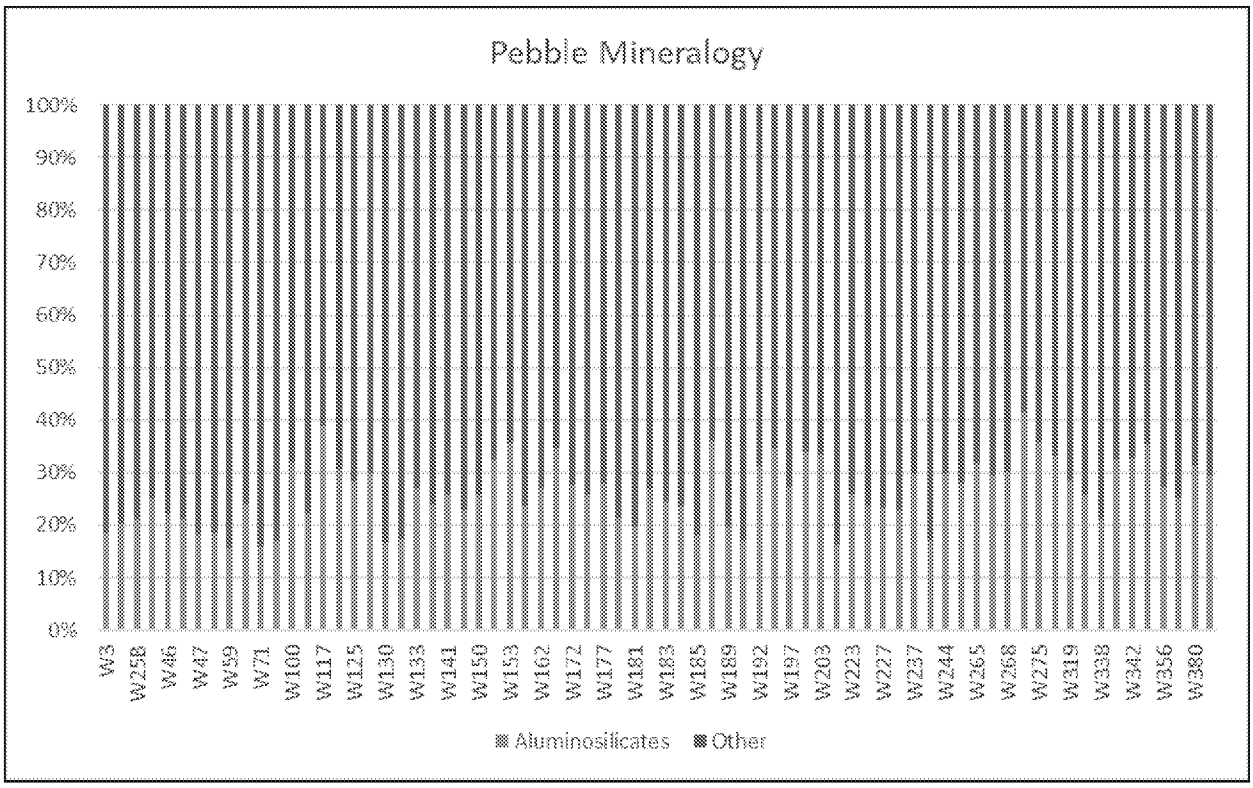

Figure 1.2 Pebble West Samples Mineralogy

Thickening the tailings as much as practicable prior to filtering provides a benefit for samples with high clay content. This leads to selecting a high compression thickener, rather than a high rate or paste thickener. Figure 1.3 presents the expected hourly filter throughput for a large, market-ready filter versus the total aluminosilicate content after thickening in a high-compression thickener. The clay content of Pebble is amongst the highest for considered filtered tailings studies. The challenges and technical risk for filtering and stacking tailings at the size and complexity of the Pebble project are unprecedented and, as such, an approach which considers filtered tailings management is impracticable for the Pebble site.

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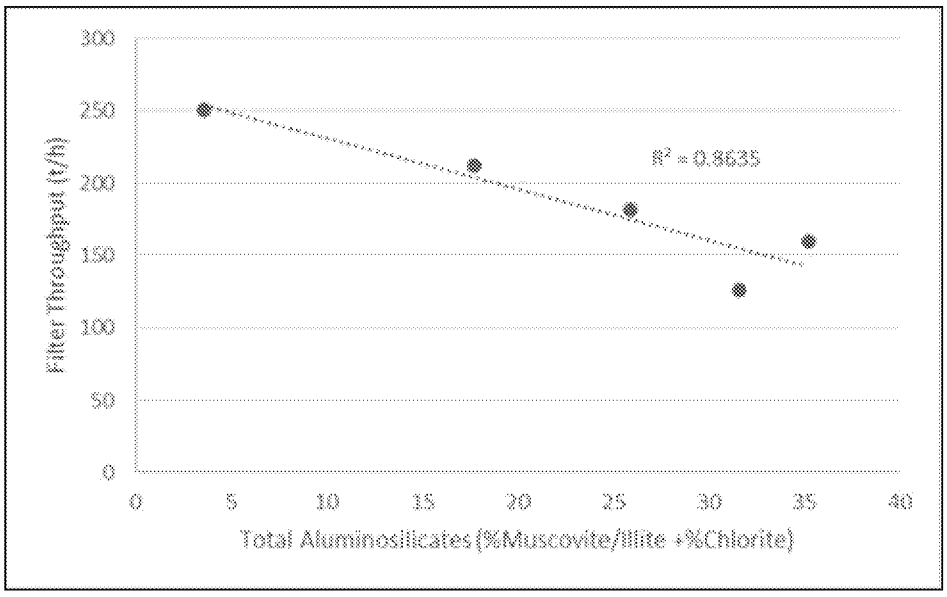

Figure 1.3 Expected Hourly Filter Throughput

The following equipment would be required to treat the average bulk filtered tailings throughput of 155,000 tpd based on the aluminosilicate content:

- 4 x 215 ft. diameter high-compression thickeners, each with duty/standby underflow pumps (in addition to the thickeners included in the current concept)
- 8 lines of 8 filters installed, each with ~10,800 ft^2 of filtration area and 1.5 – 2 inch chambers and inflatable membranes for squeezing the filter cake
- Each filter will operate at a nominal throughput of 140 t/h at an average utilization of 85%
- Each filter line will include two large filter feed tanks with 3 hours residence time (16 tanks total)
- Each filter will have a dedicated filter feed pump and discharge feeder
- Common filter services, including membrane pressing air, blowing air, filtrate return services and water services
- 4 truck loading stations with mass flow bins with an approximate residence time of 2 hours
- 4 emergency bypass systems to covered stockpiles with reclaim into the truck loading stations in the event of truck downtime

Energy consumption to thicken, filter and convey material to the storage bins is expected to be 2.5–3 kWh/t, equivalent to an average operating load of 19-23 MW. Additional heating power of approximately 10 MW will be required for the nominated buildings (e.g. mass flow bins, etc). Connected power is likely to be substantially higher than the nominal demand, at approximately 30 MW, accounting for the cyclical demand from filtration. Additional power generation facilities will be required to supply this additional demand

The thickener will consume approximately 50 g/t of flocculant on average, which equates to 9 tons of flocculant per day.

Each filter cloth is expected to last approximately 1,000 cycles, which corresponds to approximately 800 new cloths per day. This is significantly less than the industry standard of approx. 3,000 cycles and is because of the high clay content in the Pebble bulk tailings. Maintenance logistics and disposing of used cloths would be a significant logistical challenge and is not considered practicable.

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Other consumables include wet ends, piping, and valves. A new wet end and set of filter feed valves will be required every 2 – 3 days, on average, to keep the 64 filters operating.

Major equipment emissions are expected to be limited to front-end loaders for rehandling, dozing of stockpiles, forklifts, mobile cranes, bobcats and light vehicles. Average fuel consumption rates are anticipated to be approximately 2,500 gallons per day (gpd). The HVAC system is anticipated to require approximately 828,000 cubic feet (cf) of natural gas per day. Power generation for the tailings thickening and filtration facility will require approximately 5,000,000 cubic feet (cf) of natural gas per day. Total carbon dioxide (CO_2) emissions for the Filter Plant are estimated to be approximately 75 tpd.

The Pebble project would represent almost four times more throughput than the largest filtered tailings project currently in operation (Karara Iron Ore Mine). The scale of Pebble is also more than twice the throughput of the proposed Rosemont project, and in a more challenging environment. The Pebble tailings filtration plant would require a labour force increase in excess of 250 people to operate and maintain the filter plant. This does not include the additional labour force required for the trucking, placement, spreading and compaction of the filtered tailings in the TSF.

1.2 RFI 054 – 2

"What would the confidence be in maintaining continuous dry stack operations year round in consideration of filtering, handling and disposal, given seasonal weather and possible clay content changes?"

A Filter Plant utilization of 75% has been assumed for the filtered tailings concept, allowing for maintenance, downtime, filter cloth replacement, and/or filtration issues with high clay content materials. Bulk tailings will be disposed of in a separate conventional tailings storage facility as slurry tailings during these periods.

During spring freshet (one to two months) and the later summer, autumn rainy season (three to four months),filtered tailings placement and compaction will be challenging due to trafficability issues for haul truck and support equipment access.

This has been encountered at the Greens Creek Mine and has been managed by temporarily stockpiling tailings during wet weather to minimize additional moisture absorption during wet periods, or drying during warm periods. The tailings are then spread and compacted once the conditions allow for adequate placement and compaction of the material (ADOEC, 2003). This is only possible due to the low throughput at Greens Creek (approx. 1,150 tpd of filtered tailings production).

Tailings density targets would be challenging to achieve during winter months, when the temperatures fall below freezing, due to surface freezing of material (this issue has been encountered at the Pogo Mine where during winter months, placed filtered tailings fell below 80% of the target design density of the tailings) (Sumitomo, 2014). Further preventing snow inclusion within the compacted mass will likely prove impossible, further reducing the compacted density.

The Pebble throughput is 4 times higher than the largest operational or historic facility that has employed filtered tailings (Karara Iron Ore Mine @ 35,000 tpd).

The combined challenges of unprecedented scale, clay content, precipitation, and winter conditions point to filtered tailings being an impracticable solution for Pebble.

Figures 1.4 and 1.5 contextualize Pebble in comparison to a range of existing operational mines (Figure 1.4) and to those that employ filtered tailings (Figure 1.5).

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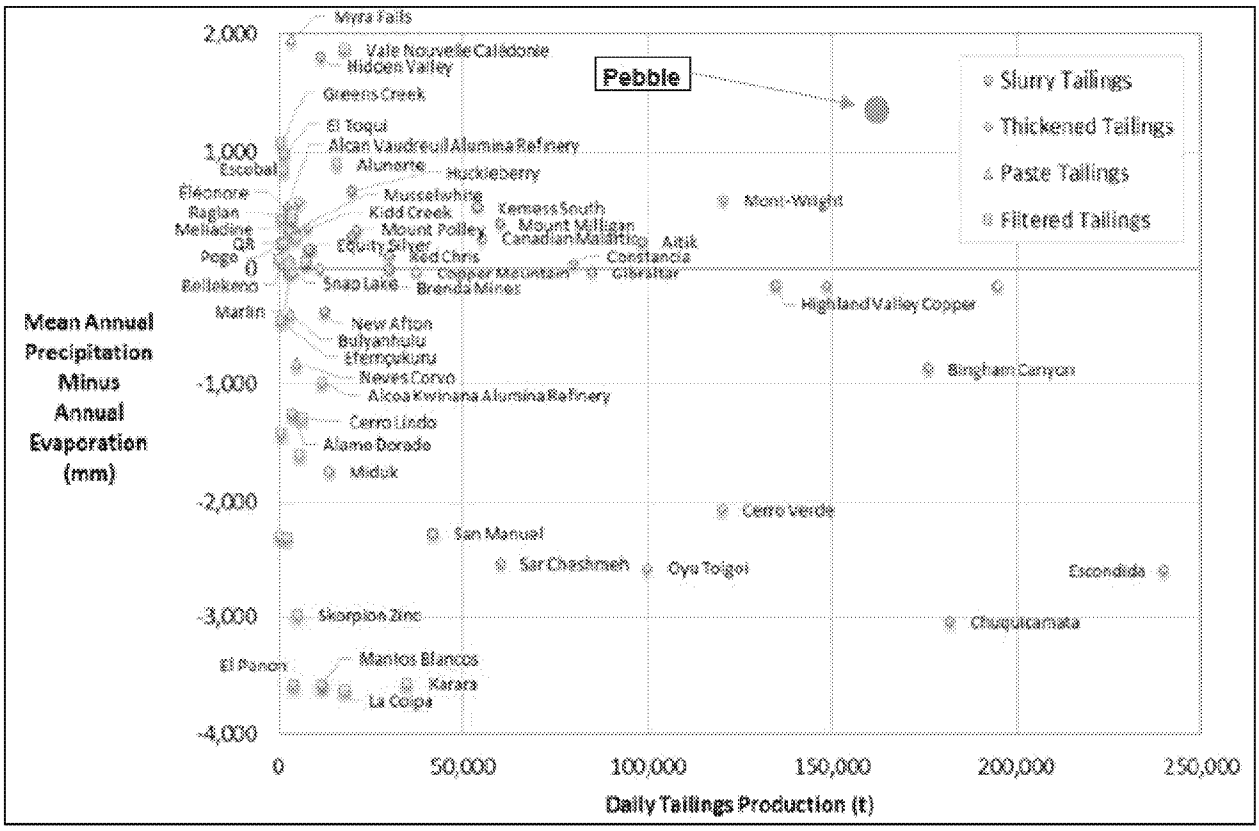

Figure 1.4 Tailings Throughput vs Mean Annual Net Precipitation (KCB, 2017)

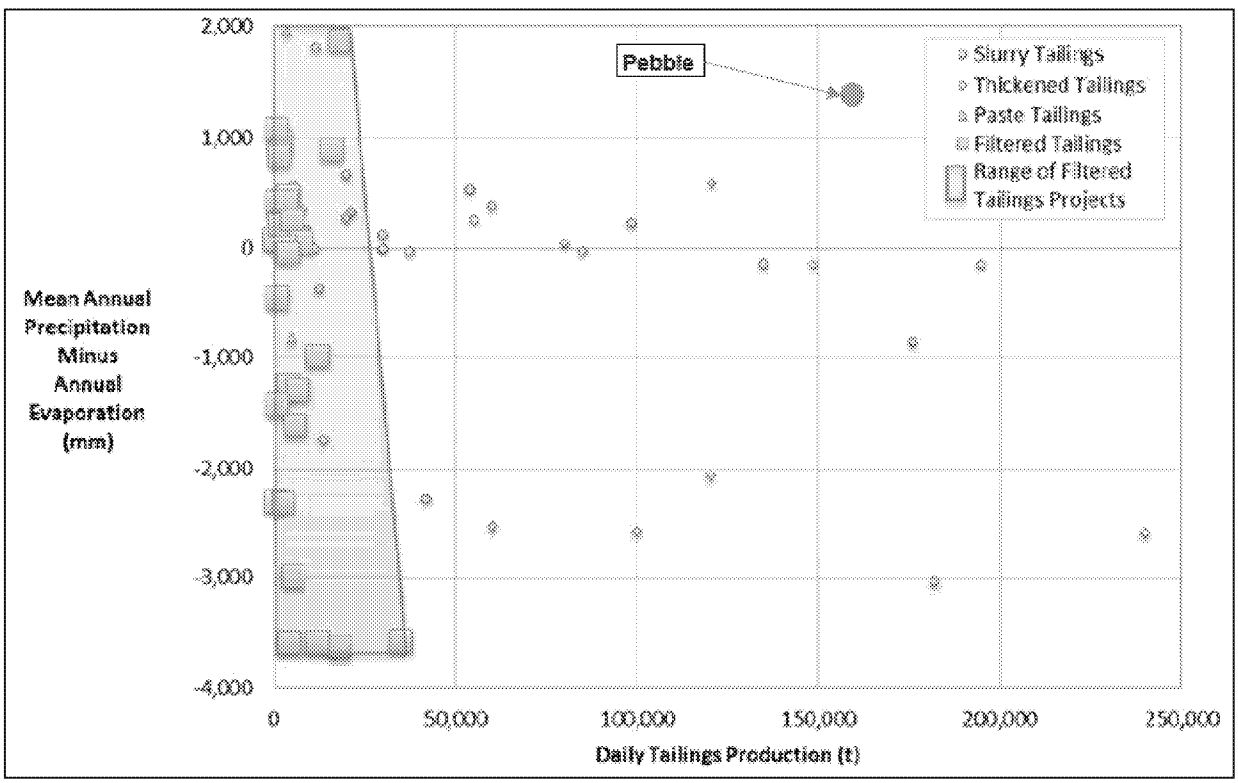

Figure 1.5 Range of Filtered Tailings Facilities in Operation (KCB, 2017)

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1.3 RFI 054 – 3

"Would there be fine tailings with high clay content that might not be efficiently filterable; what percentage of the total would these be; and where would they be disposed?"

Mineralogy data presented in Figure 1.2 indicate that all variability samples have a consistently high amount of aluminosilicates. Consequently, there is insufficient variation within the set of samples from Pebble West to provide an opportunity to filter only some ore types but not others. Therefore all ore types will need to be treated similarly and disposed of in the same location.

All ore types are expected to filter poorly and filtration rates are likely to be slow (as shown on Figure 1.3). Furthermore, it is a risk that the high clay content blinds the filter cloth and reduces the cloth life to significantly less than industry standards (<1,000 cycles per cloth as opposed to the nominal design life of ~3,000 cycles per cloth).

Pebble size distributions from grind establishment testwork at 180 µm are presented in Figure 1.6. The green line represents the expected size distribution for the finer grind P80 of 135 µm.

A size separation at 15 – 20 µm could be performed to improve filtration rates, which would result in 30 – 40% of the tailings material having to be stored separately in a separate TSF. A size separation at fine sizes (15 µm or less) would require thousands of very small cyclones operating at low feed solids density, has not previously been attempted at this scale anywhere in the world and is not practicable.

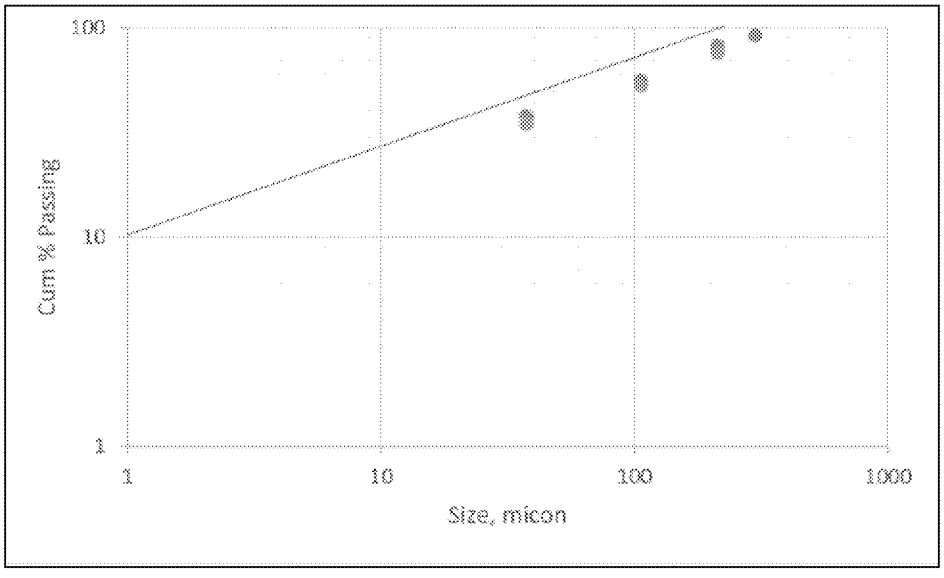

Figure 1.6 Pebble Size Distribution Data

The Filter Plant may occasionally be unable to keep up with the tailings stream due to poorer than expected filterability or filter plant maintenance (e.g. high frequency of filter cloth replacement). Tailings will be disposed of in a separate conventional slurry tailings storage facility during these periods (assumed 75% utilization of the Filter Plant).

The clay content of Pebble is amongst the highest for considered filtered tailings studies. The challenges and technical risk for filtering and stacking tailings at the size and complexity of the Pebble project are unprecedented and, as such, an approach which considers filtered tailings management is impracticable for the Pebble site.

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1.4 RFI 054 – 4

"Would there be different issues with filtering, handling, and disposal of the bulk vs pyritic tailings?"

Pyritic tailings are not considered eligible for filtered tailings production due to the higher ARD generation potential and higher content of clay-sized particles, therefore only bulk tailings would be considered for filtered tailings production. Further, the pyritic tailings will be returned to the pit at closure, thus alleviating the long-term stability risk for this facility.

1.5 RFI 054 – 5

"What major support facility and operation additions would need to be considered under a dry stack scenario (e.g., embankments, water retention ponds, back-up slurry tailings storage facility, seepage collection systems, dust control, ongoing reclamation)?"

Potential filtered tailings storage facilities have been identified at the NFK West location (Site G) and NFK North location (Site K) for the purposes of responding to this RFI. A filtered tailings storage facility at either Site G or Site K would require a number of ancillary facilities to enable successful operations.

Fill berms will be required to enhance stability of the filtered tailings stack. At Site G, these berms would be required at the existing locations of the south and main embankments. At Site K, likely three, or perhaps four, sides of the facility would require embankments.

A tailings storage facility (TSF) would be required to store slurry bulk tailings during periods of Filter Plant unavailability (due to maintenance or operational downtime) or tailings not eligible for filtration. Approximately 25% of the total bulk tailings (approximately 275 million tons) will either not filter to the required specification or will require separate storage during periods of Filter Plant downtime or unavailability. This additional TSF would require support facilities such as seepage collection system, diversion ditches, etc.

A separate water management pond would be required to store runoff and seepage from the filtered tailings TSF. This pond would need to be larger than the current water management pond as there would be no water storage available in the filtered tailings TSF and a much smaller supernatant pond would be present in the bulk slurry tailings TSF. An alternative would be to increase the size of the currently proposed Main Water Management Pond.

A fleet of water trucks would be required for dust suppression operations for the exposed filtered tailings. A fleet of dozers will also be required during winter months for snow clearing from the surface of the filtered tailings. This snow would be considered as mine contact water and would require management and treatment as such.

Seepage from the TSFs would be collected and routed to seepage collection ponds, located downstream of the TSF embankments or filtered tailings TSF berms. Collected seepage and runoff would be pumped from here to the Main Water Management Pond for recycle to the mill, or for treatment and release.

Tailings disposal at Site K would require additional seepage control measures as compared to tailings disposal in Site G as managing seepage in this arrangement is more challenging due to the topography of this area. Site K seepage control measures may include a lined TSF basin (HDPE liner) and/or a slurry cutoff wall downstream of the TSF. Seepage and runoff collection ponds would be required to the north and south of a proposed Site K TSF to limit discharge of mine contact water to the North Fork Koktuli and Upper Talarik drainage areas.

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A filtered tailings TSF in either location would allow for ongoing concurrent reclamation of the downstream face of the filtered tailings stack and downstream shell zone during operations. The slurry tailings TSF reclamation strategy would be consistent with the currently proposed strategy.

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1.6 RFI 054 – 6

"What would be the ultimate volume differences: 1) between dry stack tailings and the currently proposed bulk and pyritic tailings; and 2) between onsite water storage requirements of a dry stack scenario and the currently proposed water management ponds?"

1.6.1 RFI 054 – 6(1)

The current assumption for the bulk tailings is that they will have a dry density of approximately 90 pounds per cubic foot (pcf) (consolidating to approximately 100 pcf post-closure). Filtered tailings, at optimum placement and compaction, are assumed to have a dry density of approximately 100 pcf. Long-term, post-closure, there are anticipated to be no differences in ultimate volume of the filtered tailings and currently proposed conventional tailings. However, a larger volume of quarried rock would be required to construct the additional TSF required to store slurry tailings during Filter Plant downtime (25% of total bulk tailings throughput).

1.6.2 RFI 054 – 6(2)

The total volume of water managed with a filtered tailings solution will be similar to that with the current proposal but the system will be significantly more "flashy". In the proposed system, some transient water will be held in the TSF as the tailings settle and as the water seeps through the main embankment. With filtered tailings, this transient water will report immediately to the water management system. As a result the water management pond will be larger than the current arrangement to accommodate this transient water and to store the water currently sitting within the pond in the TSF.. Filtered tailings storage at Site K would require two additional water management ponds, one to the north, and one to the south.

A conceptual general arrangement for the filtered tailings TSF and water management pond is shown on Figure 1.7 for a TSF at Site G, and Figure 1.8 for a TSF at Site K.

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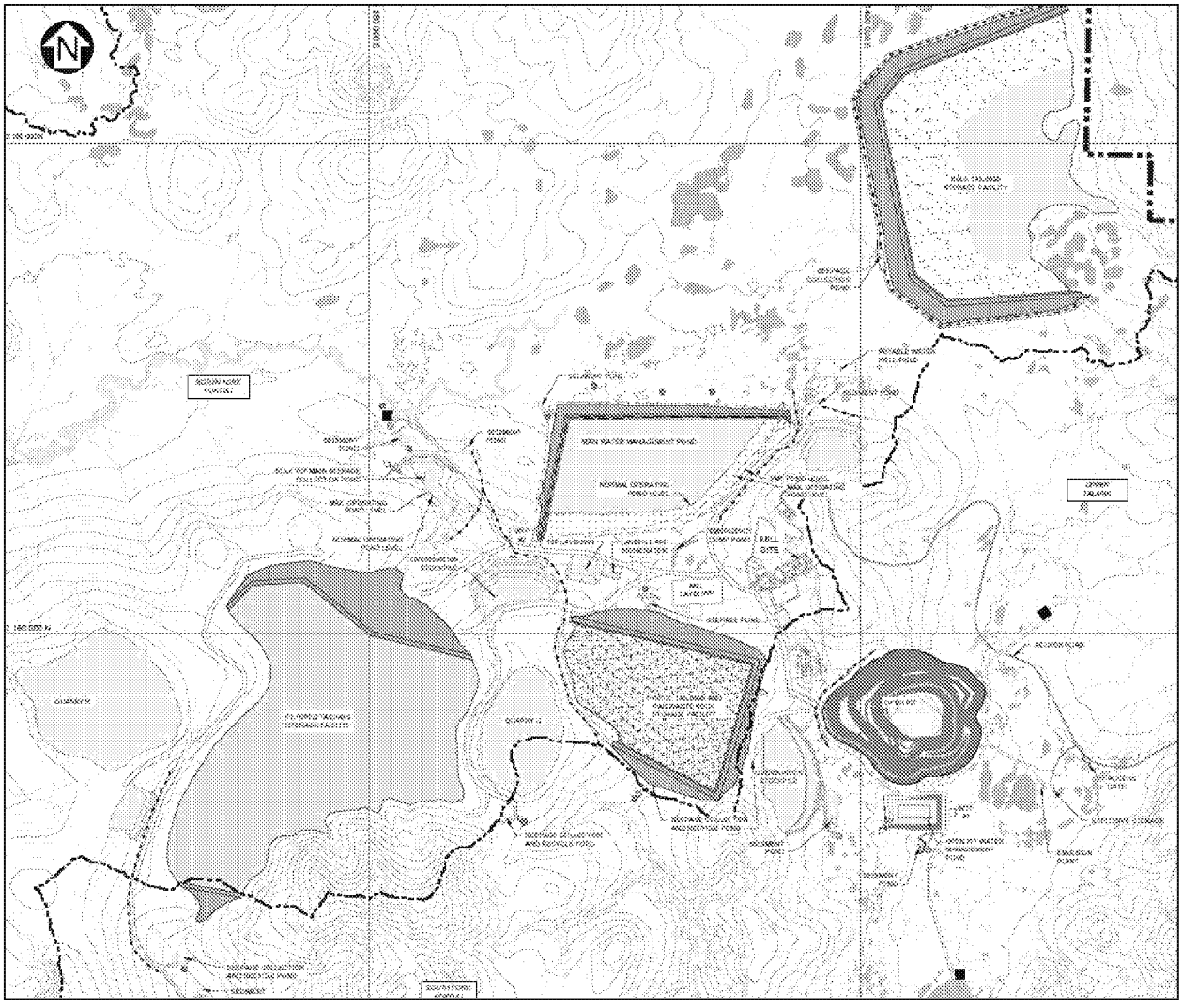

Figure 1.7 Conceptual Filtered Tailings TSF General Arrangement (Site G)

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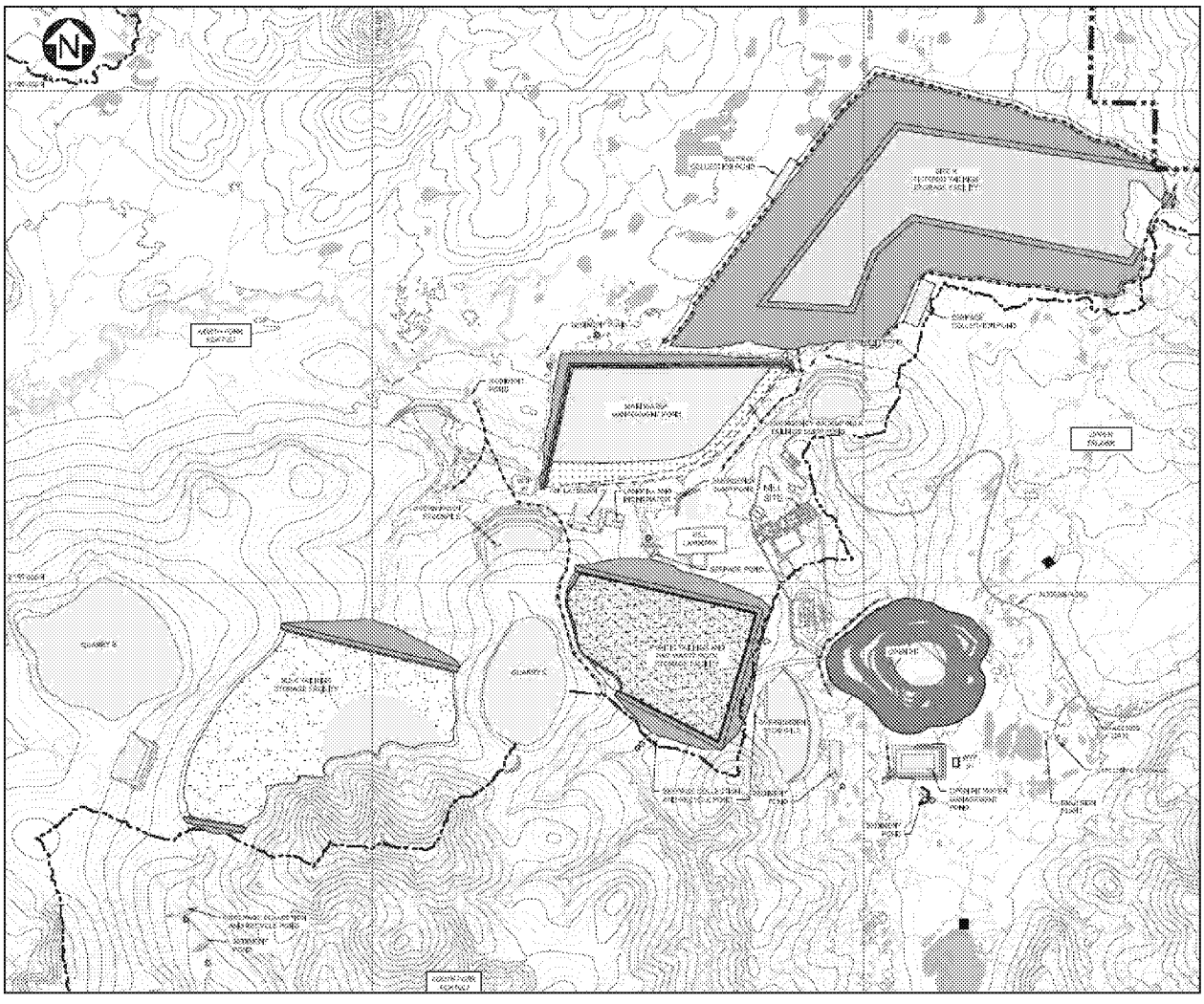

Figure 1.8 Conceptual Filtered Tailings TSF General Arrangement (Site K)

1.7 RFI 054 – 7

"What would be the type/quantity of mobile equipment and/or conveyors needed to transport and place tailings in a dry stack? How would material handling change during winter versus summer?"

Tailings would be delivered from the Filter Plant to the TSF by 100-ton conventional rear-dump haulage trucks. A fleet of approximately 70 haulage trucks will be required to meet Filter Plant production, (accounting for spare vehicles and vehicle maintenance downtime). These haul trucks would require low-bearing tires for trafficability on the surface of the filtered tailings. These haul trucks have an operating life of approx. 100,000 hrs and would require replacement after this point, i.e. once within the operational LOM.

Tailings would be spread using large tracked dozers and compacted using 15-ton vibratory compactors. Motor graders would be used as necessary to maintain the surface of the filtered tailings stack within the TSF with excavators required for reworking of material as required. Support equipment on the surface of the filtered tailings would also require low-bearing tires or tractor-type tracks. Support equipment has an operating life of 50,000 hrs and would require replacement at this point, i.e. three times within the operational LOM.

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Water trucks may be required to spray the exposed filtered tailings for dust management in areas where deposition is not ongoing. Tailings would be deposited towards the downstream sides of the TSF (i.e. close to the TSF berm and downstream shell) during this period, when tailings can be optimally compacted. Tailings would be deposited towards the central or upstream areas of the TSF in winter months and sustained wet periods, and compacted to the maximum practical extent. Should trafficability become an issue and tailings placement not be possible, operations may cease or temporarily halt until conditions allow for on-going placement and compaction of the filtered tailings. An alternate strategy for severe weather conditions that prevents or limits tailings placement would be to deposit tailings in the slurry tailings TSF, although this has not been considered for this concept. The slurry tailings TSF would conceptually store filtered tailings during Filter Plant downtime, and tailings which do not meet filtration requirements only (approximately 25% of total bulk tailings).

1.8 RFI 054 – 8

"How would waste rock storage be different under a dry stack scenario than the currently proposed plan?"

The waste rock management strategy for a filtered bulk tailings scenario will be unchanged from the currently proposed concept. PAG waste rock will still be co-disposed of with the pyritic tailings in the Pyritic TSF during operations, and removed to backfill storage in the mined-out Open Pit at closure.

Quarried NAG rock will be used to construct the slurry TSF embankments and the filtered TSF buttress.

1.9 RFI 054 – 9

"How would interim reclamation and final closure be different than the currently proposed plan under a dry stack scenario?"

Filtered tailings may allow for concurrent reclamation of downstream slopes on the filtered tailings TSF. The closure and reclamation plans for all other facilities would be unchanged. The slurry TSF would be reclaimed in a similar manner to the currently proposed concept.

Long-term, post-closure, there would be negligible differences between the physical characteristics of the filtered tailings TSF, and the current concept of a drained tailings mass post-closure (anticipated final dry densities are estimated to be the same for both concepts). The water management pond for the filtered tailings TSF would still be required post-closure for pumping of seepage and contact water to the water treatment plant for treatment and release, similar to the current proposed concept.

1.10 RFI 054 – 10

"How would the dry stack cost compare with the current plan in terms of full life cycle through to closure and post-closure including design, construction, operations, maintenance and surveillance?"

Incremental costs for a filtered tailings concept compared to the currently proposed concept only have been considered at this time.

Additional quarried rock would be required for a filtered tailings facility to construct both the downstream shell zone and toe berm of the filtered tailings TSF and the bulk slurry tailings TSF. A second slurry pump system will also be required for the bulk slurry tailings TSF in addition to the slurry pump system to feed the Filter Plant. Operating costs include electricity consumption for the pump system

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Both TSFs will require water management structures such as seepage collection ditches and water management ponds. A slurry cutoff wall and/or fully lined HDPE impoundment would be required for Site K as an additional seepage control measure to limit the potential for seepage to the North Fork Koktuli and Upper Talarik drainage areas.

Filtered tailings operations would require a Filter Plant that consists of the following components:

- Filters and ancillaries
- Additional thickeners and ancillaries
- Ore bins and Stockpile Systems
- Flocculant Plants
- Support Equipment (dozers, mobile cranes, forklifts, light vehicles, etc.)

Operating costs for the filter plant include equipment maintenance, electricity consumption, fuel consumption for mobile equipment, and labour costs.

Operating costs relating to the filtered tailings delivery include labour costs for haul truck operators, vehicle maintenance, and fuel consumption. Haul truck fuel consumption is anticipated to be approximately 24,500 gallons per day and CO_2 emissions are estimated to be approximately 270 tpd.

Operating costs relating to the filtered tailings spreading and compaction include labour costs for haul truck operators, vehicle maintenance, and fuel consumption. Support equipment fuel consumption is anticipated to be approx. 8,400 gallons per day and CO_2 emissions are estimated to be approximately 95 tpd.

The operating crew for the filter plant would number 250 people and 400 people for the for filtered tailings distribution.

Incremental life of mine costs of approximately $3.1 billion in capital costs and $5.5 billion in operating costs ($5.24 /ton) for Option 1 (filtered tailings storage at Site G with slurry tailings storage at Site K) have been assumed. This would decrease the project net present value (NPV_7) by $5.9 billion.

The Site K filtered tailings storage option would incur incremental capital costs of approximately $3.8 billion and incremental operating costs of $5.5 billion ($5.24/ton). This would decrease the project NPV_7 by $6.5 billion.

Both of these scenarios would render the project uneconomic. It should further be noted that neither of these capital estimates include contingency. For this level of study, it is not unreasonable to include contingency of 35% on the direct capital costs, which would increase the capital associated with Option 1 by up to $780 million and Option 2 by up to $950 million.

The incremental cost increases of both options are summarized on Table 1.1. Fuel consumption and total emissions are summarized on Table 1.2.

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Table 1.1 Incremental Cost Increase Summary

	Option 1 Filtered Tailings at Site G	Option 2 Filtered Tailings at Site K
Initial Capital	$2.02B	$2.50B
Filter Plant	$0.83B	$0.83B
Ancillary Facilities	$0.13B	$0.13B
Filtered Tailings Delivery	$0.07B	$0.07B
Filtered Tailings Spread/Compact	$0.02B	$0.02B
TSF/WMP Facility Construction	$0.94B	$1.41B
Slurry Tailings Delivery System	$0.03B	$0.03B
Sustaining Capital	$0.20B	$0.20B
Indirects[2]	$0.890B	$1.08B
Operating Costs	$5.48B	$5.48B
TOTAL LOM COSTS	**$8.59B**	**$9.26B**
NPV[1]	**$5.87B**	**$6.54B**

NOTES:
1. NPV RATE OF 7% ASSUMED FOR THE PROJECT.
2. INDIRECTS OF 40% ASSUMED FOR CAPITAL COSTS ONLY.
3. EXCLUDES ANY CONTINGENCY. TOTAL MAY NOT SUM DUE TO ROUNDING OF CATEGORIES. ALL COSTS PROVIDED IN US DOLLARS (USD$).

Table 1.2 Fuel Consumption and Emissions

Item	Diesel Fuel Consumption (gpd)	Natural Gas Consumption (cf/d)	Carbon Dioxide (CO_2) Emissions (tpd)[1]
Filter Plant Support Equipment	2,500	-	27
Filter Plant Power Generation	-	4,760,000	48
Filter Plant HVAC System	-	828,000	48
Filtered Tailings Haul Truck Delivery	24,500	-	270
Filtered Tailings Spreading and Compaction	8,400	-	95
TOTAL	**35,400**	**5,588,000**	**440**

NOTES:
1. TOTAL EMISSIONS DOES NOT INCLUDE EMISSIONS ASSOCIATED WITH ELECTRICAL POWER GENERATION FOR THE PROCESS PLANT, FILTER PLANT OR WATER MANAGEMENT PUMPING SYSTEMS.

2.0 REFERENCES

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State of Alaska Department of Environmental Conservation, Division of Air and Water Quality, Wastewater Discharge Program (ADOEC), 2003. *Waste Management Permit 0211-BA001 (replaces 0111-BA001) Kennecott Greens Creek Mining Company.* Juneau, AK. November 2003.

Sumitomo Metal Mining Pogo LLC (Sumitomo), 2014. *Dry Stacking Operation at Pogo Mine Alaska.* Proceedings from 17th International Seminar on Paste and Thickened Tailings (Paste 2014). June 12, 2014. Vancouver, Canada.

United States Environmental Protection Agency (US EPA), 2003. *Final Environmental Impact Statement – Pogo Gold Mine Project.* US EPA Region 10, Office of Water, NPDES Permits Unit. September 2003. Seattle, WA.

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RFI 076
Pebble Project EIS

Request for Information

Title/Subject:	**Dry Stack Bulk Tailings Information**
Requestor:	**AECOM**
Date Transmitted:	**9/11/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**9/21/2018**
Rationale:	**Additional information on the bulk tailings is needed to evaluate the dry stack tailings option.**
Describe the Information Requested and Level of Detail:	**What are the planned/estimated/anticipated fines fraction (minus No. 200 sieve size, 0.0074 mm), minus 0.005 mm fraction, and the minus 0.002 mm fraction of the "bulk tailing"? Or ranges?** **What is the planned/estimated/anticipated P80 size of the "bulk tailing"? Or range of P80 sizes?**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**The approximate size distribution is:** **60% passing 74 µm** **50% passing 50 µm** **33% passing 20 µm** **The grinding circuit is designed with a P80 of 135 microns for the bulk tailing.**
List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	**9/13/2018**

AECOM Intake Form

Date Response was Received:	**9/13/2018**
Received by:	**AECOM**
Describe any Follow-up Related to this RFI:	**None at this time**

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:19:53 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: FW: Pebble Review Drafts Submission (K3.26, 3.26, 4.26) please provide comments if your agency was requested to do so by 12/7/2018 (UNCLASSIFIED)
Attachments: 3_26_01_Project Mapping Areas.pdf; Sec3.26_Vegetation_toDA.docx; Sec4.26_Vegetation_toDA.docx; K3.26_Vegetation_FINAL.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.26, 4.26, and K3.26 – Vegetation. The only technical appendix is K3.26. There is a figure PDF. CAs are EPA, State of
Alaska, USFWS.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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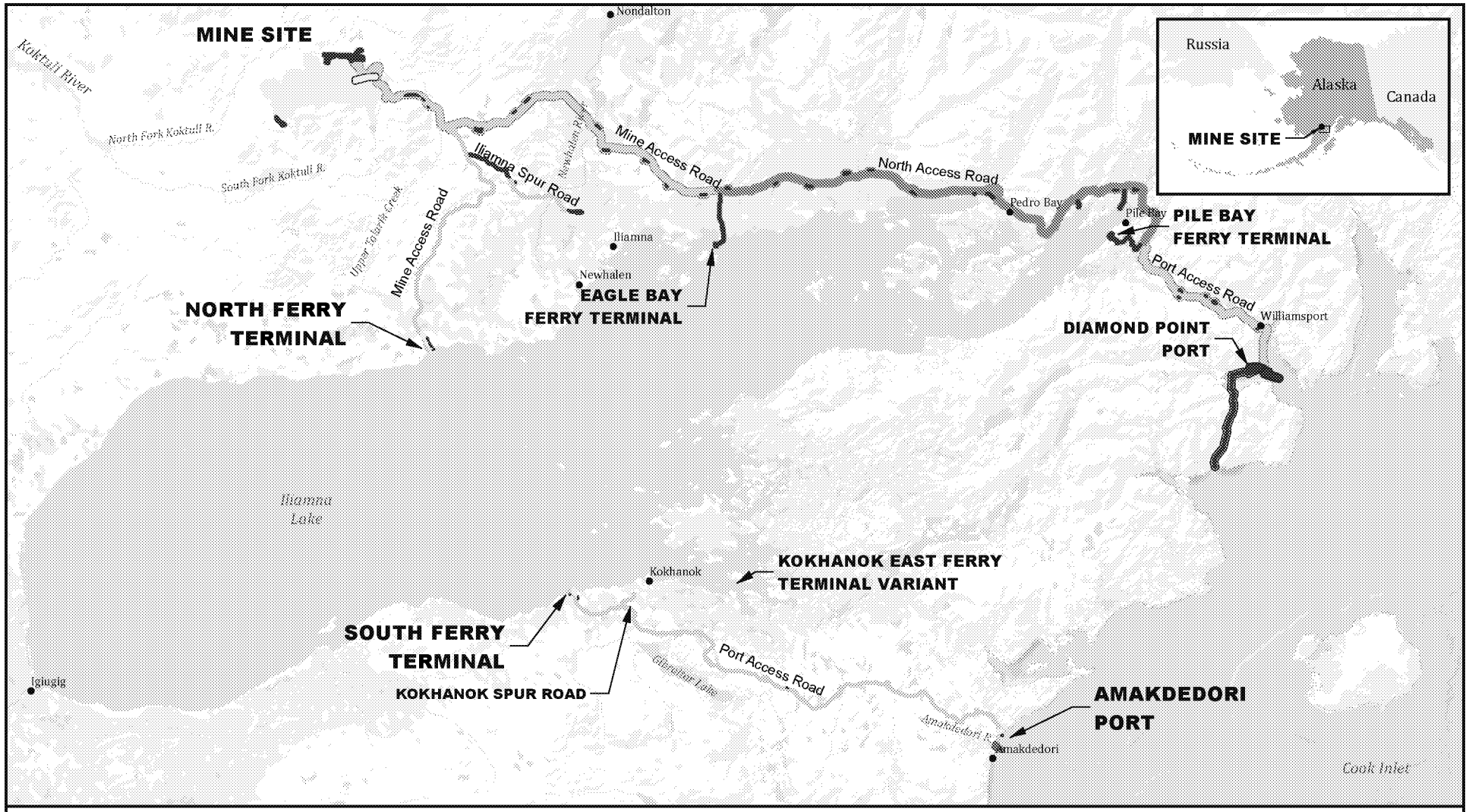

Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

Analysis Areas
- All Alternatives: Mine Site
- Alternative 1: Transportation
- Alternative 1: Natural Gas Pipeline
- Alternative 1: Port
- Alternative 2: Transportation
- Alternative 2: Natural Gas Pipeline
- Alternative 2 & 3: Port
- Alternative 3: Transportation
- Alternative 3: Natural Gas Pipeline
- Data Gap

Alternative 1
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

ANALYSIS AREAS

PEBBLE PROJECT EIS **FIGURE 3.26-1**

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K3.26 VEGETATION

Table K 3.26-1 lists the 48 vegetation types broken out by the 10 structure types. The table includes definitions and whether the vegetation type occurs predominantly in wetlands or uplands.

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
Forest (≥10% cover of trees over 10 feet in height)				
Open/Closed Forest	Closed White Spruce Forest	CWSF	Closed forest dominated by white spruce trees where the canopy cover is ≥ 60 percent.	Upland
	Open White Spruce Forest	OWSF	Open forest dominated by white spruce where the canopy cover ranges from 25 to 59 percent.	Upland
	White Spruce Woodland	WSW	Woodlands dominated by white spruce. Sparse stands of white spruce trees that have a total tree cover of 10 to 24 percent. Most of the white spruce trees are taller than 10 feet. The openings between the trees may be dominated by mosses and lichens, herbs, and/or shrubs.	Upland
	Black Spruce Woodland	BSW	Woodlands dominated by black spruce. The openings between the trees may be dominated by mosses and lichens, herbs, and/or shrubs. Sparse stands of black spruce trees that have a total tree cover of 10 to 24 percent. Most of the black spruce are taller than 10 feet.	Wetland
	Closed Broadleaf Forest	CBF	Forests dominated by broadleaf tree species where tree canopy coverage is ≥ 60 percent. More than 75 percent of the total tree cover consists	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			of broadleaf species.	
	Open Broadleaf Forest	OBF	Forests dominated by broadleaf tree species where tree canopy coverage ranges from 25 to 59 percent. Over 75 percent of the total tree cover consists of broadleaf species.	Upland
	Broadleaf Woodland	BW	Sparse stands of broadleaf trees that have a total tree cover of 10 to 24 percent.	Wetland/Upland
	Closed Mixed Forest	CMF	Forests dominated by a mix of broadleaf and needleleaf trees where tree canopy coverage is ≥ 60 percent. Both tree types must contribute 25 to 75 percent of the total canopy cover.	Upland
	Open Mixed Forest	OMF	Forests dominated by a mix of broadleaf and needleleaf trees where tree canopy coverage ranges from 25 to 59 percent. Both tree types must contribute 25 to 75 percent of the total canopy cover.	Upland
	Mixed Forest Woodland	MFW	Sparse trees stands consisting of a mix of black and/or white spruce and broadleaf trees that have a total tree cover of 10 to 24 percent. Most of the trees are taller than 10 feet. Both tree types must contribute at least 25 percent of the total canopy cover.	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
	Dwarf White Spruce Scrub	DWSS	Black spruce stands where the trees are less than 10 feet tall. This vegetation type includes woodland cover (10 to 24 percent) and open cover (25 to 59 percent). If trees 10 feet or taller cover at least 10 percent of the area, the scrub class does not apply.	Upland
Scrub (<10% cover of trees over 10 feet in height, >25% shrub cover)				
Closed Tall Shrub	Closed Willow Tall Shrub	CWTS	Thickets of tall willows. These communities have a cover of willow species ≥ 75 percent. Trees provide less than 10 percent cover. The height of the willow is ≥ 5 feet. In some sites, shrub birch may be mixed with the willow.	Upland
	Closed Alder Tall Shrub	CATS	Dense stands of tall alder where the canopy cover is ≥ 75 percent and the shrub height is ≥ 5 feet. Trees provide less than 10 percent cover.	Upland
	Closed Alder-Willow Tall Shrub	CAWTS	Mixed species thickets of tall alders and willows. Dense shrub stands consisting of a mix of alder and willow where the canopy cover is ≥ 75 percent and the shrub height is ≥ 5 feet. Both shrub types must contribute 25 to 75 percent of the total shrub canopy cover. Trees provide less than 10 percent cover.	Wetland/Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
Open Tall Shrub	Open Alder Tall Shrub	OATS	Open stands of tall alder. These communities have a shrub canopy cover of 25 to 74 percent that consists primarily of alder species. Trees provide < 10 percent cover. The height of the alder is ≥ 5 feet.	Upland
	Open Alder-Willow Tall Shrub	OAWTS	Tall, open shrub stands codominated by alder and willow. Shrub stands consisting of a mix of alder and willow where the canopy cover is ≥ 25 percent and < 75 percent. The shrub height is > 5 feet. Both shrub types must contribute 25 to 75 percent of the total shrub canopy cover. Trees provide less than 10 percent cover.	Upland
	Open Willow Tall Shrub	OWTS	Open stands of tall willow. These communities have a shrub canopy cover of 25 to 74 percent that consists primarily of willow species. In some sites, shrub birch may be mixed with the willow. Trees provide < 10 percent cover. The height of the willow is ≥ 5 feet.	Upland
Closed Low Shrub	Closed Willow Low Shrub	CWLS	Thickets of low willow. These communities have a cover of willow species ≥ 75 percent. Trees provide less than 10 percent cover. The height of the willow is ≥ 8 inches and < 5 feet. Shrubs ≥ 5 feet are	Wetland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			absent or provide less than 25 percent cover. In some sites, shrub birch may be mixed with the willow.	
	Closed Alder-Willow Low Shrub	CAWLS	Mixed-species thickets of low alder and willows. Dense shrub stands consisting of a mix of alder and willow where the canopy cover is ≥ 75 percent and the shrub height is < 5 feet. Both shrub types must contribute 25 to 75 percent of the total shrub canopy cover. Trees provide less than 10 percent cover.	Wetland/Upland
	Closed Alder Low Shrub	CALS	Thickets of low alder. Dense stands of alder where the canopy cover is ≥ 75 percent and the shrub height is < 5 feet. Trees provide less than 10 percent cover.	Upland
Open Low Shrub	Open Sweetgale-Graminoid Bog	OSGB	Bogs and fens dominated by sweetgale. These communities have 25 to 74 percent cover of shrubs ≥ 8 inches and < 5 feet. The shrubs are primarily Myrica gale. Tree canopy cover is < 10 percent. Graminoids have at least 25 percent cover. These communities occur on peat that is usually at least 8 inches thick.	Wetland
	Open Mixed Shrub-Sedge Tussock	OMSST	Tussock tundra codominated by low shrubs and tussock-forming graminoids. These communities have 25 to 74	Wetland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			percent cover of low shrubs (≥ 8 inches and < 5 feet tall) mixed with tussock-forming sedges, usually Eriophorum vaginatum, but sometimes Carex bigelowii. The tussock species have ≥ 25 percent cover. Trees are absent or very scarce.	
	Open Dwarf Birch-Ericaceous Shrub Bog	ODBESB	Bogs with abundant mosses, ericaceous shrubs, and dwarf birch. These communities have 25 to 74 percent cover of shrubs at least 8 inches tall. Tree cover is < 10 percent and tall shrubs (≥ 5 feet) provide less than 25 percent cover. Common dominants include Betula glandulosa, B. nana, Vaccinium uliginosum, V. vitis-idaea, Ledum decumbens, Empetrum nigrum, and Andromeda polifolia. The combined cover of Betula glandulosa and B. nana is ≥ 10 percent. These communities occur on peat that is at least 8 inches thick. Sphagnum spp. are abundant at most sites, but occasionally may be absent.	Wetland
	Ericaceous Shrub Bog	ESB	Bogs with abundance mosses and ericaceous shrubs, but only sparse dwarf birch. These communities are dominated by ericaceous shrubs such as Empetrum	Wetland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			nigrum, Vaccinium uliginosum, V. vitis-idaea, V. oxycoccos, Andromeda polifolia, and Ledum decumbens. The shrubs have a cumulative cover ≥ 25 percent, and range in height from 8 inches to < 5 feet. Ericaceous shrub bogs occur on organic soil (thickness of peat ≥ 16 inches). Sphagnum spp. are always present and usually dominate the moss layer. Other mosses, such as feather mosses, also may be common.	
	Low Ericaceous Shrub Tundra	LEST	Treeless areas dominated by low ericaceous shrubs, including Empetrum nigrum, Vaccinium uliginosum, V. vitis-idaea, V. oxycoccos, Andromeda polifolia, Ledum decumbens, and L. groenlandicum. The sites have mineral soils (thickness of surface organic horizons < 16 inches). The shrubs have a cumulative cover ≥ 25 percent, and range in height from 8 inches to < 5 feet.	Upland
	Open Dwarf Birch Scrub	ODBS	Open shrub stands dominated by Betula nana and B. glandulosa that have a shrub cover ≥ 25 percent and < 75 percent. While most of these areas consist of low shrubs (≥ 8 inches and < 5 feet), the vegetation type should also	Wetland/Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			be used for the occasional stand of tall (≥ 5 feet) B. glandulosa.	
	Shrub Birch-Willow	SBW	Open or dense low shrub (≥ 8 inches and < 5 feet tall) stands dominated by shrub birch and willow species. These low shrubs have 25 to 74 percent cover. Both shrub types must contribute at least 25 percent of the total shrub canopy cover.	Upland
	Open Willow Low Shrub	OWLS	Open stands of low shrub stands dominated by low willow (≥ 8 inches and < 5 feet tall) that have 25 to 74 percent cover. Shrubs 5 feet or taller provide < 25 percent cover and trees overtopping the shrubs provide < 10 percent cover. These communities usually occur on a mineral soil and are drier than Open Willow Low Shrub Fen communities.	Wetland
	Open Willow Low Shrub Fen	OWLSF	Fens characterized by open stands of shrubs dominated by low willow (≥ 8 inches and < 5 feet tall) that have 25 to 74 percent cover. These communities usually occur on peat that is at least 8 inches thick, and the sites are wetter than Open Willow Low Shrub areas. Most OWLSF areas are classified as Slope wetlands and have wetland	Wetland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			hydrology that is maintained by groundwater.	
	Open Alder-Willow Low Shrub	OAWLS	Low, open shrub stands consisting of a mix of alder and willow where the canopy cover is ≥ 25 percent and < 75 percent. The shrub height is < 5 feet. Both shrub types must contribute 25 to 75 percent of the total shrub canopy cover. Trees provide less than 10 percent cover.	Wetland
	Open Alder Low Shrub	OALS	Open stands of low alder with a shrub canopy cover of 25 to 74 percent that consists primarily of alder species. Trees provide < 10 percent cover. The height of the alder is ≥ 8 inches and < 5 feet. Shrubs ≥ 5 feet are absent or provide less than 25 percent cover.	Upland
Dwarf Shrub	Dwarf Ericaceous Shrub Tundra	DEST	Treeless areas dominated by shrubs < 8 inches in height. The shrubs are primarily ericaceous species, including Arctostaphylos spp., Vaccinium spp., Empetrum nigrum, Phyllodoce aleutica, and Cassiope spp. Lichens are often common but cover < 60 percent of the site. If lichen cover is ≥ 60 percent, the DEST vegetation type should be used.	Upland
	Dwarf Ericaceous Shrub	DEST-H	Dwarf ericaceous shrublands growing on moderate to large	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
	Tundra - Hummocks		hummocks (> 6 inches tall). Treeless areas dominated by shrubs < 8 inches in height. The shrubs are primarily ericaceous species, including Arctostaphylos spp., Vaccinium spp., Empetrum nigrum, Phyllodoce aleutica, and Cassiope spp. The ground surface consists mostly of moderate hummocks (5.9 to 17.7 inches) and large hummocks (> 17.7 inches).	
	Dwarf Ericaceous Shrub Tundra - Equisetum	DEST-EQ	Dwarf ericaceous shrublands with abundant horsetails (>25 percent coverage). Treeless areas dominated by shrubs < 8 inches in height. The shrubs are primarily ericaceous species, including Arctostaphylos spp., Vaccinium spp., Empetrum nigrum, Phyllodoce aleutica, and Cassiope spp. Equisetum spp. covers at least 25 percent of the area.	Upland
	Dwarf Ericaceous Shrub Tundra - Carex	DEST-C	Dwarf ericaceous shrublands with abundant sedges (>25 percent coverage). Treeless areas dominated by shrubs < 8 inches in height. The shrubs are primarily ericaceous species, including Arctostaphylos spp., Vaccinium spp., Empetrum nigrum, Phyllodoce aleutica, and Cassiope spp. Carex spp.	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			covers at least 25 percent of the area.	
	Dwarf Ericaceous Shrub-Lichen Tundra	DESLT	Dwarf ericaceous shrublands on lichen dominated (>60 percent coverage) ground. Treeless areas dominated by shrubs < 8 inches in height. The shrubs are primarily ericaceous species, including Arctostaphylos spp., Vaccinium spp., Empetrum nigrum, Phyllodoce aleutica, and Cassiope spp. Lichens cover at least 60 percent of the area.	Upland
Herbaceous (<10% of tree cover and <25% of shrub cover)				
Dry to Moist Herbaceous	Halophytic Dry Graminoids	HDG	These herbaceous communities are dominated by species of the genus Leymus. They are characteristic of coastal sand dunes and the upper parts of coastal flats and beaches. Many communities grade seaward into halophytic herb communities. While the dune communities are usually no-wetlands, some Leymus communities on the upper portions of coastal flats are wetland.	Upland
	Bluejoint Tall Grass	BTG	Abundant bluejoint reedgrass; other herbs and grasses may be present but are not codominant. Bluejoint tall grass communities are dominated by bluejoint. Other	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			grasses and herbs may be present but are not codominant. The canopy is usually about 2.5 to 5 feet tall. Woody plants are absent or scarce, although in some sites low or trailing shrubs may occur as a low layer below the tall bluejoint grass stratum.	
	Bluejoint-Herb	BH	Abundant bluejoint reedgrass interspersed with other low-growing species. Bluejoint herb communities are dominated by bluejoint and various herbs. Sedges and other grasses may be present in significant amounts. The canopy is usually about 2.5 to 5 feet tall. Woody plants are absent, scattered, or may occur as a low layer below the tall bluejoint herb stratum.	Upland
	Mesic Herbs	MH	Herb-dominated communities that occur on mesic sites and do not satisfy the requirements of other project vegetation types. These communities are dominated by herbs. This type is also used for drier alpine herb communities, which include a wide variety of species.	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
Wet Herbaceous	Subarctic Sedge-Moss Wet Meadow	SSMWM	This vegetation type is used as a lumped mapping type that includes numerous wet graminoid herbaceous communities. The lumped mapping class is used because of the difficulty in separating the specific Viereck types on aerial photography. These types include Sub-arctic Lowland Sedge-Moss Bog Meadow, Subarctic Lowland Sedge Bog Meadow, Subarctic Lowland Sedge Wet Meadow, Wet Sedge-Herb Meadow Tundra, and Sub-arctic Lowland Herb Bog Meadow. In general, the SSMWM type represents communities dominated or codominated by graminoids that occupy wet sites. Forbs may be codominant in some areas, and shrubs may be present, but provide < 25 percent cover. In some sites, low trailing shrubs may form a layer below the herbaceous layer. Dense moss is abundant on many of the sites. Soils are saturated or may have shallow surface water. Most sites have peat ≥ 8 inches in depth.	Wetland
	Fresh Sedge Marsh	FSM	Dominated by members of the sedge family (e.g., sedges, cottongrass) rooted in standing water, and often	Wetland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			near open water. This vegetation type is dominated by sedges, bulrush, spikerush, and/or rushes. The vegetation occurs in deep water (≥ 6 inches). Standing water persists throughout the growing season in most years. Trees, shrubs, and lichens are absent; aquatic mosses may be present, but are not abundant. The community is often found at the edge of ponds, lakes, and sluggish streams.	
	Fresh Herb Marsh	FHM	Dominated by emergent in persistent standing water	Wetland
	Aquatic Herbaceous	AH	These are herbaceous communities dominated by plants with leaves that float on the water surface or grow primarily below the surface of the water. In general, standing or flowing water persists throughout the growing season (permanently flooded).	Wetland
Other				
Other	Partially Vegetated	PV	This type is used for areas that have sparse vegetation cover (≥ 10 percent and < 25 percent). It is usually applied to temporarily flooded pond basins that lose water early in the growing season. These areas are unvegetated when water recedes, but develop	Upland

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Table K3.26-1: Summary of Project Vegetation Types in the Project Area

Vegetation Structure Type	Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
			sparse cover by pioneering annual plants as the growing season progresses. The type can also apply to sparsely vegetated rubble and scree fields, mountaintops, or revegetating gravel bars.	
	Barren	BARE	This type is used for areas devoid or nearly devoid of vegetation, such as unvegetated gravel bars, beaches, seasonal pond bottoms, rubble fields, and scree slopes. Vegetation cover is < 10 percent vascular plants.	Wetland / Upland
	Snow	SNOW	This type is used for areas devoid of visible vegetation and covered entirely by snow. These areas are generally snow covered for the majority or all of a given year.	Upland
Open Water	Open Water	OW	Unvegetated to very sparsely vegetated open water, including streams, rivers, lakes, and ponds.	Waters

1 Forest density classes (closed, open, woodland) are differentiated base on tree canopy coverage (>60%, 25-59%, 10-24%, respectively). Shrub density classes (closed thickets, open) are differentiated based on shrub canopy cover (>75%, 25-75%, respectively). Shrub height classes (tall, low, dwarf) are differentiated based on average shrub height (>5 feet tall, 5 feet to 8 inches tall, <8 inches tall, respectively).

Source: EBD Chapter 13 - 3PPI and HDR 2011, HDR 2018

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3.26 VEGETATION

The analysis area for vegetation is the same as that described in Section 3.22, Wetlands, Special Aquatic Sites and Waterbodies. It encompasses the nine Hydrologic Unit Code (HUC) 10 watersheds that could potentially be directly or indirectly impacted by the project, with a total area of approximately 6,420,000 acres. The description of vegetation in the project area is primarily based on information provided in Chapter 13 and Chapter 38 of the Environmental Baseline Document (EBD) (3PPI and HDR 2011, HDR and 3PPI 2011), as well as more recent information provided in the Preliminary Jurisdictional Determination Report (HDR 2018) (Appendix J) and associated geographic information system (GIS) database that reflects changes in the project area since publication of the EBD. The affected environment for vegetation overlaps with and provides support for other resources that are addressed in other sections of this Environmental Impact Statement (EIS), including Section 3.23, Wildlife Values and Section 3.25, Wetlands/Special Aquatic Sites and Waterbodies. Vegetation is also an important aspect of social environment disciplines such as Section 3.5, Recreation, and Section 3.9, Subsistence.

The affected environment for vegetation includes predominant vegetation communities and other land cover types, such as open water and barren areas, which may be directly or indirectly affected by project activities. The affected environment for vegetation is described in terms of the extent and characteristics of predominant types found in project component areas for each Alternative. Confirmed or reported populations of species on the Alaska Center for Conservation Science (ACCS) rare vascular plant species list are also addressed in this section. There are no federally listed threatened, endangered, or candidate plant species expected to occur in the project area.

3.26.1 Analysis Methodology

3.26.1.1 Environmental Baseline Study Program Vegetation Mapping

As part of the project's environmental baseline study program, researchers analyzed vegetation field data and aerial photo signatures to develop a system for describing and identifying vegetation types (3PPI and HDR 2011; HDR and 3PPI 2011). This classification system is based on the Alaska Vegetation Classification (Viereck et al. 1992), supplemented by Wibbenmeyer et al. (1982), and expanded as necessary to accommodate interpretation of available aerial imagery. Vegetation data collected included estimates of the percent cover of each plant species, site photographs, and classification of vegetation types. The vegetation classification system incorporated information on canopy cover, needleleaf versus broadleaf tree species, shrub height and density, and dominant species. Mapping was digitized on aerial photography at a scale between 1:1,200 and 1:1,500. Details on vegetation study methodology and field data collection can be found in Chapter 13 and Chapter 38 of the EBD (3PPI and HDR 2011; HDR and 3PPI 2011); a quick reference guide to the environmental baseline study classification system, including vegetation type definitions and representative photos, is in included in Appendix C of the Preliminary Jurisdictional Determination Report (HDR 2018)(Appendix J).

Project-specific vegetation mapping covers approximately 90 percent of the three alternatives. Figure 3.26-1 illustrates where project specific vegetation mapping is available. Supplemental vegetation mapping for areas not covered by project-specific data is discussed below.

Forty-eight project vegetation types were identified in the combined mapping (see Appendix K3.26, Vegetation). For clearer display on maps, the project vegetation types were aggregated

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into 10 vegetation structure types, based on dominant growth form (forested, shrub, or herbaceous), vegetation density (open or closed canopy), and average height (dwarf, low, or tall) (3PPI and HDR 2011; HDR and 3PPI 2011). A list of plant species from project vegetation and wetlands plots is included in Appendix B of the Preliminary Jurisdictional Determination Report (HDR 2018)(Appendix J).

3.26.1.2 Supplemental Mapping

Project-specific vegetation mapping is not complete for all project components of Alternatives 2 and 3 (see Figure 3.26-1) or for the Kokhanok East Ferry Terminal variant for Alternative 1. For those project components that fall outside the areas mapped for the project, vegetation mapping will be based on the Alaska Natural Heritage Program, ACCS, Vegetation Map and Classification for Northern, Western, and Interior Alaska (Boggs et al. 2016). ACCS landcover types were developed using best-available data derived from 18 regional landcover maps that have been developed over the last 31 years. For maps derived from satellite imagery, a 30 meter pixel size or finer was used; for maps derived from aerial photography a scale of 1:63,360 or finer was used (Boggs et al. 2016).

In order to make the data comparable to the data collected for the project, ACCS landcover types will be cross-walked into the best-corresponding grouped vegetation types based on comparison of the dominant growth forms (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf) from each classification system. In some instances, data will be summarized at a broader scale. For example, Boggs et al. (2016) vegetation classification does not break down the Tall Shrub landcover type by "open" and "closed," so the acreages for this group will be combined to report totals for one Tall Shrub category (open-closed). NOTE TO REVIEWERS: THIS CROSS-WALK ANALYSIS WILL BE COMPLETED FOR THE DRAFT EIS.

The following affected environment discussion focuses on the grouped vegetation communities, which are summarized in this section for each of the four project component mapping areas for each of the three alternatives.

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Figure 3.26-1: Alternatives 1, 2 and 3 Vegetation Mapping Overview

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3.26.2 Action Alternative 1 – Proposed Alternative

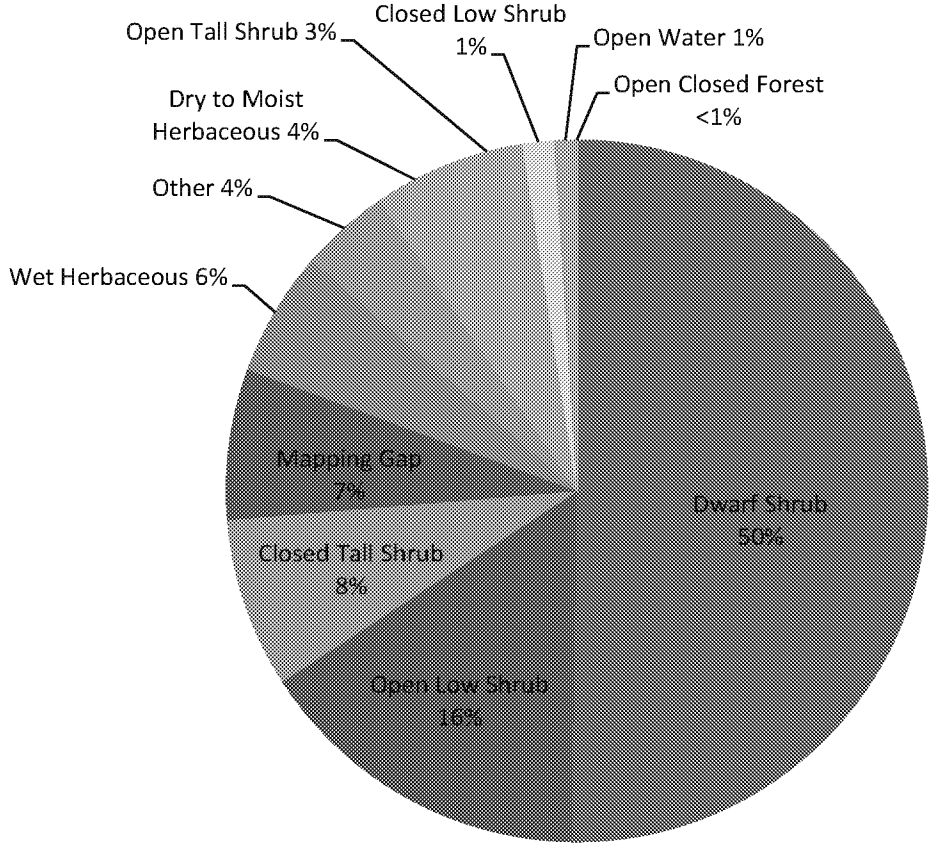
Alternative 1 is described in Chapter 2, Alternatives. A summary of vegetation communities by project components is provided below. Vegetation communities were assessed according to the analysis methodology as described above. A 300-foot buffer was applied to all project components when describing vegetation types.

Mine Site

NOTE TO REVIEWERS: VEGETATION MAPPING DATA FOR THE MINE SITE WILL BE UPDATED FOR THE DRAFT EIS BASED ON INCORPORATION OF 2018 FIELD DATA.

The mine site is characterized by a predominance of shrub types, representing approximately 80 percent of the mine site area. Figure 3.26-2 shows the percentages of grouped vegetation types in the mine site area. Human-caused soil or vegetation disturbance in the area is minimal and appeared to be limited to ATV trails or campsites (3PPI and HDR 2011).

Figure 3.26-2: Alternative 1 –Mine Site Area Vegetation Types



1 Project vegetation types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: 3PPI and HDR 2011; HDR 2018.

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3.26.2.1 Transportation Corridor

NOTE TO REVIEWERS: PROJECT SPECIFIC VEGETATION MAPPING DATA IS CURRENTLY UNAVAILABLE FOR THE KOKHANOK EAST VARIANT (FERRY TERMINAL AND ACCESS ROAD) (FIGURE 3.26-4). DATA WILL BE UPDATED USING THE SUPPLEMENTAL MAPPING METHOD DESCRIBED IN SECTION 3.26.1.2 FOR THE DRAFT EIS.

The transportation corridor area includes the 24 miles of the mine access road (5 miles of this road falls in the mine site mapping area) from the mine site to the north ferry terminal at Iliamna Lake, an 18-mile crossing of the lake to the south ferry terminal, and the port access road (37 miles) between the lake and Amakdedori port on Cook Inlet. It also includes spur roads to Iliamna Airport and Kokhanok Airport. The transportation corridor includes segments of the natural gas pipeline that fall within the transportation corridor.

This corridor is located in three physiographic divisions: Nushagak-Big River Hills, Nushagak-Bristol Bay Lowlands, and Aleutian Range; it crosses three distinct ecological zones: Dwarf Shrub Tundra/Forest, Dwarf Shrub Tundra/Mountainous Shrubland, and Dwarf Shrub Tundra.

Percentage of vegetation types in the transportation corridor are shown in Figure 3.26-3. This area is characterized by a predominance of shrub types, representing approximately 78 percent coverage. Human-caused soil or vegetation disturbance in the mapping area is minimal and appears to be limited to ATV trails, roads, and building pads near the village of Iliamna, Kokhanok Airport, and the shore of Iliamna Lake (3PPI and HDR).

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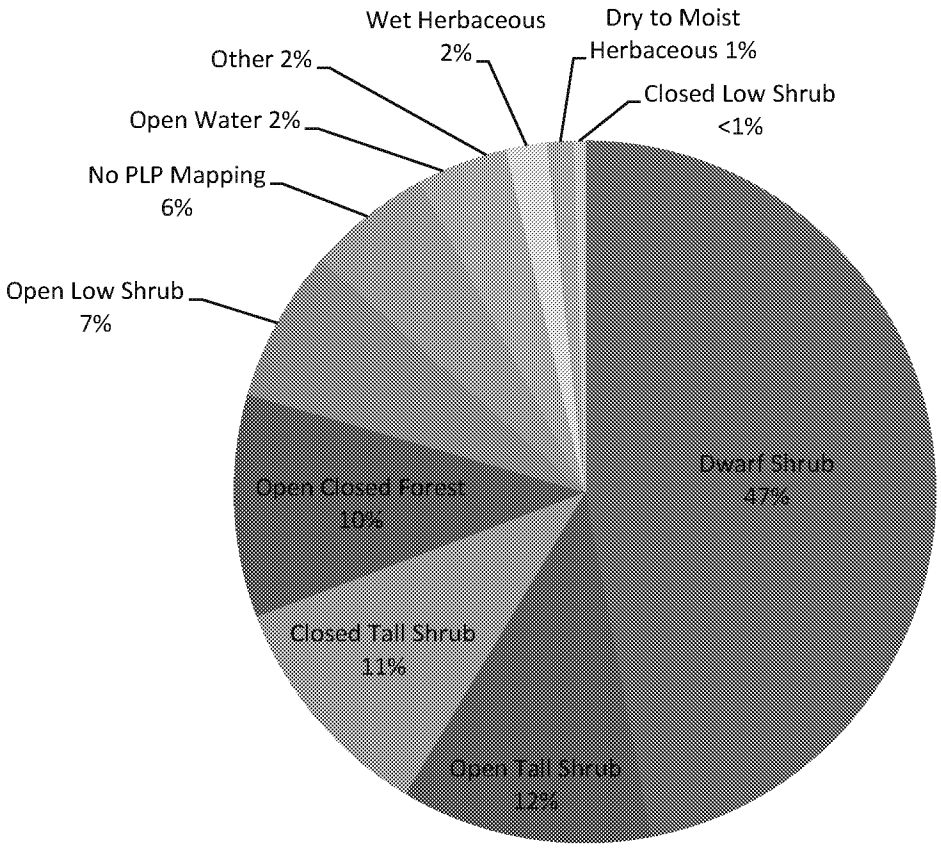
Figure 3.26-3: Alternative 1- Transportation Corridor Vegetation Types



1 Project vegetation types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: 3PPI and HDR 2011; HDR and 3PPI 2011; HDR 2018.

3.26.2.2 Amakdedori Port

The Amakdedori port is in a region composed of marine, coastal, and estuarine habitats. Vegetation mapping includes an onshore area to encompass shore-based facilities at the port as well as an off-shore area for waterside structures and improvements associated with the marine facility. Percentage of vegetation types in the Amakdedori port area are shown in Figure 3.26-4. The Amakdedori port area extends into the Cook Inlet and therefore is comprised primarily of open water. Forested vegetation types are absent from this mapping area. No human-caused soil or vegetation disturbance was reported for the Amakdedori port mapping area.

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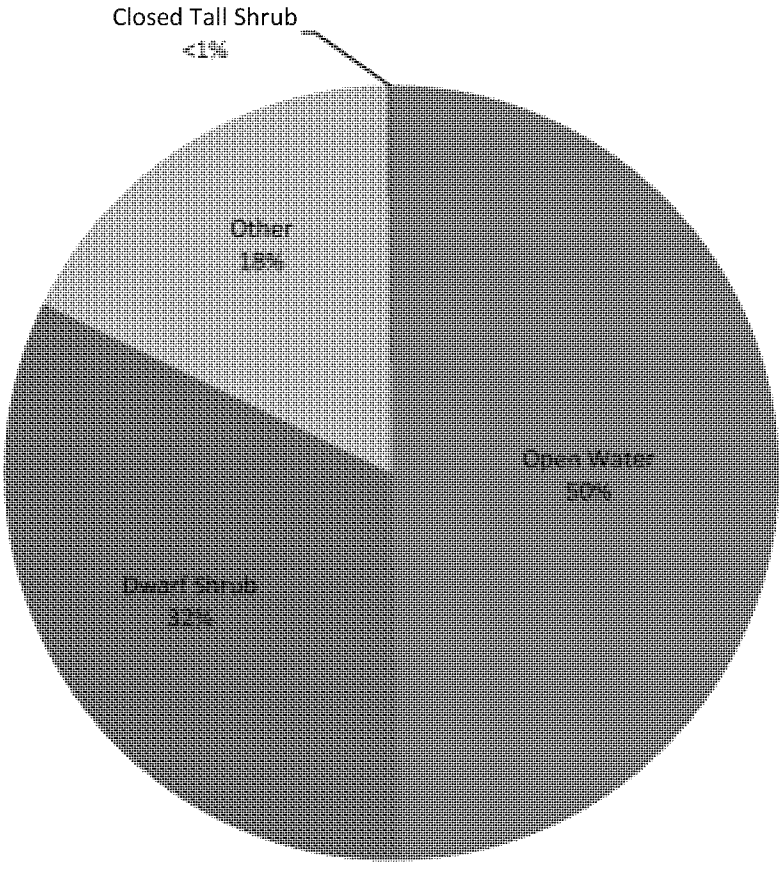
Figure 3.26-4: Alternative 1- Amakdedori Port Vegetation Types



1 Project vegetation types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: 3PPI and HDR 2011; HDR and 3PPI 2011; HDR 2018.

3.26.2.3 Natural Gas Pipeline Corridor

[NOTE: VEGEATION MAPPING IS CURRENTLY UNAVAILABLE FOR 67 ACRES. MAPPING WILL BE UPDATED FOR THE DRAFT EIS].

Segments of the natural gas pipeline adjacent to access roads are addressed under the transportation corridor mapping area. Segments of the natural gas pipeline that do not follow the access road corridors are described here and include: from Amakdedori port across the Cook Inlet to the compressor station near Anchor Point on the Kenai Peninsula.

This segment of the pipeline corridor was not included in the field studies and mapping prepared for the project; therefore, this analysis makes use of existing ACCS landcover classification data, as described above. The segment of the Cook Inlet pipeline crossing where there were no data was classified as open water.

The percentage of vegetation types are shown in Figure 3.26-5.

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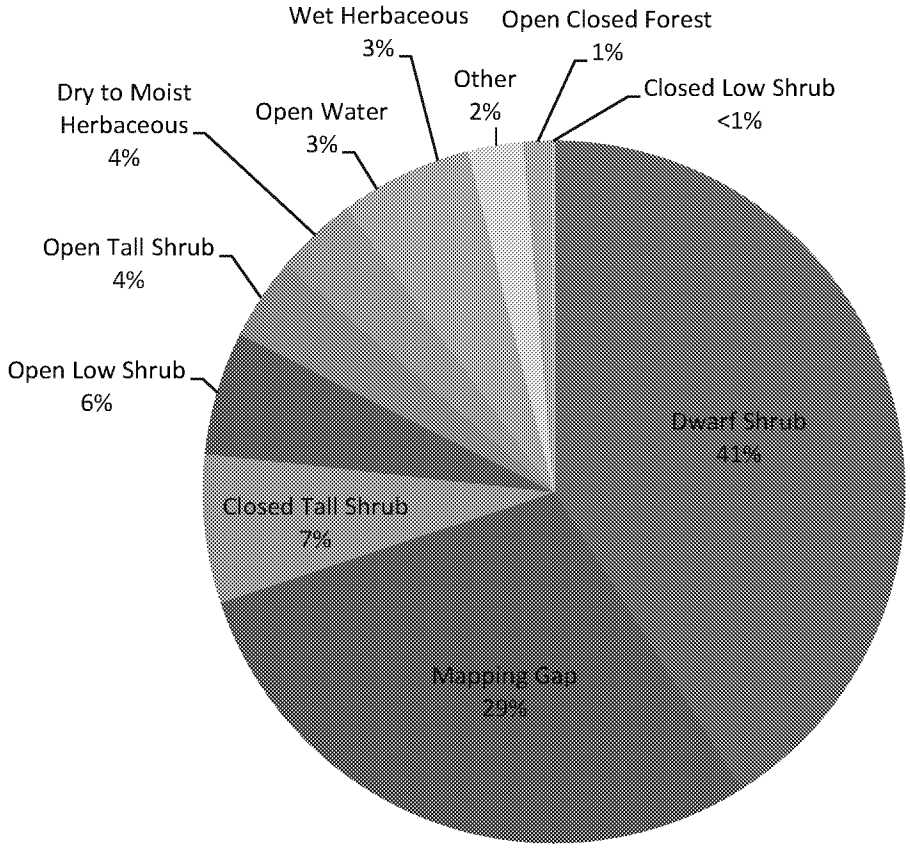
Figure 3.26-5: Alternative 1- Natural Gas Pipeline Corridor Vegetation Types



1 Vegetation mapping for the Natural Gas Pipeline mapping area on the Kenai Peninsula is based on the Alaska Natural Heritage Program, Alaska Center for Conservation Science, Vegetation Map and Classification for Northern, Western, and Interior Alaska (Boggs et al. 2016). The landcover classes were cross-walked into corresponding Grouped Vegetation Types for this project based on the review of dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf) from each data set. In some instances, a direct correlation was not applicable so the data is summarized using a broader scale. For example, Boggs et al. (2016) vegetation classification does not break down the Tall Shrub landcover type by "Open" and "Closed", so the acreages for this group is combined to report totals for one Tall Shrub category (Open-Closed).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source Boggs et al. 2016

3.26.3 Action Alternative 2 – North Road and Ferry

Alternative 2 is described in Chapter 2, Alternative. There is some overlap in the mapping areas associated with alternatives (see Figure 3.26-1). A summary of vegetation communities by project components is provided below. Vegetation communities were assessed according to the analysis methodology as described above.

3.26.3.1 Mine Site

The vegetation mapping area at the mine site is the same for all alternatives. See summary under Alternative 1.

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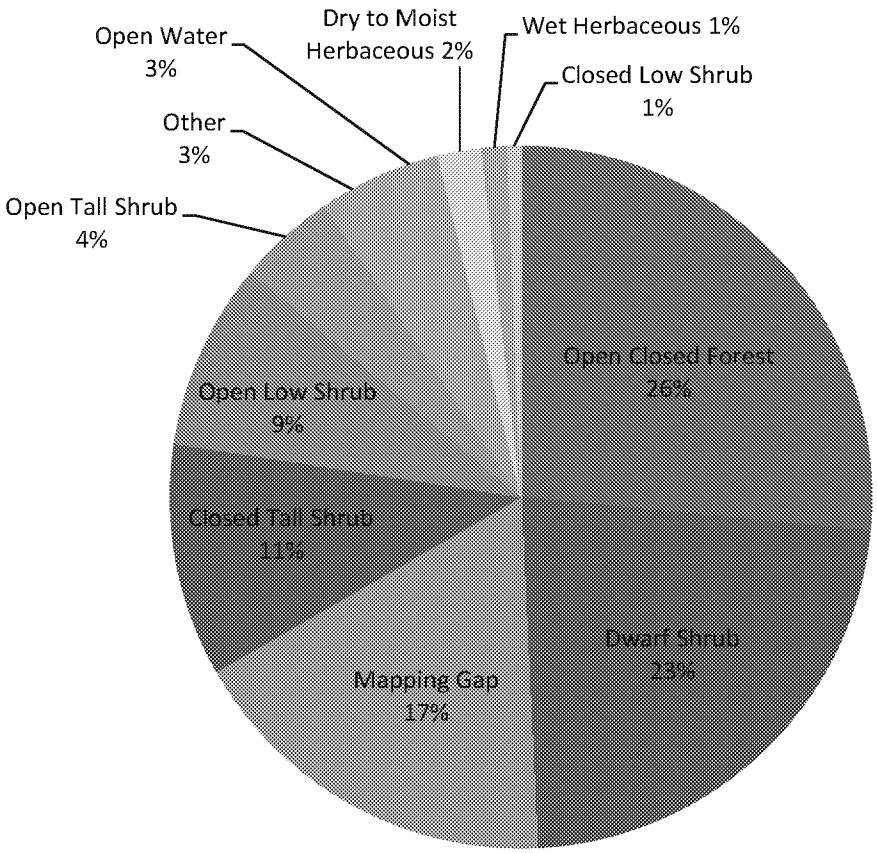
3.26.3.2 Transportation Corridor

NOTE TO REVIEWERS: PROJECT VEGETATION MAPPING DATA IS CURRENTLY UNAVAILABLE FOR ALTERNATIVE 2 PILE BAY AND EAGLE BAY ROAD SEGMENTS AND THE ILIAMNA LAKE EAST AND WEST FERRY TERMINALS (FIGURE 3.26-1). DATA WILL BE UPDATED USING THE SUPPLEMENTAL MAPPING METHOD DESCRIBED IN 3.26.1.2 FOR THE DRAFT EIS.

The transportation corridor described herein includes 31 miles of the mine access road (5 miles of this road falls in the mine site mapping area) from the mine site to the Eagle Bay ferry terminal, a 29-mile crossing of the lake to the Pile Bay ferry terminal, and the port access road (18 miles) between the lake and Diamond Point port at Cook Inlet. The transportation corridor mapping area includes segments of the natural gas pipeline that fall within the transportation corridor.

The percentage of vegetation types in the Alternative 2 transportation corridor area are shown in Figure 3.26-6. The transportation corridor is characterized by a predominance of forested vegetation and dwarf shrubs.

Figure 3.26-6: Alternative 2 – Transportation Corridor Vegetation Types



1 Project vegetation types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

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3.26.3.3 Diamond Point Port

NOTE: PROJECT SPECIFIC VEGETATION MAPPING IS CURRENTLY UNAVAILABLE FOR THIS COMPONENT. VEGETATION TYPES WILL BE UPDATED USING THE SUPPLEMENTAL MAPPING METHOD DESCRIBED IN 3.26.1.2 FOR THE DRAFT EIS.

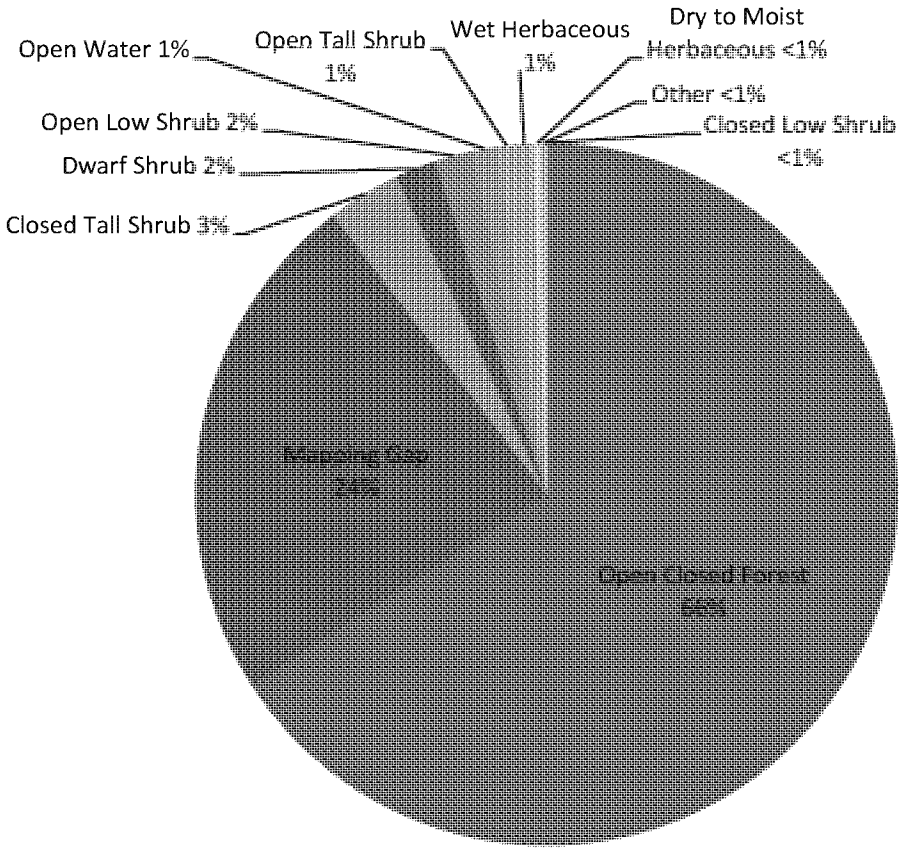
3.26.3.4 Natural Gas Pipeline Corridor

NOTE: VEGETATION MAPPING DATA IS CURRENTLY UNAVAILABLE FOR THE PIPELINE SEGMENT FROM URSUS COVE TO DIAMOND POINT. DATA WILL BE UPDATED USING THE SUPPLEMENTAL MAPPING METHOD DESCRIBED IN 3.26.1.2 FOR THE DRAFT EIS.

Segments of the natural gas pipeline adjacent to access roads are addressed under the transportation corridor. Segments of the natural gas pipeline that do not follow the access road corridors are described here and include: from the mine access road cut-off to Eagle Bay to the port access road cut-off to Pile Bay; from the Diamond Point port to Ursus Cove; and from Ursus Cove across the Cook Inlet to the compressor station near Anchor Point on the Kenai Peninsula. The area also encompasses construction access roads to the natural gas pipeline corridor on the north side of Iliamna Lake.

Vegetation types in the natural gas pipeline corridor area are shown in Figure 3.26-7.

Figure 3.26-7: Alternative 2 – Natural Gas Pipeline Corridor Vegetation Types



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3.26.4 Action Alternative 3 – North Road Only

Alternative 3 is described in Chapter 2. There is some overlap in the mapping areas associated with alternatives (see Figure 3.26-1). A summary of vegetation communities by project components is provided below. Vegetation communities were assessed according to the same analysis methodology as described above.

3.26.4.1 Mine Site

The vegetation mapping area at the mine site is the same for all alternatives. See summary under Alternative 1.

3.26.4.2 Transportation Corridor

The transportation corridor area includes 77 miles of the north access road (5 miles of this road falls in the mine site mapping area), from the mine site to the Diamond Point port on Cook Inlet. The transportation corridor area includes segments of the natural gas pipeline that fall within the transportation corridor.

Vegetation types in the Alternative 3 transportation corridor are shown in Figure 3.26-8. This area is characterized by a predominance of forest vegetation types, as compared to the same component under Alternative 1, which is dominated by shrub vegetation types.

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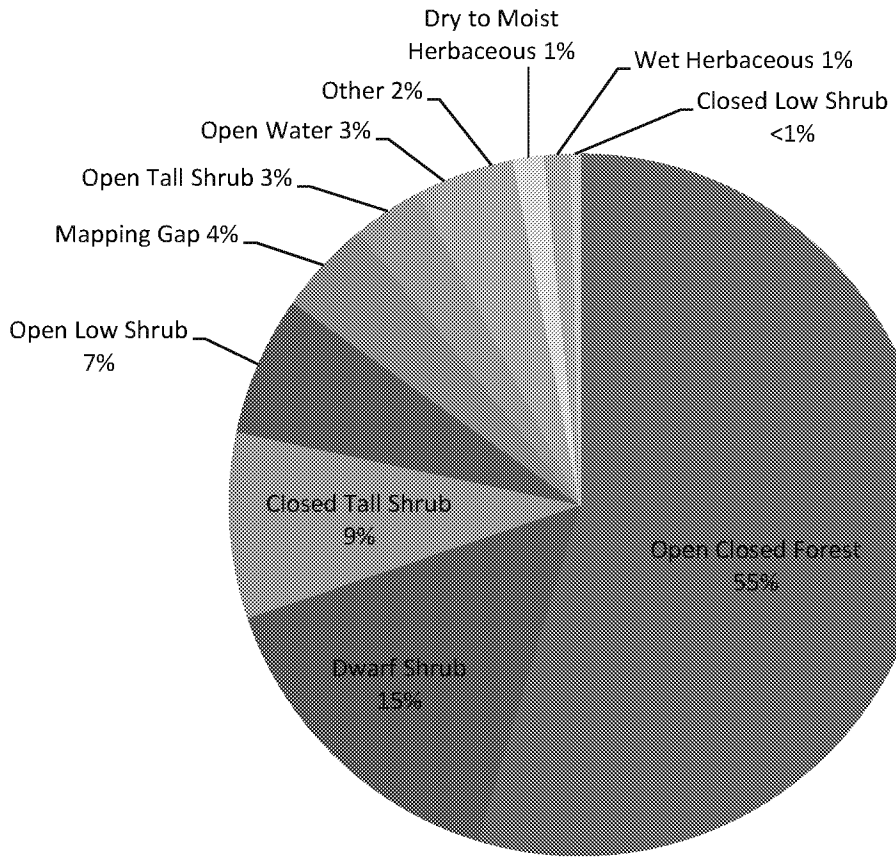
Figure 3.26-8: Alternative 3 – Transportation Corridor Vegetation Types



1 Project vegetation types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

3.26.4.3 Diamond Port

[NOTE: SECTION WILL BE UPDATED WITH SUPPLEMENTAL MAPPING FOR THE DEIS]

3.26.4.4 Natural Gas Pipeline Corridor

NOTE: VEGETATION MAPPING DATA IS CURRENTLY UNAVAILABLE FOR THE PIPELINE SEGMENT FROM URSUS COVE TO DIAMOND POINT. DATA WILL BE UPDATED USING THE SUPPLEMENTAL MAPPING METHOD DESCRIBED IN 3.26.1.2 FOR THE DRAFT EIS.

See section 3.26.3.4 for a description of vegetation types for the natural gas pipeline crossing Cook Inlet to the Kenai Peninsula.

3.26.5 Rare and Sensitive Plants

The ACCS maintains a rare plant list for Alaska, tracking occurrences of over 300 rare plant species (ACCS 2018a; Nawrocki et al. 2013), some of which occur in the mapping area. However, no special statewide protections are afforded species on this list. ACCS ranks the species with a code that describes their population status on a global level (i.e., G-rank) and on a statewide level (i.e., S-rank). The status levels are ranked on a scale of one to five, where five

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is a common species with demonstrably secure populations, and one is a critically imperiled species whose populations are vulnerable to extirpation or extinction. Two occurrences of Chukchi primrose (*Primula tschuktschorum*) occur in the mapping area. This species is ranked S2, G2/G3. Both occurrences are in the North Fork Koktuli watershed; one approximately 2 miles west/southwest of Kaskanek Mountain, and 22 miles northwest of Iliamna, and the other 40 miles west of Iliamna.

Incidental observations of ACCS tracked vascular plant species that were recorded during project surveys included one species in the analysis area: Bering Sea dock (*Rumex beringensis*) located between Newhalen and the Upper Talarik Creek. In order to be confirmed and receive a state herbarium accession number, voucher specimens must be collected or carefully photographed for review and approval by a qualified botany expert. Researchers collected specimens in some, but not all, cases. The occurrence of Bering Sea dock was not positively confirmed, although a voucher specimen was collected. Other tracked species were observed outside the analysis area.

3.26.6 Climate Change

Climate change is currently affecting vegetation in the Project Area and throughout Alaska. Bristol Bay residents (ANTHC 2014) report changes in vegetation trends due to warmer and wetter conditions including rapid tree growth and expansion, new coastal wetlands, spread of invasive plant species, and that over the past few decades the tundra and shrub environment in the vicinity of the Project Area has been replaced by alder and willow trees. In 2013, Nondalton residents reported additional outbreaks of spruce bark beetle and aphids on the Nushagak River (ANTHC 2014).

Historically, Alaska's cold climate prevented non-native plants from becoming established, but in recent years there has been an influx of meadow hawkweed, Canada thistle, and spotted knapweed; now all have localized populations in Alaska. Other species such as reed canary grass and white sweetclover are very widespread (Carlson et al. 2007). Orange hawkweed, yellow toadflax, and oxeye daisy have been reported along the road system in Dillingham and Aleknagik by the Bristol Bay Native Association (ANTHC 2014). Species documented in Nondalton during a July 2013 site visit include Leontodon autumnalis, or fall dandelion (ANTHC 2014). Oxeye daisy has been observed in Nondalton (Bristol Bay Native Association 2014). Increasing dust and silt has been noted as a health concern in Levelock (Bristol Bay Native Association 2014).

Climate models predict that Bristol Bay region will experience rapid ecological change during the next 100 years. Computer models for climate change consider future "cliomes," areas where temperature and precipitation reflect certain kinds of wildlife and vegetation. Bristol Bay's current cliome "boreal forest with coastal influence and intermixed grass and tundra," is expected to shift north and largely disappear by 2090 (ANTHC 2014). It may be replaced by "prairie and grasslands," a cliome that does not currently occur in Alaska, and is characteristic of southeastern Alberta in Canada (Fresco et al. 2012).

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4.26 VEGETATION

Potential direct and indirect effects on vegetation include:

- Direct impacts from vegetation removal (including rare and sensitive species)
- Indirect impacts from invasive species introduction or spread
- Indirect impacts from fugitive dust
- Indirect impacts from dewatering

The analysis area for vegetation is the same as that described in Section 3.22, Wetlands/Special Aquatic Sites. It encompasses the nine Hydrologic Unit Code (HUC) 10 watersheds that could potentially be directly or indirectly impacted by the project, with a total area of approximately 6,420,000 acres. Impact assessments were considered, analyzed, and determined from the perspective of overall regional Alaskan vegetation affected. To contextualize project impacts, the analysis for vegetation makes use of publically available environmental data for the environmental impact statement (EIS) analysis area (the nine HUC 10 watersheds that could potentially be directly or indirectly impacted).

The magnitude of impacts to vegetation was assessed in terms of disturbance to above-ground vegetation and soil disturbance. Vegetation would be removed above the surface and include soil disturbance. Some areas of vegetation removal and soil disturbance would be reclaimed. The duration of impacts would be temporary, meaning removal and/or disturbance would occur during the construction phase; or permanent, meaning removal and/or disturbance would occur or remain after the construction phase, through the operations and into the closure and post-closure phases. The extent of impacts would be limited to areas of the project area in which vegetation would be removed/disturbed, or would affect vegetation outside of the project area, in one or more HUC 10 watersheds.

4.26.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and would therefore have no new effects on vegetation.

4.26.2 Impacts Common to All Action Alternatives

Vegetation Removal

Shrubs, trees, understory vegetation, roots, and other obstructions such as large rocks and stumps would be cleared from construction work areas. Vegetation removal can result in changes to the surrounding environment including:

- Increased rate of soil erosion from wind or water
- Changes in water drainage patterns (increased runoff volumes)
- Sediment deposition in downslope areas
- Changes in adjacent vegetation type composition
- Changes in wildlife habitat
- Introduction or spread of invasive species

[NOTE: Project specific vegetation mapping is being updated for the DEIS; additional information and refinements may result in changes to acres reported in this review draft version].

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Rare or Sensitive Species

There are no occurrences of rare or sensitive plant species in any of the components or within a 1-mile radius of any of the components, therefore no direct impacts are expected.

Invasive Species

Project activities, especially construction and transportation, could cause the introduction and spread of invasive species throughout the project area. If project activities were to introduce new or spread existing invasive plant species it may adversely affect native plant populations by increasing competition and reducing biodiversity. Invasive plant species spread quickly and can displace native plants, prevent native plant growth, and create monocultures.

No invasive species have been documented in surveys or published literature in the project area. The four plant species that are considered not native to Alaska (common dandelion [*Taraxacum officinale*], lambsquarters [*Chenopodium album*], annual bluegrass [*Poa annua*], and pineapple weed [*Matricaria discoidea*] that have been documented adjacent to but outside of the analysis area are considered to be a low ecological risk (AKEPIC 2018). To reduce the risk of introducing or spreading invasive plant species, Best Management Practices (BMPs) would be applied for control of invasive species. An invasive species management strategy would describe the equipment, methodology, training, and assessment techniques that may be applied to avoid the introduction and spread of invasive species to the project area during permitted activities. Specific conditions may be described during the permitting process for specific permitted activities.

4.26.3 Action Alternative 1 – Applicant's Proposed Alternative

4.26.3.1 Mine Site

Vegetation Removal

Construction activities would require clearing, grading, and removal of vegetation in areas where the mine pit, tailings storage facility, overburden stockpiles, material sites, water management ponds, milling and processing facilities, access roads, and supporting infrastructure would be located.

A total of 7,677 acres of vegetation would be removed during construction of the mine site. Table 4.26-1 lists the acreage and percent of the vegetation types in the mine site area that would be affected by clearing, grading, and removal activities during construction. Acres of impacts to vegetation were calculated by overlaying the project footprint over mapped vegetation types in ArcGIS, and calculating the area impacted for each vegetation type per component.

In some locations, removal would be permanent (such as the mine pit that would become a pit lake, and bulk tailings storage facility that would become a new landform). In all other areas, removal would be temporary. In temporary disturbance areas, vegetation would be reestablished by reclamation, which would begin immediately after construction, and continue through to closure. In some areas, natural revegetation would be expected to occur. All road material sites would be stabilized and progressively reclaimed, but would remain active to support ongoing road maintenance requirements through operations. Mine laydown areas would be retained for use through operations. All construction roads would continue to serve as site access roads.

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Disturbed areas that are reclaimed would be expected to continue native vegetation success patterns over time, which would improve soil and habitat quality for wildlife. Successional species would include area native species as seeds and plant materials are dispersed and established on reclaimed sites. Vegetation reestablishment time of cleared or graded areas is variable. Trees and shrubs are expected to begin to re-establish almost immediately after construction and reclamation. Alders (*Alnus* spp.), willows (*Salix* spp.), and birch (*Betula* spp.) are generally the first trees and shrubs to re-establish. Reclamation details are discussed in greater detail in Section 3.22, Wetlands/Special Aquatic Sites.

Indirect Impacts. Areas without well-established vegetation may also be susceptible to introduction or spread of invasive plant species. In areas where vegetation is removed and is no longer present to intercept rainfall and reduce runoff, indirect effects could result from erosion of the exposed soil and sedimentation. Drainage and erosion control measures, both temporary and permanent, would be implemented at the mine site, and reclaimed areas would be reseeded. Impacts to soil are addressed in Section 4.14, Soils.

Table 4.26-1: Alternative 1* Mine Site Vegetation Removal

Vegetation Type	Acres Removed
Open Tall Shrub	288
Closed Tall Shrub	738
Open Low Shrub	1,384
Closed Low Shrub	150
Dwarf Shrub	3,968
Dry to Moist Herbaceous	298
Wet Herbaceous	483
Open Water	77
Other	291
Total	**7,677**

Source: Boggs et al. 2016 for vegetation types

*Alternative 3 has the same impacts.

Summer-Only Ferry Operations Variant

With this variant, concentrate would be stored at or near the mine site for up to 6 months per year. The mine site footprint would increase by 39 acres, the majority of which (i.e., 31 acres) is dwarf shrub.

Fugitive Dust

Fugitive dust emissions are a byproduct of construction activities. At the mine site, dust would be caused by vehicle travel on the mine roads and other unpaved surfaces in the mine, ore crushing, loading and unloading of materials, as well as by mining activities at the pit. Wind would also be expected to create dust from areas of the mine site that do not have vegetation due to vegetation removal.

The intensity of the impacts is expected to vary depending on proximity of vegetation to the source of the dust and the prevailing wind. Dust may cause variable physiological changes to vegetation depending on exposure length or level. The duration of the effects would be both seasonal, when dust is washed off during winter months (or when deciduous species lose leaves), and throughout construction. In some cases, impacts may extend beyond closure where physiological changes may occur to plants, or where vegetation community changes may

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take place. The geographic extent would be in areas adjacent to roads with vehicle traffic or in unpaved surface areas, and in the dust emissions areas, with the highest concentrations of dust closest to the source.

The effects of dust deposited on adjacent vegetation may include:

- Burial or elimination of vegetation in the most heavily impacted zones (Everett 1980)
- Reduction in vegetation biomass (Auerbach 1997)
- Decreased plant vitality due to reduced photosynthesis.
- Early snowmelt in roadside areas due to lower albedo (Klinger et al. 1983; Auerbach 1997)
- Early green-up of plants (Walker and Everett 1987)
- Increases in graminoid composition (Auerbach 1997),
- Decreases in sphagnum and other mosses and lichens (Walker et al. 1987a)
- Decreases in nutrient levels in soils (Auerbach 1997)
- Decreases in soil moisture
- Shallower organic horizon

Dust has the potential to collect on vegetation in the vicinity of the dust sources. Windblown dust could affect vegetation well beyond the source, but the effect diminishes with distance and is affected by prevailing winds and topography. During construction, a total of 74,504 acres could be affected by dust deposition from the mine site. The dominant vegetation types in this area are dwarf shrub and open low shrub. During operations, a total of 2,656 acres may be affected by dust deposition. The deposition of dust has also been analyzed in Section 4.14, Soils, with information on impacts to wetlands included in Section 4.22, Wetlands/Special Aquatic Sites.

A fugitive dust control plan would be developed for the project and the project, applying Best Available Control Technology (BACT) and BMPs for fugitive dust management. The plan would describe the equipment, methodology, training, and performance assessment techniques that would be used to control fugitive dust from site activities and wind erosion. PLP proposes to use covered containers to transport concentrate essentially eliminating potential for concentrate dust. While these measures are expected to reduce the amount of fugitive dust produced and dispersed, dust would still affect vegetation.

Dewatering

Groundwater lowering may reduce water availability to plant species. Response of terrestrial vegetation to reduced water availability depends on the water requirements of individual plant species, root depths, and tolerances. Plants with shallow root systems, such as paper birch (*Betula papyrifera*), Alaska blueberry (*Vaccinium alaskaense*) and bluejoint reedgrass (*Calamagrostis canadensis*), require a fairly constant supply of water and would be impacted to a greater extent than drought-tolerant or deep-rooted species. Impacts to vegetation from reduction in water availability may include stunted growth, greater susceptibility to disease (NCDENR 2009), and succession of more drought-tolerant species. Impacts would depend on the timing and location of the groundwater lowering and the tolerance of the vegetation types. Impacts to groundwater are discussed in Section 4.17, Groundwater Hydrology. Impacts to wetland vegetation are presented in Section 4.22, Wetlands/Special Aquatic Sites.

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4.26.3.2 Transportation and Natural Gas Pipeline Corridors

Vegetation Removal

Construction activities in the transportation and natural gas corridors would require clearing, grading, and removal of vegetation in areas where the roads, ferry terminals, laydown areas, material sites, and buried onshore pipeline would be located. During operations, periodic brushing of the revegetated pipeline corridor would occur. Segments of the natural gas pipeline adjacent to access roads are addressed in this section.

A total of 1,086 acres of vegetation would be removed. Table 4.26-2 lists the acreage and percent of the vegetation types that would be directly affected by clearing, grading, and removal activities with construction. Impacts associated some locations in these components would be temporary, because reclamation would occur shortly after installation. All temporary construction facilities would be removed after construction, and the sites, unless being used for permanent facilities, would be reclaimed. Temporary facilities associated with the transportation corridor on the western side of Cook Inlet include the camps established at the ferry landings.

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. The Iliamna Lake ferry facilities would be removed, and all closure-related supplies would be transported across the lake using a summer barging operation.

Table 4.26-2: Alternative 1 Transportation and Natural Gas Corridors Vegetation Removal

Vegetation Type	Acres Removed
Open/Closed Forest	115
Open Tall Shrub	143
Closed Tall Shrub	119
Open Low Shrub	69
Closed Low Shrub	4
Dwarf Shrub	588
Dry to Moist Herbaceous	11
Wet Herbaceous	14
Other	23
Total	**1,086**

Source: Boggs et al. 2016 for vegetation types

Kokhanok East Ferry Terminal Variant

With this variant the footprint and vegetation removal acres is expected to be similar to that of Alternative 1.

[NOTE: Project specific vegetation mapping is not currently available for this location; information and acreage will be included in the DEIS].

Fugitive Dust

Because the roads and pipeline cross several watersheds, these impacts are likely to affect a wider geographic area compared to the mine site. However, levels of dust accumulation would

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be lower along the roads because the dust-producing activities would be less frequent compared to the mine site (vehicles passing rather than ongoing movement of materials) and the smaller size of the unvegetated area (road width rather than entire mine site).

During project operations, daily transportation of materials (concentrate, fuel, reagents, and consumables) would require up to 35 truck round-trips per day on the road. Section 4.12, Transportation and Navigation, describes the type and amount of vehicles expected to use the roads. Vehicle traffic on gravel roads can produce dust that settles on the roadside. Dust would likely be generated during gravel placement, gravel compaction activities, and from vehicular traffic and equipment operation on gravel roads. The heaviest dust deposition would be anticipated to occur within 35 feet of the road (Walker and Everett 1987); however, dust has been documented at distances of 330 feet from the most heavily traveled roads in Prudhoe Bay (Walker et al. 1987a).

In summer, this dust can increase soil alkalinity, which reduces plant vigor in acidic tundra (Walker and Everett 1987), thus reducing the insulating effect of the vegetative cover to the underlying soil. During winter, the dust reduces the albedo of roadside snow, which initiates earlier melting and increases the cumulative heat absorption of the active layer. Snow acts as an insulator for the soil as well, and accelerated snowmelt reduces the insulating effect (Auerbach 1997). Loss of surface insulation, either by loss of vegetation or snow, causes earlier spring thaw and earlier freeze-up at the end of summer. Road grading and snowplowing may deposit gravel onto vegetation adjacent to the roads and pads. Over time, accumulation of gravel may compact or smother vegetation, reducing active layer insulation and increasing thaw. Thin deposits of dark-colored gravel may slightly reduce surface albedo, increase surface soil temperatures, and promote vegetation growth, which would better insulate the active layer. Overall, dust fallout, snow plow deposition, and other gravel spray onto the adjacent vegetation could impact a 35-foot-wide corridor of vegetation on each side of the road. Culvert maintenance and replacement would occur as needed. Potential effects due to culverts during operations would be downstream erosion and disturbance of the surface vegetation and soils in the work area.

4.26.3.3 Amakdedori Port

Vegetation Removal

Construction of the port would require clearing, grading, and removal of vegetation in areas along the access road, dredge stockpile area, and where the shore-based facilities would be located, such as facilities for receipt and storage of containers, fuel storage and transfer, power generation and distribution, maintenance, and employee accommodations.

All temporary construction facilities would be removed after construction, and the sites would be reclaimed, unless being used for permanent facilities. Temporary facilities associated with the port include the construction camp; however, this facility would be located in an area that would be used for port operations, and would not involve a separate footprint.

The Amakdedori port facilities would be removed and reclaimed after closure activities are completed, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies.

A total of 14 acres of vegetation would be removed with the construction. Table 4.26-3 lists the acreage and percent of the vegetation types that would be directly affected by clearing, grading, and removal activities during construction and operation. The impacts would be the same for the Pile Supported Dock Variant.

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Table 4.26-3: Alternative 1 Amakdedori Port Vegetation Removal

Vegetation Type	Acres Removed
Dwarf Shrub	10
Other	4
Total	**14**

Source: Boggs et al. 2016 for vegetation type

4.26.4 Action Alternative 2 – North Road and Ferry

4.26.4.1 Mine Site

Under Alternative 2, the mine site footprint would be 119 acres larger than under Alternative 1. Indirect impacts would be similar but would occur in the larger footprint.

4.26.4.2 Transportation and Natural Gas Pipeline Corridors

Vegetation Removal

A total of 970 acres of vegetation would be removed with construction activities in the transportation corridor, and 667 acres would be removed in the natural gas pipeline corridor. Table 4.26-4 lists the acreage and percent of the vegetation types that would be directly affected by clearing, grading, and removal activities during construction in the transportation corridor. Table 4.26-5 lists the acreage and percent of the vegetation types in the natural gas pipeline corridor that would be directly affected.

Table 4.26-4: Alternative 2 Transportation Corridor Vegetation Removal

Vegetation Type	Acres Removed
Open/Closed Forest	324
Open Tall Shrub	46
Closed Tall Shrub	96
Open Low Shrub	110
Closed Low Shrub	8
Dwarf Shrub	312
Dry to Moist Herbaceous	20
Wet Herbaceous	5
Other	49
Total	**970**

Source: Boggs et al. 2016 for vegetation type

Table 4.26-5: Alternative 2 Natural Gas Pipeline Corridor Vegetation Removal

Vegetation Type	Acres Removed
Open/Closed Forest	587
Open Tall Shrub	6

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Table 4.26-5: Alternative 2 Natural Gas Pipeline Corridor Vegetation Removal

Vegetation Type	Acres Removed
Closed Tall Shrub	32
Open Low Shrub	12
Dwarf Shrub	20
Dry to Moist Herbaceous	4
Wet Herbaceous	2
Other	4
Total	**667**

Source: Boggs et al. 2016 for vegetation type

Fugitive Dust

Impacts would be similar to those described in Alternative 1, but would be reduced due to the shorter road length.

4.26.4.3 Diamond Point Port

Construction activities would result in a permanent loss of 112 acres of vegetation at the Diamond Point port.

[NOTE: Project specific vegetation mapping is not currently available for this location; information will be included in the DEIS].

4.26.5 Action Alternative 3- North Road Only

4.26.5.1 Mine Site

Under Alternative 3, the mine site footprint would be the same as Alternative 1; therefore, both direct and indirect effects would be the same. See Table 4.26-1 for vegetation removal acres.

Concentrate Pipeline Variant

With this variant the mine site footprint and vegetation removal acres would be increased by approximately 1 acre.

4.26.5.2 Transportation and Natural Gas Pipeline Corridors

Vegetation Removal

Table 4.26-6 lists the acreage and percent of the grouped vegetation types in the transportation corridor that would be directly affected by clearing, grading, and removal activities during construction. Segments of the natural gas pipeline adjacent to access roads are included in these values. Table 4.26-7 lists the acreage and percent of the vegetation types in the natural gas pipeline corridor that would be directly affected. Segments of the natural gas pipeline that do not follow the access road corridors are included here (from the Diamond Point port to Ursus Cove, and from Ursus Cove across the Cook Inlet to the compressor station near Anchor Point on the Kenai Peninsula).

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Table 4.26-6: Alternative 3 Transportation Corridor Removal Impacts

Vegetation Type	Acres Removed
Open/Closed Forest	970
Open Tall Shrub	48
Closed Tall Shrub	114
Open Low Shrub	118
Closed Low Shrub	8
Dwarf Shrub	322
Dry to Moist Herbaceous	21
Wet Herbaceous	5
Other	51
Total	**1,657**

Source: Boggs et al. 2016 for vegetation type

Table 4.26-7: Alternative 3 Natural Gas Pipeline Corridor Removal Impacts

Vegetation Type	Acres Removed
Open Tall Shrub	2
Closed Tall Shrub	4
Dwarf Shrub	17
Dry to Moist Herbaceous	3
Total	**26**

Source: Boggs et al. 2016 for vegetation type

Fugitive Dust

Impacts would be similar to those described in Alternative 2, but would be reduced due to the shorter road length.

4.26.5.3 Diamond Point Port

Under Alternative 3, the Diamond Point Port footprint would be the same as Alternative 2, described previously. Therefore, both direct and indirect effects would be the same.

4.26.5.4 Summary of Key Impacts

Depending on alternative, the project would cause the loss or conversion of 8,777 to 9,591 acres of vegetation. This represents 0.15% of the EIS analysis area.

Table 4.26-8 summaries the key issues for vegetation across all three alternatives. When possible, acreages of habitat that would be directly or indirectly impacted are included.

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Table 4.26-8: Summary of Vegetation Key Impacts

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Vegetation Removal	Permanent loss or conversion of 7,677 acres of vegetation at the mine site. Permanent loss of 1,086 acres of vegetation at the transportation corridor. Permanent loss of 14 acres of vegetation at the Amakdedori port.	Permanent loss or conversion of 7,796 acres of vegetation at the mine site, or7,716 acres under the summer-only operations variant. Permanent loss of 970 acres of vegetation along the transportation corridor. Permanent loss of 112 acres of vegetation at the Diamond Point port. Permanent loss of 667 acres of vegetation along the natural gas pipeline corridor.	Mine site – same as Alternative 1. Permanent loss of 1,657 acres of vegetation along the transportation corridor. Diamond Point port site – same as Alternative 2. Permanent loss of 26 acres of vegetation along the natural gas pipeline corridor.
Fugitive dust	Impacts to 2,656 acres of vegetation adjacent to the mine site throughout the life of the mine. Impacts to vegetation adjacent to the transportation corridor and Amakdedori port throughout the life of the mine and at the natural gas pipeline (mainly during construction).	Same as Alternative 1 except the port would be located at Diamond Point rather than Amakdedori.	Same as Alternative 2
Dewatering	Impacts to vegetation adjacent to the mine site throughout the life of the mine. No dewatering would occur at the port, or along the transportation or natural gas pipeline corridor, therefore there would be no impacts to vegetation.	Same as Alternative 1	Same as Alternative 1
Invasive species	Moderate potential for introduction and/or spread of invasive species would occur at the mine site, at the port, and along the transportation and natural gas pipeline corridors throughout the life of the mine.	Same as Alternative 1 except the port would be located at Diamond Point rather than Amakdedori and the transportation and natural gas pipelines would be along different routes.	Same as Alternative 1 except the port would be located at Diamond Point rather than Amakdedori and the transportation and natural gas pipelines would be along different routes.

4.26.5.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to vegetation impacts. Section 4.1 details the past, present, RFFAs considered for evaluation. Several of the RFFAs detailed in Section 4.1 are considered to have no potential for cumulatively impacting vegetation in the

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study area. These would include off-shore based developments such as oil and gas lease sales, in-river hydroelectric projects and non-industrialized point source activities that are unlikely to result in any appreciable impact beyond a temporary basis (e.g., tourism, recreation, fishing and hunting). Other RFFAs removed from further consideration include those sufficiently distant from the study area to eliminate infrastructure co-use by other parties (e.g., Donlin Gold, Copper Joe).

RFFAs that could contribute cumulatively to vegetation impacts, and are therefore considered in this analysis, are those activities that would occur within the analysis area. RFFAs, combined with natural events, have the potential to contribute to adverse effects on vegetation such as vegetation removal, dust impacts, changes in plant community diversity, and the risk of introduction or spread of invasive species.

The following RFFAs identified in Section 4.1 were carried forward in this analysis based on their potential to impact aquatic resources in the analysis area:

- Pebble project buildout- develop 55 percent of the resource over 78-year period
- Pebble South/PEB*
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Diamond Point Rock Quarry
- Lake and Peninsula Transportation and Infrastructure

**Indicates exploration activities only.*

These actions have removed some vegetation and are likely to have resulted in the introduction and spread of invasive species. While these actions affected localized areas, they are additive to other vegetation removing actions, increasing the total acreage affected. As discussed previously, ground disturbing activities increases the risk of invasive plant species introduction or spread; more exposed soil means a greater risk. Dust effects can also be additive, as more dust-producing actions are implemented a greater area of vegetation is affected.

The expanded Pebble development scenario would increase the amount of vegetation removal, dust, and risk of invasive species and these impacts would be additive to those of the proposed project. The expansion would increase both the duration and geographic extent of the vegetation impacts described under the action alternatives above.

Anticipated road improvement projects in the region include new transportation corridors currently being studied in the Lake and Peninsula Borough, such as the Williamsport-Pile Bay road upgrade, Nondalton-Iliamna River Road corridor and bridge, and Kaskanak Road /Cook Inlet to Bristol Bay. The strategic plan for Illiamna includes a road connection to all villages in lake area for safer travel. As discussed previously, roads affect vegetation through direct removal and indirectly through dust deposition and increased potential for introduction and spread of invasive plant species. Road projects have high potential to cause invasive species impacts; not only during construction but also during operations as well as vehicles can easily carry seeds from one area to another. While BMPs can reduce the risk, the potential for impacts remains as long as the road is in operation.

The vegetation loss associated with these projects, when added to the past and present vegetation loss, increases the total acreage affected. Removal would be either permanent (in the case of some areas that are not planned for revegetation or reclamation, such as the pit

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lake), or temporary (areas that are planned for reclamation or areas in which natural revegetation is expected to occur). It is expected that some portion of the cleared areas would be replanted; however it is not likely that the area would return to its pre-disturbance vegetation type; some conversion of vegetation communities is expected.

Additional RFFAs expected to affect vegetation in the region include mineral and oil and gas exploration and development, energy and utilities projects, the Diamond Point rock quarry, and various village infrastructure development projects. These projects are anticipated to include vegetation removal resulting in a net loss of vegetation and conversion of vegetation communities, as well as dust deposition and increased risk of invasive plant species.

The effects of the project on vegetation would be additive to the similar effects of past, present, and RFFAs. Specifically, vegetation removal (as the number of vegetation-clearing activities increases), dust (increasing as more roads are built and used), and risk of invasive species (which is also being increased by climate change).The areal extent of impacts to vegetation from these actions is a small proportion compared to the distribution of vegetation types throughout region. The ongoing or future similar activities would likely induce little overall change to regional vegetation types in the EIS analysis area. Overall, the cumulative impacts on vegetation from the project and the past, present and reasonably foreseeable future actions are expected to be measureable, but geographically limited.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/3/2018 9:48:48 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: EPA Comments on Pebble Preliminary Draft Alternatives Appendix B
Attachments: Pebble Pre-Draft Alternatives EPA Comments 100318.docx

Hello Shane,
Thank you for the opportunity to review the draft Appendix B: Alternatives Development Process. Our comments are attached. Please let me know if you have any questions regarding EPA's recommendations.
Regards,
Molly

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 6/7/2018 4:41:45 PM
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CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: FYSA
Attachments: RFI 032 - Initial Response 060518.pdf

Shane

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From: James Fueg, Pebble Limited Partnership

To: Shane McCoy, US Army Corps of Engineers

Date: June 5th, 2018

Response to RFI-032 Project Options

This technical note is an initial response to RFI-032 that addresses:

1) Layout Option 3

Layout Option 3

As outlined in PLP's Technical Note of May 11th, 2018 on updates to the proposed project, the use of Layout Option 3 has been included in PLP's proposed project and will be the basis for PLP's application moving forward. Figure 1 shows the proposed layout, which also includes the changes associated with the increased mill throughput (180,000 tons per day) and increased life-of-mine tons milled (1.5 billion tons).

Relative to Layout Option 1 this results in the following changes:

1) The ultimate pit footprint has increased by approximately 8%, with the boundary of the pit and the associated perimeter road moving on the south-east side.
2) The low-grade ore stockpile has been removed and the location is now used to store pyritic tails and PAG waste rock.
3) The single, multi-cell tailings storage facility (TSF) is replaced by two separate facilities, one for bulk tails (unlined) and one for pyritic tails (lined). PAG waste will also be stored in the pyritic TSF. The bulk TSF southern embankment is moved approximately 2000 feet to the south to take better advantage of the existing terrain for the embankment construction. The main (northern) embankment of the bulk TSF remains a flow-through design to facilitate water management within the bulk TSF.
4) The main water management pond and the low-grade ore stockpile water management ponds have been replaced by the larger main water management pond. This has increased the contact water storage capacity from approximately 8,000 acre-feet to 69,000 acre-feet.

These changes result in the following:

1) Placement of PAG waste and pyritic tails back into the pit at closure. Following the cessation of operations, the pyritic tails and PAG waste will be relocated to the bottom of the open pit for

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permanent subaqueous storage below ground level, the pyritic TSF embankments will be breached, the liner will be removed, and the facility will be reclaimed.

a. This provides important long-term benefits:
    i. The need for perpetual maintenance and water treatment of the pyritic TSF is eliminated.
    ii. Storage of the pyritic tails below ground level eliminates all potential for downstream failure impacts associated with the pyritic tails storage after closure.
    iii. Storage of the pyritic tails and PAG waste rock below water at the bottom of the pit is the best means of preventing acid generation over the long term.

2) Embankment designs associated with the facilities are as follows:

Facility	Embankment	Design/Construction	Maximum Crest Height (ft)
Bulk TSF	Main (North)	Flow Through/Centerline	530
Bulk TSF	South	Low Permeability/Downstream	305
Bulk TSF	East	No Embankment	-
Pyritic TSF	North	Lined Facility/Downstream	405
Pyritic TSF	South	Lined Facility/Downstream	260
Pyritic TSF	East	Lined Facility/Downstream	250
Main Water Management Pond	North	Lined Pond/Downstream	195
Main Water Management Pond	West	Lined Pond/Downstream	195

Table 1 – Embankments

3) Increased ability to store additional process contact water separate from the TSF facilities, improving the project's ability to deal with multi-year precipitation variability.
4) Additional water storage capacity in the event of water treatment facility upset conditions.
5) Additional certainty for the supply of process water during dry conditions.
6) Increased flexibility to treat and release water, and improved ability to optimize discharges and minimize downstream impacts.
7) The footprint during operations of all the major facilities (pit, tailings, waste, and water storage facilities) has increased by approximately 1030 acres with the updated layout, principally due to the increased footprint of the main water management pond. However, the long-term post closure footprint of the major facilities will decrease by approximately 50 acres due to the revised closure concept for the pyritic tails.

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8) Removes the requirement for perpetual post-closure management of the pyritic tails. In conjunction with the dry closure of the bulk TSF, this reduces post closure site maintenance requirements and the associated impacts (traffic, power generation, water treatment), while further reducing any potential long-term risk associated with TSF embankment failure.

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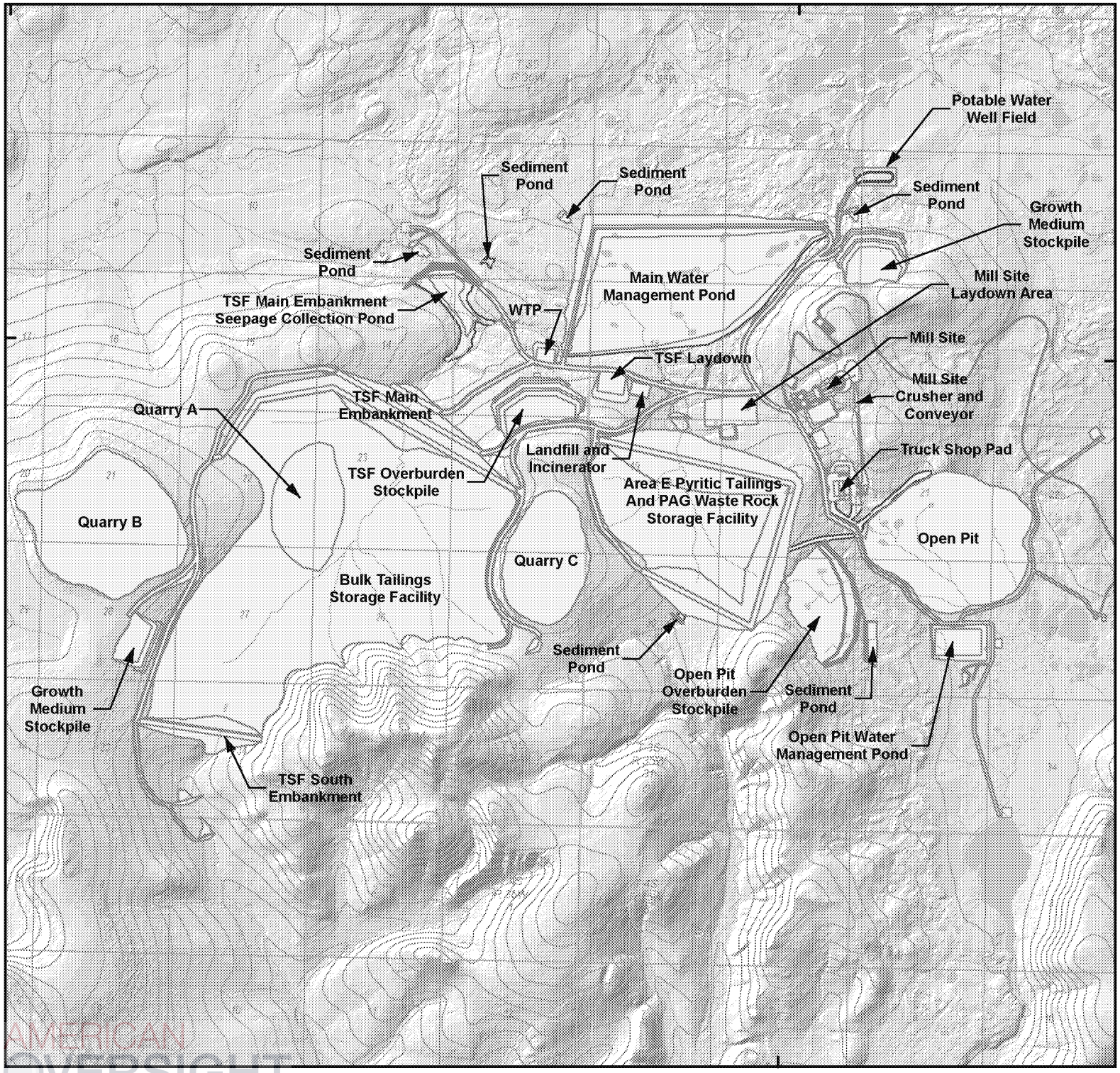


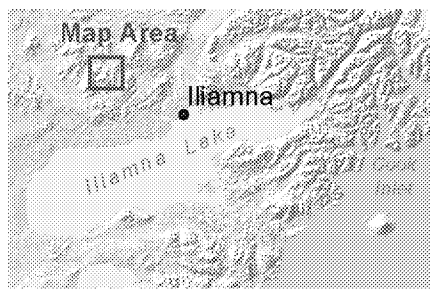
THE pebble PARTNERSHIP

FIGURE 1

Proposed Mine Layout

Current Mine Layout Design

100' Contour



Miles
0 1 2

Kilometers
0 1.5 3

N

Scale 1:63,360

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: PLP_Fig1_MineLayout_20180604.mxd	Date: 6/4/2018
Version: x	Author: HDR

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 8/23/2018 3:26:15 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: FW: Pebble EIS: Agency Meeting on Alternatives
Attachments: Figure1_AccessOptions.pdf

-----Original Message-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Wednesday, August 22, 2018 12:37 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>; Bella, Elizabeth <elizabeth.bella@aecom.com>; Isaacs, Jon <jon.isaacs@aecom.com>
Cc: John Eddins <jeddins@achp.gov>; Douglass Cooper <douglass_cooper@fws.gov>; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn <cvaughn@achp.gov>; john.mccall@bsee.gov; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Forland, Sasha <sasha.forland@aecom.com>
Subject: [Non-DoD Source] RE: Pebble EIS: Agency Meeting on Alternatives

Attached is an updated access options figure for our meeting this afternoon. We will have wall maps in the conference room and the attached map will help people calling in.
-----Original Appointment-----
From: Craig, Bill
Sent: Tuesday, July 24, 2018 10:10 AM
To: Craig, Bill; POA Special Projects; Bella, Elizabeth; Isaacs, Jon
Cc: John Eddins; Douglass Cooper; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn; john.mccall@bsee.gov; Vaughan, Molly; McGrath, Patricia; Hassell, David (PHMSA); kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US); Moselle, Kyle W (DNR); Forland, Sasha (sasha.forland@aecom.com)
Subject: Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Agenda is attached.
<< File: CA Meeting Agenda 080222018.docx >>
-- Do not delete or change any of the following text. --

Join Webex meeting <Blockedhttps://aecom.webex.com/aecom/j.php?MTID=m5a68fd8d0f63d51d9c40beea263a1e50>
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<Blockedhttps://aecom.webex.com/aecom/globalcallin.php?serviceType=MC&ED=698681487&tollFree=1> | Toll-free calling restrictions <Blockedhttps://aecom.webex.com/aecom/customer_tollfree_restrictions.pdf>

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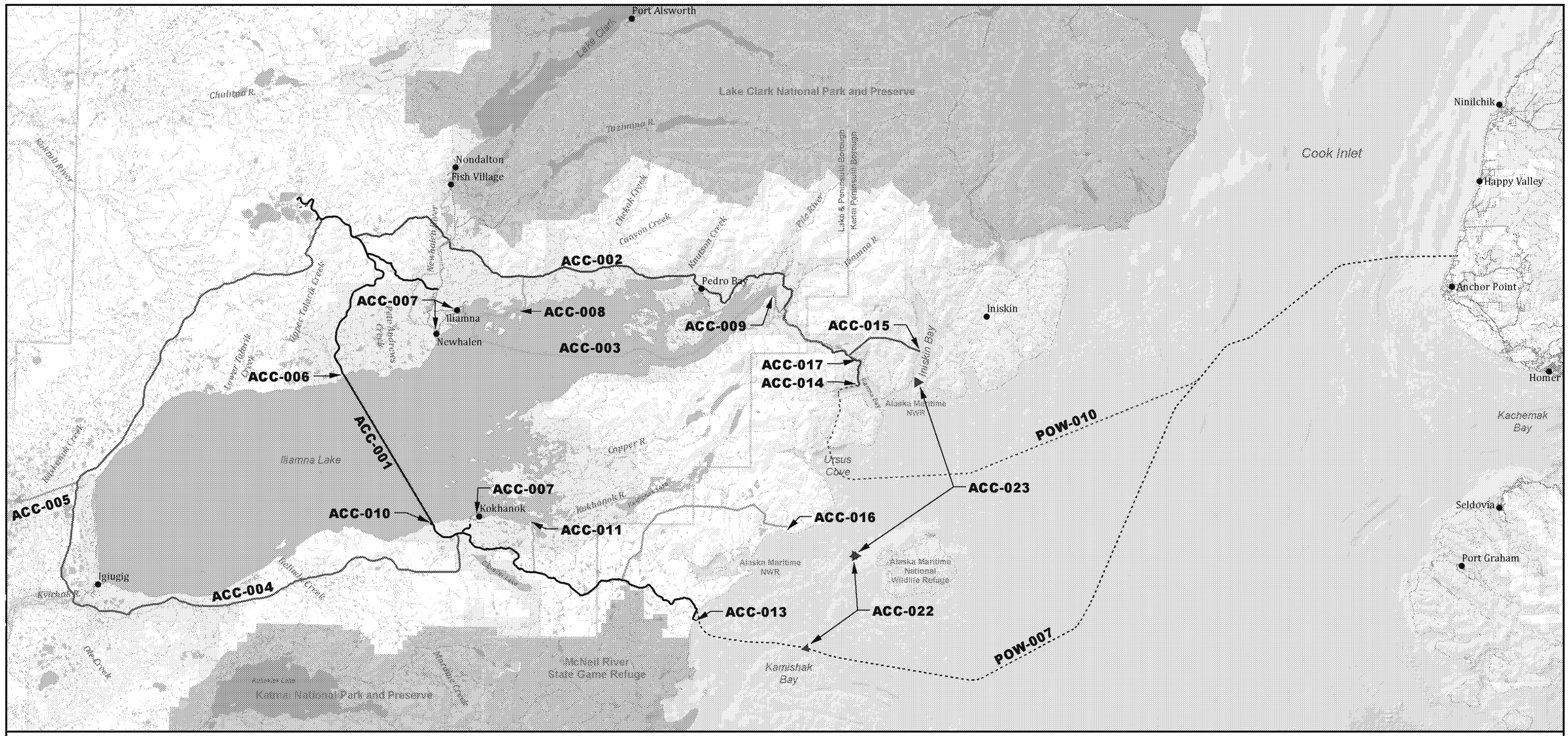

Sources: AECOM; Pebble; USGS; ADNR

US Army Corps of Engineers

0 5 10 15 Miles

Options

- South Access Route (Road and Ferry) - ACC-001, 006, 010, 013
- North Access Route (Road Only) - ACC-002, 014, 017
- North Access Route (Road and Ferry) - ACC-003, 008, 009
- West Access Route - ACC-004
- Bristol Bay Access Route - ACC-005
- Kokhanok East Ferry Terminal - ACC-011
- Knoll Head/Iniskin Bay Port Site - ACC-015
- Fortification Bluff/Rocky Point Port Site - ACC-016
- Amakdedori Offshore Lightering - ACC-022
- Iniskin Offshore Lightering - ACC-023
- South Pipeline - POW-007
- North Pipeline - POW-010

Other Features

- Proposed Mine Footprint
- Existing Roads
- Borough Boundary
- Bureau of Land Management
- Native Patent or IC; Native Selected
- State Patent or TA; State Selected
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

PEBBLE MINE EIS

ACCESS OPTIONS

FIGURE 1

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 8/23/2018 3:07:39 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: FW: Pebble EIS: Agency Meeting on Alternatives
Attachments: 08_08_2018_RFI__062_Scenario_For_Expanded_Development.docx

All,
As per the conversation yesterday.

-----Original Message-----
From: Forland, Sasha [mailto:sasha.forland@aecom.com]
Sent: Wednesday, August 22, 2018 2:46 PM
To: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Bella, Elizabeth <elizabeth.bella@aecom.com>; Isaacs, Jon <jon.isaacs@aecom.com>
Cc: John Eddins <jeddins@achp.gov>; Douglass Cooper <douglass_cooper@fws.gov>; joan_kluwe@nps.gov; courtenay@curyungtribe.com; john.mccall@bsee.gov; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Charlene Vaughn <cvaughn@achp.gov>; kevin.pendergast@bsee.gov
Subject: [Non-DoD Source] RE: Pebble EIS: Agency Meeting on Alternatives

Sasha Forland
Senior Environmental Scientist/Permitting Specialist, Alaska Office
D 1-907-267-9539
sasha.forland@aecom.com <mailto:sasha.forland@aecom.com>

AECOM
700 G Street Suite 500, Anchorage, Alaska 99501
T 1-907-562-3366 F 1-907-562-1297
Blockedwww.aecom.com <Blockedhttp://www.aecom.com/>

AECOM and URS have joined together as one company. Learn more

-----Original Appointment-----
From: Craig, Bill
Sent: Monday, August 20, 2018 9:27 AM
To: Craig, Bill; POA Special Projects (poaspecialprojects@usace.army.mil); Bella, Elizabeth; Isaacs, Jon
Cc: John Eddins; Douglass Cooper; joan_kluwe@nps.gov; courtenay@curyungtribe.com; john.mccall@bsee.gov; Vaughan, Molly; McGrath, Patricia; Hassell, David (PHMSA); bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US); Moselle, Kyle W (DNR); Forland, Sasha; Charlene Vaughn; kevin.pendergast@bsee.gov
Subject: Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Agenda is attached.
<< File: CA Meeting Agenda 080222018.docx >>
-- Do not delete or change any of the following text. --

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Conference Line/Code / Ex. 6

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RFI 062
Pebble Project EIS

Request for Information

Title/Subject:	**Scenario for Expanded Development of Pebble**
Requestor:	**Jon Isaacs, AECOM**
Date Transmitted:	**8/83/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**8/2043/2018**
Rationale:	**The USACE has decided to evaluate the cumulative effects of the 78 year resource case that was presented in the Wardrop 2011 Preliminary Assessment of the Pebble Project Southwest Alaska, prepared for Northern Dynasty Minerals Ltd. The 2011 report provides some description of a 78 year buildout to include that it would develop 55 percent of the resource. While the Wardrop report presents mine pit dimensions and an excavation profile for the 78 year scenario, it does not contain a schematic of other mine site facilities, or any description of continued use of transportation facilities.** **The 2014 EPA report titled *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska – Volume 1* presents a Pebble 6.5 mine development scenario based on a mine size with a volume similar to the 78 year resource case presented in Wardrop 2011. The 2014 EPA report also presents a mine site layout/footprint, along with tabular data on a number of parameters associated with the Pebble 6.5 scenario. The 2014 EPA report notes that their mine scenarios were developed by the EPA for the purpose of the assessment, but relied on specifics put forth in the 2011 Wardrop report.**
Describe the Information Requested and Level of Detail:	**Please provide a conceptual mine facility layout and written description for the 78 year resource case buildout scenario. The conceptual layout and description should include graphics and the dimensions of the mine pit, tailings storage facilities, waste rock storage facilities, water management and seepage ponds, quarries, overburden storage areas, processing facilities, and any additional transportation, pipeline, or power facilities that would be needed.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	Click here to enter text.
List Number and Type of Response Attachments:	Click here to enter text.

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Date Returned to USACE:	Click here to enter text.

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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Message

From: Newman, Sheila M CIV USARMY CEPOA (US) [Sheila.M.Newman@usace.army.mil]
Sent: 11/21/2018 10:47:27 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble PDEIS sections extension request (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Thank you Patty
It is always a pleasure to talk with you. As we discussed, I foresee the extension for EPA will be until at least 21 Dec. We will discuss internally and provide a response via phone or email on Monday. Have a wonderful Thanksgiving!
Vr
Sheila

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Wednesday, November 21, 2018 10:19 AM
To: Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: [Non-DoD Source] Pebble PDEIS sections extension request

Hi Sheila-

Thanks for the conversation this morning.

Our schedule extension request is for sections of chapter 3, chapter 4, and appendix K and chapter 5 in areas of our assigned special expertise (soils, surface water hydrology, hydrogeology, water & sediment quality, vegetation) and we are requesting until December 31 to submit comments. We think this request is reasonable due to the late submittal of some of the section figures, the content of the sections, and the reliance of these sections on a significant volume of reference documents that we are also reviewing.

Please let me know if you have further questions.

Best regards-

Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

CLASSIFICATION: UNCLASSIFIED

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:08:13 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures Append K Section 4.11 11-13 (UNCLASSIFIED)
Attachments: 11_03_2018_Figure_K4_11_12_Alt2_TransportationCorridor_Viewshed.pdf; 11_03_2018_Figure_K4_11_13_Kenai_Compressor_Viewshed.pdf; 11_03_2018_Figure_K4_11_11_DiamondPointPort_Viewshed.pdf

CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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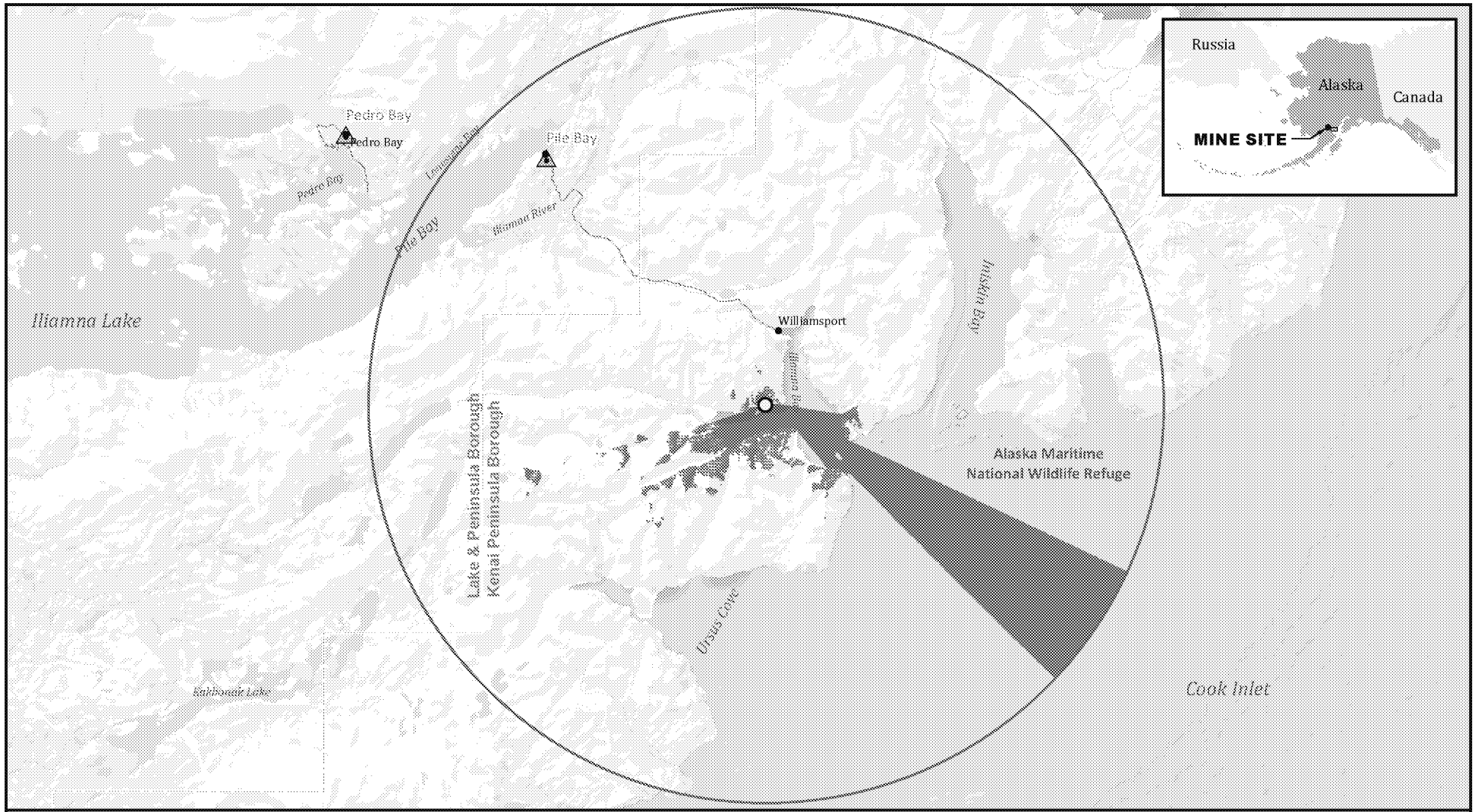

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Viewshed*
- Analysis Area (15 mi radius)

Alternative 2
- Diamond Point Port Power Generator Building

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge

*Viewshed and visibility potential are based on base-earth digital elevation data and do not account for screening effects from vegetation. Actual visibility may be substantially less.

ALTERNATIVE 2 DIAMOND POINT PORT VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-11

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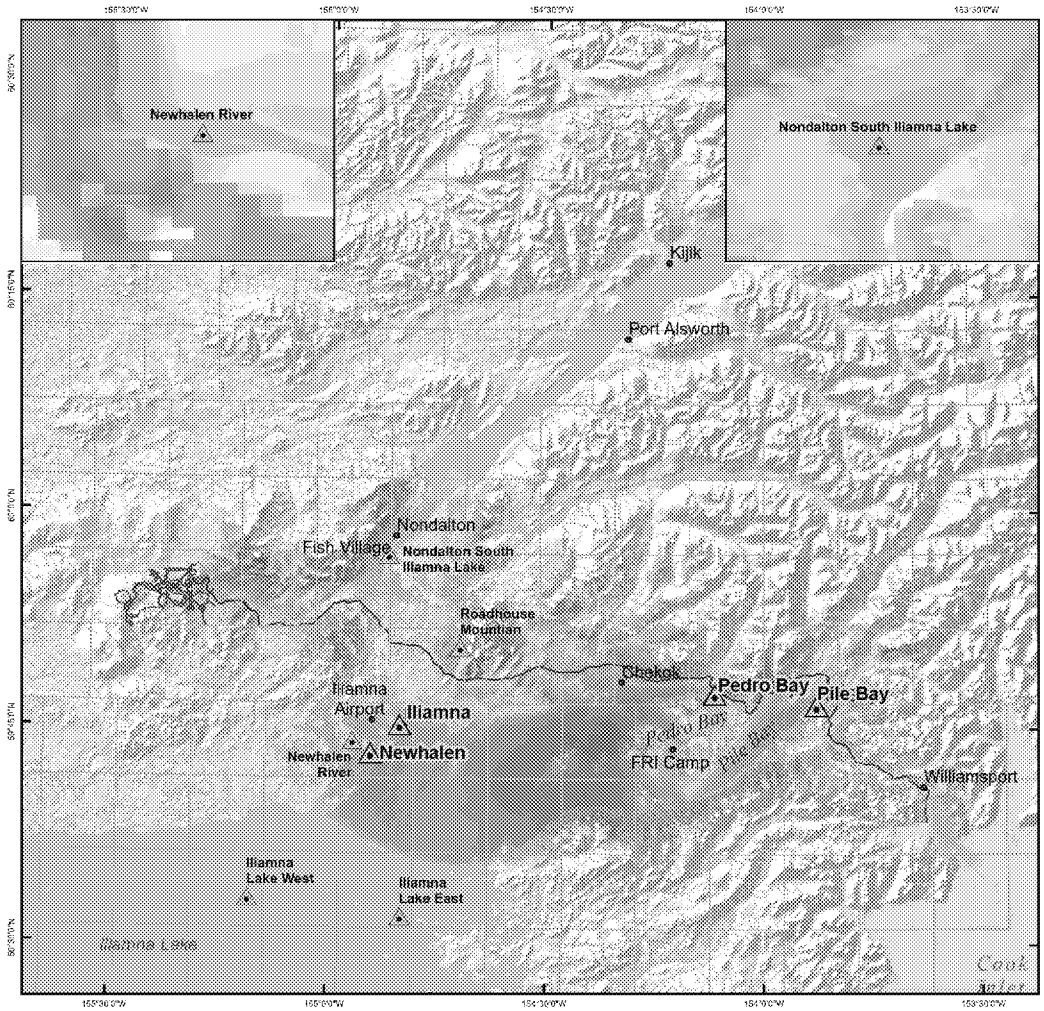

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

Mine Access Road Corridor

Key Observation Point

Potential Visibility Index

Higher

Lower

ALTERNATIVE 2 TRANSPORTATION CORRIDOR VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-12

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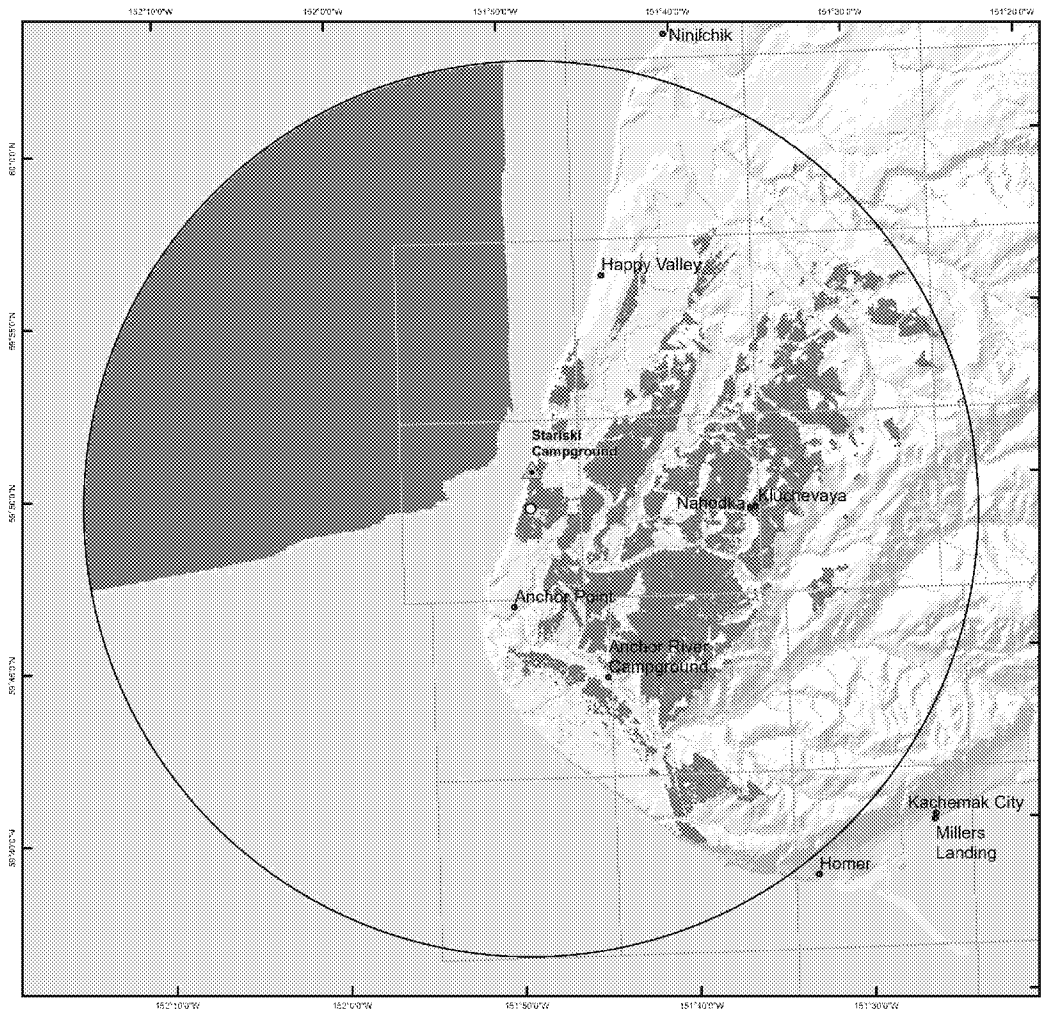

Miles
0 4 8

Kilometers
0 6.5 13

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

Key Observation Point

Compressor Station

Visible Area/Vegetation

Visible Area/Bare Earth

KENAI COMPRESSOR STATION
VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-13

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 11:09:02 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: EPA Comments on Pebble Pre-Draft EIS Sections 3.1, 3.5, 4.1, 4.5 (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Thank you.

VR

Shane McCoy
Program Manager
(907) 753-2715

-----Original Message-----
From: Vaughan, Molly [mailto:Vaughan.Molly@epa.gov]
Sent: Friday, November 09, 2018 9:32 AM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: [Non-DoD Source] EPA Comments on Pebble Pre-Draft EIS Sections 3.1, 3.5, 4.1, 4.5

Hello Shane,

Attached please find EPA's comments on the subject draft sections of the Pebble EIS, which were distributed for cooperating agency review on October 17. Thank you for the opportunity to review. Please let us know if you have any questions regarding our comments.

Regards,

Molly

~~~~~~

Molly Vaughan

U.S. Environmental Protection Agency Region 10

Alaska Operations Office

222 W. 7th Avenue #19

Anchorage, AK 99513-7588

907-271-1215

vaughan.molly@epa.gov <mailto:vaughan.molly@epa.gov>

~~~~~~

CLASSIFICATION: UNCLASSIFIED

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 4/6/2018 7:16:23 PM
To: Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]
CC: Bob Loeffler [bobl@jadenorth.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendergast [kpendergast@rmconsult.com]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble scoping period extension

All,
It was determined that the scoping period will be extended by 60 days; close will be June 29, 2018. I will be sending the telephone number to call into the meeting in a few minutes.

Shane

-----Original Message-----
From: Moselle, Kyle W (DNR) [mailto:kyle.moselle@alaska.gov]
Sent: Friday, April 06, 2018 9:59 AM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] Pebble scoping period extension

Hi Shane,

I've seen what appears to be a twitter post that says the USACE is extending the scoping period by 60 days. Can you confirm that is accurate? Thanks!

Take care,

Kyle Moselle

Associate Director

Alaska Department of Natural Resources

Office of Project Management and Permitting

907-465-6849

Kyle.moselle@alaska.gov

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 6/5/2018 9:00:11 PM
To: Bob Loeffler [bobl@jadenorth.com]; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Pres William Evanoff [nondaltontribe@yahoo.com]; Wesley Furlong [wfurlong@narf.org]
Subject: draft Pebble EIS Outline).docx
Attachments: Pebble EIS Outline_2018.3.19 (002).docx

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:15:54 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_15_DomesticWaterUseSourcesIliamnaLake.pdf

CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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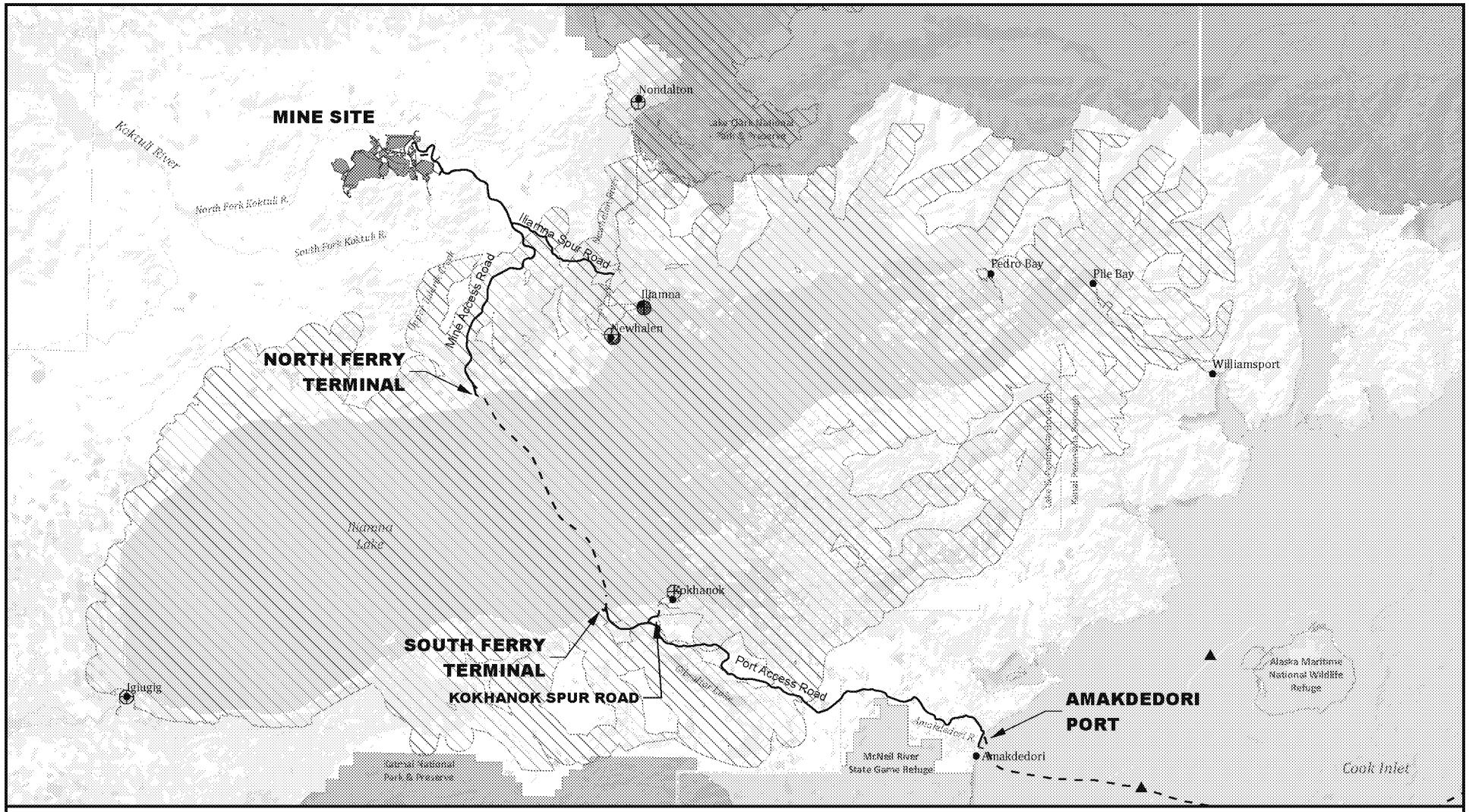

Sources: PLP 2018; ADEC

US Army Corps of Engineers

5 0 5 10
Miles

- Community Water System
- Non-Community Water System
- Drinking Water Protection Area

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- State Game Refuge/Sanctuary

DOMESTIC WATER SOURCES USED IN ILIAMNA LAKE AREA

PEBBLE PROJECT EIS

FIGURE 3.16-15

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/2/2018 5:16:38 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: please provide comments by 11/30 from the requested CAs (UNCLASSIFIED)
Attachments: Sec4.3_SocioEcon_reviewdraft_2018.11.01.docx; Sec3.3_SocioEcon_reviewdraft_2018.11.01.docx; Sec4.12_Transportation_reviewdraft_2018.11.01.docx; Sec3.12_Transportation_reviewdraft_2018.11.01.docx; 3_12_01_Existing_Roads_Part1.pdf; 3_12_02_Existing_Roads_Part2.pdf; 3_12_03_Regional_Airports_Ports.pdf

CLASSIFICATION: UNCLASSIFIED

Attached are 4 Word files and 3 PDF files, the review drafts and associated figures of:

Sec3.3/4.3-Needs and Welfare of the People-Socioeconomics (CAs listed as Curyung Tribal Council, Lake and Peninsula Borough, Nondalton Tribal Council, State of Alaska) .There are no figures associated with these two sections.

Sec3.12/4.12-Transportation and Navigation (CAs listed as USACE, USCG, State of Alaska). Section 3.12 has three figures, attached as PDFs.

A four-week review period for CAs gives a return date to AECOM of 11/30/2018.

VR

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CLASSIFICATION: UNCLASSIFIED

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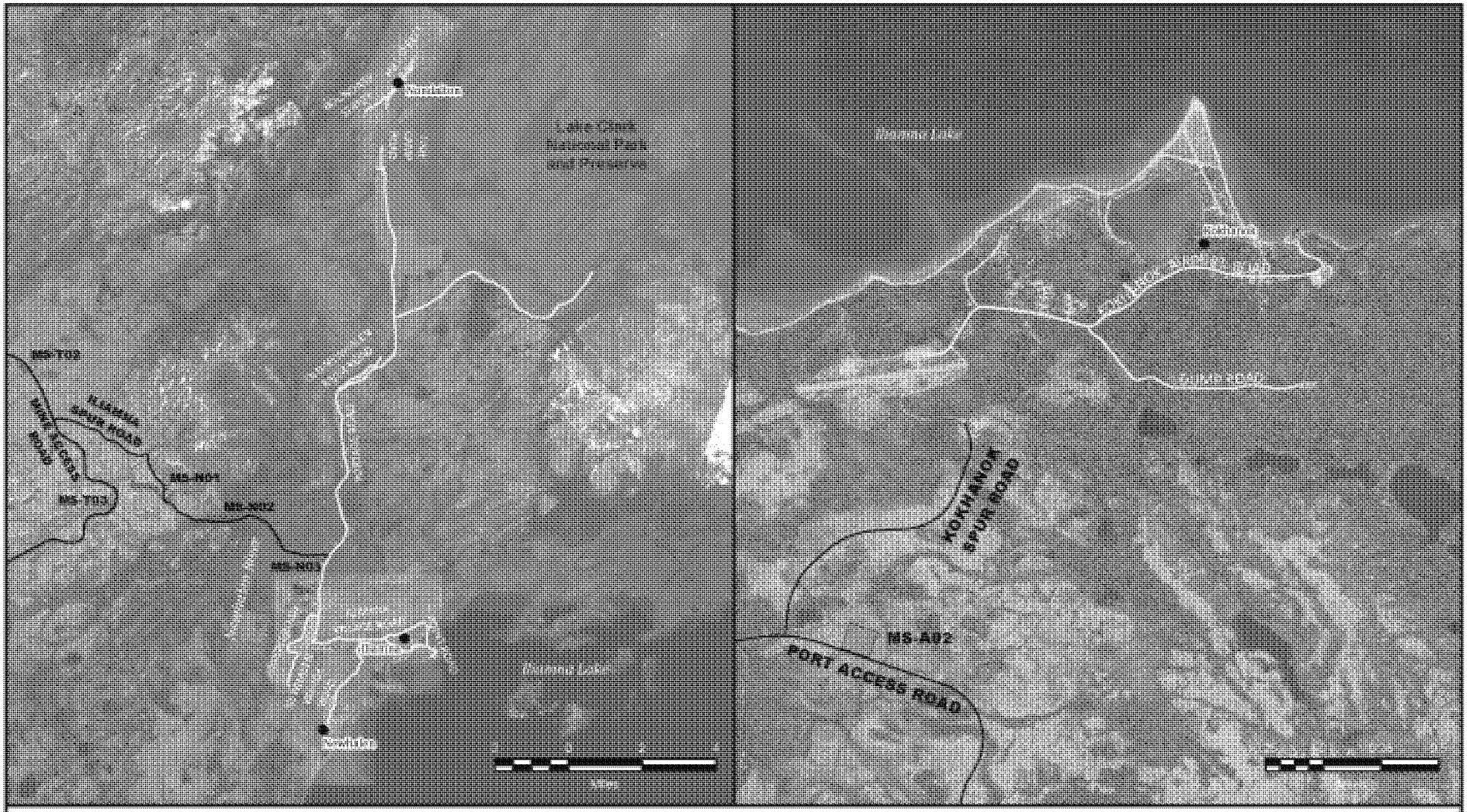
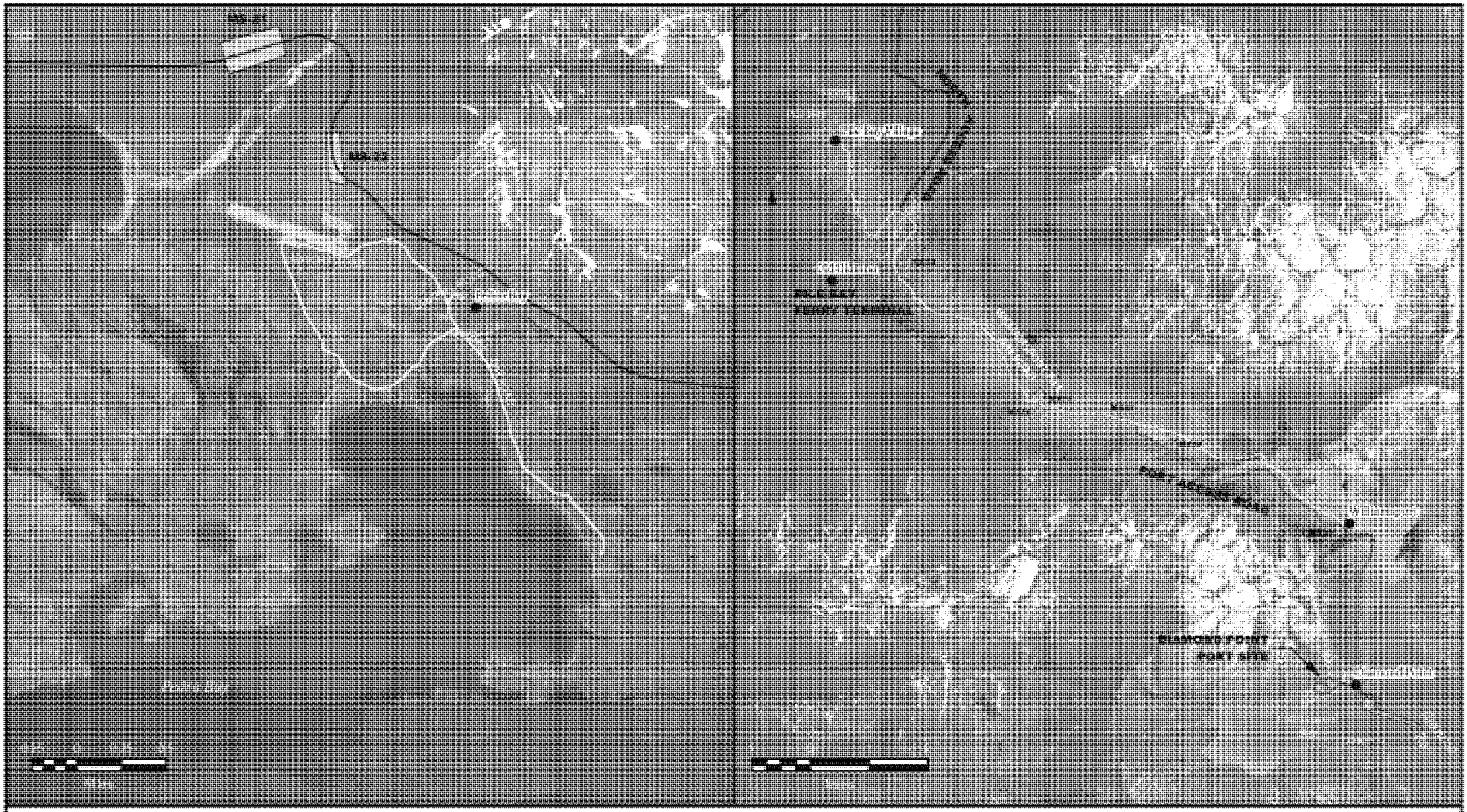


AMERICAN OVERSIGHT



Sources: PLP 2018; ADOT&PF

US Army Corps of Engineers

Alternative 2

Transportation Corridor

Transportation Footprint

Alternative 3

Transportation Corridor

Transportation Footprint

Existing Road Infrastructure

City/Town

EXISTING ROADS: WILLIAMSPORT-PILE BAY ROAD AND PEDRO BAY

PEBBLE PROJECT EIS

FIGURE 3.12-2

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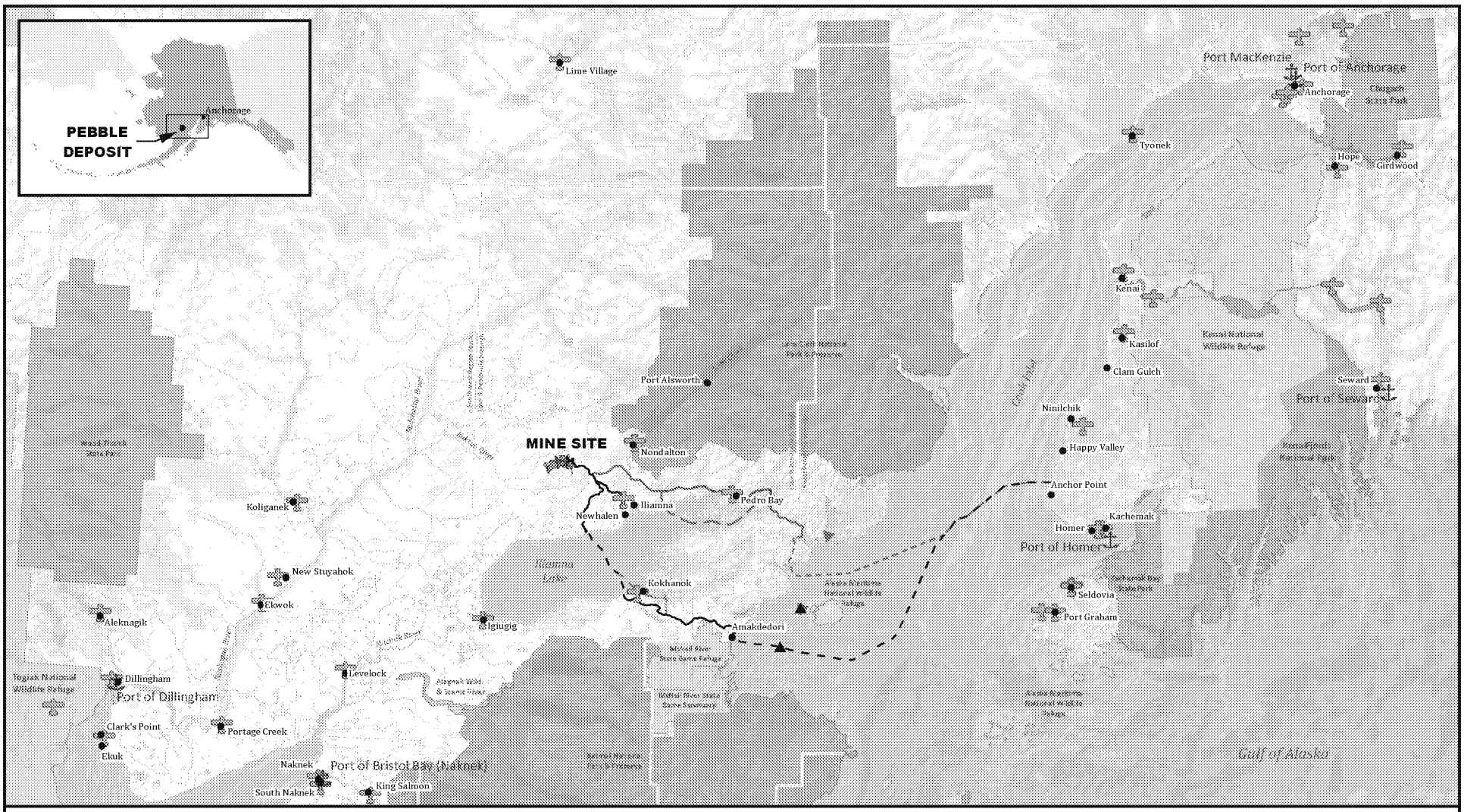

Sources: PLP 2018; ADNR

US Army Corps of Engineers

10 0 10 20
Miles

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Airport or Sea Plane Base
- Ports
- City/Town
- Borough Boundary

- National Park
- National Wildlife Refuge
- Alaska State Park
- Wild and Scenic River
- State Game Refuge/Sanctuary

REGIONAL AIRPORTS AND PORTS

PEBBLE PROJECT EIS

FIGURE 3.12-3

AMERICAN OVERSIGHT

3.3 NEEDS AND WELFARE OF THE PEOPLE –SOCIOECONOMICS

This section addresses the monetized economy of the communities listed below. In addition to jobs involving labor for wages, subsistence hunting and fishing can be an important component of the socioeconomic system in rural Alaska communities. Although subsistence frequently involves no monetary exchange, the contribution of food procured by hunting and fishing can be a significant contributor to household and community welfare. Subsistence activity is discussed in Section 4.9, Subsistence.

3.3.1 Regional Setting

3.3.1.1 Overview of the Regional Economy

The State of Alaska relies on revenue from natural resource extraction of federal, state, and private lands as a primary source of income. Alaska collects oil and gas production taxes and royalties based on the assessed value of the gross product. The state also receives production royalty payments from production of minerals on a state mining claim or state lands; state and local governments also collect and share property tax on facilities built to support resource development.

Alaska has a long history of boom-bust cycles associated with resource extraction (e.g., oil and gold) that have impacted this tax revenue and the state economy. To help smooth revenue and investments, the State of Alaska established the Alaska Permanent Fund (APF), which was incorporated into the Alaska constitution in 1977. The APF is a permanent natural resource trust fund used to pay citizen dividends, manage inflation, and support the general fund. To support the fund, 25 percent of the State's income from mineral extraction is placed in the APF. As of August 2017, the APF had a market value of $60 billion (USDOI 2018).

While large boom-bust cycles have not occurred for the past quarter century, local communities and regions can experience boom-bust cycles related to projects that occur in their area. These cycles can occur from the influx of workers and income during the construction cycle, to the more moderate employment during operations, to the loss of a major employer in the area after closure. In Alaska, recessions have more typically been triggered by a drop in oil prices, resulting in slowdown of spending in the oil industry and a drop in state revenues. With regard to the mining industry, cyclical metal prices can affect mining industry investment. However, most of the large operating mines in Alaska have been successful in finding additional reserves adjacent to their mine, extending their operating life and postponing a potential "bust" cycle.

Regardless of any boom-bust cycles, employment in Alaska varies greatly throughout the year. Many of the jobs in Alaska are seasonal, leading to large fluctuation in employment between the summertime peaks and the wintertime lows. Figure 3.3-1 and Figure 3.3-2 show the cyclical characteristic of seasonal employment in Alaska and the Southwest Economic Region, respectively. Much of the seasonal employment is related to the commercial fishing and tourism industries. Some workers with year-round employment also participate in seasonal work activities.

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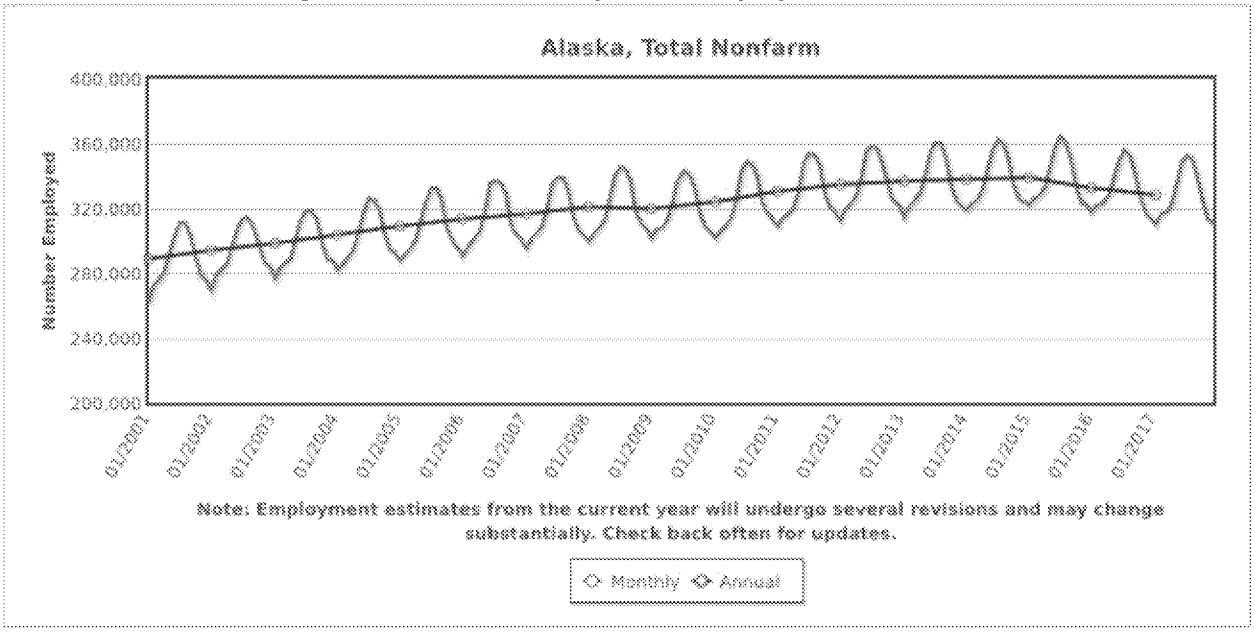
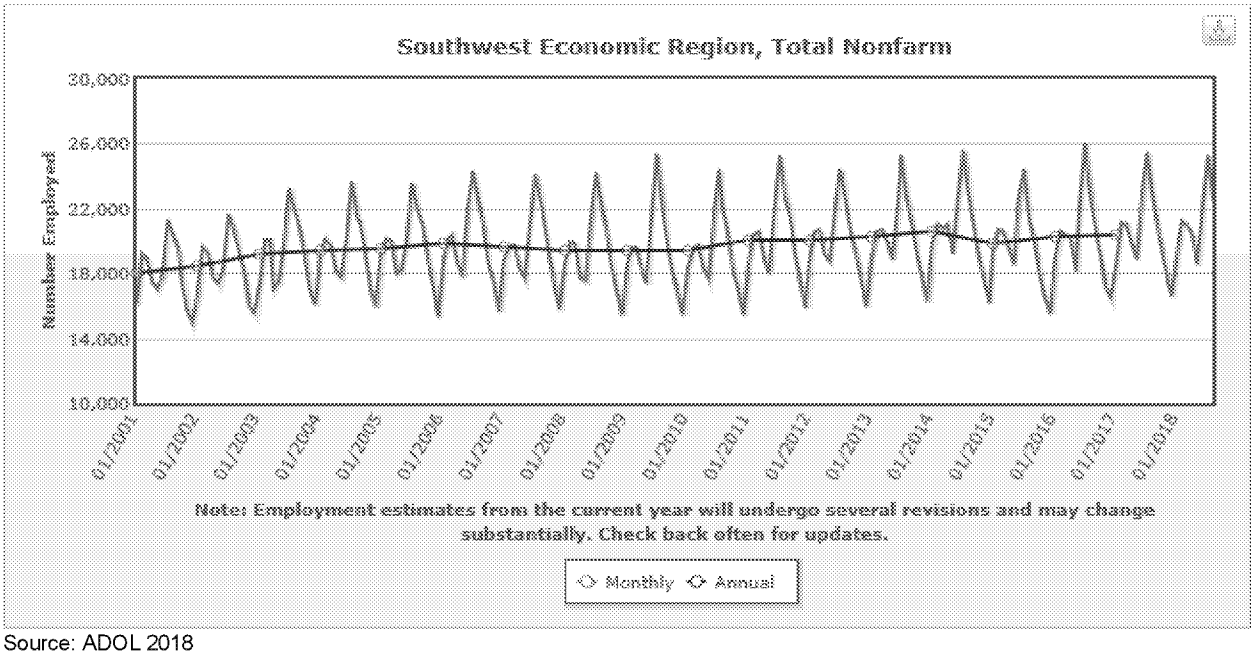
Figure 3.3-1: Seasonal Impact on Employment in Alaska



Source: ADOL 2018

Figure 3.3-2: Seasonal Impact on Employment in Alaska



Source: ADOL 2018

While the unemployment rate for the United States as a whole has been decreasing for a number of years, the unemployment rate in Alaska has remained relatively steady at about 7 percent (Figure 3.3-3).

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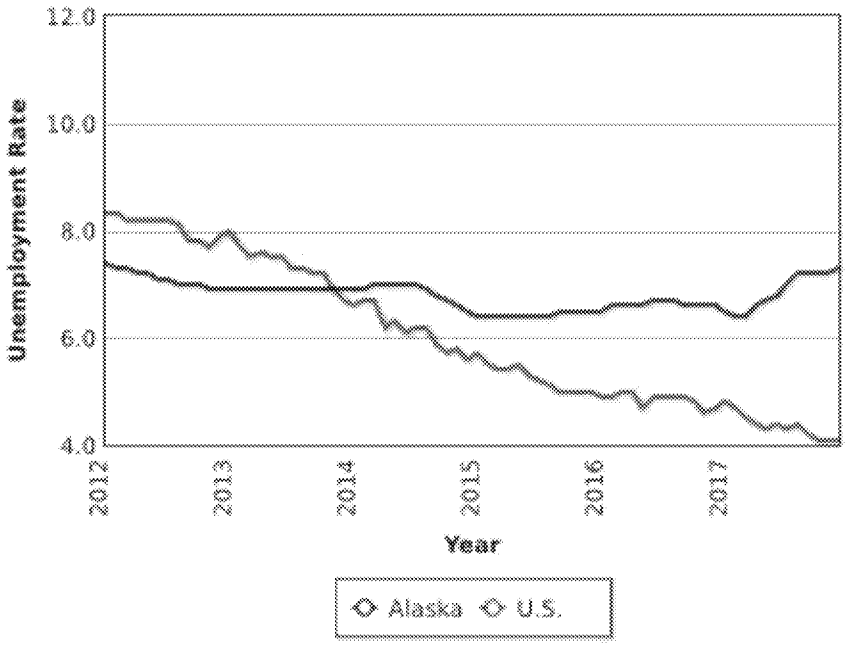
Figure 3.3-3: Recent Trends in Unemployment Rate



Source: ADOL 2018

With regard to the economies of the portions of Alaska potentially affected by development of the project, there are three distinct profiles. The area on the eastern side of Cook Inlet, Anchorage and the Kenai Peninsula Borough, generally have a more diverse economy, although there is still some seasonality in employment. The lower area of the Dillingham Census Area and coastal portions of the Lake and Peninsula Borough are dominated by the commercial salmon fishery and the economic activity it generates. While communities around Iliamna Lake and upriver in the Dillingham Census Area have less participation in commercial salmon fishing, they are more typical of small roadless rural Alaskan communities, with economic activities limited to local government, Alaska Native organizations, and some support of commercial recreation and tourism. Refer to Section 3.6, Commercial and Recreational Fisheries, for more information.

Southern Kenai Peninsula Borough

In relation to most Alaskan communities, the Kenai Peninsula Borough's economy is more diverse, with a mix of emerging and established industries. The top five performing industries by total employment are health care and social services, local government, retail trade, accommodations and food services, and commercial fishing; while the top two industries by employee wages are utilities and oil, gas, and mining. In 2016, Kenai Peninsula workers earned over $3 billion in wages (KPB 2017).

While the oil and gas sector provides significant employment and revenue to the borough, non-oil and gas mining only represents a small portion of the economic activity, accounting for less than 0.2 percent of the Kenai Peninsula's total private employment and wages (KPB 2017). However, seasonal fluctuations in employment affect many of the industry sectors, including tourism and hospitality, commercial fishing, and construction.

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Lake and Peninsula Borough and Dillingham Census Area

As noted in the Lake and Peninsula Borough Comprehensive Plan Update (LPB 2012), there are three primary components of the economy, which are also appropriate for the area of analysis on the western side of Cook Inlet and Dillingham Census Area:

1. **Commercial Fishing.** Portions of both the Lake and Peninsula Borough and Dillingham Census Area are part of the world-renown Bristol Bay fishery. Residents living in the region participate in the fishery to a varying degree through commercial fishing, subsistence activities, as well as through support of commercial and sport fishing. Commercial fisheries permit holders residing in the region have decreased in recent years as permits have transferred out of region, but the value of permits and fish caught has held steady. Commercial fishing continues to be a major way of living for some residents in the region and constitutes over half of all self-employed workers. See Section 3.6, Commercial and Recreation Fisheries, for more information. Areas around the proposed mine site rely less on commercial fishing as an industry.
2. **Local Government.** A large percentage of employment in the Lake and Peninsula Borough is in local government, with the majority employed by the school districts. Local government also provides employment in other regional communities such as Dillingham, King Salmon, and Naknek. These jobs are important to the community because they tend to have higher pay and offer year-round employment.
3. **Other Industries and Small Businesses.** After accounting for the primary economic sectors (commercial fishing and local government), residents of the region are engaged in a range of business activities, including transportation and utilities, state government, health services, tourism, and other small businesses. The region also engages heavily in subsistence activities. While the region supports a multi-million dollar sport fishing and hunting industry, a large majority of the earnings do not go to local residents. In addition, most tourism is seasonal and the opportunities conflict with other economic sectors and activities, such as commercial fishing, construction, and subsistence.

Many communities have been exploring small business opportunities for residents to increase local employment. However, most communities in the region have too small of a population to support a single service provider, so new businesses will often have to plan for a regional market in order to be successful.

3.3.1.2 Overview of the Cost of Living

In general, the cost of living in Alaska is higher than most areas of the United States. In 2017, Alaska was ranked as the third most expensive state based on the costs of living in the four largest Alaskan cities (i.e., Anchorage, Juneau, Fairbanks, and Kodiak), which were all well above the national average. While fuel costs have been decreasing in recent years, health care premiums increased 29 percent from 2016 to 2017. Alaska has the highest health care premiums (purchased on the open market) of any state (ADOL 2017a).

While taxes tend to be lower in Alaska, the cost of transportation, food, energy, and fuel is higher. Transportation is one of the main reasons the costs of living are higher in Alaska (ADOL 2017a, ADOL 2008), which is compounded in rural areas. Getting food, fuel, and other goods to Alaska is a little more expensive than other parts of the United States, and then the items need to be transported over a large geographic area to small population clusters. In some communities, staple goods, such as food and fuel, cost over twice as much as they do in Anchorage because the items need to be transported by barge or air. Costs were found to be highest in communities served by air and seasonally by barge. In the Lake and Peninsula Borough, the cost of fuel has been historically higher in Iliamna Lake communities, and

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population decline is partly driven by an increasingly high cost of living in remote communities (LPB 2012).

While the cost of living can be high in rural communities, subsistence hunting and fishing often supplement the needs of families and communities. However, supporting subsistence hunting and fishing activities can be more expensive in rural communities because of the higher cost of supplies, such as fuel, ammunition, and vehicles.

3.3.1.3 Overview of the Regional Infrastructure

The following sections provide a brief overview of the infrastructure in Alaska, with a focus on the region surrounding the potential mine site.

Education

Alaska is comprised of 54 school districts (ADEED 2018), which serve about 143,000 students. For fiscal year 2015, the National Center of Education Statistics reported that Alaska has one of the highest expenditures per pupil (NCES 2018). Alaska spent $2.9 billion on education, with a per pupil expenditure of $20,191. This is about 76 percent higher than the national average of $11,454.

School closures are a serious challenge faced by rural Alaska communities around the state. Alaska state law (AS14.17.450) cuts off state funds for schools with nine or fewer students. Falling population can create a challenging cycle, in which declines in the number of residents lead to school closures, declining services, and fewer economic opportunities; these trends can lead to further population declines. Since schools are often the largest electricity customer, the closing of a school leaves fewer customers to support the electricity network and can lead to higher energy prices for the residents of the community (LPB 2012).

Opportunities for higher education in Alaska exist through a number of colleges and universities located throughout the state, including five two-year community colleges, three primary branches of the University of Alaska, and four private institutions. In addition, through the Western Undergraduate Exchange, residents of Alaska can attend colleges and universities at participating schools in 16 states and US territories and pay no more than 150 percent of the in-state tuition.

Lake and Peninsula Borough. The Lake and Peninsula Borough School District has 13 public schools, from Port Alsworth in the north to Perryville in the south. However, a number of Lake and Peninsula Borough communities are facing population loss and potential school closings; the Dena'ina school in Pedro Bay closed in November 2010 (LPB 2012). While s communities have local road systems, only Iliamna and Newhalen (and Nondalton, seasonally) are connected by road and none of the communities are connected to the rest of Alaska by roadway; all transportation is by boat or small plane (ADEED 2018).

Bristol Bay Borough. The Bristol Bay Borough School District is comprised of the elementary and middle/high school located in Naknek (total enrollment 118). While communities have local road systems, only King Salmon and Naknek are connected by road and none of the communities are connected to the rest of Alaska by roadway; all transportation is by boat or small plane (ADEED 2018).

Dillingham Census Area

The Southwest Region School District has seven public schools with a total enrollment of 705 students (SRSD 2009), from Manokotak in the south to Koliganek in the north. The Dillingham City School District had a total enrollment of 473 in 2016/2017. While communities have local

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road systems, only Aleknagik and Dillingham are connected by road and none of the communities are connected to the rest of Alaska by roadway; all transportation is by boat or small plane.

Transportation

While most Alaskan communities have local roads, approximately 82 percent of these communities have no connection to the contiguous road system or interregional roads (ADOT&PF 2018a). With small populations in remote, scattered locations, the per-capita costs of building and maintaining transportation infrastructure is high. Therefore, building new roads to connect the communities is unlikely and Alaska will continue to rely on a combination of air, road, and marine transportation to serve the population. Brief descriptions of these modes of transportation are provided below. See Section 3.12, Transportation, for more information on the existing transportation systems in the EIS analysis area.

Air

Large portions of Alaska are only accessible by air or water. These communities depend on aviation for access to non-subsistence foods, mail, and health care. Alaska Department of Transportation and Public Facilities (ADOT&PF) owns and operates 242 of the 400 public use airports in Alaska and has identified rural airports as "Alaska's Lifeline." In addition to the public use airports, another 300 landing facilities are registered with the Federal Aviation Administration in Alaska, and thousands of private landing facilities and lakes are not registered (ASCE 2017). The people of Alaska are eight times more likely to use aviation as transportation than people in the rest of the United States (ADOT&PF 2018a). Aviation in Alaska is a huge economic engine, contributing approximately $3.5 billion annually to the state's economy.

Most communities in the region rely on air transportation for movement of people and goods into and within the region. Iliamna Airport is the primary air transportation hub for the region near the mine site, and Dillingham is a hub for the lower river communities. Scheduled air service provides transportation of passengers to the regional hubs, while air taxis and charter service transport passengers from the hubs to local communities. For most of the year, air cargo is the only means of transporting goods to many of the communities in the area (McDowell Group et al. 2011a). In addition to serving local communities, small aircraft provide primary transportation associated with recreation and tourism activities, including sport hunting and fishing, wildlife viewing, and visitation to federal and state parks and reserves.

Road

The ADOT&PF maintains 5,609 centerline miles of highways, 3,737 miles of which are paved. The highway system provides connectivity for freight and travel from the lower 48 states through Canada into Alaska, and from Alaska's economic hub, Anchorage, to those communities that are connected to the road system, which includes the southern Kenai Peninsula portion of the area affected by the proposed Pebble Project. The highway system, although very limited in total miles compared to most states, is vital to the economic growth and development of the state (ASCE 2017). The portion of Alaska connected to the road system also includes municipal and borough maintained roadways, typically a mixture of paved and unpaved roads in Alaska's hub towns and cities. These hub towns and cities are the main population centers spread across the state where goods are typically shipped to in order to reach more remote communities by road, marine and air transportation (ASCE 2017).

Village and rural roadways consist mainly of unpaved roads, walkways, trails, and boardwalks in areas outside of Alaska's hub towns. Local roadways in rural areas are typically maintained by

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local village governments and regional native corporations. The roads, walkways, trails, and boardwalks are of importance to locals because they serve as routes to health care facilities, schools, and routes to subsistence hunting and fishing locations (ASCE 2017).

In the immediate study area, the Iliamna/Newhalen area has the most extensive local road system in the areas near the Mine Site. King Salmon/Naknek and Dillingham have an extensive road network for the lower river communities. Elsewhere, road systems and vehicle use are limited (McDowell Group et al. 2011a).

In addition to community-based road systems, the Williamsport-Pile Bay Road provides access between Cook Inlet and Bristol Bay, via a 15.5 mile road to Iliamna Lake and down the Kvichak River. This road allows summer season transportation of fishing vessels bound for Bristol Bay commercial fisheries, as well as some goods and supply transport to lake and river communities. The road is owned and maintained by the State of Alaska.

Marine

Ports and harbors across Alaska provide services that support critical economic activities. These facilities play a vital role in the communities they serve by providing bulk goods and services and local employment opportunities; promoting economic diversification; and meeting cultural and subsistence lifestyles. In 2015, 40.8 million tons of goods were moved out of the state and 3.4 million tons of goods into the state via marine transport. Ports and harbors are also critical to the commercial fishing industry, which support six of the top ten fishing ports by volume in the United States (ASCE 2017).

Many of the communities in the region can be accessed via water to deliver cargo, such as fuel and other objects too heavy or bulky to ship by air. Many of the regional communities are on Iliamna Lake, which can be accessed from the Kvichak River and the Williamsport-Pile Bay Road. However, Kvichak River access has been hindered due to low water levels and shoaling (McDowell Group et al. 2011a).

In addition to commercial marine traffic, personal watercraft, particularly skiffs, are a major means of travel to subsistence activities and travel between communities during the open water season on lakes and rivers. During the period when ice allows safe travel, snowmachines provide similar access. Refer to Section 3.12, Transportation and Navigation, for more information.

Health Services

Public health services are available in project area communities, but may be limited in the smaller communities.

The Bristol Bay Area Health Corporation is a regional provider that operates a hospital, sub-regional clinics, and village clinics in the Bristol Bay region. Health clinics are also supported by the boroughs. In addition, state and federal agencies have special responsibilities to support health care for Alaska Natives (McDowell Group et al. 2011a). Because of easier access to Anchorage, many of the residents in the Iliamna and Lake Clark communities receive hospital care in Anchorage. Many residents in the Bristol Bay area receive hospital care in Dillingham (McDowell Group et al. 2011a). See Section 3.10, Health and Safety, for additional information on health services.

Water, Sewer, and Solid Waste

Alaska's water and wastewater systems can be generally divided into two categories: municipal and rural. Most municipal systems that serve more densely populated areas have long term

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operations, maintenance staff, and funding. The state has over 280 rural communities, 31 of which have no centralized water or wastewater system. For those rural communities that have water and wastewater systems, operating and maintaining systems are challenged by the high cost of energy, lack of population to support higher than average maintenance costs, and a shortage of experienced operators to maintain the systems (ASCE 2017).

Many of the unincorporated communities have water and/or sewer systems funded through the Alaska Native Tribal Health Consortium and the State's Village Safe Water Program. The Alaska Department of Environmental Conservation administers the Village Safe Water Program, which is working with rural communities to develop sustainable sanitation facilities. Many of the water and sewer improvements depend on federal funding (KPB 2017).

In rural Alaska, community water and sewer systems are primarily comprised of four types: washeterias and central watering points; individual wells and septic systems; water and sewer truck or trailer haul systems; and piped water and sewer systems. While most of the rural communities have some form of water and sewer system, there are approximately 30 communities that are considered unserved (i.e. a community where 45 percent or less of the homes are served by a piped, septic and well, or covered haul system). There are no unserved communities in the study area (ADEC 2018).

In the project area, water systems are present in:

- Igiugig
- Iliamna
- Kokhanok
- Levelock
- Nandalton
- Newhalen
- Port Alsworth

The expanse of Alaska and limited road access make dealing with solid waste a challenge. Collecting waste from Alaska's outermost communities must be done either by air or sea, or waste must be left in the community. Many rural communities have local facilities such as landfills, incinerators, or burn boxes to handle solid waste. The Alaska Department of Environmental Conservation supports many landfill facilities (ASCE 2018).

3.3.2 Potentially Affected Communities

Construction and operation of the proposed mine would have impacts to local and regional socioeconomic conditions. This section provides information about the current socioeconomic conditions of potentially affected communities. Potentially affected communities were identified based on potential impacts from any of the major components of the proposed project. The following subsections describe the general social and economic characteristics of the potentially affected communities.

3.3.2.1 Population

Table 3.3-1 displays population characteristics of the affected communities. Many of the potentially affected communities in the Lake and Peninsula Borough (where the mine would be located) are small. While some have seen an increase in population from 2010 to 2017, others have decreased. Refer to Section 3.4, Environmental Justice, for the racial characteristics of the potentially affected communities.

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Table 3.3-1: Population Characteristics of Affected Communities

Area	Population[1]			Age[2]				Gender[2]	
	2010	2017	Change 2010-2017	Under 18	18-64	65 and Over	Median Age	Male	Female
Lake and Peninsula Borough	1,631	1,721	5.5%	31%	63%	6%	31.9	51.0%	49.0%
Igiugig	50	57	14.0%	28%	62%	11%	37.3	40.4%	59.6%
Iliamna	109	100	-8.3%	26%	65%	9%	42.0	45.3%	54.7%
Kokhanok	170	173	1.8%	29%	64%	7%	28.1	50.3%	49.7%
Levelock	69	89	29.0%	45%	51%	4%	20.3	43.3%	56.7%
Newhalen	190	230	21.1%	45%	52%	3%	23.5	49.0%	51.0%
Nondalton	164	144	-12.2%	31%	63%	5%	26.8	44.6%	55.4%
Pedro Bay	42	32	-23.8%	0%	77%	23%	57.5	46.2%	53.8%
Port Alsworth	159	238	49.7%	45%	53%	3%	24.3	51.3%	48.7%
Dillingham Census Area	4,847	4,925	1.6%	32%	60%	8%	29.7	51.5%	48.5%
Ekwok	115	98	-14.8%	24%	58%	18%	39.5	50.6%	49.4%
Koliganek	209	208	-0.4%	33%	59%	8%	28.5	51.2%	48.8%
New Stuyahok	510	504	-1.2%	29%	62%	9%	24.4	56.6%	43.6%
Kenai Peninsula Borough	55,400	58,049	4.8%	23%	63%	14%	40.5	52.2%	47.8%
Bristol Bay Borough	997	887	-11.0%	23%	69%	8%	40.7	56.9%	43.1%
Anchorage	291,826	297,483	1.9%	25%	66%	9%	32.8	51.0%	49.0%
Alaska	710,231	737,080	3.8%	26%	65%	9%	33.6	52.3%	47.7%

Source: [1]ADOL 2018, [2]USCB 2017

Table 3.3-2 shows the population projections through 2045 at the borough and state level. The population of the Lake and Peninsula Borough through 2045 is not projected to increase by much, whereas the population for Alaska is projected to increase about 22 percent by 2045. The Dillingham Census Area would see a modest increase, whereas the Bristol Bay Borough is projected to decrease by 34 percent.

Table 3.3-2: Population Projections for Study Area

Area	2017	2025	2035	2045
Lake and Peninsula Borough	1,721	1,708	1,720	1,751
Dillingham Census Area	4,925	5,289	5,556	5,984
Kenai Peninsula Borough	58,049	62,845	66,271	68,423
Bristol Bay Borough	887	790	675	581
Anchorage	297,483	318,629	330,821	339,171
State of Alaska	737,080	802,352	854,104	899,825

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Source: ADOL 2016, ADOL 2018

Notes: 2017 population is estimated population from the US Census Bureau, American Community Survey (ACS) 2012-2016.

3.3.2.2 Economy and Income

The median household income and unemployment vary across the affected communities (Table 3.3-3). Bristol Bay Borough had the highest median household income of $88,000 of the communities reviewed, while Levelock had the lowest at less than $34,000. In comparison, the median household income for Alaska is approximately $75,000, and $55,000 for the United States. The unemployment rate also varied across the affected communities, from a low of zero percent in some communities, to a high of almost 30 percent in Kokhanok. The importance of subsistence as it relates to income is discussed in Section 3.9.

Table 3.3-3: Median Household Income and Unemployment Rate of Affected Communities

Area	Median Household Income (margin of error)	Unemployment Rate (margin of error)
Lake and Peninsula Borough	$43,864 ($4,294)	11.7% (2.9%)
Igiugig	$46,875 ($30,459)	4.3% (10.3%)
Iliamna	$67,500 ($4,294)	7.0% (2.9%)
Kokhanok	$35,000 ($13,041)	29.9% (9.9%)
Levelock	$33,750 ($11,779)	10.5% (9.0%)
Newhalen	$36,250 ($22,466)	10.6% (7.4%)
Nondalton	$35,500 ($9,359)	26.2% (9.4%)
Pedro Bay	$55,625 ($10,876)	0.0% (72.5%)
Port Alsworth	$79,375 ($10,377)	1.4% (3.5%)
Dillingham Census Area	$56,055 ($3,915)	11.2% (1.8%)
Ekwok	$32,500 ($18,288)	31.3% (16.2%)
Koliganek	$55,417 ($25,090)	11.8% (10%)
New Stuyahok	$40,417 ($7,434)	31.1% (7.9%)
Kenai Peninsula Borough	$64,891 ($2,835)	8.7% (1.3%)
Bristol Bay Borough	$88,000 ($13,265)	5.7% (2.4%)
Anchorage	$80,862 ($1,295)	6.0% (0.4%)
Alaska	$74,444 ($809)	7.8% (0.3%)

Source: USCB 2017

Note: Because of the small sample size in smaller communities, the values reported by the US Census Bureau may be misleading (i.e., may show large differences between communities that may not exist). Therefore, margin of error values are presented to show the potential range of the reported values.

In many of the communities, the employment of local residents in the potentially affected communities relies heavily on the local government and education and health services industry sectors. Table 3.3-4 shows the number of employed workers and the top three employment industries in each community. The local government industry sector accounted for the greatest percentage of employees for all of the communities in the Lake and Peninsula Borough, which is where the mine would be located. State and local government jobs are particularly important to these small communities, because they are often year-round and relatively high paying. While

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federal government employment is not included in the table below, it represents a small percentage of the average monthly employment (i.e., less than five percent in the Lake and Peninsula Borough, and less than two percent in the Dillingham Census Area).

The commercial salmon fishery provides a large number of seasonal employment opportunities in the harvesting and processing sectors. However, these opportunities vary with location in the area potentially affected by the proposed Pebble Project, with more opportunities available in the Dillingham and Naknek areas compared to communities up the Kvichak River and on Iliamna Lake. In addition, with the outmigration of commercial salmon permits and the nature of the processing industry, some of these opportunities are filled by residents from outside the region and state. Details on commercial fishing are discussed in Section 3.6, Commercial and Recreational Fishing.

Table 3.3-4: Top Employment Sectors in Potentially Affected Communities

Area	Employed Workers (2016)	Top Three Industries
Lake and Peninsula Borough	792	Local Government (64%)
		Education and Health Services (10%)
		Trade, Transportation and Utilities (8%)
Igiugig	35	Local Government (66%)
		Construction (9%)
		Education and Health Services (9%)
Iliamna	109	Local Government (50%)
		Professional and Business Services (17%)
		Education and Health Services (10%)
Kokhanok	85	Local Government (88%)
		Education and Health Services (6%)
		Trade, Transportation and Utilities (5%)
Levelock	42	Local Government (60%)
		Trade, Transportation and Utilities (14%)
		Professional and Business Services (10%)
Newhalen	48	Local Government (62%)
		Professional and Business Services (17%)
		Education and Health Services (10%)
Nondalton	79	Local Government (70%)
		Education and Health Services (9%)
		Trade, Transportation and Utilities (8%)
Pedro Bay	16	Local Government (75%)
		Education and Health Services (19%)
		Natural Resources and Mining (6%)
Port Alsworth	80	Local Government (33%)
		Trade, Transportation and Utilities (26%)

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Table 3.3-4: Top Employment Sectors in Potentially Affected Communities

Area	Employed Workers (2016)	Top Three Industries
		Leisure and Hospitality (24%)
Dillingham Census Area	2,130	Local Government (32%)
		Education and Health Services (28%)
		Trade, Transportation and Utilities (16%)
Ekwok	48	Local Government (67%)
		Education and Health Services (19%)
Koliganek	90	Local Government (64%)
		Education and Health Services (19%)
		Trade, Transportation and Utilities (7%)
New Stuyahok	188	Local Government (46%)
		Education and Health Services (26%)
		Trade, Transportation and Utilities (19%)
Kenai Peninsula Borough	23,497	Trade, Transportation and Utilities (20%)
		Local Government (15%)
		Education and Health Services (15%)
Bristol Bay Borough	423	Local Government (30%)
		Trade, Transportation and Utilities (25%)
		Leisure and Hospitality (8%)
Anchorage	129,020	Trade, Transportation and Utilities (23%)
		Education and Health Services (17%)
		Leisure and Hospitality (12%)
Alaska	304,556	Trade, Transportation and Utilities (21%)
		Education and Health Services (15%)
		Local Government (15%)

Source: ADOL 2018

As stated previously, a large proportion of households in the project area participate in subsistence activities and depend on the wild food resources procured by hunting and fishing. Details for each community are included in Section 3.9, Subsistence.

3.3.2.3 Housing

In the project analysis area, the housing stock consists primarily of single family detached homes, which account for over 90 percent of the housing units. As consistent with a higher density population, Anchorage has the lowest percentage of single family detached housing units (approximately 50 percent) (USCB 2017). Of the occupied housing units, approximately two-thirds of the units are owner-occupied, while the rest are rental properties (Table 3.3-5). It should be noted that throughout the project area many of the communities have a high percentage of vacant housing units, with some communities over 50 percent. This is likely due

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to a number of factors, including declining populations, seasonal use of housing, and the state of disrepair (LPB 2012). In comparison, across the United States, vacant units account for approximately 12 percent of the housing stock.

Table 3.3-5: Housing Units

Area	Total Housing Units (margin of error)	Occupied Housing Units (margin of error)	Vacant Housing Units	Owner-Occupied
Lake and Peninsula Borough	1,451 (52)	468 (53)	983	68%
Igiugig	24 (11)	19 (10)	5	74%
Iliamna	60 (8)	27 (11)	33	63%
Kokhanok	63 (12)	48 (12)	15	69%
Levelock	45 (10)	30 (11)	15	67%
Newhalen	52 (10)	42 (11)	10	64%
Nondalton	115 (21)	68 (20)	47	68%
Pedro Bay	23 (13)	7 (10)	16	71%
Port Alsworth	85 (11)	47 (11)	38	34%
Dillingham Census Area	2,444 (57)	1,375 (69)	1,069	61%
Ekwok	49 (10)	28 (9)	21	79%
Koliganek	60 (12)	47 (13)	13	66%
New Stuyahok	138 (20)	113 (20)	25	71%
Kenai Peninsula Borough	30,752 (163)	21,481 (483)	9,271	72%
Bristol Bay Borough	909 (43)	360 (42)	549	55%
Anchorage	114,443 (282)	104,969 (915)	9,474	60%
Alaska	309,171 (177)	250,235 (1,399)	58,936	64%

Source: USCB 2017

Note: Because of the small sample size in smaller communities, the values reported by the US Census Bureau may be misleading (i.e., may show large differences between communities that may not exist). Therefore, margin of error values are presented to show the potential range of the reported values.

3.3.2.4 Education

Education is provided through state and local funding, through school districts in existing borough governments or areas outside those boroughs. In general, the Bristol Bay communities have a high school graduation rate above 80 percent and about 13 to 20 percent have a bachelor's degree or higher, although the high school graduation rate varies between potentially affected communities (Table 3.3-6). The graduation rates and number of those holding a bachelor's degree or higher, are higher in more densely populated areas, such as Anchorage and Kenai Peninsula Borough. In comparison, across the United States the graduation rate is approximately 87 percent, and about 30 percent have a bachelor's degree or higher. As indicated previously, declining populations threaten the ability to keep schools open in some communities, particularly in the Lake and Peninsula Borough.

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Table 3.3-6: Education Characteristics of Potentially Affected Communities

Area	School Enrollment preK – 12*	High School Graduate or Higher**	Bachelor's Degree or Higher**
Lake and Peninsula Borough	343	86%	13%
Igiugig	19	85%	12%
Iliamna	Included with Newhalen	91%	15%
Kokhanok	34	82%	9%
Levelock	22	81%	0%
Newhalen	67	93%	18%
Nondalton	26	82%	4%
Pedro Bay	0	92%	15%
Port Alsworth	62	97%	43%
Dillingham Census Area	1092	87%	18%
Ekwok	15	60%	0%
Koliganek	56	85%	26%
New Stuyahok	141	73%	3%
Kenai Peninsula Borough	9,027	93%	24%
Bristol Bay Borough	128	93%	20%
Anchorage	47,624	93%	34%
Alaska	133,381	92%	29%

Sources: *ADEED 2017, **USCB 2017

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3.12 TRANSPORTATION AND NAVIGATION

The Environmental Impact Statement (EIS) analysis area for this section includes the transportation resources that could be affected by the proposed mine site, Amakdedori port, transportation corridor, and natural gas pipeline corridor. Local and regional land, air, and water transportation systems and activities in the EIS analysis area are included. Navigability of each element is discussed.

The major mode of transportation between communities in this region and outside of the region is by air and water. Surface transportation is most often used for travel within communities, and can include on-road and off-road transport via automobiles, trucks, snowmachines, all-terrain vehicles (ATVs), dog sleds, and horses (ADOT&PF 2016).

3.12.1 Surface Transportation

No existing roads access the current mine site directly. Surface transportation in the area of the mine site may consist of off-road transport via ATVs and snowmachines between villages and to subsistence areas (Fall et al. 2006). Using off-road vehicles with a curb weight of less than 1,500 pounds does not require a permit from Alaska Department of Natural Resources (ADNR 2011).

There is potential for overland traffic through the EIS Analysis Area to access native allotments and private lands close to the mine site. The closest native allotments to the mine site include one area approximately 25 miles to the west, and land in the community of Nondalton to the east. Privately owned land approximately 15 miles to the north exists at Nikabuna Lakes (LPB 2015). Native allotments and other private lands are shown in Figure 3.2-1.

The road system in the transportation corridor is undeveloped, with the exception of local community roads and two regional roads with limitations. Iliamna, Newhalen, and Nondalton are connected to one another, but the 15-mile road from Iliamna to Nondalton is only passable in winter (ADCCED 2018). The annual average daily traffic count for the busiest road in the Iliamna/Newhalen road system in 2017 was 424 cars per day. Nondalton roads experienced 50-60 cars per day, and Kokhanok local roads had a count of 75 per day (ADOT&PF 2018b). Figure 3.12-1 shows the existing roads near these communities.

The Williamsport-Pile Bay Road, also known as Portage Road, is a state-maintained, approximately 15-mile-long road that connects Williamsport on the Cook Inlet to Pile Bay on Iliamna Lake (NOAA 2018). This road had an average annual daily traffic count of 19 cars per day in 2017. It is assumed that the average would be doubled (38 cars per day) for the summer months and zero for the winter months, as it is used seasonally (ADOT&PF 2018b). Its current use is for transporting fishing vessels and heavy freight. Tidal fluctuations in Cook Inlet and the potential for wet and flooding road conditions determine the accessibility and degree of drivability (i.e., Williamsport is very shallow and boats can only be hauled out at a 17-foot or higher tide, after navigating through a channel) (Fast 2018, NOAA 2018). When the tide allows, one landing craft can deliver freight to Williamsport at a frequency of eight times per month. However, delivering fuel to communities by air is more economical than this method. Fuel is also transported by barge up the Kvichak River from Bristol Bay, which takes more than a week, and involves lightering (i.e., the process of transferring cargo between vessels of different sizes) through shallow areas. The Pile Bay Port is undeveloped (DOWL 2016). According to NOAA 2018, the Williamsport-Pile Bay Road continues on from Pile Bay to connect to the village of Pedro Bay, although aerial imagery from Google Earth shows only a trail that would be impassable for full-size vehicles, which terminates before reaching the end of East Bay Road in Pedro Bay. One road surveyed in Pedro Bay in 2017 experienced an average annual daily

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traffic count of 45 cars per day (ADOT&PF 2018b). The Williamsport-Pile Bay Road and Pedro Bay local roads are shown on Figure 3.12-2.

The Diamond Point quarry port is approximately 3 miles from Williamsport, in Iliamna Bay, but is not currently connected by road. The quarry contains 15 to 35 million cubic yards of useable rock; and with dredging, it is believed that this port could receive Handimax-sized ships (DP 2018).

Current off-road surface transportation in the EIS analysis area includes travel to and from subsistence harvest areas and neighboring villages via ATV and snowmachine. This type of travel is easiest in the colder months, when the tundra, rivers, and lakes are frozen (Fall et al. 2006; Krieg et al. 2009). Additionally, snowmachines are used to access hunting areas for freshwater seals on Iliamna Lake (Lanen 2012). Known community subsistence harvest areas are displayed in Section 3.9, Subsistence.

No existing roads provide access to the proposed Amakdedori port. Subsistence activities occur in the area, via surface and water transportation. For more information on subsistence activities near Amakdedori, see Section 3.9, Subsistence.

The proposed natural gas pipeline would connect to the Kenai Compressor Station near Anchor Point, following Bourbon Avenue west until crossing the Sterling Highway. This stretch of the Sterling Highway had annual average daily traffic volume of just fewer than 3,000 vehicles in 2017 (ADOT&PF 2018b). The Sterling Highway is the only major roadway connecting the city of Homer to the rest of the Kenai Peninsula and the Alaska road system (DCRA 2018). According to the Alaska Highway Safety Office, the Sterling Highway had three fatal motor vehicle accidents that each resulted in one death in 2016, all occurring in Soldotna. There was one fatal accident that resulted in one death in 2017, in Clam Gulch (AHSO 2018).

There were no fatal motor vehicle accidents reported for 2016 and 2017 on any existing internal community roads that would be connected to the mine site or transportation corridor (AHSO 2018). Statewide, the Alaska Highway Safety Office reported that in 2017, there were 75 fatal crashes in Alaska, totaling 79 fatalities. From 2016 to 2017, fatalities and fatal crashes decreased by 6 percent and 4 percent, respectively. In addition, fatal crashes related to alcohol dropped by 54 percent.

3.12.2 Air Transportation

Passenger and cargo transport by aircraft is common for residents, visitors, and goods in the Bristol Bay region, on a regularly scheduled and charter basis. Small charter planes, run by private guide companies, also transport sport fishermen and hunters to lodges around the Iliamna Lake and Lake Clark areas (Travel Alaska 2018).

Table 3.12-1 provides a summary of airports in the EIS analysis area that may be affected by a change in air traffic related to the Pebble Project. Included in the table are eight airports west of Cook Inlet, and three east of Cook Inlet. Regional airports are shown in Figure 3.12-3.

Table 3.12-1: Summary of Potentially Affected Airports

Airport	Owner	Use	Average Annual Operations*	Runway Surface	Runway Lighting	Based Aircraft
Dillingham Airport (DLG)	ADOT&PF Central Region	Public	50,735	Asphalt/grooved	HIRL	59

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Table 3.12-1: Summary of Potentially Affected Airports

Airport	Owner	Use	Average Annual Operations*	Runway Surface	Runway Lighting	Based Aircraft
Iliamna Airport (ILI)	ADOT&PF Southcoast Region	Public	15,330	Asphalt/grooved Water	MIRL -	29
King Salmon Airport (AKN)	ADOT&PF Southcoast Region	Public	15,330	Asphalt/grooved, in poor condition Asphalt/grooved Water	HIRL MIRL -	39
Kokhanok Airport (9K2)	ADOT&PF SR Region	Public	-	Gravel	MIRL	-
Nondalton Airport (5NN)	ADOT&PF Southcoast Region	Public	1,248	Gravel	MIRL	-
Pedro Bay Airport (4K0)	ADOT&PF Southcoast Region	Public	1,040	Gravel	MIRL	-
Igiugig Airport (IGG)	ADOT&PF Southcoast Region	Public	8,030	Gravel	MIRL	-
Port Alsworth Airport (TPO)	Glen Alsworth, SR	Private	1,300	Dirt/gravel	-	19
Ted Stevens Anchorage International Airport (ANC)	ADOT&PF	Public	261,705	Asphalt/concrete/grooved Asphalt/grooved Asphalt/grooved	HIRL HIRL HIRL	109
Kenai Municipal Airport (ENA)	City of Kenai	Public	39,055	Asphalt/grooved Gravel Water	HIRL None -	61
Homer Airport (HOM)	ADOT&PF Central Region	Public	48,180	Asphalt/aggregate friction Seal coat Water	HIRL -	93

Note: HIRL=High-Intensity Runway Lighting; MIRL=Medium-Intensity Runway Lighting
*One operation is a takeoff or a landing
Source: AirNav 2018

3.12.3 Water Transportation

3.12.3.1 Mine site

The mine site is not accessible by navigable waters. Some small watercraft use associated with recreational activities occurs on the Koktuli River downstream of the mine site. The closest navigable water with facilities to accommodate vessel traffic is Iliamna Lake.

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3.12.3.2 Transportation Corridor and Natural Gas Pipeline

The transportation corridor would connect the mine site with Amakdedori port, overland; with one section relying on a ferry crossing of Iliamna Lake.

Iliamna Lake is used year-round by community members to access subsistence harvest areas and resources in and surrounding the lake, traveling via watercraft in open water and by snowmachine when frozen ice permits. For example, people from Kokhanok cross the lake to access resources near the community of Iliamna and near Lake Clark National Park and Preserve (Fall et al. 2006). See Section 3.9, Subsistence, for more information on subsistence practices. There is a heavily used snowmachine route between the communities of Kokhanok and Iliamna across the lake. The communities of Pedro Bay and Iguigig also traverse the length of the lake on snowmachine, hugging the shoreline (PLP 2018 RFI-088). The local sport fishing, hunting, and tourism industries also rely on the use of Iliamna Lake for transportation and natural resources (Fall et al. 2006). Refer to Section 3.5, Recreation, for information on recreational use of Iliamna Lake; and Section 3.6, Recreation and Commercial Fisheries, for information on recreation and commercial fisheries pertaining to Iliamna Lake. Iliamna Lake is also used for inter-village travel, via boat during the open water season or by snowmachine, once ice has formed on the lake.

Fuel and other supplies are delivered to Iliamna Lake communities via barge or aircraft. Barges also use the Williamsport-Pile Bay Road for portage from Cook Inlet (Kevin Waring & Associates 2010b). Additionally, barges have traveled from Bristol Bay up the Kvichak River and into Iliamna Lake, depositing goods at the Iliamna barge landing for the communities of the area. However, low water levels and river shoals in some years make this route limited to shallow draft vessels, or infeasible (Kevin Waring & Associates 2010b).

Ice coverage can vary across Iliamna Lake, which contributes to transportation access. An aerial image analysis of lake ice coverage on Iliamna Lake from 1999 to 2018 revealed that 15 out of 19 winters had ice cover on the majority or the entire lake surface for prolonged periods. Four winters had little or no ice cover. Prevailing wind direction pushes ice to the west, creating a variance in the length of ice duration depending on location. The easternmost, narrower portion of Iliamna Lake, near Pile Bay, Pedro Bay, and Eagle Bay, had median ice duration of 88 to 100 days. Near Iliamna and Newhalen, the median ice duration was 101 to 105 days. The middle portion between east and west, north of the village of Kokhanok and south of Eagle Bay, had median ice duration of 101 to 120 days, although the portion of lake east of Kokhanok and south of Eagle Bay had median ice duration from 121 to 140 days. The longest median ice duration was observed on the western half of Iliamna Lake, topping at 140 days and gradually decreasing to 111 days at about 2 miles west of Newhalen (PLP 2018-RFI 013).

Federal jurisdiction of navigation is determined by The Rivers and Harbors Act, Sections 9 and 10. The USACE has authority of Iliamna Lake and all tidal waters, but the USCG has authority over bridges of navigable waters and the Newhalen River. See Section 3.22, Wetlands/Special Aquatic Sites and Waterbodies, for a discussion of navigable waters and other waters of the US under the jurisdiction of the USACE.

3.12.3.3 Amakdedori Port and Diamond Port

The proposed Amakdedori Port site is not currently developed for water transportation. The location of the proposed port is in Kamishak Bay, Cook Inlet, approximately 33 miles southwest of Williamsport (ADCCED 2018). The natural water depth at the proposed port site is approximately 15 feet. This is considered deep enough for barges to load and offload supplies, and travel to and from lightering locations.

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Cook Inlet is home to commercial, subsistence, sport, and personal-use fisheries. Aquatic farming, research, and hatcheries are also permitted (ADF&G 2018). See Section 3.9, Subsistence, for more information on subsistence uses of Cook Inlet.

Types of vessels that are present in Cook Inlet include various cargo vessels, tank ships carrying petroleum products, tugs, passenger vessels, fishing vessels, fish processing vessels, mobile drilling rigs, government vessels, and dredges, which can have typical speeds of up to 20 knots. The weather and conditions of Cook Inlet can create difficulty for vessels, because seasonal sea ice and sudden weather changes occur (Eley 2012).

The Cook Inlet Vessel Traffic Study (Eley 2012) found that in 2010, 80 percent of ship transits were made by 15 ships (to Homer, Nikiski, and Anchorage), and there were 480 ship port calls or transits total. Area ports are shown on Figure 3.12-3. Further summary of this study is presented below:

> *Each region of Cook Inlet (upper, middle and lower) experienced varying levels of activity based on the primary port and the types of vessels operating there. Kachemak Bay in lower Cook Inlet experienced the highest levels of activity in Cook Inlet, primarily due to ferry operations, or vessels awaiting a marine pilot, more favorable weather, or Coast Guard inspection. Middle Cook Inlet reflected tank ship movements in and around the Nikiski and Drift River oil terminals. Upper Cook Inlet activity was dominated by movement in and out of the Port of Anchorage. AIS data showed that the busiest times of year were the third quarter (July through September) followed by the second quarter (April through June).*

Pilotage (i.e., the process of directing the movement of a ship by visual or electronic observations of recognizable landmarks) is required for vessels traveling Cook Inlet (unless exempt), because navigation is affected by large tidal fluctuations, currents, winds, mud flats, ice flows, boulders, reefs and shoals that are not always detectable by echo sounder, lead lines, or by observing turbulence in the water (NOAA 2018). Potential hazardous obstacles may also include shipwrecks, unconsolidated sediments, glacial deposits, and volcanic debris (BSEE 2018b). Navigating Cook Inlet in the winter months requires a separate set of guidelines, and vessels are subject to inspection to ensure proper conditions (NOAA 2018).

Western Cook Inlet has more debris than eastern Cook Inlet, and experiences larger ice pans in the winter. In Kamishak Bay, there are scattered reefs within a few feet of the water surface, many of which are visible at low tide. Local knowledge is recommended for navigation of this area, especially for lower Kamishak Bay, near the Douglas River, where tide rips, currents, and strong west winds combine with the underwater obstructions of reefs, ledges, and mudflats.

Amakdedori can be approached safely just north of Amakdedori Creek, although rocky outcroppings exist near shore, and large reefs offshore. Winds in this area can pick up after mid-August to produce larger swells (NOAA 2018). Wave height can depend on wind direction and storms, and the mean wave heights in the vicinity of Amakdedori were 1.67 and 2.36 feet, based on data from two Acoustic Doppler Current Profilers, which started collecting data in March of 2018, and will continue through March 2019. Satellite imagery was reviewed of Kamishak Bay for the years 2006 through 2013 to conclude that ice coverage in the bay can form as early as early November, and can melt as late as late April (PLP 2018-RFI 039).

A bathymetry study of Amakdedori showed that the ocean bed slopes gently over 5.6 miles to a depth of 60 feet, with Amakdedori Creek's alluvial fan reaching almost 1,000 feet offshore. Rocky outcroppings were found about 2 miles north of the river outflow (PLP 2018-RFI 039). Preliminary results from additional wave height data collected March 2018 to June 2018 indicate that breaking may be occurring near the Amakdedori location. Numerical models were also run

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to evaluate swell and potential maximum wave heights at Amakdedori. Results confirm that a long-period swell from the Gulf of Alaska can penetrate Kamishak Bay and reach the Amakdedori site; and waves from the northeast have a slightly smaller wave height than waves coming from the southeast (PLP 2018-RFI 039).

At the end of the western arm of Iliamna Bay (called Cottonwood Bay) is Williamsport, the eastern portage point for passage to Iliamna Lake. The depth of Iliamna Bay is 6 to 8 fathoms although Williamsport is shallow and usable only at higher stages of the tide. Upper Cook Inlet ice drifts to this area in the winter (NOAA 2018). The NOAA acoustic wave profiler recorded wave height data from 2010 to 2012 outside of Iliamna Bay. These wave heights are expected to be representative of the Amakdedori port location.

Safe anchorages in this area can be dependent on season and wind. Although sometimes windy, Iniskin Bay is considered secure for anchorage of medium-sized vessels on the west side of Cook Inlet in any weather. Fishing vessels 4,000 tons or less currently use this bay for anchorage. Reefs and shoals near the water surface exist in this bay (NOAA 2018).

The *Pebble Project Ice Database 1997-2016* examined ice data at Amakdedori, Diamond Point, and Lightering Location A, and concluded that Amakdedori experienced thinner ice for a shorter duration than Diamond Point in Iliamna Bay. Diamond Point averaged 5 to 6 weeks per year surrounded by significant ice (often thick, compact, stable ice), and Amakdedori averaged 3 weeks per year of significant ice, but generally thinner. Lightering Location A showed brief irregular bursts of ice cover or no ice cover, with most (17 out of 19 seasons observed) seasons having ice cover for 2 or fewer weeks (PLP 2018-RFI 039).

Based on the available data for geography, wave, bathymetry, and ice coverage, annual access to Amakdedori may be limited due to high wave activity and periods of ice coverage in Kamishak and Iliamna bays.

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Figure 3.12-1: Existing Roads: Iliamna, Newhalen, Nondalton, Kokhanok

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Figure 3.12-2: Existing Roads: Williamsport-Pile Bay Road and Pedro Bay

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Figure 3.12-3: Regional Airports and Ports

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4.3 NEEDS AND WELFARE OF THE PEOPLE—SOCIOECONOMICS

This section addresses the direct, indirect, and cumulative effects of the No Action Alternative and action alternatives on the regional and state economy, infrastructure, cost of living, and population characteristics. Potential direct, indirect, and cumulative effects on commercial fishing and recreational tourism are discussed in Section 4.6, Commercial and Recreational Fisheries. While subsistence hunting and fishing can be an important component of community welfare in rural Alaska communities, this section addresses the monetized economy. Subsistence activities and their impact on communities are discussed in Section 4.9, Subsistence. Potential impacts to the socioeconomic environment include changes to population, economy and income, improvements in regional infrastructure, and decreased cost of living.

4.3.1 No Action Alternative

The No Action Alternative assumes that the mining operations are not undertaken. Under the No Action Alternative, the Pebble Limited Partnership (PLP) would have the same options for exploration activities that currently exist (ADNR-RFI 073). Therefore, it is anticipated that PLP would continue current activities in an effort to identify future opportunities.

4.3.1.1 Regional Setting

Regional Economy

The PLP employed around 100 and 150 local community members annually at the site during the pre-development phase of the project, which ended in 2012 (Loeffler and Schmidt 2017). Since then, PLP has had a minimal number of workers at the site for exploration and maintenance activities. Under the No Action Alternative, it is anticipated that PLP would continue current activities in an effort to identify future opportunities. As a result, the current number of direct and indirect jobs would remain the same and there would be no impact to the regional economy.

Cost of Living

The No Action Alternative is not anticipated to result in changes to the current operations of the proposed mine site or infrastructure. As a result, the No Action Alternative would have no effect on the cost of living in the potentially affected communities.

Regional Infrastructure

No impacts to the regional infrastructure would be anticipated as a result of the No Action Alternative. Because of the remoteness and small workforce, pre-development work has had little impact on the regional public infrastructure. The No Action Alternative would not affect the current or projected infrastructure, including education, health services, water, transportation, sewer, and solid waste operations.

4.3.1.2 Potentially Affected Communities

Since it is anticipated that PLP would continue current activities in an effort to identify future opportunities under the No Action Alternative, the current number of direct and indirect jobs would not be expected to change. As a result, the No Action Alternative would have no effect on the socioeconomic indicators of the potentially affected communities.

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4.3.2 Action Alternative 1 – Applicant's Proposed Alternative

Project construction and operations would have an impact on both the regional setting and the potentially affected communities.

4.3.2.1 Regional Setting

Regional Economy

Loeffler and Schmidt (2017) found that during the pre-development phase of the Pebble Project (2009 to 2012), community members from the region accounted for about 43 percent of the project's seasonal workforce. Since then, PLP has had a minimal number of workers at the site for exploration and maintenance activities. Under Alternative 1, the number of total direct hire project employees would increase to about 2,000 during the construction phase, and to 850 during the operations phase. PLP has stated that its objective is to maximize opportunities for local hire; first, directly to residents of the project area, or those with close ties to the area; and then to Alaska residents in general. However, it is likely that during the construction phase, significant non-Alaskan labor would be required to fill the anticipated 2,000 jobs, potentially as high as 50 percent of hires (PLP 2018-RFI 027). In addition, indirect employment would increase from the services that would be needed to support construction and operation activities (e.g., air services, goods, and supplies). These activities could potentially create a large number of direct and indirect jobs in the region, relative to the population.

Alternative 1 would provide year-round operations employment, which would help reduce the impacts of the seasonal fluctuations in employment that are prevalent in the region. Depending on the construction schedule and nature of activities, some construction employment may be seasonal in nature and/or limited in duration.

Loeffler and Schmidt (2017) also found during the pre-development phase that communities near the mine site provided a much higher percentage of local labor than more distant communities, such as those in the Dillingham Census Area or other coastal communities. In addition, opportunities and incomes from other sources of employment (e.g., commercial fishing) were greater in distant communities. Therefore, the impact on employment and income during the exploratory phase had a much higher magnitude of impact on the communities closest to the mine site than on more distant communities. It can be anticipated that the same pattern would occur during the operations phase; communities near the mine site and ferry/port terminals would see a greater employment impact than communities farther away, such as communities in the lower Bristol Bay watershed.

As most of the state's professional and business service firms, including PLP's office, are based in Anchorage, the Anchorage region would be anticipated to see an increase in jobs. However, the increase would be minor in relation to the larger and more diverse economy of Anchorage (approximately 130,000 employed workers in 2016). Similarly, services, particularly transportation and lodging that are based in Iliamna, and to a lesser extent in Homer, would also be anticipated to see an increase in jobs.

Alternative 1 includes a variant for summer-only ferry operations, in which the transportation corridor would only operate for 6 months (PLP 2018-RFI 065). As a result, more employees for truck drivers and ferry/terminal workers would be needed during summer operations, but fewer would be needed during winter operations, leading to less year-round employment opportunity and a larger number of seasonal employees.

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Cost of Living

As described in Section 4.12, Transportation and Navigation, Alternative 1 would result in the construction of project roads and ports. Although some components are described as private, PLP has stated that they would work with all local communities to identify the best solutions for use of the road and ferry for community transportation (PLP 2018-RFI 027). Because the higher cost of living in rural areas is primarily associated with the high transportation cost of food, fuel, and other supplies (ADOL 2017a, ADOL 2008), Alternative 1 has the potential to reduce transportation costs to the potentially affected communities near the transportation corridor should arrangements be made to allow some public use of the road. It should be noted that state and local authorizations may affect final road alignment and uses. Reduced transportation costs would likely lower the high cost of living for the communities near the transportation corridor, specifically Kokhanok, Iliamna, Newhalen, and potentially Nondalton.

Communities adjacent to the natural gas pipeline (Kokhanok, Newhalen, and Iliamna) would have the opportunity to connect to the pipeline. Natural gas would likely be less expensive than diesel heating oil, which could lower the cost of living once equipment (e.g., furnace, water heater) is converted to natural gas. However, communities would be responsible for funding the connection, lowering the likelihood.

Under the summer-only ferry operations variant, communities that would rely on the project transportation system may opt to stockpile food, fuel, and other supplies or receive shipments via air when the ferry is not operating. Overall, the variant would likely lower the high cost of living for the communities near the transportation corridor, but not to the extent of the proposed action.

Regional Infrastructure

The temporary and long-term camps housing workers would be self-contained, and operated and maintained by PLP throughout the project. The work camps would be in remote areas, and employees would not have access to services in local communities. In addition to housing facilities, the camps would be equipped with appropriate emergency medical facilities, electrical power generation, fuel storage, and facilities for sewage treatment and solid waste disposal and management. Potable water for the camps would be trucked in or sourced from on-site wells.

The direct effects of all phases of the project on public utilities in communities in the project area would not be readily noticeable, except for communities along the corridor of the natural gas pipeline that may develop infrastructure to take advantage of the supply of natural gas or reduce the costs of goods and services through access to the project transportation system.

The sections below address the direct and indirect impacts to the regional infrastructure from activities associated with Alternative 1. However, the sections do not address changes in the regional infrastructure associated with potential decisions made by Lake and Peninsula Borough (LPB) or the State of Alaska related to the use of increased tax revenues. An increase in tax revenues may lead to an increase in spending on regional infrastructure, which would improve infrastructure for the population of the region.

Education

The PLP has supported training and education programs in Alaska, such as the Alaska Native Science and Engineering Program, Teacher Industry Externship Program, and Alaska Resource Education (PLP 2018e). These activities would be anticipated to increase with Alternative 1 as the needs of the workforce expand. Conversely, some cultural education opportunities would be

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displaced, such as the current cultural camps that are held at the site of the proposed Amakdedori port.

While the project is not anticipated to result in an increased number of schools in the region, it may benefit the educational opportunities of some communities through PLP sponsored programs and an increased revenue stream to the LPB. Because of declining population (i.e., out-migration) in some communities, schools are at risk of closing (LPB 2012). The project could reduce or eliminate this decline, thus allowing the local schools to remain open and continue to serve the local communities. Conversely, steady employment and income may provide some families the ability to move to other areas, which may decrease the population of some communities.

Transportation

Alternative 1 would expand the transportation infrastructure in the region once the transportation corridor and ferry/port facilities are complete. Although the roads and port are described as private, PLP has stated that they would work with all local communities to identify the best solutions for use of the road and ferry for community transportation needs, which would help reduce the local cost of living (PLP 2018-RFI 027). Access to the infrastructure would be limited to local residents and businesses, and would most likely consist of escorted, scheduled convoys for private vehicle transport, and coordination with PLP on third-party commercial-haul traffic on the road. Road traffic would be coordinated with scheduled third-party transportation by the ferry.

Because many of the workers and supplies would be transported to the region by air, the Iliamna Airport and local airfields would see increased use. While no direct impacts are expected to airport infrastructure, the airport would likely see indirect impacts, such as an increase in fuel sales and maintenance activities related to increased air traffic. Section 4.12, Transportation and Navigation, describes the impacts to air, surface, and water transportation systems.

With port and ferry features removed at closure, only the roads and shallow draft barge facilities would remain for use in transporting bulk supplies associated with the closure operations, unless an agreement was reached for a third party to take over ferry operations. Access to the remaining infrastructure would likely be similar to that described above.

Health Services

The mine site would have on-site medical facilities to support workers. Many of the workers would be trained in emergency response and first aid. Most immediate care operations would be handled internally. Patients may be transported to a local clinic or airlifted to larger regional hospitals if needed. Therefore, existing health services are not anticipated to be directly impacted by the project. However, depending on the level of development associated with support services, there may be indirect impacts on these facilities. Any indirect impacts would be anticipated in the communities nearest the mine site (Iliamna and Newhalen), which may have the highest level of indirect development to support the mining operations. In addition, an increased revenue stream to the LPB could result in improvements to community health care facilities.

Water, Sewer, and Solid Waste

The project would construct temporary water and wastewater facilities at various sites used for project construction camps, and at the mine site, ferry terminals, and at Amakdedori port during operations. In addition, solid waste would be addressed on site or removed from the area. As a

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result, existing community water, sewer, and solid waste facilities would not be directly impacted by the project. However, depending on the level of development associated with support services, there may be indirect impacts on these facilities. Any indirect impacts would occur in the communities nearest the mine site. Similarly, an increased revenue stream to the LPB could result in improvements to community water, wastewater, and solid waste facilities.

4.3.2.2 Potentially Affected Communities

Construction and operations would have direct and indirect impacts to local and regional socioeconomic conditions. This section discusses potential impacts to the socioeconomic conditions under Alternative 1.

Population

As discussed in Section 3.3, Needs and Welfare of the People—Socioeconomics, the population of some of the potentially affected communities has been declining. Much of this decline has been associated with the lack of employment opportunities in the communities.

Alternative 1 would result in an additional estimated 2,000 direct jobs during the construction phase and 850 direct jobs during the operations phase. Some workers would be from local communities; however, the majority of workers are anticipated to be from Anchorage, larger towns in the Kenai Peninsula Borough (KPB), and other states. Workers would be transported from multiple locations, including from local communities, to the mine site via aircraft and would stay in work camps. Therefore, workers could live throughout the state and in other states and still have the ability to work at the mine. As a result, the local communities would not be anticipated to see a large increase in population from the project, particularly from in-migration. The largest impacts could occur in Iliamna, Kokhanok, Newhalen, and potentially Nondalton, which may see an increase in population related to any businesses that are developed to support the project.

While a large in-migration of population is not anticipated, Alternative 1 may lead to changing population patterns in the region. The population in some potentially affected communities has been declining (out-migration). The project could reduce or eliminate the decline because of the increase in employment opportunities and indirect effects on education and infrastructure; it could also result in some past residents returning to communities. Conversely, steady employment and income may provide some families the ability to move to other areas, which may decrease the population of some communities. Therefore, the impacts on population are difficult to anticipate.

Economy and Income

Estimating how many local community members would obtain work through the project (or would be interested in obtaining work) is difficult, but any increase in the number of jobs would help the local communities. Loeffler and Schmidt (2017) found that during the pre-development phase of the Pebble Project (2009 to 2012), community members from the region accounted for about 43 percent of the project's seasonal workforce. Communities near the mine site were found to provide a much higher percentage of local labor than more distant communities, where opportunities and incomes from other sources of employment (e.g., commercial fishing) were greater. Therefore, the impact on employment and income during the exploratory phase had a much higher magnitude of impact on the communities closest to the mine site than more distant communities.

PLP has stated that its objective is to maximize opportunities for local hire; first, directly to residents of the project area, or those with close ties to the area; and then to Alaska residents in

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general. However, it is likely that during the construction phase, significant local resident and non-Alaskan labor would be required to fill the anticipated 2,000 jobs required, potentially as high as 50 percent of hires (PLP 2018-RFI 027).

A majority of jobs would be taken by Alaskans during operations. PLP has estimated that 250 employees would come from the surrounding communities, with 50 of these employees coming from communities connected to the project site by road (PLP 2018-RFI 027). The majority of the remaining 600 employees would likely be from the Anchorage and Kenai areas.

The direct jobs created by the project would be attractive to many residents with the requisite skills. In general terms, developments like the proposed project provide economic benefits to individuals, families, and communities in the form of increased and steady income. Many of the communities in the region, especially those in the LPB, have a lower median household income and a higher unemployment rate than Anchorage or Alaska as a whole. Therefore, employment through the project would have an impact on the income levels in the local communities.

The exploratory phase of the project revealed that the income earned by residents employed by the project was an important part of the total income earned in local communities, especially those communities close to the mine site (Loeffler and Schmidt 2017). The income earned by residents close to the mine was greater than the income earned for commercial fishing, indicating that even the limited employment during the exploratory phase had large impacts on the communities. In communities that were located further from the mine site, commercial fishing was a larger part of total income. Indirect employment that is developed to support the construction and operations of the project would provide additional opportunities for community residents.

In general, mining jobs pay much higher than most industry categories. The average monthly wage in Alaska for the mining industrial classification in the third quarter of 2017 was $9,047, and mining support activities was $7,855, which was better than the average for Alaska of $4,414 (ADOL 2017b). Because these figures are an average of all people employed in that classification, the monthly wage includes executives, specialized experts, and low-skill positions. Not all local residents would make the average wage. However, the wages earned would likely be higher than the median household incomes of the potentially affected communities (see Section 3.3, Needs and Welfare of the People–Socioeconomics), which would be an improvement to the welfare of the community members. For example, income from mining could be double the median household income in the LPB of about $44,000.

Under the summer only ferry variant, the transportation corridor would only operate for 6 months. As a result, more employees (e.g., truck drivers, ferry/terminal workers) would be needed during summer operations, but fewer would be needed during winter operations (PLP 2018-RFI 065). This would lead to a smaller number of year-round employees and a large number of seasonal employees. Due to the small populations of the potentially affected communities, it is less likely that the communities would be able to support the increased number of seasonal employees (in addition to the year-round employees), requiring more employees to come from outside the region for the seasonal work. Therefore, the variant would likely shift some of the positions held by community members from year-round to seasonal, which would also lower the overall income that is earned by community members and stays within the region compared to year around employment under year round ferry operations.

Tax Revenue and Other Fiscal Effects

Construction and operations would generate revenues for local governments and the state of Alaska. The revenue sources would include mining license taxes, corporate income taxes, property taxes, borough severance taxes, and royalty payments. Revenues to local and state

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government would begin during the construction phase, and escalate during the operations phase when mining license taxes, production taxes, severance taxes, and corporate income taxes would become effective. At the time the mine ends production, and buildings, foundations, pipelines, and other infrastructure facilities are removed or reclaimed, these revenues would end, unless reuse of some of these facilities was negotiated with another party.

Mining License Tax and Corporate Income Tax

Alaska levies a mining license tax and corporate income tax on net income received in connection with mining properties and activities in the state. The collection of mining license tax and corporate income tax on project net income would have a beneficial effect on state government revenues. IHS (2013) estimates the project would generate $27 million annually in state taxes (2011) during the construction phase, and would generate an estimated $69 million annually from state corporate taxes during the operations phase. IHS estimates the operations phase would also generate $44 million annually from state mining license taxes.

Corporate income tax may increase further through the indirect and induced impacts of the mine construction and operation.

State Royalty Payments

Alaska requires holders of state mining locations to pay a production royalty on all revenues received from minerals produced on state land, per the Production Royalty Law, which applies to all revenues received from minerals produced from a state mining lease (§38.05.212). The production royalty is 3 percent of net income generated (ADNR 2015).

The collection of state royalty payments on project net income would have a beneficial effect on state government revenues. IHS (2013) estimates that the project would generate $21 million annually (2011) from state royalty payments during the operations phase.

Borough Severance Taxes

Mining operations are subject to severance taxes on resource extractions in a taxing jurisdiction, which would be the LPB. IHS (2013) estimates that the project would generate $29 million annually in severance taxes paid to LPB during the operations phase. The estimated severance tax would represent a significant increase in revenue for LPB when compared to the estimated total revenue from external sources of approximately $5 million for fiscal year 2019 (LPB 2018).

Borough Property Taxes

Real property can be subject to property taxes. The LPB does not have a property tax (LPB 2018), but the Kenai Peninsula Borough has a borough property tax of 4.7 mills ($4.7 for every $1000 of taxable assessed value), plus any other taxes assigned per the Tax Authority Group (e.g., hospital, road maintenance). While the Amakdedori port facilities would be considered real property, the infrastructure would be on state-owned property and may not be subject to Kenai Peninsula Borough property taxes.

Right-of-Way Acquisition

The right-of-way (ROW) for the 83-mile transportation corridor connecting the Amakdedori port to the mine site could be another fiscal element of the project. The State of Alaska owns 47 miles of corridor, while the remaining 42 miles of corridor are owned by the Bristol Bay Native Corporation, Alaska Peninsula Corporation (APC), and Iliamna Natives Limited. Based on costs for a similar mine ROW and the value of state lands (ADNR 2008), a preliminary estimate of the

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ROW costs for the transportation corridor ranged between $1 million and $1.5 million, which would be paid to the state government and to the Native corporations.

The pipeline corridor would cross state and federal waters, as well as state and APC lands. Historically, ROW costs account for approximately 7 percent of the total construction cost of a pipeline (Rui et. al. 2011). However, since the pipeline would follow the transportation corridor from Amakdedori port to the mine site, it is not likely that a separate ROW arrangement would be needed.

Housing

Staff working at the mine would be housed in on-site facilities (i.e., work camps), and would follow a fly-in/fly-out commute work arrangement. Therefore, there would not be an increase in housing demand in communities related to the direct employment of workers.

Communities closest to the mine and ferry terminals (Iliamna, Newhalen, Kokhanok, and potentially Nondalton) may see changes to the population as a result of support activities, which may lead to an increase in demand for housing. As presented in Section 3.3, Needs and Welfare of the People—Socioeconomics, these communities have a fairly high percentage of vacant housing units. Although the condition of the vacant units is not known, some of the units could accommodate at least a portion of any increase in population. Housing is also available in the larger communities in the region where workers may reside.

Education

While the project is not likely to result in substantive demographic increases that would support an increase in the number of schools in the potentially affected communities in the immediate vicinity of the project, the education programs supported by PLP could benefit the current student population in the nearest communities. In addition, the project could reduce the population decline in some communities, which could allow schools at risk of closing to remain open.

As with other mining operations in Alaska, employment at the mine would require at least a high school education or general equivalency diploma. Therefore, students may see employment opportunities provided by the mine as an incentive to complete at least a basic level of education, which could increase the high school graduation rates in the potentially affected communities.

4.3.3 Action Alternative 2 – North Road and Ferry

4.3.3.1 Regional Setting

Regional Economy

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2 would have the same overall impacts to the regional economy as Alternative 1.

Alternative 2 includes a variant for a summer only ferry. The impacts of the variant would be the same as described in the similar Alternative 1 variant.

Cost of Living

For the region as a whole, the impacts on the cost of living of Alternative 2 would be largely the same as the impacts of Alternative 1, and would likely lower the high cost of living for the communities near the transportation corridor. However, because of the different alignments of

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the transportation corridor and natural gas pipeline, Pedro Bay would be beneficially impacted and Kokhanok would not be impacted.

Alternative 2 includes a variant for a summer only ferry. The impacts of the variant would be the same as described in the similar variant for Alternative 1.

Regional Infrastructure

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2 would have the same overall impacts to the region as Alternative 1. However, Pedro Bay would be impacted and Kokhanok would not.

4.3.3.2 Potentially Affected Communities

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2 would have the same overall impacts to the socioeconomic indicators of the potentially affected communities as Alternative 1. However, Pedro Bay would be more impacted and Kokhanok would be less impacted.

[Note to Reviewers: Land owners for ROW acquisition will be inserted here for the Draft EIS.]

Alternative 2 includes a variant for a summer only ferry. The impacts of the variant would be the same as described in the similar variant for Alternative 1.

4.3.4 Action Alternative 3 – North Road Only

4.3.4.1 Regional Setting

Regional Economy

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 3 would have the same overall impacts to the regional economy as Alternative 1.

Alternative 3 includes a variant for a concentrate pipeline. The impacts of the variant would likely be decreased employment of truck operators and increased employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease, which would decrease overall income and employment in the region. It could potentially have greater impact on property taxes for KPB than Alternative 1, depending on final footprint and project specifics.

Cost of Living

For the region as a whole, the impacts on the cost of living for Alternative 3 would be largely the same as the impacts of Alternative 1, and would likely lower the high cost of living for the communities near the transportation corridor. However, because of the different alignments of the transportation corridor and natural gas pipeline, Kokhanok would likely experience less of a benefit, while Pedro Bay would likely experience more of a benefit.

Regional Infrastructure

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 3 would have the same overall impacts to the region as Alternative 1, with the exception of the ferry terminals. However, Kokhanok would experience fewer impacts, while Pedro Bay would experience more.

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Alternative 3 includes a variant for a concentrate pipeline. The impact of the variant would be the construction of the pipeline(s) and a dewatering facility near the port, which would likely be of no value and/or benefit to the potentially affected communities or the region as a whole, other than potential property tax revenue.

4.3.4.2 Potentially Affected Communities

While the alignment of the transportation corridor and natural gas pipeline would change, Alternative 3 would have the same overall impacts to the socioeconomic indicators of the potentially affected communities as Alternative 1. However, Kokhanok may experience fewer impacts, while Pedro Bay would experience greater impacts.

The revenue from the ROW acquisition would impact the same landowners as Alternative 2.

Alternative 3 includes a variant for a concentrate pipeline. The impacts of the variant would likely be decreased employment of truck operators and increased employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease, which would decrease the overall income and employment in the potentially impacted communities.

4.3.5 Key Issues Summary

See Table 4.3-1 for a summary of key issues.

Table 4.3-1: Summary Impact Table for the Socioeconomic Environment

Project Impact	Alternative 1 (and variants)	Alternative 2 (and variants)	Alternative 3 (and variants)
Population	Communities nearest the project components (Newhalen, Iliamna, Nondalton, and Kokhanok) may see slight population increase. There would be no difference in impacts from alternative variants.	Same as Alternative 1 except that impacts would be less likely to occur to Kokhanok. There would be no difference in impacts from alternative variants.	Same as Alternative 1, except that impacts would be less likely to occur to Kokhanok and more likely to Pedro Bay. There would be no difference in impacts from alternative variants.
Economy and Income	Alternative 1 would provide year-round employment, which would help reduce the impacts of the seasonal fluctuations in employment. During construction, there would be an estimated 2,000 direct jobs, and during operations there would be an increase of direct employment by 850 people, plus indirect employment related to support services. Communities nearest the project components (Newhalen, Iliamna, Nondalton, and Kokhanok) would likely see the greatest impacts in employment and income. The summer-only ferry variant would result in less year-round employment and greater seasonal employment, with less income remaining in the potential affected communities.	Same as Alternative 1 except that impacts would be less likely to occur to Kokhanok and more likely to Pedro Bay. The impacts of the summer-only ferry variant would be the same as described for the variant for Alternative 1.	Same as Alternative 1, except that impacts would be less likely to occur to Kokhanok and more likely to Pedro Bay. The impacts of the concentrate pipeline variant would not likely impact employment and income.

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Table 4.3-1: Summary Impact Table for the Socioeconomic Environment

Project Impact	Alternative 1 (and variants)	Alternative 2 (and variants)	Alternative 3 (and variants)
Tax Revenue and Other Fiscal Effects	Alternative 1 would generate: • $27 million annually in state taxes (2011) during the construction • $69 million annually from state corporate taxes during the operations phase. • $21 million annually (2011) from state royalty payments during the operations phase. • $29 million annually in severance taxes for LPB • Potential annual property taxes to KPB.	Same as Alternative 1.	Same as Alternative 1. The concentrate pipeline variant could potentially have greater impact on property taxes for KPB than Alternative 1, and the total number of employees needed during operations would likely be less.
Cost of Living	Reduced transportation costs would likely lower the high cost of living for the communities near the transportation corridor (Newhalen, Iliamna, Nondalton, and Kokhanok). The natural gas pipeline would also provide opportunities for adjacent communities to lower their cost of living. The summer-only ferry variant would likely have less impact than Alternative 1.	Same as Alternative 1 except that impacts would occur to Pedro Bay and not Kokhanok. The summer-only ferry variant would likely have less impact than Alternative 1.	Same as Alternative 1, except that impacts would occur to Pedro Bay and not Kokhanok. The concentrate pipeline variant could potentially have greater impact than Alternative 1.
Regional Infrastructure	Alternative 1 would increase the infrastructure in the region. The impact of the transportation corridor depends on the access afforded to communities. Communities located along the natural gas pipeline may also benefit from the infrastructure.	Same as Alternative 1 except that impacts would be less likely to occur to Kokhanok and more likely to occur to Pedro Bay. There would be no difference in impacts from alternative variants.	Same as Alternative 1 except that impacts would be less likely to occur to Kokhanok and more likely to occur to Pedro Bay. There would be no difference in impacts from alternative variants.

4.3.6 Cumulative Effects

The geographic area for the cumulative effects consideration is the region around the potentially affected communities, and to a lesser extent, the state of Alaska. Similar to the proposed project, many large facilities located in remote areas use work camps to house employees who are transported to the site for a two-week rotation. As a result, opportunities exist for employment for people living across a broad area of Alaska.

The cumulative effects assessment took into consideration reasonably foreseeable future actions (RFFAs), as identified in Section 4.1, which could have socioeconomic impacts on the potentially affected communities. It should be mentioned that with the exception of the Donlin Project and expansion of the Pebble Mine, reasonably foreseeable activities associated with other mineral exploration projects are limited to continued exploration The potential impacts for each major category are discussed below:

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- Pebble Project Expansion
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold
- Alaska Stand Alone Pipeline
- Drift River Oil Pipeline
- Cook Inlet Lease Sales*
- Alaska LNG
- Onshore Hydrocarbon Exploration*
- LPB Transportation Projects
- LPB Community Development and Capital Improvement Projects
- LPB Renewable Energy Initiatives
- Bristol Bay - Nushagak and Naknek/Kvichak State Management Districts - Salmon
- Lower Cook Inlet Management Area- Salmon and Herring
- Federal, state institutional, and private surveys and research*

**Indicates exploration and research activities only.*

The Pebble Project Expansion RFFA would extend the life of the project to recover more of the estimated reserves. Because any action would not occur during the 20-year period of the proposed project, there would be no cumulative socioeconomic impacts during that time from the RFFA. However, the Pebble Project Expansion would continue, and likely increase, the beneficial and adverse impacts that would be realized from the proposed project. Employment and income impacts, as well as tax revenue, realized from the proposed project would continue through the 78-year expansion period and could increase if operations are increased. Any impacts to population, housing, and education would be anticipated to remain the same as experienced during the operation of the proposed project.

The RFFAs related to transportation and infrastructure improvements, as well as renewable resources, could have an impact on the potentially affected communities. The projects could encourage mineral development in the area; taking advantage of the infrastructure and energy improvements. These impacts would be anticipated to be greater if the proposed project is implemented, which could increase development as support-related businesses take advantage of the additional opportunities provided by the mine.

While the proposed Donlin Gold Project could potentially create state-wide competition for skilled workers, it would also be located in a different region and would have little contribution to the regional socioeconomic effects. From a state-wide perspective, both the Donlin Gold Project and the Pebble Mine Project could create a competing need for support services and secondary/indirect jobs associated with such services.

Since community members of the potentially affected communities participate in commercial fishing activities, any changes in regulations could result in impacts. However, there would be less of an impact on the potentially affected communities than in coastal communities where commercial fishing is a much larger part of the economy.

The RFFAs related to oil and gas exploration and development would likely induce minimal cumulative effects to the socioeconomic characteristics of the potentially affected communities during the exploratory phases. If these projects are developed, it would likely be a number of years before the impacts are realized.

The RFFAs related to mining exploration and research activities would likely induce minimal cumulative effects to the socioeconomic characteristics of the potentially affected communities

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during the exploratory phases. If these projects are developed, it would likely be a number of years before the impacts are realized.

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4.12 TRANSPORTATION AND NAVIGATION

The Environmental Impact Statement (EIS) analysis area for this section includes the transportation resources that could be affected by the proposed mine site, Amakdedori port, transportation corridor, and natural gas pipeline corridor. Local and regional land, air, and water transportation systems and activities in the EIS analysis area are included. Potential impacts include:

- Vehicle traffic volume in the road-connected communities of Iliamna, Newhalen, Kokhanok, Nondalton, and Pedro Bay.
- Off-road transportation to subsistence areas.
- Flight frequency to affected airports and communities.
- Vessel traffic on Cook Inlet, with a higher volume during construction, and increased marine traffic in the port area.
- Vessel traffic on Iliamna Lake.
- Re-routes of winter over ice lake traffic on Iliamna Lake due to creation of open water.

4.12.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and would not have any new effects on transportation and navigation. Pebble Limited Partnership (PLP) would still be permitted to perform exploratory activities and research at the site and would be expected to do so. Level of activity would be assumed to remain the same as the past 10 years.

4.12.2 Action Alternative 1 – Applicant's Proposed Alternative

4.12.2.1 Surface Transportation

Mine Site

Alternative 1 would involve the construction and use of roads in the mine site, and connection of mining areas with the locations of facilities and materials.

During project construction, operations, and closure, public access to or through the mine site would be restricted for safety. Such a restriction to public access would not be very noticeable, although there is subsistence overland travel that occurs in the area of the mine site that may require adjustments to traditional routes (PLP 2018-RFI 088). See Section 4.9, Subsistence, for impacts on access to subsistence resources.

Although project construction, operation, and closure activities would introduce new traffic in the mine site area, effects related to the displacement of existing surface transportation modes in the project area would be minimal. These changes would likely include taking alternate overland routes around the mine site, and would be most apparent during construction and operations. The magnitude of impact would decrease after mine closure, because the road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. The effects would be noticed locally by the nearby community members who travel through the area.

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Transportation Corridor

During construction, surface access roads would be constructed from the Amakdedori port site to the southern shore of Iliamna Lake and from the northern shore of Iliamna Lake to the mine site. Construction would involve using heavy equipment (for construction, excavation, and pipeline installation) and vehicles to transport personnel, fuel, and supplies during construction activities. Crews would live at the work sites in camps. A temporary airstrip would be built at Amakdedori Port to facilitate the construction phase, and Amakdedori port would be used for offloading construction equipment and supplies from air and water deliveries. Road traffic in Kokhanok would be affected during construction as project vehicles travel from the airstrip to the south access road. Similarly, road traffic in Iliamna and Newhalen would be affected during construction as project vehicles travel from the airstrip to the north access road, associated with delivering goods and services and by local employees that may travelling to construction work sites. This volume of traffic would likely decrease with the transition from construction to operations.

Until Iliamna Lake is connected to Cook Inlet through the transportation corridor at the southern ferry terminal, Williamsport–Pile Bay Road (which connects the two waterbodies at the northern end of Iliamna Lake over land) may be used to transport supplies to the beachheads on Iliamna Lake during construction (PLP 2018-RFI 037). If this route is used, the volume of traffic on Williamsport–Pile Bay Road would increase during construction; however, the road is currently used infrequently to transport commercial fishing vessels and general supplies, and is usable only between June and November (Kevin Waring & Associates 2010b).

Spur roads proposed for the transportation corridor would connect the proposed mine access road to the existing roads in the communities of Iliamna, Newhalen, and Nondalton via the proposed Iliamna spur road. Kokhanok community roads would be connected to the proposed southern access road, which would run from the proposed southern ferry terminal to Amakdedori Port. Spur roads would be gated to prevent traffic on the mine access road and south access road. Additional access would be coordinated between the State of Alaska, the Lake and Peninsula Borough, PLP, and landowners. Known trail crossings would be marked, and traffic controls would be implemented for safety (PLP 2018-RFI 027).

The current public roadway network in the EIS analysis area is minimal, limited to the vicinity of existing communities, and is used by local residents. Local roads provide important routes for overland travel, because there are no alternative roads. The airports in Iliamna and Kokhanok are outside of each town center, so traffic may increase in those areas, with a low likelihood of adding to the traffic in town.

During the winter, once snow cover on land and ice formation on Iliamna Lake are adequate, surface transportation occurs over land and Iliamna Lake for subsistence activities and inter-village travel. The new road may be elevated in areas and could act as an obstacle for overland inter-village and subsistence travel, although there would be marked crossing points for known trail crossings (PLP 2018-RFI 027).

During project operations, daily transportation of materials (concentrate, fuel, reagents, and consumables) would require up to 35 truck round trips per day on each leg of the road, including three loads of fuel per day. Personnel would be transported to the mine site via road from Iliamna, and would remain at the mine site during their 2-week work shifts, which would limit traffic on the access roads. Gates limiting unauthorized traffic would be installed on the spur roads as well. The communities of Iliamna, Newhalen, and Nondalton could see altered traffic patterns and a higher traffic volume as employees are transported from the Iliamna Airport to the mine site.

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Impacts on surface transportation would last through the life of the mine, and through post-closure, until the roads are no longer deemed necessary for post-closure monitoring activities.

Under the summer only ferry variant the concentrate would be stockpiled at the mine site in the winter, doubling truck trips in the summer, so that the number of round trip truck increases to 70 per day on each access road. Surface transportation would be less disrupted during the winter under this variant.

Amakdedori Port

The temporary beachhead and workforce camps set up during construction, long-term Amakdedori Port facilities, and post-closure facilities would be located in the same general area. Currently, no existing/developed surface transportation facilities exist in the vicinity of the port site. However, port construction and operation would have some effects on current surface transportation associated with the area's use for subsistence activities. Figures in Section 3.9, Subsistence, and Appendix K3.9, show some subsistence use in the areas in the vicinity of Amakdedori, but not at the port site itself. While this use appears to be infrequent, construction and operations activities at Amakdedori site as a small potential to require some alterations to traditional over land routes.

Natural Gas Pipeline Corridor

During construction of the pipeline on the Kenai Peninsula and connection of it to the compressor station near Anchor Point, traffic on the Sterling Highway would be affected by vehicles transporting materials to the site. Heavy equipment traffic turning off the highway would exist, but would be less than the usual construction traffic experienced on Sterling Highway for road maintenance during the summer months (PLP 2018-RFI 037). Because construction of the pipeline would parallel the main transportation corridor, there would be limited disruption of community roads systems associated with pipeline installation.

During operations and closure, the pipeline would have no effect on overland traffic.

4.12.2.2 Air Transportation

Existing airports in Iliamna and Kokhanok would be used to transport personnel and some supplies to and from the project area for construction and operations activities. Iliamna Airport has the capacity to facilitate the planned aircraft traffic for the project, and would not require improvements. Kokhanok Airport has a runway capable of handling the anticipated commuter flights for workers, but would require improvements to lighting and navigation, and potentially air radio service. Additional maintenance of the Kokhanok Airport would be required with an increase in traffic (PLP 2018-RFI 027b). Infrastructure improvements would remain in place after project closure. Helipads would also be built at Amakdedori Port and at the mine site. Emergency evacuation of mine personnel would have a small potential to use any these air travel facilities.

During project construction, work crews would access sites by helicopter or boat until the access road is complete. A temporary airstrip would be built at Amakdedori Port to facilitate the construction phase. Twin Otter or similar aircraft would make 20 to 40 flights per month (average of 5 to 10 flights per week) during the construction phase to Amakdedori Port, before Kokhanok can be accessed by road. Once road access to Kokhanok is established, flights to Kokhanok would be up to 10 flights by Twin Otters per week (PLP 2018-RFI 027a).

During operations, an estimated 600 employees would fly to Iliamna Airport from the Anchorage or Kenai airport, approximately 200 employees would fly to Iliamna and Kokhanok from

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surrounding community airports, and about 50 employees would travel by road to project locations. Employee flights would be on a 2-week rotation. Weekly employee flight requirements to Iliamna include one Twin Otter from King Salmon, one from outlying villages, two from Dillingham, four from Kenai, and two Q400 flights from Anchorage (10 total). If these airplanes are commercial carriers and not private charters, more frequent commercial flights would allow for more flight options for local residents. Kokhanok would also receive 5 to 10 employee flights per week during operations (PLP 2018-RFI 027a). Iliamna and Kokhanok airports would also receive an estimated one cargo flight per week, and six unscheduled cargo flights per year, in addition to the above passenger flights (PLP 2018-RFI 027). This would be a noticeable increase from the current annual operations (see Table 3.12-1). A small volume of helicopter traffic associated with project operations would occur between Iliamna and the mine site.

During project closure, impacts on air traffic would decline, because fewer personnel would travel to and from the project area. Additionally, instead of private charters, project personnel would most likely use commercial airlines and cargo flights (PLP 2018-RFP 027a).

4.12.2.3 Water Transportation

Mine Site

No water access would exist at the Mine Site and its facilities.

Transportation Corridor

The transportation corridor would cross Iliamna Lake, Upper Talarik Creek, and the Newhalen River, which are considerable navigable by the State of Alaska. To support construction of the north and south ferry terminals and the ferry itself, small temporary barges would cross Iliamna Lake until completion of the ferry terminals. Barges may also move freight and equipment transported during construction on the Williamsport–Pile Bay Road, potentially increasing Iliamna Lake traffic. Construction of the north ferry terminal may use facilities in Iliamna and Newhalen. Employees may be transported to work via boat during this phase. Construction would affect inter-village and subsistence travel along the shorelines and across the lake via watercraft, and commercial traffic in Iliamna, Newhalen, and Kokhanok. River traffic on larger rivers and creeks such as the Newhalen River, Gibraltar River, and Upper Talarik Creek could be disturbed or displaced during the construction of bridges.

During mine operations, the ferry would cross Iliamna Lake year-round along an 18-mile route that would take an estimated 1.5 hours in open water, or 3 hours in ice conditions. The expected frequency of one round trip per day in open water would be noticed by other lake traffic, but would not disrupt such traffic, because of the infrequency of the ferry and the size of the lake for alternate routes.

Furthermore, scoping comments noted hurricane-force winds on Iliamna Lake which could be hazardous for the ferry crossing in open water. Eagle Bluff, west of Kokhanok, would be downwind of the ferry route and could pose a hazard to the ferry in high winds if it lost power or steering. In addition, there are small islands in the lake within approximately 5 miles of the ferry route that could potentially be hazardous in a high wind situation.

When the lake is frozen, it is used as a travel way for people on snowmachines (PLP 2018-RFI 088). Open water created by the ice-breaking ferry would disrupt some cross-lake snowmachine routes and potentially create a safety hazard. PLP would work with communities (and supply funding) to provide for the marking and maintenance of snowmachine trails between communities across Iliamna Lake, when lake ice is thick enough to support such traffic (PLP 2018-RFI 071a). For the Kokhanok east ferry terminal site variant, snowmachine access to

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Iliamna Lake would be provided to the east of the terminal to enable access to the Sid Larson Bay area without crossing the ferry route (PLP 2018-RFI 078). Alternate, marked safe routes would help avoid the ferry path, but would have the potential to add to travel time, distance, and fuel costs. After mine closure, the ferry facilities would be removed and supplies would be transported across the lake using a summer barging operation, so there would be no impacts from ice-breaking ferries.

The Kokhanok east ferry terminal variant has thicker ice for a longer duration than the proposed South Ferry terminal. There is a substantial amount of winter traffic between Kokhanok and Sid Larson Bay (to the east of the community), and winter travel routes would cross the East Kokhanok ferry route. However, the creation of an alternate winter travel route along the Kokhanok Spur road with an access point to the lake east of the terminal would mitigate this impact by creating a route that would not cross ferry traffic. Traffic in the town of Kokhanok would see an increase in traffic between the airport and the ferry terminal site. Navigation on Iliamna Lake at the East Kokhanok ferry terminal would be more sheltered from wind and waves, but would contain more navigational hazards such as shallow water and is a longer ferry route of 27 miles (PLP 2018-RFI 078).

This alternative includes a summer-only ferry variant. If the ferry were to run only in the summer, the effects on surface water transportation traffic on Iliamna Lake and on Cook Inlet would have a higher magnitude in the summer, likely doubling if PLP used two ferries as opposed to one bigger one, and absent in the winter.

Amakdedori Port

During construction and operation, supply barges would transport materials, supplies, and equipment to Amakdedori Port, creating an increase in barge traffic on Cook Inlet. During operations, approximately 25 concentrate vessels and 30 supply barges per year would be needed for transport (an average of one vessel per week). Each concentrate vessel would require 10 trips from the lightering barge to fill. Diesel delivery to the port would involve using bulk fuel carriers with an expected maximum load of 4 million gallons to allow fewer shipments during the winter. The additional vessel traffic on Cook Inlet would be noticeable, adding approximately 110 transits or port calls (an average of about 2 per week) to the 2010 count of 480 (an average of about nine per week). Owners of those ships include state, national, and international (Eley 2012). After operations cease and the port decommissioned, impacts on traffic in Cook Inlet would cease as well. At expected speeds between 5 and 7 knots, it is not anticipated for wake heights to exceed natural waves at the shore (PLP 2018-RFI 039).

Amakdedori Port would be in Kamishak Bay, which has several identified reefs, as well as strong winds that create a funnel effect off of the surrounding mountains. Winds can be accompanied by short, choppy sea on flood currents, and can cause heavy swells. From Tignagvik Point to Cape Douglas, vessels are warned to proceed with caution (NOAA 2017). Project vessels may encounter these winds and swells during barging and lightering activities; and should they lose power or steering, could drift onto reefs, mud flats, or otherwise ground at the southern end of Kamishak Bay or near Amakdedori. The nearby Augustine volcano has potential to cause a tsunami at the port site, as it has in the past (PLP 2018-RFI 039).

Natural Gas Pipeline Corridor

Construction of the entire pipeline would take place during the second and third years of overall project construction. The installation of 94 miles of pipeline crossing Cook Inlet on the seabed would be noticeable to vessels, as would the 18-mile crossing on the bed of Iliamna Lake. This phase would involve some time spent working in and crossing a high-traffic area of Cook Inlet,

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and would cause navigational hazards for vessels passing nearby on Cook Inlet and Iliamna Lake (Eley 2012). The construction of the Cook Inlet crossing of the pipeline would be expected to take 30 to 40 days, and would include approximately 10 vessels, support and survey vessels included. These vessels would stay in Cook Inlet for the duration of this effort, some of which would travel to shore daily to resupply. In Iliamna Lake, pipeline construction would require one barge, and construction activities would be noticeable to existing traffic (PLP 2018-RFI 027b).

Once the pipeline is fully operational, it would have little effect on vessel traffic and anchoring in Cook Inlet or in Iliamna Lake. The 12-inch-diameter pipe would be placed in a trench deeper than the height of the installation. If the depth of water is greater than 200 feet, the pipeline would be placed atop the seabed. This pipeline would add to the multiple pipelines and other obstacles already installed and located in Cook Inlet. In Iliamna Lake and Cook Inlet, vessel operators would be notified (via a USCG-approved method) of the pipeline location. Mitigation measures would be included as permit conditions for the protection of navigation and the general public's right of navigation on the water surface, and those can include requirements to report Notice to Mariners, or to install and maintain lights or signals as prescribed by the USCG. Effects of post-operational activities would be temporary, and would result in low-intensity disturbances to vessel traffic.

4.12.3 Action Alternative 2 – North Road and Ferry

At the mine site, Alternative 2 would involve the construction and use of roads at the site, and connection of mining areas with the locations of facilities and materials. The effects would be generally be the same as Alternative 1. No effects on water transportation would exist for this alternative at the Mine Site.

4.12.3.1 Surface Transportation

Transportation Corridor

The alternative port location at Diamond Point would require a new road to be constructed to Pile Bay through Williamsport, in the vicinity of the current Williamsport-Pile Bay Road. This would have a substantial increase of traffic on the road during the busy summer months. Mine-related haul trucks would travel along with privately operated shipping vehicles and vessels being portaged, increasing the volume and density of traffic in the area. Because the current condition of the Williamsport-Pile Bay Road makes traversing it difficult, an updated road would make the corridor more economically and logistically appealing for portaging vessels and shipping supplies to villages, assuming the road were built to withstand the full capacity of current and potential future traffic. This would have the potential of increasing private vehicle traffic further, if the proposed or existing Williamsport port could accommodate the increase. These impacts would occur every season during construction and operations.

There are no existing roads in the vicinity of the road proposed to be constructed from Eagle Bay to the Mine Site, and potential effects on current surface transportation would be similar to Alternative 1 with regard to Iliamna, Newhalen, and Nondalton. However, under this alternative Kokhanok would not be connected to the road system and would therefore not be impacted by surface transportation effects near the community.

Under the summer only ferry variant, the effects on surface transportation traffic would be more disrupted by the amount of truck traffic in the summer, as the volume of mine traffic would double in intensity, and would be absent in the winter. However, it is probable that the road would not have high use by other users in the winter either.

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Diamond Point Port

The need for a temporary beachhead during construction may be eliminated at the Diamond Point Port site, but a construction camp may be necessary. Surface transportation infrastructure consists of what is needed for the on-site operations at the Diamond Point Port site and quarry, and are not connected by land to a road system. Port improvement and operation would have noticeable effects on surface transportation at the quarry by adding mine traffic to the quarry area, and by connecting the quarry with Williamsport and the road to Pile Bay.

Natural Gas Pipeline Corridor

Effects of construction of the Natural Gas Pipeline on the Kenai Peninsula would be the same as in Alternative 1. The crossing from Ursus Cove to Cottonwood Bay over land would not affect surface transportation because there are no roads there, and little to no subsistence travel. Construction along the road to Pile Bay would occur simultaneously with road construction and improvements, and impacts to surface transportation would be the same as discussed above. Installation of the pipeline from where it would depart from the road near Pile Bay to where it would realign north of Eagle Bay would run through Pedro Bay. This would increase traffic volume in the village as construction vehicles work their way through and near town. During operations, the pipeline ROW between the two ferry terminals may create a route for ATV or snowmachine traffic. The most likely users of this new route along the right-of-way would be the residents in the communities of Pedro Bay, Nondalton, Iliamna, and Newhalen. How the new ROW could impact access to subsistence is discussed in Section 4.9, Subsistence.

4.12.3.2 Air Transportation

Frequency of flights to and from Iliamna would be the same as Alternative 1. Construction cargo and passenger flight frequencies to an airstrip in Pile Bay would be similar to flight frequencies to Kokhanok in Alternative 1. Impacts to the Pedro Bay and Pile Bay communities would be the same as discussed for Kokhanok in Alternative 1. PLP would not construct a new airstrip at Diamond Point, but would improve the existing airstrip near Pile Bay for limited use during construction.

4.12.3.3 Water Transportation

The effects the Transportation Corridor would have on water transportation would be the same as in Alternative 1, except for the location of the ferry terminals and ferry traffic. The community of Pedro Bay would be affected in the way that Kokhanok would have been in Alternative 1. The northeastern portion of Iliamna Lake has a lower median number of days of ice than the southwestern portion, meaning that the ferry route and terminals in this alternative would have less of an effect on winter cross-lake transportation than Alternative 1. See Section 4.9, Subsistence, for disruption on access to subsistence resource use areas.

Dredging at Diamond Point and lightering at Iniskin Bay may be noticeable to the local vessel traffic in those areas, especially during inclement weather when vessels take refuge in Iniskin Bay. Disruption would occur through operations and would result in low-intensity disturbances to vessel traffic.

Effects on water transportation from the construction and operation of the natural gas pipeline would be the same as Alternative 1 in Cook Inlet, but there would be no change in effects to Iliamna Lake other than location of vessel traffic.

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4.12.4 Action Alternative 3 – North Road Only

At the mine site, Alternative 3 would involve the construction and use of roads at the site, and connection of mining areas with the locations of facilities and materials. The effects would be the same as Alternative 1. No ferry-related effects on water transportation would exist for this alternative at the mine site, but there could be some construction-related vessel traffic on Iliamna Lake from the Williamsport-Pile Bay Road corridor.

4.12.4.1 Surface Transportation

Effects on the Kenai Peninsula would be the same as in Alternative 1. The effects of the road from Williamsport to Pile Bay would be the same as in Alternative 2.

In this alternative, a road would be built from Diamond Point and routed around the north side of Iliamna Lake, through Pedro Bay and to the mine site. This would be the same route as the natural gas pipeline corridor from Alternative 2, and have the same effects during construction. During operations and closure, this road would increase traffic in Pedro Bay from mine operations and also from the public, because this road would connect the communities on the northern side of Iliamna Lake over land to each other and to Cook Inlet. Access would be controlled the same as in Alternative 1.

The road proposed to be constructed from Eagle Bay to the mine site would have similar effect on current land traffic in Iliamna, Newhalen, and Nondalton, as described in Alternative 1.

Effects on surface transportation at the Diamond Point port site would be the same as Alternative 2.

Installation of the natural gas pipeline along the road from the Pile Bay spur to the mine site would occur simultaneously with road construction and improvements, and have similar effects as Alternative 2.

4.12.4.2 Air and Water Transportation

Frequency of flights to and from Iliamna would be the same as Alternative 1. Flight frequencies to Pedro Bay would be similar to Alternative 2, but the connecting of Pedro Bay by road to the Cook Inlet would affect frequency of flights after construction, if the road leads to more traffic through Pedro Bay. Potential effects on Kokhanok would be limited to resident crew change flights.

The effects of Alternative 3 would be the same as Alternative 2 on water transportation at the Diamond Port site, and there would be no impacts to transportation on Iliamna Lake.

4.12.5 Summary of Key Issues

See Table 4.12-1 for a summary of key issues.

Table 4.12-1: Summary of Key Issues for Transportation and Navigation

Transportation Mode	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Surface Transportation	Kokhanok, Iliamna, and Newhalen would experience an increase in volume of road traffic due to new road connections with the project area	Same as Alternative 1, except impacts from truck traffic at Kokhanok would occur at Pedro Bay instead. During operations, the	Same as Alternative 2 except that the road from Diamond Point to the mine site would be routed through Pedro Bay. During operations and closure,

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Table 4.12-1: Summary of Key Issues for Transportation and Navigation

Transportation Mode	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	through operations.	pipeline ROW may create a route for ATV or snowmachine traffic between ferry terminals. The Williamsport-Pile Bay Road would experience a high-volume increase in traffic that would last the life of the project. Winter travel over frozen Iliamna Lake would be impacted, but this ferry route experiences fewer average days of ice than the route in Alternative 1. This effect would not take place with the summer-only ferry variant.	this road would increase traffic in Pedro Bay from mine operations and also from the public, because this road would connect the communities on the northern side of Iliamna Lake over land to each other and to Cook Inlet. Alternative 3 would have no effects on winter traffic on Iliamna Lake, because the ferry would be eliminated.
Air Transportation	Increased air traffic would affect Iliamna and Kokhanok airports. Kokhanok Airport would need updates in navigation systems and lighting.	Same as Alternative 1, except impacts on flights in Pedro Bay would be the same as discussed for Kokhanok in Alternative 1.	Same as Alternative 2.
Water Transportation	Cook Inlet would experience an increase in barge and vessel traffic during operations. Kamishak Bay has several identified reefs and strong winds, which can cause heavy swells. The summer-only ferry variant would increase ferry trips from one to two round trips per day in the summer, and zero in the winter. Winter travel over Iliamna Lake would be impacted from open water caused by the ice-breaking ferry. This effect would not take place with the summer-only ferry variant, but overland traffic would be more disrupted by truck traffic doubling from 35 to 70 round trips per day.	Same as in Alternative 1 in Cook Inlet, except Iliamna Bay would have denser vessel traffic. Summer ferry variant stockpiles the concentrate so that the year round shipping schedule can be maintained. Dredging at Diamond Point and lightering at Iniskin Bay may be noticeable to the local vessel traffic in those areas, especially during inclement weather, when vessels take refuge in Iniskin Bay. Iniskin Bay is considered secure for anchorage of medium-sized vessels. The summer-only ferry variant would increase ferry trips from one to two round trips per day in the summer, and zero in the winter.	Effects on Cook Inlet would be the same as Alternative 2.

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4.12.6 Cumulative Effects

Past, present, and reasonably foreseeable future activities in the cumulative impact study area have the potential to contribute cumulatively to impacts on transportation and navigation. The potential future actions are similar to the proposed project in how they impact surface, air, and water transportation and navigation during construction, operation, and closure.

The following Reasonably Foreseeable Future Actions (RFFAs) identified in Section 4.1 were carried forward in this analysis based on their potential to impact transportation and navigation in the analysis area:

- Pebble Project buildout – develop 55% of the resource over 78-year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold
- Diamond Point Rock Quarry
- Alaska Stand Alone Pipeline Project
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Oil and Gas Lease Sales
- Hydrocarbon Exploration Licensing and Leasing Program*
- Lake and Peninsula Borough (LPB) Transportation Projects
- LPB Community Development and Capital Improvement Projects
- Rural Alaska Village Grant Program Projects
- LPB and other regional Renewable Energy Initiatives
- Nushagak Electric Cooperative Village Intertie Project
- Villages of Iliamna, Newhalen, Pedro Bay, Port Alsworth, Nondalton, Igiugig, Kokhanok, Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, Aleknagik, Clarks Point, Manokotak, Dillingham, Nikiski, and Seldovia

**Indicates exploration activities only.*

The future actions included in this analysis are those that contribute to the cumulative increase in vessel traffic in Cook Inlet. There would also be an accumulating demand for regional and helicopter air transportation and logistical support, particularly if mining exploration activities or construction schedules of the proposed action, Donlin Gold, and the Diamond Point Rock Quarry were to overlap. It is likely that any increased demand for air transport could be met by adding supply, because the RFFA sites are distributed, rather than clustered with different airstrips or staging sites.

Similarly, surface transportation impacts would occur along roads leading to the communities of Iliamna, Newhalen, and Nondalton via the proposed Iliamna spur road, and Kokhanok community roads would be connected to the proposed south access road, which would run from the proposed south ferry terminal to Amakdedori Port. Cumulative impacts would occur associated with surface transportation between the communities for subsistence and recreational uses, in addition to the ongoing LPB, rural Alaska Village Grant Program, and other village projects.

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From June to October, vessel traffic in the Cook Inlet typically includes large deep-draft vessels, tugs, barges, and small commercial vessels. Project-generated vessel traffic in Cook Inlet would include deep-draft vessels such as concentrate transport vessels, vessels for fuel, and barges for delivery and transport of materials and supplies. The proposed action vessel and barge delivery traffic would contribute a noticeable disturbance of transportation access and traffic levels in Cook Inlet.

Furthermore, RFFAs in the immediate project vicinity could potentially extend the operation of the port facilities for an additional 78 years. The Pebble project buildout RFFA may add additional annual vessel and truck traffic, and would continue operation of the port facilities at a higher production rate. There is also the possibility of additional infrastructure. Therefore, this scenario would have a larger contribution to cumulative effects in the area.

Cumulative effects would be the same as Alternative 1 for surface, air, and water transportation and navigation under Alternatives 2 and 3.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:04:57 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures for Append K Section 4.11 1-3 (UNCLASSIFIED)
Attachments: 11_03+2018_Figure_K4_11_02_TSFSouthEmbankment_Viewshed.pdf; 11_03_2018_Figure_K4_11_01_TSFMainEmbankment_Viewshed.pdf; 11_03_2018_Figure_K4_11_03_CoarseOreStockpile_Viewshed.pdf

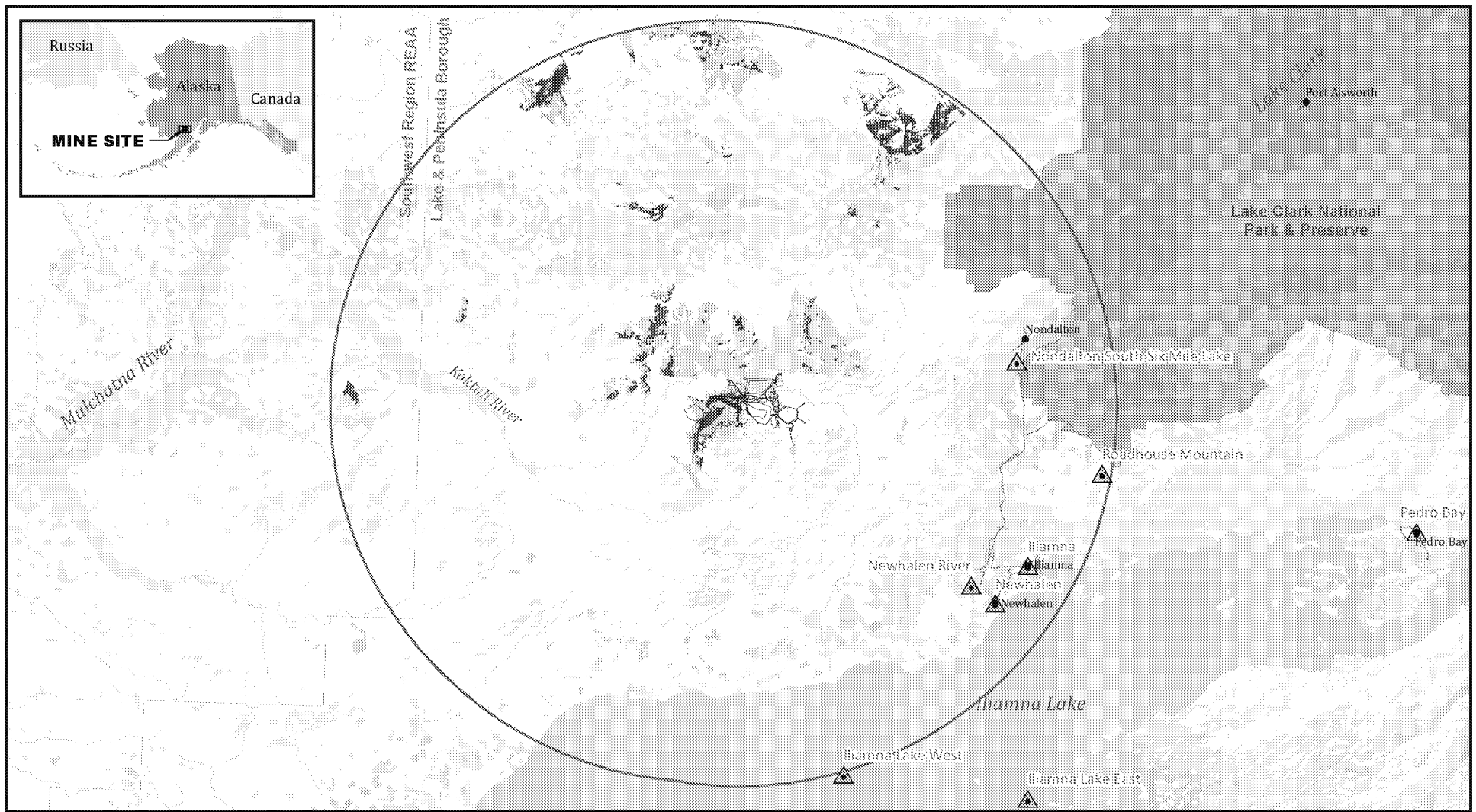
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

5 0 5 10
Miles

Viewshed Analysis
- Key Observation Points
- Visisble Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (25 mi radius)

Alternative 1
- Mine Site
- Main Embankment Crest

Other Features
- Local Roads
- Borough Boundary
- National Park

TSF MAIN EMBANKMENT VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-1

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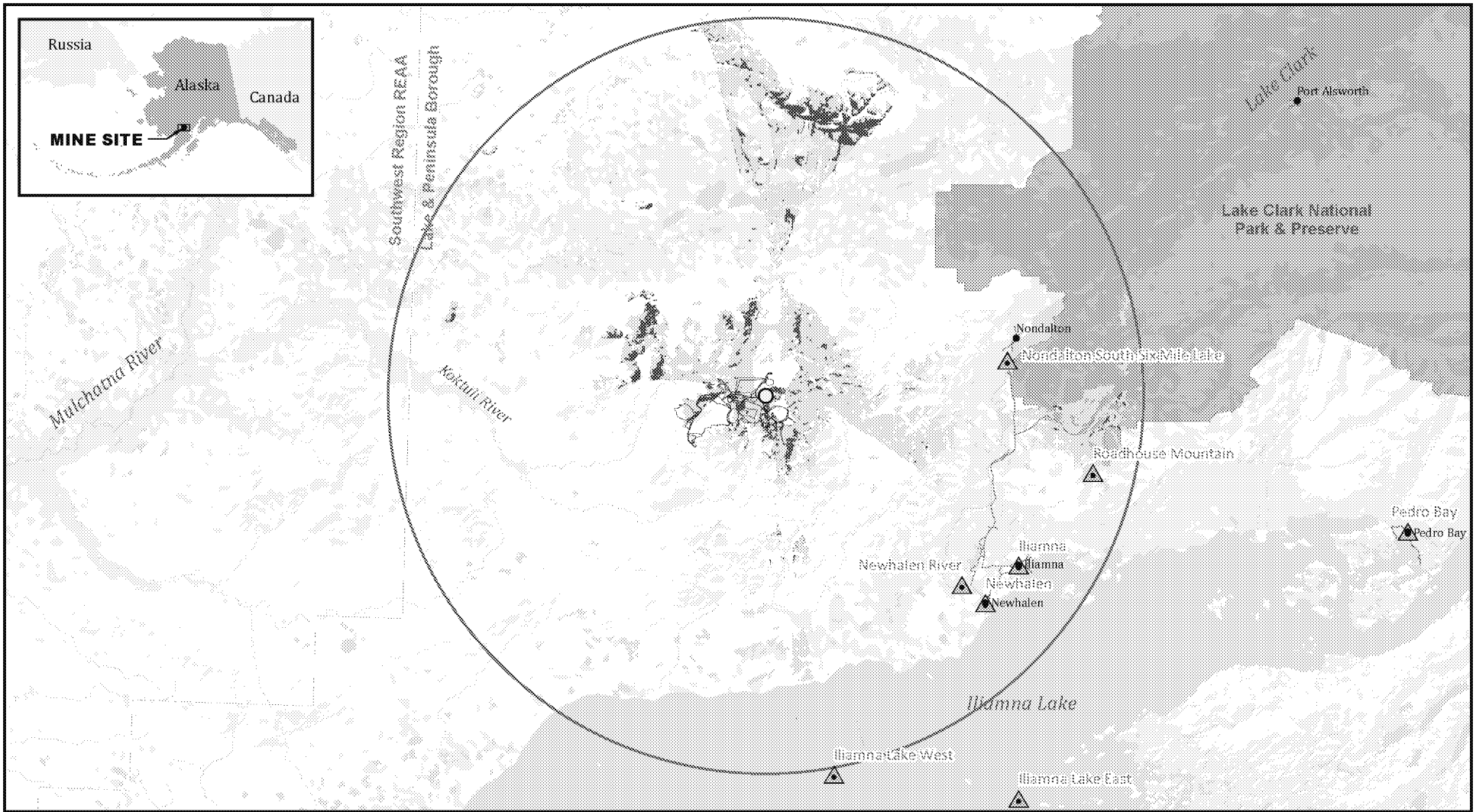


Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

5 0 5 10
Miles

Viewshed Analysis
- Key Observation Points
- Visible Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (25 mi radius)

Alternative 1
- Mine Site
- Coarse Ore Stockpile Top

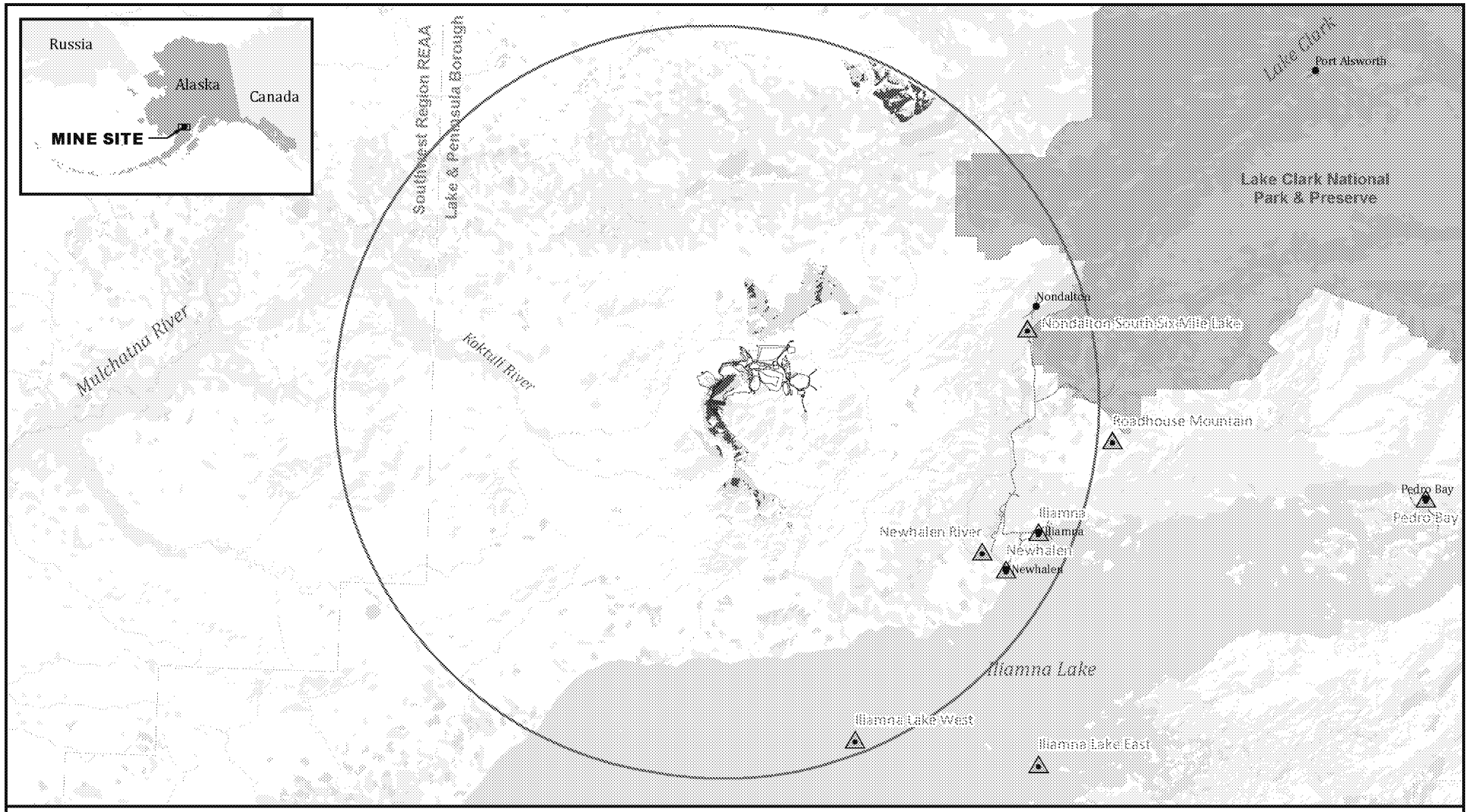
Other Features
- Local Roads
- Borough Boundary
- National Park

COARSE ORE STOCKPILE VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-3

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

5 0 5 10
Miles

Viewshed Analysis
- Key Observation Points
- Visible Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (25 mi radius)

Alternative 1
- Mine Site
- South Embankment Crest

Other Features
- Local Roads
- Borough Boundary
- National Park

TSF SOUTH EMBANKMENT VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-2

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 7/26/2018 9:08:47 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: Draft scoping report; please submit comments by 8/8/2018
Attachments: Draft Scoping Report_20180725.pdf

All,
Attached is the draft Scoping Report, out much earlier than I had anticipated. Please review and provide agency comments by COB 8/8/2018.

VR

Shane McCoy
Program Manager

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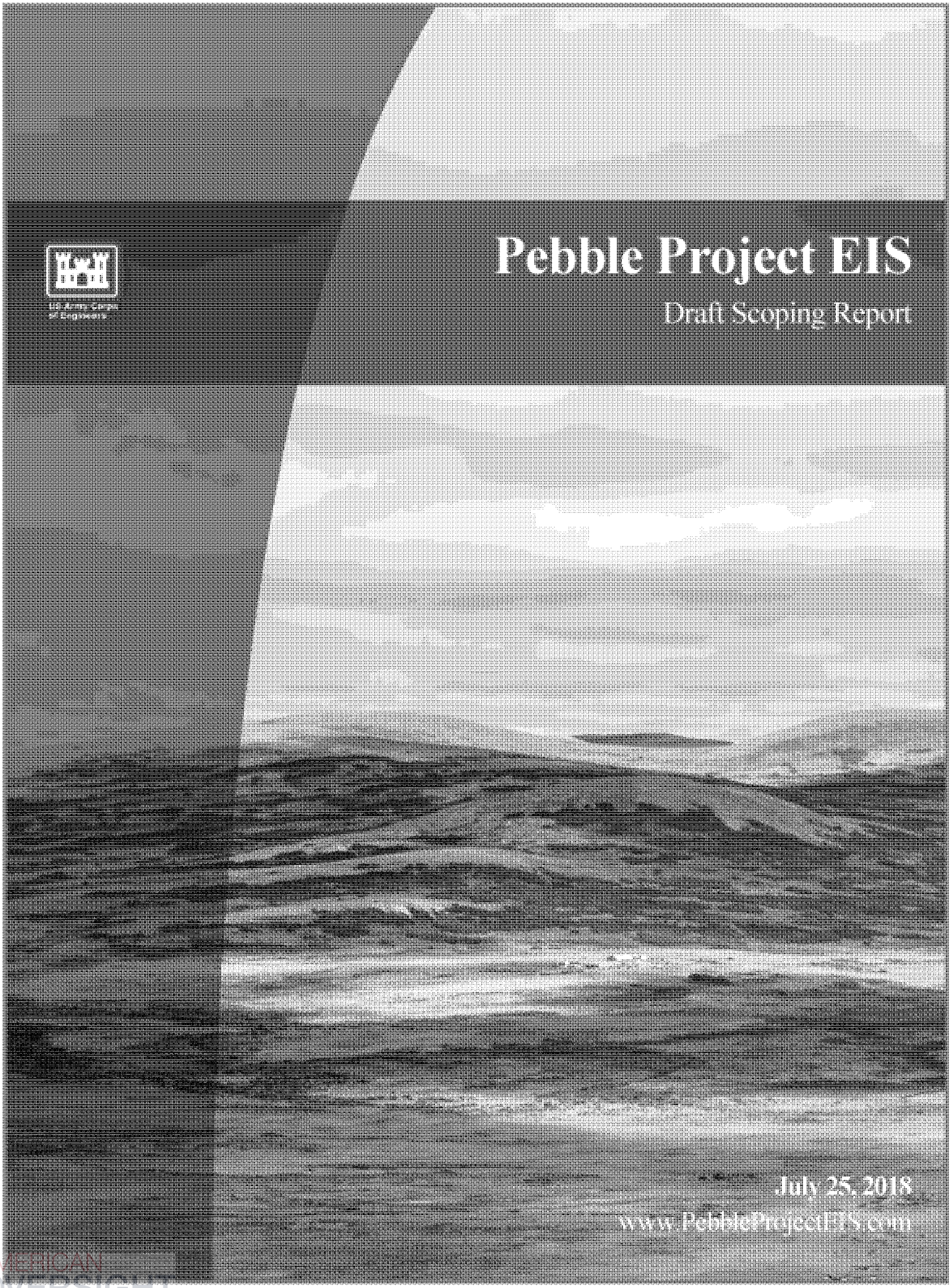
US Army Corps of Engineers

Pebble Project EIS

Draft Scoping Report



July 25, 2018

www.PebbleProjectEIS.com

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LIST OF ACRONYMS AND ABBREVIATIONS

BSEE	Bureau of Safety and Environmental Enforcement
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
GHG	greenhouse gas
LIDAR	Light Detection and Ranging
NEPA	National Environmental Policy Act
PLP	Pebble Limited Partnership
TSF	Tailings Storage Facility
U.S.C	United States Code
USACE	U.S. Army Corps of Engineers

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EPA-0135-0001348

1.0 INTRODUCTION

This Scoping Report has been developed for the U.S. Army Corps of Engineers (USACE) to share the types of issues that were received during the scoping period from the general public and the cooperating agencies. It documents outreach efforts during the scoping period and summarizes the primary issues of concern and suggested alternatives from the public. The Scoping Report will be used to develop alternatives for the Environmental Impact Statement (EIS) and identifies issues that are important to the public and should be considered in the analysis of the EIS.

2.0 PROJECT OVERVIEW AND SCOPING PROCESS

2.1 BACKGROUND

The USACE, Alaska District, intends to prepare a Draft EIS to assess the potential social, economic, and environmental impacts associated with the proposed Pebble Project. The EIS will assess potential effects of a range of alternatives.

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The proposed project would require a natural gas-fired power plant supplied by a natural gas pipeline to the Mine Site, and transportation infrastructure including a road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an ice-breaking ferry crossing to a terminal on the south shore of Iliamna Lake, and a road to the proposed Amakdedori Port on Cook Inlet.

2.2 NOTICE OF INTENT

An application for a Department of the Army permit was submitted by PLP pursuant to Section 404 of the Clean Water Act (33 United States Code [U.S.C.] 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017. The application was deemed complete, and was advertised in a Public Notice, Pacific Operations Area (POA) POA–2017–271, on January 5, 2018. On March 29, 2018, the USACE issued a Notice of Intent in the Federal Register to prepare an EIS for the proposed project. The Notice of Intent is included in Appendix A, and the Public Notice is included in Appendix B.

2.3 SCOPING PROCESS

2.3.1 Scoping Process Overview

The scoping period began on April 1, 2018. On March 30, 2018, the USACE issued a press release to announce the opening of the 30-day comment period and to provide information for how to submit comments. On April 6, 2018, their second press release extended the scoping period by 60 days to continue through June 29, 2018. See Appendix B for both press releases.

Scoping is conducted to assist in determining the breadth of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. The Council on Environmental Quality defines scoping as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 Code of Federal Regulation 1501.7). The scoping process provides an opportunity for people potentially

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affected by the project to express their views and concerns and to contribute to the completeness of the EIS.

2.3.2 Public Notice, Press Releases, and Other Media

Prior to the scoping period start, the USACE began organizing public meetings and developing materials related to scoping that were provided to the public.

The project website (www.PebbleProjectEIS.com) went live on March 19, 2018. The website includes information about the project, EIS process, and scoping. The USACE uses the website to disseminate important information to the public, such as the scoping meeting schedule. The website also included a form for the public to submit scoping comments; this online comment form included a map where commenters could mark a point that related to their comment. Comments that have been submitted are available for the public to view. Some individual comments to the website contain multiple documents. Screenshots of the website (dated May 7, 2018) are in Appendix B.

On March 20, 2018, the USACE mailed hardcopies of a Scoping Package to 35 identified Alaska Native Tribal Organizations in the project area. The complete Scoping Package (in Appendix B) was also made available on the project website and includes:

- Information about the scoping process
- A description of the project
- The process for developing alternatives
- A list of resources to be analyzed in the EIS
- Information on the National Environmental Policy Act (NEPA)
- Roles of the various participating organizations
- An EIS schedule and outline
- Information on submitting comments
- A comment form.

To help advertise the scoping period, the USACE began mailing the project's Newsletter #1 on March 29, 2018. The newsletter provided details on the public meeting schedule as well as information on how to submit comments; it was sent to every post office box in 33 communities, and to 140 other organizations and individuals on a mailing list. A total of 3,670 newsletters were mailed. The USACE also ran announcements in the Bristol Bay Times, the Homer News, and the Anchorage Daily News a week prior to relevant meetings. Finally, a flyer was emailed to communities where scoping meetings were scheduled for distribution on April 6, 2018. Newsletter #1, newspaper affidavits, and the flyer can be found in Appendix B.

2.4 PUBLIC SCOPING MEETINGS

Public scoping meetings were held in nine communities, including Anchorage. A total of 914 participants signed in at the public meetings (see Appendix C for sign-in sheets). The primary purpose of the public meetings was to present a project overview, give the public a forum for submitting verbal and electronic comments, and provide an opportunity to talk to the USACE about the EIS and the Department of the Army permit application process. Table 1 shows the meeting locations and the number of people who signed in.

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Table 1: Scoping Meetings

Date	Community	Location and Time	Number Signed In
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM	45
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM	68
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM	223
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM	47
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM	65
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM	46
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM	88
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM	47
April 19, 2018	Anchorage	Dena'ina Center, 11:00 AM-9:00 PM	285

2.4.1 Meeting Description

The format of the public meetings varied depending on the location. A sign-in station with hardcopies of supporting material was set up at all locations. The sign-in sheet was used to update the project mailing list.

In general, a brief introduction by the USACE was given. A 17-minute video describing the project was shown (or was available to be watched), and the public were given multiple ways to comment. Time was allotted for members of the public and media to speak directly with USACE staff, State of Alaska staff, or in some locations, other cooperating agency staff. AECOM (the third party NEPA contractor) staff were also present.

In Naknek, Kokhanok, Newhalen, New Stuyahok, Nondalton, and Igiugig, the USACE provided a microphone ("hot mic") where participants could speak their comments out loud in front of other meeting attendees. Comments were transcribed by a court reporter, either during the hot mic session or individually after the session. In Homer, Dillingham, and Anchorage, two court reporters were available to take comments one-on-one; therefore, no hot mic was provided.

At all meetings, laptop computers were provided for the public to submit comments electronically to the project website. Paper comment forms were available for handwritten or typed comments, which could be submitted to the USACE at a meeting or mailed later.

2.4.2 Meeting Materials Description

The USACE requested that the PLP create a video describing their proposed project and mining process. The resulting 17-minute video gives an introduction to the surrounding environment, project components and footprint, water management and mining process, and reclamation. At some meetings this video was shown after the USACE introduction, and at others it was shown on a repeating loop.

Ten posters prepared by the PLP to describe the project, the mining process, and reclamation were also displayed. The USACE created additional posters describing the NEPA process and how to write effective comments. The Anchorage meeting also included posters on the scoping process, the EIS outline, resources to be discussed in the EIS, and roles of cooperating agencies.

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The USACE also provided the Scoping Package, paper comment forms, and a handout from the Bureau of Safety and Environmental Enforcement (BSEE), a cooperating agency. A screenshot of the video, as well as all posters and handouts, are in Appendix D.

2.4.3 Additional Agency Involvement

A kickoff meeting for cooperating agencies was held on June 6, 2018, where the roles of cooperating agencies for this EIS were discussed. Cooperating agencies will have opportunity to provide input throughout the process, including alternatives development, providing technical expertise for analysis, and suggesting mitigation. In addition, the State of Alaska, BSEE, and the Pipeline and Hazardous Materials Safety Administration attended some scoping meetings to answer questions about their role and expertise.

2.4.4 Government-to-Government Consultation

Executive Order (EO) 13175, "Consultation and Coordination with Indian Tribal Governments," was enacted in 2000 and requires federal agencies to consult with Native Alaska tribal governments when considering policies that would impact tribal communities. Government-to-government consultation meetings began before the scoping period started and will continue throughout the EIS process.

2.4.5 Next Steps in the NEPA Process

Scoping is the first opportunity for public involvement under the NEPA process. An additional opportunity for public comment will follow the release of the Draft EIS scheduled for early 2019. A Notice of Availability will be published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment. The Draft EIS comment period will include public meetings in the same communities where scoping meetings were held. The project website will be updated throughout the EIS process.

Public comments shape the NEPA process by identifying project-related questions and issues of concern. Typically questions are in reference to the project, existing environment, extent of temporal and spatial impacts, or potential consequences to the human environment from the proposed action. Substantive questions and issues of concern, which can inform the scope of analysis and alternatives to be considered in the EIS, are grouped by subject matter in this Scoping Report. This information is used in the alternatives development process, the study of the affected environment, and in the process to analyze environmental consequences (or impacts). Documents that are received from the public during the scoping process via the project website, mail, and email are referred to as submissions during analysis. Each submission can contain many coded comments which are then used to inform the scope of the analysis. Submissions without substantive comments that are not specific to a particular issue are considered non-substantive. These include comments in support of or in opposition to the applicant's proposed project.

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3.0 SCOPING COMMENT SUMMARY

This section contains a description of the scoping comment analysis process and a summary of the public scoping comments received. Due to the large number of comments submitted as part of scoping for an EIS, it can be challenging for the EIS preparation team, as well as the general public, to read all the comments and understand all of the issues raised. Standard practice has been to code and enter comments into a database program that captures and summarizes issues and recommendations from scoping comments. However, the EIS team and the general public will continue to have access to comments submitted on the website for reference purposes.

The public comment summary includes the following:

- Description of the scoping comment analysis process (description of the comment database, development of the coding structure, identification and coding of comments, comment summary process).
- A summary of issues identified, categorized by physical environment, biological environment, social environment, or NEPA process.

3.1 SCOPING CONTENT ANALYSIS PROCESS

Public and agency comments submitted by the close of the scoping period were analyzed and categorized using a process called "content analysis." The analysis process included:

1. Import and organization of all comments/submission content into a comment database.
2. Development of a coding structure to analyze the comments.
3. Review of submissions to assign codes to comments.
4. Preparation of a Scoping Report with analysis results.

The goals of the content analysis process are to:

1. Ensure that every submission (every received set of comments, submitted by any means, is defined as a "submission") is considered.
2. Identify the concerns raised by commenters.
3. Represent the breadth and depth of the public's viewpoints and concerns as fairly as possible.
4. Present those concerns in a way that facilitates consideration of comments and conveys the issues raised during scoping.

All comments were treated equally. Emphasis was on the content of a comment, rather than who wrote it or the number of submissions in agreement.

3.1.1 Scoping Comment Database

Names, contact information, and comment text for commenters who submitted comments were entered into an electronic database. Many comments were submitted to the USACE in electronic format through the project website comment form. A large volume of comments were received by the USACE via email and/or postal service. As comments were received, they were made available for the public to view on the project website. Hardcopy comments, including those delivered by postal service or submitted in person at public meetings, were scanned and entered into the database, and also posted to the project website.

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The content of the comments was filtered using various database queries and identifying potential form letters (see form letter discussion below). Any submission identified as having the same commenter information and content, regardless of delivery format (e.g., hardcopy letter, email) or date, was counted as one submission.

3.1.2 Form Letters

Form letters are defined as multiple submissions with the same content. Electronic comments were pre-screened in the database, using various queries to identify similar content and thus potential form letters. If consistent content was identified, a form letter record with that content was created in the database and additional submissions with the same content were placed into that form letter category.

3.1.3 Coding Structure Development

Submission content was sorted into categories to represent commenters' concerns and rationale through a coding structure. Codes provide an efficient and accurate grouping of similar comments; coded concerns are referred to as "comments" in this report.

The aim of the coding structure is to identify applicable Pebble Project facilities and components, environmental resources, and planning processes in submissions. An initial coding structure was developed based on expected issues and concerns; this structure was continuously refined as more submissions were received to identify any additional concerns.

3.1.4 Comment Identification and Coding

Submissions were reviewed to identify substantive comments that will be used to formulate the issues and analysis conducted in the EIS process. Individual statements within a submission were identified as a comment(s) and then assigned to categories/topics.

Submissions may contain more than one comment, each coded based on the issue and the specific rationale. This form of analysis allows for specific comments to be captured and then grouped under the umbrella of a general resource issue. The NEPA process considers the substance of issues but does not consider who wrote the comment or the number of similar comments (like votes).

3.2 PUBLIC COMMENT SUBMISSION SUMMARY

3.2.1 Submissions Received

[Note: This section is preliminary; final comment tallies are pending and will be included in the Final Scoping Report.]

In total, 174,873 submissions were received through June 29, 2018. A total of 4,055 of these submissions were considered non-form letters. There were several variations of form letters that were received, with a total of 170,818 form letters. The USACE received five petitions with a total of 295,721 signatures that were considered as non-form letter submissions. The validity of these petition signatures has not been verified. Submissions with substantive comments were analyzed for key issues. The top five key issue fields for non-form letters and form letters are shown in Figure 1 and Figure 2.

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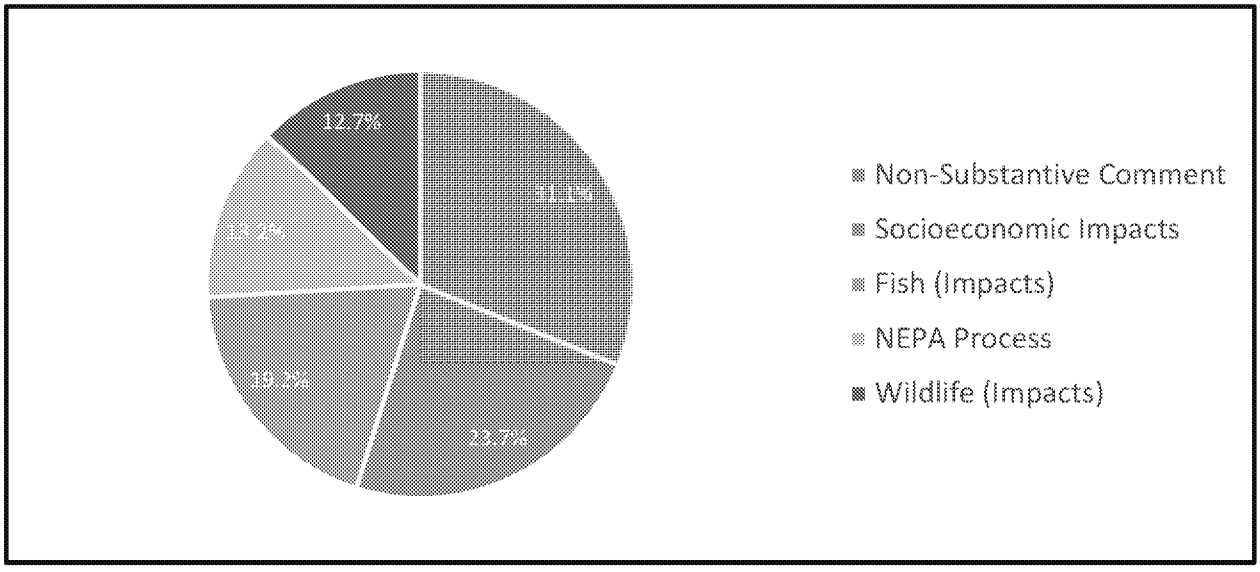
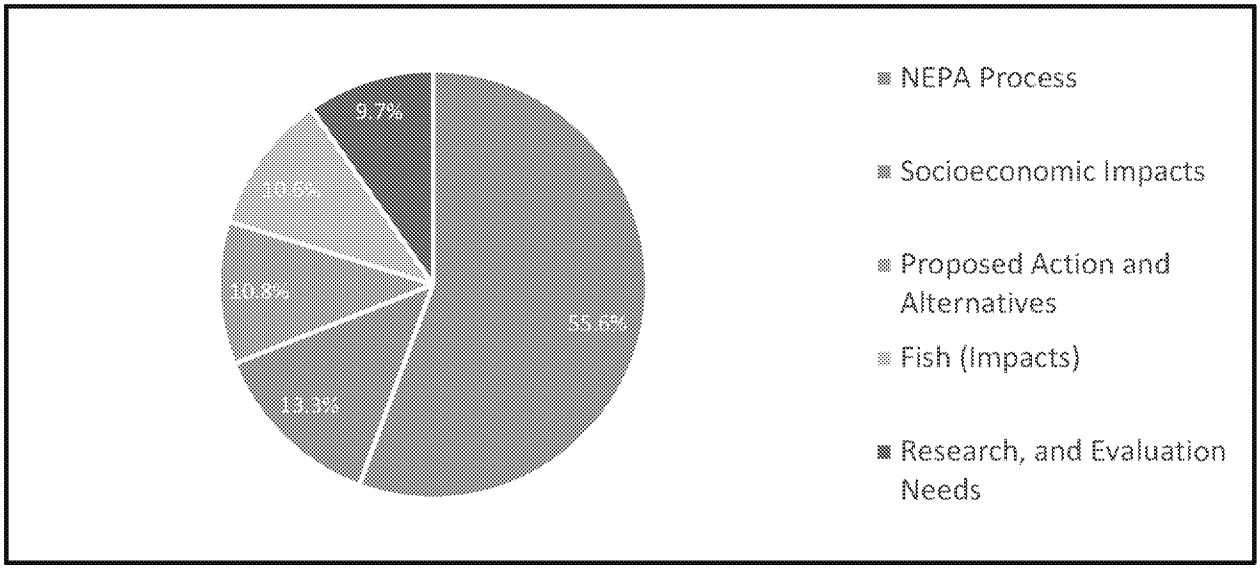
Figure 1. Top Five Key Issue Fields (Non-Form Letters)



[Note: The numbers in Figure 1 are pending final tallies.]

Figure 2. Top Five Key Issue Fields (Form Letters)



[Note: The numbers in Figure 2 are pending final tallies.]

A total of 8,866 substantive comments were received from non-form letter submissions, and 345,848 substantive comments were received from form letters.

3.3 COMMENT SUMMARY PROCESS

The intent of this Scoping Report is to provide representative summaries that capture, with a minimum of repetition, major topic areas or concerns expressed during the public scoping period. The topic areas or concerns contained in the summary of public comment will be used to develop the issues, alternatives, and mitigation strategies that will be analyzed in the EIS process. It will also inform the public of issues that were raised from their scoping comments.

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In writing this summary, comment analysts reviewed coded comments to understand the overall content of the comment and to identify topic areas or concerns in similar comments from different respondents. Similar comments were summarized into concise narrative statements and organized by the key issues.

Comments are organized in two broad categories below:

- **Resource Topics**. This section provides issues identified in scoping comments organized by resource topic. Resource-specific comments are grouped, such as comments concerning fish and wildlife habitat loss, loss of recreational access, or dust and emissions along the access roads and at the Mine Site. These topics are divided by the physical environment, the biological environment, and the social environment.
- **NEPA Process and Regulatory Compliance**. This section provides a summary of public comments on the NEPA process and alternatives to the proposed project. Topics include the public involvement process, project purpose and need, other laws and regulations, tribal consultation, cooperating agencies, and the no action alternative. Public comment suggestions for proposed action alternatives and mitigation measures are also included.

3.4 SUMMARY OF PUBLIC COMMENT –RESOURCE TOPICS

3.4.1 General Resources

A variety of general comments were received indicating that the EIS should analyze the direct, indirect, and cumulative impacts on general resources or the environment in the project area.

3.4.2 Physical Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific physical resources, including:

- Air quality
- Climate change
- Geology and seismic activity
- Surface and groundwater hydrology impacts
- Noise impacts
- Spill risks and release
- Hazardous materials stored and transported to and from the mine site
- Natural gas supply and pipeline safety
- Tailings dam
- Water resources – quality and quantity.

3.4.2.1 Air Quality

Comments were received on impacts to air quality as a result of project construction and mining operations.

- Comments were received regarding impacts to air quality from construction, fugitive dust emissions, vehicle equipment emissions, and mining activities.

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- Concerns were made regarding fugitive dust pollution from the mine and roads, and what chemicals may be used to control dust.
- Impacts to air quality including impacts from transporting ore and materials, or loading and shipping ore and concentrate.
- Impacts from air pollutants emitted during mine operations and contribution to greenhouse gas (GHG) emissions from the power plant.

3.4.2.2 Climate Change

Comments were received about the impacts of climate change to the environment and how climate change trends may interact with effects of the proposed project.

- Look at the carbon and GHG additions to the atmosphere from the proposed project.
- Provide a comprehensive emissions inventory of criteria pollutants, GHG emissions, and significant hazardous air pollutant emissions for all project components and phases.
- Create a report and use comparisons to make the units of measure understandable to the public.

3.4.2.3 Geology and Seismic Activity

Comments were received regarding impacts to the geology of the project area, including concerns that major faults occur in the proposed project area and may affect project facilities.

- Include detailed information about seismically active areas, geological faults and tectonic activity, and corresponding design features.
- Analyze impacts to bedrock, surface geology, gravel resources, paleontological resources, and landforms from all proposed project components.
- Describe how the proposed project facilities would withstand earthquakes, particularly the tailings storage facility (TSF).
- Analyze impacts from volcanic activity, especially at Amakdedori Port and along the pipeline from the Augustine Island volcano.

3.4.2.4 Surface and Groundwater Hydrology

Comments were received on impacts to groundwater systems and aquifers, transportation of groundwater, and how it moves underground. A thorough understanding of the groundwater and surface water hydrology and how they relate to each other should be demonstrated.

- Evaluate changes in water volume in the stream areas impacted, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. Include seasonal changes to the different stream segments.
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points. Areas of stream incision as a result of flow changes should be identified, as well as losses of connectivity to floodplains and riparian wetlands currently.
- Address earthquake impacts on hydrology characteristics.
- Explain the water balance model of the project. A complete water management plan based on recent data should be provided before impacts can be assessed.

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3.4.2.5 Noise

Comments were received on impacts of noise pollution as a result of project construction and mining operations.

- Discuss noise impacts of blasting in the project area, and describe the blasting methods that would be used.
- Consider noise in the water created by the proposed icebreaker ferry and the impacts to fish, bears, and other wildlife.

3.4.2.6 Spill Risks and Releases

Comments were received about the potential for fuel and oil spills or accidental releases from various aspects of the project, including adequate response capacity to clean up spills in various conditions, and potential impacts to natural resources or environment from spills or release.

- Analyze impacts of spills of diesel and natural gas to every resource discussed in the EIS.
- An earthquake could rupture the gas pipeline under the lake when salmon are migrating and impact fish and wildlife.
- Explain who is responsible for spill response on Cook Inlet and Iliamna Lake. Response plans should be developed for all parts of the project.
- The wetlands that surround the mine site would make it difficult to contain contaminated waters if any of the storage or processing sites at the mine or along the transportation corridor were to leak or fail. Therefore, it is essential to ensure that this infrastructure has no possibility of failure during the life of the mine or for decades to centuries after the mine is closed down.
- There is concern about the number of times the ore slurry/concentrate, fuel, and other supplies must be transferred. Each transfer increases the risk of a spill or release.

3.4.2.7 Hazardous Materials

Comments were received about the potential for hazardous material storage, spills, and impacts to resources or the environment; in particular, to address chemicals associated with mine process and storage of materials (such as arsenic or acids).

- The revised mine plan calls for no cyanide to be brought in to the region.
- Address impacts of hazardous and solid waste generated from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and evaluated into the Draft EIS.
- Describe how blasting agents would be transported and managed, and how much would be used.
- During the copper extraction process, an alcohol is added during the flotation along with a collector chemical called potassium amyl xanthate (or the potassium salt of an alkyl dithiocarbonate), which can be toxic.
- The process chemicals described in the permit application appear to be generic descriptions, rather than descriptions of the specific chemicals to be used. A more complete description of the ore processing is needed. A complete list of process chemicals, by manufacturer, as well as the annual amount to be used, is also required.
- List any herbicides, pesticides, or road de-icing compounds.

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3.4.2.8 Natural Gas: Pipeline and Gas Supply

Comments were received on the impacts of the proposed project on the supply, demand and cost of natural gas in the proposed project area and Cook Inlet.

- There could be lower costs of fuel in rural Alaska as result of potential new gas supply and spur/distribution systems.
- The supply of available natural gas in Cook Inlet may not be sufficient to provide power to the proposed project.
- Explain if the use of natural gas by PLP would affect existing Alaska Railbelt supply and users.

Comments were received on the design, route, construction, and safety and reliability of the natural gas pipeline crossing Cook Inlet and Iliamna Lake.

- That part of Alaska has exceptionally high tides – routinely greater than 20 feet. Please consider this when analyzing an underwater gas pipeline.
- There are safe and secure methods to construct a pipeline that would cross existing submarine cables. The pipeline owner/operators should enter into a cable crossing agreement to ensure the safety and security of both the fiber cables and the gas pipeline.
- There are not any pipelines in Cook Inlet this long. A commenter noted that in Nikiski, the seabed can change rapidly. This can cause unforeseen problems in maintenance. While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay experiences challenging winter sea conditions.
- At Iliamna Lake, maintenance could be difficult when the lake is frozen.
- The route for this pipeline would be near the base of Augustine Volcano, which is the most active volcano in Cook Inlet and has erupted eight times since 1812.
- Cook Inlet has huge tides, glacial silt, ice flows, and strong currents and is corrosive to almost everything. Explain who will pay for the maintenance and repair of this pipeline.
- The eastern end of the proposed pipeline route runs along a soft, sandy bluff north of Anchor Point. The bluffs are eroding an average of 1.1 feet/year.

3.4.2.9 Tailings Dam

Comments were received regarding concern for the stability of the tailings dam, potential for tailings dam failure, and impacts of such a failure.

- Describe the impacts of dam failure and recognize the public concern of the stability of the tailings dam. Specifically, consider the impacts to biological and social environments of a dam failure as a result of an earthquake.
- Look at examples of other tailings dam failures (in Spain, Canada, Australia, and others in the United States).
- Analyze impacts from tailings leaks and leaching, not just failures.
- Tailings dam engineering has improved considerably over the decades. Pebble's tailings dam design will have to be approved to adequately protect the environment before the project would be permitted.

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- Analyze impacts from rainfall causing overtopping of the tailings dam. Alaska has a propensity for large storms and with climate change and warming effects, risk for large storms is increased.
- It is recommended that large tailings dams use dynamic rather than pseudostatic analysis for potential dam failure under earthquake loading.

3.4.2.10 Water Quality and Quantity

Comments were received concerning a detailed analysis and discussion of the physical and chemical impacts on all water resources.

- Analyze impacts to water quality and quantity from construction, operation, and post-closure.
- Analyze pit water and tailings dam management.
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches.
- Analyze erosion, turbidity, temperature changes.
- Ferry crossing concerns, including changes in shoreline erosion and turbidity, and pollution from the proposed ferry.
- Composition of the (potential) contaminants from all project sources, including blasting.
- Prevailing winds will create water surface waves on the pyritic tailings facility which will allow oxidation of the tailings.
- Risks associated with acid rock drainage from mine project components, including the waste rock facility, leaching, and pathways for acid rock drainage. Acid rock drainage was noted as a potential source of impact on many resources, such as water quality, wetlands, fish, and subsistence food resources.
- Describe how acid rock drainage, tailings, and metals leaching would be tested, monitored, and treated during mining and post-closure.
- Analyze the potential for wastewater to enter streams and rivers.
- Project components should be designed for 500-year events, given predictions for wetter spring and summers in this area.
- The EIS should identify the Alaska Pollutant Discharge Elimination System discharge locations, identify applicable water quality standards, and analyze the likelihood of discharges to meet standards.
- The EIS should identify and describe the location of water sources for hydrostatic testing.

3.4.3 Biological Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific biological resources, including:

- Vegetation and ecosystems.
- Fish and aquatic resources.
- Wetlands and special aquatic sites.
- Wildlife and non-threatened and endangered species birds and mammals.
- Threatened and endangered species.

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3.4.3.1 Vegetation and Ecosystems

Comments were received concerning potential for disturbance from project construction and operations, and from invasive species. Comments were also received concerning terrestrial, lake, and marine habitat impacts from project construction and operations.

- Analyze the potential direct, indirect, and cumulative effects of all components and all phases (including reclamation and restoration) of the proposed project on terrestrial, marine, and freshwater ecosystems.
- Analyze impacts to rare and sensitive plants (including removal).
- Address how fugitive dust would affect vegetation within the project area and beyond.
- Address risk for invasive (non-native) species introduction by marine barges and the ferry; include ballast water management.
- Analyze ecosystems as unique in the Bristol Bay area, in the degree to which they remain unaffected by commercial development and other human technologies. Evaluate how the proposed project could alter the biological and human ecosystems and landscape.

3.4.3.2 Fish and Aquatic Resources

Comments were received related to potential impacts to fish (King Salmon, Sockeye Salmon, Silver Salmon, Pink Salmon, Chum Salmon, Dolly Varden/Arctic char, Rainbow Trout, and Grayling) populations, abundance, diversity, migratory patterns, contamination, and potential for displacement from project components.

- Address effects of ferry traffic on resident and migrating fish in Iliamna Lake: the potential for the ferry to cause erosion of the lake shoreline and the effect of that on fish; the effect of the ferry on salmon spawning and rearing habitat; the effect of increased noise on salmon productivity; the potential for increased turbidity and its effect on salmon; the potential for ferry traffic to cause wave action that could harm the fry on their way to the ocean; the potential for ferry propellers to entrap fish and cause mortality; and the potential for fish to avoid the area around the ferry and not come back to the area.
- Address effects of gravel pits on stream hydrology and fisheries.
- The USACE should understand that a disruption of habitat could affect the nutrients returned to the ecosystem by the salmon provide when they return to these watersheds.
- Water withdrawal and capture, storage, treatment and release of wastewater associated with the mine could impair the fish habitat functions of streams, wetlands, and aquatic resources.
- Address the potential for fish to become contaminated from sedimentation, metals, toxins, mining chemicals or fuel spills.
- Evaluate how the proposed project road to Iliamna Lake would impact fish species as road traffic will create dust that may contain copper and other heavy metals that could enter the watershed and affect resident aquatic organisms including salmon.
- Dredging off Amakdedori Beach may affect schooling of salmon and/or Dolly Varden before they run up Chenik Creek, McNeil River and Mikfik Creek.
- Analyze the impact of anthropogenic erosion on fish gills from construction and mining. Anthropogenic turbidity has severe impacts on newly emergent fry. Address

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the effects of constructing the Amakdedori Port and maintenance dredging would have on Cook Inlet herring spawning habitat in Kamishak Bay.

- The area that makes up the "headwaters" is full of underwater streams in which small fry/fingerlings swim as they emerge. They sometimes swim into lakes and ponds of the region and often get too big to get out; they are called land-locked salmon.

Comments were received regarding the impacts of the mine access road crossing streams and anadromous waters, and the impacts of those stream crossings on fish.

- The EIS must include and present all the waters documented in the Alaska Department of Fish and Game Anadromous Waters Catalog at a minimum; however, it should be recognized that the Catalog under-represents waters that actually support anadromous fish on the order of 20 to 40 percent.
- Current plans will impact more than 5 miles of anadromous streams.
- The construction process would build an 80-mile road system with 200 stream crossings impacts that should be analyzed.
- Analyze bridge and culvert impacts to fish, including fish passage and habitat condition change. The proposed 75-mile-long road system would include 222 culverts, 149 of which are not designed for fish passage.
- The proposed road corridor has been designed to minimize impact on wetlands, minimize stream crossings and avoid areas of known for subsistence and recreational use.
- Describe how state protocols regarding fish-bearing streams would be enforced.
- An independent third party needs to verify which streams along the road corridor are fish-bearing. History has shown that PLP and their consultants may have underestimated the number of streams containing fish.

Comments were received regarding the impacts to aquatic resources, including introduction of invasive species.

- Shipping from foreign ports may result in ballast water transporting invasive species such as green crab, which would have a devastating impact on the ecosystem and commercial shellfishery.
- The potential or known effects of a disrupted winter ice regime, lack of ice cover on resident species of fish, birds, and mammals should be investigated. These changes may have contributed to the most recent Kvichak sockeye run decrease. Partial or reduced ice cover may have affected planktonic production, hence food for salmon that may have caused salmon to smolt early.

3.4.3.3 Wetlands and Special Aquatic Sites

Comments were received on filling of wetlands and alternations of wetlands habitat, fragmentation, and loss of wetland habitat as a result of project activities.

- Include delineation of all wetlands that could be affected by the proposed project.
- The estimated mine site would fill 3,190 acres of wetlands and water bodies, nearly three times the maximum set by the Environmental Protection Agency (EPA) for Bristol Bay in 2014.
- Analyze impacts to wetlands dewatering and hydrological changes, pollution to wetlands, impacts on wetlands functions, clearing and removal of wetland vegetation,

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degrading wetland vegetation from all proposed Pebble project components and during construction, operation, and closure phases.

- Given the extent of streams, wetlands, lakes and ponds both overlying the Pebble deposit and within adjacent watersheds, excavation of a massive mine pit and construction of large tailing impoundments and waste rock piles would result in discharge of dredged or fill material into these waters.

3.4.3.4 Wildlife and Non-Threatened and Endangered Birds and Mammals

Comments were received related to potential impacts to wildlife (including terrestrial and marine mammals), and on potential impacts to migratory birds and waterfowl populations; abundance, diversity, migratory patterns and potential for displacement; and attraction of birds to tailing ponds.

- Assess how wildlife can acclimate to construction and operation impacts.
- Analyze how noise levels from construction or large vessel traffic may deter bears from coming to McNeil River Falls, or could affect bear behavior and change or end the use of McNeil River by bears.
- The proposed road and Amakdedori Port could change brown bear migration and result in brown bear mortalities.
- Analyze impacts that habitat fragmentation from Amakdedori Port and the mine access road would have on bear movements.
- Examine how increased contact between bears that use the McNeil River and humans could result in food conditioning of bears or direct bear mortality by humans.
- The proposed ferry could strike marine mammals (seals) in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry. The seals have been considered in the past for Endangered Species Act status.
- Ferries could impact the migration patterns of wildlife.
- The USACE should incorporate traditional knowledge on freshwater seals in Iliamna Lake into the EIS and be aware that there is a Freshwater Seal Commission.
- The transportation of mining materials across Cook Inlet and Iliamna Lake could have potentially negative effects for local marine mammals, particularly underwater noise pollution that impacts marine mammals.
- The Bristol Bay watershed is unique in that it provides habitat for more than 190 birds. Additionally, there are more than 40 species of water birds here and confirmed breeding sites for more than 22 species.
- There are no Bristol Bay Tribal Multi-Species Conservation and Management Plans for Iliamna Lake, the Nushagak River, Nushagak Bay, Kvichak Bay, and Alaska Peninsula. The USACE should mandate these tribal marine multi-species conservation plans be completed before issuing a permit.
- Describe what steps the developers propose to keep tailings ponds/lakes free from pollutants or physically restrict birds from trying to land on them.
- Analyze impacts from noise, blasting, and other human interference to birds.
- Blast control can mitigate noise impacts to birds, like they do with birds at the airport.
- Address effects of the project on birds and migratory waterfowl.
- Kamishak Bay is home to a large seabird nesting colony that would be impacted by disturbance generated from industrial development at Amakdedori Creek.

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- Bald eagles nest and feed along the coast and along all of the major salmon spawning rivers in the Bristol Bay and Cook Inlet regions, with a relatively high number of golden eagles also found here.
- Calving grounds for the Mulchatna caribou herd are in the proposed project area and the EIS should include an analysis of the impact of both mine construction and mine operations on caribou calving in the region.
- Exploration activities at the site have caused caribou to avoid the area.

3.4.3.5 Threatened and Endangered Species

Comments were received on impacts to threatened and endangered species as a result of project construction and operations.

- The proposed port site is designated Critical Habitat for the endangered Cook Inlet beluga whale and the threatened northern sea otter.
- Federally listed threatened northern sea otters and threatened Steller's eiders occur in the waters of Cook Inlet, including Kamishak Bay.

3.4.4 Social Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific social resources, including:

- Socioeconomics
- Subsistence
- Traditional way of life
- Archaeological and cultural resources
- Land ownership, management, and use
- Transportation and navigation
- Recreation
- Environmental justice
- Public health and safety
- Visual resources
- Wilderness characteristics.

3.4.4.1 Socioeconomic Impacts

Comments were received regarding the economic impacts to local communities, regional economy, and national economy.

- PLP should give the USACE an independently prepared economic feasibility analysis, which is usually done for other mines like Donlin. Without it, the USACE will be unable to take a hard look at all reasonable alternatives in the draft EIS.
- The Pebble Mine would bring much needed economic opportunity to a region by creating jobs during construction and operation. The Lake and Peninsula Borough has an unemployment rate of 16.6 percent. Presently commercial fishing has a very limited effect on some communities' local economy.
- Residents are moving closer to much larger metropolitan regions to seek opportunities that do not currently exist near their homes in the region. New job

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opportunities could reduce out-migration, which could help maintain rural schools and allow people in the region to participate in subsistence activities.

- Consider that the project would create a boom and bust economic cycle that would ultimately leave people without jobs.
- The mining company will bring their own workers and not train local people to work at the mine.
- The population would increase during construction and heavily impact local communities.
- Consider the socioeconomic impacts to Bristol Bay's recreational fisheries. More than 37,000 angling trips are taken to Bristol Bay each year, which supports dozens of businesses, and a $91 million annual economy. The project could also damage the Bristol Bay wild salmon brand because the watershed would no longer be pristine.
- The commercial salmon fishing economy sustains 20,000 jobs; 20,000 jobs will be lost if this mine goes forward.
- Consider that the Kennicott Copper Mine was located in the watershed of the Copper River which did not affect the value of the salmon fishery in that region.
- The impact of the use of Iliamna Lake and the proposed transportation corridors/pipelines on sport fishing and the sport fishing-related economy should be evaluated.
- Analyze impacts on the bear viewing industry near the proposed Amakdedori Port.
- Consider that fish taxes are important to the finances of the Bristol Bay Borough.
- Consider that PLP would not pay its fair share of equity to the state. The actual federal and state income royalty or tax on the production would be 3 to 5 percent of that production's value. In comparison to oil, this is inadequate.
- Review social benefits such as education opportunities, and potential reduction in the high cost of living in the region due to transportation improvements.
- PLP should consider using regional Native corporations that are already in the pipeline construction and maintenance industry.
- Examine the economic costs and benefits specific to the state of Alaska including scenarios where no environmental disaster occurs and also the worst disaster happens.
- There were inquiries made in comments if there would be compensation to commercial fishermen if there is a disaster and fish prices go down, similar to what was done with Exxon Valdez.
- The risks to the people and environment would outweigh the short-term benefits.
- Examine the potential impacts to the Homer Electric Association ratepayers.
- The socioeconomic analysis in the EIS should include first order losses from habitat, second order losses, and public perception losses. Existence values have been acknowledged as real and quantifiable and should be used.
- The EIS should use a dynamic net economic benefit approach wherever possible in assessing the socioeconomic impact. One commenter noted that discounting future values can be a highly useful tool for comparing economic benefits over time but that this method may also be misapplied. The USACE should consider that a great deal of work has since been performed on existence values.

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3.4.4.2 Food and Fiber Production – Subsistence

Comments were received related to potential impacts to subsistence resources (food and fiber production) like harvest, sharing, and traditional use areas. Comments were also received on contamination concerns and/or avoidance of subsistence resources.

- The USACE should study the direct, indirect, and cumulative effects of construction, operation, and closure at all stages of the mine and relating infrastructure to all activities relating to fishing, hunting, and other subsistence practices for the Native Village of Tyonek, the Native Village of Port Graham, the Native Village of Seldovia, the Kenaitze Tribe, the Ninilchik Tribe, the Chikaloon Tribe, and all others near in and around the Cook Inlet regions.
- Consider the importance of the salmon fishery to subsistence and the heavy reliance on fish for all users in the area.
- Analyze impacts on subsistence resources including wildlife migration, habitat for growing food, traditional use areas, fisheries, berries and other edible plants, and the cumulative effects from other mining activity. Consider that impacts to any subsistence resource (e.g., fish, wildlife, vegetation) would impact subsistence as well.
- Analyze impacts of potential contaminants entering into the air or water and affecting subsistence resources, including effects on subsistence resources due to potential accidental spills, and bioaccumulation of toxins in subsistence resources, and effects.
- Consider the impacts to the residents along Iliamna Lake who rely on access to small islands for the harvest of bird eggs in the spring.
- We are in fear for our subsistence way of life. Leave our dinner table alone!
- Helicopter traffic during exploration disrupted subsistence activities and this would occur during construction and operations of the mine. Particularly, helicopter traffic impacts spring waterfowl hunting (geese), displaces caribou, and impacts the Koktuli River.
- Many species of fish are used for subsistence harvest, not just salmon.
- Analyze potential beneficial impacts to subsistence as cash income earned from jobs could support subsistence activities. Cash income could be available to fund the boats, motors, fuel, and nets necessary to maintain subsistence activities.
- A sudden influx of noise, people, and heavy equipment over ancestral hunting and fishing lands would have an effect on the intangible resources the sustainable subsistence culture has to offer.
- There could be an influx of workers to construct, run, and remove the mine that would want to have fishing and hunting access to the same resources as the local subsistence communities and will generate user conflict.
- The mine and roads might also facilitate access to previously lightly used areas increasing hunting, fishing berry picking and other pressures.
- Be sure to include Kodiak Island to your analysis, as it has important subsistence areas that could be impacted by the project.
- Over 80 edible and medicinal plants grow and are harvested in the project area including several species of berries, wild peas, wild onions, ferns, cow parsnip, rosehips, and many others.

Comments were received on impacts to important locations for subsistence activity from the project, including:

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- The road corridor would go through our winter moose hunting area in the Talarik Creek watershed.
- The Nushugak, Mulchatna, and Koktuli watersheds are the hunting and fishing areas for people of New Stuyahok.
- The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
- The mountain behind Nondalton is traditional subsistence area.
- The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.
- The people in Seldovia have a long tradition of subsistence fishing for herring in Kamishak Bay. The herring also support other animals that we subsist on.

3.4.4.3 Traditional Culture and Way of Life

Comments were received related to potential cultural impacts and the desire to maintain traditional practices. Includes comments related to traditional land use areas (cultural continuity), and traditional ecological knowledge.

- There are concerns that the mine would be detrimental to the culture, way of life, and history to the people that live in the area, and have been there for centuries.
- Fully disclose the potential impacts of project-related activities on local Alaska Native traditional ways of life. Local culture and environment has already changed from what it was historically, and this may affect the ability to pass values on to future generations.
- Traditional ecological knowledge should be studied and incorporated into the Draft EIS. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants, and other resources of the region.
- The profit from the mine and "benefits" are not long term, while preserving Native heritage and leaving a legacy for future generations is a cause that is worthy of consideration.
- The EIS must identify and describe the cultural and spiritual uses of water by the human communities of the region.
- The Amakdedori Port area has been used as a site for a cultural camp, subsistence use areas, and school field trips.
- EIS should look at the long term social impacts, such as trapping and lifestyle change impacts. The project will kill the hearts and souls of the people; our subsistence way of life has more than monetary value.

3.4.4.4 Archeological and Cultural Resources

Concerns were expressed about impacts to archaeological and cultural resources subject to Section 106 of the National Historic Preservation Act.

- Analyze impacts to cultural resources (historical and pre-historical sites) and direct destruction of cultural resources from all project components.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.

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- There are ancestral burial grounds at/near the proposed Amakdedori Port, along the road route on the south side of Iliamna Lake, and on the road route to the south ferry dock.
- Analyze impacts to irreplaceable Native Alaskan rock art sites. This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.

3.4.4.5 Land Ownership, Management and Use

Comments were received about land status (ownership), land management, and land use for the project area.

- The proposed mine site and many project components including the port site and a majority of the transportation corridor are proposed on state-owned lands. Mine construction, operation, and closure would limit any access to these lands and transportation corridor to private entities only.
- Ensure that activities are consistent with land use plans and goals of all landowners, including the State of Alaska, and Alaska Native corporations.
- The Pebble Mine will be built on state land set aside decades ago in Western Alaska specifically for mining.
- Although the area is classified in the State's area plan as "mineral," a classification is nothing more than recognition of the resource reasonably believed to exist in a particular management unit. The management intent is neutral as to whether mineral development should occur in these units.
- Disclose any impacts to Native Allotments and Native Corporation lands in the project area.
- A pattern of land use change would occur in the region that could be a long-term pattern with additional mining deposits explored for development.
- Analyze the effect of project components on the public use of the surrounding area with regards to trails and waterfront usage.
- Explain the security status of the ferry terminals, the mine access road, and Amakdedori Port, including when and how the public may or may not access or cross project facilities.
- Explain if local Tribal governments have included the mine access road in their Indian Reservation Roads Program that would make it public, versus private roads as stated by PLP.

3.4.4.6 Transportation and Navigation

Comments were received regarding the impacts to transportation systems, including airports, roads, rivers, and trails as a result of the project.

- Evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts at Iliamna Lake, Kamishak Bay, and Cook Inlet. The Draft EIS should evaluate how the ferry crossing and vessel traffic could disrupt schedules, local access and local boaters.
- An ice-breaking ferry across Iliamna Lake would create difficulties and hazardous situations for people travelling across the ferry route on snowmachines.

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- No depths are recorded on navigation charts for Iliamna Lake. Some rocks on the chart do not exist; others are not where the charts show them to be. Some are not on the charts at all. There are places where the depth goes from 400 feet to 30 feet.
- Consider the impact of travel restrictions from road and ferry and who is benefiting.
- The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
- The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 mph.
- A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.
- The Amakdedori Port location experiences very strong onshore winds that could be hazardous. It is also in an area that could be impacted by a tsunami.
- It will be difficult to maintain the Amakdedori Port dredged channel due to sediment transport in that area.
- The plans for the Amakdedori Port have been changed since the original permit application. The change may reduce maintenance and operation cost, however barge lightering of concentrate to the bulk cargo ships may increase risk and safety in the poor weather conditions Kamishak Bay is famous for.
- Analyze impacts from increased air traffic during all project phases.
- Concerns were expressed about additional traffic on the Sterling Highway.
- The mine access road would ascend a mountain pass before descending to Iliamna Lake. Has PLP submitted a design and specific route for the road? For perspective on what this road will look like, consider the Pile Bay-Williamsport road where rock slides and falling boulders are a constant threat.

3.4.4.7 Recreation

Comments were received on impacts to recreation and tourism; recreational hunting and fishing usage near the mine, along river systems, and in transportation/pipeline corridor during construction and operation. This includes comments on disruption of recreational experiences (bear viewing, sport fishing).

- Consider the effects of project components on recreational hunting and existing guided hunting operations (e.g., changes to access, disturbance of wildlife from helicopters or vehicle traffic).
- Concerns about impacts to fish, and how impacts to species could be detrimental to the sport fishing community and businesses.
- The proposed project would bring an influx of the number of people in the Iliamna area that would want to recreate, sport fish and hunt, including mine employees and support industry personnel.
- Displacement of wildlife would impact the experience of people, throughout the proposed project area but would specifically impact the recreationists at McNeil State Game Refuge.
- The mine itself and the proposed tailings dam could not be in a worse location to threaten the trophy rainbow fishing that the many fly-out lodges rely on. The lodges provide long term employment for many in the Iliamna and Lake Clark areas.

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3.4.4.8 Environmental Justice

Comments were received relating to disproportionate, adverse impacts to low income and minority communities as result of the proposed project.

- Analyze impacts related to environmental justice include food security and subsistence resources, health impacts from pollution and exposure to increased industrial activities and noises, increased risk of injury and exposure to hazardous materials, increased exposure to outsiders and the cascading social and psychological problems that brings.
- The economic benefits will not be for the people of the region but the impacts will.
- The environmental justice risk outweighs the benefits.

3.4.4.9 Public Health

Comments were received on impacts to local communities' public health and infrastructure as a result of the project (disease, contaminants, lifestyle changes, behavioral health, and physical health), as per EO 12898.

- An analysis of health effects, such as a Health Risk Assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health.
- Analyze public health concerns related to development and infrastructure development in rural communities.
- The short- and long-term impacts from all stages of the project include increased risks of accidents and injuries, exposure to hazardous materials, negative impacts on food, nutrition, and subsistence, increased potential for infectious diseases, and risks to health and human services from population-stressed infrastructure and services
- It is important for the EIS to consider the social and psychological impacts the stress of this project has already put on people and the communities who live in the project area.
- Evaluate the potential impacts of development on indigenous women, and increased rate of violence as a result.
- Fully discuss the potential that the proposed project could be associated with behavioral health impacts, such as increased use of drugs and alcohol. More disposable income in communities may increase the use of alcohol and drugs.
- An influx of people could bring diseases to an area with minimal healthcare available that may not be able to handle large capacities of patients.

3.4.4.10 Visual Resources and Aesthetics

Comments were received on visual impacts that included:

- Consider visual impacts of the mine, roads, and Amakdedori Port to recreation, and secondary industries like flightseeing operators and wildlife viewing guides.
- The project will have permanent and significant impacts on the appearance of the landscape as viewed from key observation points, planes, etc. and will in turn impact use and enjoyment of the area by many.

3.4.4.11 Wilderness Characteristics

Comments were received related to wilderness characteristics and values.

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- This area has wilderness characteristics, and is adjacent to a national park.
- The potential impact on the Koktuli and Nushagak rivers and tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake have an undeniable wilderness quality that could be impacted by the proposed project. Impacts to the Gibraltar, Talarik, and Koktuli drainages should be considered and, when possible, quantified
- The project would mean the loss of pristine wilderness throughout the area.

3.5 SUMMARY OF PUBLIC COMMENT—NEPA PROCESS AND REGULATORY COMPLIANCE

Comments were received on the NEPA process and need for compliance with regulations including:

- The general NEPA process
- The purpose and need of the proposed project
- The proposed action and project alternatives
- Cumulative effects analysis
- Mitigation measures
- Monitoring and adaptive management
- Bonding and reclamation
- Data and available information
- Research and evaluation needs.

3.5.1 The NEPA and EIS Process

Comments were received about the overall NEPA and EIS process, the permit application to the USACE, due process, and the scoping meetings. These types of comments generally do not inform preparation of the EIS as to the project purpose and need, resources/level of impacts to be analyzed, or alternatives to the proposed action that should be considered. A summary of the general NEPA process comments includes the following:

- The Pebble Mine application is incomplete. The USACE should suspend its NEPA process/ not release a Draft EIS without more information from PLP. Foundational information for major parts of Pebble's proposal, including the proposed transportation corridor, port or use of Iliamna Lake, are lacking from their application. The data PLP supplied is more than 10 years old and thus is not reliable for analyzing project impacts.
- The Pebble Mine application is not incomplete. The Pebble Mine plan and application has recently been revised to satisfy EPA guidelines.
- There should be opportunities at each public hearing for oral comments in an open public forum. Everyone should have the opportunity to hear the comments of fellow concerned citizens. Open oral comments provide new information and learning opportunities not only for USACE and their contractors, but for all attendees. Please change your scoping format for future meetings to include an opportunity to express concerns through an open oral comment period.
- The limited number of scoping hearings and failure to host scoping hearings in communities within the Nushugak and Kvichak River drainages means that the opinions and voices of local populations have not been accounted for.

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- Consider additional scoping meetings in Washington and Oregon.
- Extend the scoping period beyond 30 days. Tribes in Bristol Bay are requesting at least 120 days for this scoping period.
- A 30 day scoping process is sufficient. Few projects have been talked about for as long and with such passion as the Pebble Mine and at this point, no new information about possible adverse effects will come to light.
- Changing the mining plan in the middle of the scoping period means the scoping comment period should be extended and new meetings held.
- The USACE should compare PLP's plans to the EPA's analysis before moving forward with permitting.
- PLP should get a fair permitting process.
- The EIS process is being rushed; the USACE took more time to prepare the Donlin Gold EIS. The USACE cannot take the 'hard look' required by NEPA in this timeframe.
- With the loss of funding, the USACE should reject this application as insufficient, since this is no longer a financially viable project.
- The Pebble Project has changed some of their plans to accommodate concerns of Alaskans. The State of Alaska has a strong track record of regulating responsible mineral development for projects of all sizes and complexities. The Pebble Project will be no exception.
- The USACE evaluation should include the already defined types of authorizations required for a mine like Pebble and the proven scientific and technical information required to support these decisions.
- To manage the high volume of public comments the USACE should consider using software that uses Near-Duplicate Detection.
- The scope of the EIS should include impacts to federally protected units near the project site, including National Parks and National Wildlife Refuge units.

Comments were received that the USACE should initiate formal consultation and coordination with tribal governments. This includes comments on formal consultation and coordination under EO 13175.

Coordination with other agencies is an important part of the NEPA process. Comments were received on how the USACE should seek and promote full- and broad-scope participation by federal and state resource agencies and tribal government entities as cooperating agencies, and undergo comprehensive formal consultation with appropriate entities (for example, consulting with the National Marine Fisheries Service regarding Essential Fish Habitat). Comments were also received on how the USACE should extend cooperating agency invitations to interested tribal governments, as well as local, state, and federal agencies with special expertise and involve cooperating agencies on the full scope of the proposed Pebble Project.

3.5.2 Purpose and Need of the Action and USACE Permits

Comments were received regarding the purpose and need of the action, and the public interest of the project for the purpose of USACE permitting.

- The Pebble EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing

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regulations for NEPA. This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

- Explain how an EIS process can proceed without more commitment from financial backers.
- PLP says their project would help with mineral independence but they will export all of the mined minerals.
- The USACE should accept the purpose and need statement contained in the permit application from PLP.
- The Draft EIS should reflect not only the purpose and need of the project proponent, and the USACE, but also the broader public interest and need based on the scoping comments.
- Describe the permit process. Specifically note if there is a time limit for the applicant to act on a permit before it becomes invalid.
- The lack of a feasibility analysis makes the project as planned un-practicable in regards to NEPA requirements.
- Wrong mine, wrong place.

3.5.3 Proposed Action and Alternatives

Comments requested more detailed information on the proposed project plans, such as the water management plan, transportation plans, and spill response plans.

- The design and operational plans for the proposed project and alternatives should be evaluated.
- Because PLP changed their plans in the middle of the scoping period, the project design is still fluctuating and is not ready for an environmental review.
- The proposed project design and the modern environmental safeguards it incorporates, as well as the significant economic potential it represents for the State of Alaska, should be fairly considered and incorporated into the EIS based solely on the scientific data presented to the USACE in this proposal.

Commenters suggested that a wide range of alternatives should be analyzed for mine pit and tailings locations, types of tailings facilities, tailings dam construction, mine rate and strip ratio, waste rock segregation methods, gold recovery methods, support facility locations, energy sources, pipeline routes, water discharge locations, road alignments, types of water crossings, and ferry routes. Specific alternatives to the proposed project that were suggested include:

- The USACE must look at a range of alternatives beyond Pebble's mine site and include alternatives for mining copper and gold somewhere other than Bristol Bay.
- The USACE does not need to explore alternatives to Pebble's proposed mine site as being somewhere other than Bristol Bay because it already 100 miles from the bay and should be deemed a reasonable distance.
- Apply a realistic scope to assess mine impacts. The timeframe of analysis is small at 20 years; the applicant's website notes that the mine can operate for 200 years and could have 11 billion tons of ore. The USACE should consider alternatives to permit 50 percent or 100 percent of the current known resources to be mined.
- There should be an alternative that restricts the size of the mine to what the EPA found appropriate in its Watershed Assessment.
- All of the pyritic tailings should be removed and not stored on the land in perpetuity.

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- There should be an alternative that includes full treatment of pyritic tailings at the time of mine closure, before or instead of dumping them in the mine pit.
- Tailings would be thickened, possibly to 55 percent solids. Alternatives (slurry, thickened tails, paste tails) need to be analyzed in the EIS.
- The EIS needs to provide an alternative that uses dry stack tailings. Dismissal of such an alternative needs to provide examples of where dry stack is currently used successfully and why this can or cannot be replicated.
- As an alternative to a tailings ponds dam for waste storage, all waste should be trucked to Canada and stored in Canada, since the company is Canadian.
- Different covers for the reclaimed tailings area, including "store and release" and impermeable covers, need to be assessed as alternatives in the EIS.
- Consider an alternative where the tailings pond is constructed at a location that will not impair surface waters, block fish passage, or have the potential to contaminate ground or surface waters.
- The EIS needs to include alternatives that provide water storage areas where excess water can be moved out of the TSF and out of the seepage pond in the event of extreme precipitation.
- The EIS should produce an alternative in which all embankments except the internal one are downstream construction.
- Modern pro-active mine design suggestions, including not placing tailings dams where a failure would put sensitive habitat at risk, should be assessed as alternatives in the EIS.
- Consider including a combination of simultaneous open pit and underground mining, a larger open pit mine, or a longer lived open pit mine. It may be possible to mine with open pits for the shallower portions, and mine by underground mining the deeper or eastern portions of the Pebble Deposit.
- The USACE should consider finding an alternative location to take the ore for processing.
- The EIS needs to analyze whether gravity concentration as a recovery method for gold recovery is viable at this deposit. This appears to be a method used in placer deposits.
- The USACE should consider the possibility of having cyanide processing at the mine site and transporting cyanide by truck or pipeline North and West toward the Nushagak Hills where pits would be out of range of the creeks and rivers flowing into the salmon spawning areas.
- An alternative of running mining operations and ore trucks on natural gas or electricity needs to be included in the EIS.
- The EIS should examine an alternative that treats water for discharge to meet the water quality of the natural receiving waters, if they are of higher quality than Alaska most stringent criteria. Studies have shown that where natural waters are very low in copper and cadmium, discharges above those background levels can have potentially toxic effects.
- The EIS needs to include an alternative for water treatment that will result in zero discharge of metals to the watershed.
- In order to contain gases that may contain acid rock drainage from getting into the air in the project area, the USACE should develop an alternative that covers the

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development with an air tight structure and the fumes should be cleaned before release into the atmosphere.

- The previous plan for a road along the northeastern side of Iliamna Lake, and the new proposed roads and a ferry across Iliamna Lake both put different communities at risk.
- The EIS should consider identifying alternative ferry terminal locations if the proposed sites are found to contain valuable spawning and/or rearing habitats for sockeye salmon.
- The two ferry terminal locations are both at the mouths of blue ribbon trout streams (Upper Talarik Creek and Gibraltar River). Alternative sites closer to populated areas should be considered if possible. The village of Kokhanok airstrip would be an alternative on the south side; a location closer to Newhalen, but away from the mouth of the river is an alternative on the north side.
- The mine access road would follow a branch of Upper Talarik Creek. An alternative that places a dock in Iliamna and uses the proposed Iliamna Spur Road to access the mine needs to be considered in the EIS to reduce potential impacts on Upper Talarik Creek.
- A better alternative is to use the existing road and resources at Pile Bay and Williamsport.
- Running an ore concentrate pipeline around Iliamna Lake to the existing road between Pile Bay and Williamsport is a safer alternative to ferrying ore concentrate across Iliamna Lake in the winter to address concerns about the potential for contamination of surface water in Iliamna Lake.
- Consider having only seasonal (summer) barge transport across Lake Iliamna to avoid impacts to winter transportation options for residents of nearby villages.
- As an alternative to the Iliamna Lake crossing, consider a haul road that would stay north of this lake, then head south from Pedro Bay to the Amakdedori port.
- The road system would cross numerous anadromous streams. It would be best to require bridges at all of these crossings. Oregon and Washington states have been working for many years to bring back their salmon runs. Recreating salmon habitat including headwaters has proven to be extremely hard.
- A port at Diamond Point in Iliamna Bay should be evaluated against the proposed Amakdedori Port.
- Alternative port sites should be evaluated due to the potential ecological impact from the project.
- There is no need to dredge the proposed port to -50 feet; a shallower depth should be evaluated.
- The EIS should assess the whole breadth of dredging activities when determining the possible impacts to aquatic organisms and consider practicable alternatives that would avoid and minimize impacts.
- The range of dredged material management alternatives include should include beneficial uses such as beach nourishment or construction material, a disposal site in internal waters landward of the Kamishak Bay closing line, and an ocean disposal site seaward of the Kamishak Bay closing line.
- The EIS should consider alternative methods for delivering natural gas to the project area, given the risk of natural gas entering the marine environment, the impact it

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would have on marine resources, and how gas line leaks or ruptures would be contained.

- The EIS should review potential alternative alignments for the pipeline route, such as an alignment north of Augustine Island.
- Include an alternative pipeline route that goes north to connect with the planned natural gas pipeline to support the development and operation of the Donlin Mine.
- Alternative fuel sources should be evaluated in an effort to eliminate the potential long term consequences that a subsea pipeline can have on the environment.
- Alternative energy sources should be examined. Many of the minerals to be mined will go into solar panels, wind turbines, and hydro turbines. The PLP could support the industries they will be supplying by utilizing alternative, renewable energy sources.
- The EIS should consider alternatives to laying the pipeline directly on the seafloor bottom (unburied) and evaluate the effects of an unburied pipeline's impact on crab movements, access to important habitat, and direct mortality.
- The EIS should evaluate practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the Alaska Department of Transportation and Public Facilities.

3.5.4 Cumulative Effects Analysis Process

Comments were received on how the cumulative effects analysis should be thorough, well-defined, and complete.

- Describe how the Draft EIS process considers cumulative effects, and identify the geographic scope and timeframe for the cumulative effects analysis.
- The USACE needs to acknowledge that the current permit application could be the initial phase in a much broader mine development plan. Pebble Limited Partnership has repeatedly said, as recently as September 2017, their project is, "a multi-generational opportunity. Its size and scale will lead to a very, very long life mine." Based on statements such as this, and official records indicating they plan to mine up to 11 billion tons of ore, it is reasonably foreseeable that Pebble intends to expand its mine far beyond what is currently proposed. Reviewing just phase one of the project unlawfully segments environmental review, shortchanges the public interest, and risks untold impacts to the Bristol Bay region's world-class fisheries.
- There are 20 large-scale active mining claims in the Bristol Bay watershed that this project could encourage by providing the transportation and power infrastructure. The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- The EIS needs a cumulative effects analysis on culture.
- Additional large-scale landscape and infrastructure development, facilitated by the initial road, pipeline, and barge and ferry ports is a reasonably foreseeable impact. The EIS should discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.
- The EIS should include an assessment of the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.

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- The EIS should include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure.

3.5.5 Mitigation Measures

Comments were received related to the need for project mitigation, and suggestions for mitigation measures.

- Use scientific data that details what damage is anticipated and determines whether and how such damage can be mitigated, including whether such mitigation is even possible.
- Tribes and the public should be involved in the mitigation planning, and monitoring of the proposed project.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- Consider and recognize the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- The measures suggested by PLP will not work.
- PLP has not given any mitigation plans for sociocultural impacts; sociocultural impacts cannot be mitigated.
- PLP has not provided a plan for compensatory mitigation. The Draft EIS should describe such a plan and reasonable alternatives to it. The USACE should consider mitigation banks, or at a minimum, in-lieu fee programs, not less reliable permittee-responsible mitigation.
- Water takes the path of least resistance, so rainfall will attempt to make its way to the river bodies, but this can be mitigated with runoff ponds and filtrated release.
- Consider bilge water treatment that is capable of more than oil-water separation to protect Lake Iliamna's ecology.
- Require that the tailings pond be lined in such a way as to prevent any interaction between tailings waste and groundwater.
- This EIS should address the timing of ferry traffic across Iliamna Lake with regard to the movement of commercial fishing boats across the lake, both before and after the salmon season, and during salmon spawning.
- The ice-breaker ferry should be constructed and assembled at an alternate location to allow for naval architectural oversight and engineering support.
- Construct the natural gas pipeline in the winter to reduce environmental impacts.
- Suggested mitigation measures for the road corridor include chip sealing, winter maintenance plans, monitoring culverts, plans for vehicle emergency response, clear policy on use of the road by non-mining personnel.
- All culverts should be required to be designed for fish passage at all times, and monitored and corrected to ensure fish passage for the lifespan of the project and closure.
- The culverts should be designed with software that can better predict stress and deflection in heavily-loaded, complex soil structures interaction dependent culvert structures.
- All upland water crossings should be designed for all impacts above the 1.5 times stream width at ordinary high water.

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- Take measures to decrease whale strikes by ships.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.
- There should be no fly zones, to address caribou hunting impacts.

3.5.6 Monitoring and Adaptive Management

Comments were received in regards to the need for monitoring plans during operations and after closure of the mine.

- The history of multiple open pit mining sites has shown that the open reservoirs put in place to hold contaminated water and processing liquids have routinely been compromised by leaking and/or by drastic failure of containment levees. While they highlight the measures taken to put these toxins in containment, they fail to address the long term maintenance and mitigation of the toxins to make them inert.
- Explain what oversight and monitoring would be applied to meet minimum detrimental environmental conditions, by whom, and under what authority.
- Explain if there would be a fund for additional environmental monitoring while the project is ongoing.
- Describe how and by whom the tailings dam will be monitored during project operations and then at the end of the mining period.

3.5.7 Bonding and Reclamation

Comments were received related to reclamation activities, bonding, and setting up an escrow fund for restoration. Comments asked the USACE to explain in the EIS the mechanisms for treatment in perpetuity and post-closure (i.e., plan for permanent water treatment, the entity that would pay post closure costs – secure financing in perpetuity).

- Alaska regulatory requirements require a financial assurance to cover the costs of premature closure of the mine and the costs of post-closure water treatment. Calculating this cost is an essential part of the economic analysis EIS.
- Local communities would be hooked up to the gas line, as well as a maintenance crew watching over the hazardous tailing piles and dams. Describe bonding to cover these costs if something happens to PLP.
- The reclamation bond amount needs to be enough to fix any damage. This needs to be a permanent interest bearing fund that will supply enough funds in perpetuity, to cover unexpected future disasters, not just planned monitoring and reclamation.

3.5.8 Data and Available Information

Comments were received that suggested specific, documents, articles, or other information that should be utilized when developing the Draft EIS.

- Review research on fiber optics cable placement on tundra by Rorik Peterson at the University of Alaska Fairbanks. In addition, the USACE should review mapping provided by GCI regarding fiber optic cable placement of the TERRA-Southwest and Kodiak Kenai Fiber Link cable crossings in Cook Inlet and Iliamna Lake that would intersect with the proposed natural gas pipeline.
- Acknowledge how Traditional Ecological Knowledge information may be used and how to ensure that sensitive information is protected and follow a set of protocols for use of this information.

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- Regarding impacts to shellfish populations, review the following:
  - Alaska Department of Environmental Conservation: Cook Inlet Subarea Contingency Plan (CISCP) sensitive areas section. Available from https://dec.alaska.gov/spar/ppr/plans/scp_ci/CISCP_DSensitive_Areas_Jan2017.pdf.
  - Collapsed or recovering shellfish fisheries in the state of Alaska. Preliminary Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1 1J02-06, October 1999.
- Review spills in Cook Inlet. In a study by the Cook Inlet Regional Citizen's Advisory Council, 70 of the 88 were caused by structural or mechanical failures.
- "After leaks, Cook Inlet's aging oil and gas pipelines get an unprecedented review." *Anchorage Daily News*, May 2, 2018.
- Woodson, Ross D. 1990. Offshore Pipeline Failures. University of California, Berkeley, Department of Civil Engineering, Hydraulic and Coastal Engineering.
- Alaska Department of Fish and Game, Division of Commercial Fisheries news release: 2018 Bristol Bay Sockeye Salmon Forecast.
- *The Economic Importance of the Bristol Bay Salmon Industry.* Prepared for the Bristol Bay Regional Seafood Development Association by Gunnar Knapp Mouhcine Guettabi Scott Goldsmith. April 2013.
- There is a recent text book edited by Dr. Carol Anne Woody that should be a resource for the EIS.
- *Review of Pebble Limited Partnership's Environmental Baseline Document, Geochemical Characterization.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- *Critique of Pebble Limited Seismic Hazard Assessment.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- Regarding salmon and fish habitat, review the following:
- Limpinsel, D. E., Eagleton, M. P., and Hanson, J. L, 2017. *Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska.* EFH 5 Year Review: 2010 through 2015. U.S. Dep. Commer., NOAA Tech.
- Review certified fish habitat areas found here: https://extra.sf.adfg.state.ak.us/
- Ching, Jason S., Curry J. Cunningham, and Thomas P Quinn. *Iliamna Lake Spawning Ground Habitat Assessment and Data Access*. Final Report to the Bristol Bay Regional Seafood Development Association, December 2014. School of Aquatic and Fishery Sciences University of Washington.
- Brennan and Daniel E. Schindler and Diego P. Fernandez, 2017. *Using strontium in otoliths to determine the natal origin and habitat use of sockeye salmon in the Nushagak River.* University of Washington, School of Aquatic and Fishery Sciences, University of Utah, Department of Geology and Geophysics.
- Hauser, William J. 2007. Potential Impacts of the Proposed Pebble Mine on Fish Habitat and Fishery Resources of Bristol Bay. Fish Talk Consulting.
- Pebble Project Freshwater, Marine Fish and Instream Flow Technical Working Groups: Development of Study Objectives and Agency Recommendations.
- Bristol Bay Fish Facts. Prepared for United Fishermen of Alaska Salmon Habitat Information Program, for Pebble Mine EIS Scoping—2018. See also Additional

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Anadromous Cataloged Waterbodies (attached to public comment submitted by United Fishermen of Alaska).

- In incorporating potential human health effects of the proposal and environmental impacts, apply the four components of the precautionary principle, as described in Kriebel et al., 2001: *Environmental Health Perspectives*. Available from https://www.ncbi.nlm.nih.gov/pubmed/11673114.
- Sharma, R. P., & Kumar, A. 2013. *Case histories of earthen dam failures*. International Conference on Case Histories in Geotechnical Engineering, 8, 6. Available from

  https://scholarsmine.mst.edu/cgi/viewcontent.cgi?article=3092&context=icchge.
- It has been reported that PLP has Light Detection and Ranging (LIDAR) data that covers the project area. LIDAR should provide a good indication of surface faulting. The LIDAR data could be very helpful in addressing the question of whether the Lake Clark fault may extend farther to the southwest.
- "Suncor investigating after more than 100 birds die at new oilsands mine". *Financial Post*, September 19, 2017.
- Bristol Bay Tribal Multi-Species Conservation and Management Plans. Currently there are none for Iliamna, Nushagak River, Nushagak Bay, Kvichak Bay, and Peninsula, but they should be incorporated into the EIS when complete.
- Cederholm, C. J., D. H. Johnson, R. E. Bilby, L.G. Dominguez, A. M. Garrett, W. H. Graeber, E. L. Greda, M. D. Kunze, B.G. Marcot, J. F. Palmisano, R. W. Plotnikoff, W. G. Pearcy, C. A. Simenstad, and P. C. Trotter. 2000. "Pacific Salmon and Wildlife: Ecological Contexts, Relationships, and Implications for Management." Special Edition Technical Report, Prepared for D. H. Johnson and T. A. O'Neil (Managing directors), Wildlife-Habitat Relationships in Oregon and Washington. Washington Department of Fish and Wildlife, Olympia, Washington.
- *Where Water is Gold: Life and Livelihood in Alaska's Bristol Bay.* By Carl Johnson, with a foreword by Sandra Day O'Connor. Copyright 2016 by Braided River and the Mountaineers Foundation.
- *From the Hinterlands to Tidewater: A Grassroots Pictorial 1885-1965.* By John B. Branson, 1998. The National Park Service, Lake Clark National Park and Preserve.
- Kokhanok portion of the Katmai Project Jukebox program. Judy Nelson/Shirley Nielsen. http://jukebox.uaf.edu/Katmai/Kokhanok/html/main.html
- H W McCurdy. 1966. Marine History of the Pacific Northwest. Pg 344. http://alaskashipwreck.com/shipwrecks-by-area/south-central-alaska-shipwrecks/south-central-alaska-wrecks/
- Bristol Bay Seasonal Subsistence Gathering Cycle. (Attached to comment submitted by Curyung Tribal Council).

3.5.9 Research and Evaluation Needs

Comments were received regarding the lack of baseline research, monitoring, and evaluation needs, or data gaps for the project.

- The USACE should suspend its NEPA process until the PLP presents sufficient environmental baseline and economic data about its proposal so as to reasonably inform the NEPA process.

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- No new baseline documents or data were submitted with PLP's application to the USACE in December 2017. The only publicly available baseline documents compiled by PLP are now more than a decade old, with data collected from 2004 to 2008. Those baseline studies failed to include newly proposed project components such as the transportation corridor, Iliamna Lake, and the proposed port site.
- Study the Montana mining industry (e.g., Berkeley Mine) and how often that state has experienced a negative environmental pollution outcome from a mine which was not cleaned up properly.
- There is a lack of baseline studies on newly added mine components for an informed permit process, such as wastewater discharges to Frying Pan Lake.
- An ecotoxicology assessment needs to be conducted for the pit lake, and it needs to be conducted when the pit first rebounds to its full level, and where pit lake stratification turns over and pit lake water mixes.
- Baseline data for the proposed Amakdedori Port and Kamishak Bay may be lacking in terms of what is known about water currents, shifting sands/silts and ice and how these physical conditions may affect trenching. The mud at Amakdedori Bay provides and important ecological function and habitat.
- No baseline data exists for the proposed port and use of Iliamna Lake, or the 83-mile transportation corridor making it impossible to analyze the potential impacts these activities would have on sensitive salmon habitat, tributaries, and adjacent wetlands.
- There are no relevant studies of Iliamna Lake. Frissell and Shaftel's spawning data are more than 7 years old.
- The Alaska Department of Fish and Game lacks assessment tools for the shellfish that live in Cook Inlet. Current baseline studies for these species do not exist. In light of the possible increase in sediment deposition rate resulting from dredging in the area of the Pebble Project, the USACE should require a shellfish population baseline assessment and impact statement regarding the dredging project prior to any dredging work beginning in Amakdedori Bay.
- An extensive and thorough baseline study on bear populations including numbers, movement, diet, and feeding areas should be done.
- More studies are needed to understand freshwater seals and all other animals in the Iliamna Lake area.
- There needs to be more baseline data on all species in the Bristol Bay river mouths and estuaries and the species in the Amakdedori Port area of Kamishak Bay.
- Require appropriate inventory survey for the broad range of historic property types that may be present in the Area of Potential Effect, including archeological sites/districts, properties of cultural and religious significance to Tribes, cultural landscapes, standing structures, and Historic Districts.
- Stream courses should be accurately documented using best available technology. The application relies largely on National Hydrography Dataset which is outdated and overlooks important tributary habitat.
- Evaluate all streams crossed by the road corridor for fish presence (including documentation of species, life stages, and abundance).
- Quantify salmon populations in the North Fork Koktuli, South Fork Koktuli, Upper Talarik Creek, and their tributaries, as well as all stream crossings in the transportation corridor, with at least five years of data.

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- The effects of ice breaking on winter lake ecology are not known; study is required to determine the width of the ice-free corridor and the impacts of changes in light, current, and lake surface albedo on spring melt date, phyto- and zooplankton bloom timing, and lake food webs.

3.5.10 Non-Substantive Comment

Submissions without substantive comment that are not specific to a particular issue or do not inform the analysis conducted in the EIS are considered non-substantive. These include comments in support of, or in opposition to, the applicant's proposed project.

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APPENDIX A – NOTICE OF INTENT

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com.*

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. *Description of the Proposed Project.* Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

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APPENDIX B – PUBLIC NOTICES

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US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: January 5, 2018

REFERENCE NUMBER: POA-2017-271

WATERWAY: Multiple

An application has been received in this office from Pebble Limited Partnership (applicant) to discharge fill material into and perform work within waters of the United States. The project site is located in Southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough. The project consists of four primary project elements: a mine site, a port at Amakdedori, transportation corridor, and natural gas pipeline. The submitted application is available on the Corps website at www.poa.usace.army.mil/Missions/Regulatory/Permitting-Section-Homepage/Department of the Army Permit Application POA-2017-271 submitted by Pebble Limited Partnership.

The Corps has determined and notified the applicant that an environmental impact statement level of analysis will be required for the review of the Department of the Army Permit application. As such, the Corps will conduct public scoping after publishing a Notice of Intent to develop an EIS in the federal register. The Notice of Intent will include a list of public scoping locations. Times and dates for these locations will subsequently be advertised via Corps Public Notice and website as well as local media outlets.

Please contact Sheila Newman, Regulatory Division Program Manager at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at poaspecialprojects@usace.army.mil if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

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NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

For Immediate Release:
March 30, 2018
Release No. 18-006

Contact:
John Budnik, 907-753-2615
John.P.Budnik@usace.army.mil

Scoping for Department of the Army Permit Application 2017-271-Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District requests public input regarding the scope of the environmental impact statement level of analysis for Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership.

The Pebble Project has been in the public eye for many years and there have been multiple public input and comment opportunities from other agencies. This public body of information has helped to inform the Corps' preliminary scope for the environmental impact analysis.

The Corps is now asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures.

Since Jan.5, the permit application has been publically available on the Alaska District's website. On Jan.12, the application was mailed via CD to 35 federally recognized Alaska Native Tribes alongside invitations for government-to-government consultation throughout the entire evaluation process including the EIS. The Corps maintains the application as well as additional scoping information at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska, 99506-0898

Beginning April 1, scoping input can be entered directly into the project website at www.pebbeprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

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Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

Meeting locations and times are indicated below. A video explaining major project components will be available for viewing. The Corps will have representatives available to answer questions regarding the Department of the Army permit application review process. Individuals may come in at any time during open hours and to provide scoping input. A Yupik translator will be available at the meetings.

Naknek
Monday, April 9
Naknek School
3:30 PM – 7:30 PM

Kokhanok
Tuesday, April 10
Tribal Hall
3:30 PM – 7:30 PM

Homer
Wednesday, April 11
Homer High School,
5:00 PM – 9:00 PM

Newhalen
Thursday, April 12
Newhalen School
3:30 PM – 7:30 PM

New Stuyahok
Friday, April 13
Community Building
1:00 PM to 4:30 PM

Nondalton
Monday, April 16
Tribal Center
3:30 PM – 7:30 PM

Dillingham
Tuesday, April 17
Dillingham Middle School
5:00 PM – 9:00 PM

Igiugig
Wednesday, April 18
Community Building
3:30 PM – 7:30 PM

Anchorage
Thursday, April 19
Dena'ina Center
11:00 AM – 9:00 PM

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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AMERICAN OVERSIGHT

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
April 6, 2018
Release No. 18-007

Contact:
John Budnik, 907-753-2615
Public.affairs3@usace.army.mil

Corps extends public scoping period for Department of Army permit application 2017-271 Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District has allotted more time for the public scoping period for the environmental impact statement level of analysis for Department of Army permit application 2017-271 submitted by Pebble Limited Partnership.

An additional 60 days has been added to the original 30-day public scoping period that began on April 1. Therefore, interested parties that would like to provide scoping input have until June 29 to submit.

The Corps is asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures. The permit application is available on the project website at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Scoping input can be entered directly into the project website at www.pebbleprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter. Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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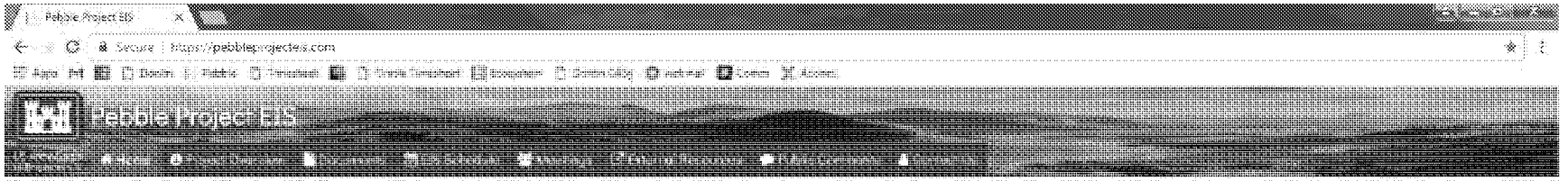

Welcome

The U.S. Army Corps of Engineers invites you to participate in the Pebble Project Environmental Impact Statement (EIS) process. Pebble Limited Partnership proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska, approximately 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton. A 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Kime Site is proposed as the energy source for the mine. The Transportation Corridor includes an 18-mile crossing of Lake Iliamna and an Amakdedori Port facility on the western shore of Cook Inlet.

The proposed mine requires many federal and state permits. The EIS provides the basis for the U.S. Army Corps of Engineers and other federal agencies to evaluate federal permit applications.

Your input can make a real difference in understanding:

- Issues and concerns that should be addressed in the EIS
- The way in which land and resources might be affected by the project
- Ideas on alternatives and ways to minimize impacts

We hope this website will answer your questions and make it easy for you to participate. Please add your name to our mailing list if you would like to be mailed our newsletters. If you have any questions that are not answered on the website, please contact us.

This site is being continually updated. Check back often for updates.

What's New?

Monday, April 30, 2018
Scoping meeting transcripts now available

Thursday, April 19, 2018
Applicant Video Available

Friday, April 6, 2018
USACE extends scoping public comment period by 60 days.

Sunday, April 1, 2018
Submit your Scoping Comments

Wednesday, March 28, 2018
Newsletter #1 Available

Friday, March 23, 2018
Scoping Package is Available

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Contact Us

AMERICAN OVERSIGHT

Pebble Project EIS

Pebble Project EIS

Project Overview | Mine Site | Transportation Corridor | Amakdedori Port | Natural Gas Pipeline | Applicant Video

Project Overview

Pebble Limited Partnership (Applicant) has applied for permits to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure. The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. In addition to the Mine Site, the project would have three other major components: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline.

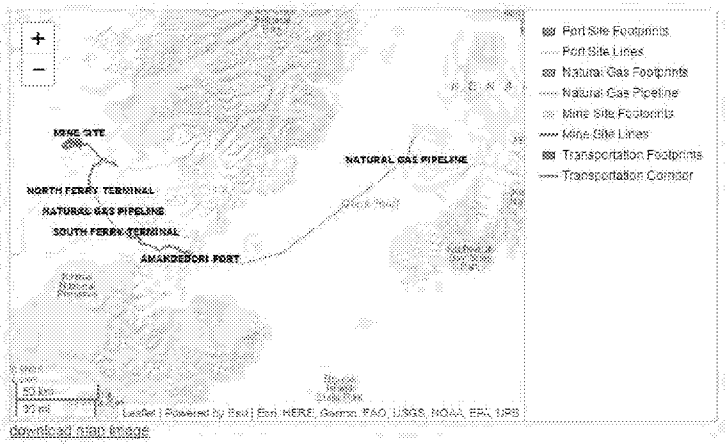
The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of the applicant and by a subsidiary of the applicant's parent company, Northern Dynasty. Neither the applicant nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Rights to develop on State of Alaska land may be acquired when necessary locations for mine development have been determined and permits awarded. The Transportation Corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act.

The proposed project would have a mine life of approximately 20 years. During that time, there would be:

- a total of 1.2 billion tons of material mined over the life of the project;
- mining rate up to 90 million tons per year;
- milling rate up to 58 million tons per year;
- annual copper-gold concentrate production of 600,000 tons; and
- annual molybdenum concentrate production of 15,000 tons.

The project would have an operating schedule of two 12-hour shifts per day for 365 days per year, and employ approximately 2,000 personnel for construction and 850 for operations.

A more detailed project description from the the applicant to the U.S. Army Corps of Engineers can be found here.



Download map image

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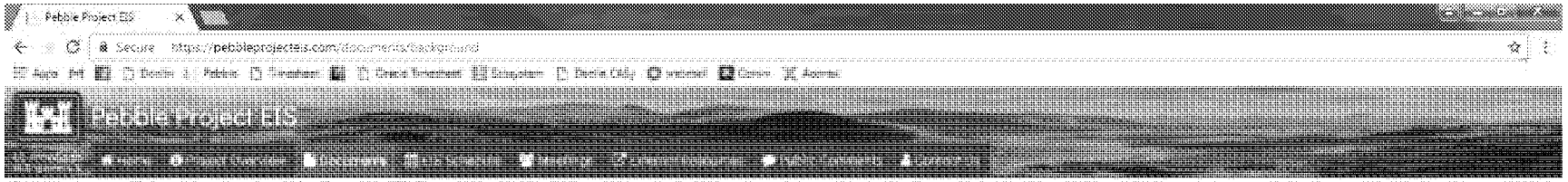

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Background Documents | Scoping Documents | EIS Documents | Newsletters | Project Library

Permit Application Documents

	Title ▲	Date
Download	Department of the Army Permit Application	12/01/2017
Download	Department of the Army Permit Application CRM Upload Consolidated Replaces	12/01/2017
Download	Department of the Army Permit Application, Attachment A1	12/01/2017
Download	Department of the Army Permit Application, Attachment A2	12/01/2017
Download	Department of the Army Permit Application, Attachment A3	12/01/2017
Download	Department of the Army Permit Application, Attachment A4	12/01/2017
Download	Department of the Army Permit Application, Attachment A5	12/01/2017
Download	Department of the Army Permit Application, Attachment A6	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs_Optimized	12/01/2017
Download	Department of the Army Permit Application, Attachment C	12/01/2017
Download	Department of the Army Permit Application, Attachment D	12/01/2017

Federal Register Notices

	Title ▲	Date
Download	Federal Register Notice of Intent	03/30/2018

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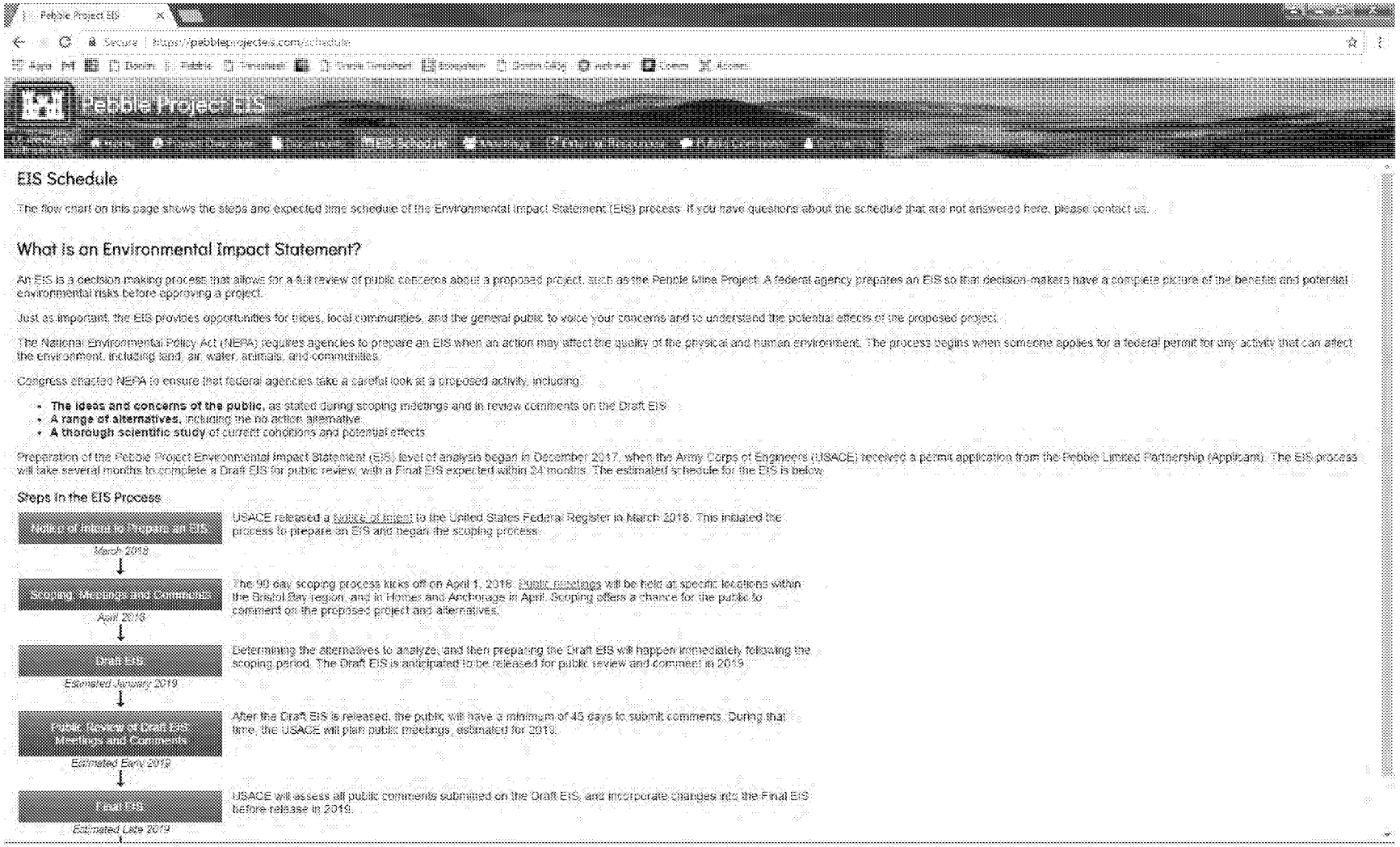

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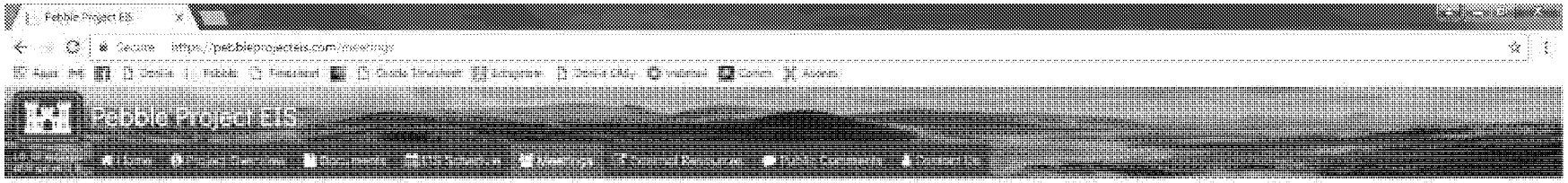

Scoping Meeting Schedule

The U.S. Army Corps of Engineers hosted public meetings in nine communities to give a presentation on USACE's role in permitting for the Project and the Environmental Impact Statement (EIS) process. The purpose was to inform communities about the EIS and gather comments from the public about concerns. Full transcripts are located here. You can view all comments as they are submitted here.

Community	Date & Time	Location
Naknek	Monday, April 9, 2018 3:30 PM - 7:30 PM	Naknek School
Kokhanok	Tuesday, April 10, 2018 3:30 PM - 7:30 PM	Community Hall
Homer	Wednesday, April 11, 2018 5:00 PM - 9:00 PM	Homer High School
Newhalen	Thursday, April 12, 2018 3:30 PM - 7:30 PM	Newhalen School
New Stuyahok	Friday, April 13, 2018 1:00 PM - 4:30 PM	Community Building
Nondalton	Monday, April 16, 2018 3:30 PM - 7:30 PM	Tribal Center
Dillingham	Tuesday, April 17, 2018 5:00 PM - 9:00 PM	Middle School
Igiugig	Wednesday, April 18, 2018 3:30 PM - 7:30 PM	Community Building
Anchorage	Thursday, April 19, 2018 11:00 AM - 5:00 PM	Denali'ina Center

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Public comments during this scoping phase will be accepted during the scoping period, scheduled to run from April 1, 2018 to June 29, 2018.

Submit your comment

There will be an additional public comment period in January 2019 when the Draft EIS is released.

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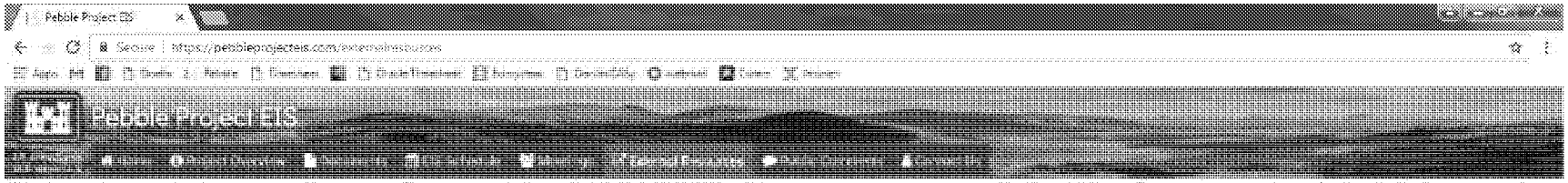

External Resources

This site provides external links as a convenience to our users. The appearance of external links on this site does not constitute endorsement by USACE of the external sites/documents or the information, products or services contained therein.

Council of Environmental Quality: Citizen's Guide to NEPA

Alaska Department of Natural Resources: Permitting Large Mine Projects in Alaska

Alaska Department of Natural Resources: Pebble Project

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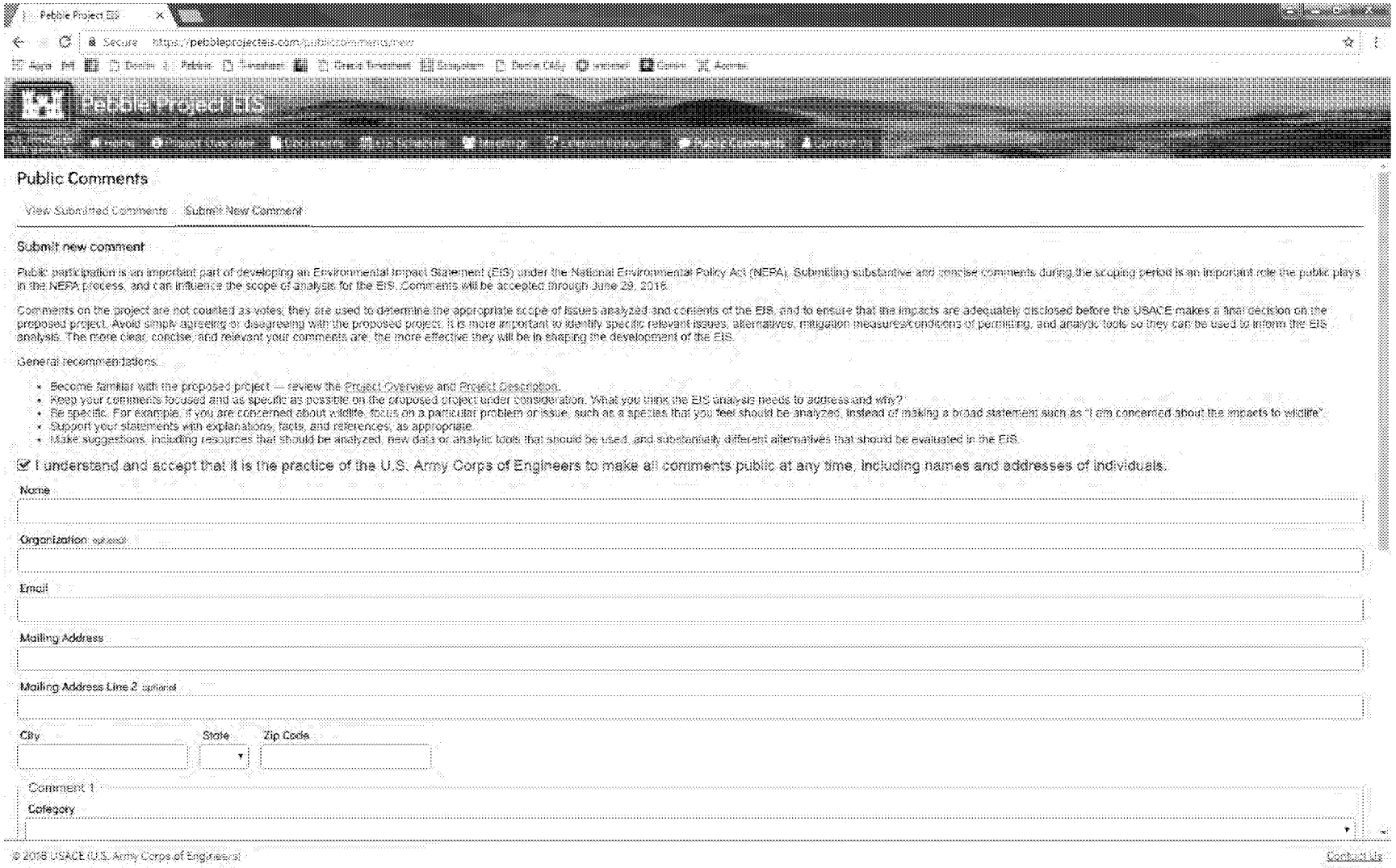

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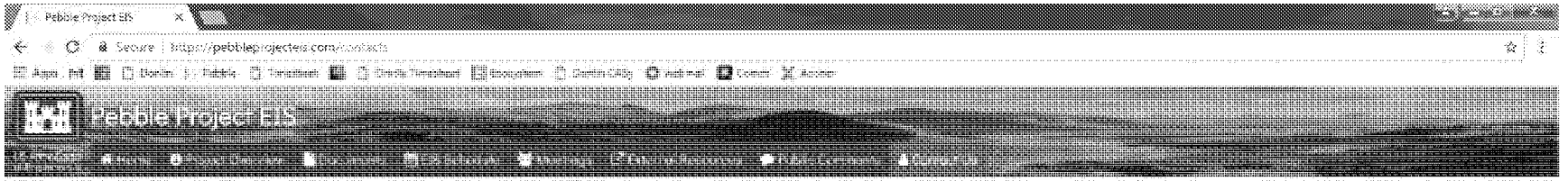

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Lead Agency

U.S. Army Corps of Engineers
http://www.poa.usace.army.mil

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DEPARTMENT OF THE ARMY PERMIT APPLICATION POA-2017-271, SCOPING PACKAGE

SCOPING PACKAGE CONTENTS

1. Public Scoping for the Pebble Project EIS
2. Pebble Limited Partnership (Applicant) Project Description
3. How Alternatives will be Developed
4. What Resources will be Analyzed in the EIS?
5. What is NEPA?
6. Roles and Responsibilities
7. EIS Schedule
8. EIS Outline
9. How to Comment
10. Pebble Project Comment Form
11. Frequently Asked Questions

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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action to express their views and concerns, and to offer suggestions on the scope of analysis. Public input may include ideas for alternatives to the proposed action that could have lesser environmental impacts.

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be avoided or lessened.

Public meetings will tentatively be held during the scoping period of April 1st to June 29th, 2018, in the following communities:

- Anchorage*
- Dillingham*
- Homer*
- Igiugig
- Kokhanok
- Naknek
- Newhalen
- New Stuyahok
- Nondalton

* To avoid long wait times, an open public testimony format will not be used.

Please check our website for the current meeting schedule.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to come to a scoping meeting and give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Scoping comments can be submitted through June 29, 2018.

* Comments received/postmarked after June 29 will be considered but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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PEBBLE PROJECT DESCRIPTION

Pebble Limited Partnership (PLP), proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. The Pebble Deposit is located approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit, and Kokhanok, which is located 3 miles to the northeast of the proposed road from the port site to the south ferry terminal on Lake Iliamna (see Figure 1).

PEBBLE PROJECT COMPONENTS

The Pebble Project as proposed consists of four facility and operations components:

Mine Site and Associated Facilities (see Figure 2)

- **Open pit mine**, developed in stages, with each stage expanding the area and deepening the previous stage. Final dimensions of the open pit would be approximately 6,500 feet long and 5,500 feet wide, with depths between 1,330 and 1,750 feet.
- **Mine site mineral processing facilities** include a crushing plant, coarse ore stockpile, grinding plant, froth flotation circuits to produce concentrates, and concentrate filters to remove moisture before shipment.
- **Copper-gold concentrate** would be loaded into covered bulk shipping containers and transported by truck to the Amakdedori Port. **Molybdenum concentrate** would be bagged and containerized before shipping to Amakdedori Port.
- **Tailings Storage Facility** located within the North Fork Koktuli watershed:
  - 1.1 billion tons storage volume.
  - separate cells for bulk and pyritic (lined) tailings.
  - four embankments: main (600 feet high), south (350 feet high), and east (60 feet high) perimeter embankments and an internal embankment (420 feet high) separating the bulk and pyritic tailings cells.
- **Low Grade Ore Stockpile** up to 330 million tons of mineralized material, segregated by relative value, and PAG waste rock, placed on an engineered liner to control seepage losses through the stockpile.
- **Waste rock** – Non-potentially acid generating (NPAG) waste rock would be used to construct various mine site structures, including the TSF embankments and mine site roads. PAG waste rock would be stored within the LGO stockpile until mine closure, and then back-hauled into the open pit.
- **Overburden Stockpile** segregated to the southwest of the open pit, and surrounded by a berm of non-mineralized rock to contain the material and increase stability.
- **Water Supply, Management and Treatment** consists of five components:
  - potable water well field and treatment plant.
  - two water management ponds (open pit and LGO/main).
  - sediment ponds.
  - three seepage ponds (south, west, and main embankment).
  - two water treatment plant/three discharge locations (north, south and east).

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- **Personnel camps** include a main construction camp to accommodate 1,700 workers, later refurbished for 850 rooms for operations.
- **Power generation** capacity and distribution infrastructure: 230 megawatt delivery capacity fired by natural gas and a 69-kilovolt distribution system.

Amakdedori Port Site (See Figure 3)

- **Ore carrier vessels** up to 40,000 dead weight tons and 700 feet in length, up to **25 Handysize ships will be required annually** to transport concentrate.
- Up to **30 marine line-haul barge loads of supplies and consumables** will be required annually. **Two ice-breaking tug boats** will be used to support marine facility operations.
- **2000 foot earthen access causeway** extending out to a marine jetty located in 15 feet of natural water depth.
- **Access channel and turning basin,** dredged to 50 foot depth.
- **Shore-based facilities** to receive and store containers and fuel, two, 2-MW natural gas power generators with an emergency diesel generator, a natural gas compressor station, maintenance facilities, employee accommodations, and offices.
- **Fuel storage** consisting of four 1.25 million gallon tanks inside a lined and bermed area

Transportation Corridor (see Figure 3)

Road System Connecting Amakdedori Port to the Mine Site

- **Private, double-lane road extending 30 miles south from the Mine Site to North ferry terminal** on the north shore of Iliamna Lake.
- **Private, double-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port** on Cook Inlet.
- **Eight bridges**, six of which would be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There would be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River.
- Daily transportation of concentrate, fuel, reagents and consumables would require **up to 35 truck round trips per day for each leg of the road**, including three loads of fuel per day.
- **Village surface road connections** from the Transportation Corridor to Iliamna, Newhalen, and Kokhanok.

Ferry Service and Terminals on Lake Iliamna

- **18 mile ferry crossing of Lake Iliamna.**
- **All-season icebreaking ferry** with 12 crew members.
- **Inbound supplies from the Amakdedori Port to the Mine Site** and **outbound copper-gold and molybdenum concentrates, backhauled waste, and empty containers.**
- **Average of one round trip ferry per day.**
- **Two ferry terminals** with 40 foot rock/aggregate causeway, container handling and storage facilities, office and maintenance buildings, and local power supply.

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Natural Gas Pipeline System (see Figure 1)

- **188 mile 10-12 inch diameter natural gas pipeline**, buried 3 feet deep onshore, in five segments:
  - starts on the eastern shore of Cook Inlet at Happy Valley near Anchor Point along the Sterling Highway.
  - 94 mile subsea pipeline crosses Cook Inlet to the Amakdedori Port Site.
  - 35 mile buried pipeline adjacent to the road from port site to south ferry terminal.
  - 18 mile pipeline across Lake Iliamna.
  - 30 mile buried pipeline adjacent to the road from north ferry terminal to Mine Site.
- **Two gas fired compression stations**, one on the eastern end at Anchor Point, and one at the Amakdedori Port.
- **Buried fiber optic cable** adjacent to pipeline.

PROJECT CONSTRUCTION

- **The project would take approximately four years to construct,** on four main project components – Mine Site, Amakdedori Port, Transportation Corridor, and Pipeline.
- **Transportation infrastructure to access the site is the first step**, along with Pre-production Phase environmental protection systems and temporary facilities that support construction crews (camps at port site, mine site, ferry terminals).
- **Initial access to the mine site within one year,** followed by earthworks, plant facilities, tailings storage embankments, stockpile foundations/liners, and water treatment facilities.
- **Natural gas line installation** will occur during the second and third construction years.
- **Completion of Pre-production Open Pit, power plant and processing facilities** in year 4.
- **Construction employment** estimated at 2,000 workers.

PROJECT OPERATIONS

- **Project operating life of 20 years**, **three mining phases** – pre-production, production and stockpile reclaim.
- **Conventional open pit mine** – drill, blast, truck and shovel operation.
- **Blasting events** – once to twice a day.
- **Tailings Storage Facility water management** – Control, collection, and recovery of tailings water for recycling or treatment prior to discharge; seepage collection system below impoundment structures; freeboard to contain inflow design flood.
- **Total material mined** – 1.2 billion tons over the life of the project.
- **Mining rate** up to 90 million tons per year, **milling rate** up to 58 million tons per year.
- **Annual concentrate production** – 600,000 tons copper gold, 15,000 tons molybdenum.
- **Operations employment** estimated at 850 workers, two shifts per day, 365 days/year.

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PROJECT CLOSURE

- **Reclamation and closure jurisdiction** – Alaska Department of Natural Resources Division of Mining, Land, and Water, and Alaska Department of Environmental Conservation.
- **Design for Closure** – early consideration of requirements for Closure and post-Closure site management.
- **Segregation of the bulk and pyritic tailings storage cells** to facilitate Tailings Storage Facility closure.
- **Potentially Acid Generating waste rock** backhauled to mine pit for subaqueous storage.
- **Comprehensive water management plan** that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of flow changes on stream flow and fish habitat.
- **Removal of mill and other infrastructure** not required for closure and reclamation.
- **Reclamation of disturbed areas** through grading, use of top soil as need and revegetated.
- **Road system retained** as needed for post-Closure activities and monitoring.
- **Pit lake water quality will be monitored;** water will be treated and discharged before levels approach elevation where groundwater flows outward from the open pit.

For more details, see Attachment D Project Description, Department of Army Application for Permit (POA-2017-271) on www.PebbleProjectEIS.com.

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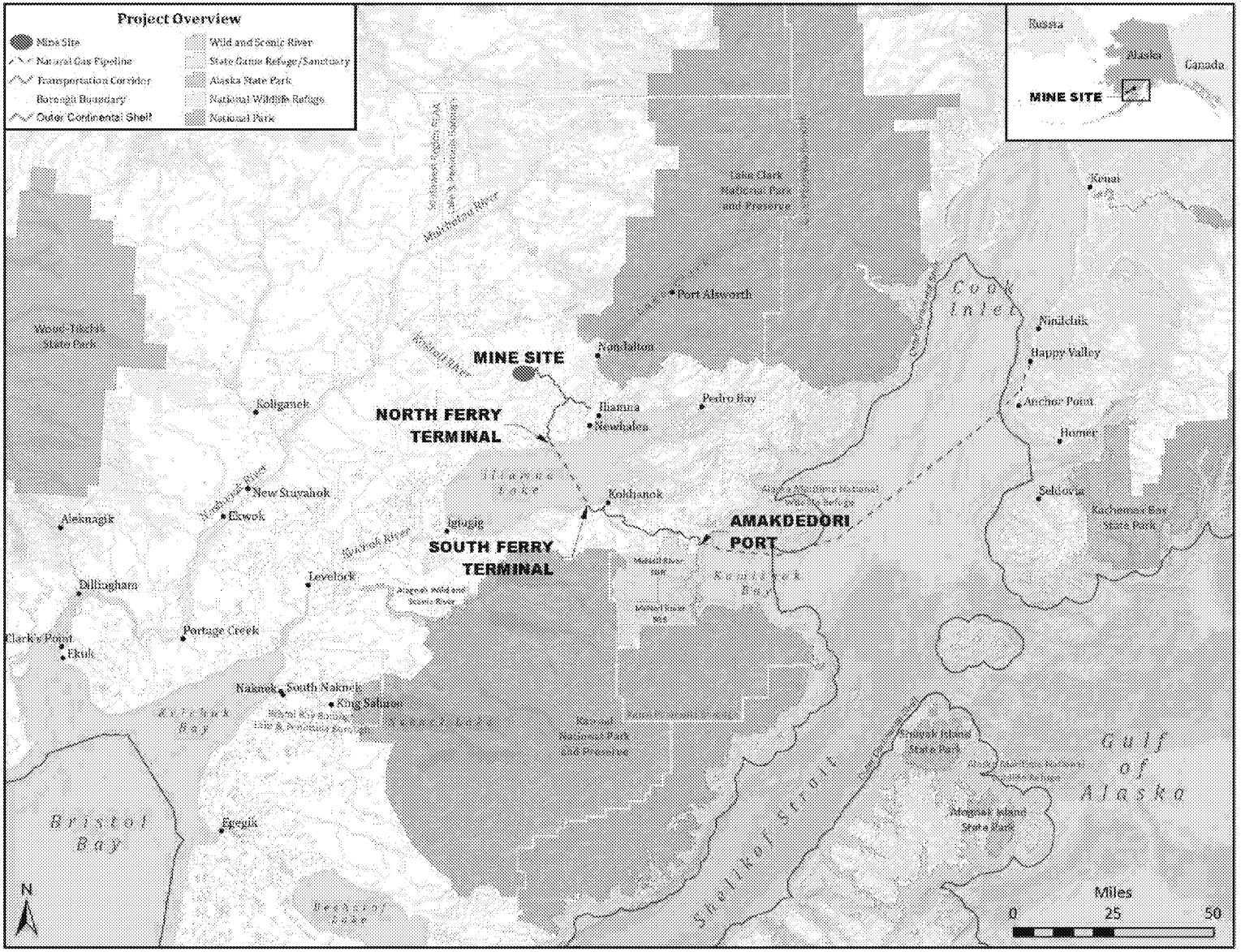

Figure 1. Project Overview

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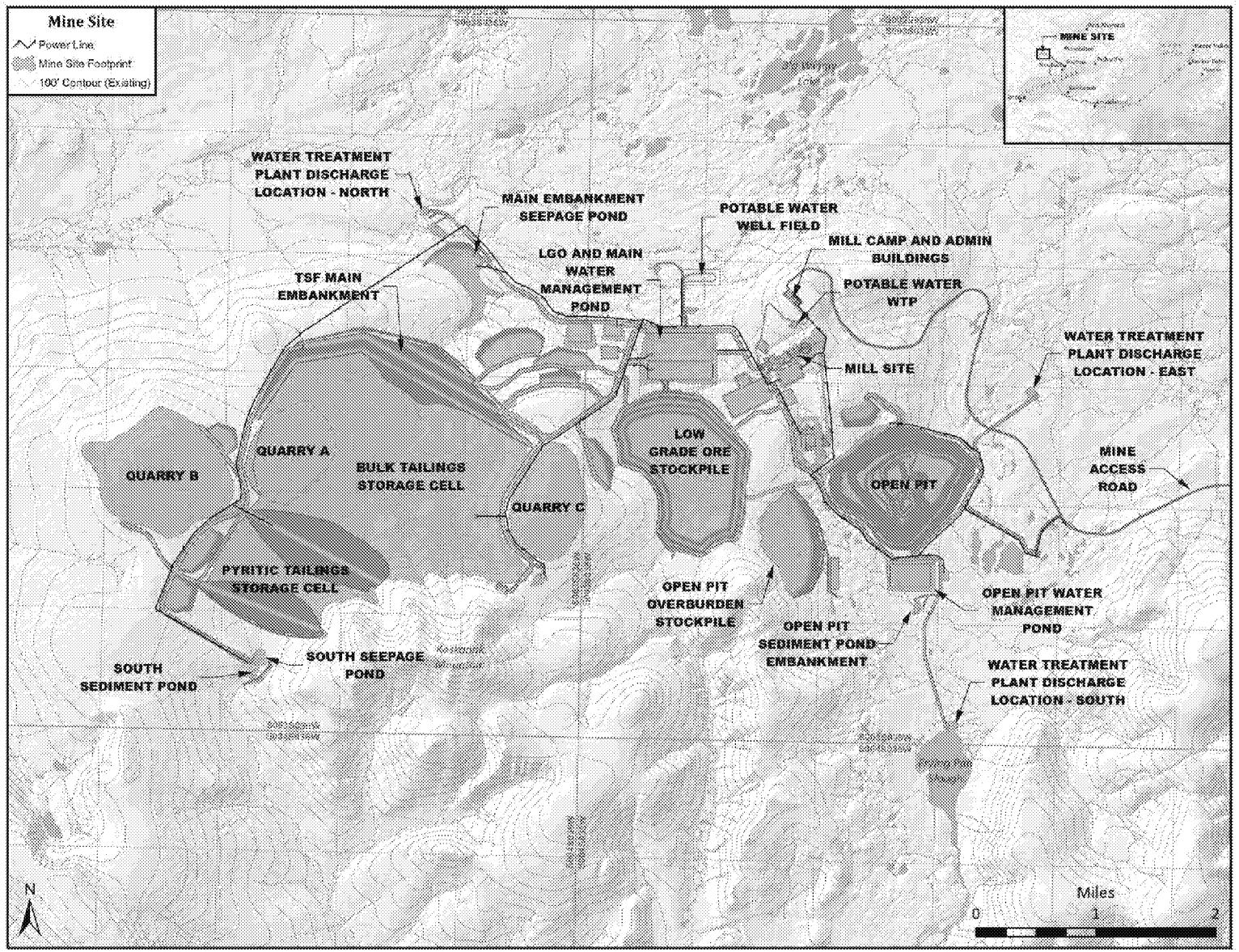

Figure 2. Mine Site and Associated Facilities

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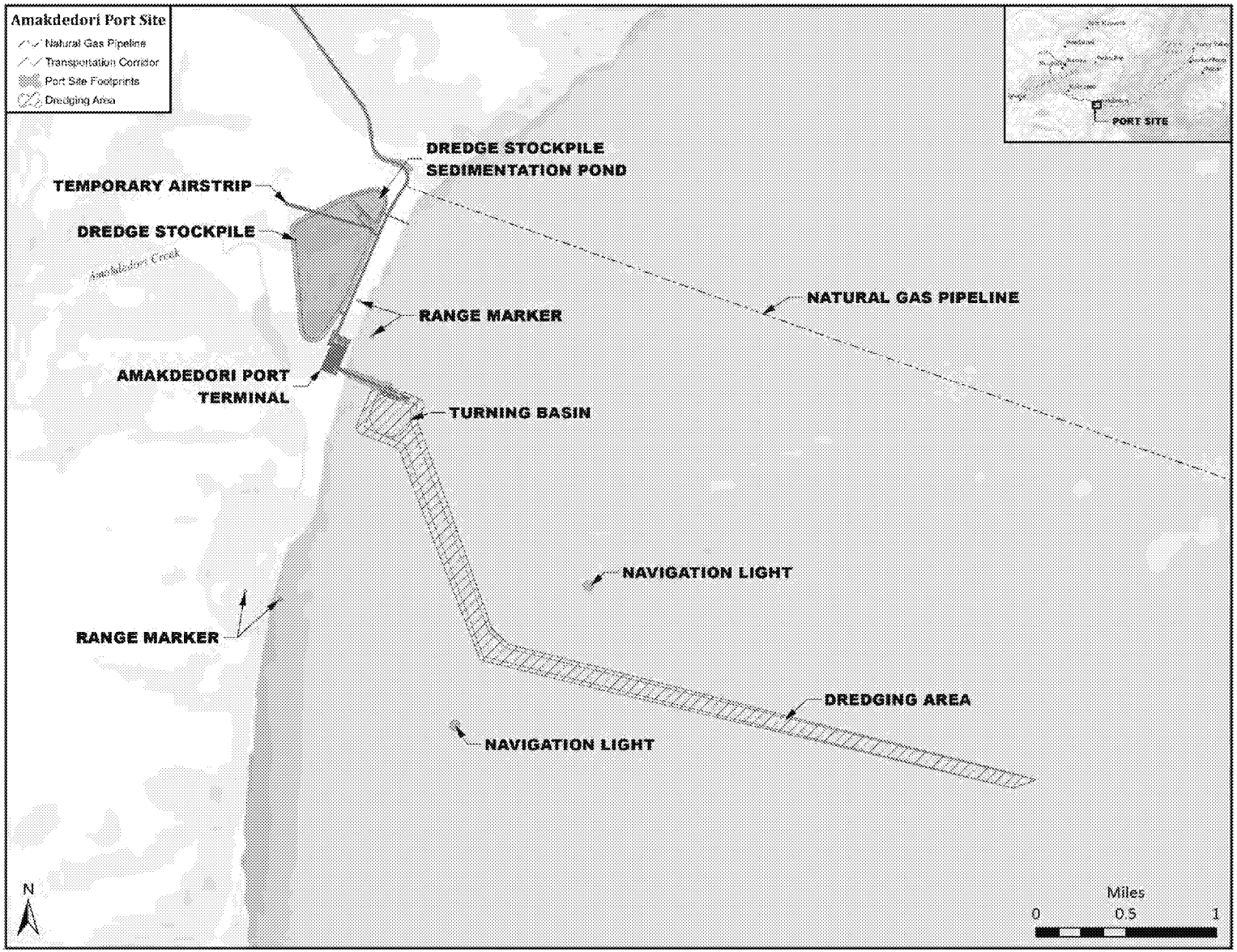

Figure 3. Amakdedori Port Site

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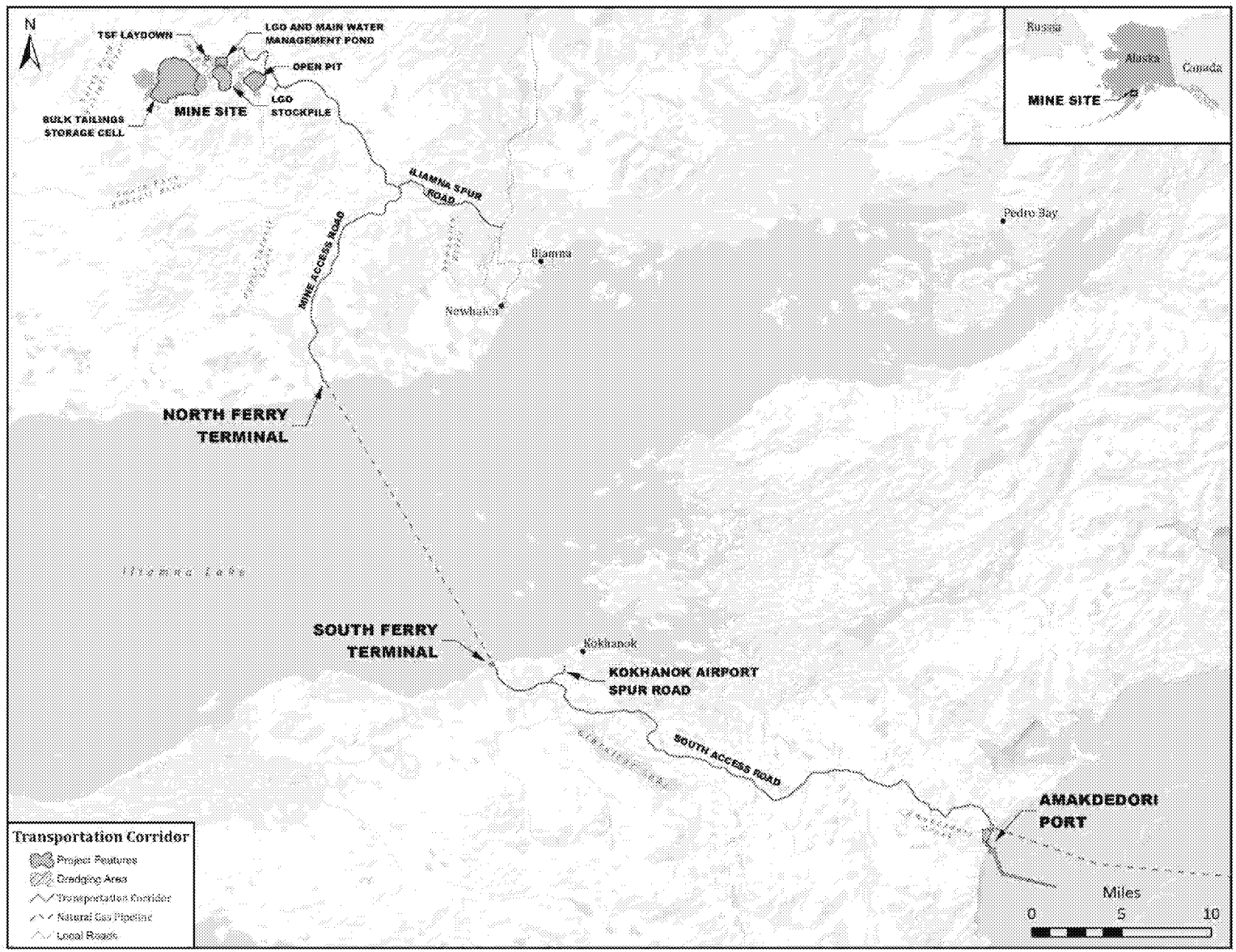

Figure 4. Transportation Corridor

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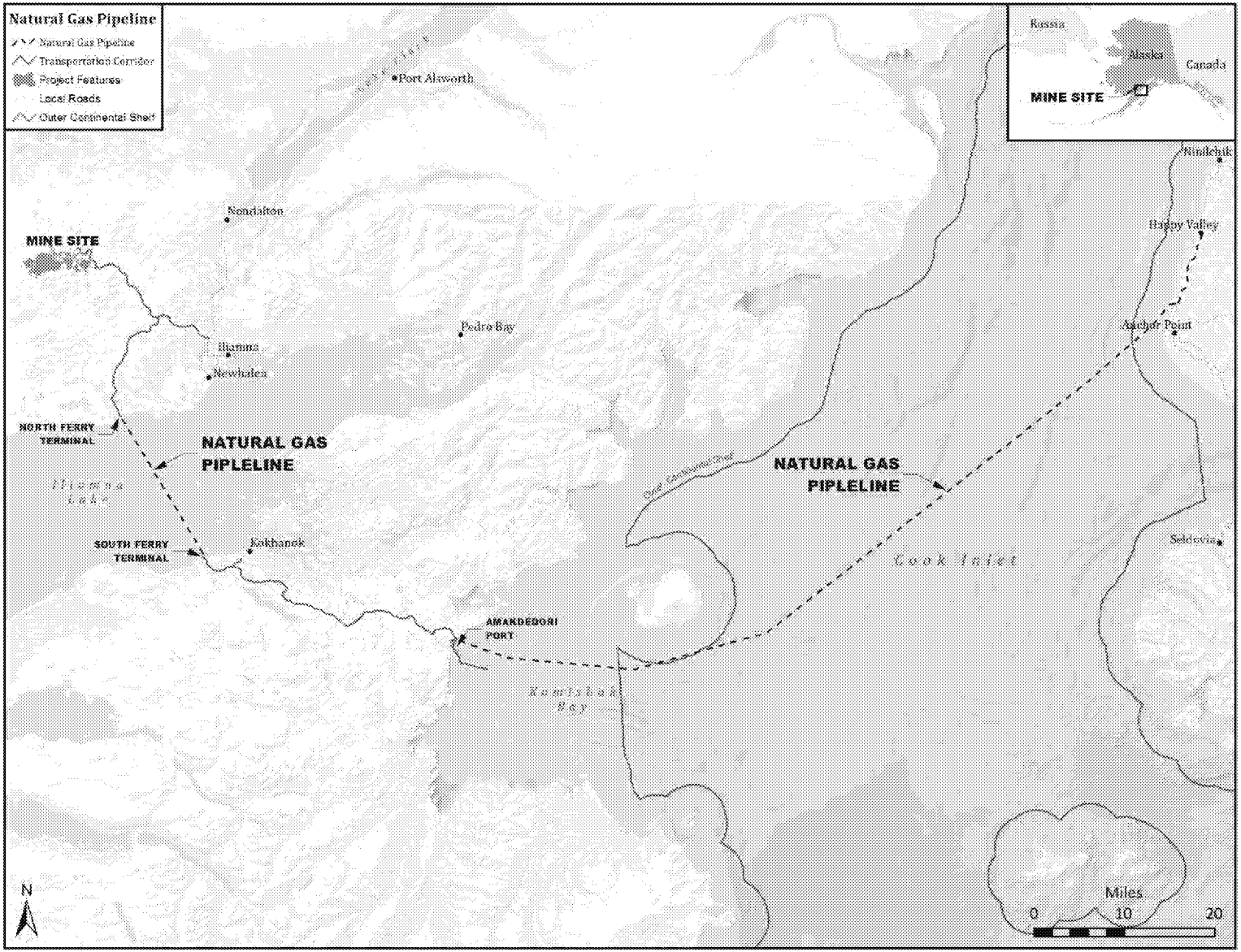

Figure 5. Natural Gas Pipeline

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How Alternatives will be Developed for the Pebble Project Environmental Impact Statement (EIS)

1. Identify need to which the United States Army Corps of Engineers (USACE) – Alaska District is responding and identify the overall project purpose. State the applicant's objectives for the project.
2. Compile a range of alternatives to be considered that meet the overall project purpose with consideration of the applicant's objectives. The alternatives compilation will include the no action alternative, any alternatives considered by the applicant, and alternatives suggested during the scoping process.
3. Determine whether identified alternatives are reasonable in accordance with the National Environmental Policy Act.
    a. Reasonable is based on the consideration of the overall project purpose including stated objectives as well as technology, economics, and common sense.
    b. Determine whether an alternative meets the overall project purpose inclusive of objectives.
        i. Alternatives that do not meet the overall project purpose will be eliminated at this stage.
        ii. Alternatives that meet the overall purpose will move forward.
    c. Alternatives that meet the overall project purpose will be reviewed to determine whether the alternative was available to the applicant during project planning (past 10 years).
        i. Alternatives identified as reasonable but were not available to the applicant will be removed at this time.
        ii. Alternatives that were available will move forward.
    d. Alternatives will be reviewed for technical feasibility (can these alternatives be accomplished using existing technology and equipment?).
        i. Alternatives determined to not be technically feasible will be removed at this stage.
        ii. Alternatives determined to be technically feasible will move forward.
    e. Alternatives will be reviewed for economic feasibility.
        i. Any alternative claimed to not be economically feasible by the applicant will require an economic analysis to support statement.
        ii. An alternative proven to not be economically feasible will be removed at this time.
        iii. Alternatives determined to be economically feasible will move forward.
    f. Alternatives will be reviewed using common sense.
        i. Alternatives that increase adverse environmental impacts will be removed at this time.
        ii. Alternatives will also be reviewed for logistical feasibility. Alternatives that are not logistically feasible will be removed at this time.

Identified REASONABLE ALTERNATIVES with significantly LESSER impacts will be evaluated in the EIS along with the NO ACTION alternative and the applicant's PROPOSED alternative.

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How Alternatives are Screened for Practicability

Due to the USACE specific authorities, alternatives must also be screened for practicability. The practicability determination is described below. Ultimately, the USACE must identify the **least environmentally damaging practicable alternative (LEDPA)** in the Record of Decision prior to making a decision under Section 404 of the Clean Water Act.

1. From the identified reasonable alternatives, further identify practicable alternatives in accordance with Clean Water Act Section 404(b)(1) of the Clean Water Act (the Guidelines). The Guidelines state practicable means the project is available and capable of being done after taking into consideration **cost**, **existing technology** and/or **logistics** in light of the overall project purpose including the applicant's objectives. Logistics and existing technology have at this point been screened in our determination of reasonable alternatives and are included below only for completeness and explanatory purposes. *An alternative needs to fail only one practicability factor to be determined not practicable*.
    a. Costs – Cost is analyzed in the context of the overall scope/cost of the project and whether it is unreasonably expensive. This determination is typically made in relation to comparable costs for similar actions in the region or analogous markets. Cost is to be based on an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost must be current with respect to the time of the alternatives analysis. Because one alternative costs more than another does not mean that the more expensive alternative is impracticable. It is important to note that in the context of this definition, cost does not include economics.
    b. Existing Technology – The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available.
    c. Logistics – The alternatives evaluated may incorporate an examination of various logistics associated with the project (e.g., placement of facilities within a specified distance to major thoroughfares, utilization of existing storage or staging areas, and/or safety concerns that cannot be overcome).
    d. Availability – The Guidelines state that if an alternative is otherwise practicable, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, the fact that an applicant does not own an alternative parcel, does not preclude that parcel from being considered as a practicable alternative. This factor is normally a consideration as a logistics and possibly cost limitation.
    e. Two tests are specified in the Guidelines for alternatives when the basic purpose of a project does not require siting within special aquatic sites such as wetlands. The basic purpose of this project is mining. The type of mining proposed (transitional metal-copper, gold, molybdenum) does not require siting within special aquatic sites. Therefore:
        i. It is presumed that alternatives that do not affect special aquatic sites such as wetlands are available

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ii. It is presumed that alternatives in sites that are not special aquatic sites will have a LESSER ADVERSE impact on the aquatic ecosystem

Once an otherwise practicable alternative has been identified, the applicant (Pebble Limited Partnership) will be required to clearly demonstrate to the USACE that both of these presumptions have been rebutted or the alternative will be considered in the determination of the LEDPA.

**All practicable alternatives are also reasonable alternatives.

2. The final step in developing alternatives is to construct detailed descriptions for the reasonable alternatives that have been retained and carried forward for evaluation in the EIS.

How the Public Can Provide Useful Guidance on Alternatives that should be Considered in the EIS

The purpose of scoping is to determine the alternatives that should be considered in the analysis and determine the extent and nature of issues by which each alternative should be evaluated.

Scoping is an important opportunity for all citizens to provide specific suggestions for alternatives that should be considered in preparing the EIS, and issues that should be addressed in that process. The following guidelines may be useful in submitting comments during the scoping period (*examples shown in italics*):

1. Keep in mind the reasonable alternative screening criteria described above – any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (*mining methods, water treatment, tailings management*), the port site, the transportation corridor and modes (*rail*), and the natural gas pipeline.
3. You can suggest changes in location of project components (*road, port site, mine components*).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (*construction of a rail connection may eliminate truck traffic and reduce dust levels*).

The USACE will make the results of the scoping process publically available by publishing the Scoping Report on the project website (pebbleprojecteis.com) and will also communicate information for newsletters.

How Alternatives will be evaluated in this EIS

Once reasonable alternatives have been identified for evaluation as above, the USACE will evaluate each alternative in relation to the following:

- Conservation
- Economics
- Aesthetics

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- General environmental concerns
- Wetlands
- Historic properties (inclusive of sacred sites or areas of community and/or spiritual significance)
- Fish and wildlife values (inclusive of endangered species, marine mammals, fisheries and wildlife)
- Flood hazards
- Floodplain values
- Land use (inclusive of transportation corridors)
- Navigation
- Shore erosion and accretion
- Recreation
- Water supply and conservation
- Water quality
- Energy needs
- Safety
- Food and fiber production (this would include subsistence activities)
- Mineral needs
- Considerations of property ownership
- The needs and welfare of the people

In the EIS, we will develop a framework to analyze each of these issues with emphasis on issues that rise to the highest level of importance.

During scoping, we are also asking you to help us determine which of these factors are of highest concern to you, to provide information of specific concern regarding any factor listed, and to identify any other specific issues that are not listed. As with your comments related to alternatives, please be as specific as possible when identifying other issues or expanding on issues identified above. This will help us develop the analytical framework moving forward.

For alternatives identified as practicable, the USACE will ultimately make the following determinations:

1) Whether the alternative is the least environmentally damaging practicable alternative,

2) Whether the LEDPA will cause or contribute to the violation of applicable state or federal laws, such as water quality standards or the Endangered Species Act,

3) Whether the LEDPA will result in significant degradation of waters of the United States

4) Whether the LEDPA includes appropriate and practicable steps have been taken to minimize the adverse impacts of the project on wetlands and other waters.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.
For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.
For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects.
For example: wetland fill from one project, combined with the wetland fill from a separate project.

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What is NEPA?

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA's goal is to help the federal government make decisions with full understanding of the potential environmental consequences associated with federal projects or authorizations. A thorough understanding of consequences allows us to identify potential actions that can be taken to protect, restore, or enhance the environment.

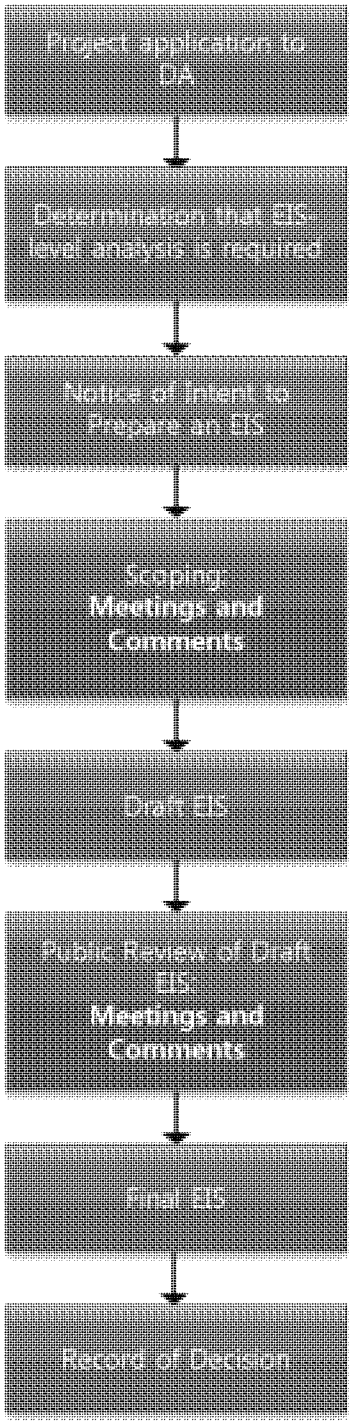
As the USACE prepares to review the submitted permit application, it must conduct a detailed study of:

- how the project will be built,
- the consequences of the project (good or bad) on the environment and for communities,
- alternative ways to develop the project that still meet the project's purpose and needs while better protecting people and the environment, and
- measures that can be taken to avoid or lessen any harmful impacts of the project.

Transparency

Before a decision is made and throughout its analysis, the federal government must ask citizens to voice concerns and suggest alternatives to ensure decisions on federal actions are well informed.

Steps in the EIS Process



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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of anlaysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. As lead agency, the USACE is responsible for identifying, inviting, and assigning roles to cooperating agencies including agencies that also have permitting decisions to make for the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisiplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide the interdisciplinary team that will develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, developing the Draft and Final EIS, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

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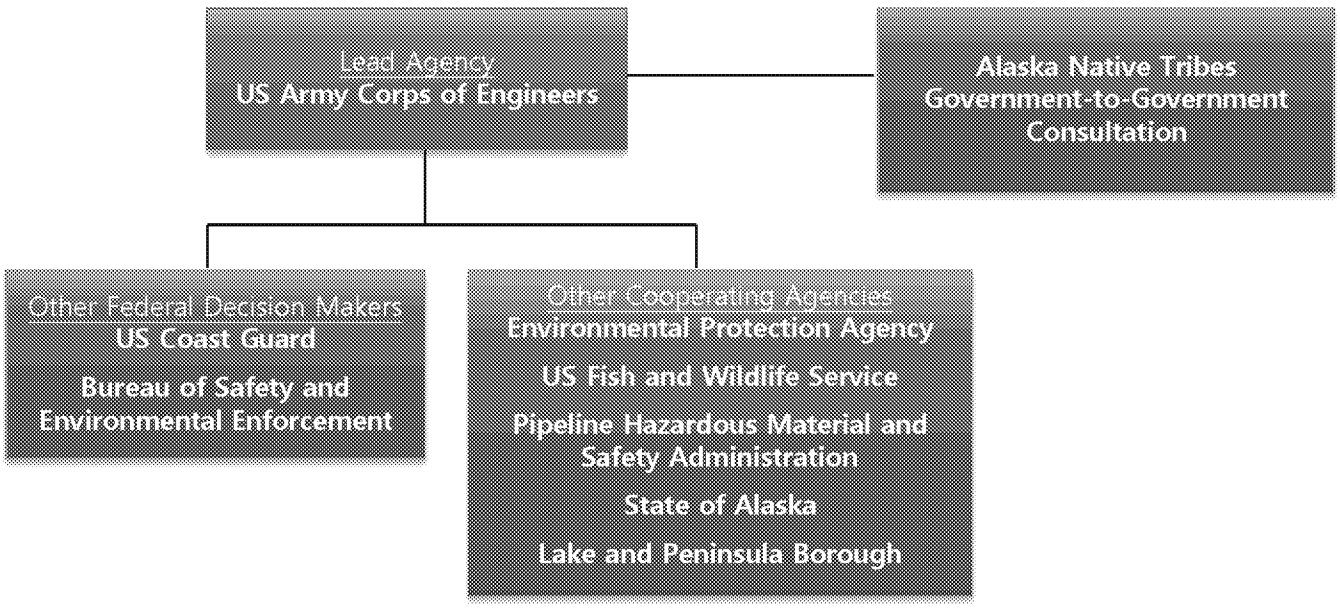
Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirity of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Lead and Cooperating Agencies



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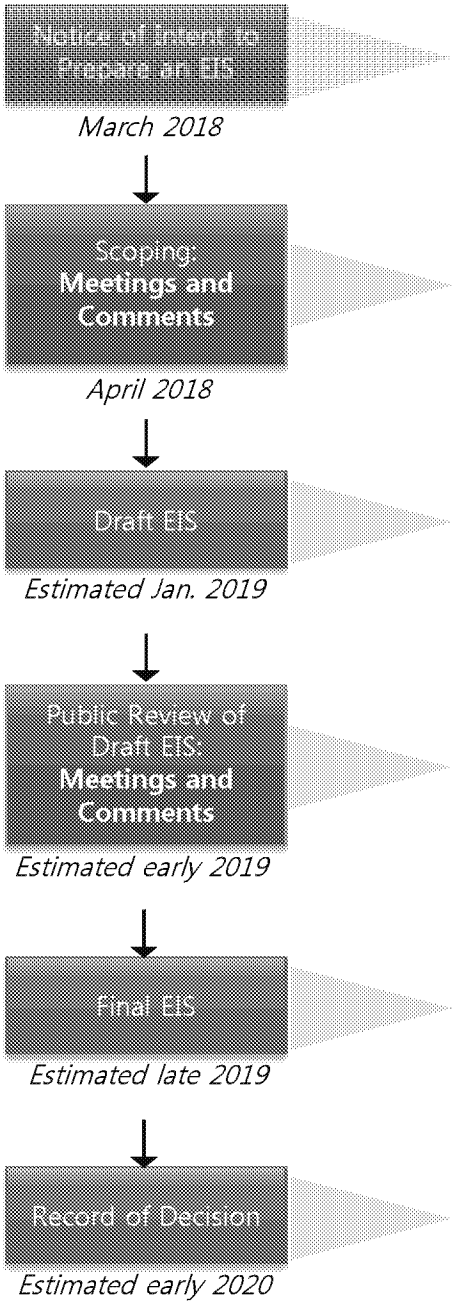
EIS Schedule

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began in December 2017, when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership (Applicant). The EIS process will take several months to complete a Draft EIS for public review, with a Final EIS expected within 24 months. The estimated schedule for the EIS is below.

Steps in the EIS Process



The USACE released a Notice of Intent to the United States Federal Register in March 2018. This initiated the process to prepare an EIS and began the scoping process.

The 30 day scoping process kicks off on April 1, 2018. Public meetings will be held at specific locations within the Bristol Bay region, and in Homer and Anchorage in April. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period. The Draft EIS is anticipated to be released for public review and comment in 2019.

After the Draft EIS is released, the public will have a minimum of 45 days to submit comments. During that time, the USACE will plan public meetings, in the same locations that occurred during scoping, estimated for 2019.

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release in 2019.

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application. This is estimated to be released in 2020.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. The EIS will be organized into chapters to address the specific requirements in the National Environmental Policy Act (NEPA). By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and providing comments.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consiquences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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How to Comment

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

General recommendations

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings. The website for the Pebble Project EIS is www.PebbleProjectEIS.com.
- **Learn about the steps in the NEPA process** and opportunities for submitting to the U.S. Army Corps of Engineers (USACE). Public comment periods are during scoping, and at the draft EIS.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through April 30.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed before the USACE makes a final decision on the permit application. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS. For a citizen's guide to NEPA, visit https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.

Tips for Writing Effective Comments

- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Support your statements** with explanations, facts, and references, as appropriate.
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29, 2018.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publically available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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OVERSIGHT
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From:

Please place first-class postage here.

Program Manager
US Army Corps of Engineers Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK 99506-0898

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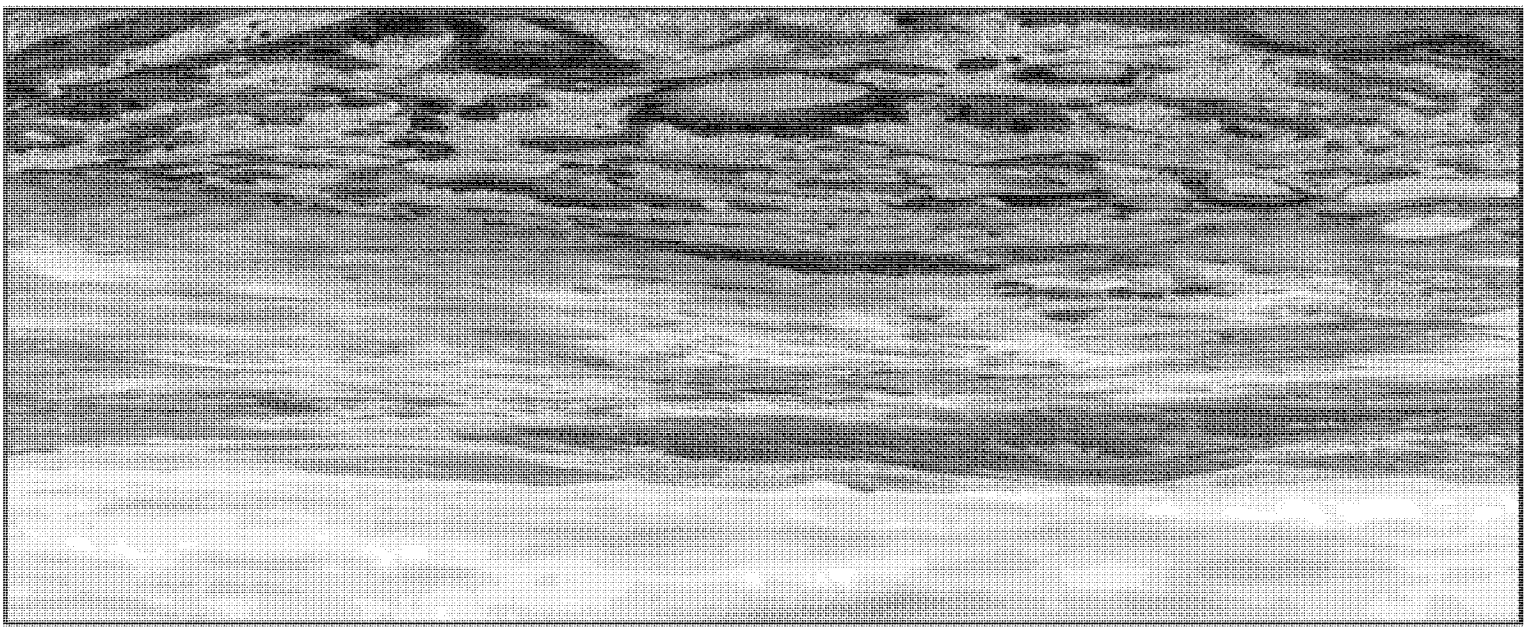

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Frequently Asked Questions

What is the U.S. Army Corps of Engineers' relationship with the applicant?

The U.S. Army Corps of Engineers (USACE) has no relationship with the applicant and is neither for or against the project. The USACE has a responsibility to review the applicant's proposed project with the same objectivity as it would any permit application and make a permit decision under the USACE statutory authorities.

Is the Pebble Project already approved and going to be built?

No.

What is the USACE's role in reviewing this project?

The applicant has applied for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. It is the USACE's responsibility to evaluate their application and ultimately make permit decisions (approval or denial) under the USACE's Clean Water Act and Rivers and Harbors authorities.

Why is the USACE conducting an EIS for this project?

The National Environmental Policy Act (NEPA) mandates an EIS-level of analysis should be conducted for review of any potential federal authorizations that could "significantly affect the quality of the human environment." The USACE has reviewed the permit application and has determined that the proposed project could "significantly affect the quality of the human environment."

Are any other federal decisions required based on the applicant's submittal of the permit application?

Two additional federal agencies have federal decision making authority: the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement, and the U.S. Coast Guard.

Will the USACE seriously consider the No Action Alternative and what factors might lead to its selection?

The USACE cannot be pre-decisional, therefore, the process will be required to analyze and consider the No Action Alternative. In the context of USACE's evaluation, the No Action Alternative constitutes an action that would not include the discharge of fill material into waters of the United States.

What is the role of cooperating agencies that do not have federal decisions to make?

The role of cooperators invited due to specific expertise is to support the lead agency in developing the environmental analysis and providing technical assistance at the request of the lead agency.

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What is the role of federally recognized Alaska Native Tribes in the EIS process?

Thirty five federally recognized Alaska Native Tribes have been asked to consult directly with the USACE as lead agency throughout the entire decision making process to include the development of the environmental impact statement.

When and how will my comments be considered in preparing the EIS?

Public comments can be submitted at any time during the preparation of an EIS. Formal requests for comment occur during two important phases of an EIS:

- During the Scoping Period, the public is asked to comment on the issues and potential impacts that should be addressed in the EIS. The public is also asked to suggest alternatives to the proposed action that should be considered for evaluation in the EIS.
- Once the Draft EIS is released for public review and comment, the public is given the opportunity to submit comments in written form via the project website and orally at public meetings on the Draft EIS.
- All comments submitted will be put into the record, analyzed, and considered in determining the scope and potential impacts within the EIS and in making changes to the Draft EIS during the preparation of the Final EIS.
- The USACE is required to prepare responses to comments submitted on the Draft EIS; comments submitted and response will be included in the Final EIS.

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Pebble Project EIS

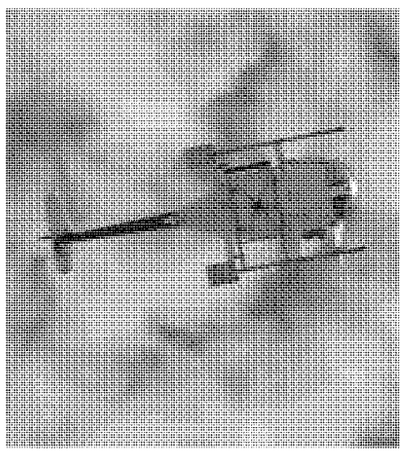
NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.

2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.

3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

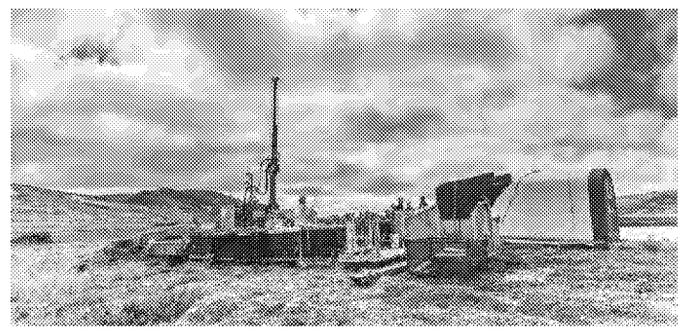
ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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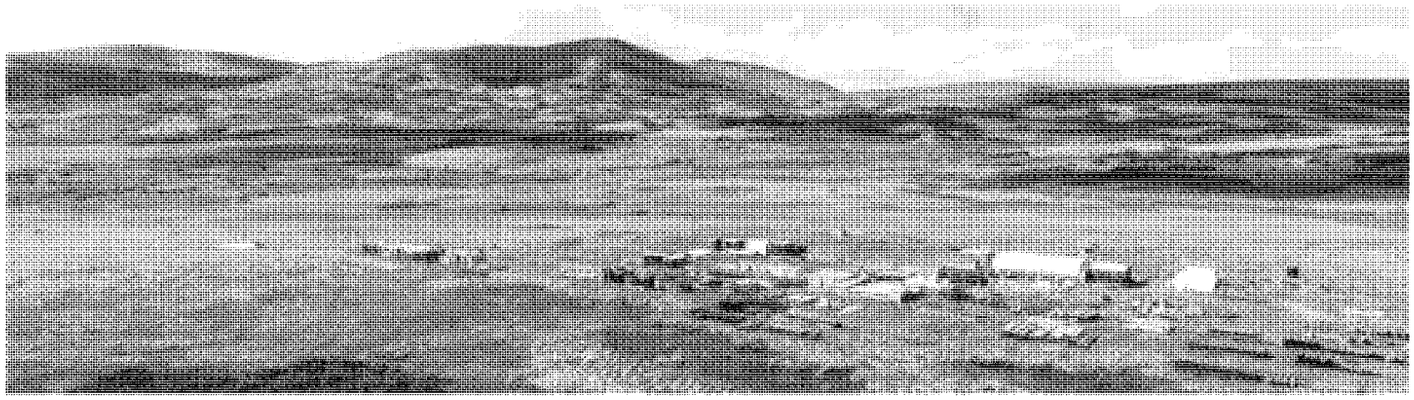

Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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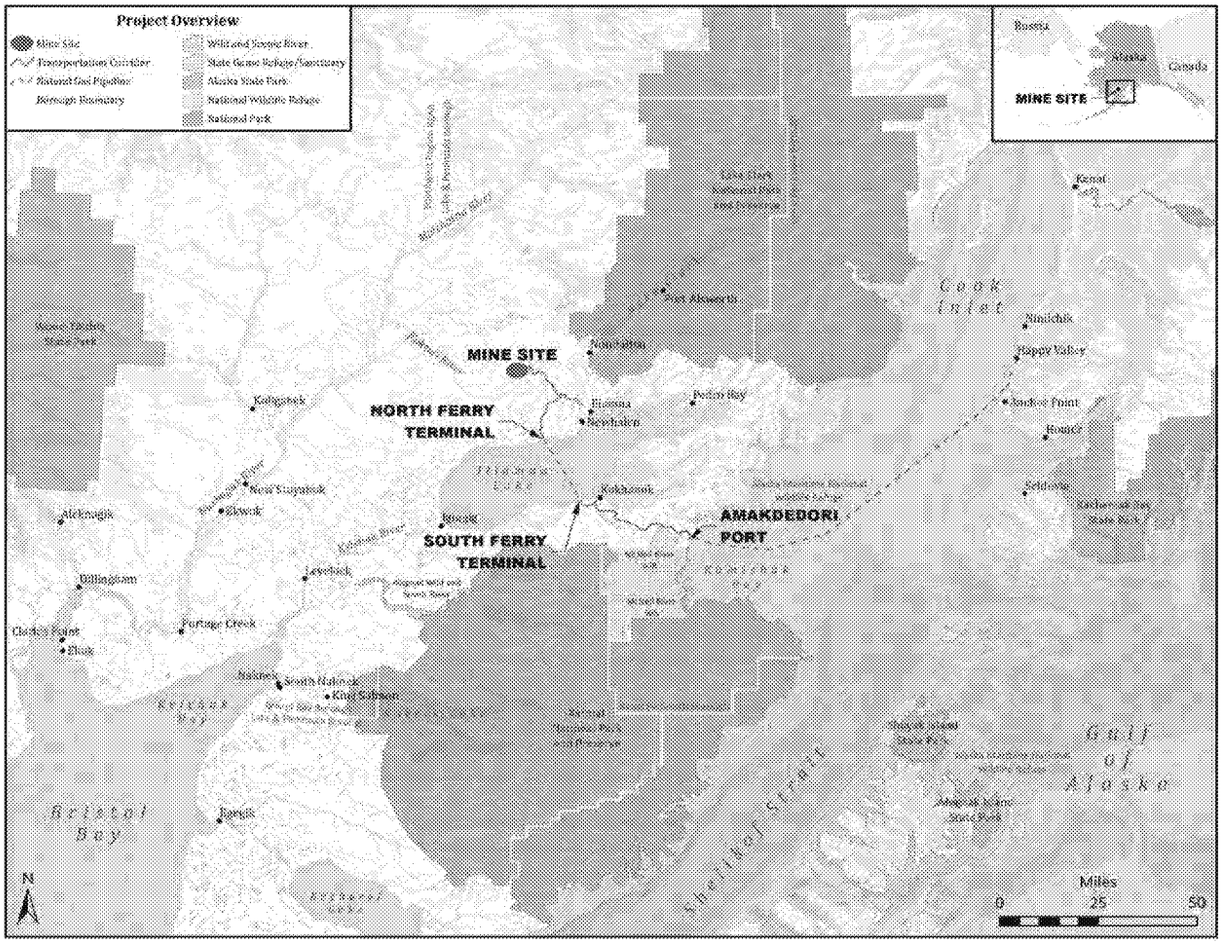
Project Overview
Mine Site
Transportation Corridor
Natural Gas Pipeline
Borough Boundary
Wild and Scenic River
State Game Refuge/Sanctuary
Alaska State Park
National Wildlife Refuge
National Park
Russia
Alaska
Canada
MINE SITE
MINE SITE
NORTH FERRY TERMINAL
SOUTH FERRY TERMINAL
AMAKDEDORI PORT
Kenai
Cook Inlet
Nikiski
Tyonek
Kalgin Island
Ninilchik
Happy Valley
Anchor Point
Homer
Seldovia
Kachemak Bay State Park
Kasilof
Kenai River
Kasilof River
Kenai Mountains Turnagain Arm National Heritage Area
Alaska Maritime National Wildlife Refuge
Kachemak Bay
Kamishak Bay
Lake Clark National Park and Preserve
Lake Clark
Iliamna
Newhalen
Pedro Bay
Kokhanok
Iliamna Lake
Nondalton
Pile Bay
Williamsport
Port Alsworth
Lake Clark Pass
Portage Pass
Merrill Pass
Chinitna Bay
Redoubt Volcano
Redoubt Mountain
Mount Spurr
Mount Susitna
Mount Iliamna
Mount Redoubt
Mount Douglas
Mount Gordon Lyon
Mount Augustine
Augustine Island and South Shore
Lake Clark Pass
Lake Clark National Park and Preserve
Lake Clark & Portage Pass
Lake Clark & Merrill Pass
Lake Clark & Chinitna Bay
Lake Clark & Redoubt Volcano
Lake Clark & Mount Spurr
Lake Clark & Mount Susitna
Lake Clark & Mount Iliamna
Lake Clark & Mount Redoubt
Lake Clark & Mount Douglas
Lake Clark & Mount Gordon Lyon
Lake Clark & Mount Augustine
Lake Clark & Augustine Island and South Shore
Lake Clark & Kamishak Bay
Lake Clark & Kasilof River
Lake Clark & Kenai River
Lake Clark & Kenai Mountains Turnagain Arm National Heritage Area
Lake Clark & Alaska Maritime National Wildlife Refuge
Lake Clark & Kachemak Bay
Lake Clark & Lake Clark National Park and Preserve
Lake Clark & Lake Clark Pass

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

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ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 08, 2018, April 09, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed _____
Joleesa Stepetin

Subscribed and sworn to before me
this 9th day of April, 2018

_____
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

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To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Naknek	Mon. April 9, 2018	3:30 – 7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30 – 7:30 pm Tribal Hall
Homer*	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30 – 7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00 – 4:30 pm Community Bldg
Nondalton	Mon. April 16, 2018	3:30 – 7:30 pm Tribal Center
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Anchorage*	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 15, 2018, April 16, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin
Joleesa Stepetin

Subscribed and sworn to before me
this 16th day of April, 2018
Britney Thompson
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

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Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

AFFP

Notice of Public Meetings

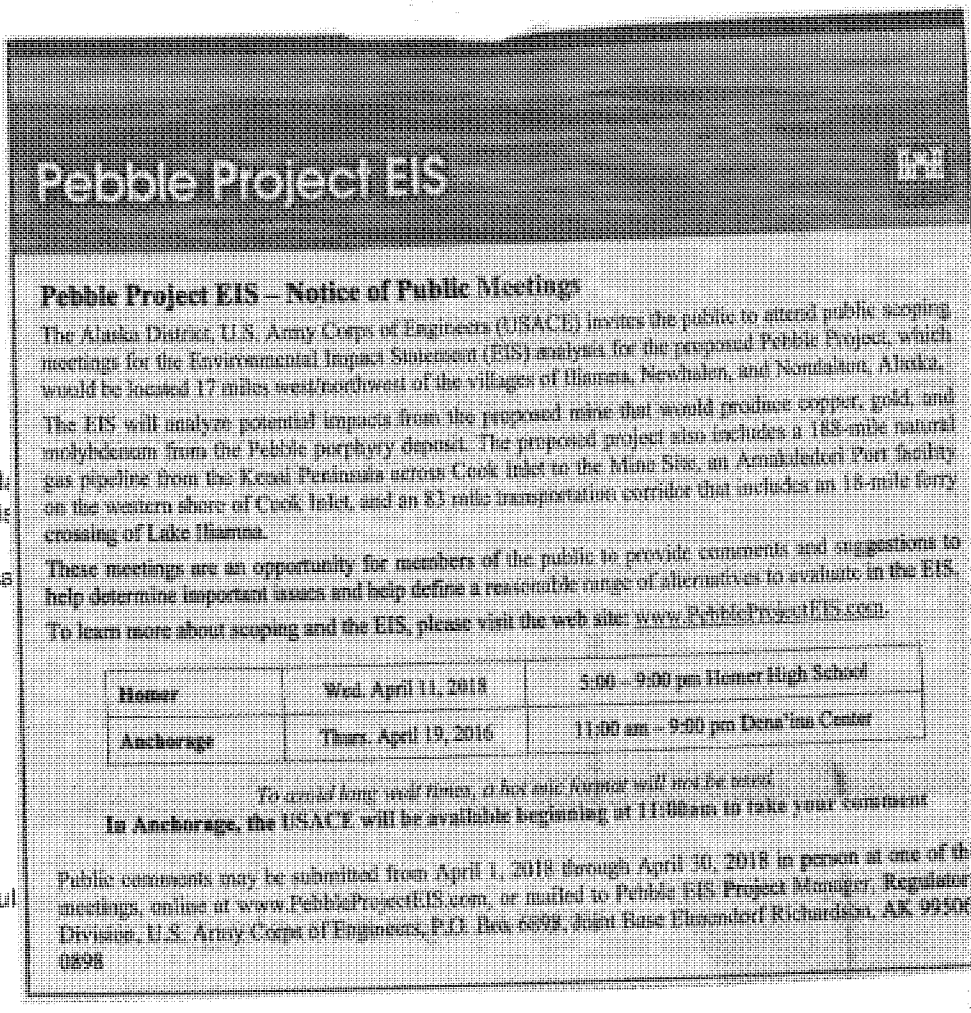
Affidavit of Publication

STATE OF ALASKA }
COUNTY OF KENAI } SS

Denise Reece, being duly sworn, says:

That she is Principal Clerk of the Homer News, a da
newspaper of general circulation, printed and publis
Homer, Kenai County, Alaska; that the publication,
of which is attached hereto, was published in the sa
newspaper on the following dates:

April 05, 2018, April 12, 2018



Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

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Anchorage	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

To avoid long wait times, a box size keypad will not be used.

In Anchorage, the USACE will be available beginning at 11:00am to take your comments.

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of th meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulator Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506 6898

That said newspaper was regularly issued and circul
on those dates.
SIGNED:

Denise Reece
Principal Clerk

Subscribed to and sworn to me this 12th day of April 2018.

Mary Von Beaudion, Notary Public, Kenai County, Alaska

My commission expires: August 29, 2020

MARY VON BEAUDION
Commission Expires
NOTARY
PUBLIC
AUGUST 29, 2020
STATE OF ALASKA

00001218 13002507

Jessica Evans
AECOM
700 G. Street, Suite 500
ANCHORAGE, AK 99501

AMERICAN OVERSIGHT

US Army Corps of Engineers

Invites You to Attend Public Scoping

for the

Pebble Project EIS

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The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the Pebble Limited Partnership's proposed project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts, benefits, and alternatives from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

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APPENDIX C – MEETING SIGN-IN SHEETS

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1.	Maureen Knutsen	self/~~husband~~	(b) (6)
2.	HENRY F. Fischer Jr	Self employed	
3.	William REGAN	RETIRED	
4.	Dorothy M Larson	BBNC	
5.	Marilyn A Hanson	housewife	
6.	Paul Hansen Sr	Subsistence/Fisherman	
7.	Sharon Thompson	resident	
8.	~~Alex~~ Williams	PLP/Self	
9.	Richard Russell	formerly ADFG but now just for myself	
10.	Peter Andrew	BBNC	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Henry		(b) (6) [redacted]
12. Ted Shangin		
13. Joe Chythlook	BBNC	
14. Quickley	BBNC	
15. Daniel J. O'Hara	Bristol Bay Borough	
16. Everett Thompson	Bristol Bay Fisherman Local	
17. Dylan Manuso	Bristol Bay Fisherman	
18. Mellisa Manuso	BB resident	
19. Lindsay Layland	BB resident	
20. Russell Phelps	BBNC	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. George Wilson Jr	BBFA/personal	(b) (6)
22. Russell Nelson	BBNC	
23. John Christensen	Native Village of Port Heiden	
24. Jodie Hasenbag	Naknek	
25. Cody Lawson	D. Mayhan	
26. MegAnna Schlais	Naknek	
27. Pete Cavasso	KS/Naknek	
28. CaroLAnn Hester	Naknek Set Gillnet Fisher	
29. Beth Hill		
30. Anna Hoover	Egegik Drifter	

Peter Andrews

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Eddie Clark	Egegik Setnetter	(b) (6)
32.	Dale Peters	NO MINE! NO WAY!! NAKNEK SETNETTER LOCAL BUSINESS OWNER	
33.	Veronica Wood	Naknek Resident	
34.	Eseta Sherman	Small Business	
35.	Joshua Gumlickpak	Alushagak Drifter	
36.	Paul Hansen Jr	Fisherman Driftnet	
37.	Rose Chr Hansen	Naknek Resident	
38.	Annette CARLSON	Naknek resident	
39.	Josey Wood	Resident	
40.			

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. William Weatherby		(b) (6)
42. Kate Conley	Lake & Peninsula Borough	
43. John Wise		
44. BECKY SAVO	resident BBB	
45.		
46.		
47.		
48.		
49.		
50.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Wesley Foster		(b) (6)
52.		
53.		
54.		
55.		
56.		
57.		
58.		
59.		
60.		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61.		(b) (6)
62.		
63.		
64.		
65.		
66.		
67.		
68.		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Gerald Andrew		(b) (6)
2. David McAlister		
3. Paul Chukwak		
4. Joe Chythlook		
5. John Nelson Jr	self	
6. Sheila M. Hobson		
7. Jim Tilly	self	
8. Michelle Ravenmoon	Lake & Penn Borough Assembly	
9. Steve Nowatak		
10. Joe Hyde		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Agnes Mike		(b) (6) [redacted]
12. Marlene Tilly		
13. Rickterff Marsha Rickterff		
14. Matt Matt Rickterff		
15. Kimberly Williams		
16. NATHAN HILL	LAKE + PENINSULA BOROUGH	
17. Trofim Wassillie		
18. Mariana Eknaty		
19. Diedre Hill	B.B.N.C. / land owner	
20. Mollie Gatzke		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Viola Paul		(b) (6)
22. Greg Andrew Jr.		
23. Sergie Chukwak	Levelockville	
24. Luke Zackar		
25. Gustie Tallekpalek	Levelock AK	
26. Gilbert Andrew	Kokhanok AK	
27. Laura Evan-Andrew	Kokhanok, AK	
28. Nick Nanyaka Jr.	Kokhanok AK	
29. Avery Gill	KDLG	
30. Cynthia Olympic-Andrew	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Alesia Newyak	Kokhanok	(b) (6)
32. Mary Nelson	Kokhanok	
33. Fran Andrew	Kokhanok	
34. Jimmy Ekuty	Kokhanok	
35. Natalia Wassillie	Kokhanok	
36. Marisa Hobson	Kokhanok	
37. Isaiah Mike	Kokhanok	
38. Joseph Zackar	Kokhanok	
39. John Chukwak	Levelock	
40. Martha Kernak	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Alice Cobb	Kokhanok	(b) (6)
42. John F. Gust	Kokhanok	
43. Gregory Wassillie	Kokhanok	
44. Samuel Madrid	Kokhanok	
45. Gail Heath (Hester)	Kokhanok	
46. Joe A Paine	Kokhanok	
47. Alexander Tallekpalek		
48. Joe Woods	Kokhanok	
49. Raymond Alokodak	Levelock	
50. Nicholas Chocknok	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Brittany Bush		(b) (6) [redacted]
52. Evangaline Chunak		
53. Sonia Delkittle		
54. ~~Megan Kloff~~		
55. SAMMARA chunak	Kokhanok	
56. Helen chunak	Kokhanok	
57. Cara Pellegrino	Kokhanok	
58. Shelby Gallio	Kokhanok	
59. Jordan Pufka	Kokhanok	
60. Charlene Roehl	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Test.ify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marlene Nielsen		(b) (6) [redacted]
62. Sharolyn Chocknok		
63. Jootsie Roehl	handed in	
64. Troy Anderson		
65. Kathy Wassillie		
66. Nancy Wassillie		
67. Jesse Davis		
68. Loney Moses		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. DAN BOONE	[redacted] NONE	(b) (6) [redacted]
2. JACK POLSTER	"	
3. Eileen Sheridan	Cook Inlet Keepers	
4. Gary Sheridan	"	
5. Wilma Williams	me	
6. Royce Page	none	
7. JACK ALLKROECE	NONE	
8. JOHN WHITTIER	NONE	
9. Amanda Kelly	none	
10. Janet Fink	none	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Sera Baxter		(b) (6) [redacted]
12. John Allardice		
13. MICHELLE MICHAUD		
14. Chris Perry		
15. Milli Martin		
16. BRYAN ZAK		
17. SHIRLEY EVANS		
18. Georgeanna Heaverley		
19. Shlomo Gherman		
20. [illegible]		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Bern Levine	none	(b) (6)
22. Linda Layland	n/A	
23. Emilie Springer	UAF	
24. Martha Crow	fisherwoman	
25. Charles Crampton	farmer-none	
26. Barbara Reilly		
27. Larry Shone	None	
28. Mili Lundgren	Fisherman	
29. Mike Lundgren	Fisherman	
30. Clyde Bogard	Interested Alaskans save our fishery	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Jeff Middleton		(b) (6) [redacted]
32. Dennis Andrews		
33. Shelley Gill	Eye of the Whale.org	
34. Michael Yourkowski		
35. Rae Lewis	Salmon Lover	
36. George Matz		
37. John Mcall	BBB	
38. MATT HAKALA		
39. Lorena Brown	Salmon State	
40. Jessie Nelson	Cook Inlet Aquaculture Lower Inlet Setter	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Beaver Nelson	Cook Inlet Seiner	(b) (6) [redacted]
42. Brad Cameron	Sportsfisherman	
43. Janette Latimer	Nurse	
44. Lisa Krebs	Bristol Bay Fisherman	
45. Tricia Curran	Tender owner in B.B.	
46. George Smallwood	Keeper	
47. Marika Carey		
48. Shine Carey		
49. Kyle Schneider	Sportfisherman/Educator	
50. Donna Adarhold	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Charlie Franz		(b) (6)
52. Claire Heaton	comfish	
53. Jim Plymale	Bear Cove Fisheries LLC	
54. Jinky Handy		
55. Malcolm Milne	North Pacific Fisheries Assoc.	
56. Revelle Russell	North Pac Fisheries Assoc UCIDA	
57. Jennifer Hakala	NPFA	
58. GARY AULT		
59. Andrew Gregorev		
60. Jaime Gable		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Jon James Sharp	human	(b) (6)
62. Chessie Sharp		
63. Laura McIntoe		
64. MARK MASSION		
65. Reba Temple	fisherman	
66. Ron KEFFER	CAN	
67. Carolyn Maolerd	teacher/salmon advocate	
68. STEVE BAIRD		
69. Jane Mills		
70. Catie Bursch	Fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Wendy Wayne		2435 Paradise Pl Homer HK 99603 (b) (6) [redacted]
72. Lolita Brache		
73. Tess Dally		
74. Charles Lindsay	VCIDA	
75. Renie Cannava		
76. Peter Cannava		
77. Joey Kraszeski		
78. Solstice Kraszeski		
79. LOGAN SANDER		
80. Barb Buzzelli Aust		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Pat & Lyle Bellamy		(b) (6) [redacted]
82. Cheryl Rykaczewski	Mariculture Oyster Farmer – ASSN.	
83. McKibben Jockinsky	Homer News/ Reporter Writer	
84. Sharon Brooks	resident	
85. Laura Luttrell		
86. ROB LUND	RESIDENT	
87. Karen Murdock	resident	
88. Thomas McDonough	resident	
89. Wesley Sharon Henry	resident	
90. LuAnne M. Nelson	resident	

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. Brandon Hill	Cook Inletkeeper	(b) (6)
92. Tim Scheffel DO	Private-Healthcare	
93. Stu Schmutzler	Private	
94. Amanda Campbell		
95. Sean Campbell		
96. Kathryn Carssow	private	
97. MAKO HAGGERTY	self	
98. Amy Christiansen	self	
99. Shevaun Miller	self	
100. Amy Woodruff	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Brenda Dolma	Alaskan (self)	(b) (6) [redacted]
102. Drue Smith	Alaskan	
103. Erin Knudtson	"	
104. Patricia Cue	Kachemak Bay Conservation Society	
105. Dina Cheeman	Alaskan	
106. Tim Steinberg	Alaskan	
107. Laurie Daniel	Alaskan	
108. Katie Dawson	Alaskan	
109. Tammy Cornwell	Alaskan / tourist	
110. David Schaible	Alaskan	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Philip Brudie	local fisherman	(b) (6)
112. Joe Symbersky	Local fisherman	
113. Dawn Symbersky	business owner	
114. Roberta Highland	Kachemak Bay Society Community	
115. Ernest Svoja	Local	
116. Bill Wiehe	Local	
117. Leon Smith		
118. Trisha J. Davis	Superfund Site Survivor	
119. Mark Munro	Fisherman Bear View Air Taxi	
120. Matthew Martushev	Commercial fisherman	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. NATACHA MCCANN		(b) (6)
122. John Mink		
123. SARAH ROBERTSON	HOMER BIRTH & WELLNES	
124. GLENN CALDWELL		
125. Jeff Dean		
126. Skywalker Payne		
127. Daniel Laylands	COOK INLET RESIDENT 35yr Bristol Bay Summer	
128. DAVE BACHRACH		
129. Doug Reid		
130. Deborah Smith	Cook Inlet Keeper Supporter	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Lynn Temple		(b) (6)
132. MARY FEISCHE		
133. KARA CLEMENS		
134. AndreaVanDinther	Bear Guide	
135. Sofia Loboy		
136. Isabella Loboy		
137. Hudson Loboy		
138. Joe Loboy		
139. Jeanne Parker	teacher	
140. Russell Miller		

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Public Scoping Meeting

Homer – April 11, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141.	Alison O'Hara		(b) (6)
142.	Miranda Weiss	Citizen voter mother	
143.	GREGORY FRIES	VOTER/CITIZEN	
144.	Morgan Edminster	Fisherman/voter/citizen	
145.	EDWIN O. KILCHER	COMMERCIAL BARGE & BUSINESS	
146.	Charlotte Adamson	Farmer	
147.	Francie Roberts	Citizen	
148.	LACEY VERSKO	COMMERCIAL FISH	
149.	Penelope Haas	ADF&G/Commercial fishing	
150.	Todd Gustafson		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Mark Schollenberger		(b) (6)
152. RICHARD HARNESS	SEASIDE ADVENTURE	
153. TORREY SHORT	Wildland Firefighter	
154. ELAINE BURGESS		
155. DORLA HARNESS	citizen	
156. Cynthia Morelli	fish eater	
157. Lynn Takeeda Spence		
158. SHERYL BAECHLER	HOMER CITIZEN LANDOWNER BTS	
159. Tim Whip		
160. JACK CUSHING	HOMER CITIZEN	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Susan Cushing	Homer Resident	(b) (6) [redacted]
162. Ivan Wood Bell	Homer Resident	
163. Shannon McBride-Morin	Kachemak Bay Wilderness Lodge, Homer	
164. Lars	Homer Resident	
165. Ben	Homer Resident	
166. Maggie Goedeke	Homer Resident	
167. Robert Johnson	Alaska resident, fisheries biologist, tribal employee	
168. Monica Zappa	Ninilchik, AK setnetter	
169. Peter Andrew	BBNC	
170. Rika Mouw	resident	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. Jennifer Dickson	Homer	(b) (6)
172. Sherri Burt	Seldovia	
173. Peggy Palmer	Homer	
174. Aaron Ford	Homer	
175. Nicole Arevalo	myself	
176. JUDY GONSALVES	BRISTOL BAY FISHERMA HOMER RESIDENT	
177. Charlie Christoffersen	Kenai	
178. Zenovia Prokopief-Talleknalek	Levelok	
179. Jordan Jackinsky		
180. Brad Thorenburgh	Homer	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181. Betty Siegel	-	(b) (6)
182. Daniel Del Missier		
183. Stephanie Zuniga	—	
184. Wes Schacht	Homeroid	
185. Jodi Andrews		
186. Christine Kulcheski		
187. Mikee Flora	Bristol Bay Fisherman	
188. Taylor Andrade	Homer Resident employed in Tourism.	
189. Kyla Dammann		
190. Anne Wieland	—	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191. Bob Moore	AK Resident 48 yrs.	(b) (6)
192. Mercedes Becker	Ak resident 21 yrs	
193. Karen Northrop	AK resident 21+yrs	
194. Ruby Haigh	AK resident 66yr	
195. Carrie Oats	Ak resident 19yrs.	
196. Cal Loomer	AK Resident	
197. Pete Beck	AK RESIDENT	
198. TRISH BOYER	AK RESIDENT	
199. Michael Mosley	Ak Resident	
200. Tim Osmar	Ak Resident	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201. Beverly Cronen		(b) (6)
202. Louis Dupree		
203. Amanda Miotke		
204. Diedre Hill	B.B.N.C.	
205. Karen Schmidt		
206. Kim M'Nett	Kachemak Bay Conservation Society	
207. NANCY HILLSTRAND	PIONEER ALASKAN FISHERIES	
208. Jeffrey Lee		
209. Joey Allred		
210. Karianna Derr	Homer	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211. Timothy Gervais	fisherman	(b) (6)
212. Ruby		
213. Margaret		
214. Meghan		
215. Eileen Mullen	fisherwoman	
216. Martin Kenne		
217. Sue Mauger		
218. WAYNE ANDERSON	—	
219. Anders Gustafson	Bristol Bay Heritage Land Trust Homer Local Guide	
220. Leah Evans	Homer	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
221. Mary Edminster	Homer	(b) (6)
222. Scott Bartlett	Homer	
223. Aimee Sulczynski		
224.		
225.		
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Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
231.		(b) (6)
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
241.		(b) (6) [redacted]
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Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Raymond Wassille		(b) (6) [redacted]	
2. Tasha Hobson	Student		
3. Wyatt Wassilie			
4. Lem Batchelder		Lem Bat	
5. Greg Anelon	self	greganelon@	
6. Myrtle Anelon	INL		
7. Ethel Adcox	Ili	eadcox@	
8. James R Lamont Sr.			
9. Verna Kolyaha	Pedro Bay	vjkolyah	
10. Wade	Student		

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Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ben Foss	Pedro Bay	b.foss@pedro bay.com	DK
12. Avery Lill	KDLG	avery@kdl	(b) (6) [redacted]
13. Keith Jensen	Pedro Bay	darthlice@	
14. Kara Jensen	Pedro Bay Tribe	Shavelasurfer	
15. Wynn Knighton	Pedro Bay	Knighton 9	
16. Molly Dischner	UTBB		
17. Ira W. Nickoli Jr Nickoli	none	—	
18. Terry Wassillie	Newhalen Tribal Council		
19. Samantha Herrick	Pedro Bay	Samantha.f	
20. Mike Clark	Iliamna	clarks4H	

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Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. [illegible]			
22. RANDY ALVAREZ			
23. Heather Hase			
24. [illegible]			
25. Kim Williams			
26. Chasity Anelon			
27. Alex Wassillie			
28. Lisa Reimers			
29. [illegible]			
30. Lovere Anelon			

(b) (6) [redacted]

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Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Nathan Kilbride	—	nate[redacted]	[redacted]
32. Maxine Wassillie			
33. Lydia Olympic	—	Ohlydia53[redacted]	
34. Joe Chythlook	BBNC		
35. Russell Nelson	Resident of BB	russell@[redacted]	
36. Norman Van Vactor	Bristol Bay Economic Dev. Corp	[redacted]	
37. Margie Olympic	Newhalen	molympic[redacted]	
38. Agnes Ryshinsky	Newhalen	aj772@ya[redacted]	
39. Chip Embretson	Iliamna	chipco5@[redacted]	
40. Harvey Anderson	Iliamna Natives		

(b) (6) [redacted]

AMERICAN OVERSIGHT

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Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Bill Cornell		Newhalen, A[redacted] (b) (6)	
42. Joanne Wassille		Newhalentr[redacted]	
43. Annie Wassille		Newhalen[redacted]	
44. Cathleen Gust		mybabyangel[redacted]	
45. Sheena Ismoode		sismoode ya[redacted]	
46. Sarah Armstrong		Sarmstrong[redacted]	
47. Tim Foster		[redacted]	
48.			
49.			
50.			

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Public Scoping Meeting

New Stuyahok – April 13, 2018

Father Alexie YES ✓

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. John Hanson Sr.	NSTC	N/A [redacted]	
2. (Wally) Wassilie Gust Sr	New Stuyahok Traditional Council	August 2015 [redacted]	
3. Blunka Stephan Blunka		new Stu[redacted] Box 17[redacted]	
4. Randal A Hastings	community member	P.O. Box 61 New Stuyahok[redacted]	
5. Wonhola Adrian Wonhola	community member	P.O Box 55 New Stuya[redacted]	
6. Timothy Wonhola	" "	" P.O B[redacted]	
7. Mike Oyaluk	" "	P.O. Box 12 New Stuyahok[redacted]	
8. John Hanson Jr	" "	Box 95 New Stuyaho[redacted]	
9. Kim Williams			
10. Tatianna Oyaluk		Box 73 New Stuyaho[redacted]	

(b) (6)

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Gustie Kusma		PO Box 82 New Stuya	
12. Moxie Andrew Jr.		mandrewjr@	
13. Matrona Gust		P.O. Box 168 New Stuyaho	
14. MaryAnn Gust		P.O Box 92 New Stuyah gustmaryann@	
15. Evan Kusma Sr.		P.O. Box 82 New Stuyaho	
16. DENNIS Andrew2		New Stuy	
17. Bobby Larson		Box 5028 Kollgeuc	
18. Thomas Tilden		tildenthom	
19. Tatianna Gumlickpuk		Box 26 New Stuyo	
20. Charlie & Gumlickpuck		11	

(b) (6) [redacted]

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US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Myrtice Evan	Nunamta Aulukestai	myrticeev	
22. Joe Chythlook	BBNC		
23. Gusty S Blunka Sr		P.O. Box 32	
24. Wass Nketa Sr.			
25. Mary Workola		P.O. Box 77 Church Road New Stuyaha	
26. Andrew Wyason		P.O. Box 93 New Stuya	
27. Peter Christopher Sr.	Stuyahok IRA	P.O. Box 85 New Stuya	
28. Lucas Bav	pupil	"	
29. Marie Paul	BBNC	mpaulch	
30. Hannah Hurley	UTBB	hhurle	

(b) (6)

[redacted]

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Lindsay Layland	NTBB	llayland[redacted]	
32. Frances A. Nelson	New Koliganek Village Council	P.O. Box 50[redacted] Koliganek	
33. Jent McBrown Jen tell	New Koliganek Villiage council	P.O. Box 5043[redacted] Koliganek A[redacted]	
34. Mary Ann Wassilie	New Stuyahok		
35. Michael Gust			
36. Matrona Andrew			
37. Irene Wonhola		P.O. Box 51 New Stuya[redacted]	
38. Natalia Christopher	New Stuyahok	P.O. Box 115 New Stuya[redacted]	
39. Natalia Oyaluk	New Stuyahok	P.O. BOX 73 New Stuyaho[redacted]	
40. Glen Olympic			

Glen Olympic

(b) (6) [redacted]

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Natalia Wassilliey		P.O. Box 37 New Stuy	
42. Blunka Wassilliey Sr		"	
43. Bjorn Olson	~~[illegible]~~	fatbikeb	
44. Wassilie Andrews		wassilieand	
45. Harvey Demantle		hdemantle	
46. SERGIE NALUK			
47. Annie Chunak		Bx 124 KNW AK	
48. Ivan Blunka		"	
49. Thomas Weedman		P.O. Box New Sta	
50. L. Alexie Askoda			

(b) (6) [redacted]

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New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Nina P. Gust			
52. James Acoral			
53. mike yuraluk		New Stu	
54. Phillip Pavella		New Stuyak	
55. Michael P Gumlickpuk			
56. Gustie Hanson Sr		New Stuyah	
57. Peter Ogaluk		New Stuye	
58. Dimitri Gust		dimitri gust@	
59. John Wonhola		John Wonhola	
60. Wassillie Blunka		blunka_c	

(b) (6)

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Public Scoping Meeting

New Stuyahok 13 ~~Newhalen~~ – April ~~12~~, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
~~51.~~ 61 Nancy Waskey		P.O. Box 13 New Stuyahok	
~~52.~~ 62 Dolores Larson		PO Box 5015 Koliganek,	
~~53.~~ 63 Tim Pawela			
~~54.~~ 64 Faith Andrew		fandrew@b	
~~55.~~ 65 Mary Olympic		PO Box 132 New Stuya	
~~56.~~ 66			
~~57.~~ 67			
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~~59.~~ 69			
~~60.~~ 70			

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Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Luther E. Hobson Jr.	R	[redacted]	
2. Charlotte Beaude			
3. Christina Salmon	Lake & Penn ~~the~~ Borough Assembly		
4. Jackie C Hobson		TPCRPR6	
5. John B Branson			
6. Michelle Ravenmoon	Lake & Penn & Borough Assembly		
7. Tim Vogel			
8. Darcelle Balluta	Lake & Penn		
9. Paul Hobson Hobson SR.			
10. June Tracey			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ventura Samaniego	Kijik Corp.	Venturu@Ki	
12. Billy Trefon Jr	Nondalton Tribal Council	billytrefonjr	
13. Timothy Hobson	None Nondalton	Timothy Hob	
14. George Allen Alexie	" "		
15. Natalia Martinka Martinka	Nondalton Tribal	—	
16. Elizabeth A. Ralph	" "	going	
17. Virginia Delkittie	Nondalton		
18. Melvin Trefon	NONDALTON		
19. Clara Trefon	Nondalton	ctrefon@b	
20. Louis Weedmark	Nondalton		

(b) (6)

[redacted]

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Clarence Delkittie	Tribe		
22. Bjorn Olson	UTBB	fatbike bs	
23. Alannah Hurley	UTBB	ahurley@	
24. Wesley Sanne Furlong	NARF	wfurlong@	
25. Molly Dischner	UTBB	mdischner	
26. EVANOFF Will Evanoff	Tribal Council		
27. Kristy Jeffries	Nondalton Tribal Council	c-ballut	
28. Sarah O'Neal	UW	sarahlouiseon	
29. Briana Delkittie	Nondalton Tribal Council		
30. nenita Wilson		wilsonnenita@	

(b) (6) [redacted]

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Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Michelle Wilson	Nondalton Tribal Council	ntcsecretary (b) (6) [redacted]	
32. Sunflower Delkittie	Nondalton Tribal Council	ntcttp@y[redacted]	
33. Darlene Molan	NND T. Member	[redacted]	
34. Randy Kakaruk	Nondalton Tribal Member	midianptg@g[redacted]	
35. Fawn Silas	———	Fawnsilas[redacted]	
36. Teresa Rickteroff	P.O. Box 73	↓ [redacted]	
37. Illeah Aaberg	PO Box 43	ileahaaberg[redacted]	
38. Chris Crookham	Po. Box 43	Chris Croo[redacted]	
39. Rob Kakaruk	PO Box 116	[redacted]	
40. Harry Karshakoff	PO Box 35 Kijik	[redacted]	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Kim William	BBNC	(b) (6) [redacted]	
42. Ivan Washington			
43. Eric Tallekpalek			
44. Myrtice Evalt	Nunamta Aulukestai		
45. Mark Noden	[illegible]	mnoden	
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Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Alannah Hurley	Yup'ik	[redacted] (b) (6)	
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Marie Paul	BBNC	(b) (6) [redacted]
2. Bertha Parian-Lockuk	UTBB	
3. Myrtle Ishnook	Ishnook	
4. William P Johnson		
5. Helen Adermen	BBNA Marine Mammals	
6. Wassiliisia Bernis	BBNA -CAO	
7. Wassiliisia Bernis	self	
8. Dave Bowker	-	
9. Patricia Treydte	Self	
10. Everette Hyderson	BBNC	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Karl Hill		(b) (6)
12. Sam Eveslage		
13. Tom Eveslage		
14. Deborah McLean		
15. Katherine Carscallen		
16. Jimmy Coppenrath		
17. Susie Jenkins-Baito		
18. Courtenay Carty		
19. Violet Kung		
20. Tod Larson		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Deven Lisac		(b) (6) [redacted]
22. Elaine Phillips		
23. Stephen Boyd		
24. Myra Olsen		
25. David Wetter		
26. Morgan Allen		
27. Christopher Manes	BBNA	
28. Shannon Clouse		
29. Kalin Clouse		
30. Kolki Clouse		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Avery Lill	KDLG	(b) (6) [redacted]
32. Betty Gardiner	CPVC	
33. Annalee Carty		
34. Charlene Savo		
35. Harry Wassily SR.	Clark's Pt. Tribal.	
36. LaRhae Angasan		
37. Cory Angasan	N	
38. [illegible]		
39. Andy Aderman		
40. Alisha Folsom		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Bruce Ilutsik	Aleknagik Traditional Council	(b) (6) [redacted]
42. Jean Barrett	City of DLG	
43. Hailey Carty		
44. Lara Collis		
45. Nicole Krause		
46. Susanna Henry	U.S. Fish & Wildlife Service	
47. Malcolm Wright		
48. Bernina Venua		
49. Cory Howard		
50. Steve Wassily Steve Wassily		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Kenton Woods		(b) (6)
52. Andrea Hurley		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Cate Gomez		(b) (6) [redacted]
132. Robert Himschoot		
133. Doug Johnson		
134. Gayla Hoseth		
135. Terry D. Mann		
136. Valencia Mann		
137. Thomas Tilden		
138. Dan Dunaway	me	
139. Gary Cline	Self	
140. Thomas Woods	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
251. Mark Nolen		(b) (6)
252.		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
371. Ethel J. Nelson		(b) (6)
372. George L. Nelson		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
481. Tim Williams	BBNC Curyung Tribe	(b) (6)
482. Cody Larson		
483. Diane Wetter		
484. Jackie Nelson		
485. Chanice Johnson		
486. [illegible]	Bristol Bay Economic Dev. Corp	
487. [illegible]	UAF	
488. Ingrid Andrew	interested	
489. Wassillie Tikka	BB	
490. Moses L Kritz III	BB	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
491. Sharon Clerk	self nonprofit	(b) (6) [redacted]
492. Mike Lisac	Self	
493. Alannah Hurley	UTBB	
494. Glen Szymoniak	schol Dist	
495. Izzy Ross	Self	
496. Susan Flensburg	self	
497. Frederick Angasan III	Self	
498. Greyy Maxmiller	Self	
499. Richard Alty	Self	
500. Page O'connell	self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
501. Hannah Hendrickson		(b) (6)
502. Rebekah Fonkert		
503. Holly Wyrick		
504.		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61.		(b) (6)
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Betsy Hostetter		betshoss@h[redacted]	
2. Andy Smith		asmith.pt[redacted]	
3. Nick Smith			
4. [illegible]	JTBB		
5. Christina Salmon		Christinasa[redacted]	
6. Keilansalmon			
7. Karl Hill	IVC	karlhill907@y[redacted]	
8. Glen R. Alsworth Sr. Glen R. Alsworth Sr	LPBoro	grasojr@hot[redacted]	
9. Everette Anderson		eanderson[redacted]	
10. Renae Zackar		rzackar(a)y[redacted]	

(b) (6)

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Lindsay Laykind	VTBB		Yes - attend
12. RANDY ALVAREZ		PO Box 901 IGIUGIG AK	
13. Dannikak Salmon	NA	NA	
14. JON Alvarez			
15. Audra Gooden		agooden@ joedogcole	
16. Michelle Ravenmoon	[redacted]		
17. Charlie Gifford		gbtrout@ ya	
18. Whit Gooden			
19. John Chukwak			
20. Gregory Zacker			

(b) (6)

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Jeff Bringhurst	Self	jeffbringhur(b) (6)	
22. Olga Zackar		Bx 4034 Fir	
23. Anna Werlin	Self		
24. Avery Wilson			
25. Tayue Salmon	Self	salmon_tay	
26. Jem Gooden			
27. Annie Wilson			
28. Julie Salmon	self	juliasalmon57	
29. Alicia Zackar	self	alicia_zacka	
30. Olivia Simyon	self		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Alice Zackar	self		
32. Dallia Andrew	self		
33. Ruth Simyon	self		
34. Sharolynn Zackar	self		
35. Yako Nicholi	Self		
36. Sandra Alvarez	Self	sjalvarez	
37. Denise Chythlook	Self	chythlook	
38. DENNIS Andrew Sr	self	Nativedenn	
39. Gerry Nelson	self	sdnelson	
40. Alexanna Salmon	self	alexannas	

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Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Lydia Olympic	—	~~ohlydia@g~~ ohlydia533	
42. Ida Nelson	Self	nelsonida	
43. Tatyana Zachar	Self	zachar24@g	
44. Terek Anelon	Own	anelonterek	
45. Sheryl Wassillie	Own	slwassillie@g	
46. Steve Routh			
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(b) (6) [redacted]

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Myrtle Gult	Nunamta Aulukestai	myrtlegnad[redacted] (b) (6)	
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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Mischa E Wanns	BBNC	(b) (6)
2. Gene M. Wardell		
3. Charles McKee c/o P.O. # 243053	self	
4. Taryn Kiekow Heimer	NRDC	
5. Rick Delkittie Sr.	Nanwalek tribe	
6. Kerry Adler	self	
7. Kim Williams	BBNC / Conyng Tribe	
8. Joseph James	Pan-American Invest mts.	
9. Joe Blogs		
10. Dana Stewart	DES.IT	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Mark McCullough		(b) (6) [redacted]
12. RAINBOW AZURE	Turtle Mtn Chippewa & Yakama Tribe	
13. Jill Burke	Bloomberg BNA	
14. Sue Bauer	–	
15. Adriane Christensen	Pedro Bay	
16. RAYN ABBERA	PEDRO BAY	
17. Nelli Williams		
18. Daniel J. Michels	Crystal Creek Lodge King Salmon	
19. Chris Bruns	None	
20. Jenny Weis		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Tim Sohn	Journalist	(b) (6) [redacted]
22. Ron Benkert	ADF&G	
23. Doug Griffin	Southwest Alaska Municipal Conference - (SWAMC)	
24. Ryan Astalos		
25. Melissa Thayne	Alaskan	
26. Gerald Protzman		
27. Howard J. Grey		
28. Don Perrin		
29. Mariah Oxford	Pebble Watch	
30. MARC LESTER	ANCH. DAILY NEWS	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Anna Kohl		(b) (6)
32.	Marilyn Houser	None	
33.	Emily Fehrenbacher	Salmon State	
34.	Eric Booton	Trout Unlimited	
35.	Brooke Merrell	NPS	
36.	Jim Posey	PA LAC	
37.	Phil Walczak	KTUU	
38.	Carl Portman	RDC	
39.	Leslie Tose	USACE	
40.	Beth Verga	KTUU-TV	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Elwood Brehmer	ASOC	(b) (6)
42. Mary Romero	—	
43. Jeremy Graut	—	
44. Alex DeMarBan	Anchorage Daily News	
45. Jennifer Worrell	Alaska Miners Assoc.	
46. Terry L Levy	Alaskan	
47. Nicole O'Hara	ABC/Fox Alaska	
48. MARIANNA MAH	RDC	
49. Abe Williams	Bristol Bay Fisher	
50. Deantha Crockett	Alaska Miners	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Emily Carlson	KTVA	(b) (6) [redacted]
52. John Thompson	KTVA	
53. Nick Hubbard		
54. Jason Brune		
55. Emily Vullo		
56. Jack Colonell		
57. KRISTEN ULLERY		
58. BRIAN KRAFT		
59. Charlotte MacG		
60. George Edwardson	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marytnn K. Johnson	Portage Creek	(b) (6) [redacted]
62. Charlie Johnson	Portage Creek	
63. Gayla Hoseth	Dillingham	
64. Myrtice Evalt	Dlg	
65. Sheyna Wisdom	Fairweather Science	
66. Stephanie Patton	—	
67. Lance Powell	—	
68. John Holman	—	
69. Sherry Dugan	—	
70. Carrie Cecil	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Myra Olsen		(b) (6) [redacted]
72. Thomas Pebler		
73. Destinee Holstrom		
74. George Holstrom Jr		
75. Ceara Mishlee		
76. Molly Vaughan	EPA	
77. Dennis Hyppolite	TY	
78. Agnes Rychnovsky		
79. Marina Barner		
80. Jalen Konukpeok	N/A	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81.	Barbara Hood	NA	(b) (6)
82.	Nancy Pfeiffle	Human	
83.	Brian Baeck		
84.	Frank Wake	None	
85.	JESS HILYER	NONE	
86.	Pat Abney	None	
87.	Jamie Dithmas	———	
88.	Sheldon Wardell	None	
89.	CHRIS WIITA	N/A	
90.	NICK Hansen		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. MARIUS PANZARELLA		(b) (6)
92. Cathe Heroy		
93. Leila Pyle		
94. Karlene Leeper		
95. Kate Sandvig		
96. Russ Miller		
97. Kay Heafner		
98. Glen M. Gustafson		
99. MIKE COOPER		
100. Julian & Jean		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Kerry Wilkins		(b) (6) [redacted]
102. Kim Ansakuck		
103. Vivian Mendenhall		
104. Andria Agli		
105. Elijah Good-Farm		
106. Travis Rector		
107. Janice Stamper		
108. [illegible]		
109. Jessica Speed		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Johanna Grasso		(b) (6)
112. Cecilia Kleinkauf		
113. Barbara Crews		
114. Libby Roderick		
115. Kate Nilsson		
116. Rich Stromberg		
117. Laura Sherman		
118. Lucy Terry	Eskimo	
119. BILL JASO		
120. & Susan Hooker		

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121.	Thomas Tilden	self	(b) (6)
122.	BROOKS LARSON	self	
123.	Tyler Heregan	Self	
124.	RYAN PETERSON	—	
125.	Francesca DeBrock	—	
126.	Laura Miller	Self	
127.	PAMELA TESCHE	self	
128.	Daniel McIntosh	Self	
129.	Jessi Thornton	Cook Inletkeeper	
130.	Victoria Lytle	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Ronda Pokupec		[redacted] (b) (6)
132. [illegible]	—	
133. Julie K Wahl	Citizens Climate Lobby Sierra Club AK Center	
134. Barbara Norris	AK Center	
135. Rachelle Griffitts	student - UAA Environmental Engineering	
136. DAVE COOLIDGE	—	
137. Jeanette LeClair		
138. Wassiliisia Gumlickpuk		
139. Dr. Stephanie Quinn-Davidson, PhD	self - Salmon/fisheries scientis	
140. [illegible] Dunn	Student ES APU	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Michelle Leffingwell	Self / Bear Trail Lodge Local Fisherman Yoga(+)Ak	[redacted] (b) (6)
142. Margaret M. Anderson	Alaskan	
143. Thomas Harman	Fisherman	
144. Brenda I Waitman	Igiugig Lodge LLC	
145. Norman Straub	Intricate Bay Lodge	
146. Spencer Waitman	Igiugig Lodge LLC	
147. Becky Bitzer	Alaskan	
148. David Theriault	Fisherman	
149. Raschad Galimba		
150. Ann James	Born & raised Alaskan	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Karen Button	resident	(b) (6)
152. CHRIS KLOSTERMAN	TRYLA AIR ALASKA	
153. Micaela Hogan	volunteer	
154. Susan NIMAN	Resident	
155. Bill Shermont	self (AK resident)	
156. RICHARD KNIGHT	RESIDENT	
157. Carolyn E. Phillips	None	
158. George Pletnikoff, Jr	Unangax̂	
159. Jessica Barnes	Resident	
160. Brian Coyle	Resident	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161.	Laura Chartier	N/A	(b) (6)
162.	KAREN GONDERMAN		
163.	THOMAS A. SCHWARTZ	N/A	
164.	Myranda Walso		
165.	Jeff Parker	Attorney for BOFA/EC	
166.	Su Chun	N/A	
167.	Dayle Sanborn		
168.	Gerard Farkas	Alaska Resident	
169.	Steven Silber	Chulitna Lodge - Lake + Penn Borough Resident	
170.	Andrew Conno	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. LARRY RUNDQUIST		(b) (6) [redacted]
172. Steven McNicholas		
173. Derek Hansen		
174. Dianne E. Osterhaus		
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
381. James Wilson	Mat Su. Bonanch	(b) (6) [redacted]
382. Mary Kay Ryckman	self	
383. Rochelle Harrison	self griezyskins fak	
384. Verna Kolyaha	Pedro Bay	
385. Mark Newman	self	
386. Kelly Kass	self	
387. Neverley Wake	EPA Tribal Coordinator	
388. Everette Anderson	BBNC	
389. Myrtle J. Lonsdale	CDOK Inlet	
390. Ron Tenny	Self	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391. Sarah E Anderson		(b) (6)
392. Harry M. Walker		
393. C. Steffens		
394. S Rooth		
395. Jennifer Wardell		
396. Brian Kortl		
397. Jeanne Hanson		
398. Sylvia Panzacella	No Pebble Mine!	
399. Lindsey Kenyon	ERM	
400. Oleksandr Lushchyk		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
401. Carolyn Brodie		(b) (6) [redacted]
402. Erik Kopperud		
403. [illegible] R Hanne		
404. Kathrine Consenstein		
405. CHARLIE COLLINS		
406. MARK Miller		
407. Felicia Miller		
408. Vincent Vat		
409. Riki Lebman		
410. SUEWARD		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411. Barbara Loutrel		(b) (6) [redacted]
412. Peter F Alward	AK citizen/resident	
413. Kristen Collins		
414. Sophie Tidler		
415. Shirley Kelly	Bristol Bay Fisher	
416. CHRISTOPHER JOHN ERPELDING	BRISTOL BAY FISHERMAN	
417. PAUL CREWS	Individual	
418. P. Derochick	Individual	
419. Dawnell Smith	Individual	
420. Jane Whitsett	Individual	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421. Lisa Alexia		(b) (6)
422. Michael Alexia		
423. Susan Terwilliger		
424. Jenna DiFolco		
425. Maria Tahenakos		
426. Bryce Niver	No Pebble!	
427 Brian Canton		
428. JACK FOSTER		
429. Art Allen		
430. Ryan VanderBie		

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Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431. Lindsey Diamond		Lindseydiamond94@gmail.co[redacted]
432. Raymond Koleser		
433. Olivia Garrett		
434. Elijah Kahula	Save Bristol Bay	
435. R. Lytle		
436. Evan Anderson		
437. STEPHAN C. PALIWODA	RETIRED ARCHITECT (former Corps of Engineers empla[redacted]	
438. Kayla Weller		
439. Kenneth Nunsoke		
440. Paul Frost		

(b) (6)

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441. Judy Caminer		(b) (6)
442. Lenny Anderson		
443. David J. Haamaid	Sons	
444. Richard L. Anderson	"	
445. Brad Waitman	Igiugig Lodge	
446. Ming Stephens	None	
447. Regis Pappert	Self	
448. Austin Quinn-Davidson		
449. Rebecca King	Alaskan	
450. Alex Nelsen	Ak Resident	

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Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
451. Kori Blake	Save Bristol Bay	(b) (6)
452. James Affone	Save the Earth	
453. Suzanne Stewart	Beluga Whale Alliance	
454. DAVID FARCY	NONE	
455. Erin Borowski	none	
456. Angelica Whitley		
457. Ryan Witten	None	
458. Maya Heubner	none	
459. Darla Munguia	None	
460. Christina Howell	None	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461. Kassidy O'Connell		(b) (6)
462. William J. Schreck	NA	
463. Robert Wiy	—	
464. Keenan	—	
465. Yasuhiro Ozuk	—	
466. Sam Magee		
467. Kelly Drummond	—	
468. Andrey Anderson	—	
469. [illegible]	—	
470. Merle Jerue	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
611. Jeremy Tayhi		(b) (6) [redacted]
612. Braelan Michael Welsch		
613. Joel Hadley		
614. Elizabeth Welsh		
615. Gracee Hadley		
616. Carl Johnson		
617. M. Ska. Alexa		
618. Bernhard Richert		
619. Sera Schroeder		
620. Sammie Ellsworth		

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US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
621. Carissa Churchill		(b) (6) [redacted]
622. STEVEN CALLAGHAN		
623. Adan Kurr		
624. Breena Weller		
625. Jessica Henderson		
626. Abraham Henderson		
627. Vickie Harman		
628. Levi Oyster		
629. E. Morris		
630. M. Ammann	ne Pebble	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
631. Makenna Hanson	UAA- alumni	(b) (6)
632. Rachel James		
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US Army Corps of Engineers

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US Army Corps of Engineers

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Pebble Project Environmental Impact Statement

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US Army Corps of Engineers

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Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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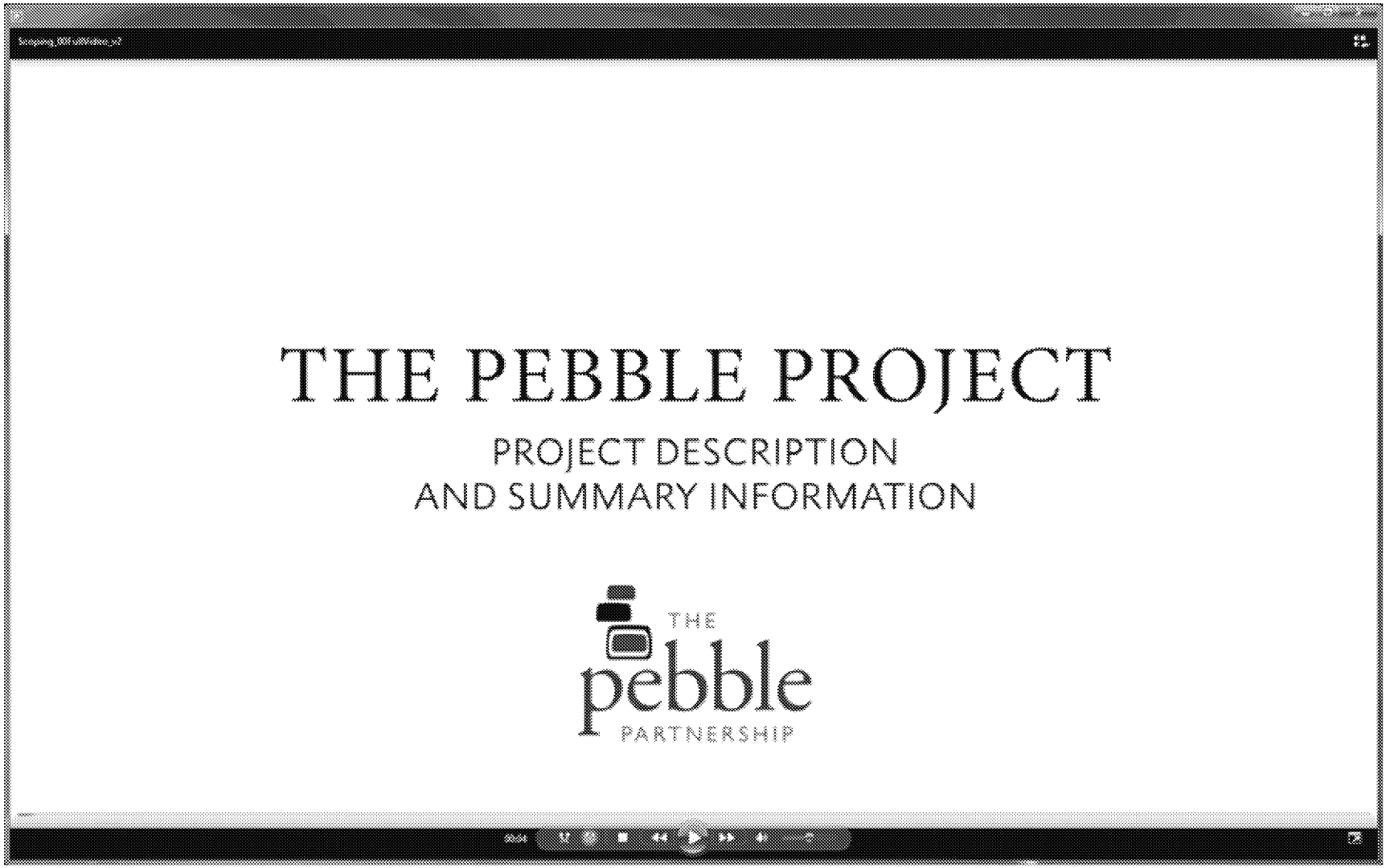
AMERICAN OVERSIGHT

APPENDIX D – MEETING MATERIALS

AMERICAN OVERSIGHT



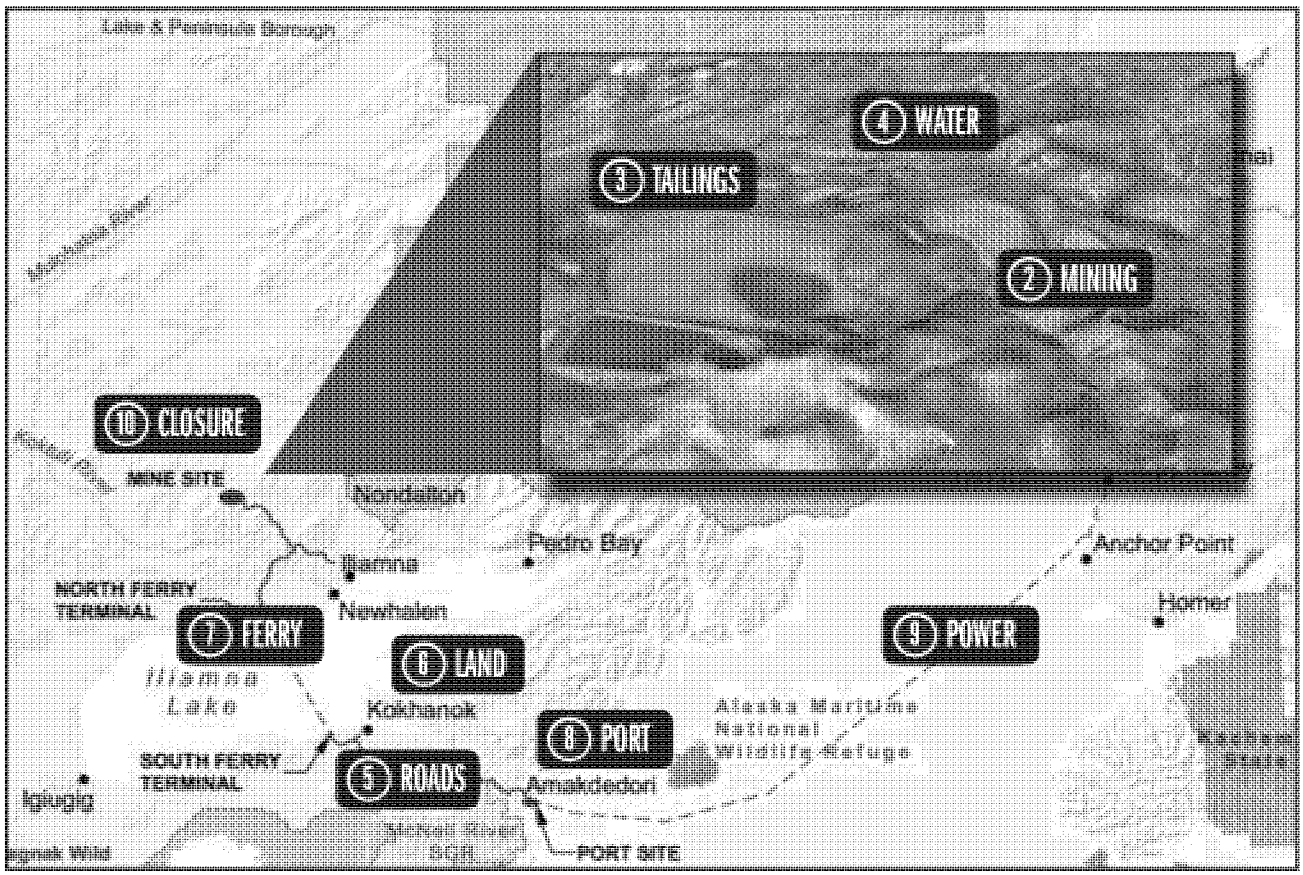
AMERICAN OVERSIGHT

THE PEBBLE PROJECT

1 OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) in southwest Alaska as an open-pit mine, with associated infrastructure.

PROJECT DESCRIPTION DETAILS



SUMMARY INFORMATION

- Located on state of Alaska land
- Project operating life of 20 years
- Employment of 2,000 people for construction and 850 for operation
- Gas pipeline from Anchor Point and gas-fired power plant at site
- Road and lake ferry to Cook Inlet
- Segregated storage of bulk and pyritic tailings

THE pebble PARTNERSHIP

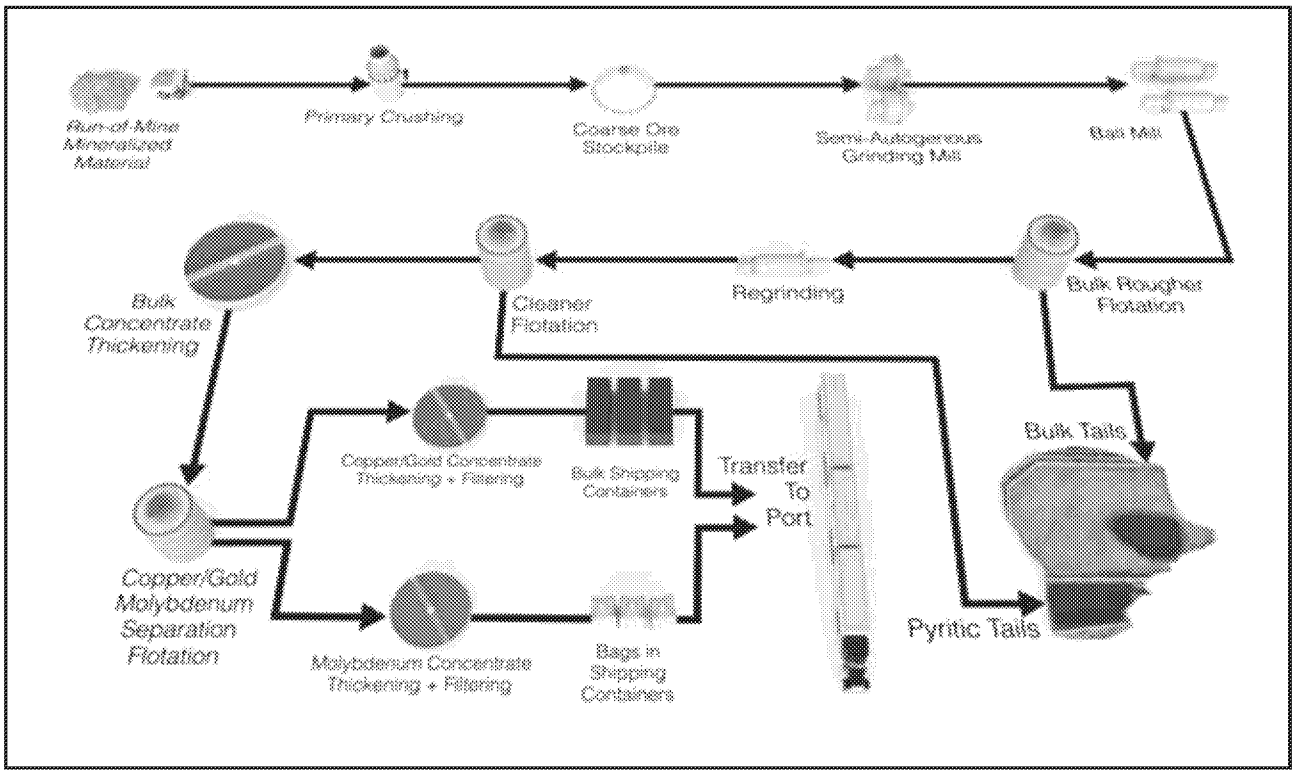
AMERICAN OVERSIGHT

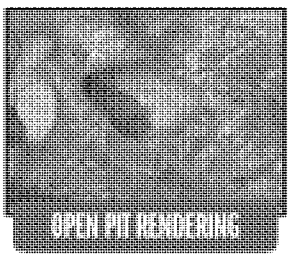
MINING & PROCESSING

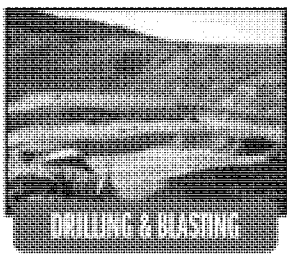
2 MINING

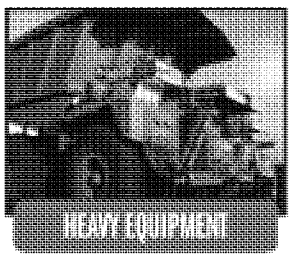
The Project will mine approximately 1.1 billion tons of mineralized material throughout the 20-year mine life.

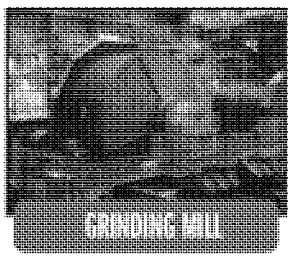
AN OVERVIEW OF MINERAL PROCESSING




OPEN PIT RENDERING


DRILLING & BLASTING


HEAVY EQUIPMENT


GRINDING MILL

SUMMARY INFORMATION

- Mining rate up to 90 million tons per year
- Milling rate up to 58 million tons per year
- Annual copper/gold concentrate production of 600,000 tons
- Annual molybdenum concentrate production of 15,000 tons

THE pebble PARTNERSHIP

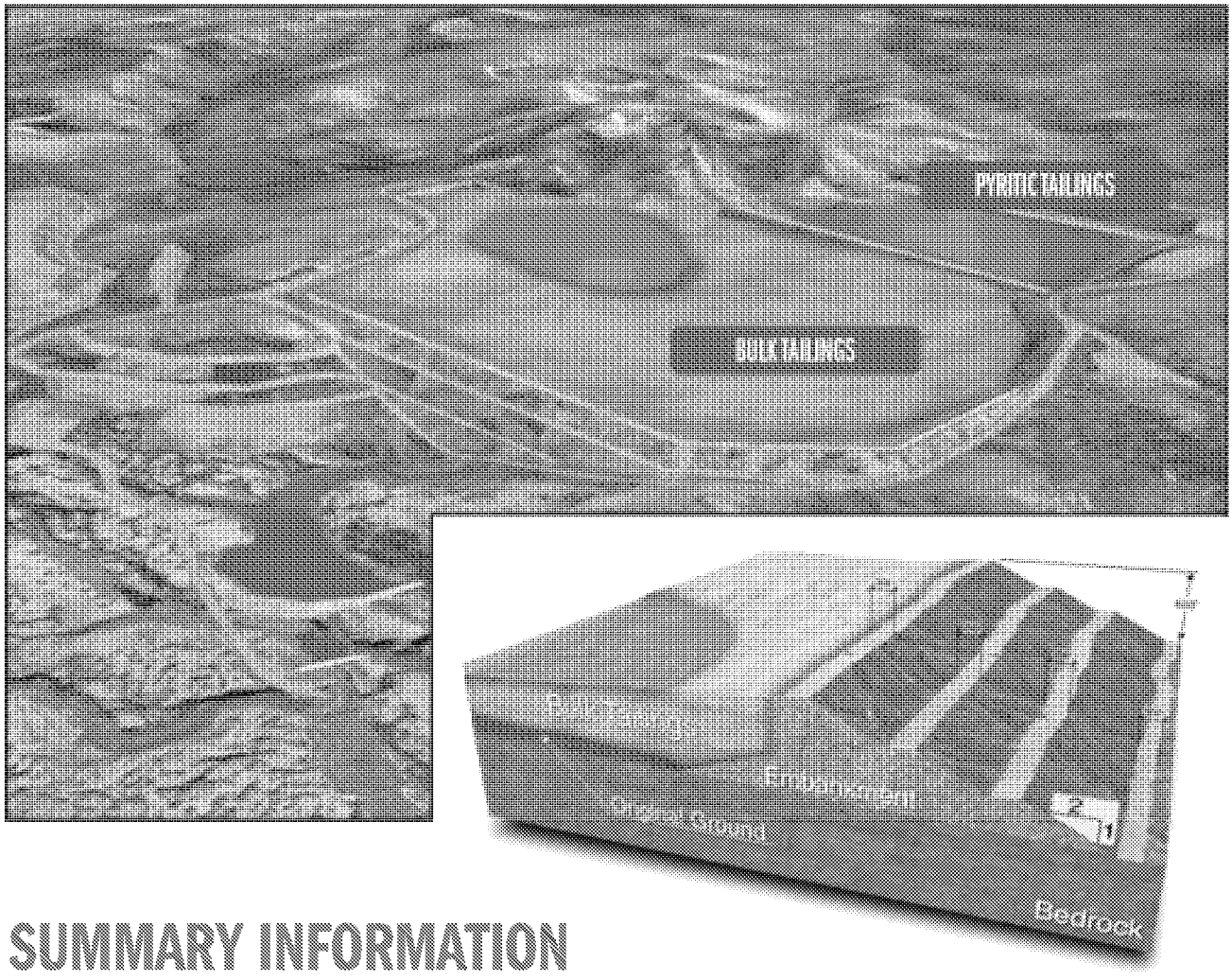
AMERICAN OVERSIGHT

TAILINGS STORAGE

③ TAILINGS

Pebble Limited Partnership (PLP) conducted a multiyear, multidisciplinary evaluation to select a Tailings Storage Facility (TSF) location that meets all engineering and environmental goals. It will store ground-up material after minerals have been extracted.

TAILINGS STORAGE FACILITY



SUMMARY INFORMATION

- Designed to meet Alaska Dam Safety Program standards
- Separate cells for bulk and pyritic tailings
- Minimize water storage in bulk tailings to keep water away from embankment
- Fully-lined cell for pyritic tailings with water cover
- Rock-filled embankments (600' high at main embankment)
- Seepage collection facilities for all embankments

THE pebble PARTNERSHIP

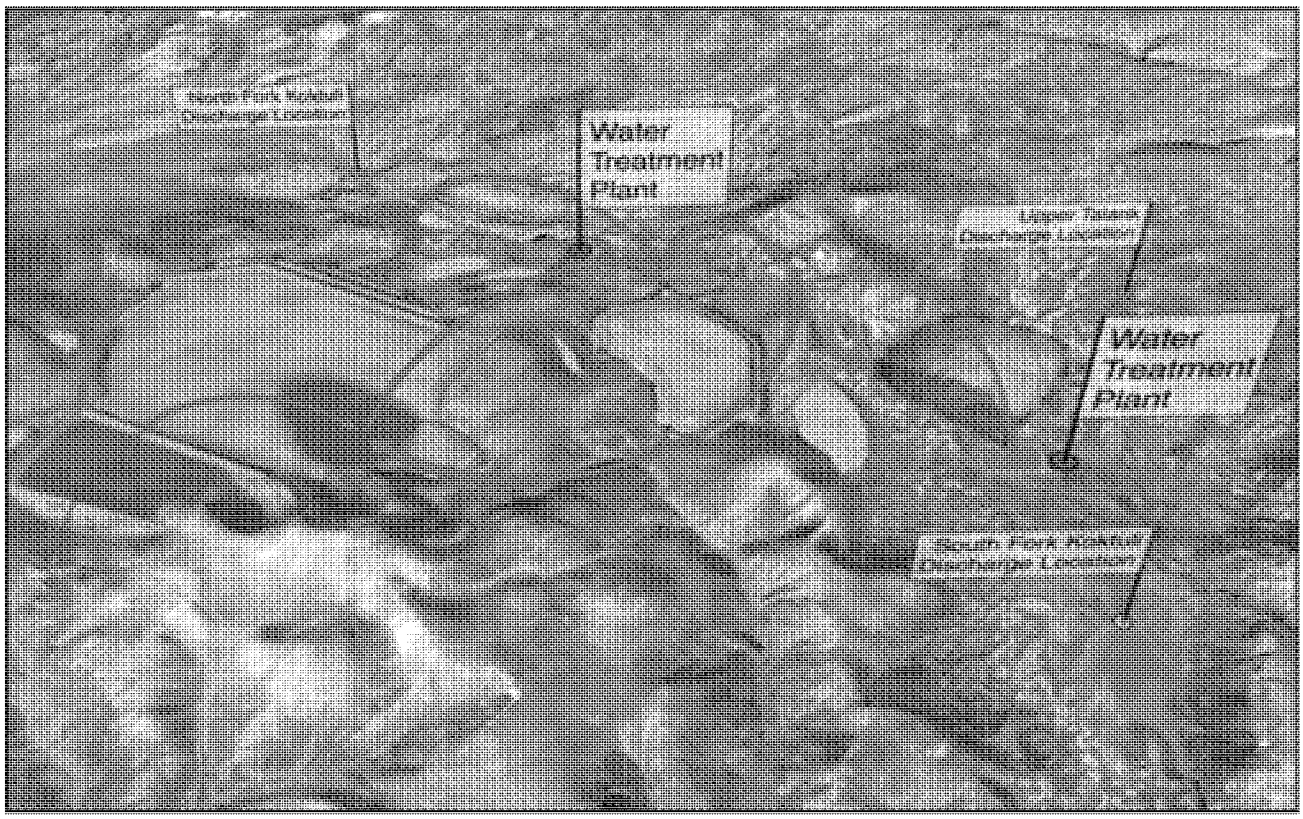
AMERICAN OVERSIGHT

WATER MANAGEMENT

4 WATER

Pebble Limited Partnership (PLP) has designed the water management plan to minimize the volume of water diverted from natural flows and to treat and condition all water to meet quality standards before discharge.

MONITORING AND TREATMENT



SUMMARY INFORMATION

- All water is tracked and managed from rainfall to discharge
- One water treatment plant for pit-related water
- One water treatment plant for tailings, stockpile, and process contact water
- All water treated and conditioned to meet quality standards before release
- Discharge locations in each of three drainages
- No mixing zones will be required
- Discharge managed based on downstream habitat needs

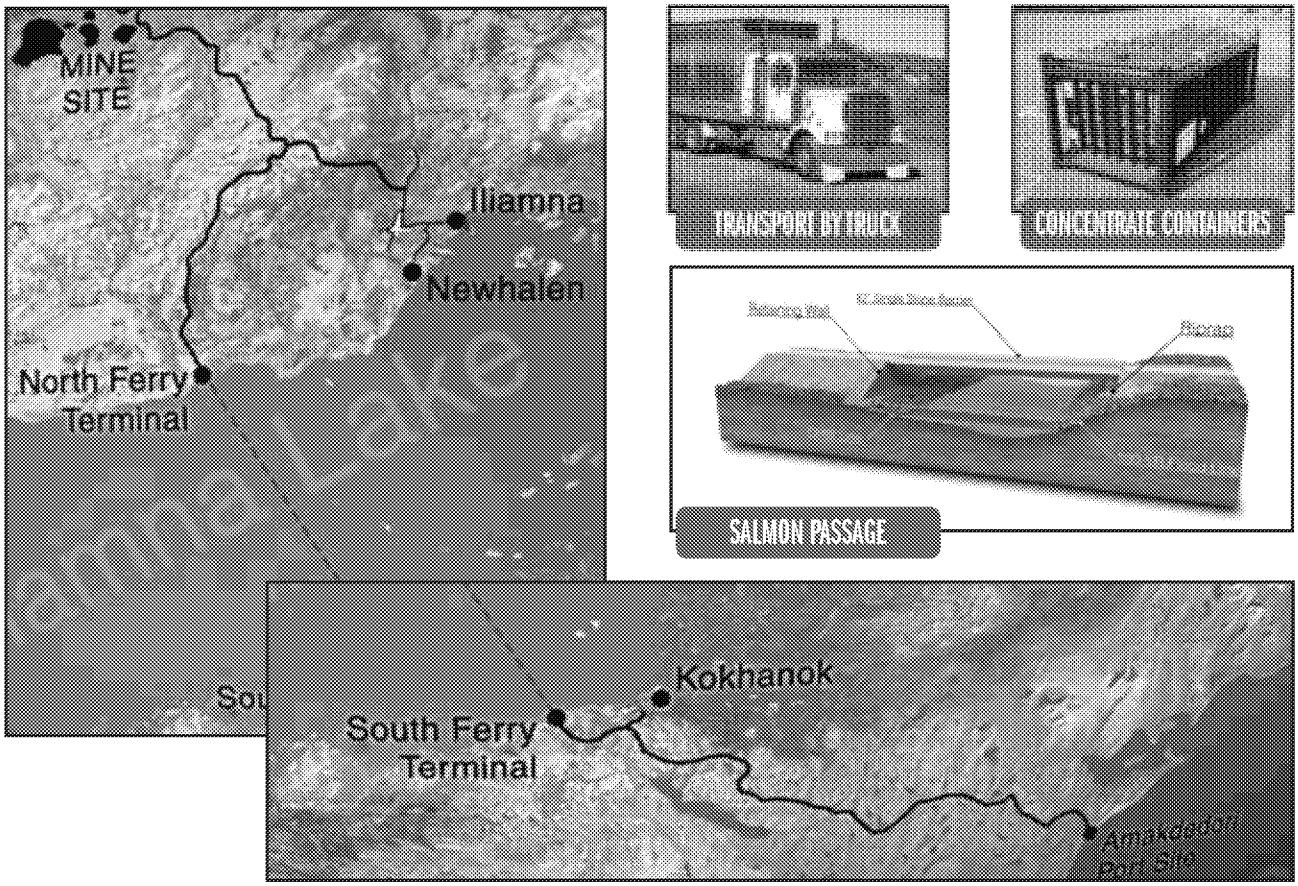
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

ROADS & TRANSPORT

An 83-mile transportation corridor runs from the mine site to a port site on Cook Inlet. The route was selected to minimize impact on wetlands, minimize stream crossings, and avoid area of known subsistence and recreational use.

NORTH & SOUTH ROAD SEGMENTS



SUMMARY INFORMATION

- Personnel flown to Iliamna Airport and driven to mine site
- 30-mile (north segment) and 35-mile (south segment) private roads
- Spur roads connecting to the villages of Iliamna, Newhalen, and Kokhanok
- Stream crossings designed to state of Alaska standards
- Up to 35 round trips by truck each day (one by ferry)
- Concentrate hauled in bulk containers with locking lids
- Fuel hauled in 6350-gallon sealed tank containers

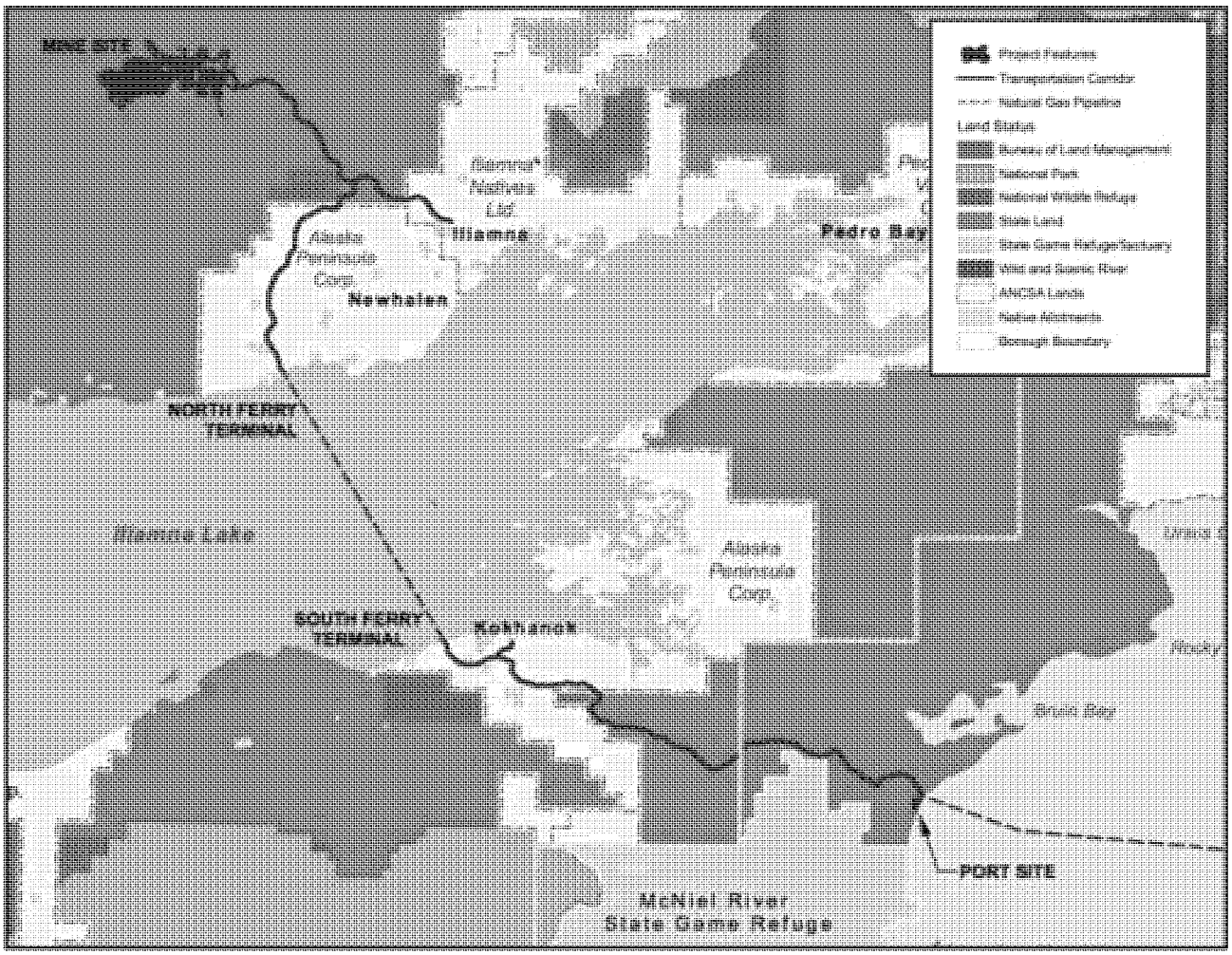
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

LAND STATUS

The mine site — including the pit, tailings storage, and all primary facilities — is located on state of Alaska land. The transportation corridor includes state of Alaska and ANCSA land.

MINE SITE & CORRIDOR LAND OWNERSHIP



SUMMARY INFORMATION

- Access Road = 65% state of Alaska + 35% Alaska Peninsula Corporation
- Iliamna Airport Spur = 55% state of Alaska + 45% Iliamna Natives Limited
- Iliamna Lake Crossing = 100% state of Alaska
- Kokhanok Airport Spur = 100% Alaska Peninsula Corporation

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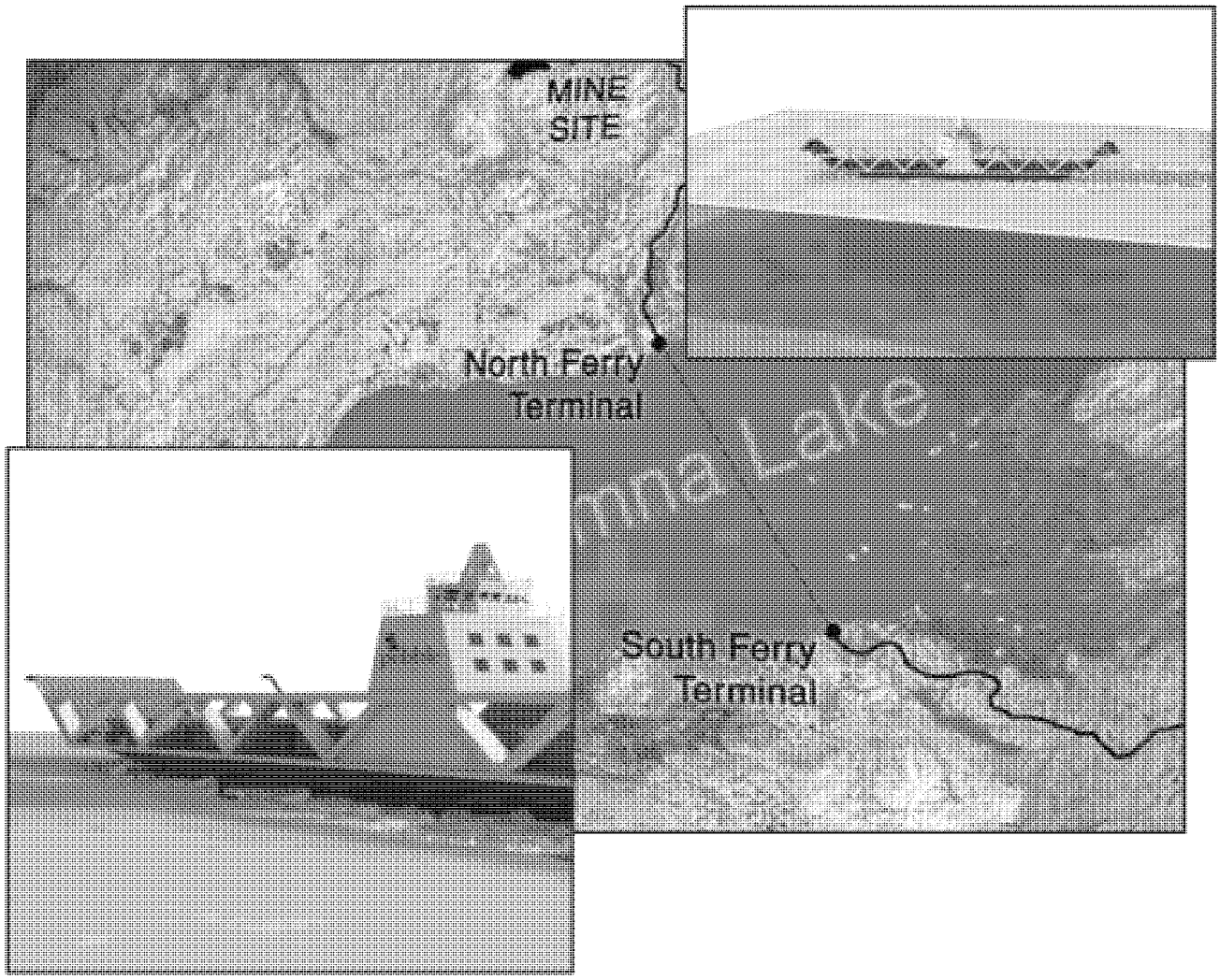
FERRY & TERMINALS

7 FERRY

A custom-built ice breaking ferry will transit Iliamna Lake year round, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates.

ILIAMNA LAKE CROSSING



SUMMARY INFORMATION

- The one-way ferry trip across Iliamna Lake is about 18 miles
- An average of one round trip per day will be required
- Vessel is designed to operate year-round, in all ice conditions
- Symmetrical forward and aft with two ice-breaking bows
- 12 crew members may be accommodated on the ferry

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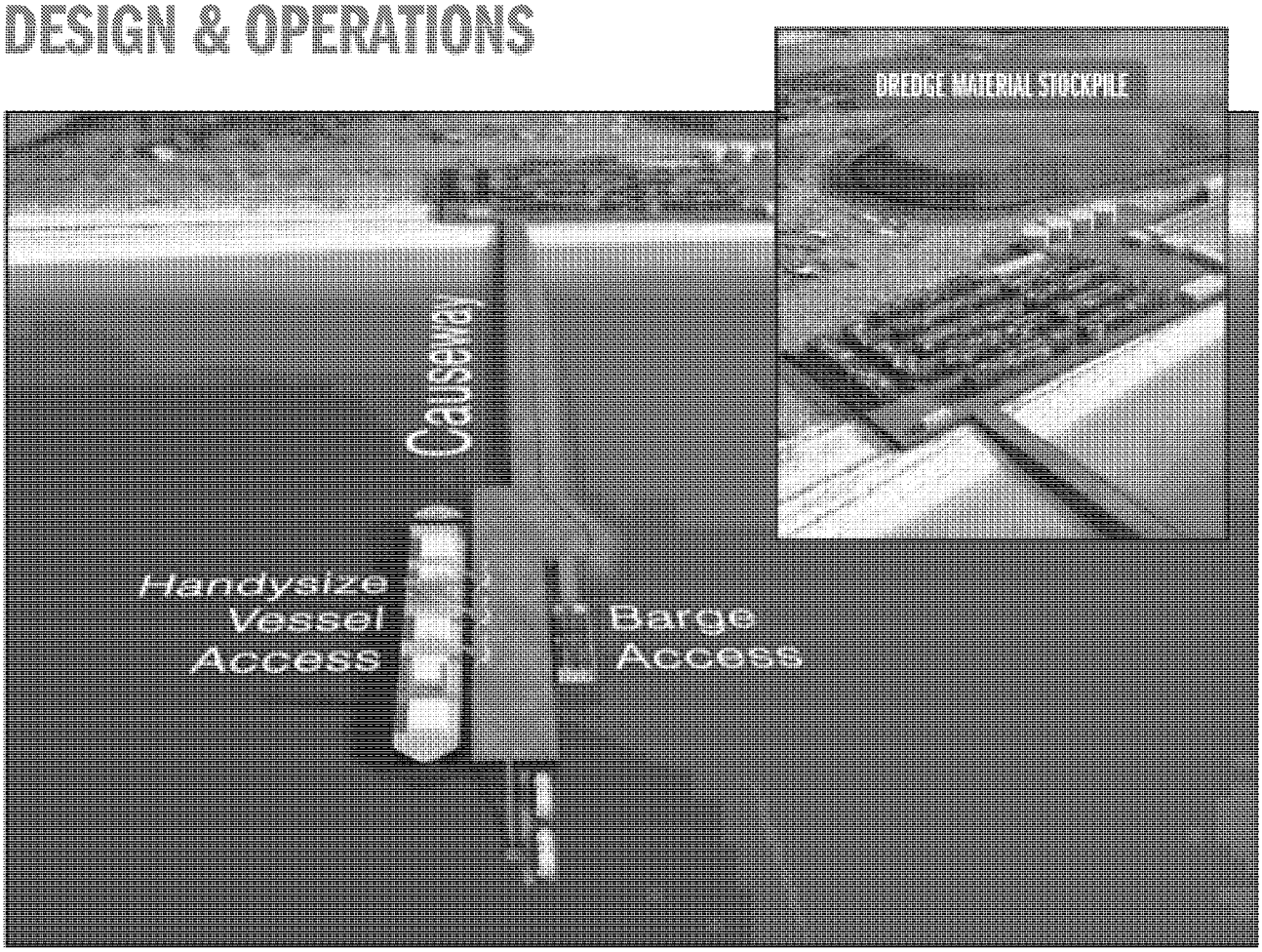
AMAKDEDORI PORT

PORT

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site.

DESIGN & OPERATIONS



SUMMARY INFORMATION

- 50-foot deep channel dredged to provide access for Handysize bulk carriers
- Mineral concentrate will be direct-loaded from the containers onto the vessels
- Equipment and supplies delivered by barge
- Shore-based facilities will receive and store containers and fuel
- Up to 25 concentrate shipments annually
- Up to 30 marine barge loads annually

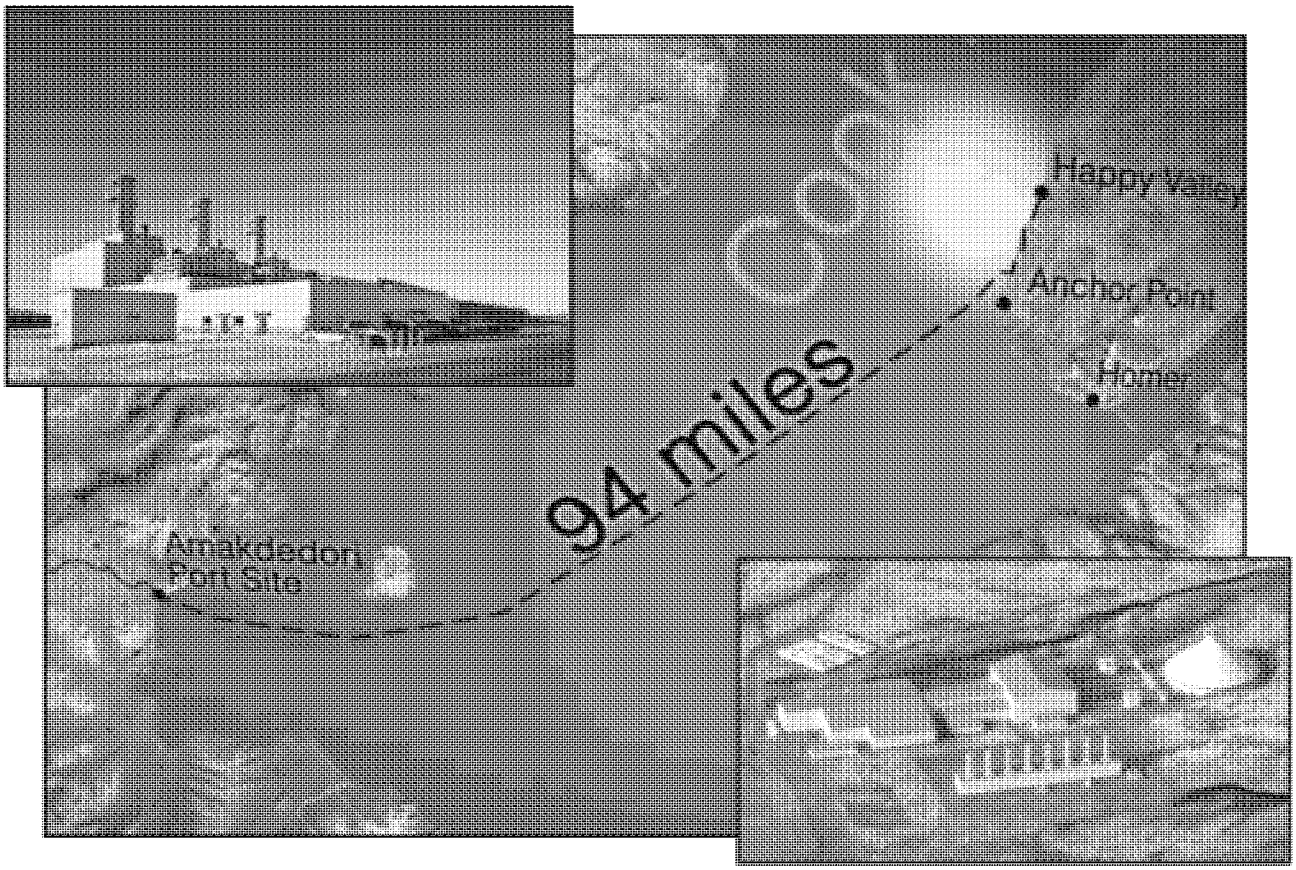
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

POWER GENERATION

The power plant will be sized to meet the anticipated load of 230 megawatts using high-efficiency turbine or reciprocating engine generators operating in a combined-cycle configuration.

NATURAL GAS PIPELINE + POWER PLANT



SUMMARY INFORMATION

- Pipeline will connect to existing gas supply infrastructure near Happy Valley
- Buried pipe will transport gas to a compressor station near Anchor Point
- 94-mile subsea pipeline across Cook Inlet will come ashore near port site, follow road to site, and cross the bed of Iliamna Lake
- Gross flow rate of 50 million standard cubic feet per day
- 10" pipeline on land, 12" pipeline for water crossings
- Emergency backup power provided by diesel generators

THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

CLOSURE & RECLAMATION

10 CLOSURE

Pebble Limited Partnership (PLP) is committed to conducting all mining operations, including reclamation and closure, in accordance with all local, state, and federal regulations.

PEBBLE: DESIGNED FOR CLOSURE

RECLAMATION

AFTER...

5 YEARS

Most buildings removed

Terrain resculpted

Native plants resown

20 YEARS

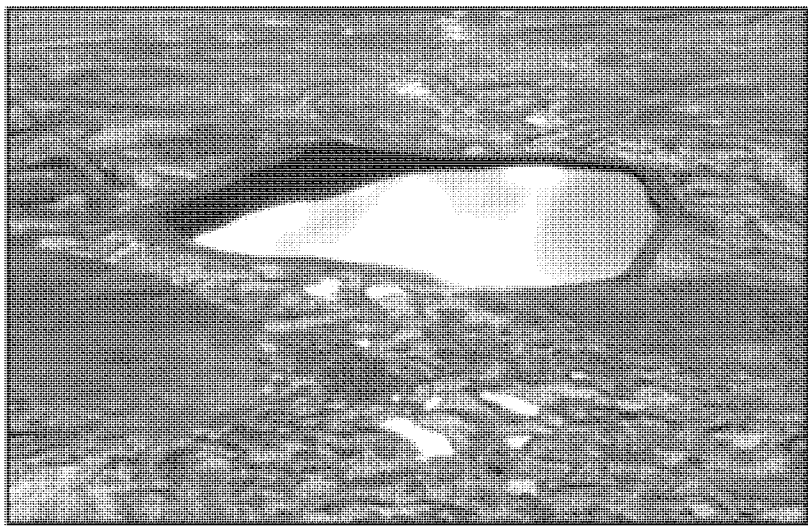
Vegetation well-established in reclaimed areas

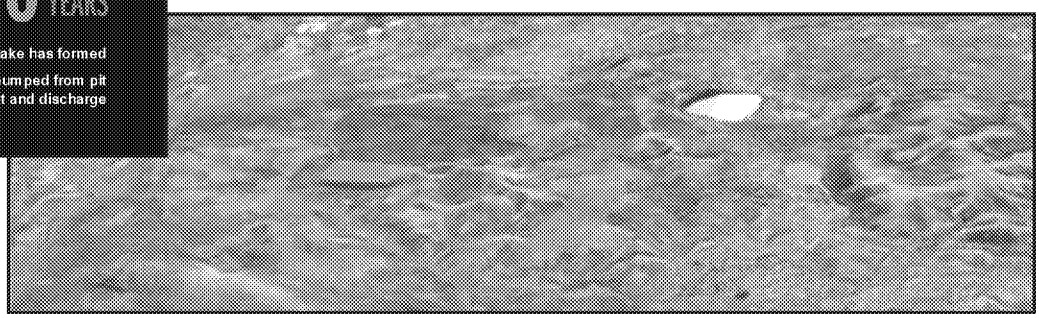
Pit continues to fill with water

30 YEARS

Pit lake has formed

Water is pumped from pit for treatment and discharge





SUMMARY INFORMATION

- Removal of mill and other facilities not used after closure
- Hauling of PAG waste rock into the open pit for under water storage
- Recontouring and placement of overburden for revegetation
- Plan and infrastructure for long term water management and treatment
- Financial assurance for closure and long term site management is required before construction

THE pebble PARTNERSHIP

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Tips for Writing Effective Comments

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings.
- **Learn about the steps in the NEPA process** and opportunities for submitting comments to the U.S. Army Corps of Engineers.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through June 29.
- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS.

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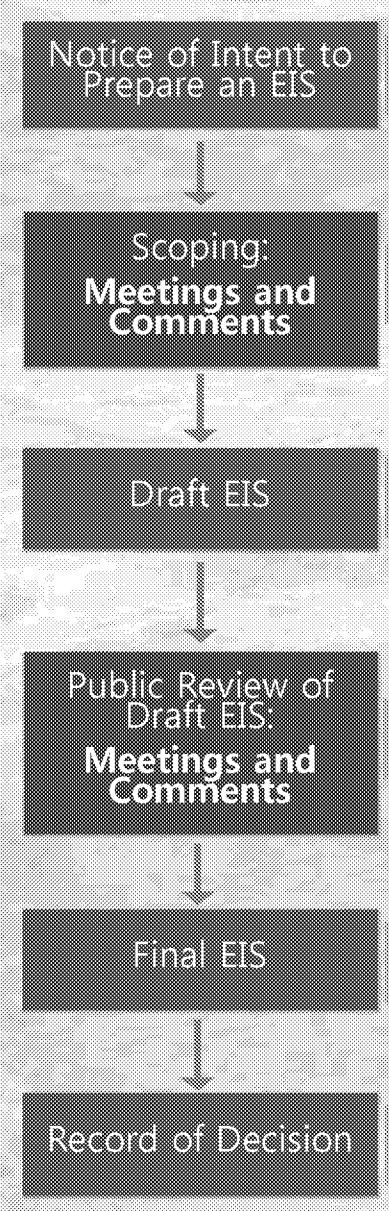
The National Environmental Policy Act

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership. The EIS process will take several months to complete a Draft EIS for public review, and several months to incorporate public comments into the draft to develop the Final EIS.

Steps in the EIS Process



The USACE released a Notice of Intent to the United States Federal Register. This initiated the process to prepare an EIS and began the scoping process.

The scoping process kicks off on April 1, 2018. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period.

After the Draft EIS is released, the public will have a chance to submit comments. During that time, the USACE will plan public meetings to collect comments.

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release.

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application.

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How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and commenting on.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consequences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.

For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.

For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. For example: wetland fill from one projects.

For example: wetland fill from one project, combined with the wetland fill from a separate project.

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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of analysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS.

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisciplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide an interdisciplinary team to develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirety of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

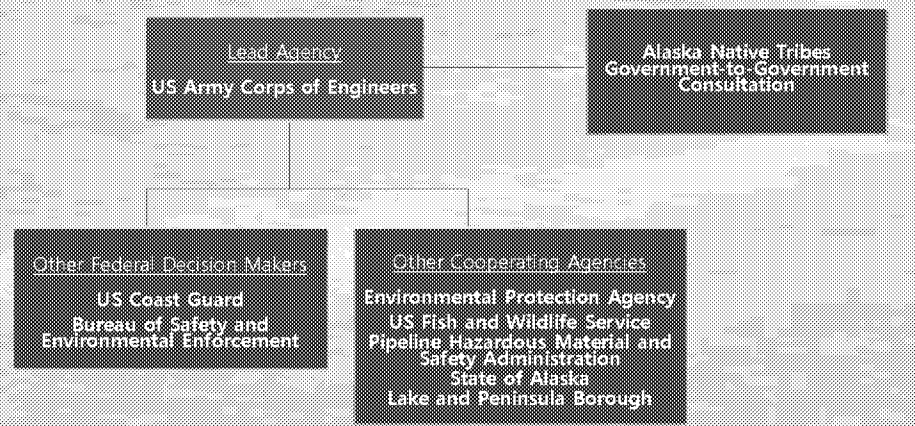
- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

Lead and Cooperating Agencies



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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action that could have lesser environmental impacts.

In addition to Anchorage, Public meetings were held in April in the following communities:

- Naknek
- Kokhanok
- Homer
- Newhalen
- New Stuyahok
- Nondalton
- Dillingham
- Igiugig

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods-ways in which potential negative impacts could be avoided or lessened.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Let us know what aspects of the proposed project are important to you!

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to give your comment orally to a dedicated court reporter or electronically submit using one of the dedicated laptop computers. You can also submit hand-written comments, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson
AK 99506-0898

Scoping comments can be submitted through June 29, 2018.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publicaly available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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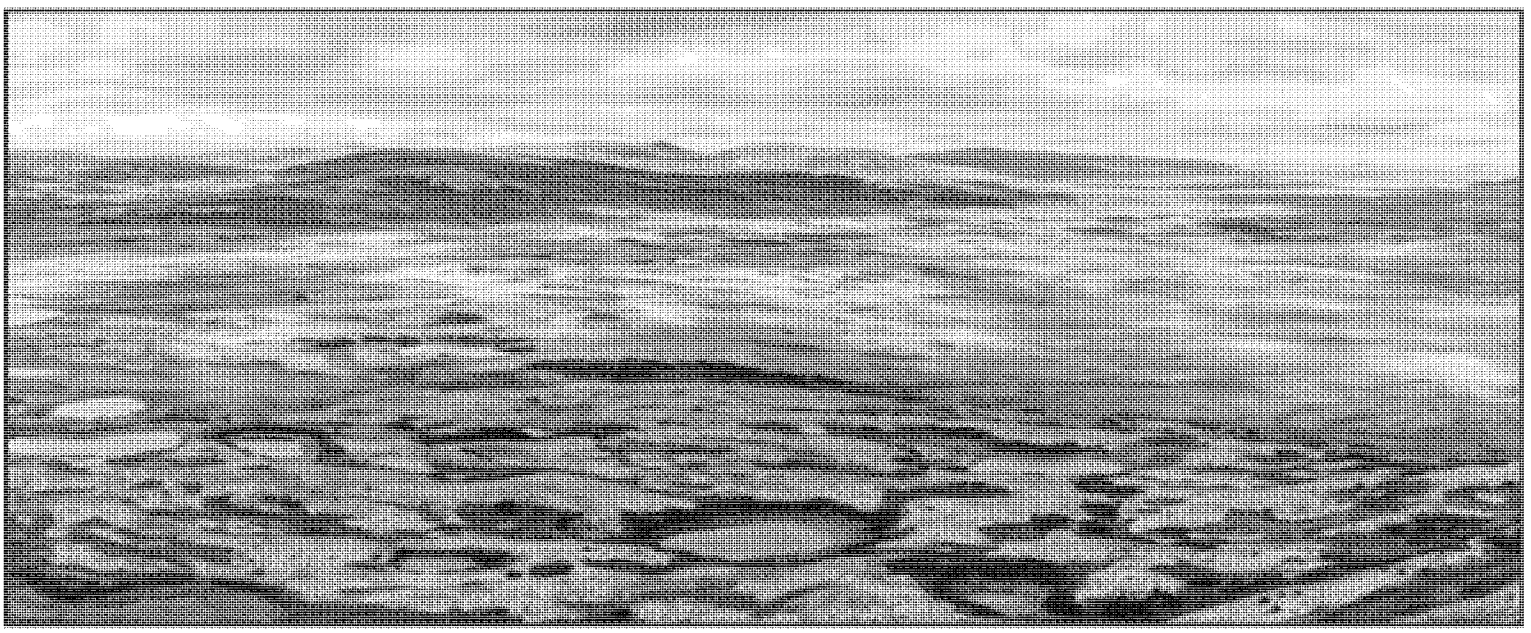

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Program Manager
US Army Corps of Engineers
Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

Please place first-class postage here.

From:

AMERICAN OVERSIGHT

FACT SHEET

Pebble Limited Partnership Project Proposed Natural Gas Pipeline

Background

The Bureau of Safety and Environmental Enforcement (BSEE) is a cooperating agency on the Environmental Impact Statement that the United States Army Corps of Engineers, Alaska District, is preparing for the Pebble Limited Partnership project.

The Pebble Limited Partnership is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The proposed project infrastructure will include an approximately 230-megawatt power plant that will be fueled using natural gas. Natural gas would be supplied to the site using a roughly 190-mile pipeline that would connect to the project site from a tie-in on the Kenai Peninsula near Happy Valley.

While BSEE has no regulatory oversight of onshore mining, our role will include a Pipeline Right-of-Way grant approval process for the proposed pipeline crossing federal waters of the Outer Continental Shelf in Cook Inlet.

Proposed Pipeline

The gas pipeline alignment, as currently proposed, would start near Happy Valley on the Kenai Peninsula and travel south paralleling the Sterling Highway for approximately 9 miles to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the proposed Pebble port site near the mouth of Amakdedori Creek. A second compressor station and offtake point is located at the port site. The pipeline then follows the proposed road alignment from the port to the mine site, including crossing Iliamna Lake on the lake bed for approximately 18 miles. BSEE's jurisdiction for the proposed pipeline will likely only cover 63 miles, the portion that crosses federal waters of Cook Inlet.

The pipeline, as currently proposed, would be constructed of steel and designed to have a gross flow rate of 50 million standard cubic feet of natural gas per day. The onshore portions of the pipeline would be 10-inch diameter, while the offshore portion would be constructed using heavy wall 12-inch diameter pipe with negative buoyancy. All appropriate federal regulations would be followed in the design, construction, and operation of the pipeline.

Right-of-Way Decision Process

Pipeline right-of-way requirements for permitting are detailed in the 30 Federal Code of Regulations Part 250—Oil And Gas And Sulphur Operations In The Outer Continental Shelf Subpart J—Pipelines and Pipeline Rights-of-Way.

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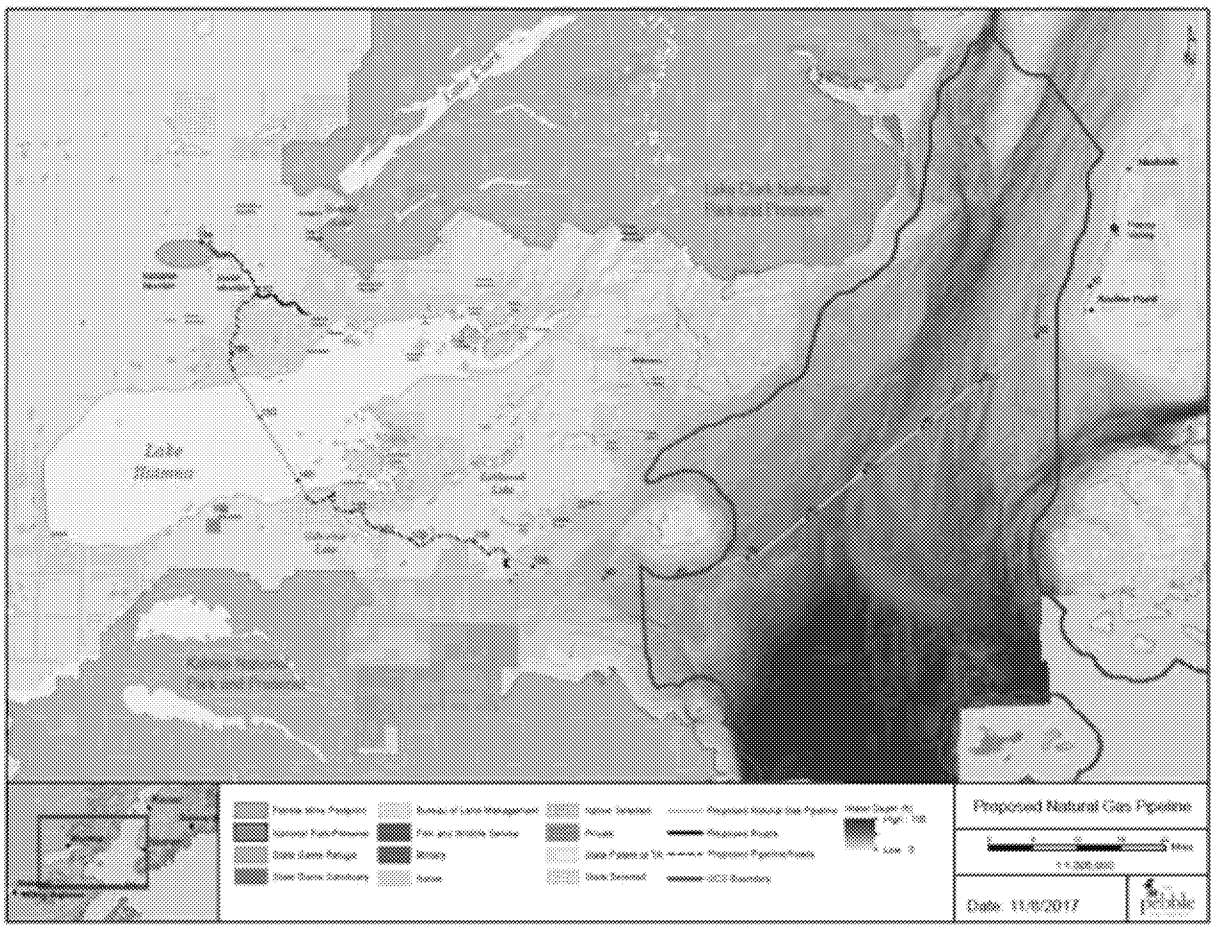
Applications for permits must be submitted to the BSEE Regional Supervisor and will include detailed information about the right of way, including consideration of effects from water currents, storm or ice scouring, soft bottoms, mudslides, earthquakes, permafrost, and other relevant environmental factors.

While the pipeline in this case will ultimately be regulated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, BSEE's interest is to have the requisite level of information that enables a well-informed right-of-way decision process, with the knowledge that environmental and safety factors have been considered and addressed.

Pebble Project Proposed Natural Gas Pipeline



-- BSEE --

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:12:45 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_01_Bristol_Bay_Watershed_8x11.pdf; 3_16_02_WatershedsMineStudyArea.pdf

CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

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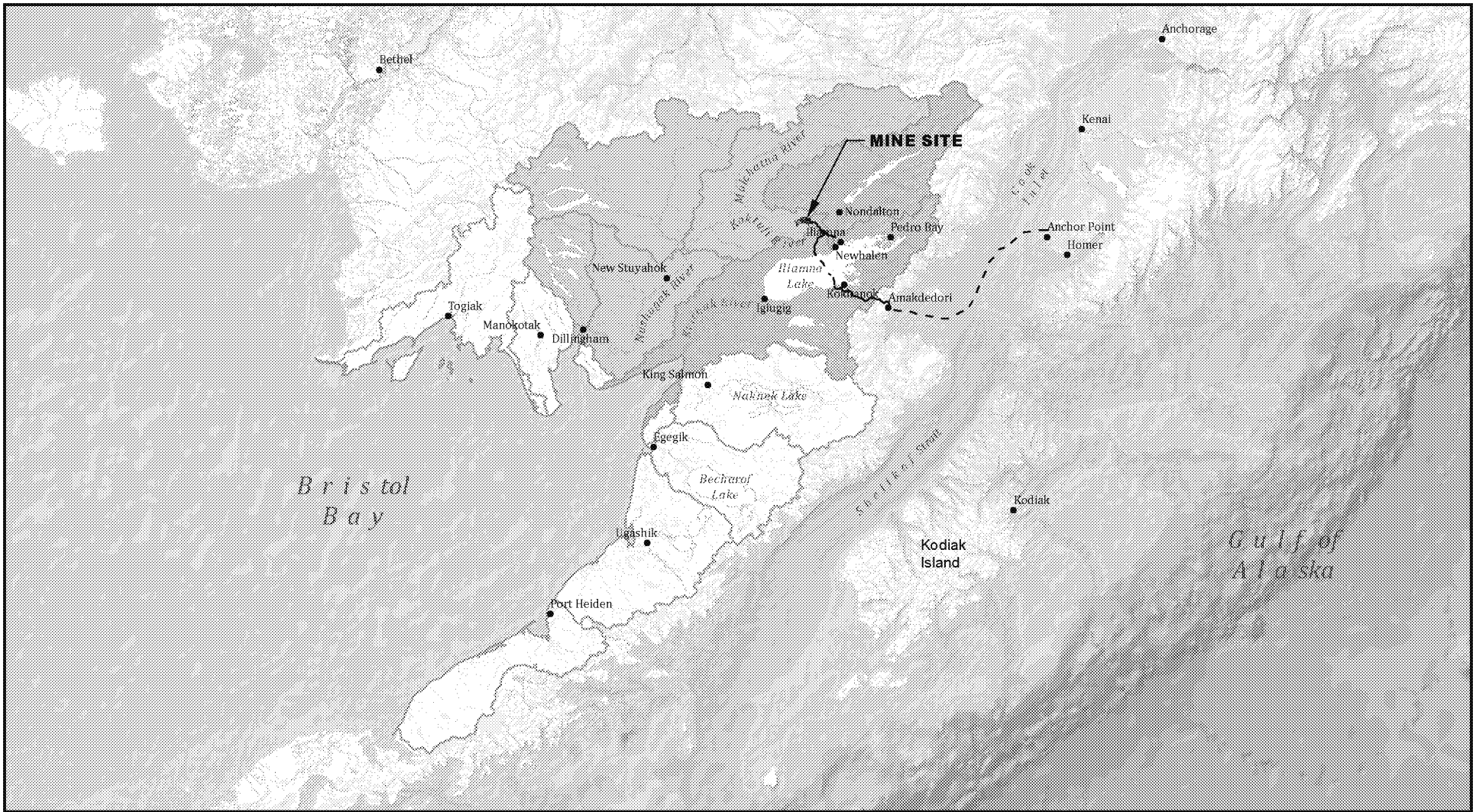

BRISTOL BAY WATERSHED

PEBBLE MINE EIS

FIGURE 3.16-1

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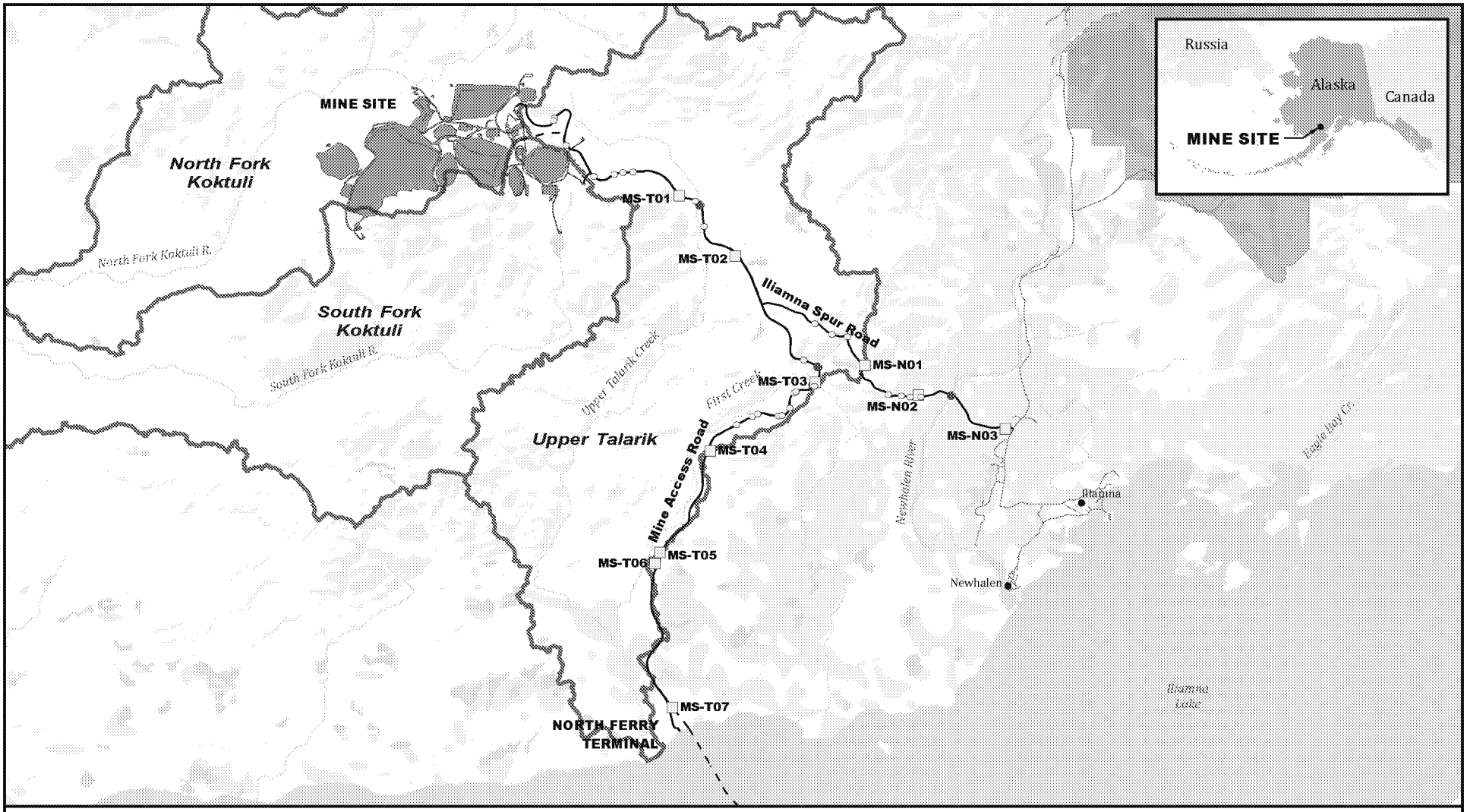


Sources: PLP 2018; ADNR

US Army Corps of Engineers

2 0 2 4
Miles

Major Drainage Boundary
Alternative 1
Bridge
Culvert
Material Site
Transportation Corridor
Natural Gas Pipeline
Mine Site
Other Features
Local Roads
National Park

WATERSHEDS IN THE MINE STUDY AREA

PEBBLE PROJECT EIS

FIGURE 3.16-2

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:05:57 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures Append K Section 4.11 4-6 (UNCLASSIFIED)
Attachments: 11_03_2018_Figure_K4_11_06_AmakdedoriPort_Viewshed.pdf; 11_03_2018_Figure_K4_11_04_NorthFerryTerminal_Viewshed.pdf; 11_03_2018_Figure_K4_11_05_SouthFerryTerminal_Viewshed.pdf

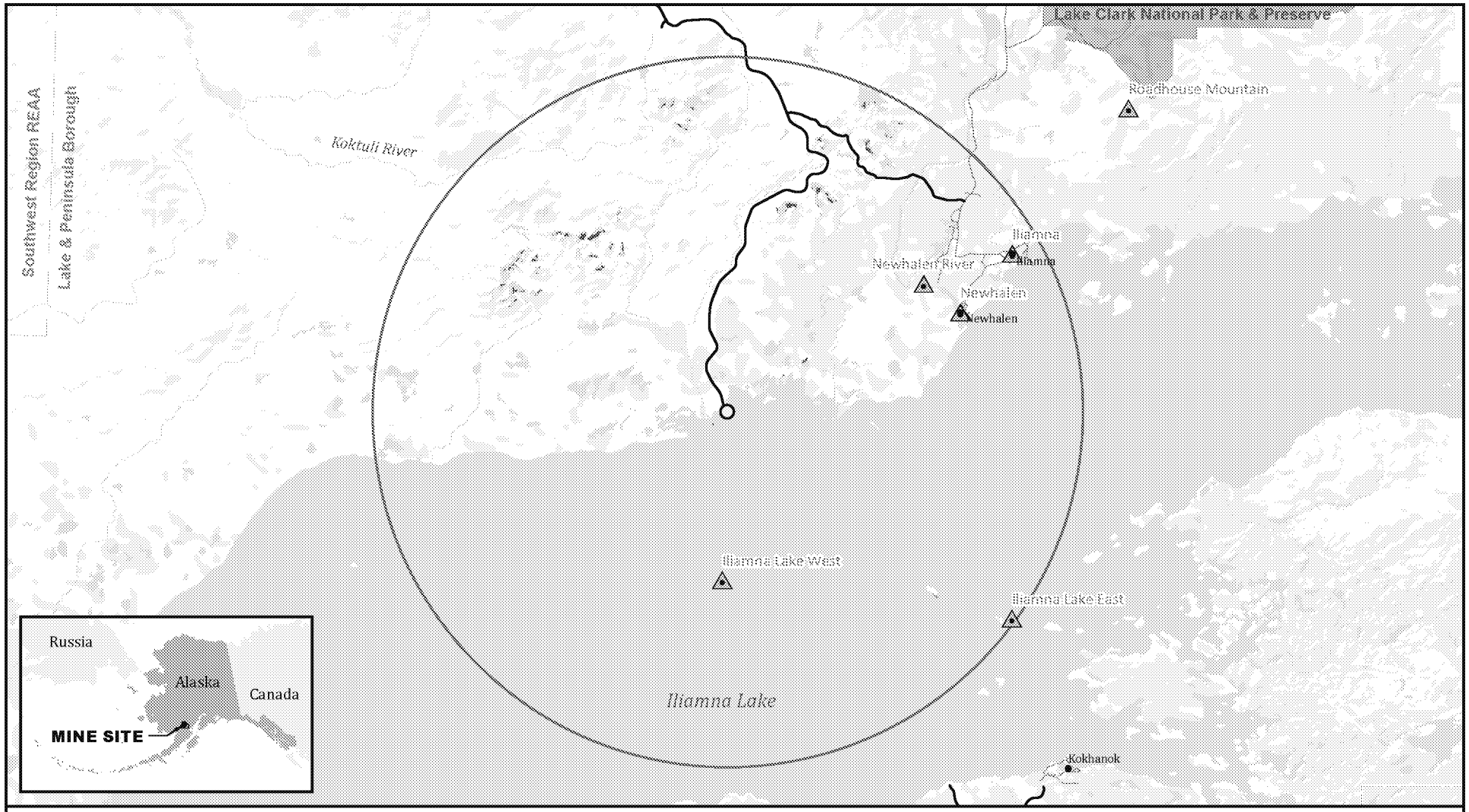
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Visible Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (15 mi radius)

Alternative 1
- Transportation Corridor
- North Ferry Terminal Maintenance Shop

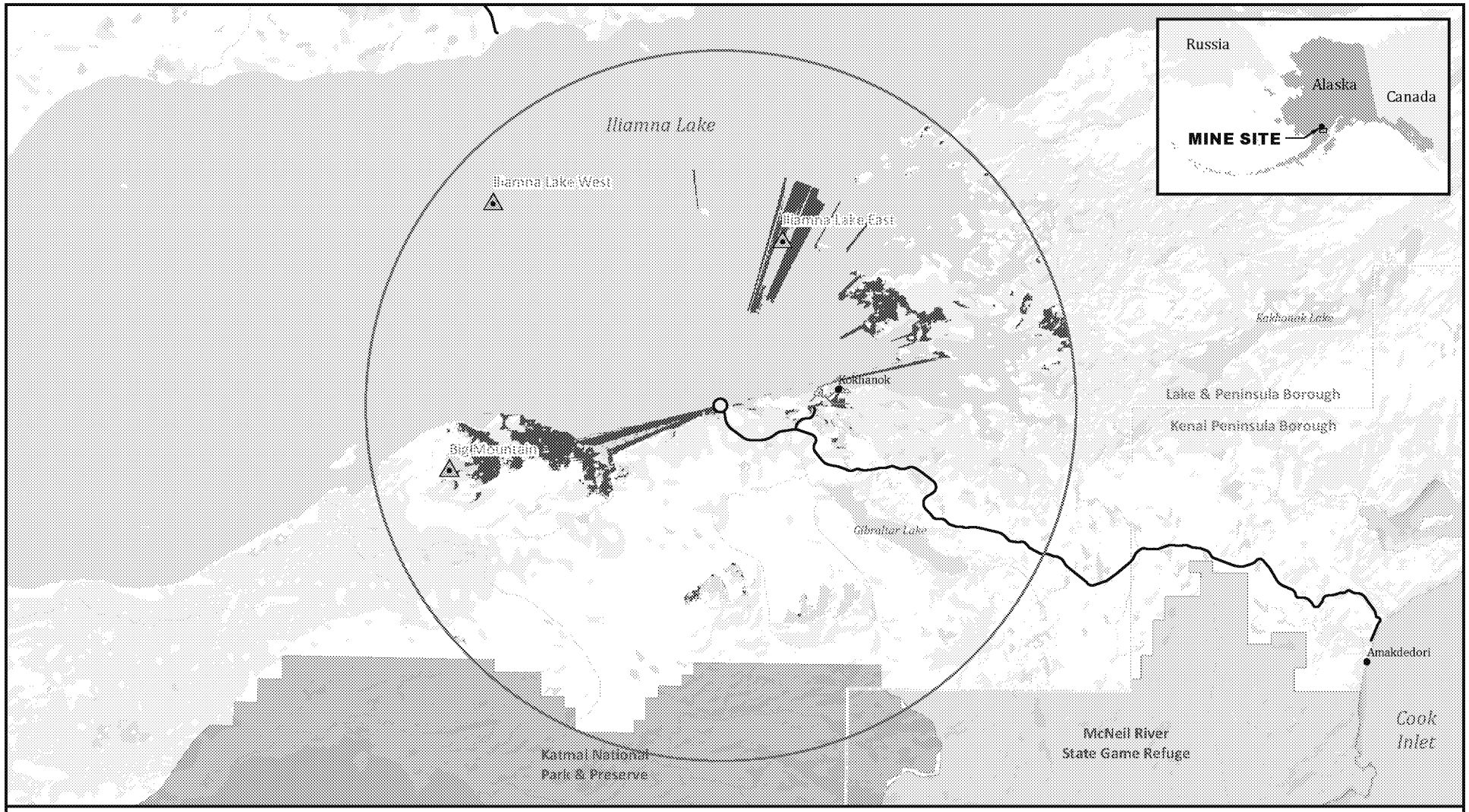
Other Features
- Local Roads
- Borough Boundary
- National Park

ALTERNATIVE 1 NORTH FERRY TERMINAL VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-4

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Visible Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (15 mi radius)

Alternative 1
- Transportation Corridor
- South Ferry Terminal Maintenance Shop

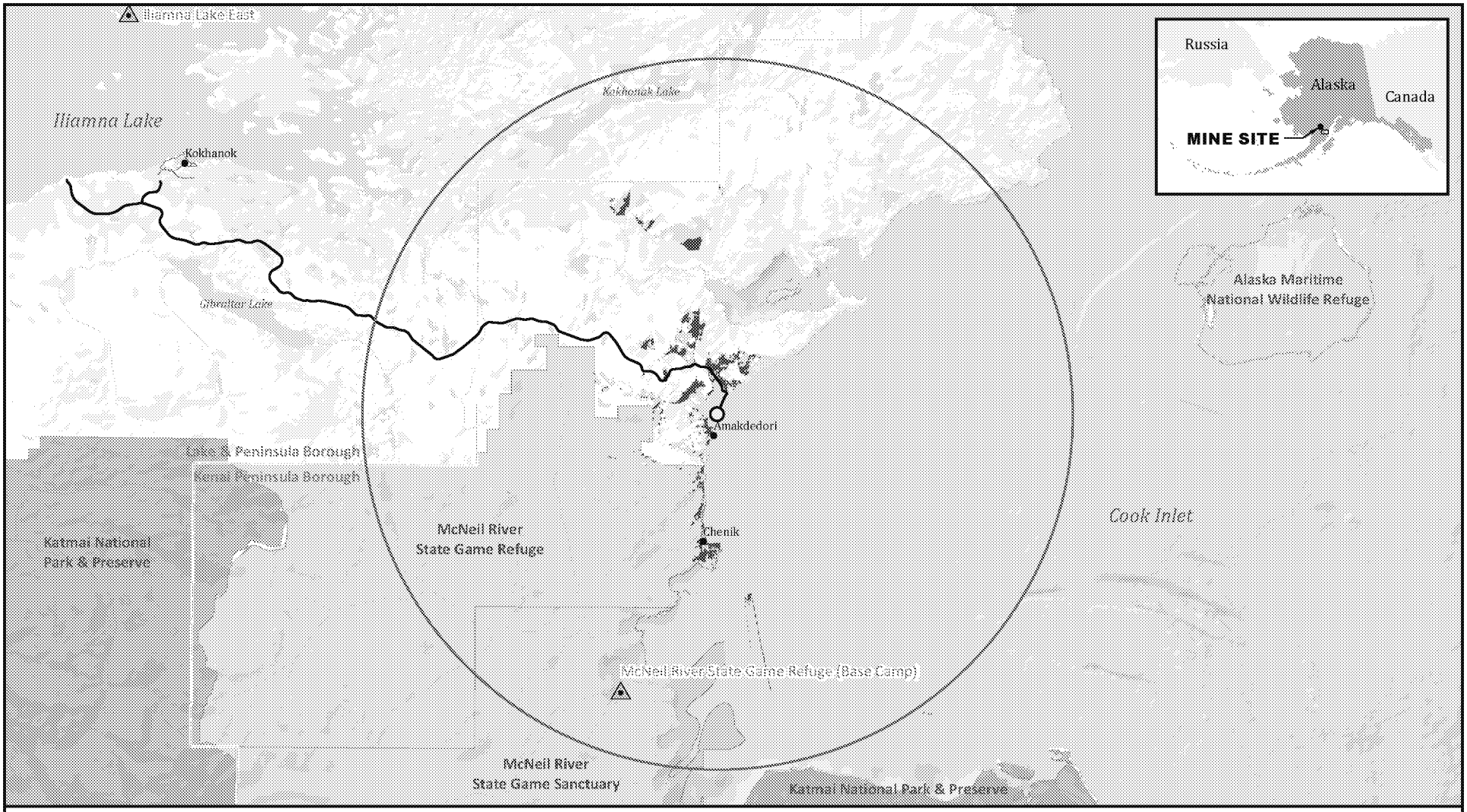
Other Features
- Local Roads
- Borough Boundary
- National Park
- State Game Refuge/Sanctuary

ALTERNATIVE 1 SOUTH FERRY TERMINAL VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-5

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Visible Area/Land Cover
- Visible Area/Bare Earth
- Analysis Area (15 mi radius)

Alternative 1
- Transportation Corridor
- Amakdedori Port Power Generator Building

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- State Game Refuge/Sanctuary

ALTERNATIVE 1 AMAKDEDORI PORT VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-6

AMERICAN OVERSIGHT

Message

From: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Sent: 6/5/2018 5:55:11 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: draft CH 3
Attachments: 05_16_2018_PreDraft_Sec3.14_Soils.docx; 05_16_2018_PreDraft_Sec3.17_Groundwater.docx; 05_16_2018_PreDraft_Sec3.18_WaterQuality.docx; 05_16_2018_PreDraft_Sec3.22_Wetlands.docx; 3_14_01_Soil_Type_Distribution.pdf; 3_16_01_Bristol_Bay_Watershed.pdf; 3_16_02_Mine_Watershed.pdf; 3_16_03_Surface_Hydrology_Stations.pdf; 3_16_04_Meteorlogical_Monitoring_Stations.pdf; 3_16_05_Stream_Gaging_Stations_and_Watersheds.pdf; 3_17_02_Cross_Section_E10.pdf; 3_17_03_Cross_Section_L1.pdf; 3_17_04_Cross_Section_M1.pdf; 3_17_05_Cross_Section_S1.pdf; 3_17_06_Shallow_Groundwater_Contours.pdf; 3_17_07_Hydraulic_Conductivity_Deposit_Area.pdf; 3_17_08_Hydraulic_Conductivity_Outside_Deposit_Area.pdf; 3_17_09_Hydraulic_Conductivity_Deep_Bedrock.pdf; 3_17_10_Piezometric_Elevations_MW-11.pdf; 3_17_11_Piezometric_Elevations_MW-5.pdf; 3_22_01_Wet_Mapping_Overview.pdf; 3_22_02_Wet_Mapping_Mine.pdf; 3_22_03_Transportation_North.pdf; 3_22_04_Transportation_South.pdf; 3_22_05_Amakdedori_Port.pdf; 3_22_06_PipelineKenai.pdf; 3_26_01_Veg_Mapping_Overview.pdf; 3_26_02_Veg_Mapping_Mine.pdf; 3_26_03_Transportation_North.pdf; 3_26_04_Transportation_South.pdf; 3_26_05_Amakdedori_Port.pdf; 3_26_06_PipelineKenai.pdf; 05_11_2018_Updates_to_Proposed_Project.pdf; 05_16_2018_PreDraft_Sec3.1_Intro.docx; 05_16_2018_PreDraft_Sec3.5_Recreation.docx; 05_16_2018_PreDraft_Sec3.11_Aesthetics.docx

Attached are the draft sections of Ch 3 for your agency to assist in developing.

Shane

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:14:46 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_05_Stream_Gaging_Stations_Mine.pdf

CLASSIFICATION: UNCLASSIFIED

VR

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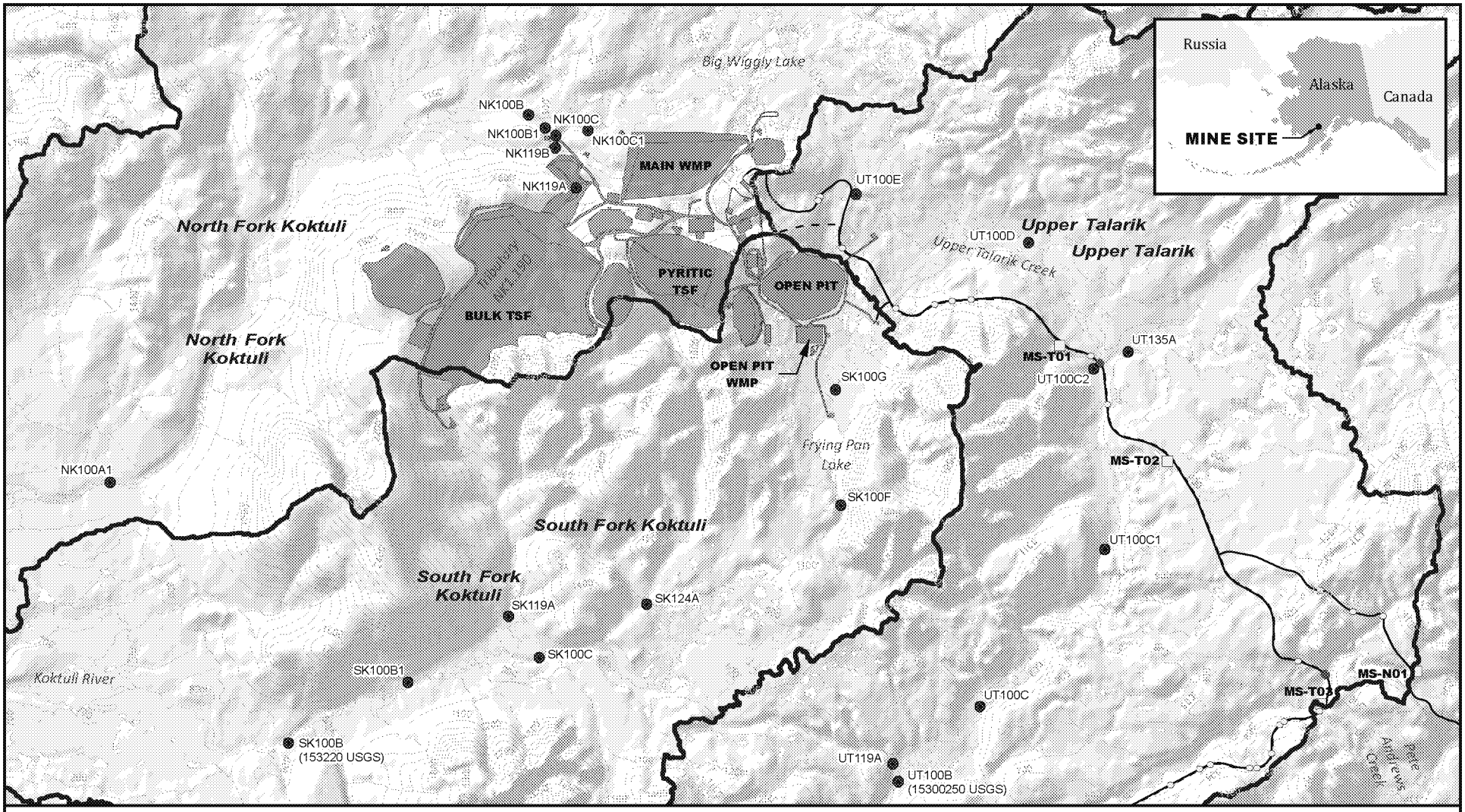
CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: HDR 2012; PLP 2013

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Gage Stations
Major Drainage Boundary
Alternative 1
Bridge
Culvert
Material Site
Mine Site
Transportation Corridor
Natural Gas Pipeline
Other Features
River/Stream
Lake/Pond
100' Contour (Existing)

STREAM GAGING STATIONS IN VICINITY OF MINE SITE

PEBBLE MINE EIS

FIGURE 3.16-5

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:14:59 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_12_MedianIceDurationIliamna.pdf

CLASSIFICATION: UNCLASSIFIED

VR

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Program Manager
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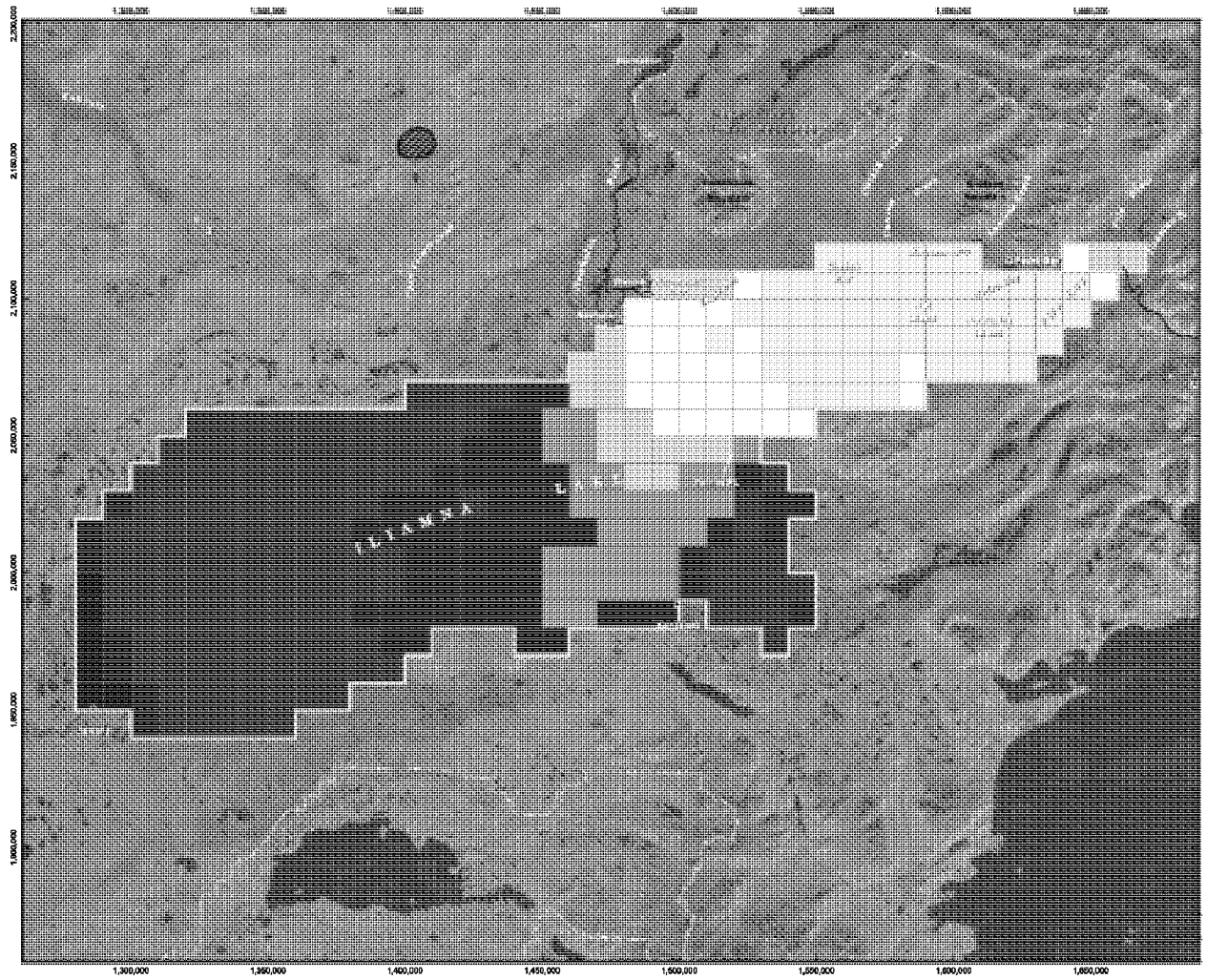
CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Source: PLP 2018 RFI 013; ABR 2018 Figure 3

US Army Corps of Engineers®

Study Area

Existing Road

Median Ice Duration (days)

88 - 90	106 - 110	126 - 130
91 - 95	111 - 115	131 - 135
96 - 100	116 - 120	136 - 140
101 - 105	121 - 125	

MEDIAN ICE DURATION ON ILIAMNA LAKE - WINTERS 2000/2001 THROUGH 2017/2018

PEBBLE PROJECT EIS

FIGURE 3.16-12

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 10/31/2018 6:46:14 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: 10_31_2018_Products_Delivery_Schedule (UNCLASSIFIED)
Attachments: 10_31_2018_Pebble_Deliverable_Schedule.xlsx

CLASSIFICATION: UNCLASSIFIED

Attached is the delivery schedule for the chapters and sections for agency review. Pease note there is a section for Spill Risk that will be produced later than the November 9 date, however USACE is not requesting agency comments on the section prior to publishing the NOA for the dEIS.

VR

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Pebble Project EIS Deliverable Schedule - EIS Sections and Inputs - Draft EIS

Ch.	Document	To USACE	Notes
01 Purpose and Need for the Proposed Action		**24-Oct-18 A**	A = Actual date of transmission
02 Alternatives Including Applicant's Proposed Alternative		**23-Nov-18 A**	
03 Affected Environment		**9-Nov-18**	Ch3-4+Tech Apps to be transmitted together as bundles
	3.1 Intro to Affected Environment	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	3.2 Lands	9-Nov-18	
	3.3 Needs & Welfare	2-Nov-18	
	3.4 Environmental Justice	2-Nov-18	
	3.5 Recreation	16-Oct-18 A	
	3.6 Commercial and Recreational Fisheries	9-Nov-18	
	3.7 Cultural Resources	2-Nov-18	
	3.8 Historic	9-Nov-18	
	3.9 Subsistence	9-Nov-18	
	3.10 Health and Safety	6-Nov-18	
	3.11 Aesthetics	2-Nov-18	
	3.12 Transportation and Navigation	2-Nov-18	
	3.13 Geology	9-Nov-18	
	3.14 Soils	9-Nov-18	
	3.15 Geohazards	9-Nov-18	
	3.16 Surface Water	9-Nov-18	
	3.17 Groundwater	9-Nov-18	
	3.18 Water and Sediment Quality	9-Nov-18	
	3.19 Noise	9-Nov-18	
	3.20 Air Quality	9-Nov-18	
	3.21 Food and Fiber Production	2-Oct-18 A	
	3.22 Wetlands	9-Nov-18	
	3.23 Wildlife Values	9-Nov-18	
	3.24 Fish Values	9-Nov-18	
	3.25 TES	9-Nov-18	
	3.26 Vegetation	9-Nov-18	
04 Environmental Consequences		**9-Nov-18**	Ch3-4+Tech Apps to be transmitted together as bundles
	4.1 Intro to Environmental Consequences	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	4.2 Lands	9-Nov-18	
	4.3 Needs & Welfare - Socioeconomics	2-Nov-18	
	4.4 Environmental Justice	2-Nov-18	
	4.5 Recreation	10/16/2018 A	
	4.6 Commercial and Recreational Fisheries	9-Nov-18	
	4.7 Cultural	2-Nov-18	
	4.8 Historic	9-Nov-18	
	4.9 Subsistence	9-Nov-18	
	4.10 Health and Safety	6-Nov-18	
	4.11 Aesthetics	2-Nov-18	
	4.12 Transportation and Navigation	2-Nov-18	
	4.13 Geology	9-Nov-18	
	4.14 Soils	9-Nov-18	
	4.15 Geohazards	9-Nov-18	
	4.16 Surface Water	9-Nov-18	
	4.17 Groundwater	9-Nov-18	
	4.18 Water and Sediment Quality	9-Nov-18	
	4.19 Noise	9-Nov-18	
	4.20 Air Quality	9-Nov-18	
	4.21 Food and Fiber Production	2-Oct-18 A	
	4.22 Wetlands	9-Nov-18	
	4.23 Wildlife Values	9-Nov-18	
	4.24 Fish Values	9-Nov-18	
	4.25 TES	9-Nov-18	
	4.26 Vegetation	9-Nov-18	
	4.27 Spill Risk	14-Dec-18	not reqesting any agencies comments preNOA
05 Mitigation and Monitoring		**9-Nov-18**	
06 Consultation and Coordination		**2-Oct-18 A**	
07 List of Preparers		**18-Oct-18 A**	
08 List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent		**18-Oct-18 A**	
09 References		**9-Nov-18**	
Appendices		**9-Nov-18**	
	Appendix A Public Involvement (Scoping Report)	N/A (PDF of Report)	
	Appendix B Alternatives Development	N/A (USACE review if needed)	
	Appendix C Mailing List	N/A (USACE review if needed)	
	Appendix D Comments Received on the Draft EIS and Corps Responses (Comment Analysis Report)	N/A (Placeholder for DEIS)	
	Appendix E Permits, Approvals, and Consultations Required	2-Nov-18	
	Appendix F Draft Clean Water Action 404(b)(1) Analysis	TBD	
	Appendix G ESA Biological Assessment (FWS)	N/A (PDF of BA)	
	Appendix H ESA Biological Assessment (NMFS)	N/A (PDF of BA)	
	Appendix I EFH Assessment	N/A (PDF of EFHA)	
	Appendix J PJD	N/A (PDF of PJD)	
	Appendix K Technical Appendices	See below	
	Chapter 3 Technical Appendices		Ch3-4+Tech Apps to be transmitted together as bundles
	K3.1 Intro to Affected Environment	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	K3.6 Commercial and Recreational Fisheries	9-Nov-18	
	K3.8 Historic Properties	9-Nov-18	
	K3.9 Subsistence	9-Nov-18	
	K3.13 Geology	9-Nov-18	
	K3.14 Soils	9-Nov-18	
	K3.15 Geohazards	9-Nov-18	
	K3.16 Surface Water	9-Nov-18	
	K3.17 Groundwater	9-Nov-18	
	K3.18 Water and Sediment Quality	9-Nov-18	
	K3.19 Noise	9-Nov-18	
	K3.20 Air Quality	9-Nov-18	
	K3.22 Wetlands	9-Nov-18	
	K3.24 Fish	9-Nov-18	
	K3.26 Vegetation	9-Nov-18	
	Chapter 4 Technical Appendices		
	K4.10 Health and Safety	6-Nov-18	
	K4.11 Aesthetics	2-Nov-18	
	K4.13 Geology	9-Nov-18	
	K4.14 Soils	9-Nov-18	
	K4.15 Geohazards	9-Nov-18	
	K4.16 Surface Water	9-Nov-18	
	K4.17 Groundwater	9-Nov-18	
	K4.18 Water and Sediment Quality	9-Nov-18	
	K4.19 Noise	9-Nov-18	
	K4.20 Air Quality	9-Nov-18	
	K4.22 Wetlands	9-Nov-18	
	K4.23, Wildlife	9-Nov-18	
	K4.24 Fish	9-Nov-18	
	K4.25 TES	9-Nov-18	
	Appendix L Programmatic Agreement	N/A (Placeholder for DEIS)	
	Appendix M Migitation, including Compensatory Monitoring Plan	9-Nov-18	
	Appendix N Project Description	N/A (PDF of PD)	

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:14:18 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_03_WatershedsMineFootprint.pdf; 3_16_04_Surface_Hydrology_Stations.pdf

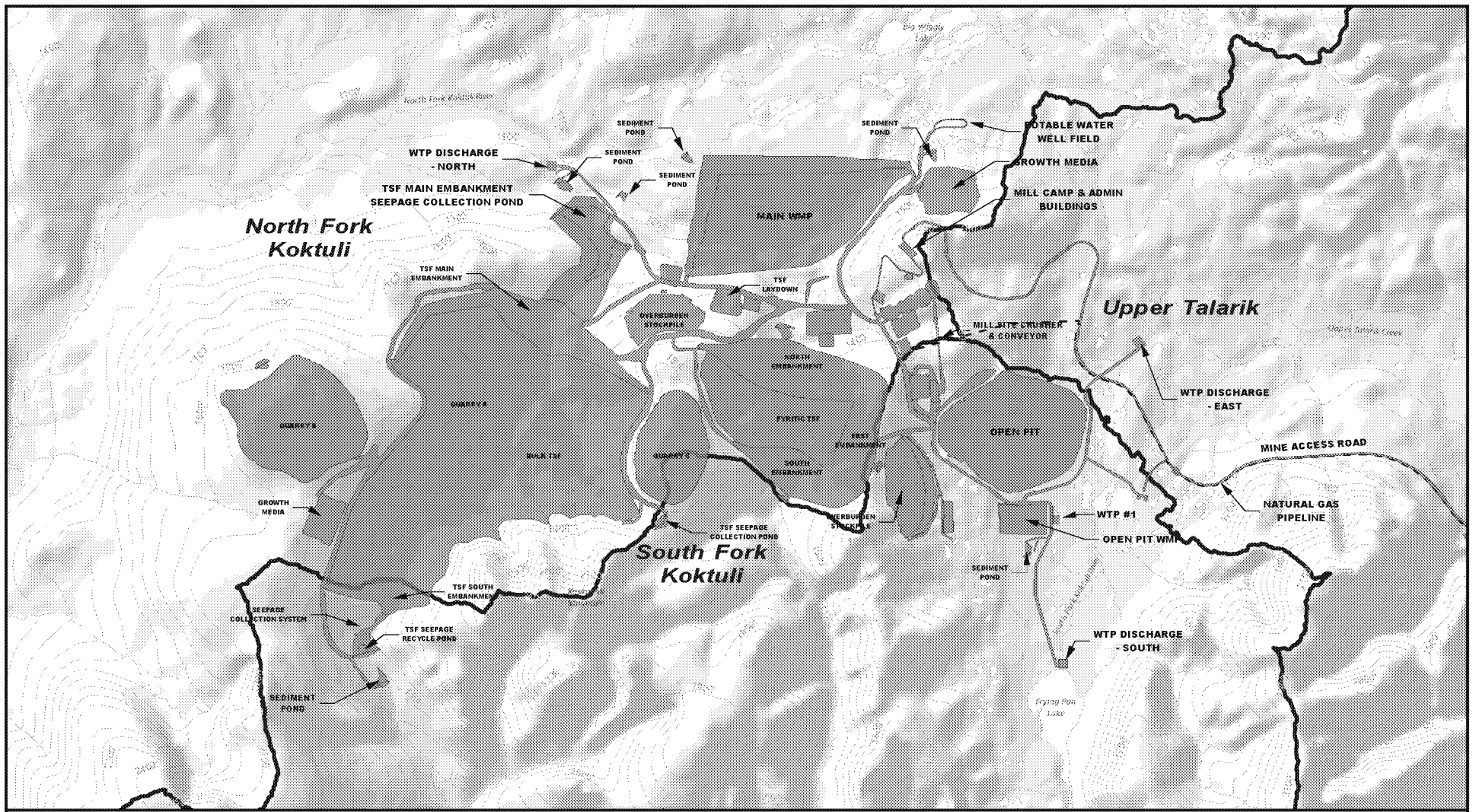
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: PLP 2018-RFI 032; USGS; ADNR

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Major Drainage Boundary
Alternative 1
Project Features
Natural Gas Pipeline

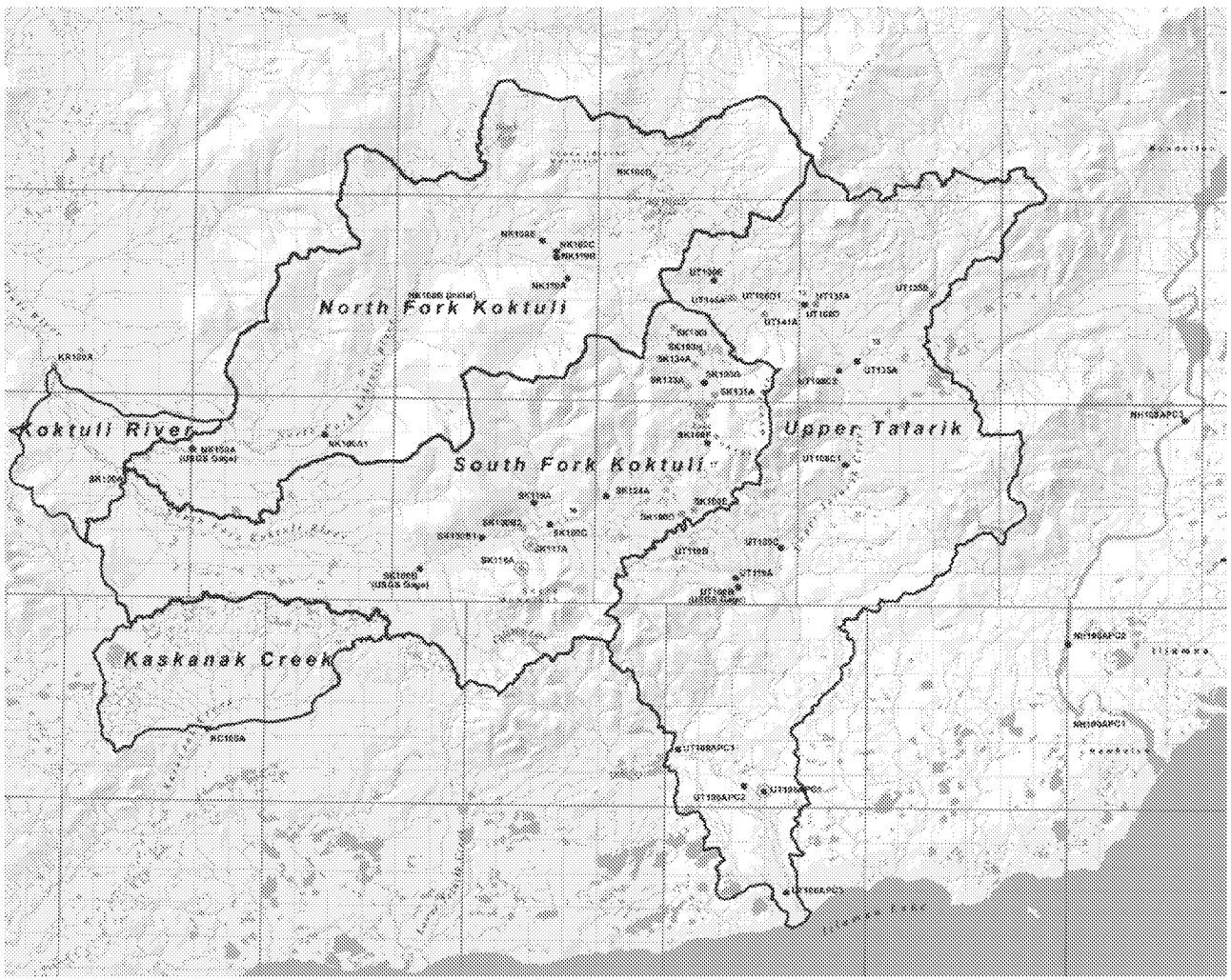
Other Features
River/Stream
Lake/Pond
100' Contour (Pre-Mine)

WATERSHEDS AND MINE SITE FOOTPRINT

PEBBLE PROJECT EIS

FIGURE 3.16-3

AMERICAN OVERSIGHT



Sources: HDR 2011

US Army Corps of Engineers

SK100B2: Example of Hydrologic Station Identification Number

Baseline Hydrologic Stations

- Continuous
- Instantaneous
- Cominco Stations
- New 2008 Stations

- Major Drainage Boundary
- Stream
- Water Feature
- General Deposit Location
- Village Corporation Boundary

STREAM GAGING STATIONS IN MINE STUDY AREA

PEBBLE MINE EIS

FIGURE 3.16-4

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 6:43:56 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures for 3.25/4.25 (UNCLASSIFIED)
Attachments: 4_25_01_Marine Mammal Critical Habitat Action Area.pdf; 4_25_02_Stellers Eider Action Area.pdf

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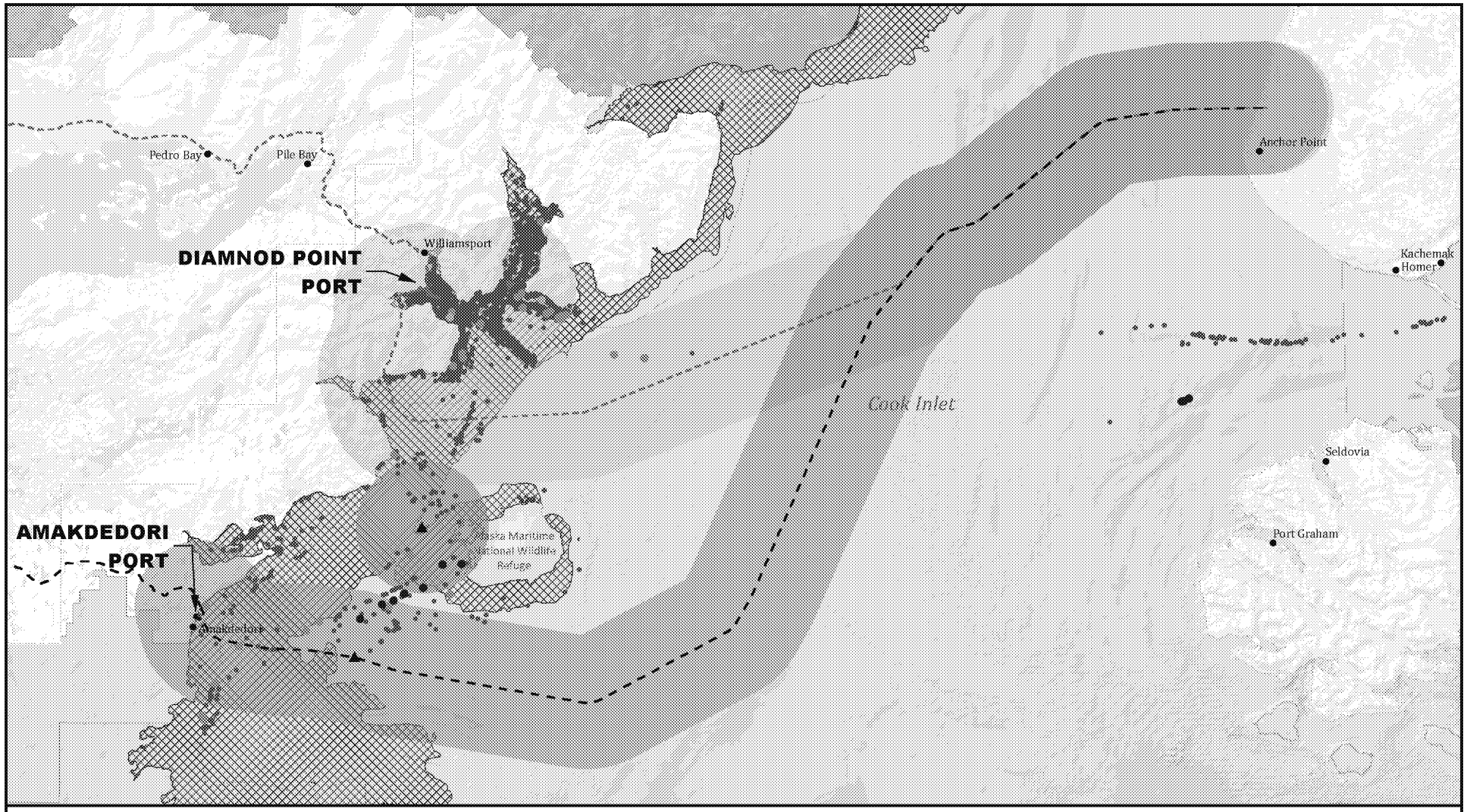

Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10

Miles

Species Observations
- Beluga Whale
- Humpback Whale
- Steller's Sea Lion
- Northern Sea Otter

Critical Habitat
- Northern Sea Otter
- Beluga Whale

Alternative 1
- Lightering Locations
- Natural Gas Pipeline
- Amakdedori Port
- Action Area

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Diamond Point Port
- Action Area

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

FEDERALLY LISTED MARINE MAMMAL CRITICAL HABITAT AND LOCATION WITHIN THE ACTION AREA

PEBBLE PROJECT EIS

FIGURE 4.25-1

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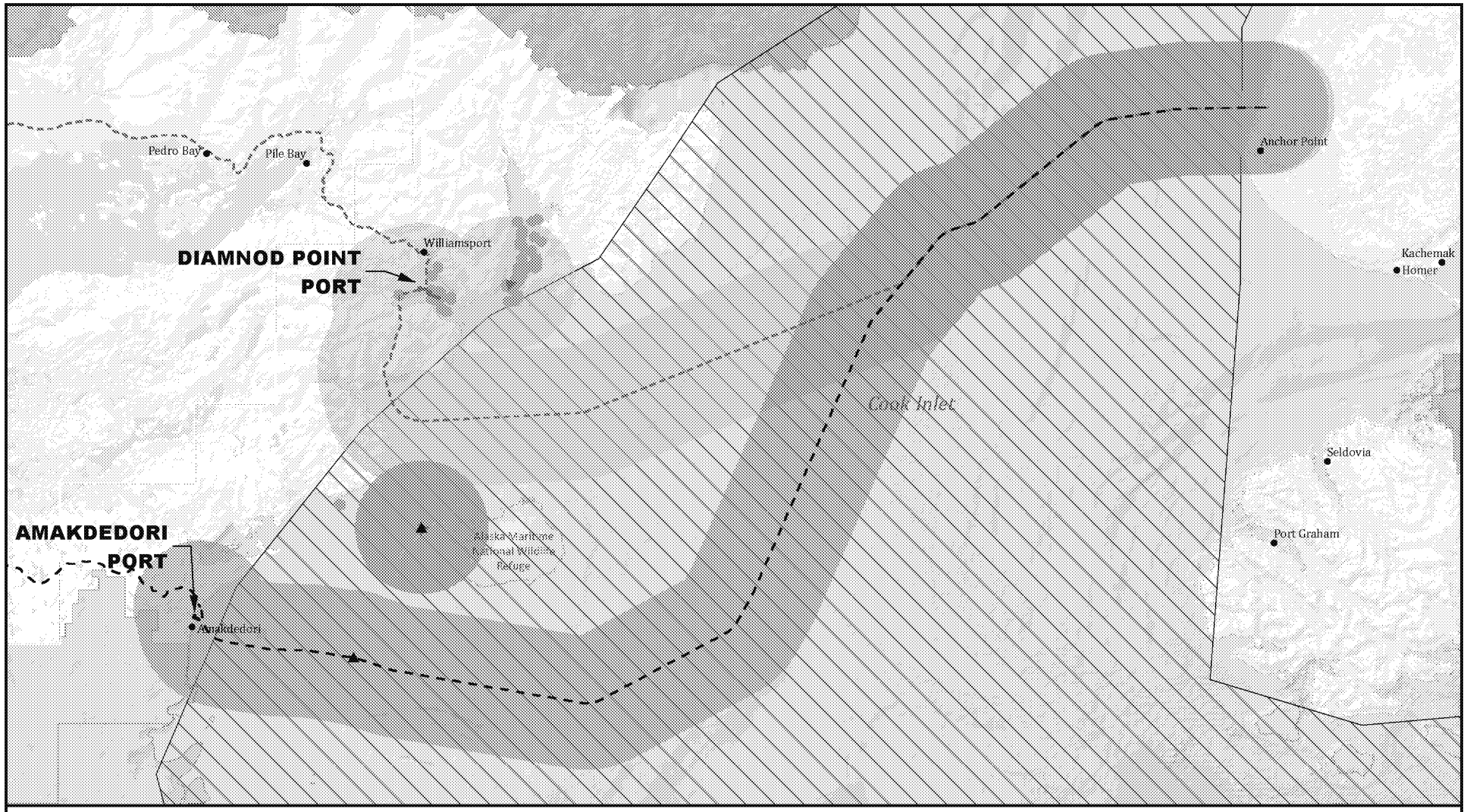

Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

Steller's Eider
- Observations
- Molting & Wintering Habitat

Alternative 1
- Lightering Locations
- Natural Gas Pipeline
- Amakdedori Port
- Action Area

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Diamond Point Port
- Action Area

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

STELLER'S EIDER MOLTING AND WINTERING LOCATIONS WITHIN THE ACTION AREA

PEBBLE PROJECT EIS

FIGURE 4.25-2

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From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 6:43:17 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: part two of lase email please review and provide comments by 12/01/2018 (UNCLASSIFIED)
Attachments: Fig K4.10-1.pdf; Fig K4.10-2.pdf; 3_25_01_Federally_Listed_WildlifeHabitat_CookInlet.pdf; 3_04_01_Low_Income_Minority_Communities.pdf

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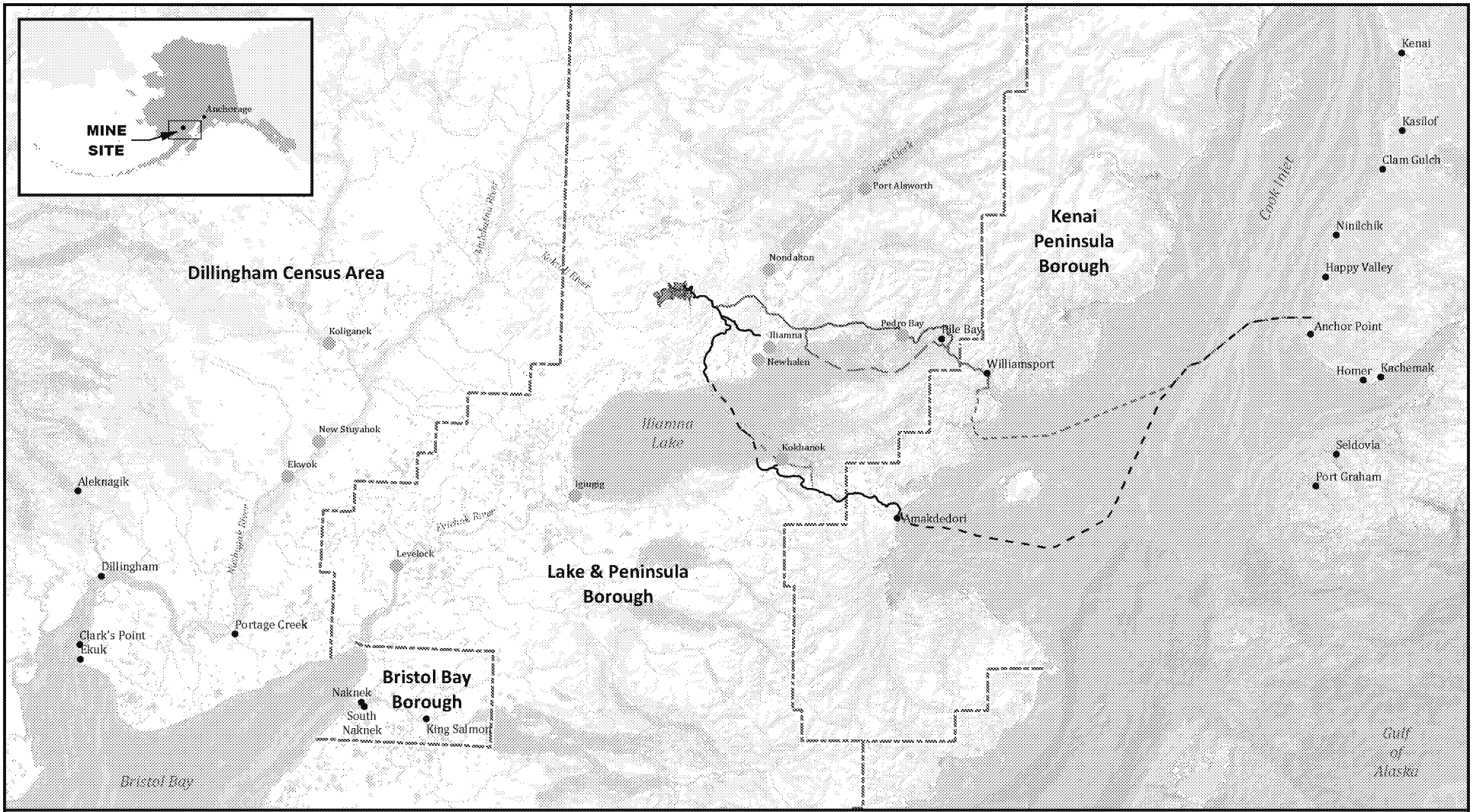

MINORITY AND LOW-INCOME COMMUNITIES IN THE EIS ANALYSIS AREA

PEBBLE PROJECT EIS **FIGURE 3.4-1**

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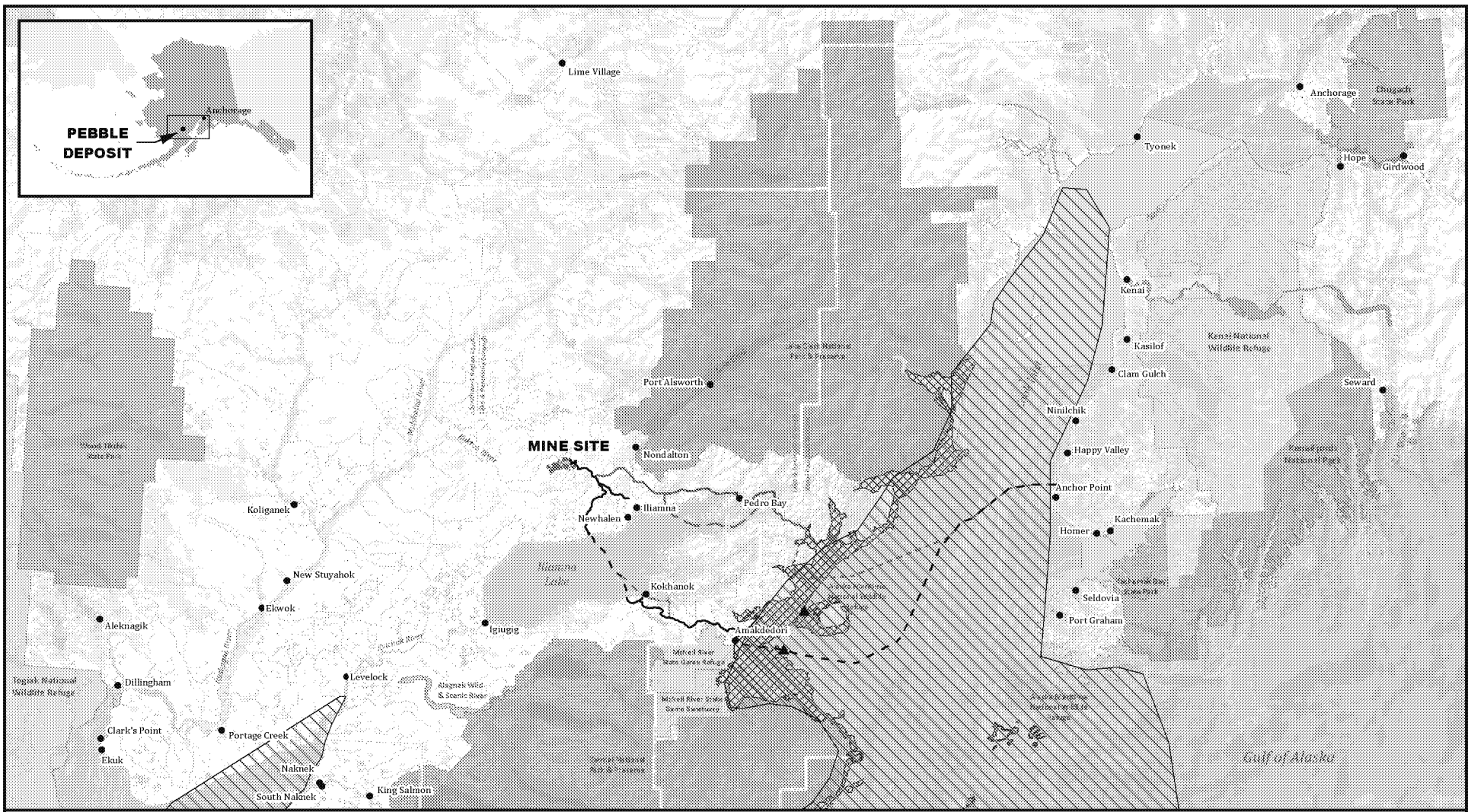

Sources: PLP 2018; USFWS; ADNR

US Army Corps of Engineers

10 0 10 20

Miles

Federally Listed Wildlife Specieis Habitat

- Steller's Eider Molting & Wintering Habitat
- Northern Sea Otter Critical Habitat within Unit 5
- Beluga Whale Critical Habitat Area 2

Alternative 1

- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Alternative 2

- Transportation Corridor
- Ferry Route

Alternative 2/3

- Lightering Location
- Natural Gas Pipeline

Alternative 3

- Transportation Corridor

Other Features

- Borough Boundary
- National Park
- National Wildlife Refuge
- Alaska State Park
- Wild and Scenic River
- State Game Refuge/Sanctuary

FEDERALLY LISTED WILDLIFE SPECIES HABITAT IN COOK INLET

PEBBLE PROJECT EIS

FIGURE 3.25-1

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 6:36:47 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: please provide applicable comments by 12/01/2018 (UNCLASSIFIED)
Attachments: Sec4.10_HealthSafety_reviewdraft_2018.11.02.docx; Sec4.11_Aesthetics_reviewdraft_2018.11.02.docx; Sec4.25_TES_reviewdraft_2018.11.02.docx; App K4.10_HealthSafety_reviewdraft_2018.11.02.docx; AppK4.11_Aesthetics_reviewdraft_2018.11.02.docx; K4.25_TES_reviewdraft_2018.11.02.docx; Sec3.4_EnvJustice_reviewdraft_2018.11.02.docx; Sec3.10_HealthSafety_reviewdraft_2018.11.02.docx; Sec3.11_Aesthetics_reviewdraft_2018.11.02.docx; Sec3.25_TES_reviewdraft_2018.11.02.docx; Figure_03_11_01_KOPs.pdf; Sec4.4_EnvJustice_reviewdraft_2018.11.02.docx

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Attached are 11 Word files and 5 PDF files, the review drafts and associated figures of:

Sec3.4/4.4 - Environmental Justice (CAs listed as ADF&G-Subsistence, ACCED, ADOL). Sec3.4 has 1 separate PDF figure.

Sec3.10/4.10/K4.10-Health and Safety (CAs listed as BSEE, PHMSA, ADHSS). Appendix K4.10 has 2 separate PDF figures.

Sec3.11/4.11/K4.11-Aesthetics (CAs listed as EPA, NPS, USACE, ADNR-DMLW, ADF&G-Wildlife Conservation, ADF&G-Sportfish). Sec3.11 has 1 separate PDF figure;

Sec3.25/4.25/K4.25-Threatened and Endangered Species (CAs listed as USACE, USFWS). Sec3.25 has 1 separate PDF figure; Sec4.25 has 2 separate PDF figures - these will be sent in a separate email.

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K4.10 HEALTH AND SAFETY

As discussed in Sections 3.10 and 4.10, Health and Safety, the Alaska Department of Health and Social Services (ADHSS) (2015) defines health as "the reduction in mortality, morbidity and disability due to detectable disease or disorder and an increase in the perceived level of health." Because health is a multi-dimensional concept with physical, mental, and social aspects, the proposed project may affect aspects of health at a localized or individual level, a community level, a regional level, or a state-wide level, depending on the nature of the effect.

Human health impacts were evaluated in accordance with National Environmental Policy Act (NEPA) practice, and generally followed the ADHSS methodology. The terminology used for descriptions and rankings of health impacts in this section generally correspond to the terms and ratings used in the ADHSS Health Impact Assessment (HIA) guidance. A characteristic of this guidance is that the individual dimensions of health impacts (i.e., nature of health effect, duration, magnitude, extent, and likelihood) are each given their own descriptive terms for the estimated relative degree of occurrence; and a final consolidated health impact rating for each health metric or health effects category (HEC) is numerical (Category 1 through 4). The guidance suggests that impact ratings of 2 or higher may markedly increase or decrease illness and injury rates, and may warrant interventions, if negative (ADHSS 2015).

In accordance with NEPA practice and ADHSS (2015), the scope of this assessment is limited to affected communities "outside of the fence," (outside the mine site and other mine-related components). Accordingly, this assessment does not include a direct evaluation of the anticipated workforce safety and health issues ("inside the fence") because the project would be governed by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA) regulations in the areas where project activities would occur. However, this assessment does consider "crossover issues" such as areas where workers are housed, or where workforce behaviors result in interactions/overlap with the affected communities.

The analysis of potential consequences to human health for the affected communities using ADHSS (2015) criteria is consistent with the principles of analysis required by NEPA. The first step is to determine the impact score, which takes into consideration four impact dimensions: severity of potential health effects (which can be positive or negative and considers the need for intervention if the impact is negative), duration, magnitude, and extent of the impact (Table K4.10 1). Each component of the impact dimension is assigned a score of 0, 1, 2, or 3 to derive the overall impact rating score.

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Table K4.10-1: Step 1 – Impact Dimensions

Step 1				
Impact Rating Score	**A – Health Effect (+/-)**	**B – Duration**	**C – Magnitude**	**D – Extent**
0	Effect is not perceptible	Less than 1 month	Minor	Individual cases
1	(+/-) minor benefits or risks to injury or illness patterns (no intervention needed)	Short-team: 1 to 12 months	Those impacted will: 1) be able to adapt to the impact with ease and maintain pre-impact level of health; 2) see noticeable but limited and localized improvements to health conditions.	Local: small limited impact to households
2	(+/-) moderate benefits or risks to illness or injury patterns (intervention needed, if negative)	Medium-term: 1 to 6 years	Those impacted will: 1) be able to adapt to the health impact with some difficulty and will maintain pre-impact level of health with support; or 2) experience beneficial impacts to health for specific populations; some maintenance may still be required.	Entire Potentially Affected Communities; village level
3	(+/-) severe benefits or risks: marked change in mortality and morbidity patterns (intervention needed, if negative)	Long-term: more than 6 years/life of project and beyond	Those impacted will: 1) not be able to adapt to the health impact or to maintain pre-impact level of health; or 2) see noticeable major improvements in health and overall quality of life.	Extends beyond Potentially Affected Communities; regional and state-wide levels

Source: ADHSS 2015

Next, the severity and likelihood of each type of impact is evaluated, and those ratings are used to develop an overall significance impact rating category of 1, 2, 3, or 4 (Table K4.10-2). Recommended actions for negative impacts are listed by category below:

- Category 1: Actions to reduce negative impacts are not needed.
- Category 2: Recommend that decision-makers assess whether actions to reduce negative impacts would be helpful for negative impacts.
- Category 3: Recommend that decision-makers develop and implement actions to reduce negative impacts.
- Category 4: Strongly recommend that decision-makers develop and implement actions to reduce negative impacts.

Table K4.10-2: Steps 2, 3, and 4 – Likelihood and Overall Impact Ratings

Step 2	Step 3						
Impact Severity Level (Sum Scores from Step 1 to choose range)	**Likelihood Rating**						
	Extremely Unlikely (<1%)	**Very Unlikely (1-10%)**	**Unlikely (10-33%)**	**About as likely as Not (33-66%)**	**Likely (66-90%)**	**Very Likely (90-99%)**	**Virtually Certain (>99%)**
1-3	♦	♦	♦	♦	♦♦	♦♦	♦♦

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Table K4.10-2: Steps 2, 3, and 4 – Likelihood and Overall Impact Ratings

Step 2	Step 3						
Impact Severity Level (Sum Scores from Step 1 to choose range)	Likelihood Rating						
	Extremely Unlikely (<1%)	Very Unlikely (1-10%)	Unlikely (10-33%)	About as likely as Not (33-66%)	Likely (66-90%)	Very Likely (90-99%)	Virtually Certain (>99%)
4-6	♦	♦	♦	♦♦	♦♦	♦♦	♦♦♦
7-9	♦♦	♦♦	♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦
10-12	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦
Step 4	**Impact Rating**						
	Category 1 = ♦		Category 2 = ♦♦		Category 3 = ♦♦♦		Category 4 = ♦♦♦♦

Source: ADHSS 2015

Although the framework used for the evaluation of health impacts is generally consistent with ADHSS guidance, and the data are considered sufficient for analysis in the Pebble Project Environmental Impact Statement (EIS), it is important to note that any assessment of potential impacts is subject to several types of uncertainty, as summarized below.

- Baseline data used to describe current health status and conditions vary along the spatial and temporal scales; the reported data may range from current, to several years since data were collected; some data are available at the level of individual communities, while others are regional or state-level in scale. For example, Lake and Peninsula Borough (LPB) community-level baseline data (≤ 2016) are available for leading hospitalizations by diagnosis, leading causes of non-fatal injuries, and leading causes of death (see Section 3.10, Health and Safety, HECs 2 and 7), while similar community-level data are not available for the Nushagak/Bristol Bay communities. Recent baseline data are available for these metrics and at regional or state level for other baseline data (various social determinants of health [SDH], infectious diseases, and contributing factors to chronic disease). Therefore, not all health conditions are described or evaluated at the same level of precision and timeliness.
- Health consequences related to changes in environmental conditions—such as soil quality and water quality, which can potentially lead to bioaccumulation in foods—are subject to uncertainties. Although the concentrations of chemicals in environmental media under baseline conditions may be known, future concentrations (e.g., as related to end-of-mine life and closure) are evaluated by using conservative modeling approaches that meet NEPA requirements (see Section 4.20, Air Quality; Section 4.14, Soils; and Section 4.18, Water and Sediment Quality). It is likely that these modeling approaches lead to overestimation of the potential for impacts, but do not necessarily represent "worst-case scenarios.".
- Although the presentation of baseline health conditions may be based on data of varying levels of completeness and quality, the evaluation of health impacts is generally more qualitative; and some potential health consequences, by their very nature, are complex, and not easily quantifiable. The evaluation of social determinants of health is particularly subject to uncertainty, because many of the choices that affect social and mental health and behavioral risk factors are actually made at the level of the individual, and many of the choices may have both beneficial and negative aspects associated with them. Two individuals exposed to the same

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situation may make very different behavioral choices; therefore, there is uncertainty in trying to predict the aggregate of individual choices at a community level in terms of overall severity, likelihood, and impact rating. The evaluation uses published literature, where feasible, to provide context for this type of uncertainty. In addition, effects related to communicable and non-communicable diseases typically cannot be quantified, because their prevalence depends on numerous environmental, behavioral, and genetic factors. The potential for these indirect health effects to occur is included in the assessment, based on reports of their occurrence at other projects and sites, but the severity and likelihood of their occurrence in relation to the project cannot be precisely estimated.

Where quantifiable evaluations are not possible, qualitative evaluations strive for transparency in professional judgement. To this end, the components of the severity ranking system and the likelihood ranking system follow the gradations described in the ADHSS guidance, and the final impact ratings are based on a combination of severity and likelihood considerations. This allows the reader to clearly understand the basis of the ratings for project-related health consequences.

- Another source of uncertainty is the rating system for "likelihood" of impacts that is employed by the ADHSS guidance. Uncertainties regarding the reliability of impact ratings and the methodology have been pointed out by several authors (Thomson 2008; Petticrew et al. 2007). Uncertainty in estimating likelihood is easier to describe and quantify for certain types of health impacts such as exposure to potentially hazardous materials, and more difficult for other kinds of impacts such as social determinants of health, or diseases (both infectious and non-communicable). For this health assessment, estimation of likelihood is based on a general understanding of baseline health status and trends; project description, including proposed programs and measures to avoid or minimize health impacts; the detailed evaluation of certain types of impacts in other sections of the EIS (e.g., air quality, water quality, socio-economics, subsistence, transportation); and publicly available literature regarding these impacts on other, similar projects. The actual likelihood of the impacts may vary from the estimated level.

For each alternative, the consequences of the project activities are described with regard to relevant issues and concerns associated with the eight HECs described in the HIA guidance (ADHSS 2015). Although all components were considered, the project was primarily analyzed as a whole because effects could not be attributed to a single component (i.e., there was overlap of affected communities for multiple components). Finally, the health consequences are summarized by HEC and for the alternative as a whole; and expressed as Category 1, 2, 3, or 4. ADHSS does not provide narrative descriptions for these numeric impact category rankings, and only suggests that they be used to propose recommendations for actions.

K4.10.1 No Action Alternative

It is difficult to project the No Action Alternative health status 24 years into the future due to the many factors and variables that could impact the health of communities in the EIS area in the future; therefore, current baseline condition is assumed as a reasonable proxy to qualitatively evaluate the future in the No Action Alternative. As a result, no quantitative discussion (i.e., rating) is presented for the No Action Alternative.

As discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics, the No Action Alternative would have direct impacts related to the PLP exploration activities; PLP exploration-related employment and income—which were realized in the Bristol Bay region over the previous decade—would cease. Human health impacts associated with the loss of jobs and

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decrease in household income for communities closest to the mine site (Nondalton, Iliamna, and Newhalen) would be expected to be minor in magnitude, with changes relative to baseline; with potential increases or decreases in SDH, such as income, psychosocial stress, substance abuse, and family stability. There would be no impact to communities in the lower Bristol Bay watershed, such as Dillingham, other than removing uncertainty about the fate of this project. Other health factors would likely be similar to current conditions (baseline), such as potential rates of accidents and injuries, communicable and non-communicable diseases, exposure to hazardous constituents, and access to healthcare services.

Health impacts from the No Action Alternative would not be perceptible, or those impacted would be able to adapt to the impact with ease, and not require medical intervention. Direct effects would be largely similar to baseline levels of health. There would be no contribution to cumulative effects on human health. Current health conditions and trends, as described in Section 3.10, Health & Safety, would continue in the EIS analysis area.

K4.10.2 Action Alternative 1 – Applicant's Proposed Alternative

This section presents the environmental consequences to community health for Alternative 1. This evaluates potential impacts (both positive and negative) to the affected communities from the Pebble Project during all three phases. The HIA does not evaluate human health impacts from potential spills or failures. The potential health impacts from exposure to chemicals due to a spill or failure are unanticipated and are typically short-term, acute exposures. Section 4.27, Spill Risk, evaluates impacts from potential spills or failures, as well as rates, volume, and likelihood of occurrence. Project design measures, standard permit conditions, and best management practices would be implemented for preventing and reducing impacts from potential spills (see Section 5, Mitigation and Monitoring). For example, the design of ferry reduces the risk of grounding or sinking, thereby reducing the risk of a spill, and reduces the potential for concentrate dust.

As discussed in Section 3.10, Health and Safety, the communities potentially affected by the project range from small, remote, and rural communities to larger regional and urban centers. The eight communities identified in that section in the Lake and Peninsula Borough would be most closely affected by multiple project components. In addition, three Nushagak/Bristol Bay communities in the Dillingham Census Area were also identified as potentially affected by project components. The Kenai Peninsula Borough and Anchorage would also be potentially affected economically by all components of the project, in a relatively small way. In addition, more communities have been identified as using the EIS analysis area for subsistence; therefore, these communities could also be potentially affected by all of the components of the project (see Section 3.9, Subsistence).

The consequences (described below per HEC) for all project components would be expected to be more noticeable in smaller, rural communities, and less perceptible in the Municipality of Anchorage. The following HECs were evaluated for potential negative (adverse) and positive impacts from the project.

K4.10.2.1 HEC 1: Social Determinants of Health

The following subsections present the evaluation of potential health impacts, both beneficial and adverse, that are often correlated with SDH. Table K4.10-3 summarizes the potential impact levels and categories for the SDH, including the health effect consequences, magnitude, duration, and geographic extent of the impact, and likelihood of the impact occurring.

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Table K4.10-3: Summary of HEC 1 Impacts: Social Determinants of Health

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increase in household incomes, employment, and education attainment	Construction	+	1	2, beneficial impacts to health for specific population	2, medium-term	2, limited to regional households that benefit from regional economic opportunities	**7**	66-90%	♦♦♦	**3**
	Operations				3, long-term		**8**	66-90%	♦♦♦	**3**
	Closure				3, long-term		**7**	66-90%	♦♦♦	**3**
Psychosocial stress	Construction	+/-	2	2, able to maintain pre-impact levels of health with support; beneficial impacts to health for specific population	2, medium-term	1, limited number of households	**7**	10-33%	♦♦	**2**
	Operations				3, long-term		**8**	10-33%	♦♦	**2**
	Closure				3, long-term		**8**	10-33%	♦♦	**2**
Family stress and stability	Construction	+/-	1	2, able to maintain pre-impact levels of health with support; beneficial impacts to health for specific population	2, medium-term	1, limited number of households	**6**	10-33%	♦	**1**
	Operations		1		3, long-term		**7**	10-33%	♦♦	**2**
	Closure		1		3, long-term		**7**	1-10%	♦♦	**2**

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Household Incomes, Employment, and Education Attainment

Increases in household incomes, employment rates, and education attainment would likely result in an improvement to the overall health and well-being of residents living in the communities from which the workforce for the project would be employed, and where ancillary municipal tax revenue might be spent. Section 4.3, Needs and Welfare of the People—Socioeconomics, discusses the economic impacts of household incomes, employment rates, and education attainment. The following summarizes the findings:

- The project would result in 2,000 jobs during the construction phase, and 850 jobs during the operations phase, and some jobs would continue during closure.
- The benefits would be more apparent in the small, rural communities closest to the mine site (e.g., Lake and Peninsula Borough communities) where even small changes in their economies could have a measureable impact on their overall health and well-being.
- The benefits of these employment opportunities would be felt most in the households of those employees, but the ancillary sales and taxes would benefit the communities, regions, and state as a whole. However, it cannot be assumed that the economic benefits to the communities and region would directly correspond to increased healthcare spending or enhancement or development of community healthcare facilities, because these decisions may require involvement from multiple levels of government.
- Under the summer-only ferry operations variant, communities may wish to stockpile food, fuel, and other supplies, or receive shipments via air when the ferry is not operating. In addition, more mine site employees (e.g., truck drivers, ferry/terminal workers) would be needed seasonally during summer operations, but less year-round employees would be needed (PLP 2018-RFI 065). This variant would likely lower the income earned by community members in the core EIS analysis. Overall, the high cost of living for the communities near the transportation corridor would still be lowered under this variant, but not to the extent of the proposed year-round ferry operations.

The summary impact to human health due to increased household incomes, employment rates, and education attainment for the potentially affected communities would be Category 3 (beneficial) for all three phases (see Table K4.10-3), because health benefits are expected to result in perceptible minor benefits, and more apparent benefits in the small rural communities, although they may extend to a state-wide level. The duration ratings for this potential impact, as well as all potential impacts/HECs, would correlate with the expected duration of the three phases of the project. The likelihood of this benefit occurring is considered good, because PLP has committed to filling as many positions as possible within the region.

Psychosocial Stress

As defined by ADHSS (2015), the term psychosocial refers "to social situations that produce psychological distress or psychological relief." Adverse health behaviors may be adopted by people to cope with psychological stress; and likewise, beneficial health behaviors may be fostered during times of perceived optimism and hopefulness (e.g., change in economic and education status; increased food security, improved infrastructure, and access to healthcare services). Poverty, lack of employment, rural and urban isolation, impacts to subsistence practices, cultural change, family instability, and outward and inward migration are some of the social factors that may impact psychological stress. An example would be a community's fear that a proposed project could impact their environment and subsistence resources. Increased

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stress could also occur from increased exposure to physical stressors such as noise, vibration, and light.

As discussed in Section 4.19, Noise, and Section 4.5, Recreation, mine site activities during all phases would increase noise levels above existing outdoor ambient concentrations in proximity of the mine, which could lead to sleep disturbance for recreational or subsistence hunters sleeping outdoors; however, beyond 10 miles from the mine site, noise impacts would be well below the existing outdoor sound level. Similarly, the transportation corridor, Amakdedori port, and natural gas pipeline could result in noise impacts that may result in sleep disturbance for overnight recreational and subsistence receptors, depending on their location and proximity to these features, particularly during construction and operations. The noise generated by these activities would also likely displace wildlife from the vicinity of the noise-impacted area, thereby reducing the likelihood of hunting success close to project components. Therefore, subsistence and recreational users would likely stop using these noise-impacted areas. It would result in minimal displacement to other areas with similar habitats during construction, operation, and closure activities. In addition, noise impacts may also be realized for inhabited structures near the Kokhanok spur road, depending on their potential location. Vibration and light could be increased at the mine site, particularly during construction and closure, but the nearest communities (Nondalton, Iliamna, and Newhalen) would be approximately 17 miles away. Overall, noise impacts to communities would be expected to be minimal. Therefore, physical stressors could increase psychosocial stress for individuals on overnight recreational or subsistence trips. However, it is also possible that recreational and subsistence receptors would adapt and sleep outside the noise-impacted areas, and therefore not experience an increase in psychosocial stress.

Although it is difficult to predict changes in the direction and magnitude of psychosocial stresses and indicators, it is considered that both positive and negative impacts may occur in the area of psychosocial stress; but that changes are not readily predictable or quantifiable and are relatively unlikely, because they are influenced by complex, multi-dimensional contributing factors. Because the same household and/or individual may be impacted by both positive and negative factors resulting from the project, the nature of the impacts would vary among different populations; and as a result, the likelihood of the different impacts would also be expected to be variable for the project phases.

Some potential health outcomes of psychosocial stress (i.e., indicators) may include substance abuse, suicide (overlaps with HEC 2), and mental health issues. The potential for decreases in psychosocial stress could occur from improved economic opportunities and employment (see Section 3.10, Health and Safety). The project would likely have a drug- and alcohol-free workplace, with a zero tolerance policy and targeted and random drug testing. Potential decreases in rates of psychosocial stress could also occur, due to the increase in jobs available in the region. New jobs and increased income could contribute to increased family stability, and subsequently lead to decreased rates of poor mental health and lower rates of substance abuse.

There is also the potential for increases in psychosocial stress in the potentially affected communities, related to fear of changes in lifestyle and cultural practices, land encroachment, impact to the environment, and food security and quality associated with both commercial and recreational fishing, and with subsistence. The addition of new stressors to the populations in the EIS analysis area could potentially worsen existing mental health conditions, primarily for those individuals that are susceptible and who are not benefiting from increased economic security related to the project or accessory economic development. As noted in Section 3.10, Health and Safety, in the area of the affected communities, there are currently shortages of mental health professionals as a contributing factor to its Medically Underserved

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Area/Population and Health Professional Shortage Area designations. Any substantial increases in mental health disorders would further strain an already underserved system.

The summary impact to human health due to changes in psychosocial stress for the potentially affected communities is rated as Category 2 (beneficial and adverse) for construction, operations, and closure (see Table K4.10-3). The health effect is expected to result in moderate benefits and risks. However, the likelihood of this impact occurring is considered unlikely for all phases, because it is a multi-dimensional aspect that is influenced by many factors, and the probability of a significant contribution from any one factor would be low.

Family Stress and Stability

As with psychosocial stress, there may be both decreases and increases in family stress and instability, with different potential causes and effects in different segments of the community. Increases in family stress and instability could occur due to long-term work rotations (i.e., living at the mine site while working and going home during off periods). Rotational work schedules can increase stress and instability in families, put a strain on relationships and child care, and may increase feelings of fatigue, anxiety, worry, and jealousy, contributing to domestic violence, extra-marital affairs, and unwanted sexual harassment—particularly of women (UBC 2014; Diavik 1999). However, potential decreases in family stress and increases in family stability could also occur due to the increase in jobs available in the region, and increase in household income. Proportions of adverse and beneficial effects cannot be predicted, because the causes and effects would vary among different portions of the population.

The summary impact on human health due to increased family stress for the potentially affected communities is rated as Category 1 (beneficial and adverse) for construction; and Category 2 (beneficial and adverse) for the operations and closure (see Table K4.10-3). The health effect is expected to result in minor benefits and risks. Similar to psychosocial stress, the nature and likelihood of project effects on family stress and stability may be highly variable and unpredictable. Construction and operation are assigned a slightly higher likelihood than closure because it would be expected that individuals in the potentially affected communities would be more directly and extensively affected during the initial phases of the project.

K4.10.2.2 HEC 2: Accidents and Injuries

Accidents (e.g., motor vehicle crashes, falls, and fires) can result in unintentional injuries. Unintentional injury (e.g., falls, poisoning, drowning, motor vehicle crashes) is the third leading cause of death in the state and most regions (ADHSS 2017a, ANTHC 2017i). Intentional injuries include homicide and suicide (note: suicide overlaps with HEC 1, psychosocial stress). Non-fatal and fatal intentional and unintentional injuries can place a substantial burden on available healthcare resources (such as hospitals, clinics, and ambulances).

Transportation Accidents

Transportation-related unintentional accidents and injuries account for approximately 44 percent of hospitalizations in the state (Section 3.10, Health and Safety). Section 4.12, Transportation and Navigation, presents the evaluation of potential impacts from transportation (air, surface, and water) and navigation (water) activities. Road and ferry terminals would be sited to avoid environmentally sensitive areas, archaeological resources, and areas of known high subsistence use. During project construction, operations, and closure, public access to or through the mine site would be restricted for safety. Along the transportation corridor, spur roads would be gated to prevent traffic on the mine access road and south access road. Known trail crossings would be marked, and traffic controls would be implemented for safety (PLP 2018-RFI

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027). Additional access would be coordinated between the State of Alaska, the Lake and Peninsula Borough, PLP, and landowners. Potential surface transportation impacts to the public from the project could occur related to taking alternate routes, crossing the access roads at marked crossing points, or other potential community uses. It should be noted that state and local authorizations may affect final road alignment and uses.

When Iliamna Lake is frozen, it is used as a travel way for the public on snowmachines. Open water created by the ice-breaking ferry would disrupt some cross-lake snowmachine routes, and could potentially create a safety hazard. The project would work with communities (and supply funding) to provide for the marking and maintenance of snowmachine trails between communities across Iliamna Lake, when lake ice is thick enough to support such traffic. Alternate, marked safe routes would avoid the ferry path, but would have the potential to add to travel time and distance. The construction of the natural gas pipeline corridor would impact a high-traffic area of Cook Inlet, and could cause navigational hazards for vessels passing nearby on Cook Inlet and Iliamna Lake.

If the Kokhanok east ferry terminal variant were to be built, differences in impacts would occur; however, because impacts would be mitigated by the creation of an alternate route to Sid Larson Bay that would not cross ferry traffic (Section 4.12, Transportation and Navigation). Navigation on Iliamna Lake at the east Kokhanok terminal would be more sheltered from wind and waves, but would contain more navigational hazards such as shallow water and a longer ferry route (PLP 2018-RFI 078).

If the ferry were to only operate in the summer, the concentrate would be stockpiled in the winter, and truck and ferry trips would double in the summer. This would mean that winter snowmachine traffic across the lake would not be interrupted by an ice-breaking ferry, but vessels on the lake in the summer would experience double the ferry traffic.

Based on Section 4.12, Transportation and Navigation, evaluation, accidents, and injuries (mortality and morbidity rates) could occur for mine site workers and for the public at surface access road crossings (at a minimum), if alternate safe routes or mitigation measures were not taken across Iliamna Lake; and from navigation hazards during the pipeline corridor construction phase. For transportation-related accidents and injury, the summary impact to human health due to air, surface, and water transportation are rated Category 2 for all phases (Table K4.10-4). The health effect is assigned a score of 3 (“severe”) due to the potential for serious health injury and loss of life for all modes of transportation. The magnitude of the effect is assigned a score of 2 for surface and water accidents, because those affected may require medical intervention to maintain pre-impact level of health, while air accidents are assigned a score of 3, because air accidents have a higher likelihood of death, and those affected may be unable to maintain pre-impact level of health. The geographic extent of potential transportation and navigation impacts is assigned a score of 0, because impacts would be limited to individual cases, although the individuals may come from any of the communities in the EIS analysis area. The likelihood of these accidents occurring range from extremely unlikely for air transport (they generally occur rarely), to very unlikely for surface transportation (given the potential for limited public access except at designated crossings, and that service capacity of roadways are expected to be below capacity even if final use designation of certain transportation corridor segments also become available to the public), to unlikely for water navigation (given low nautical speeds, but shared waterbodies).

Other Unintentional Injuries

As shown in Section 3.10, Health and Safety, unintentional injuries from falls accounts for 44 percent of hospitalizations in the state (equal to transportation-related injuries), followed by

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cuts (3.6 percent), poisoning (3.4 percent), and all other injuries/accidents combined (17.6 percent). It is difficult to predict changes in direction and magnitude of these types of unintentional injuries due to their unintentional nature. The project would provide safety training (as required by OSHA and MSHA) for all employees; health and safety plans would be developed and implemented; and public access would be prohibited in industrial facilities. Therefore, it is assumed that the project workforce would adhere to the project's safety procedures when travelling or operating in the public domain, and promote the safety culture outside of standard work operations as well (i.e., outside the fence). Based on this, the summary impact to human health due to increases in non-transportation unintentional injury rates would be Category 2 for all project phases (Table K4.10-4). The health effect would be considered severe due to the potential for serious health injury and loss of life. The likelihood of this impact occurring is considered very low, because of the potential for promotion of safety awareness and culture, and its likely limited scale.

Intentional Injury: Suicide Rate

As discussed in Section 3.10, Health and Safety, suicide mortality rates vary by region, but was the fourth leading cause of death among Alaska Native people during the period 2012 to 2015 (ANTHC 2017f). Similar to psychosocial stress and family stability (HEC 1), it is difficult to predict changes in the direction and magnitude of impacts to suicide rates because it is influenced by complex, multi-dimensional contributing factors. Increases in suicide rates could potentially occur due to increases in psychosocial stress and decreases in family stability. Conversely, decreases in psychosocial stress and increases in family stability may also occur, and could potentially result in decreased suicide rates. Note that baseline suicide rates for the Bristol Bay region and the Kenai region may not be statistically significant due to the low number of reported cases, and any interpretations should be viewed with caution.

The summary impact to human health due to increases in suicide rates would be Category 2 for all project phases (Table K4.10-4). The health effect would be considered severe due to the potential for loss of life. The magnitude of the effect is assigned a score of 3, because those affected would not maintain pre-impact level of health. The geographic extent of this potential impact is assigned a score of 0, because impacts would be limited to individual cases. The likelihood of this impact occurring is considered very low on a large scale (1 to 10 percent), because both beneficial and adverse effects could occur due to the project.

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Table K4.10-4: Summary of HEC 2 Impacts: Accidents and Injuries

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increase in unintentional accidents and injuries, morbidity, and mortality rates due to air, surface, and water transportation (same rating unless otherwise noted)	Construction	-	3	air = 3, unable to maintain pre-impact level of health surface and water = 2, able to maintain pre-impact level of health with medical intervention	2, medium-term	0, individual cases	8 (air) 7 (water/ surface)	<1 % (air) 1-10% (surface)	♦♦	2
	Operations				3, long-term		9 (air) 8 (water/ surface)	10-33% (water)	♦♦	2
	Closure				3, long-term		9 (air) 8 (water/ surface)		♦♦	2
Increase in other unintentional injury (e.g., falls, cuts, poisoning)	Construction	+/-	3	2, able to maintain pre-impact level of health with medical intervention	2, medium-term	0, individual cases	7	1-10%	♦♦	2
	Operations				3, long-term		8		♦♦	2
	Closure				3, long-term		8		♦♦	2
Increase in Intentional injury: suicide rate	Construction	+/-	3	3, unable to maintain pre-impact level of health with medical intervention	2, medium-term	0, individual cases	8	1-10%	♦♦	2
	Operations				3, long-term		9		♦♦	2
	Closure				3, long-term		9		♦♦	2

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K4.10.2.3 HEC 3: Exposure to Potentially Hazardous Materials

This section evaluates the health determinants and outcomes from potential exposure to project-related hazardous materials consistent with ADHSS (2015) and NEPA practice. As noted above, this section does not evaluate human health impacts from potential spills or failures. The key health outcomes considered are the potential for increases and decreases in illnesses or exacerbation of illnesses commonly associated with exposure to chemicals of potential concern (COPCs) through inhalation, physical (dermal) contact, and direct or indirect ingestion (e.g., direct exposure through incidental soil ingestion, indirect exposure through ingestion of subsistence foods that have the potential to bioaccumulate COPCs).

The first step in the HIA evaluation is the exposure pathway analysis. This step includes the identification of the primary potential project-related sources of contamination, COPCs, determination of exposure pathway completeness, and an assessment of the likelihood of exposure (e.g., complete but insignificant). The presence of a complete exposure pathway is established when there is an unbroken chain from a project-related COPC source to exposure point. If a pathway is incomplete, then there is no exposure and no associated risk. One way to show the exposure pathway analysis is through the use of a conceptual site model (CSM) that illustrates the potential project COPC source(s), release mechanism(s), secondary source(s), exposure media, and exposure routes, as well as the likelihood of exposure. Likelihood of exposure may be deemed insignificant based on multiple factors, including but not limited to expected project mitigation measures or geographical distance from the source. Two Pebble Project CSMs were developed and are presented in Figure K4.10-1 (mine site) and Figure K4.10-2 (transportation corridor, Amakdedori port, and natural gas pipeline).

For those pathways that are deemed potentially complete and significant, the concentration of any COPCs at the expected exposure points is determined when possible (i.e., the geographical locations where an individual comes in contact with the source material, such as air, soil, groundwater, sediment, surface water, or subsistence foods). Future media-specific exposure point concentrations are estimated, when possible, by modeling expected project-related increases from baseline concentrations. Then, baseline conditions and estimated future concentrations (when available) can be compared to health-protective criteria to determine if project impacts from exposure to hazardous chemicals is unlikely to or could potentially result in human health concerns. In the absence of available estimated future exposure point concentrations, a more qualitative evaluation may be performed to assess potential future exposure and effects. These quantitative and qualitative evaluations are then used to inform risk-management decisions (e.g., impact avoidance, monitoring, and mitigation measures).

The following subsections present the anticipated project sources and COPCs, and the media-specific exposure pathway analysis and exposure concentrations evaluation when relevant.

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Figure K4.10-1: Mine Site Conceptual Site Model

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Figure K4.10-2: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline Conceptual Site Model

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Anticipated Project Sources and Chemicals of Potential Concern

The primary anticipated project sources of potential contamination are from hazardous chemicals used, released, or present during construction, operations, and closure. Specific project sources are summarized below, along with their project-associated COPCs:

- Mine site, transportation corridor, Amakdedori port, and the natural gas compressor station on the Kenai Peninsula air emissions during construction, operations, and closure from stationary sources (e.g., turbines, generators, boilers), mobile sources (e.g., vehicle and mobile equipment exhaust), and fugitive sources (e.g., air particulates from blasting, drilling, vehicle road dust, road wind erosion). The associated COPCs include criteria air pollutants: carbon monoxide, nitrogen oxides (NOX), particulate matter (PM), sulfur dioxide, volatile organic compounds (VOCs) and lead. The project air emissions would also release hazardous air pollutants (HAPs), including VOCs (e.g., benzene, formaldehyde, and toluene) and several heavy metals (e.g., lead, mercury, and arsenic). Although lead emissions from all project components would be negligible, they are included as COPCs for consistency with air quality regulations (see Section 4.20, Air Quality).
- Mine site fugitive emissions from material and handling activities (mined ore, quarry rock, overburden, and waste rock) would result in fugitive air emissions and could result in dust deposition onto soils, waterbodies, and vegetation (e.g., berries). This could result in elevating concentrations of metals above baseline in and outside the mine site due to the concentration of heavy metals found in orebody materials (see Section 4.14, Soils). The transportation corridor, Amakdedori port, and natural gas pipeline fugitive emissions also have the potential to result in dust deposition. However, since baseline soils would be disturbed during construction and local rock sources would be used for construction of the roadway, dust deposition would not be expected to increase metal concentrations above baseline conditions (see Section 4.14, Soils). Mine site fugitive emission COPCs would include metals.
- Mine site use of non-potentially acid generating (PAG) waste rock for infrastructure construction at the mine (e.g., tailings storage facility [TSF] embankments, water management pond embankments, and roads) would result in negligible metals releases compared to other mine sources such as material and handling fugitive emissions (see Section 4.14, Soils). Non-PAG waste rock is considered to have a low susceptibility to hydraulic and wind erosion. Therefore, the use of non-PAG waste rock for infrastructure construction in the mine site is considered an insignificant source of COPCs (e.g., metals) “inside the fence” at the mine site and an incomplete source “outside the fence.”
- Mine site surplus water (e.g., non-contact stormwater runoff and contact water) would be collected separately on site and discharged to downstream drainages during operations and closure after treatment. Contact water influent COPCs would include metals and general water quality parameters such as weak acid dissociable cyanide. Weak acid dissociable cyanide would be negligible in the surplus water influent, but are included for consistency with water quality regulations (see Section 4.18, Water and Sediment Quality).
- Mine site operations and facilities (e.g., tailings, waste rock, and contact water storage) would directly impact groundwater quality in the mine site. During the life of the mine, groundwater impacts would likely be limited to local groundwater in the vicinity of mine facilities, expected to remain in mine site boundaries, and would not be expected to impact the mine drinking water wells located north of the core facility and estimated cone of depression around the open pit (see Section 4.18, Water and

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Sediment Quality, and Chapter 2, Alternatives). Post-closure, once groundwater seepage collection system monitoring indicates that the water quality meets the approved criteria for discharge without treatment, direct discharge would occur. Similar to mine site effluent, post-closure groundwater COPCs would include metals and general water quality parameters.

- Mine site dust deposition could result in increased concentrations of metals in soil (see discussion above) and subsequently leach to groundwater. Groundwater COPCs would include metals.
- Mine site activities would create new areas of standing water (e.g., main water management pond, tailings pond, open pit water management pond, sediment ponds, and seepage collection and recycling ponds). A variety of birds could potentially be affected by environmental contamination by contact with water and foraging in these locations (see Section 4.23, Wildlife Values). These birds may then be harvested and ingested by human recreational and subsistence receptors (see Section 4.9, Subsistence). COPCs would include metals and general water quality parameters.
- Transportation corridor operations could result in the release of small amounts of vehicle- or ferry-related pollutants such as fuel, oil, and lubricants during the normal course of operations. COPCs would include petroleum hydrocarbons.

An evaluation of the potentially complete media-specific exposure pathways are presented below for those project sources identified above that could be sources of COPCs to the affected communities. Those project components that were identified as being an incomplete source of COPCs are not evaluated further below.

Air Exposure Pathways

Project air emissions could potentially be inhaled by the affected communities, including subsistence and recreational users in the vicinity of these project components and phases (e.g., inhalation of particulate matter (PM) from vehicle traffic along the transportation corridor). As noted in ADHSS (2015), air emissions that are in compliance with permits are presumed to be protective of human health; however, unregulated emissions (e.g., particulate deposition from fugitive dust that may contain heavy metals or other potentially toxic substances) may impact wild foods (e.g., berries and other wild plants consumed) and may require evaluation prior to human consumption.

This section describes air quality impacts to health in the context of three types of sources:

- Stationary point sources (air permits required)
- Mobile sources (permits not required)
- Fugitive sources (permits not required)

As detailed in Section 4.20, Air Quality, project air emissions were modeled to evaluate permit applicability and to evaluate compliance with potentially applicable ambient air quality standards (AAQS), which are protective of human health and the environment. The following summarizes the air quality assessment presented in Section 4.20, Air Quality:

- Mine site construction emissions (from point and fugitive sources) were modeled under a near-field impact assessment and demonstrated to be in compliance with permitting requirements and AAQS.
- Mine site operations would be subject to a minor permit and the power generation facility is assumed to be subject to Prevention of Significant Deterioration (PSD) and

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Title V permitting. The power generation facility would therefore be subject to Best Available Control Technology (BACT). In the future, the mine site would undergo a complete permitting analysis and would be expected to operate in compliance with these permits. Mine site operation emissions (from point and fugitive sources) were modeled under near-field and far-field impact assessment. The near-field impact assessment demonstrated that air emissions would be in compliance with permitting requirements and AAQS. The far-field impact assessment demonstrated that impacts to Air Quality Related Values (AQRVs) would not be anticipated at any nearby PSD Class I areas.

- The transportation corridor ferry terminals would be considered stationary emission sources and subject to permitting requirements. The ferry terminals operational emissions' were modeled and demonstrated to be in compliance with permitting requirements (i.e., minor permit not required). Although near-field modeling was not conducted for the transportation corridor, it would be anticipated that near-field impacts would be similar or less than the mine site.
- Amakdedori port operational emissions were modeled and demonstrated to be in compliance with permit requirements (i.e., minor permit not required) and the near-field impact assessment for NO_2 demonstrated compliance with AAQS. Because fugitive PM emissions from unloading the concentrate into the hold of the bulk carrier would be negligible, estimates of dry and wet deposition for HAPs were not calculated. The far-field impact assessment concluded that AQRVs would not likely be affected at any of the PSD Class I or federal PSD Class II areas.
- The compressor station on the Kenai Peninsula operational emissions demonstrated that a minor permit would be required due to NO_x. The near-field impact assessment modeled annual NO_2 concentrations and demonstrated that NO_2 would be in compliance with AAQS.

Other Sources Evaluated for Air Quality

In addition to the project component air emissions evaluated above, the project would also release mobile and fugitive emissions that would not be subject to permitting requirements and were not quantitatively evaluated in Section 4.20, Air Quality. These project components and phases include mine site closure, all phases relating to the transportation corridor (except ferry terminal operations), all phases relating to the Amakdedori port (except port operation NO_x emissions), and all phases relating the natural gas pipeline (except compressor station operation NO_x emissions). To evaluate human health and safety in this HIA, these mobile and fugitive emissions were semi-quantitatively evaluated by estimating annual emissions and conservatively comparing them to the stationary source permit thresholds as an initial step.

As shown in Table K4.10-5, the annual HAP emissions from all the evaluated project components and phases are less than the stationary source Title V HAP permit thresholds, which are set at limits protective of human health and the environment. The annual PM emissions for mine site closure and transportation corridor construction, operations, and closure, which do not take into account mitigation measures, were greater than the stationary source permit thresholds (Table K4.10-5); therefore, they were further evaluated semi-quantitatively, as described below.

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Table K4.10-5: Annual HAP and PM Comparison for Components not Modeled

Project Component	Phase	Total HAPs[1] (tons)	Total PM[1] (tons)	Duration (years)	Annual HAPs[2] (tpy)	Annual PM[2] (tpy)	Annual HAP Threshold[3] (tpy)	Annual PM Threshold[4] (tpy)
Mine Site	Construction	5.5	--	4	1.38	--	10 / 25	25 / 100/ 250
	Operations	9.1	--	20	0.46	--		
	Closure	94.5	48,447	20	4.73	2,422		
Transportation Corridor	Construction	7.35	5,762	4	1.84	1,441		
	Operations	2.6	1568	20	0.13	78.4		
	Closure	ND	ND	20	ND	ND		
Amakdedori Port	Construction	3.6	35.8	4	0.90	8.95		
	Operations	8.9	19.4	20	0.45	0.97		
	Closure	ND	ND	20	ND	ND		
Natural Gas Pipeline Corridor	Construction	0.02	2.53	4	0.0050	0.63		
	Operations	0.22	1.40	20	0.011	0.07		
	Closure	ND	ND	20	ND	ND		

-- = Evaluated for permit applicability, and compared to AAQS in Section 4.20, Air Quality; see Sources Evaluated for Permitting and Air Quality above. Near-field modelling indicates that these parameters would meet AAQS.

ND = no data

tpy = tons per year

(1) For total HAPs and PM, see Section 4.20, Air Quality.

(2) Annual emissions were estimated by dividing the total emissions by duration.

(3) Title V Permit Thresholds for individual (10 tpy) and combined (25 tpy) HAPs, see Section 4.20, Air Quality.

(4) PSD Significant Emission Rate (25 tpy), Title V Permit Threshold (100 tpy), and Major Source (250 tpy), see Section 4.20, Air Quality.

As noted in Section 4.20, Air Quality, it would be anticipated that near-field impacts for the components that did not have modeling performed, would be similar or less than the mine site. Given this, near-field results for PM were estimated for those components and phases that had total annual PM exceeding the stationary source permit thresholds based on mine site operations near-field results. Since mine site operations near-field PM_{10} had the highest ratio of estimated maximum cumulative concentration to AAQS (25 percent) (see Section 4.20, Air Quality), it was used as a relative representation for the other projects and components in this semi-quantitative and semi-qualitative ratio evaluation. Mine site operations annual PM_{10} estimates were compared to the evaluated project/phase annual PM_{10} to generate an annual PM ratio. Next, the mine site operations PM_{10} near-field results were multiplied by the annual PM_{10} ratio to estimate the evaluated project phases' likely ratio of PM_{10} cumulative maximum concentration to AAQS. As shown in Table K4.10-6, the ratio of cumulative PM_{10} for each of the evaluated project phase was estimated at less than the AAQS (i.e., ratio less than 100 percent), with the exception of mine site closure. Since the near-field models are more complex than a straight ratio approach (i.e., not linear), this evaluation provides a high-level approximate estimate (rough estimate) with a high margin of error (higher level of uncertainty) and is intended only to provide a general perspective regarding potential health concerns. In addition,

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given that these estimates of PM do not account for dust suppression or other mitigation measures, PM was further qualitatively evaluated below.

Table K4.10-6: Near-Field Ratio Estimates for Components not Modeled

Project Component	Phase	Total PM_{10} (tons)[1]	Duration (years)	Annual PM_{10}[2] (tpy)	Annual PM_{10} Ratio to Mine Site Operation[3]	Estimated Ratio of PM_{10} Conc. to AAQS[4,5]
Near-field Modeled						
Mine Site	Operation	3,009	20	151	--	25%
Not Near-field Modeled						
Mine Site	Closure	22,478	20	1,124	7.4	185%
Transportation Corridor	Construction	1,866	4	467	3.1	77%
	Operation	407.4	20	20.4	0.14	3.4%
	Closure	ND	ND	ND	ND	ND

Notes:

ND = no data

tpy = tons per year

(1) For total PM10, see Section 4.20, Air Quality.

(2) Annual PM10 emissions were estimated by dividing the total PM10 emissions by duration.

(3) Modeling for mine site operations PM10 resulted in the highest ratio to AAQS of 24 percent. The relationship was used to estimate proportion of AAQS to the other evaluated project and phase. PM10 for each of the evaluated projects and phases was divided by mine site operations PM10.

(4) Ratio of cumulative impact to AAQS for mine site operations found in Section 4.20, Air Quality.

(5) For each of the other evaluated projects and phases, the ratio of PM10 to AAQS was estimated by multiplying the mine site operations PM10 ratio to AAQS (25 percent) by the annual PM10 ratio to mine site operation (e.g., mine site closure ratio of 7.4 multiplied by 25 percent = 185 percent).

The following presents a qualitative evaluation of PM emission impacts. With implementation of the mitigation measures for idling and dust suppression, dust/PM would not be expected to exceed the annual PM thresholds and further reduce the ratio of the estimated near-field concentrations for all project components to below AAQS.

- PM emission impacts would be expected to be fairly localized in the vicinity of the project activity and linearly along the roadways. PLP expects a 35-foot wide buffer zone on either side of the transportation corridor to be impacted by snow plow spray, gravel spray, and road dust (PLP 2018-RFI 082). Since the affected communities are not located in close proximity to these project features or in the roadway buffer zone, residents in the affected communities would not be expected to be directly impacted. In addition, subsistence and recreational users would likely adjust the resource use areas to target resources that would be less affected by dust/PM (see Section 4.9, Subsistence).
- PLP would follow an idling policy, such as not allowing haul trucks to idle for more than a set amount of time if the vehicle or equipment is not in motion, which would reduce fuel consumption and reduce vehicle exhaust emissions, including PM (see Section 4.20, Air Quality).
- Mitigation measures would be used to control dust generation at the mine site and along the transportation during operations activities, as well during construction and

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closure activities for all components (see Section 4.20, Air Quality). A fugitive dust control plan (FDCP) would be developed by PLP for mitigation and control of project activity related fugitive dust and wind erosion. The anticipated FDCP would use best management practices and BACTs (PLP 2018-RFI 071a). As discussed in Section 5, Mitigation, mitigation measures would include the use of dust palliatives and chip seal on transportation surfaces, dust suppression watering, and posting/enforcing lower speed limits on project roads. Non-contact water from local, un-impacted water sources would be used for dust suppression outside the mine site boundaries (PLP 2018-RFI 021). These mitigation measures would be expected to result in lower total PM emissions than those calculated in Section 4.20, Air Quality that do not account for these mitigation measures. In addition, precipitation would naturally reduce fugitive dust (e.g., long winters with more than 50-inches of precipitation a year).

Summary of Air Exposure Pathway

In summary, the air inhalation exposure pathway from all Pebble Project components would not be expected to substantively impact the health of the affected communities, including subsistence receptors and recreational users, as long as effective dust control measures were implemented in accordance with the FDCP. With effective dust mitigation measures, the potential air exposure pathways for the project would be insignificant. Potential impacts from mine site potential dust deposition onto soil, waterbodies, and wild foods "outside the fence" are discussed below.

Soil Exposure Pathways

Mine site material and handling activities (mined ore, quarry rock, overburden, and waste rock) would result in fugitive emissions that could result in dust deposition in the mine site and "outside the fence," resulting in increased metals in soil. The predominant wind directions are from the southeast and northwest (PLP 2018 RFI-009).

In the mine site, the employee camp would be located northeast of the core mine facility (Chapter 2, Alternatives), away from the predominant wind directions. In addition, the mine camps would implement dust deposition mitigation measures and follow PLP's health and safety plans, which would be protective of the health of mine employees while on-duty and while off-duty at the on-site camp. Therefore, mine site fugitive emissions would not be expected be a substantive source of metals from dust deposition to off-duty employees at the mine site camp.

Outside the mine site, members of the affected communities, such as human subsistence receptors and recreational users, could come into direct contact with soil potentially impacted from mine site dust deposition. As discussed in Section 4.14, Soils, potential increases of metal concentrations in soils at the mine site from fugitive dust deposition were estimated using the AERMOD modeling data, dust deposition rates (PLP 2018-RFI 009), and baseline soil data. Dust deposition rates were estimated at the maximum point along the ambient air boundary of the mine site (i.e., "at the fence"). Section 4.20, Air Quality, presents the predicted change in soil quality from mine site dust deposition. These results indicate a small expected increase in metals concentration in soil due to dust deposition. Expected total concentration increases for all metals ranged from 0.11 percent to 0.72 percent, with the exception of antimony, which would be expected to increase by 3.04 percent.

The three metals (arsenic, chromium, and copper) that have baseline concentrations above the selected human health comparative action levels (CALs) (i.e., the ADEC Soil Method 2 values), would remain above the human health CALs with negligible increased cancer risk and hazard (i.e., increased concentration indistinguishable from baseline risk/hazard). In the remaining

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metals, the increases from dust deposition would not cause exceedances of the human health CALs. For cobalt and manganese, which lack human health CALs, the baseline and increased concentrations were compared to the Environmental Protection Agency (EPA) residential soil Regional Screening Levels (RSLs) of 2.3 milligrams per kilogram (mg/kg) and 180 mg/kg, respectively (EPA 2018a). Both baseline and estimated future concentrations of cobalt and manganese were above the EPA residential RSLs (at target hazard quotients of 0.1); however, the estimated future hazards would be indistinguishable from baseline hazards given the negligible increases estimated for future concentrations. Therefore, dust deposition impacts to soil would not be expected to substantively impact the health of the affected communities, including subsistence receptors and recreational users.

Water Exposure Pathways

Mine Site Discharges to Surface Waterbodies – As discussed in Section 4.18 and Appendix K4.18, Water and Sediment Quality, the stormwater runoff from mine site facilities that does not come in direct contact with mining infrastructure would be treated for sediment and discharged under general APDES stormwater permits (Knight Piésold 2018a). Mine site contact water would be treated to ensure compliance with the most stringent applicable water quality standards (Appendix K3.18) before being discharged to the environment. As with air, water discharges that are in compliance with permits would be presumed to be protective of human health (ADHSS 2015). Since mine site effluent would meet permitting requirements prior to discharge, the mine site effluent would not be expected to result in impacts to surface water quality and would be presumed to be protective of human health. Therefore, the treated mine site effluents (non-contact stormwater and WTP discharges) would not be considered a significant source of COPCs to human receptors "outside the fence." This potential exposure pathway would be complete but insignificant.

Once groundwater seepage collection systems post-closure monitoring indicates that water quality meets the approved criteria for discharge without treatment, direct discharge would occur. This would occur at approximately year 50 post-closure (Section 4.18, Water and Sediment Quality). Similar to mine site treated effluents, direct discharge of post-closure mine site groundwater would only occur once water quality criteria are met; therefore, it would be considered a complete but insignificant exposure pathway.

Transportation Corridor Minor Releases to Surface Waterbodies – Transportation corridor operations could result in the release of small amounts of vehicle- or ferry-related pollutants such as fuel, oil, and lubricants during the normal course of operations. These releases could occur onto the roadbed and runoff into stream or pond substrates, or be released into Iliamna Lake and incorporated into lakebed substrate. As discussed in Section 4.18, Water and Sediment Quality, these potential impacts on freshwater sediment contamination would likely be of low intensity, and would extend throughout the life of the mine and into post-closure. Similarly, marine vessel operations could result in small amounts of pollutants during normal operations to Kamishak Bay and Cook Inlet waters, and become incorporated into seafloor sediment. However, sediment contamination at the port from regular vessel activity would likely be negligible. These impacts would be expected to be indistinguishable from other minor contributions from non-project watercraft. Therefore, this potential exposure pathway would be considered insignificant.

Mine Site Fugitive Dust Deposition to Surface Waterbodies – Mine site material and handling activities (mined ore, quarry rock, overburden, and waste rock) would result in fugitive emissions that could result in dust deposition "outside the fence" and result in increased metals in waterbodies. As discussed in Section 4.18 and Appendix K4.18, Water and Sediment Quality, potential increases of metal concentrations in sediments at the mine site from fugitive dust

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deposition was estimated using the AERMOD modeling data, dust deposition rates (PLP 2018-RFI 009), and baseline sediment data. Dust deposition rates were estimated at the maximum point along the ambient air boundary of the mine site (i.e., "at the fence"). Appendix K4.18 presents the predicted change in sediment quality from mine site dust deposition. These results indicate a small expected increase in metals concentration in sediment due to dust deposition. Expected total concentration increases for all metals ranged from 0.11 percent to 0.66 percent, with the exception of antimony, which would increase by 3.17 percent.

The three metals (arsenic, chromium, and copper) that have baseline concentrations above the selected human health CALs (i.e., the ADEC Soil Method 2 values), would remain above the human health CALs with insignificant increased cancer risk and hazard (i.e., increased concentration indistinguishable from baseline risk/hazard). In the remaining metals, the increases from dust deposition would not cause exceedances of the human health CALs. For cobalt and manganese, which lack human health CALs, the baseline and increased concentrations were compared to the EPA residential soil RSLs of 2.3 mg/kg and 180 mg/kg, respectively (EPA 2018a). Both baseline and estimated future concentrations of cobalt and manganese were above the EPA residential RSLs (at target hazard quotients of 0.1); however, the estimated future hazards would be indistinguishable from baseline hazards given the negligible increases estimated for future concentrations. Therefore, mine site dust deposition impacts to sediment would not be expected to substantively impact the health of the affected communities, including subsistence receptors and recreational users.

Next, the potential increases of metal concentrations in surface water at the mine site from fugitive dust deposition were estimated as detailed in Appendix K4.18, Water and Sediment Quality, which presents the predicted change in surface water quality from dust deposition at the North Fork Koktuli watershed, South Fork Koktuli watershed, Upper Talarik Creek, and Frying Pan Lake. These results indicate a small expected increase in metals concentration in surface water at each of these watersheds/waterbodies due to dust deposition. Expected total concentration increases ranged from 0.11 percent to 0.66 percent and caused no exceedances of the most stringent water quality criteria, which are presumed to be protective of human health.

In addition, as discussed above under air exposure, a FDCP would be developed by PLP for mitigation and control of project activity related fugitive dust and wind erosion. The anticipated FDCP would use best management practices and BACTs (PLP 2018-RFI 071a). Appropriate dust suppression water would be used at the mine site and along the transportation corridor (PLP 2018-RFI 021).

Mine Site Fugitive Dust Deposition To Groundwater – As discussed above, mine site dust deposition impacts were estimated at the boundary of the mine site (i.e., "at the fence") and would result in slight increases of metal concentrations in soil. Metals in soil may subsequently leach to groundwater, representing a potential source of increased metals to groundwater in the EIS analysis area, which could be used as drinking water by the affected communities. Appendix 4.18, Water and Sediment Quality, presents baseline and estimated soil concentrations of potentially hazardous metals due to dust and compares them to the ADEC migration to groundwater CALs. The migration to groundwater CAL represents the soil concentration level at which there would be potential for substances to leach to groundwater and pose a human health risk or hazard (ADEC 2017b).

As shown in Appendix K4.18, Water and Sediment Quality, with the exception of arsenic, baseline and predicted future soil concentrations would be below the migration to groundwater CALs, below which human health is presumed to be protected. Both the baseline and estimated future arsenic concentrations exceed the migration to groundwater CALs. However, given the

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slight estimated future soil increase (0.57 percent), the potential increases in future groundwater would similarly be negligible. For cobalt, lead, and manganese, which lack migration to groundwater CALs, the baseline and increased concentrations were compared to the EPA residential soil to groundwater RSLs of 0.027 mg/kg, 14 mg/kg, and 2.8 mg/kg, respectively (EPA 2018a). Lead baseline and future estimated concentrations were below the EPA residential RSL. Both baseline and estimated future concentrations of cobalt and manganese were above the EPA residential RSLs (at target hazard quotients of 0.1); however, the estimated future hazards would be indistinguishable from baseline hazards given the negligible increases estimated for future concentrations. Therefore, the incremental arsenic risk/hazard from exposure to future groundwater would be expected to be indistinguishable from baseline risk/hazard in groundwater.

Subsistence Foods Exposure Pathways

Affected communities, particularly rural residents, consuming a subsistence diet may be exposed to higher levels of bioaccumulative compounds because subsistence foods may comprise a very large portion of their daily dietary intake. Section 4.21, Subsistence, notes that subsistence users may avoid harvesting resources near the mine site and transportation corridor due to air/dust deposition concerns and may avoid harvesting waterfowl because of concerns about birds becoming contaminated from landing on and using open water at mine site facilities. However, this HIA evaluates the potential exposure of project-related chemicals that may be released to primary media (e.g., soil, surface water, sediment) and may be bioaccumulated in biota (e.g., subsistence foods), which in turn could be ingested by subsistence receptors. The subsistence receptor evaluation is protective of residential exposure to harvested biota shared by subsistence receptors and of residential recreational exposure. Since the subsistence receptor evaluation captures and is protective of these potential exposure pathways (i.e., residential exposure to subsistence foods and residential recreational exposure), they are not evaluated separately.

Mine Site Dust Deposition to Wild Foods – As previously discussed, mine site fugitive emissions would result in dust deposition to soil, surface waterbodies, and vegetation (e.g., berries). Mine site dust deposition from fugitive emissions would result in small increases in metal concentrations in abiotic media. Potential impacts from dust deposition would decrease as distance from the mine site increases. In soil, sediment, and surface water, all metal concentrations, except antimony, were estimated to increase by less than 1 percent at the mine site boundary (i.e., "at the fence") at the end of operations (after 20 years). Estimated increases of antimony were likewise low, at less than 3.2 percent in all abiotic media. Estimated future surface water metal concentrations would remain below water quality criteria, and most metals in soil and sediment would remain below their criteria. For arsenic, chromium, and copper, which had baseline soil and sediment concentrations greater than their CALs, the future estimated concentrations would be indistinguishable from baseline risks/hazards. Although ADEC considers several of these metals to be potentially bioaccumulative (e.g., arsenic, cadmium, hexavalent chromium, copper, lead, methyl mercury, nickel, selenium, and zinc) (ADEC 2017b), future increases in wild foods (e.g., berries, upland game, fish) would be expected to negligible to slight given the predicted negligible increases in future abiotic media. Therefore, risks and hazards to the affected communities from harvesting and ingesting wild foods in the future would be expected to be indistinguishable from baseline; this potential exposure pathway is considered complete but insignificant.

Waterfowl Exposure to Mine Site Standing Waterbodies – Mine site activities would create new areas of standing water (e.g., main water management pond, tailings pond, open pit water management pond, sediment ponds, and seepage collection and recycling ponds). A variety of

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birds could potentially be affected by environmental contamination by contact with water and foraging in these locations (see Section 4.23, Wildlife Values). These birds may then be harvested and ingested by human subsistence receptors (see Section 4.9, Subsistence). Appendix K4.18, Water and Sediment Quality, presents the predicted concentrations of metals and water quality parameters in mine site standing water bodies during operations and at closure. Multiple metals (e.g., aluminum, antimony, arsenic, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, and zinc) would be predicted to exceed their water quality criteria. Several of these metals are considered bioaccumualtive, as noted above.

The TSF would be characterized by ongoing mining activity during operations, and would be unlikely to support growth of vegetation or waterfowl food resources. Without vegetated cover and food resources, birds are not likely to be attracted to the TSF. The open pit lake would be deep, contain no shallow water habitats, and lack freshwater vegetation, but some waterfowl may use it during open water months (Section 4.23, Wildlife Values). Based on this, migratory waterfowl would not be expected to have substantive exposure to the mine site water storage features. PLP would develop a Wildlife Management Plan to minimize the potential for wildlife interaction with project activities; therefore, this potential exposure pathway is considered potentially complete but insignificant.

Summary of HEC 3 Impacts

The mine site CSM (Figure K4.10-1) and transportation corridor, Amakdedori port, and natural gas pipeline CSM (Figure K4.10-2) present an illustrated summary of the exposure pathway analysis. Table K4.10-7 summarizes the potential impact levels for the potentially complete hazardous chemical exposure pathways, including the potential health effect consequence, magnitude, duration, and geographic extent of the impact, and likelihood of the impact occurring based on the evaluations presented above. The summary impact to human health is rated Category 1 for potential increased risk of exposure to potentially hazardous chemicals in air, soil, surface water, sediment, groundwater, and wild foods. For the mine site during all phases, the health effect was assigned scores of 1 (i.e., “minor” risk/hazard increases compared to baseline). For the three other project components (transportation corridor, port, and pipeline) during all phases, health effects were assigned a score of 0 (i.e., “not perceptible” from baseline). The magnitude of these impacts are expected to be “minor” and assigned a score of 0 because the impacts would be below permit thresholds or result in impacts imperceptible or negligible compared to baseline. The geographic extents of these impacts are assigned score of 2 because the affected communities could be impacted. The likelihood of these impacts occurring is very unlikely (1-10 percent) for the transportation corridor, Amakdedori port, and the natural gas pipeline since impacts above baseline would not be expected, while the likelihood of impacts from the mine site would be unlikely (10-33 percent) since the potential incremental cancer risk and non-cancer hazards would be expected to be indistinguishable from baseline risks and hazards.

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Table K4.10-7: Summary of HEC 3 Impacts: Exposure to Potentially Hazardous Materials

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increased risk of exposure to potentially hazardous chemicals in air	Construction	-	1 (M), 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	10-33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
Increased risk exposure to potentially hazardous chemicals in surface water and sediment	Construction	-	1 (M), 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	10-33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
Increased risk of exposure to potentially hazardous chemicals in groundwater	Construction	-	1 (M), 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	10-33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
Increased risk of exposure to potentially hazardous chemicals in soil	Construction	-	1 (M), 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	10-33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi,		♦	1

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Table K4.10-7: Summary of HEC 3 Impacts: Exposure to Potentially Hazardous Materials

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
							Po)			
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
Increased risk of exposure to bioaccumulated chemicals in Fish, Waterfowl, Wildlife, and Plant Foods	Construction	-	1 (M), 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	10-33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1

Note: Project-specific indicators: M = Mine Site; T = Transportation Corridor; Po = Amakdedori Port; Pi = Natural Gas Pipeline

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K4.10.2.4 HEC 4: Food, Nutrition, and Subsistence Activity

As noted in ADHSS (2015), most of rural Alaska sustains a "mixed, subsistence-market" economy, wherein families invest money into small-scale, efficient technologies to harvest wild foods. In the non-urban areas of the state, many households depend on a mix of cash, subsistence (hunting, fishing and gathering), sharing, and non-cash trading; and many of the communities in the vicinity of project components have a high participation in subsistence harvest activities and consumption. Potential impacts, either positive or negative, on food security and subsistence resources, could have large and persistent impacts on community health. Section 4.3, Needs and Welfare of the People—Socioeconomics, evaluates the potential environmental consequences to socioeconomics from the project, including impacts to cost of living and price of food, which subsequently can impact community nutrition and food security. Section 4.9, Subsistence, evaluates the potential consequences to subsistence activity and associated community nutrition and food security. This section summarizes those findings, and incorporates them in the generation of this HEC ranking.

The evaluation presented in Section 4.3, Needs and Welfare of the People–Socioeconomics, concluded that the project could result in increases in economic opportunities that could result in steady income throughout the year, and help reduce seasonal fluctuations prevalent in the region. It also has the potential to lower the cost of living for nearby communities, which would likely decrease regional food costs and increase food security through reduced transportation costs. Additional impacts could include potentially stemming the current trend of out-migration, increasing or maintaining the number of schools in the region, and other indirect economic benefits (e.g., taxes, sales/revenue, and other fiscal effects to the regional and local communities). It could also result in replacement by store bought foods at greater expense.

The evaluation presented in Section 4.9, Subsistence, found that there could be both adverse and positive potential impacts. Potential negative impacts could be from actual or perceived decreases in access to, availability/quantity of, and/or quality of subsistence recourses, which could also adversely impact community health/well-being and cultural identity. Subsistence users would likely adjust the seasonal round, resource use areas, and species composition of harvest resources to target resources that would be less affected by project activities. Although these adaptive approaches would likely sustain harvest levels for affected communities, they may increase expenses and time needed to harvest subsistence resources. However, positive benefits may also occur, because increased incomes and employment can positively affect subsistence harvest levels and participation in a myriad of ways, including making procurement of hunting and fishing equipment more affordable. Once constructed, the transportation corridor roads and the natural gas pipeline right-of-way could have a positive effect on access to subsistence resources (depending on the level of access agreed to between the State, PLP, and the LPB); because these cleared routes could facilitate overland travel by all-terrain vehicles and snowmachines. The ferry could also facilitate access to subsistence resources by transporting local residents and their vehicles across the lake. PLP would work with local communities to find solutions for ferry transportation use (PLP 2018-RFI 027). Under the summer-only ferry operations variant, the ferry would not impact cross-lake local transport.

In addition, the HEC 3 evaluation on potential exposure to hazardous chemicals through subsistence wildfoods was taken into consideration. The HEC 3 evaluation concluded that project-related hazardous chemical increases to the environment from the mine site would be expected to be negligible compared to baseline concentrations, while the other project components would be insignificant. Any increased risks or hazards to human health from the project would be expected to be indistinguishable from baseline.

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Table K4.10-8: Summary of HEC 4 Impacts, summarizes the potential impact levels for food, nutrition, and subsistence activity, including the potential health effect consequence, magnitude, duration, and geographic extent of the impact, and likelihood of the impact occurring based on the evaluations presented in Section 4.3, Needs and Welfare of the People—Socioeconomics, Section 4.9, Subsistence, and HEC 3. The summary impact to human health is rated Category 2 for potential health benefits due to the potential for decreased cost of living, which would likely decrease regional food costs and increase food security. The summary impact to human health relative to access to, quantity of, and quality of subsistence resources is rated Category 2 for mine site construction, Category 1 for construction of the other project components, and Category 2 for operations and closure for components for both negative (adverse) and positive impacts (potential for decreased access to and/or quantity of subsistence resources and increased income for subsistence equipment).

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Table K4.10-8: Summary of HEC 4 Impacts: Food, Nutrition, and Subsistence

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Decrease in food cost relative to income, and increased food security (expressed as cost of living)	Construction	+	1	1, noticeable, but limited and localized	2, medium-term	1, limited to households that benefit from economic opportunities	5	66-90%	♦♦	2
	Operations		1	1, noticeable, but limited and localized	3, long-term		6		♦♦	2
	Closure		0	0	3, long-term		4		♦♦	2
Access to, quantity of, and quality of subsistence resources	Construction	-/+	1 (M) 0 (T, Pi, Po)	0	2, medium-term	1, limited to households	4 (M) 3 (T, Pi, Po)	33-66%	♦	2 (M) 1 (T, Pi, Po)
	Operations		1 (M) 0 (T, Pi, Po)	0	3, long-term		5 (M) 4 (T, Pi, Po)		♦♦	2
	Closure		1 (M) 0 (T, Pi, Po)	0	3, long-term		5 (M) 4 (T, Pi, Po)		♦♦	2

Note: Project-specific indicators: M = mine site; T = transportation corridor; Po = Amakdedori port; Pi = natural gas pipeline

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K4.10.2.5 HEC 5: Infectious Diseases

The following subsections present the evaluation of the potential impacts on rates of infectious diseases, including sexually transmitted infections (STIs) (e.g., gonorrhea, chlamydia, Hepatitis C, and HIV); respiratory diseases (e.g., influenza and pneumonia); foodborne illness (e.g., salmonella and E. Coli); and zoonotic diseases (disease that is passed between animals and humans). Table K4.10-9 summarizes the potential impact levels for infectious diseases, including the potential health effect consequence, magnitude, duration, and geographic extent of the impact, and likelihood of the impact occurring.

The mine site personnel camp facilities would include a main construction camp to accommodate 1,700 workers. During construction and operation, the camp facilities would include a potable water supply from a series of groundwater wells north of the mine site, outside of the estimated cone of depression around the proposed open pit. The camp facilities would likely include common wash modules containing toilets, showers, and personnel laundry facilities. Temporary camps would be used during construction that would be moved as construction progresses. The Amakdedori port shore-based complex would include employee accommodations and common washrooms during operations. A groundwater well would be installed at the port to supply potable water for use by personnel. The well would be situated upland from the shoreline to avoid potential saltwater intrusion. PLP would likely conduct worker code of conduct training, and implement a closed work camp and workforce health education programs that would promote awareness of infectious diseases and preventive measures. The project would likely provide a place where workers who have infectious diseases (of any kind) could be diagnosed and treated, and measures would be taken to avoid transmittal of diseases to others. See Chapter 2, Alternatives, and Section 4.17, Hydrogeology, for more project details.

The following sections describe the potential project impacts on affected communities due to potential increases or decreases in rates of infectious disease.

Increases in Sexually Transmitted Infection Rates

Increases in STI rates could occur due to employment of workers from outside the region, and/or the rotation of the workforce during the various project phases; particularly construction. Residents living in the vicinity of the project workforce camps are the most vulnerable receptors to increases in STIs due to their proximity. Because the mine site and Amakdedori port would be located in remote areas, the probability of worker interactions with the residents living in local communities would be lower, relative to the construction workforce camps for the transportation corridor and natural gas pipeline.

Chlamydia and gonorrhea are reported as higher than national prevalence rates for the state, but particularly among Alaska Native populations (Section 3.10, Health and Safety). Chlamydia trachomatis was reported as 4 times more common than gonorrhea. In the Bristol Bay Region, rates of chlamydia are higher than state-wide Alaska Native populations, while chlamydia rates in the Kenai Peninsula Region are lower than state-wide Alaska Native populations, but still much higher than non-white Alaska Native state populations and nationally. Although Bristol Bay Region and Kenai Peninsula Region appear to have gonorrhea rates less than the state-wide Alaska Native rates, both had fewer than 20 cases of gonorrhea during the reporting period, and the rate may not be statistically reliable.

The potential impact of increases in STI rates for the potentially affected communities is rated Category 1 for all phases and components, except for during construction of the transportation corridor and natural gas pipeline, which are rated Category 2 (Table K4.10-9). For all components and phases, the health effect is considered to pose a minor risk of health injury.

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Because the project would use individuals primarily from the region for the workforce (i.e., there would not be a major influx of workers from outside the region), and statewide STI rates are lower than the local regional rates, it is expected that STI rates would not show a discernable change. Therefore, the likelihood of increased STI rates is considered as likely as not (33-66 percent) for the construction of the transportation corridor and pipeline due to the larger workforce (including those that already have STIs and may transmit to others) that would be housed in temporary camps near local communities; but unlikely (10-33 percent) for all phases at the mine site and Amakdedori port due to geographic remoteness.

Increases in Infectious Diseases

Increases in infectious disease rates could occur from employment of workers from outside the region and/or the rotation of the workforce during the project phases. Influenza and pneumonia was the tenth top cause of death statewide (ANTHC 2017i). Influenza and pneumonia rates of death are higher for Alaska Natives than those experienced by non-Alaska Natives and nationally. In addition, Alaska continues to have some of the highest tuberculosis rates in the nation (ADHSS 2017b), with Alaska Natives experiencing the greatest rates (Section 3.10, Health and Safety).

Impacts to human health from increases in infectious disease rates would be the same as discussed for sexually transmitted diseases. The potential impact of increases in infectious (respiratory) diseases rates for the potentially affected communities is rated Category 1 for all phases and components, except for during construction for the transportation corridor and natural gas pipeline, which are rated Category 2.

Increases in Rates of Foodborne Illnesses and Zoonotic Diseases

Increases in rates of foodborne illnesses and zoonotic diseases could occur due to improper food handling/catering services and food disposal at the project workforce camps during the project phases. Food-borne illnesses or zoonotic diseases from improper food disposal practices, such as harboring and feeding of wildlife near project camps, could occur at the project workforce camps, and be transmitted to the local communities via rotating staff. The potential for increased rates of foodborne illnesses and zoonotic diseases would be expected to impact primarily the local communities near the project components. This scenario is considered unlikely if the project adheres to and enforces regulations related to food services (such as 18 AAA 31) and wildlife interactions at the base camps or workforce housing.

The potential for increases in rates of foodborne illnesses and zoonotic diseases would be greatest in project workforce camps or workforce housing, with camps at all project components during construction, and at the mine site and Amakdedori port during operations and closure. The potential impact of increases in rates of foodborne illnesses and zoonotic diseases is rated Category 1 for all project phases (Table K4.10-9). For all project phases, the health effect is considered a minor risk of health injury. The magnitude of this impact is assigned a score of 1, because those affected would be expected to easily adapt to this impact with some intervention. The geographic extent of this impact is assigned a score of 0, because this impact would be limited to individual cases. The likelihood of this impact occurring would be very unlikely (1 to 10 percent), because the base camps would have safe food handling and disposal protocols in place to manage the food handling and catering services that would be provided for the project workforce.

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Table K4.10-9: Summary of HEC 5 Impacts: Infectious Diseases

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increase in sexually transmitted infection rates (including gonorrhea, chlamydia, Hepatitis C, and HIV)	Construction	-	1	1, noticeable, but limited and localized	2, medium-term	1, limited to infected individuals and their partners	5	33-66% (T, Pi) 10-33% (M, Po)	♦♦ ♦	2 1
	Operations		1	1, noticeable, but limited and localized	3, long-term		6	10-33%	♦	1
	Closure		1	1, noticeable, but limited and localized	3, long-term		6	10-33%	♦	1
Increase in infectious (respiratory) disease morbidity and mortality rates (e.g., influenza and pneumonia)	Construction	-	1	1, noticeable, but limited and localized	2, medium-term	1, limited to infected individuals and their partners	5	33-66% (T, Pi) 10-33% (M, Po)	♦♦	2 1
	Operations		1	1, noticeable, but limited and localized	3, long-term		6	10-33%	♦	1
	Closure		1	1, noticeable, but limited and localized	3, long-term		6	10-33%	♦	1
Increase in rates of foodborne illness and zoonotic diseases	Construction	-	1	1, noticeable, but limited and localized	2, medium-term	0, limited to individual cases	4	1-10%	♦	1
	Operations		1	1, noticeable, but limited and localized	3, long-term		5	1-10%	♦	1
	Closure		1r	1, noticeable, but limited and localized	3, long-term		5	1-10%	♦	1

Note: Project-specific indicators: M = Mine Site, T=Transportation Corridor, Po= Amakdedori port, Pi = Natural Gas Pipeline Corridor

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K4.10.2.6 HEC 6: Water and Sanitation

This section presents the evaluation of the potential impacts of increases in morbidity and mortality rates due to the availability and quality of water and sanitation services. Lack of in-home water and sewer service in some locations of rural Alaska causes severe skin infections and respiratory illnesses; residents of Southwest Alaska suffer rates of invasive pneumococcal disease that are among the highest in the world (ADEC 2018d). As discussed in Section 3.10, Health and Safety, as of 2016, 83.5 percent of rural Alaska Native communities were served by water and sewer services (a significant increase since 2004). In the Bristol Bay Region, 99 percent of households had water and sewer services; and in the Kenai Peninsula region, service was 100 percent (ANTHC 2017n). It is unlikely that the project would directly affect access to water and sanitation services in the local communities.

The potential impact of increases in mortality and morbidity rates due to change in the availability, and quality of water and sanitation services is rated Category 1 for the potentially affected communities for all project phases (Table K4.10-10). Because the majority of potentially affected communities have high baseline rates of water and sanitation service, it would be unlikely that there would be any perceptible changes from baseline to the affected communities due to the project. Therefore, the health effect and magnitude of impact are both assigned scores of 0 for all phases. The geographic extent of this impact is assigned a score of 0, because this impact would be limited to individual cases and households, if it does occur. The likelihood of increasing mortality and morbidity rates due to change in the availability and quality of water and sanitation services of communities near the project would be considered extremely unlikely (<1 percent).

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Table K4.10-10: Summary of HEC 6 Impacts: Water and Sanitation

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increase in morbidity and mortality rates due to the availability and quality of water and sanitation facilities	Construction	-	0	0	2, medium-term	0, individual cases	2	<1%	♦	1
	Operations				3, long-term		3		♦	1
	Closure				3, long-term		3		♦	1

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K4.10.2.7 HEC 7: Non-Communicable and Chronic Diseases

This section presents the evaluation of the potential impacts of increases in non-communicable and chronic morbidity and mortality rates in the potentially affected communities (such as cancer, cardiovascular, and respiratory). Although several factors (such as excess weight, physical activity, diet and nutrition, diabetes, and tobacco use) can contribute to increases in non-communicable and chronic morbidity and mortality rates, the evaluation of potential impacts focused on factors that could be directly attributed to the project. Potential exposure to project-related hazardous chemicals could result in increases in non-communicable and chronic (such as cancer, respiratory, and cardiovascular) morbidity and mortality rates in the potentially affected communities. For example, increased cancer rates in affected communities could occur from hazardous chemical exposure through ingestion of bioaccumulative and carcinogenic chemicals in subsistence foods. Changes in subsistence habits, diet, and nutrition, and changes in activity patterns could also affect the incidence of chronic diseases.

Chronic Disease Impacts from Diet, Nutrition, and Exercise

As discussed for HEC 4, the project would be expected to decrease food costs and increase food security, related to increased income levels for those who benefit economically from the project; while impacts to access to, quantity of, and quality of subsistence resources could be both negative and positive (see Table K4.10-4). Subsistence activities are a central feature of Alaska Native history and society, and support healthy diet and nutrition, physical activity needs, and are an important aspect of preserving cultural heritage and mental health (see Section 3.10, Health and Safety). All of the affected communities report higher baseline subsistence lifestyle compared to Alaska overall, while LPB and Bristol Bay Borough report higher percentages of adults who believe they get enough physical activity. With increased food security and decreased food costs (relative to income), it is possible that subsistence activities could be reduced in some community households and lead to lower rates of physical activity; but it is also possible that increased income would be used to supplement the subsistence lifestyle. In addition, subsistence users would likely adjust the resource use areas to target resources that would be less affected by actual or perceived impacts from the project (see Section 4.9, Subsistence) For community members employed by PLP, the project could increase rates of physical activity for some, while reducing physical activity rates for those in less physically active positions (i.e., vehicle drivers and equipment operators). In addition, individuals who may obtain full-time employment on the project may have reduced availability to engage in subsistence activities, thereby simultaneously experiencing increased incomes and reduced levels of fitness and subsistence activities, as reported in several other studies for Alaskan populations (Nobmann et al. 2005; Redwood et al. 2008).

The summary impact level for increased morbidity and mortality rates for cancer, respiratory, and cardiovascular diseases from changes in diet, nutrition, and physical activity for the potentially affected communities is rated Category 2 (Table K4.10-11). For the three components and project phases, the health effect was assigned a score of 1 (minor), given both the positive and negative potential impacts to diet, subsistence, and physical activity. The magnitude of impact was also assigned a score of 1, given the likely noticeable but limited/localized positive project impacts to diet and nutrition, and that those potentially negatively impacted are expected to be able to adapt and maintain pre-impact level of health. The geographic extent of this impact is assigned a score of 1, because impacts would be limited to a number of households. The likelihood of increased cancer, respiratory, and cardiovascular morbidity and mortality rates due to decreased diet/nutrition and decreased physical activity is considered as likely as not (33-66 percent).

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Chronic Disease Impacts from Exposure to Hazardous Chemicals

Based on the findings of the evaluation on potential exposure to hazardous chemicals, as presented for HEC 3, the project-related hazardous chemical increases to the environment from the mine site would be expected to be negligible compared to baseline concentrations, while the other components would be insignificant. Any increased risks or hazards to human health would be expected to be indistinguishable from baseline In addition, mitigation measures and best management practices would be implemented to further minimize potential exposures of hazardous chemicals to receptors in the potentially affected communities. The summary impact level for increased morbidity and mortality rates for cancer, respiratory, and cardiovascular diseases for the potentially affected communities is rated Category 1 (Table K4.10-11). For the mine site during all phases, the health effect and magnitude of impact are assigned scores of 1 and 0, respectively ("minor" increases compared to baseline). For the other components during all project phases, the health effect and magnitude of impact are both assigned a score of 0 (not perceptible and minor, respectively). The geographic extent of this impact is assigned a score of 2, because the communities in the vicinity of the EIS project area could be potentially affected. Based on the HEC 3 findings, the likelihood of increased cancer, respiratory, and cardiovascular morbidity and mortality rates due to increased exposure to potentially hazardous chemicals is considered unlikely (10-33 percent) for the mine site and very unlikely (1-10 percent) for the other three components.

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Table K4.10-11: Summary of HEC 7 Impacts: Non-communicable and Chronic Diseases

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Increase in cancer, respiratory, and cardio-vascular morbidity and mortality rates due to change in diet, nutrition, and physical activity	Construction	+/-	1	1	2, medium-term	1, limited number of households	5	33-66%	♦♦	2
	Operations				3, long-term		6		♦♦	2
	Closure				3, long-term		6		♦♦	2
Increase in cancer, respiratory, and cardio-vascular morbidity and mortality rates due to exposure from hazardous chemicals	Construction	-	1 (M) 0 (T, Pi, Po)	0	2, medium-term	2, potentially affected community	5 (M) 4 (T, Pi, Po)	33% (M) 1-10% (T, Pi, Po)	♦	1
	Operations				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1
	Closure				3, long-term		6 (M) 5 (T, Pi, Po)		♦	1

Note: Project-specific indicators: M = Mine Site, T=Transportation Corridor, Po= Amakdedori port, Pi = Natural Gas Pipeline Corridor

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K4.10.2.8 HEC 8: Health Services Infrastructure and Capacity

Access to health services is important for achieving health equity and increasing the quality of life for all individuals. The level of access to health services can impact life expectancy, mortality, and morbidity rates; early detection and treatment of health conditions; and control of infectious diseases through increased access to vaccines. The following subsections present the evaluation of the potential impacts from decreased access to healthcare under routine conditions and emergency situations that could overwhelm local and regional healthcare capacities. Table K4.10-12 summarizes the potential impact levels for health services infrastructure and capacity, including the potential health effect consequence, magnitude, duration, and geographic extent of the impact, and likelihood of the impact occurring.

Access to Routine Healthcare

Several entities provide healthcare services in the EIS Analysis Area (Section 3.3, Needs and Welfare of the People—Socioeconomics). Every LPB community has a health clinic (Nondalton, Kokhanok, Newhalen, Iliamna, Levelock, Pedro Bay, and Igiugig), with the exception of two communities (Port Alsworth and Ugashik). The three Nushagak/Bristol Bay communities in the Dillingham Census Area in close proximity to the core EIS analysis area (New Stuyahok, Koliganek, and Ekwok) each have a health clinic. In addition, health clinics are in every community in the Dillingham Census Area, except Portage Creek and Ekek, which had a population of zero in 2009 (McDowell Group et al., 2011a; McDowell Group et al. 2018b).

The project has the potential to impact access to routine healthcare. On-site mine rescue and medical emergencies would likely be handled by a mine rescue team. Medical evacuation would be available by fixed-wing aircraft or helicopter to fly injured workers to medical facilities; likely in Anchorage. All project workforce camps would include first-aid provisions. Some project employees might obtain healthcare from healthcare facilities in nearby communities (e.g., Kokhanok, Iliamna, Newhalen, and Nondalton), although that would not be expected to occur often, because the mine site would have on-site medical facilities to support workers. Therefore, a noticeable effect on access to routine healthcare services would not be expected for residents living in the EIS analysis area, including the communities near the mine site.

In addition, positive impacts may also occur related to routine healthcare. Municipal tax revenues generated by the project may result in expansion or improvements to existing healthcare facilities and services, and therefore result in net benefits to all members of the community with regard to healthcare access and the quality of available services.

The summary impact level for access to routine healthcare for the potentially affected communities is rated Category 1 for all project components and phases (Table K4.10-12). For all project phases, the health effect is assigned a score of 1 (minor). The likelihood of this impact occurring would be unlikely, because mine site workers would be expected to typically use on-site medical facilities.

Access to Healthcare due to Large-Scale Emergency Situations and Overwhelming Local and Regional Healthcare Capacities

Although many of the workers would be trained in emergency response and first aid, the mine site medical resources may not be adequate to handle life-threating health conditions or multiple injured personnel in an emergency situation, depending on the situation. Due to the remote region and terrain, air travel is the primary mode of long-distance transportation, especially for major medical or medical emergency issues. However, while this scenario is possible, the probability of occurrence of emergency scenarios would be rare.

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As discussed in Section 3.10, Health and Safety, much of the region is classified as medically underserved, or has a shortage of health care professionals; however, the LPB (closest to the all project phases) is not listed as having a shortage of primary care health professionals. The LPB is serviced by a network of healthcare clinics, which are located in seven of nine communities (McDowell Group et al., 2011a). The three Nushagak/Bristol Bay communities (New Stuyahok, Koliganek, and Ekwok) are each serviced by a healthcare clinic (McDowell Group et al. 2018b). These clinics are staffed by medical and dental professionals with internet connections to specialists in Anchorage and around the country. However, the closest hospital is in Dillingham, approximately 125 miles southwest of the mine site, and is only a 16-bed facility. Because air/water transportation service to Anchorage (200 miles northeast of the mine site) is better equipped than to Dillingham, the affected communities in the LPB and the Kenai Peninsula Borough typically receive hospital care and other major medical services at the Alaska Native Medical Center in Anchorage (McDowell Group et al., 2011a). Mine site workers in need of medical emergency care that surpasses the capabilities of the on-site medical facility would be evacuated (via air, as described above) to appropriate medical facilities, likely in Anchorage.

The summary impact level for access to routine healthcare for the potentially affected communities is rated Category 2 for all project components and phases (Table K4.10-12). For all project phases, the health effect is assigned a score of 2 (moderate injury that may require intervention). Although possible, the probability of occurrence of emergency scenarios would be expected to be rare due to project safety protocols that would be employed. Therefore, this impact would be considered very unlikely (1-10 percent) to occur.

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Table K4.10-12: Summary of HEC 8 Impacts: Health Services Infrastructure and Capacity

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Access to routine healthcare	Construction	-/+	1	1, adaptable and able to maintain pre-impact levels of health	2, medium-term	1, limited number of households	5	10-33%	♦	1
	Operations				3, long-term		6		♦	1
	Closure				3, long-term		6		♦	1
Access to healthcare due to emergency situations and overwhelming local and regional healthcare capacities	Construction	-	2	2, able to maintain pre-impact levels of health with support	2, medium-term	2, potentially affected community	8	1-10%	♦♦	2
	Operations				3, long-term		9		♦♦	2
	Closure				3, long-term		9		♦♦	2

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K4.10.3 Action Alternative 2 – North Road and Ferry

Impacts from the project would be the same as or similar to Alternative 1, with few exceptions. The area of Iliamna Lake used for the ferry would be different because it encompasses the areas at the north end of the lake around Pedro Bay (as opposed to the mid-lake region; i.e., Kokhanok). Under the summer-only ferry operations variant, transportation impacts on the lake would be eliminated during the winter, but double during the summer; and the air quality impacts from ferry and truck traffic would be the same as those for Alternative 1. Socioeconomic impacts under this variant would be similar to impacts under Alternative 1. This alternative's natural gas pipeline alignment would follow the north road alignment and not go across Iliamna Lake; there would be no hazards or impacts at Iliamna Lake during construction of the pipeline as would occur under Alternative 1. Impacts from the port at Diamond Point would be the same or similar to those as Amakdedori port.

Overall, the HEC for which Alternative 2 consequences may be most noticeably different from Alternative 1 is HEC 2: Accidents and Injuries due to transportation. However, even given the differences noted above, the transportation-related accidents and injury summary impact to human health would remain the same, and would remain at a Category 2 for all phases and transportation types (Table K4.10-13). The health effect, magnitude, duration, and geographic extent would all remain the same as Alternative 1. The likelihood for air and surface water would remain the same. Surface transportation likelihood would remain very unlikely (1 to 10 percent), but has the potential to increase to unlikely (10 to 33 percent) under the summer-only ferry variant if the road is not built to meet the increased summer capacity needs (i.e., traffic on Williamsport-Pile Bay Road would include doubled mine-related summer traffic and continuing or increasing levels of public boat portage). If mitigation measures include building the road to handle this increased summer capacity, then this potential likelihood increase could be mitigated, and likelihood would remain at very unlikely.

K4.10.4 Action Alternative 3 – North Road Only

Impacts from the project would be the same as or similar to Alternatives 1 and 2, with few exceptions. The use of Iliamna Lake for a ferry would be eliminated, shifting project-related transportation impacts to the area around Pedro Bay, rather than around Kokhanok. Impacts from the port at Diamond Point would be the same or similar to those as Amakdedori port. The concentrate pipeline variant would build a concentrate slurry pipeline from the mine to the port, and include a waste treatment plant at Diamond Point to treat the slurry, which would then be discharged to Iliamna Lake. Potential hazardous materials impacts would remain the same as under Alternative 1, because the effluent would be treated to meet the Alaska water quality criteria prior to discharge. This variant would likely decrease employment of truck operators, but increase employment at the water treatment plant (WTP)/dewatering facility, but with lower overall employment. Similar to the Alternatives 1 and 2 summer-only ferry operations variant, the overall impact would likely be to lower the high cost of living for the affected communities near the transportation corridor, but not to the extent of the non-variant alternative.

Similar to Alternative 2, the HEC for which Alternative 2 consequences may be most noticeable from other alternatives is HEC 2: Accidents and Injuries due to transportation. However, even given the differences noted above, the transportation-related accidents and injury summary impact to human health would remain the same—at a Category 2 for all phases and transportation types (Table K4.10-13). The health effect, magnitude, duration, and geographic extent would all remain the same as Alternative 1. The likelihood for air would remain the same, as would surface, because the Williamsport-Pile Bay road would be expected to handle year-round capacity needs. Even though the ferry operation on Iliamna Lake would be eliminated, the

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project would continue to use of Cook Inlet; therefore, the surface water likelihood would be remain unlikely.

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Table K4.10-13: Summary of HEC 2 Impacts: Accidents and Injuries for Alternatives 2 and 3

Potential Impact	Project Phase	Negative/ Positive	Health Effect	Magnitude	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Category
Alternative 2 – North Road and Ferry										
Increase in unintentional accidents and injuries morbidity and mortality rates due to air, surface, and water transportation (same rating unless otherwise noted)	Construction	-	3	air = 3, unable to maintain pre-impact level of health surface and water = 2, able to maintain pre-impact level of health with medical intervention	2, medium-term	0, individual cases	8 (air) 7 (water/ surface)	<1 % (air) 1-10% to 10-33% (surface) 10-33% (water)	♦♦	2
	Operations				3, long-term		9 (air) 8 (water/ surface)		♦♦	2
	Closure				3, long-term		9 (air) 8 (water/ surface)		♦♦	2
Alternative 3 – North Road Only										
Increase in unintentional accidents and injuries morbidity and mortality rates due to air, surface, and water transportation (same rating unless otherwise noted)	Construction	-	3	air = 3, unable to maintain pre-impact level of health surface and water = 2, able to maintain pre-impact level of health with medical intervention	2, medium-term	0, individual cases	8 (air) 7 (water/ surface)	<1 % (air) 1-10% (surface) 10-33% (water)	♦♦	2
	Operations				3, long-term		9 (air) 8 (water/ surface)		♦♦	2
	Closure				3, long-term		9 (air) 8 (water/ surface)		♦♦	2

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K4.10.5 Summary of Key Impacts

See Table K4.10-14 for a summary of key issues.

Table 4.10-14: Summary of Key Issues for Health and Safety

Impact-causing Project Component	Alternative 1 and variants	Alternative 2 and variants	Alternative 3 and variants
All Project Components	Increase in household incomes, employment, and education attainment. The summer-only ferry variant would lower the cost of living and increase employment opportunities, but not by as much as Alternative 1 because of seasonal vs. year-round employment (+ Category 3). Decrease in food cost relative to income and increased food security (+ Category 2).	Same as Alternative 1, including summer-only variant.	Same as Alternative 1. The concentrate pipeline variant would have similar impacts to the summer-only ferry variant under Alternative1.
	Increase and decrease psychosocial stress, family stress, and family stability (+/- Category 2). Increase and decrease in unintentional injury (e.g., falls, cuts, poisoning) and intentional injury (suicide) (+/- Category 2). Increase and decrease access to quantity and quality of subsistence resources (+/- Category 2). Increase in cancer, respiratory, and cardio-vascular morbidity and mortality rates due to change in diet, nutrition, and physical activity (+/- Category 2). Decreased access to healthcare due to emergency situations and overwhelming local and regional healthcare capacities (- Category 2).	Same as Alternative 1.	Same as Alternative 1.
Transportation Corridor	Increase in unintentional accidents and injuries morbidity and mortality rates due to air, surface, and water transportation, particularly regarding winter access across Iliamna Lake from the ice-breaking ferry. PLP would put some measures in place to minimize impacts, such as trail marking and crossings. The east Kokhanok ferry terminal variant would include access to Sid Larson Bay without crossing the ferry route. The summer-only ferry variant would eliminate the potential hazards to snowmachine winter lake crossings,	Impacts would be similar to Alternative 1, except that the routes and closest communities affected would be around Pedro Bay and the northern end of the lake instead of Kokhanok and the mid-lake region. The summer only ferry variant could increase the likelihood of surface transportation accidents and injuries along Williamsport-Pile Bay Road from an increase in truck	Same as Alternative 2, except that the elimination of the ferry on Iliamna Lake would reduce the likelihood of water transportation accidents and injuries, but could increase the likelihood of surface transportation accidents and injuries if mitigation measures are not taken to build the Williamsport-Pile Bay Road to meet mine-related and public summer capacity.

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Table 4.10-14: Summary of Key Issues for Health and Safety

Impact-causing Project Component	Alternative 1 and variants	Alternative 2 and variants	Alternative 3 and variants
	but increase summer lake and road traffic (- Category 2).	traffic if mitigation measures are not taken to build to meet the increased mine-related and public summer capacity (- Category 2).	(- Category 2)
Transportation Corridor and Natural Gas Pipeline	Increase in sexually transmitted infection rates and in infectious (respiratory) disease morbidity and mortality rates (- Category 2, during construction phase only).	Same as Alternative 1.	Same as Alternative 1.

K4.10.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to impacts on health and safety. These potential future actions are similar to the proposed actions in that each may result in direct and indirect effects to the project-affected communities. To varying degrees, all the RFFAs identified in Section 4.1 have the potential to impact cumulative health and safety through impacts to transportation (e.g., increase in Cook Inlet vessel traffic), subsistence (e.g., impacts on cultural resources and disturbance of wildlife), socioeconomics (e.g., increased household income from other employment opportunities), and water quality and soil quality (e.g., sources of contamination).

RFFAs in the core EIS analysis area have the greatest potential to impact health and safety to the affected communities due to the more-direct nexus to the project. Of these, the following RFFAs have the greatest potential to impact cumulative health and safety:

- Pebble Project buildout – develop 55 percent of the resource over a 78-year period
- Lake and Peninsula Borough Transportation Projects
- Lake and Peninsula Borough Community Development and Capital Improvement Projects
- Rural Alaska Village Grant Program Projects
- Lake and Peninsula Borough and other regional Renewable Energy Initiatives
- Nushagak Electric Cooperative Village Intertie Project
- Industrial Pollutants and Contaminated Sites within Project Area Communities.

Of these, the Pebble Project buildout is the most notable, and would extend the operation of the project for an additional 78 years. This has the potential to result in increased health impacts, especially from increased impact durations, and possibly increased releases and affected community exposure to potentially hazardous materials. The buildout is not part of the proposed action, and would require additional permits and separate NEPA compliance. Project area communities with pre-existing industrial pollutants and contaminated sites have the potential to add to the cumulative health impacts from exposure to potentially hazardous materials in communities where PLP proposes construction and operations support activities. It would be expected that mitigation measures would be used to minimize or mitigate exposure (e.g., avoidance of ADEC-contaminated sites, protective clothing and equipment, dust

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suppression). The improvement-related RFFAs have the potential to add to positive impacts to the affected communities (e.g., road improvement and increased safety).

As discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics, several RFFAs could have socioeconomic impacts on the potentially affected communities. Transportation, infrastructure, and energy improvements could induce increased development, and these potential impacts would likely be greater if the proposed project is implemented. Other RFFAs were noted as likely having minimal socioeconomic cumulative impact on the potentially affected communities.

As discussed in Section 4.9., Subsistence, many of the RFFAs could contribute to increased potential for impacts on subsistence resources by environmentally disturbing activities, and cause an increased volume of people. Environmental impacts could include habitat fragmentation, increased noise and atmospheric pollution, and disturbances and impacts to fish and wildlife. The increased volume of people could lead to increased recreational hunting/fishing, and impact subsistence cycles for local communities. The cumulative impacts would be long term to permanent, and geographically broad in scope (regional level).

As discussed in Section 4.12, Transportation and Navigation, most of the RFFAs would contribute to the cumulative increase in vessel traffic in Cook Inlet; increased demand for regional and helicopter air transportation and logistical support (particularly if mining development projects were to overlap); and increased surface transportation impacts along roads leading to the communities of Iliamna, Newhalen, and Nondalton via the proposed Iliamna spur road from RFFAs related to subsistence and recreational uses. It would be likely that any increased demand for air transport could be met by adding supply, because the RFFA sites are distributed rather than clustered with different airstrips or staging sites.

Cumulative effects would be the same under all alternatives.

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K4.11 AESTHETICS

Viewshed analyses were developed for Alternatives 1, 2 and 3 by the Pebble Limited Partnership (PLP) (PLP 2018-RFI 034a, PLP 2018-RFI 034c) and used to form the basis of analysis in Section 4.11, Aesthetics. The viewshed analyses are below in Figure K4.11-1 through Figure K4.11-13.

Simulations of project components from a series of pre-determined Key Observation Points (KOPs) were developed by PLP (PLP 2018-RFI 034a) and shown in Figure K4.11-12 through Figure K4.14-19.

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Figure K4.11-1: TSF Main Embankment Viewshed Analysis

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Figure K4.11-2: TSF South Embankment Viewshed Analysis

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Figure K4.11-4: Alternative 1 North Ferry Terminal Viewshed Analysis

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Figure K4.11-14: Simulation: Roadhouse Mountain KOP West Toward Mine Site

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Figure K4.11-15: Simulation: Newhalen River KOP Northwest Toward Mine Site

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Figure K4.11-16: Simulation: Iliamna Lake West KOP North Toward North Ferry Terminal

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Figure K4.11-17: Simulation: Iliamna Lake East KOP South Toward South Ferry Terminal

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Figure K4.11-18: Simulation: Big Mountain KOP East Toward South Ferry Terminal

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Figure K4.11-19: Simulation: McNeil River Base Camp KOP North Toward Amakdedori

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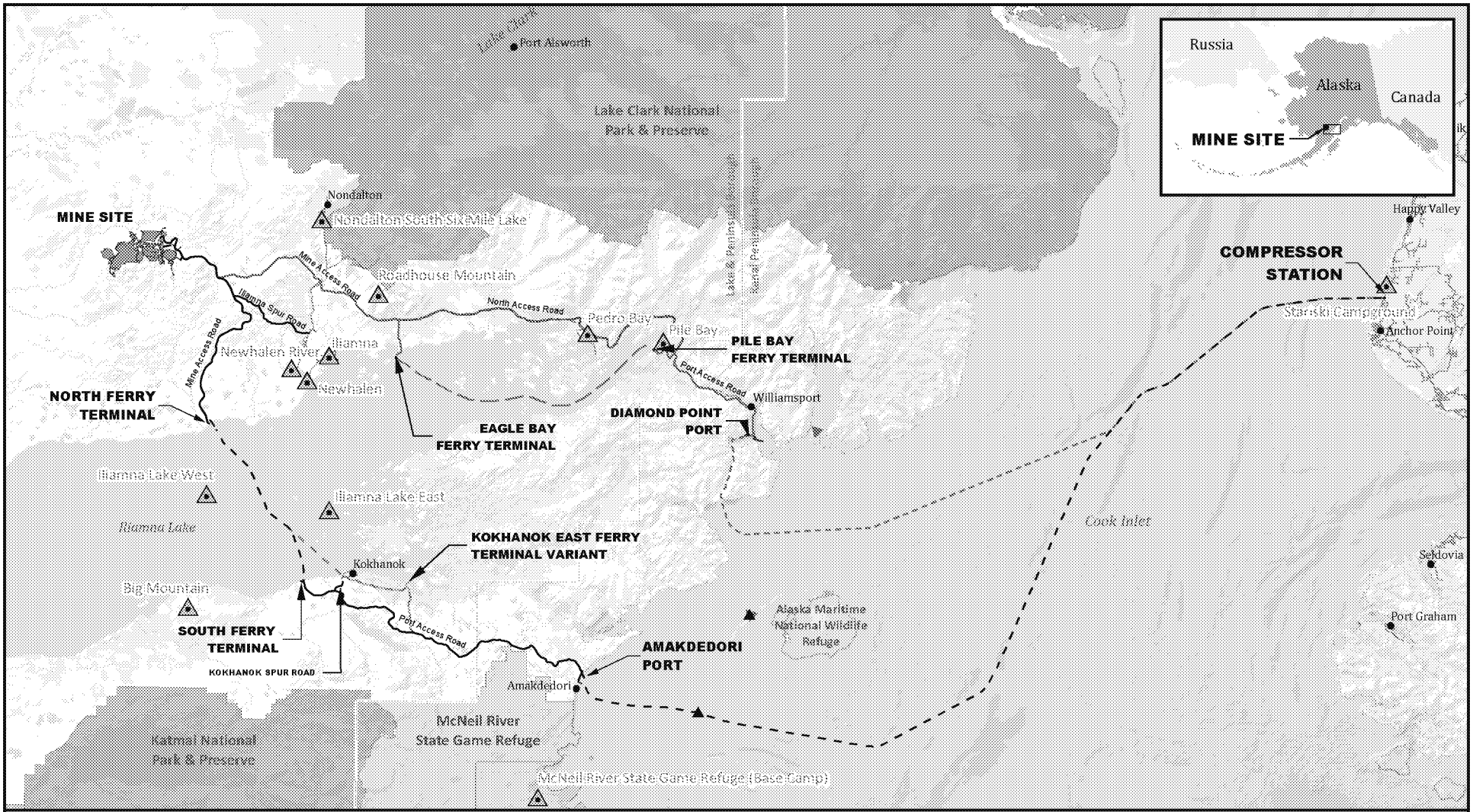

Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

Key Observation Points
Alternative 1
Lightering Locations
Mine Site
Transportation Corridor
Natural Gas Pipeline
Ferry/Port Site
Kokhanok East Ferry Terminal Variant
Transportation Corridor
Ferry Route
Natural Gas Pipeline
Ferry Terminal
Alternative 2
Transportation Corridor
Ferry Route
Ferry Site
Alternative 2/3
Lightering Location
Natural Gas Pipeline
Port Site
Alternative 3
Transportation Corridor
Other Features
Local Roads
Borough Boundary
National Park
National Wildlife Refuge
State Game Refuge/Sanctuary

KEY OBSERVATION POINTS

PEBBLE PROJECT EIS **FIGURE 3.11-1**

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K4.25 THREATENED AND ENDANGERED SPECIES

K4.25.1 Overview of Underwater Acoustics

This appendix contains additional information on applicable underwater noise concepts and methodologies used in development of Section 3.25, Threatened and Endangered Species, and Section 4.25, Threatened and Endangered Species). This appendix summarizes the properties of underwater noise, which are relevant to understanding the effects of noise produced by construction and operations activities on the underwater marine environment in the analysis area. This document does not provide a detailed acoustical calculation of specific project components proposed under the action alternatives. This detailed information would be analyzed further in a Marine Mammal Protection Act (MMPA) authorization request to the regulatory agencies to meet Level A and B guidelines.

K4.25.1.1 Underwater Noise Descriptors

Noise received at and below the sea surface is relevant to marine mammals and some other marine animals at sea. The noise descriptors used in this report and for underwater acoustics in general, include the following:

- Sound pressure level (SPL) represents the sound pressure of a sound relative to a reference pressure; it is measured in decibels (dB)
- Sound exposure level (SEL) is the total energy of an event referenced to a period of 1 second; therefore, the SEL accounts for both the noise level and duration of an event. SEL can be used to represent a range of different types of noise sources and is expressed in dB with a reference pressure of 1 $\mu Pa^2 \cdot s$ (Pa = microascal). Variations of SEL include:
  - Single strike sound exposure level (SEL_{ss}), which is the total energy of a single occurrence of an impulsive noise source, and;
  - The cumulative sound exposure level 24-hour cumulative SEL (SEL_{24h}), which is the total energy of the entire period of exposure.
- Peak level, which is the maximum instantaneous noise level for an event. A peak level is typically used to represent impulsive noise sources and is expressed in dB with a reference pressure of 1 µPa.

Underwater sound propagation depends on several factors including sound speed gradients in water, depth, temperature, salinity, and seafloor composition. In addition, characteristics of the sound source like frequency, source level, type of sound, and depth of the source will also affect propagation. For ease in estimating distances to thresholds, simple transmission loss (TL) can be calculated using the logarithmic spreading loss with the formula:

$$TL = B * log10(R)$$

TL is transmission loss, B is logarithmic loss, and R is radius

The three common spreading models are cylindrical spreading for shallow water, or 10 log(R); spherical spreading for deeper water, or 20 log(R); and practical spreading, or 15 log(R).

K4.25.1.2 Applicable Noise Criteria

Under the MMPA, the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) have defined levels of harassment for marine mammals. Level A harassment is defined as, "…any act of pursuit, torment, or annoyance which has the potential to injure a

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marine mammal or marine mammal stock in the wild." Level B harassment is defined as, "…any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering."

For Level A, NMFS 2018 provides guidelines for assessing the onset of permanent threshold shifts (PTS) from anthropogenic sound. Under these guidelines, marine mammals are separated into five functional hearing groups; source types are separated into impulsive (e.g., seismic) and non-impulsive; and require analyses of the distance to the peak received SPL; L_{pk}, and SEL_{24h}.

The current Level B (i.e., disturbance) threshold for assessing the onset of temporary threshold shifts for impulsive sound is 160 decibels referenced to one microPascal (dB re 1 µPa) root mean square (rms) for impulsive and 120 dB re 1 µPa rms for non-impulsive sound for all marine mammals.

Table K4.25-1 provides a summary of the disturbance guidelines. For purposes of this section, all underwater SPLs are reported as dB re 1 µPa.

Table K4.25-1: Summary of NMFS Acoustic Thresholds

Marine Mammals	Injury (Level A) Threshold		Disturbance (Level B) Threshold	
	Impulsive	Non-Impulsive	Impulsive	Non-Impulsive
Low Frequency Cetaceans	219 dB L_{pk} 183 dB SEL	199 dB SEL	160 dB rms	120 dB rms
Mid-Frequency Cetaceans	230 dB L_{pk} 185 dB SEL	198 dB SEL	160 dB rms	120 dB rms
High-Frequency Cetaceans	202 dB L_{pk} 155 dB SEL	173 dB SEL	160 dB rms	120 dB rms
Phocid Pinnipeds	218 dB L_{pk} 185 dB SEL	201 dB SEL	160 dB rms	120 dB rms
Otariid Pinnipeds	232 dB L_{pk} 203 dB SEL	219 dB SEL	160 dB rms	120 dB rms
Sea Otters	190 dB rms	180 dB rms	160 dB rms	160 dB rms

K4.25.1.3 Description of Sound Sources

The acoustic characteristics of each of the activities proposed under Alternative 1 are described in the following section and summarized in Table K4.25-2. Not all sources of noise will result in Level A or B acoustic harassment, but are presented for reference. The underwater noise sources associated with the construction will comprise:

- Vessels;
- Aircraft;
- Causeway construction; and
- Pile driving (impact and vibratory).

The majority of underwater vessel sound energy is restricted to frequencies below 100 to 200 Hertz (Hz), but broadband sounds may include acoustic energy at frequencies as high as 1 kiloHertz (kHz). The underwater SPLs of vessels depend on size and speed, but typically range from 145 to 175 decibels referenced to dB re 1 µPa-m (Richardson et al. 1995). Underwater sound levels from pile driving vary with the size and type of piles, as well as the size and type of

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hammer. Impact pile driving is generally below 4 kHz, with peak sound pressure levels ranging from 185 to 220 dB re 1 µPa at 10 m; vibratory pile driving generally has energy up to 10 kHz, but produces lower peak levels ranging 165 to 195 dB re 1 µPa at 10 m (Illingworth and Rodkin 2007). Underwater noise from aircraft (e.g., helicopter and fixed-wing) is greatest directly below the aircraft, with energy generally below 500 Hz, and ranging 100 to 124 dB re 1 µPa-m. Airborne sound levels associated with construction equipment generally range from 75 to 85 dB re 20 µPa at 15 m, with pile driving producing higher sound levels between 95 to 105 dB re 20 µPa at 15 m.

Table K4.25-2: Summary of Noise Sources for Each Activity

Activity	Sound Pressure Levels (dB re 1 µPa)	Frequency	Reference
General vessel operations	145-175 dB rms at 1 m	10 Hz – 1,500 Hz	Richardson et al. 1995; Blackwell and Greene 2003; Ireland and Bisson 2016
General aircraft operations	100-124 dB rms at 1 m	<500 Hz	Richardson et al. 1995
Rock laying for causeway	Less than dredging: 136-141 dB rms at 12-19 m	<500 Hz	Nedwell and Edwards 2004; URS 2007
Impact pile driving (12-60-inch pipe pile)	185-210 dB peak at 10 m 160-185 SEL at 10 m 170-195 rms at 10 m	<100-1,500 Hz	Illingworth & Rodkin 2007
Vibratory pile driving (12-72-inch pipe and sheet pile)	165-195 dB peak at 10 m 150-180 dB SEL at 10 m 150-180 dB rms at 10 m	<100-2,500 Hz	Illingworth & Rodkin 2007

Vessel Operations

Vessels are major contributors to the overall acoustic environment (Richardson et al. 1995), particularly in the Alaska (Huntington et al. 2015). In a 2012 Cook Inlet Vessel Traffic Study Report (Cape International, Inc. 2012), patterns of activities were described for vessels over 300 gross tons operating during 2010. Results showed that there were 480 port calls or transits through Cook Inlet, with 80 percent of the transits made by 15 ships for the purpose of crude oil and product transport, packaged commodity shipments, and passenger/vehicle carriage. This class of vessel is characterized with source levels of 160 to 200 dB re 1 µPa rms at 1 m in the 6 to 500 Hertz (Hz) range (Richardson et al. 1995).

Position keeping in Cook Inlet is a challenge due to strong currents; therefore, some vessels use dynamic positioning with bow thrusters when anchoring is not possible. Ireland and Bisson (2016) measured source levels from 148.5 dB re 1 µPa rms at 1 m at 2,000 Hz to 174.5 dB re 1 µPa rms at 1 m at 10 Hz with 100 percent of all four thrusters.

Blackwell and Greene (2003) recorded underwater noise produced by both large and small vessels near the Port of Anchorage. The Leo tugboat produced the highest broadband levels of 149 dB re 1 µPa at a distance of approximately 100 m, while the docked cargo freight ship, Northern Lights, produced the lowest broadband levels of 126 dB re 1 µPa at 100-400 m. Ship noise was generally below 1 kHz.

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Aircraft Operations

Helicopters and fixed-wing aircraft generate noise from their engines, airframe, and propellers. The dominant tones for both types of aircraft generally are less than 500 Hz (Richardson et al. 1995). Richardson et al. (1995) reported that received sound levels in water from aircraft flying at an altitude of 152 meters were 109 dB re 1 µPa for a Bell 212 helicopter, 101 dB re 1 µPa for a small fixed-wing aircraft, 107 dB re 1 µPa for a twin otter, and 124 dB re 1 µPa for a P-3 Orion.

Penetration of aircraft noise into the water is greatest directly below the aircraft; at angles greater than 13 degrees from vertical, much of the sound is reflected and does not penetrate (Richardson et al. 1995). Duration of underwater sound from passing aircraft is much shorter in water than air. For example, a helicopter passing at an altitude of 152 meters, audible in air for 4 minutes, may be detectable underwater for 38 seconds at 3 meters depth, and 11 seconds at 18 meters depth (Richardson et al. 1995).

Pile Driving

Impulsive underwater sound generated by construction activities has the potential to harass marine mammals where it exceeds 160 dB re 1 µPa (rms). Impulsive noise sources proposed for the construction phase of the project include pile driving using an impact hammer. Pile driving would be necessary for construction of the pile supported dock variants at the Amakdedori port site under Alternative 1 and the Diamond Point port site under Alternative 2. Illingworth and Rodkin (2007) compiled measured near-source (i.e., 10 meter) SPL data from impact pile driving for pile sizes ranging in diameter from 12 to 96 inches (Table K4.25-2). Non-impulsive underwater sound generated by construction activities has the potential to harass marine mammals where it exceeds 120 dB re µ1 Pa (rms) for NMFS-species and 160 dB re 1 µ Pa (rms) for sea otters. Vibratory pile driving generally results in lower source sound levels, but the harassment threshold is larger than for impulsive sounds. Illingworth and Rodkin (2007) also compiled measured near-source (i.e., 10 meter) SPL data from impact vibratory driving for pile sizes ranging in diameter from 12 to 72 inches. Because the in-water construction details are not fully developed, a range of sound is provided in Table K4.25-2.

Rock Laying

Measurements of underwater noise during rock placement have shown that the rock placement itself is not distinguishable from the vessel noise (Nedwell and Edwards 2004); rock placement vessels are similar to dredging vessels. URS (2007) measured underwater sound levels from clamshell dredging at the Port of Anchorage and reported broadband levels of 136 to 141 dB re 1 µPa rms at 12 to 19 meters.

K4.25.1.4 Acoustic Analysis

Per the MMPA and Endangered Species Act, applicants are required to evaluate the number of marine mammals potentially exposed to sound levels exceeding the thresholds from Table K4.25-2. This method requires an estimated density of marine mammals' (animals per square kilometer) area of ensonification (square kilometers), which is determined by calculating the distance from the source to the threshold, duration in a 24-hour period of the activity. Once project specific details are finalized, details such as pile type and size, size of hammer and number of strikes per pile to install, number of piles per day, and duration of the pile strike will be used to calculate the appropriate number of potential marine mammal exposures. Calculated distances to agency thresholds are also used to establish mitigation and monitoring zones.

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3.4 ENVIRONMENTAL JUSTICE

The affected environment for environmental justice includes definitions of minority and low-income populations; a discussion of race, ethnic origin, and a discussion of the relationship between environmental justice and subsistence resources, socioeconomics, cultural resources, and community health.

3.4.1 Definitions of Minority and Low-Income Populations

Executive Order 12898 (1994) requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority communities and low-income populations. Under Executive Order 12898, demographic information is used to determine whether minority populations or low-income populations are present in the areas potentially affected by the project. If so, a determination must be made as to whether implementation of the project may cause disproportionately high and adverse human health or environmental effects on those populations.

For the purposes of this analysis, a minority community is defined as a community with a majority (i.e., 50 percent or greater) minority population, and a low-income community is defined as having a greater percentage of the population living in households below the poverty threshold as defined by the US Census Bureau than the percentage of the population in the state living below that level. This is consistent with guidance by the Council on Environmental Quality (CEQ) (CEQ 1997). Historically, minority and low-income populations have suffered a greater share of adverse environmental and health impacts related to industry and development projects relative to the benefits. In addition, impacts to Alaska Native populations may be different from impacts on the general population due to a community's distinct cultural practices (CEQ 1997). Therefore, agencies would consider impacts to subsistence and sociocultural characteristics as a component of the environmental justice analysis.

3.4.2 Minority and Low-Income Populations

The project's potentially affected population includes those who live, work, or subsist in the EIS analysis area. Table 3.4-1 presents available community-level racial and ethnic characteristics as well as the percent living below the poverty level for the population in the EIS analysis area that would be affected during construction and operations of the mine site, transportation corridor, Amakdedori port, and natural gas pipeline. Figure 3.4-1 shows minority and low-income communities in the EIS analysis area.

Data in this section were obtained from the US Census Bureau 2012-2016 American Community Survey (ACS). Estimates from the ACS are all "period" estimates that represent data collected over a period of time (as opposed to "point-in-time" estimates, such as the decennial census, that approximate the characteristics of an area on a specific date). The primary advantage of using multi-year estimates in this analysis of low-income populations is the increased statistical reliability of the data for less populated areas and small population subgroups. Statistics for the state of Alaska are provided as a reference.

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Table 3.4-1: Ethnicity, Racial, and Poverty Characteristics of the EIS Analysis Area, 2016 (Percent of Total Population)

	White[1]	Black or African American[2]	Alaska Native and American Indians[2]	Asian[2]	Native Hawaiian and Other Pacific Islander[2]	Some Other Race[2]	Hispanic or Latino[3]	Total Minority	Living bleow Poverty Threshold
Lake and Peninsula Borough	21.3	0.8	69.2	2.8	0.1	5.9	2.1	72.9	18.8
Igiugig	10.6	0	89.4	0	0	0	4.3	89.4	4.3
Iliamna	27.9	0	61.6	0	0	10.5	4.7	61.6	15.9
Kokhanok	8.3	0	97.7	0	0	0	2.1	97.7	28.5
Levelock	1.0	0	99.0	0	0	0	4.1	99.0	23.7
Newhalen	7.0	0	87.4	0	0	5.6	6.3	87.4	26.6
Nondalton	7.0	0	83.3	0	0.5	9.1	0	83.8	31.7
Pedro Bay	30.8	0	69.2	0	0	0	0	69.2	7.7
Port Alsworth	73.7	2.6	9.6	0	0	14.1	0	12.2	2.6
Kenai Peninsula Borough	83.6	0.6	7.5	1.3	0.3	6.6	3.8	9.7	7.1
Bristol Bay Borough	55.7	0.3	32.1	1.2	0.2	10.5	4.9	33.8	7.3
Dillingham Census Area	17.9	0.2	72.2	2.2	0	7.4	3.0	74.6	14.8
Ekwok	3.8	0	96.2	0	0	0	0	96.2	29.9
Koliganek	13.6	0	83.3	0	0	3.1	0	83.3	9.3
New Stuyahok	0.7	0	97.0	0	0	2.3	0	97.0	29.8
Anchorage Municipality	64.3	5.7	7.0	8.9	2.3	11.9	8.7	23.9	8.1
State of Alaska	65.6	3.3	14.1	6.0	1.2	9.8	6.7	24.6	10.1

Note: Minority population = Total population – (White, non-Hispanic population + Some Other Race Alone, non-Hispanic population).

1. Alone, non-Hispanic.

2. Alone or in combination with one or more other races.

3. Of any race.

Source: USCB 2016a, 2016b

Most Alaskan communities tend to have a bi-modal racial structure. Most commonly, communities either have a substantial majority of the community that identify as White and other ethnic groups, or a majority that identify as Alaska Native or American Indian (Himes-Cornell et al. 2013). These trends are consistent with the EIS analysis area. As shown in Table 3.4-1, the majority of individuals in the Kenai Peninsula, Bristol Bay Borough, and Anchorage Municipality identify as White, whereas the majority of individuals in the Lake and Peninsula Borough and the Dillingham Census Area identify as Alaska Native or American Indian.

The Kenai Peninsula Borough, Bristol Bay Borough, Municipality of Anchorage, and Port Alsworth in the Lake and Peninsula Borough are not considered minority or low-income

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communities. Igiugig and Pedro Bay are considered minority communities but not low-income communities. Iliamna, Kokhanok, Levelock, Newhalen, Nondalton, and the Dillingham Census Area as a whole are considered both minority and low-income communities. Of these communities, Levelock, Kokhanok, and Iliamna have the largest percentage of minority individuals. Kokhanok, Newhalen, and Levelock have the highest percentage of persons below poverty level.

In addition, median incomes through communities in the region are less than half the statewide average of $74,444. High rates of the population living below the poverty level and low median income are partly based on economies being largely subsistence based, as wage employment is limited (Himes-Cornell et al. 2013). Many residents seek additional wage employment outside of their community. It should be noted that ACS data are based on wage earnings and do not take into account the value of subsistence in the local economy (see Section 3.3, Needs and Welfare of the People–Socioeconomics, for further discussion of employment and income in the EIS analysis area).

Table 3.4-2 evaluates if communities in the EIS analysis area meet the CEQ definitions of minority and low-income communities. Igiugig, Iliamna, Kokhanok, Levelock, Newhalen, Nondalton, and Pedro Bay in the Lake and Peninsula Borough; Ekwok, Koliganek, and New Stuyahok in the Dillingham Census Area; and the Dillingham Census Area as a whole meet CEQ definition of minority and/or low-income communities. Therefore, this environmental justice analysis will consider if the project results in disproportionately high and adverse human health or environmental effects on those populations.

Table 3.4-2: Determination of Minority and Low-Income Communities with Environmental Justice

	Total Minority	Poverty Rates in excess of Poverty Rate for the State of Alaska	Meets Minority or Low-Income Definitions for Environmental Justice
Lake and Peninsula Borough	Yes	Yes	Yes
Igiugig	Yes	No	Yes
Iliamna	Yes	Yes	Yes
Kokhanok	Yes	Yes	Yes
Levelock	Yes	Yes	Yes
Newhalen	Yes	Yes	Yes
Nondalton	Yes	Yes	Yes
Pedro Bay	Yes	No	Yes
Port Alsworth	No	No	No
Kenai Peninsula Borough	No	No	No
Bristol Bay Borough	No	No	No
Dillingham Census Area	Yes	Yes	Yes
Ekwok	Yes	Yes	Yes
Koliganek	Yes	No	Yes
New Stuyahok	Yes	Yes	Yes
Anchorage Municipality	No	No	No

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Table 3.4-2: Determination of Minority and Low-Income Communities with Environmental Justice

	Total Minority	Poverty Rates in excess of Poverty Rate for the State of Alaska	Meets Minority or Low-Income Definitions for Environmental Justice
State of Alaska	No	No	No

Source: Data summarized from Table 3.4-1

As stated above, impacts to Alaska Native populations may be different from impacts on the general population due to a community's distinct cultural practices; impacts associated with subsistence are a component of the environmental justice analysis. Section 3.9, Subsistence, describes subsistence resources, harvest, and sharing patterns for subsistence-based communities in the EIS analysis area. These communities include Nilchik and Seldovia in the Kenai Peninsula Borough; Naknek, South Naknek, and King Salmon in the Bristol Bay Borough; and Aleknagik, Clark's Point, Dillingham, Manokotak, New Stuyahok and in the Dillingham Census Area. The proportion of minority and low-income populations in these communities are generally similar to those shown in Table 3.4-1 for the Kenai Peninsula Borough, Bristol Bay Borough, and Dillingham Census Area. Other communities in the Kenai Peninsula Borough and Bristol Bay Borough are not considered minority and low-income communities because there is a high proportion of White residents and the percentage of populations at income levels below the poverty level are generally low. The populations in the Dillingham Census Area are considered minority and low-income communities, with a high proportion of Alaska Native residents and a high percentage of populations at income levels below the poverty level (Himes-Cornell et al. 2013; State of Alaska 2017).

3.4.3 Relationship to Subsistence, Health, and Environment

Environmental justice analysis is an intersection between several resource topics. The relationship includes subsistence users, subsistence resources, cultural practices, socioeconomic characteristics, and community health, with a potential for both beneficial and adverse impacts. Socioeconomic impacts associated with population, housing, and employment are described in Section 3.3, Needs and Welfare of the People–Socioeconomics. Section 3.9, Subsistence, describes subsistence resources and harvest patterns for subsistence-based communities in the EIS analysis area. Project-related impacts to human health are described in Section 4.10, Health and Safety, including effects from changes in air quality and water quality, as well as concerns about contamination and subsistence food consumption. Each alternative is evaluated in Section 4.4, Environmental Justice, for possible disproportionate impacts to minority and low-income communities using the information provided in the socioeconomic, subsistence, and human health sections of this EIS; determinations are made on whether environmental justice effects would occur.

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Figure 3.4-1: Minority and Low-Income Communities in the EIS Analysis Area

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3.10 HEALTH AND SAFETY

The evaluation of impacts on human health is a required component of the National Environmental Policy Act (NEPA) as it pertains to negative and beneficial consequences of a proposed project on potentially affected communities. There are laws and regulations, such as the Clean Air Act, Clean Water Act, and various Alaska statutes that have been enacted to ensure protection of human health. Compliance with health laws and regulations are taken into consideration in the evaluation of health impacts. This section presents a human health assessment for the Pebble Project EIS. This assessment is intended to document baseline health status in the EIS analysis area so that project-related positive and negative health consequences for the proposed action and alternatives may be identified and ranked in Section 4.10 as to their likelihood and degree, and mitigation measures may be recommended to minimize potential negative impacts that could occur as a result of the project. Human health data for the EIS analysis area are generally available at broad regional scales, but some data are available at the community level. When differences are able to be distinguished between the two, they are distinguished to the extent that is relevant for the purposes of the assessment.

For the purposes of this document and consistent with Alaska Department of Health and Social Services (ADHSS), health is defined not merely as the absence of disease, but as "the reduction in mortality, morbidity, and disability due to detectable disease or disorder, and an increase in the perceived level of health" (ADHSS 2015). Thus, it represents an integrated state of physical, social, and mental well-being. Health is affected by environmental, social, cultural, and genetic factors often called "determinants of health." Community health in Alaska, with its environmental and social setting and complex blend of health determinants, is in many ways different from national health trends in the US (ADHSS 2015). Large projects such as mining activities can often affect the health of nearby communities in complex ways; impacts may be both positive and negative.

Although this assessment describes the broad health effects categories (HECs) and several typical health metrics for each category included in the ADHSS guidelines, emphasis is focused on assessing key issues and potential impacts identified during scoping (as required by NEPA) and those expressed by stakeholders. In accordance with NEPA practice, the scope of the human health section is limited to "outside of the fence." Consistent with ADHSS (2015), this assessment does not include a direct evaluation of the anticipated workforce safety and health issues (i.e., "inside the fence") because the project is governed by the regulations of the Occupational Safety and Health Administration and the Mining Safety and Health Administration. However, the assessment does consider crossover issues where workforce behaviors result in interactions/overlap with the local communities.

The primary sources of baseline affected community and environmental information were obtained from the PLP, Environmental Baseline Documents (EBDs) (BEESC 2011a, McDowell Group et al. 2011a, McDowell Group, 2013b, Schlumberger et al., 2011a, Schlumberger, 2015b, SRB&A 2011b, TPP 2011a, TPP 2011b), Socioeconomics – Bristol Bay Drainages, Updated Detailed Cumulative Baseline Data (2000-2018) (McDowell Group 2018a) and Human Health Cumulative Baseline Data: Bristol Bay Drainages (2010-2018) (McDowell Group 2018b), and have been condensed and summarized for this EIS. When practicable, additional or updated data have also been incorporated from the Pebble Limited Partnership (PLP) and other publicly available sources (e.g., ADHSS' Alaska Health Analytics and Vital Records). This health evaluation focuses on the communities associated with proposed project components and phases (see Chapter 2, Alternatives, for a description).

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There is generally overlap between the affected communities in relation to the project components and phases; therefore, the functional classification of baseline information for the affected communities was at the EIS analysis area through the end of the closure phase. Specific affected community distinctions by component, area, or phase are only denoted when relevant.

3.10.1 Assumptions and Limitations

Focus on Most Relevant Human Health Effects Categories and Diseases. The assessment has been streamlined to focus on the HECs that could be directly impacted by the project and may be expressed as a primary stakeholder concern (HEC 3: Exposure to Hazardous Materials), as well as Infectious Disease (HEC 5) and Non-Communicable and Chronic Diseases (HEC 7). Infectious Disease and Non-Communicable and Chronic Diseases will focus on the top several diseases in each category based on their public health significance and frequency of occurrence. The sources of data cited also provide information on less prevalent diseases and conditions. The remaining five categories (i.e., Social Determinants of Health; Accidents and Injuries; Food, Nutrition, and Subsistence Activity, Water and Sanitation, and Health Services Infrastructure) will primarily rely on the data and conclusions from Section 4.3 (Needs and Welfare of the People–Socioeconomics), Section 4.12 (Transportation and Navigation), and Section 4.9 (Subsistence), and will supplement those sections as appropriate.

Age of Available Information. This EIS relies upon previously compiled baseline information for most of the HECs, which date from about 2008 to 2010. More current data was accessed, when available, with a focus on the effects categories and diseases most relevant to human health effects.

Identifying Potentially Affected Communities: The project covers a relatively large geographical distance (e.g., the transportation corridor would extend approximately 93 miles and the Pipeline Corridor would extend approximately 188 miles) and considers effects to broad rural areas. The potentially affected communities for most HECs (with the exception of HEC 4, Subsistence) are identified primarily based on proximity to the project components. They are identified first by those local communities in the vicinity of the core EIS analysis area (i.e., mine site, transportation corridor, and Amakdedori port project components) and then by regions (e.g., boroughs) (see Section 3.3, Needs and Welfare of the People–Socioeconomics, and Section 3.12, Transportation and Navigation).

The eight communities in the Lake and Peninsula Borough that were identified as those closest to the core of the EIS analysis area and evaluated for all HECs included: Nondalton, Newhalen, Kokhanok, Port Alsworth, Iliamna, Pedro Bay, Levelock, and Igiugig. These small rural communities have approximate population ranges of 48 to 128 people (McDowell Group et al. 2011a) and may be more directly impacted both positively and negatively, compared to communities farther away, due to their relative proximity to the project components. In addition, three Nushagak/Bristol Bay communities in the Dillingham Census Area were also identified as geographically close to the core EIS analysis area and were evaluated at the community-level when data permitted: New Stuyahok, Koliganek, and Ekwok. Health data are not always available at the community level for these potentially affected communities, due to privacy concerns and very small community sizes, and are not considered to be severe limitations for the purposes of the project. For the project, these limitations are addressed by using regional data sources within and near the EIS analysis area, including the Lake and Peninsula Borough, Bristol Bay Borough, Dillingham Census Area, Kenai Peninsula Borough, and city of Anchorage. Of these, only the city of Anchorage is considered an urbanized area, and while it lies outside the EIS analysis area, it is likely that some project workers will come from this population. The other boroughs are considered remote, rural areas. As mentioned above, the eight Lake and

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Peninsula Borough communities are within the core EIS analysis area, the three Nushagak/Bristol Bay communities are in close proximity to the core EIS analysis area, the Kenai Peninsula is the start of the natural gas pipeline corridor, and all the rural boroughs may use the area for subsistence (discussed below).

The limitation to evaluating health impacts to communities based on proximity to the project components is that some effects may not be directly related to the length of distance between the community and the project component, such as employment opportunities. Although the direct economic effects are discussed in Section 3.3, Needs and Welfare of the People–Socioeconomics, the relationship between income and health cannot be overstated. The rural location of the mine and the planned on-site housing camps make traditional commute times irrelevant, and therefore the communities that would contribute to the workforce may include more than those closest to the site. Also not directly related to distance would be changes in a community from project features, such as additional communities that might want to utilize project components like the Amakdedori port. These factors that are not dependent on distance also warrant consideration, along with the communities located relatively close to the project components.

For subsistence (HEC 4), the local communities evaluated include the eight affected communities in the Lake and Peninsula Borough and two of the three affected communities in the Nushagak/Bristol Bay area (data for Ekwok are insufficient to evaluate subsistence), as well as ten other communities that are known to use the area for subsistence, as discussed in detail in Section 3.9, Subsistence. These subsistence-related communities include six communities within the Dillingham Census Area (Dillingham, Clark's Point, Manokotak, Aleknagik, Koliganek, and New Stuyahok), three communities within the Bristol Bay Borough (Naknek, South Naknek, and King Salmon), and two communities within the Kenai Peninsula Borough (Ninilchik and Seldovia). Although it is possible that additional communities may occasionally utilize the EIS analysis area, these 19 communities capture those most likely to use the area and are adequate to assess potential project impacts in this EIS.

3.10.2 Demographic Summary of Potentially Affected Communities

Demographic and socioeconomic profiles of the affected communities are presented in McDowell Group et al. 2011a, McDowell Group 2018a, in Section 3.3, Needs and Welfare of the People–Socioeconomics, and Section 3.4, Environmental Justice; the information is not repeated here. The Alaska Native Health Status Report (ANTHC 2017a) presents recent state and regional overviews of sociodemographic highlights (e.g., demographics, education attainment, unemployment, poverty, and household income), as well as mortality highlights, morbidity highlights, and maternal, infant, and child health highlights. To provide context for the assessment, a brief summary of the demographic data is presented in Table 3.10-1.

Table 3.10-1: Demographic Summary

Subject	Alaska Native[2] Population (2016)	White[1] Population (2016)	Median Age (2017)	High School Graduate or Higher (2017)	Earned College Degrees (2017)	Median Household Income (2017)	Unemploy-ment Rate (2017)
Community-level – Iliamna Lake/Lake Clark Communities							
Nondalton	83.3%	7.0%	26.8	82%	4%	$35,500	26.2%
Iliamna	61.6%	27.9%	42.0	91%	15%	$67,500	7.0%

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Table 3.10-1: Demographic Summary

Subject	Alaska Native[2] Population (2016)	White[1] Population (2016)	Median Age (2017)	High School Graduate or Higher (2017)	Earned College Degrees (2017)	Median Household Income (2017)	Unemploy-ment Rate (2017)
Newhalen	87.4%	7.0%	23.5	93%	18%	$36,250	10.6%
Port Alsworth	9.6%	73.75%	24.3	97%	43%	$79,375	1.4%
Pedro Bay	69.2%	30.8%	57.5	92%	15%	$55,625	0.0%
Kokhanok	97.7%	8.3%	28.1	82%	9%	$35,000	29.9%
Igiugig	89.4%	10.6%	37.3	85%	12%	$46,875	4.3%
Levelock	99.0%	1.0%	20.3	81%	0%	$33,750	10.5%
Community-level – Nushagak/Bristol Bay Region							
Ekwok	96.2%	3.8%	39.5	60%	0%	$32,500	31.3%
Koliganek	86.4%	16.4%	28.5	85%	26%	$55,417	11.8%
New Stuyahok	99.3%	3.0%	24.4	73%	3%	$40,417	31.1%
Regional-level							
Bristol Bay Borough	32.1%	55.7%	40.7	94%	21%	$88,000	5.7%
Dillingham Census Area	72.2%	17.9%	29.7	87%	18%	$56,055	11.2%
Kenai Peninsula Borough	7.5%	83.6%	40.5	93%	24%	$64,891	8.7%
Lake and Peninsula Borough	69.2%	21.3%	31.9	86%	13%	$43,864	11.7%
Anchorage			32.8	93%	34%	$80,862	6.0%
State of Alaska	14.1%	65.6%	33.6	92%	29%	$74,444	7.8%

Notes:

-- = Not Available

1 Alone, non-Hispanic.

2 Alone or in combination with one or more other races.

Sources: USCB 2017; USCB 2016a, 2016b

See Section 3.3, Socioeconomics for additional discussion and details.

3.10.3 Baseline Community Health Conditions

Information for the 11 potentially affected communities is presented and compared to other local and regional data as warranted, and also compared to state or US data. Primary data sources include government, regional, community, and academic sources.[1]

[1] Primary data sources include the Alaska Department of Commerce, Community, and Economic Development, Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, ADHSS, Alaska Department of Labor and Workforce Department, Alaska Native Tribal Health Consortium, Alaska State Troopers, Bristol Bay Area Health Corporation, Bristol Bay Native Association,

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Although statewide data offers some context, the HEC discussions in this section are limited to health endpoints that have relevant and recent regional and local data available. Current data are generally preferred, older data are presented as warranted or if current data were not available. In some cases, local community data are neither reported nor available due to small size or privacy concerns. When available, local community data are representative of very small populations. Comparisons of statewide rates with local small population community rates should be interpreted with caution due to the statistical uncertainty associated with small populations. For regional rates based on fewer than 20 cases, they should also be viewed with caution because they may not be statistically reliable.

3.10.4 Health Effects Categories

3.10.4.1 HEC 1: Social Determinants of Health

The ADHSS Technical Guide (ADHSS 2015) suggests a broad list of social determinants of health (SDH) for consideration. Many of these SDH for the affected communities evaluated in this EIS are presented in Section 3.3, Needs and Welfare of the People–Socioeconomics, including discussion and tables with information and statistics on demographics, age distribution, population size and trends, educational attainment, employment rates and categories, household income, and poverty rates. SDHs such as isolation and cultural change lack of meaningful available data at the level of community health but are addressed in larger context in Section 3.7, Cultural Resources, and Section 3.9, Subsistence.

Overall, the affected communities whose health may be most impacted by the project within EIS analysis area (or may use the area for residence, subsistence, or recreation) are the remote, rural communities within the Bristol Bay Region (includes the Lake and Peninsula Borough, Bristol Bay Borough, and Dillingham Census Area) and Kenai Peninsula Region. The remote communities generally have lower levels of employment, income, formal educational attainment, and access to amenities than the urbanized communities.

For those SDH not covered in Section 3.3, Needs and Welfare of the People–Socioeconomics, Table 3.10-2, below, summarizes the additional SDH that are relevant and important indicators for this HEC and may potentially be impacted by the project. The remote, rural communities have similar life expectancy with the urbanized communities. While the Kenai Peninsula region typically has SDH similar to Anchorage, the Bristol Bay region tends to have higher rates of inadequate prenatal care and teen pregnancy, but higher rates of adult dental care and lower rates of adult tooth loss, poor mental health, and adult binge drinking.

Cook Inlet Region, Inc. Foundation, Commercial Fisheries Entry Commission, US Department of Commerce, Bureau of Economic Analysis, US Census Bureau, US Centers for Disease Control and Prevention, US Department of Health and Human Services, World Health Organization, and other government, regional, community, and academic sources.

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Table 3.10-2: Social Determinants of Health

Determinant	Date Period	Illamna Lake/Lake Clark Communities	Nushagak /Bristol Bay Communities	Lake and Peninsula Borough	Dilingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage/Mat-Su Region	Alaska	National
Life Expectancy in Years	2009-2013	--	--	--	--	--	71.4 (AN)	71.6 (AN)	71.6 (AN)	70.7 (AN) 78.0 (White)	79.1 (White)
Adequate Prenatal Care in Percent (%)	2009-2013 (unless noted)	63.3 (all races; 2014-2016)	36.1 (all races; 2014-2016)	55.3[a] (all races; 2014-2016)	47.4[b] (all races; 2014-2016)	51.8 (all races; 2014-2016)	35.4 (AN)	64.2 (AN)	63.9 (AN)	50.0 (AN) 54.5 (AN 2013) 68.8 (White 2013) 62 (all races; 2014-2016)	--
Infant Mortality (rate per 1,000 live births)	2009-2013 (unless noted)	--	--	--	--	--	5.9[c] (AN)	--	5.6 (AN)	6.7 (AN) 8.9 (AN 2013) 3.5 (White 2013)	5.1 (White 2013)
Teen Pregnancy (rate per 1,000 births)	2009-2013 (unless noted)	--	70[c] (all races; 2014-2016)	--	44.4[b] (all races; 2014-2016)	--	65.8 (AN)	45.2 (AN)	52.9 (AN)	69.2 (AN) 47.3 (AN 2013) 20.5 (White 2013) 27.5 (all races; 2014-2016)	18.6 (White 2013)
Adult Dental Care (percent with dental visit in past year)	2006-2014 (unless noted)	--	--	--	--	--	66.4 (AN)	56.3 (AN)	63.7 (AN)	58.7 (AN) 56.5 (AN 2014) 65.5 (White 2014)	65.3 (White 2014)
Adult Tooth Loss (percent with 1 or more teeth removed due to tooth decay or gum disease)	2006-2014 (unless noted)	--	--	--	--	--	58.6 (AN)	59.1 (AN)	51.9 (AN)	59.5 (AN) 60.5 (AN 2014) 37.7 (White 2014)	43.4 (all races; 2014)

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Table 3.10-2: Social Determinants of Health

Determinant	Date Period	Iliamna Lake/Lake Clark Communities	Nushagak/Bristol Bay Communities	Lake and Peninsula Borough	Dillingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage/Mat-Su Region	Alaska	National
Adult Mental Health (average days poor mental health per 30 days)	2010-2014 (unless noted)	--	--	2.2 (all races; 2011-2015)	2.8 (all races; 2011-2015)	2.6 (all races; 2011-2015)	3.2 (AN)	4.7 (AN)	4.6 (AN)	3.6 (AN) 3.0 (White) 3.2 (all races; 2011-2015)	3.4 (all races; 2005-2009)
Suicide Mortality (age-adjusted rate per 100,000 population)	2012-2015 (unless noted)	--	--	--	0.4[b,c] (all races; 2012-2016)	--	58.1[c] (AN)	30.1[c] (AN)	37.0 (AN)	40.9 (AN) 17.9 (non-AN)	14.3 (White)
Adult Binge Drinking (percent in past 30 days)	2010-2014 (unless noted)	--	--	16.6 (all races; 2011-2015)	14.1 (all races; 2011-2015)	24.5 (all races; 2011-2015)	14.8 (AN)	27.4 (AN)	19.7 (AN)	19.8 (AN) 19.8 (White) 18.8 (all races; 2011-2015)	17.7 (White)
Adult Alcohol Mortality (rate per 100,000 population)	2012-2015	--	--	--	--	--	49.3[c] (AN)	--	43.0 (AN)	29.8 (AN) 3.9 (non-AN)	3.0 (White)

Notes:

Sources: ANTHC 2016a, 2016b, 2016c, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h; McDowell Group 2018b

AN = Alaska Native

Mat-Su = Matanuska-Susitna

-- = Not Available

(a) = Lake and Peninsula Borough, excluding the eight Iliamna Lake/Lake Clarke Communities.

(b) = Dillingham Census Area, excluding the three Nushagak/Bristol Bay Communities.

(c) = rate based on less than 20 cases/counts (may not be statistically reliable)

The Bristol Bay Region includes the Lake and Peninsula Borough, Dillingham Census Area, Bristol Bay Borough, and surrounding area. Kenai Region includes Kenai Borough and surrounding area.

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Adult mental health, suicide mortality, and substance abuse (e.g., alcohol abuse) can be indicators of psychosocial stress. Mental health is measured as self-reported stress, depression, and problems with emotions in the past 30 days; the average statewide number of poor mental health days was 20 percent higher for Alaska Natives than Alaska Whites (ANTHC 2017e). Suicide mortality rates varied by region, but was the fourth leading cause of death among Alaska Native people during the period from 2012 to 2015 (ANTHC 2017f). Binge drinking is measured as self-reported adults aged 18 years of older who had five or more drinks (men) or four or more drinks (women) on one or more occasions in the past 30 days (ANTHC 2017g).

3.10.4.2 HEC 2: Accidents and Injuries

Accidents and injuries include both fatal and non-fatal incidents that are primarily unintentional and affect the mortality and morbidity rates of a community. Unintentional injury (e.g., falls, poisoning, drowning, motor vehicle crashes) is the third leading cause of death in the state and most regions (ADHSS 2017a; ANTHC 2017i). Intentional incidents include suicide and homicide.

McDowell Group et al. 2011a presents regional baseline rates of hospitalization discharges by diagnosis (2001 through 2005) for the Lake and Peninsula Borough, Dillingham Census Area, and Bristol Bay Borough. It also presents the leading causes of non-fatal injuries requiring hospitalization (2000 through 2004) for the Bristol Bay Borough. McDowell Group 2018b presents inpatient and outpatient hospitalizations/admissions demographics and leading diagnoses for the Lake and Peninsula Borough, Dillingham Census Area, and the Bristol Bay Borough.

Table 3.10-3 presents the baseline accident and injury rates for the affected communities. The role of alcohol in accidents and injuries is well-known, and various Alaska Native villages have enacted policies that designate a community as dry (i.e., no sale or consumption of alcohol), damp (i.e., no sale, but possession allowed), and wet (i.e., sale, importation, and possession allowed).

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Table 3.10-3: Accidents and Injuries

Determinant	Date Period	Illamna Lake/Lake Clark Commun-ities	Nushagak /Bristol Bay Commun-ities	Lake and Peninsula Borough	Dilingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage / Mat-Su Region	Alaska	National
Unintentional Injury Deaths (rate per 100,000 population)	2012-2015 (unless noted)	160[c] (all races; 2012-2016)	--	--[a]	180[b] (all races; 2012-2016)	140[c] (all races; 2012-2016)	151.8 (AN)	65.0 [c] (AN)	101.7 (AN)	99.4 (AN) 38.9 (non-AN)	42.4 (White)
Unintentional Injury (percent of injuries)	2009-2016	--	--	92.4 (all races)	84 (all races)	--	85.5 (all races)	--	--	83.3 (all races)	--
Unintentional Injury Hospitalization (rate per 100,000 population)	2002-2011	--	--	--	--	--	134.4 (AN)	94.9 (AN)	102.4 (AN)	109.2 (AN)	--
	2008-2011	--	--	--	--	--	--	--	--	106.9 (AN-Male) 90.4 (AN-Female) 50.4 (non-AN Male) 43.0 (non-AN Female	--
Hospitalizations due to Falls (percent or ranking)	2009-2016 (unless noted)	--	--	#1 Leading Cause	#1 Leading Cause	#2 Leading Cause	--	--	--	43.9 (AN; 2002-2011) #1 Leading Cause	--

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Table 3.10-3: Accidents and Injuries

Determinant	Date Period	Iliamna Lake/Lake Clark Commun-ities	Nushagak /Bristol Bay Commun-ities	Lake and Peninsula Borough	Dilingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage / Mat-Su Region	Alaska	National
Hospitalizations due to Vehicles (percent)	2009-2016 (unless noted)	--	--	#2 Leading Cause is Other Land Transport	#2 & #3 Leading Causes are Other Land Transport & Motor Vehicle Traffic	#1 Leading Cause is Other Land Transport	--	--	--	31.5 (AN; 2002-2011 #2 & #4 Leading Causes are Other Land Transport and Motor Vehicle Traffic	--
Hospitalizations due to Cut (percent)	2002-2011	--	--	--	--	--	--	--	--	3.6 (AN)	--
Hospitalizations due to Poisoning (percent)	2002-2011	--	--	--	--	--	--	--	--	3.4 (AN)	--
Hospitalizations due to Other Incidents (percent)	2002-2011	--	--	--	--	--	--	--	--	17.6 (AN)	--

Notes:
AN = Alaska Native
Mat-Su = Matanuska-Susitna
-- = Not Available
(a) = Lake and Peninsula Borough, excluding the eight Iliamna Lake/Lake Clark Communities.
(b) = Dillingham Census Area, excluding the three Nushagak/Bristol Bay Communities.
(c) = rate based on less than 20 cases/counts (may not be statistically reliable)

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The Bristol Bay Region includes the Lake and Peninsula Borough, Dillingham Census Area, Bristol Bay Borough, and surrounding area. Kenai Region includes the Kenai Peninsula Borough and surrounding area.

Sources: ANTHC 2015, 2017i, 2017j; McDowell Group et al. 2011a; McDowell Group 2018b

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3.10.4.3 HEC 3: Exposure to Potentially Hazardous Materials

Environmental exposure to chemical or physical hazards through the air, land, or water is also considered a health determinant. Baseline data may be qualitative in terms of proximity to known contamination sources, or quantitative through analytical data collection (e.g., water quality data, soil analytical data).

Physical Hazards. There are no specific baseline data on physical hazards, but it should be recognized that the rural and remote regions in Alaska carry exposure risk from the terrain, elements, and wildlife.

Air Quality. The role of poor air quality on community health, particularly with regard to respiratory disorders, has been well-documented (WHO 2016). The available regional baseline air quality data for criteria pollutants is sufficient for establishing baseline EIS analysis area conditions for NEPA purposes and is provided in Section 3.20, Air Quality. As discussed in Section 3.20, Air Quality, hazardous air pollutants (HAPs) are not measured in the region due to lack of large regional anthropogenic sources of HAPs in the area (e.g., factories, refineries, or power plants); therefore, no baseline data is available. Given the absence of large sources of HAPs in the region, there is no reason to expect measurable concentrations in the project study area except what is biogenic in nature. Local practices of burning trash, generating power using diesel generators, and heating some homes using wood stoves could contribute to poor air quality indoors and outdoors. Unpaved roads are a major source of dust, and may circulate pollutants in dust, which affects air quality and may also settle on food sources. There are also indoor air quality issues with the use of old wood and fuel oil burning stoves, which may be made worse by spending a lot of time indoors in winter.

Water Quality. The baseline water quality data is provided in Section 3.18, Water and Sediment Quality. Baseline surface water resources in the vicinity of the mine site had numerous detections of naturally occurring trace elements/metals, which occasionally exceeded their maximum criteria, and while cyanide was only occasionally present in detectable concentrations, some detections were above maximum criteria.

Community drinking water wells are located within the transportation corridor; arsenic and pH were noted as above maximum drinking water standards in one or more of the community wells (Schlumberger et al., 2011a, Schlumberger, 2015b). Arsenic is a naturally occurring element in rock and soil, and often present in trace amounts in groundwater. Concentrations of arsenic in groundwater are generally associated with volcanic deposits and gold-mining areas, and high concentrations of arsenic in groundwater are largely the result of arsenic-containing minerals (e.g., iron-sulfide and copper-sulfide minerals) dissolving naturally over time from weathered rock and soils (Schlumberger et al., 2011a, Schlumberger, 2015b).

Potentially Hazardous Materials. There are numerous known contaminated sites within the EIS analysis area. The following summarizes the number of open Alaska Department of Environmental Conservation (ADEC) regulated contaminated sites listed for each of the boroughs within and in the vicinity of the EIS analysis area on ADEC's Contaminated Sites database, as of March 2018 (ADEC 2018d):

- Lake and Peninsula Borough – 30 open sites
- Bristol Bay Borough – 60 open sites
- Dillingham Census Area – 25 open sites
- Kenai Peninsula – 130 open sites

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In addition, there are four US Environmental Protection Agency Comprehensive Environmental Response, Compensation, and Liability Act sites in Anchorage (EPA 2018), as well as several USACE formerly used defense sites in the Lake and Peninsula Borough (4 sites) and the Kenai Peninsula Borough (10 sites). Contaminants of concern from these sites include, but are not limited to: metals, asbestos, polychlorinated biphenyls (PCBs), petroleum hydrocarbons (e.g., fuel, lubricants), pesticides, and solvents. All these sites are under active oversight by government agencies, and agency directives are expected to control or prevent exposure to the general public. Therefore, the proximity of these sites is not expected to contribute to the baseline exposure to hazardous materials.

In the core EIS analysis area, baseline trace element (metal) data (2004 to 2008) were collected for soil, vegetation, fish tissue, as well as sediment and surface water (BEESC 2011, Schlumberger et al., 2011a, Schlumberger, 2015b, TPP 2011a, TPP 2011b). These baseline data are provided and discussed in Section 3.14, Soils, Section 3.26, Vegetation, Section 3.24, Fish Values, and Section 3.18, Water and Sediment Quality. Exposure to these trace elements may have the potential to impact human health from direct exposure or through subsistence (i.e., some of these trace metals are considered bioaccumulative) and represents baseline hazardous exposure potential.

3.10.4.4 HEC 4: Food, Nutrition, and Subsistence Activity

As discussed in Section 3.3, Needs and Welfare of the People–Socioeconomics, the cost of living in Alaska is higher than the national average, while the price of food is comparatively high in small rural communities that are not connected to the Alaska main road system and instead rely on air and water transportation. For example, on an August 2018 visit to Iliamna, the price of a half-gallon of whole milk was $13.49, which is equivalent to $27 a gallon and is nearly nine times the 2017 national average price of $3.16 (Statistica 2018). Subsistence activities are a central feature of Alaska Native history and society, and support healthy diet and nutrition. Subsistence foods are vital in small rural communities, often the basis of many local economies. These foods are important for food security due to high cost of living/food in the region, and are widely recognized as healthier than market food options. Subsistence foods include fish (primarily sockeye and Chinook salmon), shellfish, game and wildlife (primarily moose and caribou), and plants and berries. Subsistence activities are also an important aspect of preserving cultural heritage and mental health. Subsistence activity is discussed in detail in Section 3.9, Subsistence.

McDowell Group 2018b presents nutrition and lifestyle baseline information for Lake and Peninsula Borough, Dillingham Census Area, and Bristol Bay Borough compared to Alaska's population overall. Percentages of physical activity and nutritional intake are similar between these communities and Alaska, with some noted differences. These communities report a higher subsistence lifestyle (74.1 to 79.5 percent) compared to Alaska's population overall (30.5 percent). Lake and Peninsula Borough and Bristol Bay Borough believe they have higher percentages of getting enough physical activity (74.3 and 73.2 percent, respectively) compared to Alaska overall (52 percent). Bristol Bay Borough is more likely to be overweight/obese according to body mass index (84.7 percent) and eat less than five daily servings of fruits and vegetables (90.8 percent) compared to Alaska overall (66.1 percent and 78.6 percent, respectively); while Dillingham Census Area reports higher servings of sugar drinks (48.6 percent) compared to Alaska overall (30.5 percent). See (HEC 7) for further baseline details on weight and physical activity (chronic disease contributing factors).

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3.10.4.5 HEC 5: Infectious Diseases

The role of infectious diseases in the mortality and morbidity rates of a population is well known. Reportable infectious diseases (i.e., influenza and pneumonia) were the tenth leading cause of death to all races in Alaska (ADHSS 2017a). Noteworthy are the conditions that promote the spread of infectious disease, such as unsafe water, poor personal hygiene, and unsanitary conditions. Other infectious diseases impact human health quality and mortality, including sexually transmitted infections, HIV, tuberculosis, septicemia, and viral hepatitis. Immunizations play an important role in decreasing the rates of infectious diseases. Table 3.10-4 presents the leading infectious disease rates for Alaska and regions, when available, as well as childhood immunization rates.

Table 3.10-4: Infectious Diseases

Infectious Disease Indicators (Period)	Bristol Bay Region	Kenai Region	Anchorage/ Mat-Su Region	Alaska	National
Influenza and Pneumonia (mortality age-adjusted rate per 100,000 population) (2012-2015)	--	--	--	21.3 (AN) 9.9 (non-AN)	15 (White)
Laboratory Confirmed Influenza (count) (2016-2017 Season)	165 (Southwest Alaska)		1309	3276	--
Tuberculosis (rate per 100,000 population) (2016)	--	--	--	37 (AN) 7.7 (all races)	2.9 (all races)
Chlamydia Cases (age-adjusted rate per 100,000 population) (2015)	1,728.3 (AN)	873.8 (AN)	2504.4 (AN)	1,653.8 (AN) 452.3 (non-AN)	187.2 (White)
Gonorrhea Cases (age-adjusted rate per 100,000 population) (2015)	169.4* (AN)	184.5* (AN)	792.2 (AN)	436.7 (AN) 70.6 (non-AN)	44.2 (White)
Immunization Rate for Alaskan Children (percent) (2015, unless noted)	40.0 Bristol Bay Borough (all races; 2016)	--	--	75.1% (AN) 66.3% (all races)	72.7% (White)

Notes:

AN = Alaska Native

Mat-Su = Matanuska-Susitna

-- = Not Available

* = rate based on less than 20 cases/counts (may not be statistically reliable)

The Bristol Bay Region includes the Lake and Peninsula Borough, Dillingham Census Area, Bristol Bay Borough, and surrounding area. Kenai Region includes Kenai Peninsula Borough and surrounding area.

Sources: ANTHC 2017a, 2017k; 2017l; 2017m; ADHSS 2017b, 2018; McDowell Group 2018b

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Some regional rates (i.e., mortality from influenza and pneumonia, tuberculosis rate, and immunization rates) are not readily available. This might be due to the low state rates (i.e., influenza/pneumonia mortality), privacy concerns, and/or tracking or reporting methodology.

3.10.4.6 HEC 6: Water and Sanitation

The lack of safe water supply (i.e., running water) and suitable sewage disposal can represent a major public health and community development problem. Lack of in-home water and sewer service in rural Alaska causes severe skin infections and respiratory illnesses. Residents of Southwest Alaska suffer rates of invasive pneumococcal disease that are among the highest in the world (ADEC 2018d). That would include areas in the Yukon-Kuskokwim Delta that are not near the project area. Prior to 2004, a large portion of rural Alaska communities were classified as "unserved Rural Alaska Communities," which is defined as a community having 45 percent or more homes that are not served by central wells, and have a mix of central sewage plumbing, septic systems, honey buckets, and outhouses.

In 2016, 83.5 percent of rural Alaska Native communities were served by water and sewer services (a significant increase since 2004). In the Bristol Bay Region (includes Bristol Bay Borough, Dillingham Census Area, and Lake and Peninsula Borough), 99 percent of households had water and sewer services. In the Kenai Peninsula, service was 100 percent (ANTHC 2017n).

3.10.4.7 HEC 7: Non-Communicable and Chronic Diseases

Non-communicable and chronic diseases consume a large part of healthcare resources and affect the overall health status of a population. McDowell Group et al. 2011a presents regional baseline rates for the leading causes of death for the Lake and Peninsula Borough and Dillingham Census Area for the period from 2006 to 2008.

The three recent leading causes of death due to non-communicable and chronic diseases were cancer, heart disease, and chronic obstructive pulmonary disease (COPD), including chronic lower respiratory disease (ADHSS 2017a; ANTHC 2017a). Cancer was one of the top two causes of death in the Lake and Peninsula Borough, while cancer and heart disease were the top two causes of death in the Dillingham Census Area. The three types of cancer with the highest incidence were colon/rectum (17.9 percent), lung (17.2 percent), and breast (15.1 percent) (ANTHC 2017a, o).

McDowell Group 2018b reports that the highest rate (per 100,000 individuals) of cancer incidence is colorectal cancer in the Lake and Peninsula Borough (107.7) and Dillingham Census Area (107.7), while the highest rate of cancer incidence is breast cancer in Bristol Bay Borough (213.7). Colorectal cancer and lung and bronchus cancer had the highest cancer mortality rates per 100,000 individuals in the Lake and Peninsula Borough (107.7 and 48.5, respectively), and the Dillingham Census Area (73.9 and 38.2, respectively). Most of these cancer incidence and mortality rates appear higher than those reported for Alaska overall: colorectal cancer incidence rate of 43.1, female breast cancer incidence rate of 125.6, and colorectal cancer mortality rate of 43.1; while Alaska's lung and bronchus cancer mortality rate (59.9) is higher.

Table 3.10-5 presents the recent average age-adjusted non-communicable and chronic disease mortality (death) rates for the three leading regional causes, as well as several chronic disease contributing factors.

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Table 3.10-5: Non-Communicable and Chronic Diseases

Disease Type and Metric	Date Period	Iliamna Lake/ Lake Clark Commun-ities	Nushagak/ Bristol Bay Commun-ities	Lake and Peninsula Borough	Dillingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage /Mat-Su Region	Alaska	National
Cancer Deaths (age-adjusted rate per 100,000 population)	2012-2015	320 [c,e] (all races; 2012-2016)	230 [c,e] (all races; 2012-2016)	340[a,e] (all races; 2012-2016) 229.3[a] (all races; 2005-2014)	160[b,e] (all races; 2012-2016) 196.4[a] (all races; 2005-2014)	140 [c,e] (all races; 2012-2016) 273.7[a] (all races; 2005-2014)	232.4 (AN)	203.1 (AN)	259.2 (AN)	242.7 (AN) 154.5 (non-AN) 175.7 (all races; 2005-2014)	164 (White)
Heart Disease Deaths (age-adjusted rate per 100,000 population)	2012-2015 (unless noted)	280[c] (all races; 2012-2016)	330[c] (all races; 2012-2016)	410[a] (all races; 2012-2016)	190[b] (all races; 2012-2016)	140 [c] (all races; 2012-2016)	262.6 (AN)	264.3 (AN)	226.1 (AN)	208.2 (AN) 133.3 (non-AN)	167.7 (White)
COPD Deaths (age-adjusted rate per 100,000 population)	2012-2015	--	--	--	--	--	91.3 [c] (AN)	56.3 [c] (AN)	61.2 (AN)	68.0 (AN) 35.2 (non-AN)	44.0 (White)
Chronic Disease Contributing Factors											
Adult Overweight (percent with a BMI of 25 to 29.9)	2010-2014 (unless noted)	--	--	70.0 (all races; 2011-2015)	71.3 (all races; 2011-2015)	84.7 (all races; 2011-2015)	38.6 (AN)	37.8 (AN)	35.0 (AN)	34.9 (AN)[d] 38.2 (White) [d]	35.9 (White)
Adult Obesity (percent with a BMI of 30 or more)	2010-2014 (unless noted)	--	--				35.1 (AN)	36.3 (AN)	37.4 (AN)	35.2 (AN) [d] 26.9 (White) [d]	26.4 (White)

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Table 3.10-5: Non-Communicable and Chronic Diseases

Disease Type and Metric	Date Period	Illamna Lake/ Lake Clark Commun-ities	Nushagak/ Bristol Bay Commun-ities	Lake and Peninsula Borough	Dilingham Census Area	Bristol Bay Borough	Bristol Bay Region	Kenai Peninsula Region	Anchorage /Mat-Su Region	Alaska	National
Adult Physical Activity (percent who meet recommended weekly activity)	2011-2013	--	--	--	--	--	36.9 (AN)	11.3 (AN)	17.5 (AN)	18.5-18.7 (AN) 24.6-26.4 (White)	20.4-20.9 (all races)
Adults Who Believe Get Enough Physical Activity (percent)	2011-2015	--	--	74.3 (all races)	57.2 (all races)	73.2 (all races)	--	--	--	52.0 (all races)	--
Adult Current Smoking (percent who have had100+ cigarettes and currently smoke)	2010-2014 (unless noted)	--	--	29.1 (all races; 2011-2015)	34.8 (all races; 2011-2015)	27.8 (all races; 2011-2015)	45.3 (AN)	33.9 (AN)	31.1 (AN)	36.4 (AN) 18.3 (White) 20.5 (all races; 2011-2016)	19.0 (White)
Adult Formerly Smoked (percent who had 100+ cigarettes)	2011-2015	--	--	28.3 (all races)	25.9 (all races)	30.1 (all races)	--	--	--	27.5 (all races)	
Adult Current Smokeless Tobacco Use (percent currently use smokeless tobacco product)	2010-2014	--	--	--	--	--	15.0 (AN)	14.8 (AN)	6.7 (AN)	12.8 (AN) 3.8 (White)	3.4 (2014, all races)
Adult Ever Used Chewing Tobacco (percent)	2011-2015	--	--	29.5 (all races)	30.5 (all races)	35.5 (all races)	--	--	--	21.0 (all races)	--

Notes:

AN = Alaska Native

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Mat-Su = Matanuska-Susitna

-- = Not Available

(a) = Lake and Peninsula Borough, excluding the eight Iliamna Lake/Lake Clark Communities.

(b) = Dillingham Census Area, excluding the three Nushagak/Bristol Bay Communities.

(c) = Rate based on less than 20 cases/counts (may not be statistically reliable)

(d) = Alaska-wide and all races, 66.1 percent of adults are overweight/obese (2011-2015).

(e) = Malignant neoplasms (cancerous tumors)

The Bristol Bay Region includes the Lake and Peninsula Borough, Dillingham Census Area, Bristol Bay Borough, and surrounding area. Kenai Region includes Kenai Borough and surrounding area.

Recommended physical activity defined as 150 minutes of moderate-intensity activity or 75 minutes vigorous-intensity activity, or an equivalent combination, each week per Center for Disease Control's 2008 Physical Activity Guidelines for Americans.

Sources: ANTHC 2017o, 2017p, 2017q, 2017r, 2017s, 2017t, 2017u, 2017v; CDC 2016; McDowell Group 2018b

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3.10.4.8 HEC 8: Health Services Infrastructure and Capacity

An important measure of the health-related resilience and support structure of a community is the quality and quantity of healthcare that is available to the residents.

Health Services. The baseline health services infrastructure and capacity information for the eight affected communities in the Lake and Peninsula Borough and at the regional level are presented in McDowell Group et al. 2011a. Baseline health services infrastructure for the eight Iliamna Lake/Lake Clark communities in the Lake and Peninsula Borough and the three Nushagak/Bristol Bay communities in the Dillingham Census Area were updated and presented in McDowell Group 2018b. McDowell Group 2018b also summarizes health access for Lake and Peninsula Borough, Dillingham Census Area, and Bristol Bay Borough. The Lake and Peninsula Borough and Bristol Bay Borough report lower or similar access to health plans, medical care, and a personal doctor compared to Alaska overall, but higher medical costs. The Dillingham Census Area reports lower or similar access to medical care, access to a doctor, and medical cost, but reports higher access to health plans than seen in Alaska overall.

These health services findings are summarized on a more regional basis in Section 3.3, Needs and Welfare of the People–Socioeconomics. Healthcare services generally include small local clinics operated by regional providers. Access to the region and most of its communities is limited to small aircraft and boat.

Hospitalizations. The top three leading hospital discharges in the Lake and Peninsula Borough, Bristol Bay Borough, and Dillingham Census Area by diagnosis (2001 to 2005) were circulatory system, injury or poisoning, and digestive system (McDowell Group et al. 2011a). In 2015, the statewide leading causes of diagnosed hospitalizations were pregnancy/childbirth, respiratory diseases, and digestive system diseases (ANTHC 2016d). The following summarizes the leading causes of hospitalizations in 2016 (ADHSS 2017c) and 2017 (McDowell Group 2018b):

- Statewide – Pregnancy/childbirth, newborn/neonate conditions, musculoskeletal/ connective tissue diseases in 2016. Childbirth, septicemia (except in labor), and osteoarthritis in 2017.
- Southwest Region (includes Lake and Peninsula Borough, Dillingham Census Area, and Bristol Bay Borough) – Pregnancy/childbirth, newborn/neonate conditions, and respiratory diseases in 2016.
    - Lake and Peninsula Borough – Childbirth and other complications of birth, including postpartum care of mother in 2017.
    - Dillingham Census Area – Childbirth, septicemia (except in labor), pneumonia (except that caused by tuberculosis or sexually transmitted diseases), and alcohol-related disorders in 2017.
    - Bristol Bay Borough – Childbirth and alcohol-related disorders in 2017.
- Gulf Coast Region (includes Kenai Peninsula) – Musculoskeletal/connective tissue diseases/disorders, pregnancy/childbirth, and newborn/neonate conditions in 2016.
- Anchorage – Pregnancy/childbirth, newborn/neonate conditions, and musculoskeletal/ connective tissue diseases/disorders in 2016.

Although there are some variations in the top three leading causes of hospitalizations by year and region, pregnancy/childbirth and newborn/neonate complications of pregnancy and childbirth or newborn/neonate conditions are consistently leading causes.

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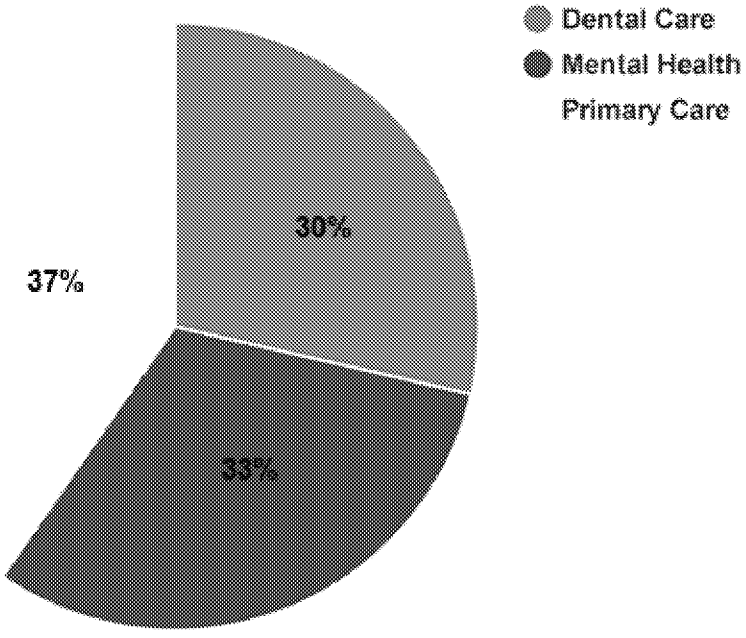
Adequacy of Health Services. Areas may be designated as having health impact issues for the adequacy of the health services, designated as Health Professional Shortage Area (HPSA) and/or a Medically Underserved Area/Population (MUA/P). HPSA designation may be due to a shortage of primary medical care, dental, or mental health providers, while MUA/P designation may include groups of persons who face economic, cultural, or linguistic barriers to healthcare (HRSA 2018). The Lake and Peninsula Borough (with the eight communities closest to the core EIS analysis area), Dillingham Census Area, Bristol Bay Borough, Kenai Peninsula, and Anchorage are all designated as MUA/P (Dillingham Census Area and Kenai Peninsula Borough are designated MUA/P – governor's exception). Table 3.10-6 presents the HPSA ratings (out of 26) for these regions. The rating is used to establish the communities with the greater needs per shortage area, indicated by those communities with higher HPSA ratings.

Table 3.10-6: Health Professional Shortage Area Ratings

Shortage Area	Lake and Peninsula Borough	Bristol Bay Borough	Dillingham Cenus Area	Kenai Peninsula Borough	Anchorage Borough
Primary Care	--	15-17	13-17	8-18	3-21
Dental Care	16	0-16	16-20	6-23	6-20
Mental Health	14	14-16	14-20	15-21	6-20

Notes: -- = Not listed.

Figure 3.10-1: Health Professional Shortage Areas by Discipline in Alaska



It should be noted that these designations are most directly comparable when the populations are similar; otherwise, a relatively low population area such as the Lake and Peninsula Borough may appear to have less "need" than a densely populated area when the difference may be more due to the population disparity than the actual "need." Furthermore, comparing a community to a larger region or state would not be meaningful since the region or state value represents a sum total that includes the communities.Figure 3.10-1: Health Professional Shortage Areas by Discipline in Alaska

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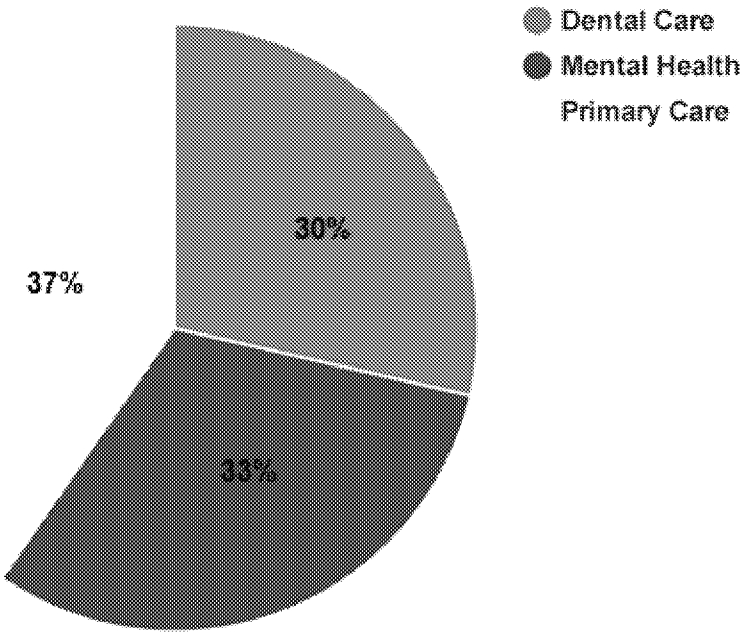

It should be noted that these designations are most directly comparable when the populations are similar; otherwise, a relatively low population area such as the Lake and Peninsula Borough may appear to have less "need" than a densely populated area when the difference may be more due to the population disparity than the actual "need." Furthermore, comparing a community to a larger region or state would not be meaningful since the region or state value represents a sum total that includes the communities.

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3.11 AESTHETICS RESOURCES

This section describes the existing conditions against which the potential effects of a project will be assessed, pertinent regulatory and management framework, and information about the regional and project landscape. Aesthetic attributes addressed in the assessment focused on perceptual elements of visual environment, including night sky and soundscape. Aesthetics can refer to the perception of beauty by one or a combination of the senses, and can apply to the quality of life enjoyed by the general public and property owners (40 Code of Federal Regulation [CFR] 230.53).

3.11.1 Environmental Impact Statement Analysis Area

The aesthetic resources analysis area extends westward from Happy Valley on the Kenai Peninsula and the Bristol Bay and Cook Inlet drainages to the eastern side of the Iniskin Peninsula, encompassing Iliamna Lake and the surrounding communities. The analysis area includes a 50-mile radius from the mine site; 15-mile radius from the ferry terminals, 20-mile buffer from the transportation corridor and natural gas pipeline, and 25-mile radius around Amakdedori port.

3.11.2 Methods for Establishing Baseline Conditions

Baseline visual resource conditions were established by: 1) implementing a viewshed analysis to determine locations where the project could be visible (i.e., seen areas); 2) completing a regulatory and management review; 3) assessing landscape character attributes, viewer groups and related visual sensitivity, and visual distance zones (visibility) in the analysis area; and 4) assessing baseline soundscape.

3.11.2.1 Regulatory and Management Framework

The regulatory and management framework review included federal, state, and local planning documents for planning areas with geographic nexus to the project area. The review focused on identifying specific regulations or planning objectives pertaining to visual resources or scenery management.

3.11.2.2 Viewshed Analysis

Locations from which the project could be seen in the analysis area were determined by implementing a viewshed analysis using geographic information system (GIS). This analysis determines project visibility based on the relationship between topography, height of project components, average eye height of the viewer, and height of vegetation. The resulting "seen area" represents an area that may contain views of proposed project features. However, it does not represent any measure of detectability of these features.

Viewshed analyses were performed for the following project components: mine site (including the tailings storage facility [TSF] main embankment, the TSF south embankment, and the course or stockpile), north ferry terminal, south ferry terminal, Amakdedori port, Kenai compressor station, north road corridor, and south road corridor. Models were developed using assumptions of bare earth (i.e., not considering the potential screening effects of vegetation) and vegetation for Alternative 1, and bare earth only for Alternatives 2 and 3, at a viewer height of 5 feet 5 inches. The completed viewshed analyses are in Appendix K4.11.

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3.11.2.3 Landscape Character

Landscape Character: Landscape character attributes were assessed by first dividing the analysis area into geographic units defined by prevailing physiography (Wahrhaftig 1965), then assessing landscape character in each geographic unit. Landscape character attributes were described in terms of landscape character typology; the basic elements of form, line, color, and texture of prevailing landform, water, vegetation, and cultural modification. This approach was applied across the analysis area to ensure that baseline data in visual resources were collected consistently across all jurisdictions.

Viewer Groups and Visual Sensitivity: Viewer groups were identified through coordination with recreation, cultural, and subsistence resources, as well as review of scoping comments. These sources were used to understand how specific locations in the analysis area are used, and the types of viewer groups that may be associated with those uses. Characteristics of identified viewer groups, such as seasonality, amount of use, and predominant viewer activity were included in this inventory.

Distance Zone: Project visibility, or distance zones, was assessed by subdividing into three zones based on relative distance from travel routes or observation points. Common travel routes included common commercial flight paths and common local flight paths. Distance zones were classified as: foreground (0 to 0.5 mile from view point), middleground (0.5 mile to 5 miles), and background (over 5 miles). Visual clarity applies to all distance zones.

3.11.2.4 Key Observation Points

Key Observation Points (KOPs) representing common and/or sensitive viewer locations were established in the analysis area. These locations represent point-based (vistas), linear (roadways), and area-based viewer locations characterized by residential, subsistence or recreational uses discussed above. The KOPs were used as standard locations from which to describe existing visual resources at a localized scale, and to assess potential effects that may result from the proposed project. KOPs are listed in Table 3.11-1 and shown in Figure 3.11-1.

3.11.2.5 Soundscape

Soundscape was evaluated using a noise receptor analysis from 10 miles around the mine site infrastructure, and from 0.5 miles around the pipeline work area at Happy Valley, the transportation corridor (proposed new access roads), the north and south ferry terminals, and Amakdedori port infrastructure (See Section 3.19, Noise).

3.11.3 Regulatory and Management Framework

3.11.3.1 Federal

Clean Water Act 404(b)(1), Section 230.53 Aesthetics

(a) Aesthetics associated with the aquatic ecosystem consist of the perception of beauty by one or a combination of the senses of sight, hearing, touch, and smell. Aesthetics of aquatic ecosystems apply to the quality of life enjoyed by the general public and property owners.

3.11.3.2 State

The project area is located in the Alaska Department of Natural Resources Bristol Bay and Kenai planning units. These areas are managed per the Bristol Bay Area Plan (ADNR 2013a) and the Kenai Area Plan (ADNR 2001), respectively, to “maintain the quality and diversity of the

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natural environment and protect heritage resources and the character and lifestyle of the community."

The project area also takes into account lands owned by seven Alaska Native Claims Settlement Act (ANSCA) corporations. ANSCA does not provide provisions for the protection or management of visual resources; however, individual landowners may implement such management policies.

3.11.4 Landscape Character

The landscape setting in the visual resources analysis area includes mountain ranges surrounded by river valleys, rivers, shrub tundra, marshy lowlands, wetlands, coastal shoreline, estuaries, and ocean inlet environments. Primary river drainages intersecting the analysis area include the Mulchatna, the Nushagak, and Koktuli rivers. The waterways provide access to remote recreation and subsistence use areas. Human development in the analysis area is generally limited to areas in and around geographically isolated communities and small fishing and hunting lodges. Development includes roads, airstrips, and docks.

3.11.4.1 Regional

The visual resources analysis area falls within portions of four different physiographic units: Nushagak–Big Hills, Nushagak–Bristol Bay Lowland, Aleutian Range, and Alaska Range (Wahrhaftig 1965). The landscape character of each physiographic unit is influenced by the fluvial geomorphologic, hydrologic, vegetation cover, elevation, and landforms.

The **Nushagak—Big River Hills** are characterized by flat-topped ridges ranging in elevation from 1,500 feet to the west, 2,500 feet to the east, and 4,200 feet to the north. The Big River Hills unit drains to the Kuskokwim River from primary tributaries. The southern section of the physiographic unit drains to the Mulchatna and Nushagak rivers. Vegetation communities consist of spruce, birch, and cottonwoods along riparian corridors (Shacklette et al. 1969, ADNR 2005).

The **Nushagak—Bristol Bay Lowland** is dotted with moraine lakes rising from sea-level to an altitude of 300 to 500 feet at its high point. Linear narrow belts of elevated topography enclose large glacial lakes fed by upland hydrology. The lowland is drained by the Nushagak River and other rivers flowing to the estuaries of Bristol Bay. This physiographic unit is of the marine phase of the tundra climate with mild winters and short, cool summers. Dominant vegetation includes moist wet tundra plant communities. Standing water, mosses, sedges, and low-growing shrubs cover the landscape with clumping stands of alder, willow, and patches of stunted spruce and birch growing along the riparian edges of major streams and rivers (Shacklette et al. 1969, Bailey 1995).

The **Aleutian Range** consists of heavily glaciated U-shaped valleys, rugged ridges, and mountain peaks anchored between the Pacific Ocean and the Bering Sea. It runs west to Aleutian Island with an elevation ranging from 1,000 to 4,000 feet. The Aleutian Range is flanked by large volcanic peaks elevating upward to 8,500 feet. Steep rivers drain south to the Pacific Ocean, while braided meandering rivers run slowly to the Bering Sea. The west end of the Aleutian Range drains into the Bristol Bay Lowland, feeding hundreds of small lakes and ponds. Vegetation is sparse and consists of spruce, birch, and cottonwoods along riparian corridors and a spattering of open low-shrub tundra as the elevation increases (Shacklette et al. 1969, Kevin Waring & Associates 2015a).

To the east, the **Alaska Range** connects with the Aleutian Range between Iliamna Lake and Mount Spurr. The mountain range extends over 600 miles to the Canadian border. The heavily

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glaciated mountain ranges average between 7,000 and 10,000 feet in elevation with a number of peaks exceeding 10,000 feet. The Alaska Mountain range is the divide for rivers flowing from the Yukon Territory south to the Gulf of Alaska. The southern section drains through glacial streams to the Kuskokwim River and to the Nushagak or Kvichak rivers, eventually flowing into Bristol Bay (Shacklette et al. 1969, Kevin Waring & Associates 2015a).

3.11.4.2 Analysis Area

Mine Site

The proposed mine site would be located in the southern section of the Nushagak–Big River Hills physiographic unit. The landscape is large in scale, characterized by the rugged Sharp, Pig, Kaskanak, and Groundhog Mountains that appear prominent and distinct from the surrounding lowlands and Iliamna Lake.

Views from ridgetops are largely panoramic; however, there is more enclosure in drainages and low elevation areas. Topography is dominated by numerous rounded hills that appear as consistent and well-defined by the converging lines of drainages. As elevation increases, trees become stunted and vegetation becomes intermixed with short alpine tundra and exposed rock outcrops.

The upper sections of Talarik Creek and the Koktuli rivers meander through eroded, braided wetlands and tundra flowing into Iliamna Lake to the Kvichak River, before draining into Bristol Bay. The Talarik Creek floodplain is characterized by exposed flat grasslands and low sand dunes created from strong winds with little diversity of vegetation. These river systems not only provide habitat for salmon, but also provide important travel routes to remote areas for subsistence use in the summer and winter.

Viewer groups in this area are limited to individuals engaged in subsistence or recreation activities. These individuals experience the landscape from fixed points while fishing or viewing wildlife and can be transient as they move through the landscape on foot, snowmachine, or aircraft. Small aircraft are used to provide access for fishing and hunting areas, and to a lesser extent, provide tours for nature viewing. Areas on the flight paths provide an expansive view of the landscape settings. During winter months, overland travel (via snowmachine) is common as the ground is frozen.

Amakdedori Port

The proposed Amakdedori port site is located on state lands designated for habitat use in the Kenai Peninsula Borough area boundary. The area located to the northern end of the Aleutian Range is considered wet shrub tundra, collecting runoff forming wet meadows, bogs, and hundreds of small lakes.

This area is noteworthy because of its close proximity to Katmai National Park and Preserve, the McNeil River State Game Sanctuary, Kamishak Bay, and the steep mountain peaks of Katmai National Park and Preserve.

As described in Section 3.5, Recreation, the McNeil State Game Refuge and Sanctuary is a premier destination for bear viewing and is home to one of the largest bear populations in Alaska. McNeil River Falls, which is located about a mile from the mouth of the McNeil River, slows the movement of salmon. Large numbers of brown bears can be seen at McNeil State Game Refuge and Sanctuary in early July through mid-August (ADF&G 2018b).

Viewer positons take into account the elevation and whether the viewer is in a fixed or a moving status. Private outfitters run single and multi-day commercial tours to Katmai National Park and

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Preserve from May through September. Single day adventure tours are offered from as far away as Anchorage, and as close as Dillingham.

Single day tours are almost exclusively accessed via aircraft. Visitors are flown into the park over the proposed project area to access bear viewing locations along the coastline, in the estuaries and up the stream corridors and over the glaciers of Four Peaks Mountain. Multi-day commercial tours either stage outside the park on large boats in Kamishak Bay, or at lodges in the park.

Transportation Corridor

The proposed transportation corridor is a linear system that cuts through the Nushagak-Big River Hills, and Nushagak-Bristol Bay Lowland physiographic units.

Iliamna Lake sits in the Bristol Bay Lowlands, southwest of Lake Clark National Park and Preserve and the northwestern edge of the Alaska Range. Iliamna Lake is approximately 100 miles long by 30 miles wide and is the largest fresh water lake in Alaska. The shallow shoreline is made up of long, fine edges, meandering inlets, and checkered islands. The low topographic relief provides extensive panoramic views extending across the tundra to Iliamna Lake. In the immediate foreground, the wet shrub tundra presents limited obstruction to vast views of the surrounding landscape. To the west is the Bristol Bay lowlands made of wet shrub tundra, marsh lands and hundreds of small lakes. Northern views feature the rounded mountains of the Nushagak–Big River Hills.

From Iliamna Lake the viewing position is either from the shoreline or from a boat on the water. Access to the surrounding landscape for commercial, subsistence, and recreation uses are through the main airport and community of Iliamna. Air transportation is a prominent form of travel in the area. From the elevated position in an aircraft, the viewer can relate to the expansive, undisturbed landscape setting. There is minimal lighting visible from the existing communities, which primarily seen in the winter months when there is limited daylight.

Flowing into Iliamna Lake from the north is the Lower Talarik Creek. The State of Alaska established the Lower Talarik Creek Special Use Area in 1999 as a high value resource for fish and wildlife habitat and subsistence harvest, as well as local and commercial recreation.

Lake Clark National Park and Preserve is located to the north and east of the transportation corridor access roads, at the northwestern edge of the Alaska Range. The park is the start of the long string of mountains tied together through glaciers and snow covered peaks. The features are viewed by aircraft while traveling in and out of the park, and local communities.

Roadhouse Mountain is a popular summer all-terrain vehicle (ATV) route that is located to the southwest of the mine site along the border of Lake Clark National Park and Preserve and the north end of Iliamna Lake. Expansive 360 degree panoramic views dominate the viewer experience from the top of Roadhouse Mountain. Significant visual features include Iliamna Lake and its distinct shoreline. The marshy wet lowlands and the river valleys of the Nushagak–Big River Hills dominate the foreground view while Sharp, Groundhog, and Kaskanak mountains frame the background views.

As shown in Figure 3.2-1A, the Alagnak River is designated as a Wild River in the Wild and Scenic River System. The Alagnak River is located about 30 miles west of the proposed mine site and 10 miles from Iliamna Lake. The Alagnak River provides opportunities for exemplary Alaska recreation due to remoteness, scenery, and sport fisheries. The Alagnak River is accessed by aircraft and from the west side of Katmai National Park and Preserve. The river has a reputation of being a world-class fishery and is considered to be one of the most popular fly-in fishing destinations in southwest Alaska.

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Natural Gas Pipeline

The pipeline would interface with the entire physiographic unit system tying the Cook Inlet–Susitna Lowlands to the Nushagak–Big River Hills. The Sterling Highway winds its way along the steep shoreline of Susitna Lowlands, terminating in the town of Homer. Vast panoramic views of the Cook Inlet and the rocky beaches are consistent along this linear corridor. The area is populated with residents, recreationists, and tourists and commercial operators using the Cook Inlet and Kenai Peninsula as base to access the natural and remote setting of Bristol Bay, Iliamna Lake, and the national parks and preserves.

3.11.5 Viewer Groups and Visual Sensitivity

There is seasonal variation in the number and type of viewers in the analysis area. According to Section 3.5, Recreation, a majority of visitors come to experience the "naturalness" and "abundance of resources" from May through October. This seasonal access corresponds with fishing and hunting activities and is the high season for recreation, tourism, and subsistence activities. Access to fishing and hunting grounds for recreation and subsistence use is from air travel, boat, and ATVs.

Although the majority of recreation and tourism occurs in the summer, ongoing subsistence activity and inter-village travel occur in the winter. As the wet grounds freeze, travel via snowmachine provides access to areas not available in the warmer seasons. Commercial activities consist of fisheries, recreation, and tourism.

Commercial recreation fishing lodges and camps are located on the Kvichak and Alagnak rivers. Several lodges on the main stem of the Alagnak, at the outlet of Nonvianuk Lake, and one on the Kulik River, provide guided fishing services. Together these lodges support the majority of the visitation for fishing in the area. Access to the fishing lodges and camps is through aircraft or motorized boat transportation. The elevated position provides a contextual experience, allowing the viewer to see broad expanses of the landscape.

Viewer groups in the analysis area include local residents and communities, as well as those engaging in subsistence activities, recreationists, and travellers.

Local Communities. Local communities are located throughout the analysis area. Communities along the shoreline of Iliamna Lake consist of Iliamna, Newhalen, Pedro Bay, Kokhanok, and Igiugig. To the north, at the edge of Lake Clark National Park and Preserve, is the community of Nondalton. The landscape is dominated by vast panoramic views of Iliamna Lake, with a backdrop of the mountains of the Big River Hills.

Subsistence Areas. See Section 3.9, Subsistence, for subsistence activity locations. Summer access to these areas is primarily by boat, aircraft, and ATV, while in winter travel predominantly follows the frozen rivers and tundra by snowmachine. Air travel is also prevalent in the throughout the year.

Recreation Areas. Recreation extends from the fishing camps along Iliamna Lake into Lake Clark National Park and Preserve, Katmai National Park and Preserve, and up the Koktuli River Watershed and into the tundra of the Big River Hills. Outfitters provide guide service from fishing and hunting camps to remote locations in the Big River Hills and fishing areas on Iliamna Lake and Kamishak Bay in the Cook Inlet.

Transportation Routes. Several transportation routes used by industry, local communities, and subsistence and recreation users are limited to air travel, boat, ATV, and snowmachine. Short unimproved roads connect the communities of Newhalen and Iliamna to Nondalton in the winter,

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although in the summer that route involves an impassable river crossing. In the winter, there are transportation routes across Iliamna Lake or along its shores between the lake communities.

Air Travel. Low-altitude local aircraft may fly over the project area during scheduled air service or in route to remote communities or hunting/fishing destinations.

3.11.6 Key Observation Points

A total of 12 KOPs were identified for use in the analysis as described in Table 3.11-1 and shown in Figure 3.11-1.

3.11.7 Soundscape

There is no known residential land use or other type of noise-sensitive receptor within 10 miles of the mine site and its facilities. However, subsistence users and recreationists may be temporarily present in any of the management areas in the analysis area. The existing ambient noise level is estimated to be comparable to "wilderness ambient" (see Section 3.19, Noise), and thus, 35 decibel day-night average noise level (L_{dn}).

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Table 3.11-1. Key Observation Points

KOP Number	Location	KOP Type	Viewer Group	Viewer Sensitivity	Project Component	Distance Zone	Viewer Geometry	Viewer Activity
1	Stariski Campground	Point	Recreationists; Tourists	High	compressor station; Amakdedori port	Foreground/ Middle ground	At Grade	Stationary
2	McNeil River State Game Refuge (Base Camp)	Area	Recreationists; Tourists	High	Amakdedori port; transportation corridor	Middleground	At Grade	Stationary - Transient
3	Iliamna Lake West	Area	Residents; Subsistence Users; Tourists	Moderate-High	north ferry terminal; transportation corridor	Foreground to Background	At Grade; Inferior	Stationary - Transient
4	Iliamna Lake East	Area	Residents; Subsistence Users	Moderate-High	south ferry terminal; transportation corridor	Foreground to Background	At Grade; Inferior	Stationary - Transient
5	Newhalen River	Linear	Residents; Subsistence Users; Recreationists; Tourists	High	mine site; transportation corridor	Background	At Grade	Transient
6	Roadhouse Mountain	Point	Recreationists; Subsistence Users	Moderate	mine site; transportation corridor	Middleground; Background	Superior	Stationary
7	Big Mountain	Point	Recreationists; Subsistence Users	Moderate	mine site; transportation corridor	Middleground; Background	Superior	Stationary
8	Nondalton South	Point	Residents	High	mine site; transportation corridor	Background	At Grade; Inferior	Stationary - Transient
9	Iliamna	Point	Residents	High	transportation corridor	Middle ground	At Grade	Stationary
10	Newhalen	Point	Residents	High	transportation corridor[1]	Background	At Grade	Stationary
11	Pedro Bay	Point	Residents	High	transportation corridor[1]	Foreground	At Grade	Stationary
12	Pile Bay	Point	Residents	High	transportation corridor[1]	Foreground	At Grade	Stationary

[1]Project components pertain specifically to Alternative 2 and 3

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Figure 3.11-1: Key Observation Points

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3.25 THREATENED AND ENDANGERED SPECIES

Note: This section will be updated with 2018 environmental baseline field survey results for the Draft EIS.

This section covers threatened and endangered species listed under the federal Endangered Species Act (ESA)(16 United States Code [USC] Section 1531 et seq.) of 1973 that occur, or are likely to occur, in the project area. The ESA provides for conservation of fish, wildlife, and plant species considered to be at risk of extinction (threatened or endangered) in all or a substantial portion of their ranges, and to conserve the ecosystems and habitats upon which they depend. The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share regulatory authority for implementing the ESA for threatened and endangered species potentially affected by the project and alternatives. The federally listed species known or with a potential to occur in the project area are described herein based on a review of scientific literature and wildlife surveys conducted as part of the environmental baseline survey program. Marine mammal species with NMFS oversight are discussed first, followed by the marine mammal and avian species managed by the USFWS.

Additionally, to comply with the ESA, the US Army Corps of Engineers (USACE) is in the process of preparing biological assessments to assess the potential impacts that a federal action may have on federally listed species or critical habitat. Note: The biological assessments and any resulting consultation documentation will provide a greater level of detail and will be referenced in this Environmental Impact Statement once complete.

3.25.1 Action Alternative 1 – Applicant's Proposed Alternative

3.25.1.1 Cook Inlet Beluga Whale

Stock Identification and Abundance

The Cook Inlet beluga whale stock (CIBS) occurs in the project area and is the most isolated of the five recognized beluga whale stocks (Laidre et al. 2000). The Cook Inlet beluga whale population was designated as depleted under the Marine Mammal Protection Act (MMPA) in 2000 (NMFS 2000a). In 2006, NMFS announced initiation of another Cook Inlet beluga whale status review under the ESA (NMFS 2006). NMFS issued a decision on the status review on April 20, 2007, concluding that the Cook Inlet beluga whale is a distinct population segment (DPS), in danger of extinction throughout its range; NMFS issued a proposed rule to list the Cook Inlet beluga whale as an endangered species (NMFS 2007a). The Cook Inlet beluga whale population was listed by NMFS as endangered under the ESA on October 17, 2008 (NMFS 2008b). NMFS published the Cook Inlet Beluga Whale Recovery Plan in 2016 (NMFS 2016b), as required by ESA, as well as the Final Conservation Plan (NMFS 2008a) as required by the MMPA. According to the annual abundance surveys conducted every June and August since 1999, the Cook Inlet beluga whale population has continued to decline at a rate of approximately 0.4 percent per year (Shelden et al. 2017).

Critical Habitat

NMFS announced the designation of critical habitat for the CIBS on April 8, 2011 (NMFS 2011, Figure 3.25-1). Critical habitat includes two areas: Critical Habitat Area 1 and Critical Habitat Area 2, which encompass approximately 7,804 square kilometers, collectively, of marine and estuarine habitat in Cook Inlet (NMFS 2011).

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Critical Habitat Area 1 consists of approximately 1,911 square kilometers and encompasses all marine waters of Cook Inlet north of a line connecting Point Possession and the mouth of Three Mile Creek, including waters of the Susitna, Little Susitna, and Chickaloon rivers below mean higher high water. Critical Habitat Area 1 does not overlap with the project area.

Critical Habitat Area 2 consists of approximately 5,892 square kilometers south of Critical Habitat Area 1, includes nearshore areas along western Cook Inlet and Kachemak Bay, and does overlap with the project area (Figure 3.25-1). Critical Habitat Area 2 includes fall and winter foraging and transit habitat for beluga whales, as well as spring and summer habitat for smaller concentrations of beluga whales (NMFS 2011). This area consists of less concentrated spring and summer beluga use; however, it includes known fall and winter feeding and transit areas.

Habitat Use and Distribution

The CIBS remains in Cook Inlet throughout the year (Goetz et al. 2012), although Rugh et al. (2010) documented a significant northward contraction in the early summer range of Cook Inlet beluga whales since the 1970s (Shelden et al. 2016; NMFS 2016b). During ice-free months, Cook Inlet beluga whales are typically concentrated near river mouths (Rugh et al. 2010). NMFS has conducted aerial surveys to estimate abundance of the beluga population in Cook Inlet every June, July, or both from 1993 to 2012. Biennial surveys began in 2014, which have included the project area. Results of these surveys indicate that the majority of Cook Inlet beluga whales have been concentrated in shallow areas near river mouths north of the project area, not occurring as frequently in the central or southern portions of Cook Inlet (Shelden et al. 2017). The concentration of beluga whales in the northernmost portion of Cook Inlet appears to be consistent from June to October (Rugh et al. 2000, 2004, 2005, 2006, 2007).

The primary foraging locations of the CIBS include the Susitna River Delta (the Big and Little Susitna rivers), Eagle Bay, Eklutna River, Ivan Slough, Theodore River, Lewis River, and Chickaloon Bay and River (NMFS 2008a; NMFS 2016b). All of these locations are considerably north of the project area. The CIBS feeds on a wide variety of prey species including eulachon (*Thaleichthys pacificus*) and gadids (e.g., Pacific cod [*Gadus macrocephalus*], Saffron cod [*Eleginus gracilis*], and walleye pollock [*Theragra chalcogrammal*]).

The fall/winter/spring distribution of this stock is not fully determined; however, there is evidence that most whales in this population inhabit upper Cook Inlet year-round (Muto et al. 2017). Satellite location data found 70 to 100 percent of 20 tagged whales were in the lower to middle inlet (i.e., south of Point Possession and the North Forelands) from January through March; these tagged whales rarely traveled south of the Forelands (Ezer et al. 2013), indicating that winter distribution is north of the project area. However, this small sample size may not be indicative of the population as a whole. The satellite telemetry used by NMFS to track the movements of belugas from September 2000 through March 2003 provided detail on seasonal movements and habitat use. None of the 14 belugas tagged in that study moved south of Chinitna Bay (Hobbs et al. 2005), which is notably north of the project area; however, this small sample size may not be indicative of the population as a whole. NMFS aerial surveys have not reported beluga whale sightings south of Tuxedni Bay (Shelden et al. 2015). In the fall, as anadromous fish runs begin to decline, belugas return to consume resident fish species (e.g., cod and groundfish) found in nearshore bays and estuaries. Groundfish include Pacific staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and yellowfin sole (*Pleuronectes asper*).

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Figure 3.25-1: Federally Listed Wildlife Species Habitat in Cook Inlet

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3.25.1.2 Humpback Whale

Stock Identification and Abundance

Humpback whales were designated as endangered under the ESA in 1973 (35 Federal Register [FR] 18319). No critical habitat has been designated for the humpback whale. In 2013, NMFS published a 90-day finding to identify the Central North Pacific population of humpback whales as a DPS under the ESA, and recommended that this DPS be delisted from the ESA based on population abundance (NMFS 2013c). On September 8, 2016, NMFS revised the listing status of the humpback whale. NMFS divided the globally listed species into 14 DPSs, removing the current species listing and replacing it with four endangered DPSs (Cape Verde Islands/Northwest Africa, Western North Pacific, Central America, and Arabian Sea), and one threatened DPS (Mexico). The remaining nine DPSs did not warrant listing. Critical habitat for the three DPSs found in US waters (Western North Pacific, Central America, and Mexico) has not been determined (NMFS 2016c). Only the Central North and Western North Pacific stocks could be present in the project area.

Habitat Use and Distribution

North Pacific humpbacks spend the winter mating and calving in the subtropical and tropical waters of the Northern Hemisphere and the Southern Hemisphere. In the spring, humpback whales migrate north and feed in the prey-rich, sub-polar waters of southern Alaska, British Columbia, and the southern Chukchi Sea. Individuals from the Western North Pacific (endangered), Hawaii (not listed under the ESA), and Mexico (threatened) DPSs migrate to areas near and potentially in the project area; however, most of the individuals that migrate to the Gulf of Alaska, Cook Inlet area are likely from the Hawaii DPS and not the Western North Pacific or Mexico DPSs (NMFS 2017c). The Mexican DPS breeds along the Pacific coast of Mexico, the Baja California Peninsula, and the Revillagigedos Islands, and feeds across a broad range from California to the Aleutian Islands (Muto et al. 2017). The Hawaii DPS breeds in the main Hawaiian Islands and feeds in most of the known feeding grounds in the North Pacific, particularly Southeast Alaska and northern British Columbia (Muto et al. 2017). The western North Pacific DPS breeds in the areas of Okinawa, Japan and the Philippines, and feeds in the northern Pacific, primarily off the Russian coast (Muto et al. 2017).

Humpback whales have been observed during the NMFS beluga whale aerial surveys conducted in Cook Inlet from 2000 to 2016. These surveys occurred in or adjacent to the project area, but most sightings occurred outside of the project area near Augustine, Barren, and Elizabeth islands (Shelden et al. 2013, 2015, 2017).

Primary foraging areas for humpback whales in the Gulf of Alaska region are south of the project area including the waters east of Kodiak Island (the Albatross and Portlock), waters along the southeastern side of Shelikof Strait, and in the bays along the northwestern shore of Kodiak Island (Ferguson et al. 2015).

3.25.1.3 Fin Whale

Stock Identification and Abundance

Fin whales were listed as endangered under the ESA in 1973 (35 FR 18319; July 30, 1970). No critical habitat has been designated for the fin whale. For management purposes, NMFS divided fin whales in United States waters into several management units or "stocks." One of these stocks, the Alaska (Northeast Pacific), occurs in Alaskan waters. The Northeast Pacific stock is seasonally found off the coast of the Chukchi and Bering seas and the Gulf of Alaska during the

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summer (Muto et al. 2017). The closest dedicated surveys aimed at estimating the abundance of fin whales occurred in the Gulf of Alaska in 2013 and 2015, with an abundance estimate of 3,168 fin whales (Rone et al. 2017). There are no abundance estimates for fin whales in Cook Inlet or the project area.

Habitat Use and Distribution

Fin whales range across the entire North Pacific Ocean from April to October in both pelagic and shelf waters, and especially use shelf edge upwelling and mixing zones. Fin whales have been acoustically detected in the Gulf of Alaska year-round, with highest acoustic detections rates from August through December, and lowest call occurrence rates from February through July (Moore et al. 2006; Stafford et al. 2007). In July and August, they concentrate in the Bering Sea / eastern Aleutian area (Mizroch et al. 2009) and are regularly seen in the Gulf of Alaska (Muto et al. 2017). Results from a study off the Kenai Peninsula and the central Aleutian Islands indicate that fin whales occurred primarily from the Kenai Peninsula to the Shumagin Islands, but were abundant near the Semidi Islands and Kodiak (Zerbini et al. 2006).

Fin whale sightings in Cook Inlet are rare (NMFS 2017b). The NMFS beluga whale aerial surveys from 1993 through 2016 report only 10 fin whales scattered offshore between Anchor Point and Cape Douglas, mostly near the mouth of Cook Inlet and south of the proposed natural gas pipeline corridor. Panigada et al. (2006) found water depth to be the most significant variable in describing fin whale distribution, with more than 90 percent of sightings occurring in waters deeper than 2,000 meters. As fin whales are very rare in Cook Inlet and specifically in the project area, they are not expected to be encountered during project operations.

In January and February, fin whales have been sighted in the Aleutian area and Bering Sea. In March, concentrations of fin whales have been seen around Kodiak Island and in the Bering Sea. In April, sightings are generally concentrated around Kodiak Island. In May through July, sightings indicate high use of the Gulf of Alaska, and in June and July the Bering Sea; August data show fewer sightings in the Gulf of Alaska. In September and October, sightings indicate that fin whales are in the Bering Sea and the Gulf of Alaska. In November, fin whales are still observed in the Kodiak region, while in December, sightings in Alaska have not been documented (Uhen and Kwon 2007).

3.25.1.4 Steller Sea Lion

Stock Identification and Abundance

Steller sea lions inhabit waters of Alaska year-round; however, large numbers of individuals may widely disperse from concentrated breeding areas and rookeries after the breeding season (late May through early July), likely to access seasonally important prey resources (Muto et al. 2017). NMFS listed the Steller sea lion as a threatened species under the ESA in 1990 (NMFS 2013b). In 1997, NMFS designated the Western DPS as endangered (NMFS 1997a). The 2016 Stock Assessment Report lists a minimum population estimate of 50,983 for the Western DPS (Muto et al. 2017). NMFS reclassified Steller sea lions as two DPSs under the ESA based on genetic studies and phylogeographical analyses from across the sea lions' range (NOAA 1997a). The Eastern DPS consists of sea lions breeding to the east of Cape Suckling (144°W longitude), and the Western DPS consists those animals breeding to the west of Cape Suckling (144°W longitude; NMFS 2013a). This document only discusses the Western DPS Steller sea lions, as the range includes the project area in the lower Cook Inlet. Animals in this region are further classified for purposes of population analysis into regions; those animals that typically use the waters surrounding the project area are part of the central Gulf of Alaska region.

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Habitat Use and Distribution

Steller sea lions occur in lower Cook Inlet, south of Anchor Point around the offshore islands, and rarely north of Nikiski (NMFS 2008c; Shelden et al. 2017). Steller sea lions have been observed during NMFS beluga aerial surveys conducted in Cook Inlet from 2000 to 2016; sightings of Steller sea lions occurred outside of the project area on land in the mouth of Cook Inlet (i.e., Elizabeth and Shaw Islands to the south of the project area) (Shelden et al. 2013, 2015, 2017).

NMFS designated Steller sea lion critical habitat on August 27, 1993 (NMFS 1993). Steller sea lion critical habitat does not overlap with the project area.

The Western DPS of Steller sea lion habitat extends along Alaska's southern coast (NMFS 2008c) including the coastline adjacent to the Amakdedori port site; therefore, individuals from the Western DPS are expected to occur in the project area, as the center of abundance for the Western DPS is considered to extend from Kenai to Kiska Island (NMFS 2008c). The range of the Western DPS includes 38 rookeries and hundreds of haul-out sites.

Steller sea lions feed on a variety of demersal, semi-demersal, and pelagic prey indicative of a broad spectrum of foraging behaviors likely based primarily on prey availability (NMFS 2010). Greg and Trites (2008) determined that juvenile and female Steller sea lions particularly forage relatively close to rookeries and haul-outs, all south of the project area.

The few surveys of Steller sea lions from 2004 to 2008 show little pronounced spatial patterns other than consistent occurrence in the Iniskin Islands. Steller sea lions were observed hauling-out on islands near and off the mouths of Iliamna and Iniskin bays (ABR 2011d), north of the project area. Historical data from aerial herring surveys conducted by the Alaska Department of Fish and Game (ADF&G) in the spring suggest a long-standing preference of the Iniskin Islands by sea lions, with smaller numbers of animals scattered elsewhere throughout the study area. In offshore waters, Steller sea lions occurred along the open coastline between Iliamna and Iniskin bays, north of the proposed project port location at Amakdedori Point.

3.25.1.5 Northern Sea Otter

Stock Identification and Abundance

Three sea otter populations are recognized in Alaska: Southcentral, Southwest, and Southeast. Two stocks occur in Cook Inlet, the Southwest and the Southcentral; the dividing line between the two stocks is an arbitrary line in a north-south direction in the middle of Cook Inlet. Only the Southwest stock occurs in the proposed Amakdedori port area. The Southwest DPS was listed as threatened under the ESA on August 5, 2005 (NMFS 2005) and is classified as a strategic stock under the MMPA (USFWS 2014a). The Southwest DPS range extends along the western shore of lower Cook Inlet (USFWS 2014a). Critical habitat management Unit 5, Kamishak Bay, is the only unit that includes the project area (Figure 3.25-1). The estimated size of Unit 5 is approximately 6,752 square kilometers (USFWS 2009). The greatest proportion of the critical habitat area within the project area is comprised of waters within the 20 meter isobath.

USFWS conducted aerial surveys in May 2017 in two density units, which apply to the proposed Amakdedori port site, Kachemak Bay, and western Cook Inlet (which includes the upper west Cook Inlet and Kamishak Bay) (K. Klein, personal communication 2018). In Kamishak Bay, USFWS counted 364 sea otters, and estimated a density of 2.3 otters per square kilometer. The western Cook Inlet survey yielded a total western lower Cook Inlet abundance estimate of 10,737 sea otters.

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Critical Habitat

In 2009, USWFS designated five management units as critical habitat (Figure 3.25-1). Critical habitat includes approximately 15,164 square kilometers, all of which is located in Alaska. For management purposes, USWFS designated five units as critical habitat. Critical habitat defined in Unit 5 includes the entire nearshore marine environment ranging from the mean high tide line to the 20 meter depth contour as well as waters occurring within 100 meters of the mean high tide line (USFWS 2009). The proposed Amakdedori port site's location is in sea otter critical habitat Unit 5.

USFWS's determination of the primary constituent elements (PCEs) for the Southwest DPS of northern sea otters and the status of each PCE in the action area are summarized below.

Habitat Use and Distribution

Northern sea otters occur year-round throughout lower Cook Inlet (Garshelis 1987), which spans southwest from the North Forelands to the inlet mouth between English Bay and Cape Douglas. The Southwest DPS range is along the western shore of lower Cook Inlet (USFWS 2014d). Critical Habitat Unit 5, Kamishak Bay, Alaska Peninsula, contains all of the PCEs essential for the conservation of the Southwest Alaska DPS of sea otters (USFWS 2009). The greatest proportion of the critical habitat area within the project area is comprised of waters within the 20 meter isobath.

1. PCE 1: Shallow, rocky areas where marine predators are less likely to forage, which are waters less than 2 meters in depth.
2. PCE 2: Nearshore waters that may provide protection or escape from marine predators, which are those up to 100 meters from the mean high tide line.
3. PCE 3: Kelp forests that provide protection from marine predators, which occur in waters less than 20 meters in depth.
4. PCE 4: Prey resources within the areas identified by PCEs 1, 2, and 3 that are present in sufficient quantity to support the energetic requirements of the species

Sea otters forage in nearshore waters at depths of around 40 meters in the nearshore benthos of rocky and soft-sediment communities (Marshall 2014), which includes all of Kamishak Bay and therefore the proposed Amakdedori port site. Approximately 40 percent of sea otters' daily activity is spent foraging, and they primarily feed on benthic invertebrates, including mussels, crabs, urchins, sea cucumbers, and clams.

NMFS beluga whale aerial surveys have documented the presence of sea otters in the project area, especially in Kamishak Bay (including Augustine Island) where the proposed project port at Amakdedori Point is located. In the greater Kamishak Bay area, groups of over 30 animals were observed in multiple survey years (Shelden et al. 2013, 2015, 2017).

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3.25.1.6 Steller's Eider

The Alaska population of Steller's eider (*Polysticta stelleri*), federally listed as threatened, is the only federally listed avian species known to occur in the project area. This section focuses on known locations of Steller's eiders in relation to project components and includes the Amakdedori port (in the larger area known as Kamishak Bay), Iliamna Bay, and the eastern side of Cook Inlet near Anchor Point. The species is only present in these areas of Cook Inlet during the late fall, winter, and early spring. The project is located outside of the geographic breeding range for Steller's eider and does not support the coastal tundra habitats where the species breeds. The mine site, transportation corridor, and natural gas pipeline corridor (excluding the portion in the Cook Inlet) lack suitable breeding, wintering, staging, molting, or foraging habitat for Steller's eider. Steller's eiders may occasionally fly through the mine site and terrestrial portions of the transportation corridor and natural gas pipeline corridor while moving between Cook Inlet, the Alaska Peninsula, and the western coast of Alaska. No Steller's eiders were documented during any biological surveys in the mine site, therefore the species is considered absent from the mine site.

There are three main Steller's eiders breeding populations, with the majority breeding in Russia (30,000 to 50,000 of the Russian Atlantic population, and 50,000 to 100,000 of the Russian Pacific population), and a much smaller Alaska-based breeding population (around 500 individuals) (USFWS 2011, 2012). The Alaska-based breeding population was listed as federally threatened on June 11, 1997 (USFWS 2011). The Alaska-based breeding population nests primarily along the Arctic Coastal Plains around Utqiaġvik with a small sub-population nesting in the Yukon-Kuskokwim Delta (Y-K Delta). There is no USFWS designated critical habitat for Steller's eider anywhere in the project area; therefore, critical habitat for this species will not be discussed.

Steller's eiders do not breed within several hundred kilometers of the project area, and therefore a discussion of the species' reproductive ecology is not included herein. In addition to areas in Russia and the Alaska Peninsula, Steller's eiders molt and spend the winter in nearshore waters in lower Cook Inlet, which includes the project area. As such, this section is focused on Steller's eiders' fall molt, winter distribution, and migration as it relates to those areas in lower Cook Inlet that may be impacted by the project.

Fall Molt and Winter Distribution

Of the Steller's eiders that winter and molt in the Cook Inlet, the USFWS assumes that less than one percent is from the listed Alaska-based breeding population (USFWS 2008b). After breeding in the Arctic Coastal Plains and Y-K Delta, Steller's eiders move to marine waters where they mix with birds from the Russian-based breeding population and undergo a three week flightless molt. Adult birds undergo a flightless molt in fall with most birds molting in a few lagoons on the north side of the Alaska Peninsula and along the western Alaska coast (USFWS 2011). During the fall molt (from late July until late October; USFWS 2002), eiders undergo a complete molt including all flight feathers, which renders them flightless. In a study conducted along the north side of the Alaska Peninsula, sub-adult birds were flightless first, followed by adult males, and then adult females, with eiders maintaining spatial and temporal sex and age class separation during the flightless period (Petersen 1981). While some Steller's eiders remain in their molting areas throughout winter, other birds disperse to coastal waters that include southern Cook Inlet. Molting and wintering Steller's eiders occur in the western part of Cook Inlet and the adjacent nearshore coastal waters, including the project area (Figure 3.25-1).

The preferred marine habitat for Steller's eiders includes marine waters up to 9 meters deep, the associated invertebrate communities, and where present, eelgrass beds along with their

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associated flora and fauna (USFWS 2000). Molting areas tend to be characterized by extensive shallow areas with eelgrass beds and intertidal sand flats and mudflats. Since Steller's eiders prefer to winter in shallow waters, they are usually found within 400 yards of shore, except where shallows extend farther offshore in bays and lagoons or near reefs (USFWS 2002). The coastal/nearshore areas of Kamishak Bay have been designated a global Important Bird Area by the Alaska Audubon Society, due in part to the presence of Steller's eiders (National Audubon Society 2013).

During a historical aerial and boat survey conducted in Cook Inlet during February of 1994, 1,363 Steller's eiders were reported in nearshore areas of Kamishak Bay from McNeil Cove to Iniskin Bay (Agler et al 1995). During a more recent survey from 2004 to 2006, 24 satellite transmitter-tagged Steller's eiders captured during winter at Kodiak Island documented molting and wintering in Kamishak Bay. Approximately 20 percent of the birds used Kamishak Bay as a molting area and at least two birds molted on two consecutive years, suggesting some site fidelity. In both 2005 and 2006, an estimated minimum of 2,500 birds were counted molting in Kamishak Bay based on aerial photography. Most birds were associated with a large reef (Douglas River Shoals) near the southern end of Kamishak Bay, approximately 27 kilometers south of Amakdedori port (Rosenberg et al 2016). During aerial transect surveys in 2005, approximately 2,000 molting Steller's eiders were observed in the Douglas River Shoals in late August and September. During winter surveys in 2005, 3,921 Steller's eiders were recorded in southern Kamishak Bay (Larned 2006). Data from 2004 and 2005 indicate that the number of Steller's eiders in Cook Inlet increases in early winter, peaks in January and February, and then declines from early March through mid- to late April as birds depart on spring migration for their breeding grounds (Larned 2006).

Based on data from Larned (2006), Steller's eiders appear to be concentrated both north and south of Amakdedulia Cove, with low numbers of Steller's eiders around Amakdedulia Cove. Specific surveys of Kamishak Bay (Larned 2006), including Amakdedulia Cove, indicated that low numbers of Steller's eiders may occasionally be found in the area during winter months. Two groups of between one and 37 Steller's eiders were observed during aerial surveys from February 11 to 16, 2004 in the area around Amakdedulia Cove (Larned 2006). Several more groups between one and 30 Steller's eiders were observed in the same area from March 11 to 17, 2004. Only one group between eight and 30 birds were detected during April 12 and 13, 2004, indicating that most wintering Steller's eiders had left the area by mid-April in 2004. Surveys conducted that following December (December 4 through 8, 2004), detected several small flocks of Steller's eiders between one and 60 birds. Surveys were repeated again from January through April 2005, with similar results of small flocks of Steller's eiders using the nearshore waters of Amakdedulia Cove (Larned 2006). Most eider flocks were located closer to Bruin Bay, near the northern part of Amakdedulia Cove.

Steller's eiders are known to occur on the east side of Cook Inlet around Anchor Point, where the natural gas pipeline would extend from Cook Inlet and connect to an existing pipeline north of Anchor Point. Historical survey data from Larned (2006) indicate that several small flocks of less than 100 birds each winter around Anchor Point. The actual number of birds and location varies throughout the winter, often depending upon the extent of the sea ice cover, but most small flocks congregate around an extensive shoal south of Anchor Point. Clusters of flocks of Steller's eiders were observed in locations ranging from Anchor Point, to north of Ninilchik, with numbers of birds ranging from 1,141 in January 2005, to 2,370 in March 2001 (Larned 2006). During surveys in winter 2004 and 2005, the average monthly mean was 463 Steller's eiders in the area located north of Anchor Point to Ninilchik, and 1,713 Steller's eiders in Kamishak Bay (Larned 2006). The number of eiders peaked in January and drastically decreased by early April. Groups of eiders were consistently observed around an extensive shoal south of Anchor

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Point. Therefore, Steller's eiders are present in both western and eastern parts of Cook Inlet during the winter months. By mid- to late April, most Steller's eiders have left Cook Inlet for their northern breeding grounds.

Migration

The path of migration for Steller's eiders to and from Cook Inlet during the fall molt and throughout the winter and early spring is not known. However, Steller's eiders' bird strikes on towers and power lines at Togiak, Naknek, and King Salmon (including inland sites) indicate that there may be some overland pathway that includes Iliamna Lake (USFWS 2008b). Satellite transmitter data from 2004 to 2006 documented Steller's eiders molting in Kamishak Bay from mid- to late August, until mid- to the end of November, and through the end of January (Rosenberg et al 2016). Prior to departure for the breeding grounds and migrating north, Steller's eiders stage in several locations along the Alaska Peninsula. In 2005, Rosenberg et al (2016) documented two satellite transmitter-tagged birds that staged in Kamishak Bay from March 25 to May 8. These data indicate that Kamishak Bay is used by the same individual eiders during consecutive years and that the species use the bay for molting, wintering, and staging. The birds then fly to the north side of the Alaska Peninsula (exact route is unknown) and up the west coast of Alaska before heading to Russia, the Y-K Delta, and the Arctic Coastal Plains.

3.25.2 Action Alternative 2 – North Road and Ferry

Action Alternative 2 is described in Chapter 2. The species discussed in this section have broad distributions and are expected to occur in similar densities throughout the marine environment as described above. Where there are anticipated differences between species' distribution and habitat use across the preferred alternative and the other alternatives, further discussion is provided.

3.25.2.1 Cook Inlet Beluga Whale

During NMFS beluga whale aerial surveys in Cook Inlet, a small group of two belugas was seen in Iniskin Bay on June 4, 1994 (Rugh et al. 2000). ADF&G biologists have occasionally recorded belugas in the area of Iliamna and Iniskin bays during herring surveys from 1978 to 2002; in 1997, an ADF&G biologist recorded a group of 12 to 15 belugas off the mouth of Iniskin Bay, with only a few individuals seen in Iliamna Bay (ABR 2011d). In September 2007, ADF&G biologists recorded 25 to 30 beluga whales in inner Chinitna Bay (ABR 2011d), and 12 beluga whales were seen in upper Iniskin Bay (ABR 2011d).

Several studies have been conducted in the marine environment that would potentially be affected by Alternative 2, where beluga observations were recorded. Twelve beluga whales were seen in Iliamna, Iniskin, and Chinitna bays, as well as near the Iniskin Islands. Beluga whales were also recorded along the eastern shore of Iliamna Bay in October 2008 (ABR 2011d). Cook Inlet beluga whales are expected to occur in similar densities throughout the marine environment across the proposed alternatives.

3.25.2.2 Humpback Whale

Humpback whales have been observed during NMFS Cook Inlet beluga whale aerial surveys from 2000 to 2016. Although a number of humpback whale sightings occurred mid-inlet between the Iniskin Peninsula and Kachemak Bay, most sightings occurred in the area near the Augustine, Barren, and Elizabeth Islands (Shelden et al. 2013, 2015, 2016), which are to the

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south of Alternative 2 suggesting less habitat use in the marine environment that would be potentially affected by Alternative 2.

3.25.2.3 Fin Whale

Fin whales are rarely observed in Cook Inlet, with most sightings near the mouth of Cook Inlet. They have not been observed in the Alternative 2 marine environment, and are not expected to occur in the area.

3.25.2.4 Steller Sea Lion

Sightings of large congregations of Steller sea lions during NMFS beluga whale aerial surveys occurred outside of the project area, on land in the mouth of Cook Inlet (e.g., Elizabeth and Shaw Islands)(NMFS 2008b). During studies conducted in Iliamna and Iniskin bays, Steller sea lions were rarely observed, with only a few animals being recorded. The majority of the observations occurred in April (ABR 2011d). The few records of Steller sea lions show little pronounced spatial patterns other than consistent occurrence in the Iniskin Islands. Historical data from aerial herring surveys conducted by the ADF&G in the spring suggest a long-standing preference of the Iniskin Islands by sea lions, with smaller numbers of animals scattered elsewhere throughout the study area. In the offshore waters, Steller sea lions occurred in the open coastline between Iliamna and Iniskin bays (ABR 2011d). Steller sea lions are expected to occur in similar densities throughout the marine environment across the proposed alternatives. Alternative 2 is farther away than the closest known Steller sea lion rookery location on Shaw Island, located at the southwest entrance of Kamishak Bay.

3.25.2.5 Northern Sea Otter

Sea otters were commonly observed during studies in Iliamna and Iniskin bays and were recorded in the project area primarily during winter, with only scattered individuals recorded during the spring and summer. Sea otters occurred broadly throughout the study area, but most otters were found outside Iniskin and Iliamna bays in offshore habitats and among islands at the mouths of the bays (ABR 2011d). Sea otters were observed moving into the sheltered bays when the sea ice lessened starting in March, and were seen in higher densities offshore in the winter. Otters were scarce in Iniskin Bay, although a few were recorded in Iliamna Bay during winter months (ABR 2011d); this trend is speculated to continue for all bays on the west side of Cook Inlet. The number of sea otters observed in Iliamna and Iniskin bays increased from fall to mid-winter, presumably as the weather in the exposed Kamishak Bay deteriorated. Numbers dropped in the spring as otters began moving into Kamishak Bay to summer. This data suggest that the use of the marine environment associated with Alternative 2 varies seasonally, but that the total number of otters using this environment does not vary. Sea otters are expected to occur in similar densities throughout the marine environment across the proposed alternatives.

3.25.2.6 Steller's Eider

Historical surveys during winter 1994 in lower Cook Inlet by Agler et al (1995) documented 435 Steller's eiders ranging among Oil, Iniskin, and Iliamna bays. Larned (2006) consistently observed Steller's eiders at the mouth of Iniskin Bay (between 160 and 435 individuals) between December 2004 and early spring 2005. Surveys conducted by ABR regularly recorded Steller's eiders in Iniskin and Iliamna bays during winter and early spring based on helicopter surveys conducted from 2006 through 2008 (ABR 2011d). Additional helicopter-based surveys were conducted from 2009 to 2012, with the focus on nearshore marine waters from Iniskin Bay south to Bruin Bay (ABR 2015c). These additional surveys confirmed results from previous surveys, but also documented two flocks totalling 2,462 eiders between Ursus Cove and Bruin

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Bay along Fortification Bluff (west of Augustine Island) in December 2012 (ABR 2015c). Steller's eiders were found primarily in offshore waters in the middle portions of Iniskin and Iliamna bays, and occasionally in nearshore waters. Most birds occurred around a shallow shoal in the lower part of Iniskin Bay and in the middle of the channel between Cottonwood and Iliamna bays. Generally, several hundred Steller's eiders were present from late November to early December, through the end of March to early April. In 2006, the highest count was 300 Steller's eiders in early December; numbers increased to 676 Steller's eiders during the surveys in early March 2007. In 2008, the highest number recorded was in early March with 275 eiders. Between 2006 and 2008, the total number of Steller's eiders observations (which may represent some of the same individuals) ranged from 790 in 2006, 1,636 in 2007, and 808 in 2008 (ABR 2011d). Surveys from 2009 through 2012 documented between 1,231 to 265 eiders, respectively. The fluctuation in Steller's eider numbers during winter is likely related to the location and presence of sea and shorefast ice, in addition to severity and timing of fall storms (which push eiders from southerly locations into more northerly protected bays). Therefore, surveys conducted by Agler et al (1995), Larned (2006), and ABR (2011d, 2015c) indicate that Iniskin and Iliamna bays provide overwintering habitat for several hundred Steller's eiders.

3.25.3 Action Alternative 3 – North Road Only

There are no new geographical areas covered by this alternative, thus no new information for any of the federally listed species. All information for this alternative is previously covered by Alternatives 1 and 2, above.

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4.4 ENVIRONMENTAL JUSTICE

As described in Section 3.4, Environmental Justice (EJ), Executive Order 12898 requires federal agencies to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations," including Alaska Native communities. Furthermore, Executive Order 12898 also requires the protection of populations with differential patterns of consumption of fish and wildlife. The Council on Environmental Quality (CEQ) defines this as differences in rates or patterns of subsistence consumption by minority, low-income, and Indian tribes, as compared with rates and patterns of consumption by the general population (CEQ 1997).

The CEQ's "Environmental Justice: Guidance Under the National Environmental Policy Act" (1997) and the Environmental Protection Agency's (EPA's) *Promising Practices for EJ Methodologies in NEPA Reviews* (2016) were developed to provide agencies with a process for identifying environmental justice communities and addressing potential impacts on those communities. According to these guidance documents, the basic components of an environmental justice assessment should include:

- A demographic assessment of the affected communities to identify minority and low-income populations that may be present.
- An integrated assessment to determine whether any adverse impacts would disproportionately affect minority or low-income populations.
- An opportunity for the public to participate in the process, including community, minority, low income, and tribal participation.

CEQ guidance indicates that when determining whether natural and physical effects on the environment are "high and adverse," agencies are to consider if environmental effects are significant (as that term is defined by the National Environmental Policy Act [NEPA] lead agency), and if those significant effects are or may have an adverse impact on minority populations, low-income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group (CEQ 1997).

CEQ guidance also indicates that when determining whether human health effects, which may be measured in risks and rates, are high and adverse, agencies are to consider if those risks and rates are significant or above generally accepted norms (CEQ 1997).

In addition, the EPA recommends considering the following factors in the determination of disproportionately high and adverse human health effects (EPA 2007, 2016):

- Proximity and exposure to chemical and other adverse stressors, including impacts commonly experienced by "fence-line" communities.
- Unique exposure pathways, including subsistence fishing, hunting, or gathering in minority and low-income populations.
- Multiple or cumulative impacts, including exposure to several sources of pollutions or pollutants from single or multiple sources.
- Physical infrastructure, including inadequate housing, roads, or water supplies in communities.
- Non-chemical stressors, including chronic stress related to environmental or socioeconomic impacts.

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The project's potentially affected population includes those who live, work, subsist, visit, or recreate in the environmental impact statement (EIS) analysis area. Section 3.4, Environmental Justice, presents racial and ethnic characteristics and poverty status for the population in the EIS analysis area that would be affected during construction and operations of the project. In the EIS analysis area, Igiugig, Iliamna, Kokhanok, Newhalen, Nondalton, and Pedro Bay, all of which are communities in the Lake and Peninsula Borough, meet the CEQ definition of minority and/or low-income communities (see Section 3.4, Environmental Justice). Many of the potential physical, environmental, and social effects would be experienced more frequently and intensely by residents of those communities, given their proximity to multiple project components and their use of the area and nearby areas for subsistence harvests.

Section 4.3, Needs and Welfare of the People—Socioeconomics, Section 4.9, Subsistence, and Section 4.10, Health and Safety, describe impacts to affected communities and the population in the EIS analysis areas for these resources. This environmental justice analysis considers information presented in those sections, considers the distribution of adverse and beneficial impacts throughout the EIS analysis area, and concludes whether there may be disproportionately high and adverse effects to minority or low-income communities. Potential impacts include:

- Changes in job opportunities, employment, income, and the cost of living;
- Changes in access to subsistence resources and resource availability;
- Changes in sociocultural conditions; and
- Changes in health and well-being, including the risk of exposure to hazardous chemicals and bioaccumulative compounds, and non-chemical stressors.

4.4.1 No Action Alternative

The No Action Alternative assumes that the mining operations at the Pebble deposit are not undertaken. The Pebble Limited Partnership (PLP) would not move forward with the project. Under the No Action Alternative, PLP would have the same options for exploration activities that currently exist (PLP 2018-RFI-073). Therefore, it is anticipated that PLP would continue current activities in an effort to identify future opportunities.

PLP has employed local community members at the site during the exploratory phase of the project. In particular, the communities closest to the exploration area in the Lake and Peninsula Borough, likely including Nondalton, Iliamna, and Newhalen, provide the greatest proportion of the local workforce. These communities are identified as minority and/or low-income communities. Similarly, these communities and others harvest caribou, large land mammals and other subsistence resources in the vicinity of project components. Scoping comments suggested that exploration activities have affected wildlife populations (caribou) used for subsistence.

4.4.1.1 Needs and Welfare of the People – Socioeconomics

Under the No Action Alternative, it is anticipated that PLP would continue current activities in an effort to identify future opportunities. As a result, the current number of direct and indirect jobs would remain the same and there would be no impact on income, economic stability, or social integrity in minority and low-income communities.

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4.4.1.2 Subsistence

The extent of effects on subsistence would be localized impacts near the exploration area. PLP would still be permitted to perform exploratory activities and research at the site and would be expected to do so.

Resource availability would not change from the conditions present during exploration activity and environmental studies at the mine site. Minority and low-income communities in the vicinity of the exploration area would bear a disproportionate share of effects associated with subsistence. It is likely that existing trends in subsistence resources and uses would continue, and that these communities would continue to harvest subsistence resources; the effects of the No Action Alternative would not be high or adverse.

4.4.1.3 Health and Safety

As discussed in Section 4.10, Health and Safety, human health impacts associated with the potential loss of some jobs and decrease in household income could result in potential increases or decreases in social determinants of health, such as income, psychosocial stress, substance abuse, and family stability. These impacts would mainly affect those workers in minority and low-income communities in the Lake and Peninsula Borough in the communities closest to the exploration area. Therefore, the human health effects of the No Action Alternative would potentially be disproportionately "high and adverse." In addition, a decision not to permit the project may relieve some stress in affected communities associated with concerns regarding project development and perceived impacts on salmon.

4.4.2 Action Alternative 1 – Applicant's Proposed Alternative

Alternative 1 assumes that construction and operations at Pebble Mine would occur as described in Chapter 2, Alternatives. This section presents the potential for Alternative 1 to result in high and adverse effects on minority and low-income populations. Both adverse and beneficial effects are summarized below.

4.4.2.1 Needs and Welfare of the People

As discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics, Alternative 1 would provide economic benefits to individuals, families, and communities in the form of increased incomes, year-round employment, and steady income, and would reduce the impacts of the seasonal fluctuations in employment. Under Alternative 1, the number of employees would increase to about 2,000 during the 4-year construction phase, and 850 during the 20-year operation of the mine. For the operations phase, PLP has estimated that 250 employees would come from the surrounding communities, with 50 of these employees coming from communities connected to the project site by road (PLP 2018-RFI 027).

The communities closest to the mine site include Nondalton, Iliamna, and Newhalen, and Kokhanok on the southern shore of Iliamna Lake; these communities are also proximal to the proposed transportation corridor. These communities are minority and low-income communities and have a lower median household income and a higher unemployment rate than Anchorage, as well as Alaska as a whole. Although PLP has generated exploration-related employment for residents of villages throughout the Lake and Peninsula Borough and broader Bristol Bay region over the past decade, the communities surrounding Iliamna Lake and connected by road, have provided the greatest proportion of the local workforce. It is anticipated that residents of the communities surrounding Iliamna Lake would continue to provide the majority of the local workforce for construction and operations of the project. Therefore, employment through the project would have beneficial economic effects on minority and low-income communities.

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The Lake and Peninsula Borough is not connected by road to the rest of the state and has few roads, contributing to an extremely high cost of living. As described in Section 4.12, Transportation and Navigation, Alternative 1 would result in the construction of roads and ports. Although the road and port would have limited access, PLP has stated that they would work with all local communities to identify the best solutions for controlled-access use of the road and ferry for community transportation (PLP 2018-RFI 027). Additional access would be coordinated between the State of Alaska, the Lake and Peninsula Borough, PLP, and landowners. Because the higher cost of living in rural areas is primarily associated with high transportation cost of food, fuel, and other supplies (ADOL 2008, 2017a), Alternative 1 has the potential to reduce transportation costs of materials and goods to the transportation corridor area's potentially affected communities (Kokhanok, Iliamna, Newhalen, and potentially Nondalton). Reduced transportation costs would lower the cost of living for these communities, many of which are minority and low income.

Communities adjacent to the natural gas pipeline would have the opportunity to connect to the pipeline. Natural gas would likely be less expensive than diesel heating oil, which could lower the cost of living once equipment (e.g., furnace, water heater) is converted to natural gas.

The summer-only ferry variant would likely shift some of the positions held by community members from year-round to seasonal, which would also lower the overall income earned by community members that stays in the region compared to year-round ferry operations (see Section 4.3, Needs and Welfare of the People—Socioeconomics for additional information).

The increase in job opportunities, year-round or seasonal employment, steady income, and lower cost of living described above would have beneficial impacts on the EIS analysis area, especially for communities in the Lake and Peninsula Borough, during construction and operations of the project. Therefore, the effects of Alternative 1 on the needs and welfare of the people would not be "high or adverse."

4.4.2.2 Subsistence

As discussed in Section 4.9, Subsistence, communities closest to project infrastructure would be the most affected by changes in resource availability. These include the minority and/or low-income communities of Iliamna, Newhalen, Pedro Bay, Igiugig, Nondalton, and Kokhanok. Communities in the Nushagak River drainage and the Kvichak River drainage below Iliamna Lake would experience little to no impact on resource availability or access to resources during routine operations.

Project construction—and to a lesser extent, operations—would impact the availability and abundance of traditional and subsistence resources through habitat loss; behavioral disturbance to resources from increased noise and human activity; fugitive dust deposits on vegetation; concerns about contamination of resources; avoidance of traditional use areas; and increased costs and times for traveling to more distant areas. The communities closest to project infrastructure and transportation activities, including the mine site, transportation corridor, the ferry and terminals, port, and airports, would be the most affected by changes in resource availability. These communities include the minority and low-income communities of Iliamna, Newhalen, Pedro Bay, Igiugig, Nondalton and Kokhanok. There is a potential for a small population increase in communities closest to the mine site, which could introduce a slight amount of resource competition to the area. Adaptive strategies for the harvest of resources would likely maintain harvest levels for affected communities, but potentially at the cost of additional time and money. In general, the impacts of subsistence resource availability on minority and low-income communities would potentially be adverse.

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Construction and operations of the project would result in changes in access to subsistence resources. During the construction period, access to the area around project components would be inhibited or restricted. This would impact a number of communities located near project infrastructure that use this land for subsistence fishing, hunting, gathering, education of youth on subsistence traditions, and other cultural and customary practices. Construction of linear features, such as the roads, pipeline, and ice-breaking ferry corridor, could interrupt travel to resources or communities on the other side of the linear features, and create some unease with hunting in the vicinity of these construction activities and facilities, resulting in adverse effects on those minority and low-income communities.

Once constructed, the natural gas pipeline corridor right-of-way and the transportation corridor roads would likely have a positive impact on minority and low-income communities by providing access to subsistence resources, because these cleared routes would facilitate overland all-terrain vehicle and snowmachine travel under approved conditions. During operations, PLP would work with local communities to identify safe, practicable ways for residents to use the access roads, such as scheduled, escorted convoys for private vehicle transport. However, the Iliamna Lake ice-breaking ferry could disrupt winter travel over the frozen lake by potentially adding to travel time and increasing fuel expenditures. This could potentially result in adverse effects on minority and low-income communities that rely on winter travel over the lake. In addition, the open water in the ferry's wake would present a safety hazard for subsistence users. PLP would work with communities (and supply funding) to provide for the marking and maintenance of snowmachine trails between communities across Iliamna Lake when lake ice is thick enough to support such traffic (see Chapter 5, Mitigation). The ferry could also facilitate access to subsistence resources by transporting local residents and their vehicles across the lake. The summer-only ferry operations variant would not have impacts to lake travel in the winter.

Impacts on access to subsistence resource harvest areas would occur for the minority and/or low-income communities located closest to the project components: Nondalton, Iliamna, Newhalen, Pedro Bay, Igiugig, and Kokhanok. Impacts associated with access around the mine site for subsistence use and harvest would be most concentrated near the mine site area and would diminish with distance. Impacts of the transportation corridor and associated uses to use areas would vary depending on the activity of the user and the location of the use area in relation to the transportation corridor. The effects would be localized in geographic extent; as there is availability of alternate areas in traditional and currently used subsistence areas for activities for these communities and mitigation for access to areas near or around project components is planned (PLP 2018-RFI 078). Therefore, the impacts of access to subsistence resource harvest areas for minority and low-income communities would not be high and adverse (see Section 4.9, Subsistence, for a detailed discussion of impacts related to changes in access of subsistence resource harvest areas for the communities of Nondalton, Iliamna, Newhalen, Pedro Bay, Igiugig, and Kokhanok).

Project construction and operations would be expected to increase employment opportunities for local residents, particularly for those living in communities surrounding Iliamna Lake. Many subsistence activities depend on cash income to pay for the tools, ammunition, equipment, maintenance, and fuel used to harvest, process, and store subsistence resources. When cash incomes increase, subsistence production often increases as a result. Therefore, new employment opportunities would benefit minority and low-income communities.

Changes in harvest participation are a leading indicator of cultural changes. The level of participation may be affected by changes in resource abundance and quality, season and bag limits, changes in physical access, changes in cultural perceptions of resources (e.g., fish and animals are seen as tainted/contaminated, or water is seen as polluted) and the times and funds

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available for subsistence activity change. Year-round and rotational employment could reduce the opportunity for subsistence users to harvest and process resources, as well as reduce their ability to pass on skills and knowledge to the next generation. Households and communities would need to adjust to new roles of subsistence labor, changes in sharing networks, and to possible changes in harvest levels. Project employment or related regional out-migration (see Section 4.3, Needs and Welfare of the People—Socioeconomics for additional information) could cause the reduction or loss of subsistence production from high-harvesting households. In typical communities, 30 percent of households harvest 70 percent of the resources and there is a high level of sharing that occurs among households (Wolfe et al. 2009). If high-harvesting households leave the community or reduce their production, it could have an impact on the rest of the community and nearby communities from sharing. The loss of high-harvesting households and a reduction in sharing could result in adverse impacts on minority and low-income communities. However, the effects could be reduced with planned periods of leave options during subsistence harvest periods.

4.4.2.3 Health and Safety

Section 4.10, Health and Safety, describes impact ratings for the health effects category under Alternative 1. These effects determinations take into account impact-reducing design features proposed for the Pebble Project.

The Pebble Project would increase household incomes, employment rates, and education attainment, and those economic benefits would likely result in an improvement to the overall health and well-being of residents living in the communities from which the workforce for the project would be employed. Many of the communities that would experience these beneficial effects are minority and low-income communities. Economic benefits to these communities would also likely result in increased diet options and lower regional food costs, and therefore food security; positive effects on affordability of healthcare services; and improvements to mental health, including lowering suicide rates. The benefits would be more apparent in the small, rural Lake and Peninsula Borough communities where even minor changes in their economies could have a measureable impact on their overall health and well-being.

Impacts on psychosocial health, family stress, other unintentional injuries (e.g., falls, poisoning), and intentional injuries (e.g., suicide) would be both beneficial and adverse. Beneficial effects could include increased funding from the borough to maintain or improve community health services, and additional disposable income for project employees. Adverse health consequences may be related to decreased access to healthcare due to emergency situations, and increased stress and infectious (communicable) disease rates during the construction phase. For those individuals that harvest fish as part of subsistence, commercial fishing, and commercial recreation activities, there may be additional stress over perceived impacts to fish and the quality of the fish resource, associated with construction and operation of the project. This would constitute an adverse impact.

Impacts on access to and quantity of subsistence resources could be both adverse and positive to health and safety, and many of these effects would be most noticeable to minority and low-income communities in close proximity to the mine site and transportation corridor. Potential negative impacts could be from actual or perceived decreases in access to, availability, and/or quality of subsistence recourses, which could also adversely impact community health/well-being and cultural identity. Subsistence users would likely adjust the seasonal round, resource use areas, and species composition of harvest resources to target resources that would be less affected by project activities. Although these adaptive approaches would likely sustain harvest levels for affected communities, they may increase expenses and time needed to harvest subsistence resources. However, positive benefits may also occur since increased incomes and

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employment can positively affect subsistence harvest levels and participation including making procurement of hunting and fishing equipment more affordable. These would positively impact communities' health for reasons discussed above.

Other key health outcomes considered are the potential for increased risk of exposure to hazardous chemicals in air, soil, groundwater, surface water, and sediment. Exposure to hazardous chemicals could occur through inhalation, physical (i.e., dermal) contact, and direct or indirect ingestion (e.g., direct exposure through incidental soil ingestion). See Section 4.10, Health and Safety, for information on risk of exposure.

4.4.3 Action Alternative 2 – North Road and Ferry Alternative

4.4.3.1 Needs and Welfare of the People

The impacts of Alternative 2 on employment and income would likely be the same as the impacts of Alternative 1. It is anticipated that residents of the communities surrounding Iliamna Lake would continue to provide the majority of the local workforce for construction and operations of the project under Alternative 2. The increase in job opportunities, year-round employment, and steady income under Alternative 2 would have the same beneficial impacts on minority and low-income communities as Alternative 1. However, there would be impacts to Pedro Bay instead of Kokhanok.

The impacts on the cost of living of Alternative 2 would likely be the same as the impacts of Alternative 1 for the communities of Nondalton, Iliamna, and Newhalen. However, because the north access road and ferry would be located at the north end of the lake around Pedro Bay as opposed to the mid-lake region, the cost of living benefits provided to Kokhanok under Alternative 1 would not be provided under Alternative 2; however, Pedro Bay, which is considered a minority community, would benefit from reduced transportation costs that would lower the high cost of living.

4.4.3.2 Subsistence

Impacts from the changes in resource availability, access to subsistence resources, and the sociocultural dimension of subsistence under Alternative 2 would be the same as Alternative 1, except for the differences described below. As described above for Alternative 1, impacts could result in both beneficial and adverse effects on minority and low-income communities.

Changes in resource availability along the transportation corridor and the natural gas pipeline for Alternative 2 would be similar to Alternative 1. Disturbance to and displacement of subsistence resources would occur at approximately the same levels. The primary difference is that there are fewer communities using the area in between Pile Bay and Williamsport for subsistence, and so the magnitude of the impact would be much less than Alternative 1.

Under Alternative 2, there would be an overland pipeline right-of-way from Pile Bay to the mine site. This could introduce some competition to subsistence users from recreational sport hunting and fishing, although because of the relatively low recreational use of the area, the magnitude of the effects would be expected to be small. Therefore, there would be no adverse effects on minority and low-income communities from competition for subsistence resources.

Under Alternative 2, the north access road and ferry terminal would be located at the north end of the lake as opposed to the mid-lake region. The transportation corridor and ferry would cause more disruption of access to subsistence resource areas for residents of Nondalton, Iliamna, Newhalen, and Pedro Bay and less disruption of access for residents in Igiugig and Kokhanok. In addition, there would be a higher number of overlapping use areas along the road corridor of

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Alternative 2 from Pedro Bay to the mine site, and so the magnitude of the impact would be slightly greater than Alternative 1. However, similar to Alternative 1, there is availability of alternate areas within traditional subsistence areas for activities for these communities. Therefore, the impacts of access to subsistence resource harvest areas for minority and low-income communities would not be high and adverse.

4.4.3.3 Health and Safety

Alternative 2 would have the same health and safety impacts on minority and low-income communities as Alternative 1. Alternative 2 would provide the same economic benefits and improvements to the overall health and well-being of residents, would have the same beneficial and adverse impacts on psychosocial health, family stress, and unintentional and intentional injuries, and would have the same beneficial and adverse impacts on access to and quantity of subsistence resources as described above for Alternative 1.

Alternative 2 would have the same potential for increased risk of exposure to hazardous chemicals in air, soil, groundwater, surface water, sediment, and bioaccumulative compounds as Alternative 1. However, this alternative includes a natural gas pipeline variant along the north road, which eliminates any potential hazards and impacts at the Iliamna Lake segment during the construction phase under Alternative 1. See Section 4.10, Health and Safety, for information on risk of exposure.

4.4.4 Action Alternative 3 – North Road Only

4.4.4.1 Needs and Welfare of the People

The impacts of Alternative 3 on employment and income would likely be the same as the impacts of Alternative 1. It is anticipated that residents of the communities surrounding Iliamna Lake would continue to provide the majority of the local workforce for construction and operations of the project under Alternative 3. The increase in job opportunities, year-round employment, and steady income under Alternative 3 would have the same beneficial impacts on minority and low-income communities as Alternative 1. There would be less potential for interference with winter access across Iliamna Lake, as there are no ferry operations under Alternative 3.

The impacts on the cost of living of Alternative 3 would likely be the same as the impacts of Alternative 1 for the communities of Nondalton, Iliamna, and Newhalen. However, because the north access road would be located at the north end of the lake around Pedro Bay as opposed to the mid-lake region, the cost of living benefits provided to Kokhanok under Alternative 1 would not be provided under Alternative 3; however, Pedro Bay, which is considered a minority community, would benefit from reduced transportation costs that would lower the high cost of living.

Alternative 3 includes a variant for a concentrate pipeline. The impacts of the variant would likely be a decrease in employment of truck operators and increased employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease, which would decrease the overall income and employment in the potentially affected communities. However, the variant would still provide some economic benefits to minority and low-income communities by providing job opportunities, year-round employment, and steady income to a lesser extent than Alternative 1.

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4.4.4.2 Subsistence

Impacts from the changes in resource availability, access to subsistence resources, and the sociocultural dimension of subsistence under Alternative 3 would be the same as Alternative 1, except for differences described below. As described above for Alternative 1, these impacts could result in both beneficial and adverse effects on minority and low-income communities.

Changes in resource availability along the transportation corridor and the natural gas pipeline for Alternative 3 would be similar to Alternative 1. Disturbance to and displacement of subsistence resources would occur at approximately the same levels. The primary difference is that there are fewer communities using the area between Pile Bay and Williamsport for subsistence, and so the magnitude of the impact would be much less than Alternative 1.

Under Alternative 3, there would be a road from Pile Bay to the mine site. This could introduce some competition to subsistence uses of resources from recreational sport hunting and fishing, although the road beyond Pile Bay would have similar controlled access as described under Alternative 1, therefore the magnitude of the effects would be expected to be small.

Access to subsistence resource use areas would be similar to Alternative 2 for residents of Nondalton, Iliamna, Newhalen, and Pedro Bay. Igiugig and Kokhanok have not reported using the areas inland of the east end of Iliamna Lake along the transportation corridor for subsistence harvest. Similar to Alternative 1, there is availability of alternate areas in traditional subsistence areas for activities for these communities. Therefore, the impacts of access to subsistence resource harvest areas for minority and low-income communities would not be high and adverse.

4.4.4.3 Health and Safety

Alternative 3 would have the same health and safety impacts on minority and low-income communities as Alternative 1. Alternative 3 would provide the same economic benefits and improvements to the overall health and well-being of residents, would have the same beneficial and adverse impacts on psychosocial health, family stress, and unintentional and intentional injuries, and would have the same positive and adverse impacts on access to and quantity of subsistence resources as described above for Alternative 1.

Alternative 3 would have the same potential for increased risk of exposure to hazardous chemicals in air, soil, groundwater, surface water, sediment, and bioaccumulative compounds as Alternative 1. This alternative includes a natural gas pipeline variant along the north road, which eliminates any potential hazards and impacts at the Iliamna Lake segment during the construction phase under Alternative 1. See Section 4.10, Health and Safety, for information on risk of exposure.

Alternative 3 includes a variant for a concentrate pipeline. This variant would likely decrease employment of truck operators and increase employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease. However, this variant would still provide some economic benefits and improvements to the overall health and well-being of residents as described for Alternative 1, but to a lesser extent.

Because Alternative 3 does not involve operation of a ferry across Iliamna Lake, there would be no potential safety hazards to winter transportation by local residents across Iliamna Lake compared to Alternatives 1 and 2.

4.4.5 Summary of Key Issues:

See Table 4.4-1 for a summary of key issues.

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Table 4.4-1: Summary of Key Issues for Environmental Justice

Impact	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Socioeconomics	Economic benefits to minority and low-income communities. Alternative 1 would increase job opportunities, create year-round employment, and provide steady income. Minority and low-income communities nearest the project components (i.e., Newhalen, Iliamna, Nondalton, and Kokhanok) would likely see the greatest impacts in employment and income. Reduced transportation costs would likely lower the high cost of living for the communities near the transportation corridor (i.e., Newhalen, Iliamna, Nondalton, and Kokhanok). The natural gas pipeline could also provide opportunities for adjacent communities to lower their cost of living.	Same as Alternative 1 except that the cost of living benefits would not be provided to Kokhanok, but would be provided to Pedro Bay instead.	Same as Alternative 2 except that the impacts of the concentrate pipeline variant would likely be less to employment and income. There would still be economic benefits to minority and low-income communities from job opportunities, year-round employment, and steady income, but to a lesser extent.
Subsistence	Changes in resource availability would be adverse for minority and low-income communities. Impacts to access of subsistence resource harvest areas for minority and low-income communities would not be high or adverse. Employment opportunities could provide additional revenue to support subsistence activities.	Same as Alternative 1, except that the transportation corridor and ferry would cause more disruption of access to subsistence resource areas for residents of Iliamna, Newhalen, and Pedro Bay, and less disruption of access for residents in Igiugig and Kokhanok.	Same as Alternative 1 for resource availability, access to subsistence resources. Access to subsistence resource use areas would be the similar to Alternative 2 for residents of Iliamna, Newhalen, Pedro Bay and, Nondalton.
Health and Safety	Alternative 1 would provide economic benefits and improvements to the overall health and well-being of residents, especially those in the Lake and Peninsula Borough. Beneficial and adverse impacts on minority and low-income communities from psychosocial and family stress, injuries.	Same as Alternative 1.	Same as Alternative 1, except that the impacts of the concentrate pipeline variant. This variant would provide the same economic benefits and improvements to the overall health and well-being of residents as described for Alternative 1, but to a lesser extent.

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Table 4.4-1: Summary of Key Issues for Environmental Justice

Impact	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Beneficial and adverse impacts on minority and low-income communities related to access to and quantity of subsistence resources. Increased risk of exposure to hazardous chemicals in air, soil, groundwater, surface water, sediment, and bioaccumulative compounds would not be high or adverse. Perceived impacts could cause additional stress for local residents harvesting salmon for subsistence, commercial fishing, and recreational fishing purposes.		

4.4.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to cumulatively contribute to disproportionately high and adverse effects on minority and low-income communities. The geographic area for the cumulative effects consideration consists of those who live, work, subsist, or recreate in the EIS analysis area and the broader region that would be affected by the RFFAs. These areas include the Kenai Peninsula Borough, Bristol Bay Borough, and Municipality of Anchorage, which are not considered minority or low-income communities as a whole, as well as the Lake and Peninsula Borough and Dillingham Census Area, which are considered minority and low-income communities (see Section 3.4, Environmental Justice).

This cumulative analysis considers information presented in Section 4.3, Needs and Welfare of the People—Socioeconomics, Section 4.9, Subsistence, and Section 4.10, Health and Safety. These sections took into consideration RFFAs as identified Section 4.1 and Appendix K4.1. The specific RFFAs with the greatest potential to cumulatively impact socioeconomic, subsistence, and health and safety conditions are identified in those respective sections.

4.4.6.1 Needs and Welfare of the People

RFFAs identified in Section 4.3, Needs and Welfare of the People—Socioeconomics, would provide economic benefits to individuals, families, and communities in the form of increased incomes, year-round employment, and steady income.

The RFFAs related to transportation and infrastructure improvements could have a cumulative impact on potentially affected communities in the EIS analysis area. For example, the Lake and Peninsula Borough transportation projects, such as the Williamsport-Pile Bay Road upgrade and the Nondalton-Iliamna River Road corridor and bridge, would reduce high transportation costs and lower the cost of living for minority and low-income communities in the Lake and

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Peninsula Borough. These benefits would be anticipated to be greater if the project is implemented.

The proposed Donlin Gold Project would contribute to regional economic benefits similar to those of the Pebble project. Employees would likely come from the city of Bethel as well as other parts of the Bethel Census Area, the Kusilvak Census Area, and the Yukon-Koyukuk Census Area. Therefore, these benefits would not directly contribute to economic benefits for minority and low-income communities in the EIS analysis area. From a statewide perspective, both the Donlin Gold Project and the Pebble Mine Project could create a need for support services and secondary/indirect jobs associated with such services in the region.

The proposed Diamond Point rock quarry would be located near the convergence of Cottonwood and Iliamna bays. This project could increase job opportunities and provide steady income to minority and low-income communities in the Lake and Peninsula Borough and the Kenai Peninsula Borough.

Since community members of the potentially affected communities participate in commercial fishing activities, any changes in regulations under the RFFA could result in impacts. However, there would be less of an impact to the potentially affected communities around Iliamna Lake than to the coastal communities where commercial fishing is a much larger part of the economy.

4.4.6.2 Subsistence

Cumulative subsistence impacts could result from changes in availability and abundance of subsistence resources and access to harvest areas. Each of the RFFAs identified in Section 4.9, Subsistence, contribute to the increased potential for impacts on subsistence resources, as each involves some aspect of activity that can lead to the disturbance and displacement of subsistence resources at those locations. Actions that expand mineral development near the Pebble deposit and around Iliamna Lake contribute to landscape-level effects where there is increased noise and atmospheric pollution, along with an increased volume of people. This can lead to an invasion of privacy and solace during subsistence activities and adverse impacts on subsistence resources and practices that are central to cultural belief systems and the life way of local people and could have far reaching social and physical health impacts. Effects such as habitat fragmentation, noise, and increased access for recreational hunting and fishing could also disrupt subsistence cycles, and may result in direct impacts on resource gathering areas. Local residents have observed that there has already been a loss to subsistence opportunities and the way of life due to planning and exploration activities that are associated with the Pebble Project can cause changes in distribution to local wildlife and disturbance from helicopter traffic. Subsistence users in Nondalton noted in Fall (2006) that their community uses traditional trapping and hunting areas near Groundhog Mountain that could see development. Many of the communities in the region that would experience these adverse effects are minority and low-income communities.

These types of effects are also applicable to an increase in resource development actions along the coast of Cook Inlet, which may impact the associated subsistence resources and access to sites that are important for harvest, as well as religious and spiritual practices central to the health and relationship of people to the land they inhabit. The cumulative impacts would be long term to permanent and geographically broad in scope (at a regional level).

4.4.6.3 Health and Safety

The RFFAs considered in Section 4.10, Health and Safety, have the potential to increase household incomes, employment rates, and education attainment; those economic benefits would likely result in an improvement to the overall health and well-being of residents living in

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the communities from which the workforce would be employed. Many of the communities in the region that would experience these beneficial effects are minority and low-income communities. The benefits would be more apparent in the small, rural communities, where even small economic changes could have a measureable impact on their overall health and well-being.

The Pebble Project has the potential to result in increased health impacts, especially from increased impact durations from RFFAs, possible increased releases into the environment, and affected community exposure to potentially hazardous materials. The Pebble Project buildout would extend the operations of the project for an additional 78 years; however, this project is not part of the proposed action and would require additional permits and separate NEPA compliance. Project area communities with pre-existing industrial pollutants and contaminated sites have the potential to add to the cumulative health impacts from exposure to potentially hazardous materials in communities where PLP proposes construction and operations activities. It would be expected that mitigation measures would be used to minimize or mitigate exposure (e.g., avoidance of ADEC contaminated sites, protective clothing and equipment, dust suppression).

The capital improvement-related RFFAs and rural development projects have the potential to add to positive impacts to any affected minority and low-income communities (e.g., road improvement and increased safety) in the EIS analysis area.

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4.10 HEALTH AND SAFETY

As discussed in Section 3.10, Health and Safety, and Appendix K4.10, the Alaska Department of Health and Social Services (ADHSS 2015) defines health as "the reduction in mortality, morbidity and disability due to detectable disease or disorder and an increase in the perceived level of health." Because health is a multi-dimensional concept with physical, mental, and social aspects, the proposed project may affect aspects of health at a localized or individual level, a community level, a regional level, or a statewide level, depending on the nature and extent of the effect. Potential impacts include:

- Potential for increases and/or decreases in household incomes, employment rates, education attainment, stress and family stability, food costs, food security, and access and quantity of subsistence resources.
- Potential for increases and/or decreases of unintentional accidents and injuries, intentional injury (suicide rate), infectious diseases, and non-communicable and chronic diseases, as well as access to healthcare.
- Potential for increases and/or decreases in illnesses or exacerbation of illnesses due to potential direct or indirect exposure to hazardous materials associated with the project.

Human health impacts were evaluated in accordance with National Environmental Policy Act (NEPA) practice, and generally followed the ADHSS methodology. The terminology used for descriptions and rankings of health impacts in this section generally correspond to the terms and ratings used in the ADHSS Health Impact Assessment (HIA) guidance. A characteristic of this guidance is that the individual dimensions of health impacts (i.e., nature of health effect, duration, magnitude, extent, and likelihood) are each given their own descriptive terms for the estimated relative degree of occurrence; and a final consolidated health impact rating for each health metric or health effects category (HEC) is numerical (Category 1 through 4). The guidance suggests that impact ratings of 2 or higher may markedly increase or decrease illness and injury rates, and may warrant interventions, if negative (ADHSS 2015).

In accordance with NEPA practice and ADHSS (2015), the scope of this assessment is limited to affected communities "outside of the fence," (outside the mine site and other mine-related components). Accordingly, this assessment does not include a direct evaluation of the anticipated workforce safety and health issues ("inside the fence") because the project would be governed by the Occupational Safety and Health Administration and the Mine Safety and Health Administration regulations in the areas where project activities would occur. However, this assessment does consider "crossover issues," such as health impacts where workers may be housed in work camps, or where workforce behaviors result in interactions/overlap with the affected communities.

The analysis of potential consequences to human health for the affected communities using ADHSS (2015) criteria is consistent with the principles of analysis required by NEPA. The first step is to determine the impact score, which takes into consideration four impact dimensions: severity of potential health effects (which can be positive or negative, and considers the need for intervention if the impact is negative), duration, magnitude, and extent of the impact (Table 4.10 1). Each component of the impact dimension is assigned a score of 0, 1, 2, or 3 to derive the overall impact rating score.

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Table 4.10-1: Step 1 – Impact Dimensions

Step 1				
Impact Rating Score	**A – Health Effect (+/-)**	**B – Duration**	**C – Magnitude**	**D – Extent**
0	Effect is not perceptible	Less than 1 month	Minor	Individual cases
1	(+/-) minor benefits or risks to injury or illness patterns (no intervention needed)	Short-term: 1 to 12 months	Those impacted will: 1) be able to adapt to the impact with ease and maintain pre-impact level of health; and 2) see noticeable but limited and localized improvements to health conditions.	Local: small limited impact to households
2	(+/-) moderate benefits or risks to illness or injury patterns (intervention needed, if negative)	Medium-term: 1 to 6 years	Those impacted will: 1) be able to adapt to the health impact with some difficulty and will maintain pre- impact level of health with support; or 2) experience beneficial impacts to health for specific populations; some maintenance may still be required.	Entire Potentially Affected Communities; village level
3	(+/-) severe benefits or risks: marked change in mortality and morbidity patterns (intervention needed, if negative)	Long-term: more than 6 years/life of project and beyond	Those impacted will: 1) not be able to adapt to the health impact or to maintain pre-impact level of health; or 2) see noticeable major improvements in health and overall quality of life.	Extends beyond Potentially Affected Communities; regional and statewide levels

Source: ADHSS 2015

Next, the severity and likelihood of each type of impact is evaluated, and those ratings are used to develop an overall significance impact rating category of 1, 2, 3, or 4 (Table 4.10-2). Recommended actions for negative impacts are listed by category below:

- Category 1: Actions to reduce negative impacts are not needed.
- Category 2: Recommend that decision-makers assess whether actions to reduce negative impacts would be helpful for negative impacts.
- Category 3: Recommend that decision-makers develop and implement actions to reduce negative impacts.
- Category 4: Strongly recommend that decision-makers develop and implement actions to reduce negative impacts.

Table 4.10-2: Steps 2, 3, and 4 – Likelihood and Overall Impact Ratings

Step 2	Step 3						
Impact Severity Level (Sum Scores from Step 1 to choose range)	**Likelihood Rating**						
	Extremely Unlikely (<1%)	**Very Unlikely (1-10%)**	**Unlikely (10-33%)**	**About as likely as Not (33-66%)**	**Likely (66-90%)**	**Very Likely (90-99%)**	**Virtually Certain (>99%)**
1-3	♦	♦	♦	♦	♦♦	♦♦	♦♦

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Table 4.10-2: Steps 2, 3, and 4 – Likelihood and Overall Impact Ratings

Step 2	Step 3						
Impact Severity Level (Sum Scores from Step 1 to choose range)	Likelihood Rating						
	Extremely Unlikely (<1%)	Very Unlikely (1-10%)	Unlikely (10-33%)	About as likely as Not (33-66%)	Likely (66-90%)	Very Likely (90-99%)	Virtually Certain (>99%)
4-6	♦	♦	♦	♦♦	♦♦	♦♦	♦♦♦
7-9	♦♦	♦♦	♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦
10-12	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦
Step 4	Impact Rating						
	Category 1 = ♦		Category 2 = ♦♦		Category 3 = ♦♦♦		Category 4 = ♦♦♦♦

Source: ADHSS 2015

For each alternative, the consequences of the project activities are described with regard to relevant issues and concerns associated with the eight HECs described in the HIA guidance (ADHSS 2015). Although all components were considered, the project was primarily analyzed as a whole because effects could not be attributed to a single component (i.e., there was overlap of affected communities for multiple components). Finally, the health consequences are summarized by HEC and for the alternative as a whole and expressed as Category 1, 2, 3, or 4. ADHSS does not provide narrative descriptions for these numeric impact category rankings, and only suggests that they be used to propose recommendations for actions. The detailed analysis for the below conclusions can be found in Appendix K4.10.

4.10.1 No Action Alternative

It is difficult to project the No Action Alternative health status 24 years into the future due to the many factors and variables that could impact the health of communities in the Environmental Impact Statement (EIS) analysis area in the future; therefore, current baseline condition is assumed as a reasonable proxy to qualitatively evaluate the future in the No Action Alternative. As a result, no quantitative discussion (i.e., rating) is presented for the No Action Alternative.

As discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics, the No Action Alternative would have direct impacts related to the current PLP exploration activities; PLP exploration-related employment and income, which were realized in the Bristol Bay region over the previous decade, would decrease or continue at the same rate. Human health impacts associated with the loss of jobs and decrease in household income for communities closest to the mine site (Nondalton, Iliamna, and Newhalen) would be expected to be minor in magnitude, with changes relative to baseline; and potential increases or decreases in social determinants of health, such as income, psychosocial stress, substance abuse, and family stability. There would be no impact to communities in the lower Bristol Bay watershed, such as Dillingham, other than removing uncertainty about the fate of this project. Other health factors would likely be similar to current conditions (baseline), such as potential rates of accidents and injuries, communicable and non-communicable diseases, exposure to hazardous constituents, and access to healthcare services.

Health impacts from the No Action Alternative would be imperceptible, or those impacted would be able to adapt to the impact with ease and not require medical intervention. Direct effects would be largely similar to baseline levels of health. There would be no contribution to

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cumulative effects on human health. Current health conditions and trends, as described in Section 3.10, Health & Safety, would continue in the EIS analysis area.

4.10.2 Action Alternative 1 – Applicant's Proposed Alternative

This section presents the environmental consequences to community health for Alternative 1. This evaluates potential impacts (both positive and negative) to the affected communities from the Pebble Project during all three phases. The HIA does not evaluate human health impacts from potential spills or failures. The potential health impacts from exposure to chemicals due to a spill or failure are unanticipated, and are typically short-term, acute exposures. Section 4.27, Spill Risk, evaluates impacts from potential spills or failures, as well as rates, volume, and likelihood of occurrence. Project design features, Standard Permit Conditions, and best management practices would be implemented for preventing and reducing impacts from potential spills (see Chapter 5, Mitigation and Monitoring). The detailed analysis for conclusions can be found in Appendix K4.10.

As discussed in Section 3.10, Health and Safety, the communities potentially affected by the project range from small, remote rural communities, to larger regional and urban centers. The eight communities in the Lake and Peninsula Borough identified would be most closely affected by multiple project components. In addition, three Nushagak/Bristol Bay communities in the Dillingham Census Area were also identified as potentially affected by project components. The Kenai Peninsula Borough and Anchorage would also be potentially affected economically by all components of the project in a relatively small way. In addition, more communities have been identified as using the EIS analysis area for subsistence; therefore, these communities could also be potentially affected by all of the components of the project (see Section 3.9, Subsistence).

Appendix K4.10 presents the detailed discussion of consequences per HEC, as well as associated uncertainties with the HIA. The consequences for all project components would be expected to be more noticeable in smaller, rural communities, and less perceptible in Anchorage. The following HECs were evaluated for potential negative (adverse) and positive impacts from the project in Appendix K4.10:

- **HEC 1: Social Determinants of Health**, which evaluated potential impacts to household incomes, employment and education attainment, as well as potential impacts to psychosocial stress of individuals and to family stress and stability.
- **HEC 2: Accidents and Unintentional Injuries**, which covered potential impacts to rates of accidents and unintentional injuries (e.g., transportation accidents, falls, fires, drownings, food poisoning).
- **HEC 3: Exposure to Potentially Hazardous Materials**, which evaluated the potential for increases and decreases in illness, or exacerbation of illnesses commonly associated with exposure to site-related chemicals of potential concern (COPCs) through inhalation, physical (dermal) contact, and direct or indirect ingestion (e.g., incidental soil ingestion or ingestion of impacted subsistence foods).
- **HEC 4: Food, Nutrition, and Subsistence Activity**, which evaluated the potential impacts on food costs, food security, and access to and quantity of subsistence resources.
- **HEC 5: Infectious Diseases**, which covered the potential impacts on rates of infectious diseases, including sexually transmitted infections, to the affected communities, as well as workers living at the on-site camp.

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- **HEC 6: Water and Sanitation**, which evaluated the potential impacts of increases in morbidity and mortality rates due to the availability and quality of water and sanitation services.
- **HEC 7: Non-Communicable and Chronic Diseases**, which covered the potential impacts of increases in non-communicable and chronic morbidity, as well as mortality rates (e.g., cancer, cardiovascular, and respiratory).
- **HEC 8: Health Services and Infrastructure and Capacity**, which evaluated the potential impacts on access to routine healthcare, as well as potential impacts to healthcare due to large-scale emergency situations and overwhelming local and regional healthcare capacities.

Table 4.10-3 presents a summary of the impact ratings for these HECs under Alternative 1. Human health impacts resulting from Alternative 1 would affect primarily low income and minority communities, as discussed in Section 3.3, Needs and Welfare of the People—Socioeconomics, and Section 4.4, Environmental Justice.

Table 4.10-3: Summary of Alternative 2 Impact Levels by HEC

Health Effects Categories[1]	Summary Impact Category	Beneficial (+)or Adverse (-)Rating
HEC 1: Social Determinants of Health		
Household incomes, employment, and education attainment	3	+
Psychosocial stress (substance abuse and suicide as indicators)	2	+/-
Family stress and instability	1-2	+/-
HEC 2: Accidents and Injuries		
Unintentional accidents and injuries morbidity and mortality rates due to transportation/navigation	2	-
Other unintentional injury (falls, poisoning, etc.)	2	+/-
Increase in Intentional Injury (suicide rate)	2	+/-
HEC 3: Exposure to Potentially Hazardous Materials		
Air quality impacts	1	-
Surface water and sediment impacts	1	-
Groundwater impacts	1	-
Soil impacts	1	-
Bioaccumulated chemicals in subsistence foods	1	-
HEC 4: Food, Nutrition, and Subsistence Activity		
Regional food costs and food security	2	+
Access to and quantity of subsistence resources	1-2	+/-
HEC 5: Infectious Disease		
Rates of sexually transmitted infections such as gonorrhea and chlamydia	1-2	-
Rates of respiratory diseases such as influenza and pneumonia	1-2	-
Foodborne illness and zoonotic disease	1	-
HEC 6: Water and Sanitation		

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Table 4.10-3: Summary of Alternative 2 Impact Levels by HEC

Health Effects Categories[1]	Summary Impact Category	Beneficial (+)or Adverse (-)Rating
Access to potable water and sanitation facilities	1	-
HEC 7: Non-communicable and Chronic Disease		
Cancer, respiratory, and cardiovascular morbidity rates due to changes in diet, nutrition, and physical activity	2	+/-
Cancer, respiratory, and cardiovascular morbidity and mortality rates due to exposure from hazardous chemicals	1	-
HEC 8: Healthcare Services Infrastructure and Capacity		
Access to routine healthcare	1	+/-
Access to healthcare due to large-scale emergency situations	2	-

Overall, the economic and health benefits of improvements in economic status would be considered substantial for the residents of the affected communities. Project-related economic benefits are rated Category 3, and would be expected to result in benefits to many supplementary aspects of human health, including increased income, employment, and educational opportunities. Economic benefits would also likely have positive effects on affordability of healthcare services and improving mental health, including the possibility of lowering suicide rates. In addition, municipal revenue likely generated by the project would lead to the maintenance and improvement of community health services and facilities. No negative impacts at a rating of Category 3 were identified.

Benefits that are rated as Category 2 include reduced food costs relative to income and increased food security for those members of the community who would realize economic benefits from the project. Negative health consequences rated as Category 2 may be related to potential transportation-related accidents and injuries for all phases (due to accidents by air, water, and surface transportation), decreased access to healthcare due to emergency situations, and increased infectious (communicable) diseases rates during construction. Impacts on psychosocial stress; other unintentional injuries (e.g., falls, poisoning); intentional injuries (i.e., suicide); and impacts on rates of non-communicable diseases due to changes in diet, nutrition, and activity are also rated Category 2 for both positive and negative effects. Intentional injuries are rated as Category 2 primarily because of the severity of the consequence, although it is considered very unlikely to occur, relative to baseline conditions. Impacts to access to and quantity of subsistence resources are rated as Category 1 (construction) to 2 (operations and closure) for both positive (increased income for hunting and fishing equipment) and negative (perceived or actual decreases in access to and quantity of resources) effects. Other potential impacts were rated Category 1.

Alternative 1, as a whole, is rated as a Category 2 for both negative (adverse) and positive potential impacts. These effects determinations take into account the implementation of impact-reducing design features proposed by PLP, and also the Standard Permit Conditions and best management practices that would be implemented.

4.10.3 Action Alternative 2 – North Road and Ferry

Impacts from the project would be the same as or similar to Alternative 1, with few exceptions. The area of Iliamna Lake used for the ferry would be different, because it encompasses the areas at the northern end of the lake around Pedro Bay (as opposed the mid-lake region; i.e.,

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Kokhanok). Under the summer-only ferry operations variant, transportation impacts on the lake would be eliminated during the winter, but double during the summer; and the air quality impacts from ferry and truck traffic would be the same as those for Alternative 1. Socioeconomic impacts under this variant would be similar to impacts under Alternative 1. This alternative's natural gas pipeline alignment would follow the north road alignment, and not go across Iliamna Lake; there would be no hazards or impacts at Iliamna Lake during construction of the pipeline, as would occur under Alternative 1. Impacts from the port at Diamond Port would be the same or similar to those as Amakdedori port.

Overall, the HEC for which Alternative 2 consequences may be most noticeably different from Alternative 1 is HEC 2: Accidents and Injuries due to transportation. However, even given the differences noted above, the transportation-related accidents and injury summary impact to human health would remain the same and would be Category 2 (see Appendix K4.10).

4.10.4 Action Alternative 3 – North Road Only

Impacts from the project would be the same as or similar to Alternatives 1 and 2, with few exceptions. The use of Iliamna Lake for a ferry would be eliminated, shifting project-related transportation impacts to the area around Pedro Bay, rather than around Kokhanok. Impacts from the port at Diamond Point would be the same or similar to those as Amakdedori port, with the exception that there is existing port-related activity at both Williamsport and Diamond Point. The concentrate pipeline variant would build a concentrate slurry pipeline from the mine to the port, eliminating concentrate truck traffic, and include a waste treatment plant at Diamond Point to treat the water after slutty has been removed, which would then be piped to and discharged in Iliamna Lake. Potential hazardous materials impacts would remain the same as under Alternative 1, because the slurry pipeline effluent would be treated to meet the Alaska water quality criteria prior to discharge. This variant would likely decrease employment of truck operators, but increase employment at the water treatment plant (WTP) / dewatering facility, but with lower overall employment. Similar to Alternatives 1 and 2 summer-only ferry operations variant, the overall impact would increase seasonal employment but lower year-round employment and likely be to lower the high cost of living for the affected communities near the transportation corridor, but not to the extent of the non-variant alternative.

Similar to Alternative 2, the HEC for which Alternative 3 consequences may be most noticeable from other alternatives is HEC 2: Accidents and Injuries due to transportation. However, even given the differences noted above, the transportation-related accidents and injury summary impact to human health would remain the same; at a Category 2 (see Appendix K4.10).

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4.10.5 Summary of Key Impacts

See Table 4.10-4 for a summary of key issues.

Table 4.10-4: Summary of Key Issues for Health and Safety

Impact-causing Project Component	Alternative 1 and variants	Alternative 2 and variants	Alternative 3 and variants
All Project Components	Increase in affected community household incomes, employment, and education attainment. The summer-only ferry variant would lower the cost of living and increase employment opportunities, but not by as much as Alternative 1 because of seasonal vs. year-round employment (+ Category 3). Decrease in food cost relative to income and increased food security (+ Category 2).	Same as Alternative 1, including summer-only variant, although cost of living would be lowered and employment increased in Pedro Bay and not Kokhanok.	Same as Alternative 1. The concentrate pipeline variant would have similar impacts to the summer-only ferry variant under Alternative1.
	Increase and decrease in psychosocial stress, family stress, and family stability (+/- Category 2). Increase and decrease in unintentional injury (falls, cuts, poisoning, etc.) and intentional injury (suicide) (+/- Category 2). Increase and decrease access to quantity and quality of subsistence resources (+/- Category 2). Increase in cancer, respiratory, and cardio-vascular morbidity and mortality rates due to change in diet, nutrition, and physical activity (+/- Category 2). Decreased access to healthcare due to emergency situations and overwhelming local and regional healthcare capacities (- Category 2).	Same as Alternative 1.	Same as Alternative 1.
Transportation Corridor	Increase in unintentional accidents and injuries morbidity and mortality rates due to air, surface, and water transportation, particularly regarding winter access across Iliamna Lake from the ice-breaking ferry. PLP would put some measures in place to minimize impacts, such as trail marking and crossings. The east Kokhanok ferry terminal variant would include access to Sid Larson Bay without crossing the ferry route. The summer-only ferry variant would eliminate the potential hazards to snowmachine winter lake crossings, but increase summer lake and road	Impacts would be similar to Alternative 1, except that the routes and closest communities affected would be around Pedro Bay and the northern end of the lake, instead of Kokhanok and the mid-lake region. The summer-only ferry variant could increase the likelihood of surface transportation accidents and injuries along Williamsport-Pile Bay Road from an increase in truck traffic if mitigation	Same as Alternative 2, except that the elimination of the ferry on Iliamna Lake would reduce the likelihood of water transportation accidents and injuries, but could increase the likelihood of surface transportation accidents and injuries if mitigation measures are not taken to build the Williamsport-Pile Bay Road to meet mine-related and public summer capacity. (- Category 2)

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Table 4.10-4: Summary of Key Issues for Health and Safety

Impact-causing Project Component	Alternative 1 and variants	Alternative 2 and variants	Alternative 3 and variants
	traffic (- Category 2).	measures are not taken to build to meet the increased mine-related and public summer capacity (- Category 2).	
Transportation Corridor and Natural Gas Pipeline	Increase in sexually transmitted infection rates and in infectious (respiratory) disease morbidity and mortality rates (- Category 2, during construction phase only).	Same as Alternative 1.	Same as Alternative 1.

4.10.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to impacts on health and safety. These potential future actions are similar to the proposed actions in that each may result in direct and indirect effects to the project-affected communities. To varying degrees, all the RFFAs identified in Section 4.1 have the potential to impact cumulative health and safety through impacts to transportation (e.g., increase in Cook Inlet vessel traffic), subsistence (e.g., impacts on cultural resources and disturbance of wildlife), socioeconomics (e.g., increased household income from other employment opportunities), and water quality and soil quality (e.g., sources of contamination).

RFFAs in the core EIS analysis area have the greatest potential to impact health and safety to the affected communities due to the more-direct nexus to the project. Of these, the following RFFAs have the greatest potential to impact cumulative health and safety:

- Pebble Project buildout – develop 55 percent of the resource over a 78-year period
- Lake and Peninsula Borough Transportation Projects
- Lake and Peninsula Borough Community Development and Capital Improvement Projects
- Rural Alaska Village Grant Program Projects
- Lake and Peninsula Borough and other regional Renewable Energy Initiatives
- Nushagak Electric Cooperative Village Intertie Project
- Industrial Pollutants and Contaminated Sites within Project Area Communities.

Of these, the Pebble Project buildout is the most notable, and would extend the operation of the project for an additional 78 years because it would use the Alternative 1 transportation corridor for the first 20 years, and then add some infrastructure from Alternatives 2 and 3 for the next 53 years and expands the mine site facilities. This has the potential to result in increased health impacts, especially from increased impact durations and possibly increased releases and affected community exposure to potentially hazardous materials. The buildout is not part of the proposed action, and would require additional permits and separate NEPA compliance. Project area communities with pre-existing industrial pollutants and contaminated sites have the potential to add to the cumulative health impacts from exposure to potentially hazardous materials in communities where PLP proposes construction and operations support activities. It

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would be expected that mitigation measures would be used to minimize or mitigate exposure (e.g., avoidance of Alaska Department of Environmental Conservation-contaminated sites, protective clothing and equipment, dust suppression, etc.). The improvement-related RFFAs have the potential to add to positive impacts to the affected communities (e.g., road improvement and increased safety).

As discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics, several RFFAs could have socioeconomic impacts on the potentially affected communities. Transportation, infrastructure, and energy improvements could induce increased development, and these potential impacts would likely be greater if the proposed project is implemented. Other RFFAs were noted as likely having minimal socioeconomic cumulative impact on the potentially affected communities.

As discussed in Section 4.9, Subsistence, many of the RFFAs could contribute to increased potential for impacts on subsistence resources by environmentally disturbing activities and increased human activity. Environmental impacts could include habitat fragmentation, increased noise and atmospheric pollution, and disturbances and impacts to fish and wildlife. The increased volume of people could lead to increased recreational hunting/fishing, and impact subsistence cycles for local communities. The cumulative impacts would be long term to permanent, and geographically broad in scope (regional level).

As discussed in Section 4.12, Transportation and Navigation, most of the RFFAs would contribute to the cumulative increase in vessel traffic in Cook Inlet; increased demand for regional and helicopter air transportation and logistical support (particularly if mining development projects were to overlap); and increased surface transportation impacts along roads leading to the communities of Iliamna, Newhalen, and Nondalton via the proposed Iliamna spur road from RFFAs related to subsistence and recreational uses. It would be likely that any increased demand for air transport could be met by adding supply, because the RFFA sites are distributed rather than clustered with different airstrips or staging sites.

Cumulative effects would be the same under all alternatives.

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4.11 AESTHETICS

Aesthetic impacts include in those that could result from changes in the visual landscape (including night sky) and/or soundscape. For this analysis, visual impacts are defined as changes to the scenic attributes of the landscape resulting from the introduction of visual contrasts (e.g., development) and the associated changes in the human visual experience of the landscape (NPS 2014b). Impacts to soundscape are defined by changes in decibels (dBA) levels that altered soundscape from a "wilderness ambient" character.

4.11.1 Visual Impacts

Visual impacts were assessed by determining 1) the magnitude and geographic extent of visual contrast caused by the proposed project, and 2) the potential effects of visual contrasts on the viewer experience based on the context of the impact and how it is perceived.

4.11.1.1 Magnitude and Geographic Extent of Impacts

The magnitude of impacts on aesthetics and visual resources were assessed by determining the overall change in landscape character based on an assessment of visual contrast and scale dominance. The geographic extent of the effects was measured by the extent of moderate to strong visual contrast, and was summarized as localized, extended, or regional.

- **Visual Contrast:** The Bureau of Land Management (BLM) Contrast Rating Procedure was used to determine visual contrast that could result from construction and operation of the project (BLM 1986). The project would not directly affect federal land; however, the BLM Contrast Rating Procedure is an established and developed methodology commonly used to assess visual impacts. This method assumes that the extent to which a project results in adverse effects on visual resources is a function of the visual contrast between the project components and the existing landscape character. Levels of contrast are defined as follows:
  - None – The element contrast is not visible or perceived.
  - Weak – The element contrast can be seen but does not attract attention.
  - Moderate – The element contrast begins to attract attention and to dominate the characteristic landscape.
  - Strong – The element contrast demands attention, would not be overlooked, and is dominant in the landscape.
- **Scale Dominance:** The contrast created by a project is directly related to its size and scale as compared to the surroundings in which it is placed. Scale dominance refers to the scale of an object relative to the visible expanse of the landscape that forms its setting (BLM 1986). A dominant feature of a landscape tends to attract attention and becomes the focal point of the view. Where two or more features both attract attention and have generally equal visual influence over the landscape, they are considered co-dominant. An object or feature that is easily overlooked or absorbed by the surrounding landscape is considered subordinate. Scale dominance was classified using the following metrics:
  - Not Visually Evident (NVE)
  - Visually Subordinate (VS)
  - Visually Evident (VE)
  - Dominant (D)

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Visual Impacts: Potential visual impacts perceived by viewers was assessed at each Key Observation Point (KOP) based on the level of exposure to moderate or high magnitude impacts, viewer sensitivity to change, the potential for those effects to alter the human experience of the landscape, and the context of the impact. Exposure was measured based on viewer duration, viewer geometry, and distance from the project component. These metrics were assessed as follows:

- **Viewer Duration:** Viewer duration or exposure refers to the length of time project features may be in view. This description discloses whether expected viewer exposure would be limited to a short duration and/or small number of viewpoints, or would be of a prolonged duration and/or experienced from multiple viewpoints.
- **Viewer Geometry:** Viewer geometry refers to the spatial relationship of the observer to the viewed object (i.e., the project), including both the vertical and horizontal angles of view (BLM 2013). The vertical angle of view refers to the observer's elevation relative to the viewed object. The horizontal angle of view refers to the compass direction of the view from the observer to the object. Visibility is typically greater for observers whose viewing angle is directed toward a project feature than for those with a lateral view.
- **Distance:** The degree of perceived visual contrast and scale dominance of an object is influenced by the object's distance from the viewer. As viewing distance increases, the project appears smaller and less dominant. Likewise, as distance increases, the apparent contrast of color decreases (BLM 1986). Distance from project components is classified as follows:
  - Immediate foreground (less than 3 miles)
  - Foreground–middleground (3 to 5 miles)
  - Background (5 to 15 miles)
  - Seldom seen (beyond 15 miles).

Soundscape: The soundscape was analyzed using the information and methods described in Section 3.19, Noise, and Section 4.19, Noise.

4.11.2 No Action Alternative

Under the No Action alternative, the project would not be constructed, and therefore would not have any new or additional effects on aesthetics.

4.11.3 Action Alternative 1 – Applicant's Proposed Alternative

Due to the scale of the project, many of the components are geographically isolated, and as such, visual impacts of the project may be limited to that caused by one component. However, some viewers' locations may be characterized by broader or expansive views, and as such have the potential for exposure to more than one project component (e.g., mine site and transportation corridor). To address this, potential visual and aesthetic impacts are provided below by project component and collectively for all project components.

4.11.3.1 Mine Site

Visual Impacts: Specific mine site components would result in variable levels of visual contrast and scale dominance. For example, the open pit mine, tailings storage facility overburden stockpiles, material sites, and quarries would create strong visual contrast in form, line, color, and texture due to alterations in the existing natural contours of the landscape and removal of vegetation. Smooth texture and reflective surface of water management ponds would result in

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strong contrast against the coarse textures and natural matte colors of the landscape. Milling and processing facilities, along with supporting infrastructure such as the power plant, water treatment plants, camp facilities, and storage facilities, would appear industrial. These industrial straight lines and geometric forms would contrast against the softer, less angular lines of the landscape. These features would also include lighting that would have a strong contrast level against the existing dark sky nightscape. Lighting could be visible at distances from high elevation locations beyond 15 miles due to the lack of night lighting and intactness of night sky. During periods of snow cover, lighting at the mine site would reflect against the snow, thereby creating a halo effect that could extend outward to background distance zones.

Collectively, and where visible from locations within 15 miles, the mine site would appear dominant in the landscape and would alter scenic quality and night sky. Viewshed models indicate that visibility of mine components from ground-based locations would be limited by topography and vegetation screening (refer to Appendix K4.11 for figures of the viewshed). Visibility would generally be limited to high-elevation areas on Sharp Mountain and Groundhog Mountain, and the upper Stuyahok River Valley. The mine site could also be visible from higher elevations located west of Lake Clark (but outside of Lake Clark National Park and Preserve); however, visual contrast is expected to attenuate to a weak level at this distance (approximately 20 miles away). Refer to Appendix K4.11 for visual simulations of the project at defined KOPs. At Iliamna Lake, views of the mine site would largely be screened by vegetation and topography; however, night lighting would be evident as haloing during winter months.

Impacts of the mine site perceived from residents, recreationists, or subsistence users in the analysis area for the mine site would be of medium-high magnitude and localized geographic extent due the remoteness of the site and the existing topographic and vegetation screening. Viewer duration would be intermittent to prolonged, depending on the activity of the viewer. If remote recreation or subsistence use should occur within 15 miles of the mine site and in the seen area, impacts could be high magnitude due to the increased visual contrast perceived from this distance. The duration of impacts would be long term, extending beyond the life of the project. Visual impacts would not impact viewers located in areas identified by special designations. The likelihood of impacts is high.

Soundscape: Operations at the mine site would involve noise-producing activities and processes that include extracting rock at the pit and transporting rock material to milling facilities or the pyritic tailings storage facility/potentially acid generating storage facility. Section 4.19, Noise, describes anticipated noise-related impacts that could result from construction, operation, and closure of the mine. Based on the results of the noise analysis, it was determined that the existing "wilderness ambient" soundscape would be maintained beyond a distance of 10 miles from the mine site. Within approximately 18,450 feet, the estimated operational noise level would be at least 30 dBA equivalent continuous sound level (L_{eq}), and thus, would risk causing sleep disturbance for recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient". Within approximately 12,900 feet, the estimated operational noise level would be at least 45 times day-night sound level (dBA L_{dn}) at a building exterior. These impacts to soundscape would last for the duration of project operations.

4.11.3.2 Transportation Corridor

Visual Impacts: Specific components of the transportation corridor would result in variable levels of visual contrast and scale dominance. Access roads could result in strong visual contrast in form, line, color, and texture against the surrounding landscape, as linear/curvilinear line and grey-brown color and coarse texture of road would contrast surrounding natural color, textures, and lines of the landscape. Mine-related traffic on the roadway could be visually

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evident due to movement and associated dust plumes. Movement of vehicles would be more apparent during dark sky conditions, as vehicle lighting would be evident. The access road and mine traffic are expected to result in the strongest contrast when viewed from higher elevation or superior viewer positions or aircraft, as roads would not be screened by vegetation.

The north and south ferry terminals would result in moderate to strong visual contrast when viewed in close proximity (i.e., 3 to 5 miles) from Iliamna Lake or higher elevation locations (see Appendix K4.11 for visual simulations from defined KOPs). The ferry terminals would appear distinct against the shoreline, as the form and line of the structures would contrast with the natural character of the surrounding landscape. Visual contrast would primarily result for the angular lines, varied colors, and smooth texture of cargo containers where they would be stockpiled at the terminals. Strong visual contrast would be expected to result from night lighting. Where lights are not visible because the terminals would be located outside of the seen area, haloing may still be visually evident, particularly in winter months when lighting is reflected off snow and ice surfaces. Terminal facilities would be not visible or visually subordinate from villages on the shoreline of Iliamna Lake, as the communities are either located outside of the seen area, or are situated greater than 25 miles away.

Ferry traffic would appear dominant from Kokhanok, as this community is located within 5 miles of the ferry route. Other communities are located more than 15 miles from the route; given the size and low stature of the ferries, visual contrast is expected to be weak and ferries would appear visually subordinate.

Impacts of the transportation corridor perceived from residents, recreationists, or subsistence users in the EIS analysis area would be of low to medium magnitude and localized geographic extent due to screening of the road corridor by vegetation and the low stature of the ferry terminals (see Appendix K4.11 for project viewshed models). The magnitude and geographic extent would be greater under dark sky conditions due to the contrast of night-lighting. Viewer exposure to the transportation corridor and associated uses would be intermittent to prolonged, depending on the activity of the viewer. The duration of impacts would be long term, extending beyond the life of the project. Visual impacts would not impact viewers located in areas identified by special designations. The likelihood of impacts is high.

Soundscape: During operations, truck traffic, light vehicles, and maintenance along the mine access road could result in impacts to soundscape that extend to up to 0.5 miles from the road corridor, as measured by the potential for a 45 dBA L_{max} value (maximum value level; see Section 4.19, Noise for more information). The presence of dense vegetation or terrain features like ridgelines or hills could narrow this distance. Impacts to soundscape from the access route would endure for as long as the project is in the operations phase.

Primary impacts to soundscape from operation of the ferry terminals would result from continuous (day and night) operation of the power supply (generator) at each ferry terminal. This feature would produce a reference sound level no greater than 70 dBA L_{eq} at 50 feet. Within approximately 2,250 feet from the ferry terminal, the estimated operational noise level would be at least 30 dBA L_{eq}, and thus, would risk causing sleep disturbance for recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient." Within approximately 1,000 feet, the estimated operational noise level would be at least 45 dBA L_{dn} at a building exterior. Anticipated impacts to soundscape would persist through operations.

Kokhanok East Ferry Terminal Variant: Potential impacts to aesthetic resources would be similar to that described for the south ferry terminal; however, the perception of impacts would be of high magnitude due to the close proximity of viewer and noise-receptors.

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Summer-Only Ferry Variant: Season-specific impacts to aesthetic resources during winter months primarily pertain to lighting, and the visual contrast created from ice break on the lake where the ferry would cross, and ferry noise associated with ice breaking. Visual impacts would be primarily experienced by residents of Kokhanok due to the proximity of this village to the ferry terminal and crossing route. Individuals engaged in winter subsistence activity may also experience impacts from vehicle lighting on access roads and facility lighting at the ferry terminals. Under the summer-only ferry variant, impacts from the transportation corridor would be reduced to low-medium magnitude due to the decrease in lighting-related impacts. The reduction in impacts would be primarily experienced under the Kokhanok East Ferry Variant, as residents of this community would experience fewer visual and soundscape-related impacts during winter months when the transportation corridor was not operational.

4.11.3.3 Amakdedori Port

Visual Impacts: Visual contrast of the Amakdedori port would be similar to that described for the north and south ferry terminals. Visual contrast may be stronger when viewed from close proximity due to the larger stature of this facility, as vertical lines and geometric shape of the facility would contrast against the low marshlands, with the backdrop of the rolling hills and mountains. As a result of the unobstructed horizon of the Cook Inlet, the geographic extent of impacts would extend until moderate to strong contrast attenuated to a weak level (anticipated beyond 10 miles). Refer to Appendix K4.11 for project viewshed models. Development of the port would change the configuration of the shoreline and create an industrial feature in an otherwise natural landscape in Kamishak Bay. Increased project-related boat traffic on Kamishak Bay in Cook Inlet would be visually evident from the foreground, middleground, and background distance zones. The port would not be visible from the mouth of McNeil River at the edge of McNeil State Game Refuge; however, vessel traffic including lightering at the southern location, would be evident and could be a dominant part of the viewers' experience. As discussed for ferry terminals, strong visual contrast is expected to result from night lighting and the potential for haloing during winter months when lighting is reflected off the snow's surface. Visual impacts could impact viewers located in areas identified by special designations, including the McNeil River State Game Refuge and Alaska Maritime National Wildlife Refuge. The likelihood of impacts is high. The duration of direct impacts would be long term, as an agreement with the landowner would leave the port facilities in place for use as an industrial port. Peak visitation and viewing is from early summer into fall, and would be extremely low during the winter.

Soundscape: Although the equipment and vehicle rosters are different, the technique used for estimating noise exposure attributable to Amakdedori port operations is similar to and uses the same conservative assumptions as the technique used for estimating aggregate noise emissions from mine site operations. Considering sound attenuation with distance and other factors, the findings of the predictive analysis are as follows:

- Within approximately 9,750 feet, the estimated operations-attributed noise level would be at least 30 dBA L_{eq}, and thus, would risk causing sleep disturbance for recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient."
- Within approximately 5,800 feet, the estimated operational noise level would be at least 45 dBA L_{dn} at a building exterior, and thus, would be 10 dBA greater than the existing outdoor ambient sound level.

The anticipated noise effects within the two latter above-stated distance buffers would last as long as the port operates during concentrate loading. See Section 4.19, Noise, for more detailed analysis.

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4.11.3.4 Natural Gas Pipeline Corridor

Because the natural gas pipeline corridor would follow the transportation corridor, it would not introduce additional visual contrast in form, line, color, or texture that is distinct from the access road. The compressor station, located on the Kenai Peninsula, would result in moderate to strong visual contrast against the surrounding landscape and would be visually evident against the natural landscape. The compressor station would not be seen from Anchor Point State Recreation Area or Stariski Campground.

While pipeline construction activities would create noise in conjunction with road construction, the duration would be limited to two years. No noise-producing sources would be located along the pipeline corridor during pipeline operation. Gas traveling through the buried pipeline would not emit audible noise; therefore, no noise impacts associated with pipeline operations would occur under Alternative 1.

4.11.3.5 All Components

Due to the scale of the project, many of the components are geographically isolated from each other and from population centers or areas of frequent visitation, and as a result, opportunity to experience visual contrast of more than one component is limited. An exception to this limitation applies to those experiencing views of the project from recreational or local low-altitude aircraft. When viewed from the air, the project would result in moderate to strong visual contrast due to vegetation removal and ground disturbance in access roads and the mine site. For air-based viewers flying to recreation destinations such as the McNeil River State Game Refuge, the transportation corridor and Amakdedori port would be visually evident. Visual impacts would be expected to be of medium to high magnitude, and would decrease with distance from the facilities.

4.11.4 Action Alternative 2 – North Road and Ferry

4.11.4.1 Mine Site

Impacts to aesthetic resources (visual and soundscape) under Alternative 2 would be the same or similar as those described for Alternative 1. The mine site component variants would not be substantial enough to change the impacts.

4.11.4.2 Transportation Corridor – North Road and Ferry

Visual Impacts: The transportation corridor under Alternative 2 would result in variable levels of visual contrast and scale dominance as described in Alternative 1. The magnitude of these impacts would be greatest when viewed from higher elevation or superior viewer positons, as roads would not be screened by vegetation, and visual contrast of the cleared vegetation of the roadway would contrast the surrounding landscape. When viewed from Nondalton or Fish Village, the north road would be expected to result in low visual contrast, as viewers would be primarily situated at a similar grade to the road and visibility would be minimized by vegetation screening. The north road would also be located greater than 5 miles from these villages, thereby further minimizing the potential for visual contrast or scale dominance. The North Road would result in strong visual contrast when viewed from higher elevations on Roadhouse Mountain. Located approximately 3 miles from the Roadhouse Mountain, the road would appear as a discrete curvilinear line that resulted in strong visual contrast against the landscape that would appear visually evident.

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Between Pile Bay and Diamond Point port, operation of the access road would result in high magnitude impacts, particularly in areas where the new access road would bypass the existing road as multiple roads would result in moderate to strong contrast.

As was described for the north and south ferry terminals, the ferry terminals at Eagle Bay and Pile Bay would result in moderate to strong visual contrast when viewed in close proximity (i.e., 3 to 5 miles) from Iliamna Lake or higher elevation locations. From this distance zone, the ferry terminals would appear distinct against the shoreline, as the form and line of the structures would contrast with the natural character of the surrounding landscape. Strong visual contrast is expected to result from night lighting. Where lights are not visible because the port is located outside of the seen area, haloing in the night sky may still be visually evident, particularly in winter months when lighting is reflected off the snow's surface.

The communities of Newhalen and Iliamna are the only residential areas located within approximately 10 miles of the ferry terminals. From these locations, visual contrast would be weak and the facilities would not be visually evident under daylight conditions. During periods of night lighting, visual contrast and scale dominance could increase to a moderate to strong level, and would be visually evident due to the contrast of lighting against the otherwise intact dark sky. Noise from ferry ice breaking activities could also be apparent to these communities.

Other villages on Iliamna Lake are located greater than 15 miles from the ferry terminals and route. Given the size and low stature of the ferries, visual contrast is expected to be weak and ferries would appear visually subordinate. There is one small research camp located on the peninsula of Pedro Bay. From this location, passing ferry traffic would be considered visually evident.

Viewer exposure would be intermittent to prolonged, depending on the activity of the viewer. The duration of impacts would be long term, extending beyond the life of the project. Visual impacts would not impact viewers located in areas identified by special designations (see the project viewshed models in Appendix K4.11). The likelihood of impacts is high.

Soundscape: Impacts to soundscape would be similar to those described for Alternative 1; however, noise-related impacts are not expected to affect local communities, as communities are located more than 0.5 miles from the transportation corridor.

Summer-Only Ferry Variant: As described in Alternative 1, season-specific impacts to aesthetic resources during winter months primarily pertain to those that would result from lighting, and the visual contrast created from ice break on the lake where the ferry crosses. Visual impacts would be primarily experienced by residents of Iliamna, Newhalen, Pedro Bay, and Pile Bay due to the proximity of these communities to the ferry terminals and crossing route. Individuals engaged in winter subsistence activity would also experience impacts from vehicle lighting on access roads and facility lighting at the ferry terminals.

4.11.4.3 Diamond Point Port

Visual Impacts: The magnitude of impacts from the Diamond Point port would be similar to that described for the Amakdedori port under Alternative 1. Visual contrast would appear strong when viewed from close proximity due to the larger stature of this facility; the vertical lines and geometric shape of the facility would contrast against the natural backdrop of the Iliamna Bay. The geographic extent of impacts would be more limited than Amakdedori port due to the steep landforms and enclosure of views created by topography surrounding the bay (see Appendix K4.11 for project viewshed models). For viewers situated in the bay, the port would appear dominant and focal due to the enclosure of the landscape in the bay.

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Increased project-related boat traffic in Cook Inlet would be visually evident from the foreground, middleground, and background distance zones. The port would be visible from the Alaska Maritime National Wildlife Refuge, and vessel traffic would be evident and could dominate the viewers' experience. As discussed for the ferry terminals, strong visual contrast is expected to result from night lighting and the potential for haloing during winter months when lighting is reflected off the snow's surface. The duration of impacts would be long term, extending beyond the life of the project if the port remains in operation. Visual impacts could impact viewers located in areas identified by special designations, including the Alaska Maritime National Wildlife Refuge. The likelihood of impacts is high.

Soundscape: Impacts to soundscape would be similar to those described for the Amakdedori port. Noise-related impacts would be largely contained in Iliamna Bay due to the steep topography of the surrounding landforms.

4.11.4.4 Natural Gas Pipeline Corridor

Visual Impacts: Under Alternative 2, the gas pipeline would be located on the north road and then follow the alignment of the north road of Alternative 3. The magnitude of impacts from the pipeline would be greatest between the junction with the Eagle Bay ferry terminal access road and the east ferry terminal access road, as visual contrast of the cleared right-of-way would contrast the existing natural landscape. Where aligned with the exiting Pile Bay-Williamsport Road, the pipeline would result in weak to moderate visual contrast resulting primarily from roadway upgrades.

Soundscape: As described in Alternative 1, no noise-producing sources would be located along the pipeline corridor during pipeline operation. Gas traveling through the buried pipeline would not emit audible noise; therefore, no noise impacts associated with pipeline operations would occur under Alternative 2.

4.11.4.5 All Components

Visual impacts from all components would be similar to those described for Alternative 1; however, the proximity of the access road to popular recreation destinations could result in increased viewer exposure to those features. For example, for air-based viewers flying to recreation destinations such as the Lake Clark National Park and Preserve, McNeil River State Game Refuge, Katmai National Park and Preserve, and area sport fishing lodges, the transportation corridor and Diamond Point port would be visually evident, although not as visually evident as the Amakdedori port under Alternative 1. Visual impacts would be expected to be of medium to high magnitude, and would decrease with distance from the facilities.

4.11.5 Action Alternative 3 – North Road Only

4.11.5.1 Mine Site

Impacts to aesthetic resources (visual and soundscape) under Alternative 3 would be the same as those described for Alternative 1.

4.11.5.2 Transportation Corridor

Impacts form the transportation corridor under Alternative 3 would be similar to Alternative 2 in portions of the network that are the same under both alternatives (mine site to junction leading to Eagle Bay ferry terminal; Pile Bay to Diamond Point port). However, because the access road would extend along the north shore of Iliamna Lake, impacts would be of higher magnitude and larger geographic extent (refer to Appendix K4.11 for project viewshed models). Visual contrast

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would be strong and the road would appear dominant when viewed from the close proximity of the community of Pedro Bay, and from areas within 3 miles of the shoreline of Iliamna Lake and from high points within Lake Clark National Park and Preserve.

4.11.5.3 Diamond Point Port

Impacts under Alternative 3 would be the same as those described for Alternative 2.

4.11.5.4 All Components

Visual impacts from all components would be similar to those described for Alternative 2; however, the magnitude of impacts would be greater due to operation of the north access road. The road would be visually evident, appearing as a curvilinear line with contrasting color and texture against the surrounding landscape.

4.11.6 Key Issues Summary

See Table 4.11-1 for a summary of key issues.

Table 4.11-1: Summary of Key Issues for Aesthetic Resources

Project component	Alt 1 (+variants)	Alt 2 (+variants)	Alt 3 (+variants)
Mine Site	Aesthetic resources would be affected by medium to high magnitude impacts that would appear dominant in the landscape. Impacts would be limited in geographic extent by rugged topography. Impacts from lighting would be visually evident, particularly during winter months. Impacts to soundscape would be limited to within 10 miles of the mine site.	Same as Alternative 1	Same as Alternative 1
Transportation Corridor	Aesthetic resources would be affected by low to medium magnitude impacts that would be visually evident in the landscape. Movement of vehicles and ferries could be more apparent during dark sky conditions, as lighting would be evident. Impacts to soundscape would be limited to within 0.5 miles of the transportation corridor. Kokhanok, and to a lesser extent Iliamna and Newhalen would be affected by transportation corridor and ferry activities.	Impacts would be similar to Alternative 1; however the northern route would affect residents of Iliamna, Newhalen, and Pile Bay due to proximity to the access route and ferry terminals. Impacts would include those that result from movement and lighting. Under the summer-only ferry variant, reduction of season-specific impacts to aesthetic resources during winter months would be similar to Alternative 1; however reduction in impacts would be experienced by residents in the communities along	Impacts would be the same as described in Alternative 2; however, high magnitude impacts would occur in the community of Pedro Bay due to the proximity to the transportation route.

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Table 4.11-1: Summary of Key Issues for Aesthetic Resources

Project component	Alt 1 (+variants)	Alt 2 (+variants)	Alt 3 (+variants)
	Under the Kokhanok East Ferry Terminal Variant, Potential impacts to aesthetic resources would be similar to that described for the south ferry terminal; however the perception of impacts would be of high magnitude due to the close proximity of viewer and noise-receptors. Under the summer-only ferry variant, the visual contrast would not be created from ice break on the lake where the ferry crosses. The reduction in impacts would be primarily experienced under the Kokhanok East Ferry Variant.	the northern shore of Lake Iliamna.	
Amakdedori Port and Diamond Point Port	Aesthetic resources would be affected by low-medium magnitude impacts that would be visually evident when viewed within 5 miles. Scale dominance of the port facility would decrease with distance. Lighting could be visible at distances of 10 miles from the port, particularly during winter months. Soundscape-related impacts could extend to almost 2 miles from port.	Impacts would be similar to that described for Alternative 1; however, the port site would be located in Iliamna Bay, where steep topography would limit geographic extent of visual and soundscape-related impacts.	Same as Alternative 2.
Natural Gas Pipeline	Because the natural gas pipeline corridor would follow the transportation corridor, it would not introduce additional visual contrast in form, line, color, or texture that is distinct from the roadway access road.	The magnitude of impacts from the pipeline would be greatest between the junction with the Eagle Bay ferry Terminal Access Road, as visual contrast of the cleared right-of-way would contrast the existing natural landscape.	Same as Alternative 1.
All Components	Visual impacts would appear dominant to viewers located in recreational or local low-altitude aircraft. When viewed from the air, the project would result in moderate to strong visual contrast due to vegetation removal and ground	Visual impacts from all components would be similar to those described for Alternative 1; however, the proximity of the access road to popular recreation destinations could result in increased viewer exposure to those features.	Visual impacts from all components would be similar to those described for Alternative 2; however, the magnitude of impacts would be greater due to operation of the north access road. The road would be visually evident, appearing as a curvilinear

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Table 4.11-1: Summary of Key Issues for Aesthetic Resources

Project component	Alt 1 (+variants)	Alt 2 (+variants)	Alt 3 (+variants)
	disturbance in access roads and the mine site. For air-based viewers flying to recreation destinations such as the McNeil River State Game Refuge, the transportation corridor would be visually evident. Visual impacts are expected to be of medium to high magnitude, and would decrease with distance from the facilities.		line with contrasting color and texture against the surrounding landscape.

4.11.7 Cumulative Effects

The reasonably foreseeable future actions (RFFAs) identified in Section 4.1 and Appendix K4.1 carried forward in this analysis include contiguous mining clams located roughly between Iliamna Lake and the Chuitna River, as well as more geographically isolated claims in the watershed, oil and gas development in Cook Inlet, and smaller scale onshore oil and gas, as summarized below:

- Pebble Project buildout- develop 55% of the resource over a 78 year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*

*Indicates exploration activities only.

- Donlin Gold
- Diamond Point Rock Quarry
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure and Energy Project

Reasonably foreseeable locatable mineral development in the project area of Iliamna Lake and the Chuitna River, and east to Lake Clark, could contribute cumulatively to high magnitude impacts that alter landscape character from naturally evolving to industrial across a large geographic extent. Such impacts could be experienced by recreationists in Lake Clark National Park and Preserve and surrounding areas, and would be of high magnitude and dominant when viewed from high elevations and recreational flightpaths. The RFFA for the expansion of the Pebble Project could include the impacts from both Alternative 1 and 3, which would contribute to the cumulative impacts of aesthetics in the region.

Aesthetic impacts could extend to the Cook Inlet, as port and shipping traffic would be more frequent due to the number of projects being serviced. Oil and gas development in Cook Inlet would contribute cumulatively to impacts in Cook Inlet, with the magnitude dependent on the level of on- and offshore oil and gas development. Transportation and infrastructure development in communities would contribute to cumulative impacts at a lesser extent;

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however, when combined with other RFFAs, these actions would contribute to overall change in character from one that is more remote and undeveloped to one that is more industrial. The project would contribute to cumulative impacts, and there would be no difference across action alternatives.

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4.25 THREATENED AND ENDANGERED SPECIES

Under the federal Endangered Species Act (ESA) of 1973, applicants for projects requiring federal agency action that could adversely affect Threatened and Endangered Species (TES) are required to consult with and mitigate impacts in consultation with US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Adverse impacts are defined as "take" (defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct"), which are prohibited except as authorized through consultation with USFWS and NMFS. The USFWS or NMFS may issue an Incidental Take Statement under Section 7 or Section 10 of the ESA, depending on whether there is a federal nexus (federal permit required or funding involved). Because the US Army Corps of Engineers is the lead federal agency for the project, the agency is required to consider the effects that a federal action may have on all listed species in the project's action area. To analyze the potential effects that a federal action may have on a listed species, a biological assessment has been prepared. Separate biological assessments for species under the jurisdiction of the USFWS and NMFS have been prepared. These biological assessments are included as Appendix G and Appendix H, and are referenced throughout this section because they provide additional details and analyses for Action Alternative 1, the applicant's proposed alternative.

This section details the potential impacts of the project and alternatives on TES in the project's action area. Marine mammals also protected under the Marine Mammal Protection Act (MMPA) are adiscussed in Sections 3.23 and 4.23. The action area for TES includes all areas of potential direct and indirect impacts from the project and alternatives. The action area encompasses all marine project components (all proposed port locations, lightering locations, and natural gas pipeline routes), plus a surrounding 5-mile radius buffer in the marine environment. No terrestrial components of the project (e.g., the mine site, ferry terminals, terrestrial portion of the transportation and natural gas pipeline corridors, and compressor station on the Kenai Peninsula) are included in the action area, because TES do not occur in the area; only marine components of the project are included in the action area. Potential direct and indirect impacts from the project and alternatives may include:

- behavioral disturbance (from noise and physical presence);
- injury and mortality (from vessels and aircraft); and
- habitat changes (from loss of foraging habitat and climate change).

The magnitude of impact from the project depends on the specific species' sensitivity to the disturbance and the type of disturbance; the duration and geographic extent of impacts depends on the location and season in which the disturbance occurs (e.g., during whale migrations); and the potential of impacts is how likely the project would overlap with TES and/or TES habitat.

Specific to habitat changes and potential impacts to marine mammal TES from climate change are included in the discussion with all marine mammal species in Section 4.23, and are not repeated here. Potential impacts from a spill or leak (including natural gas, oil, diesel, and all other substances being transported to and from the mine site) are not discussed in this section, but detailed in Section 4.27. [Note: data from 2018 baseline field surveys will be included in the DEIS].

Specific mitigation measures to minimize impacts are currently being developed. Impacts to TES species would be minimized or mitigated by implementation of mitigation measures that would be developed through the permitting process in consultation with the USFWS and NMFS. Some of the applicant's avoidance and minimization measures include the development of a

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Wildlife Management Plan that would detail management measures to minimize impacts to wildlife species (see Chapter 5, Mitigation). The Wildlife Management Plan would describe the equipment, methodology, training, and assessment techniques that would be used to minimize the potential for wildlife interaction and minimize impacts to species from all aspects of the project. Additionally, tug and barge speeds in northern sea otter (*Enhydra lutris kenyoni*) critical habitat would be controlled to minimize the potential impacts to northern sea otters. This would involve regulating vessel speeds to reduce the potential for collision and disturbance for all TES.

4.25.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and there would be no new impacts on TES in the project area.

4.25.2 Action Alternative 1 – Applicant's Proposed Alternative

The project has the potential to directly and indirectly impact TES through behavioral disturbance (such as noise and physical presence of vessels and aircraft) and habitat changes (such as loss of foraging habitat and climate change impacts) as detailed in the following sections. Potential TES impacts specific to the Amakdedori port and natural gas pipeline corridor across Cook Inlet are described herein. Project sources of noise and physical presence that may disturb the natural behavior of TES include construction, operations, and decommissioning of the marine-portions of project components. This may occur through the presence of various project-specific vessels in Kamishak Bay; pile driving (under the pile-supported dock variant) and other construction noise associated with the construction of the Amakdedori port; and aircraft used during construction and operations. Potential noise resulting from the pile-supported dock variant of Action Alternative 1 would produce greater sound levels in the water than constructing a solid fill dock, and could cause greater potential effects to all marine mammal TES discussed in this section, as pile driving noise may exceed injury thresholds as defined by regulatory agencies. The specific noise sources that may impact TES are previously described in Section 3.23 and Appendix K4.25. Impacts from habitat changes generally include the loss of foraging habitat from fill into the marine environment from the earthen causeway and sheet pile wharf at Amakdedori port. Some of these impacts would occur to TES critical habitat. Overall, injury and mortality to TES have a low potential to occur and are only discussed per species, where applicable.

4.25.2.1 Cook Inlet Beluga Whale

Behavioral Disturbance

Underwater and Airborne Noise

Beluga whales (*Delphinapterus leucas*) are categorized as mid-frequency cetaceans with functional hearing in the 50-Hertz (Hz) to 200-kilohertz (kHz) range (Ciminello et al. 2012). Spatial displacements of beluga whales caused by loud sources of noise have been documented. Underwater noise from project-related activities during all phases of development could affect passage of Cook Inlet beluga whales in their critical habitat. Beluga whale responses to underwater noise include changes in behavioral states (Richardson et al. 1995), changes in vocalizations (Gervaise et al. 2012), and avoidance (Erbe and Farmer 2000). Lesage et al. (1999) observed vocal responses, which included a reduction in call rate, an increase in emissions of certain call types, repetition of specific calls, and a shift in frequency bands. A detailed discussion on noise impacts from project components can be found in Appendix K4.25.

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The magnitude of the impact from underwater noise on beluga whales is expected to be minimal with the implementation of industry-standard mitigation measures anticipated through consultation with NMFS. The extent to which project activity noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995); however, project activity noise is expected to be localized, only affecting the area in the immediate vicinity of the project activities (see Appendix K4.25). Noise as a result of construction of the port under pile-supported dock variant of Action Alternative 1 at Amakdedori port would have the greatest potential behavioral impact on Cook Inlet beluga whales. Underwater sound levels from pile driving vary with the size and type of piles; the size and type of hammer and will be further analyzed in subsequent permitting efforts required by the MMPA. The duration of time that beluga whales may be exposed to underwater sound from vessels would be short-term and temporary during pipeline installation and construction activities; however, the exposure would only be expected when seasonal distribution and habitat selection overlap in time and space with in-water project activities. Most Cook Inlet beluga whales spend the ice-free months in the upper portion of Cook Inlet (Goetz et al. 2012; Shelden et al. 2015), to the north of the action area. As Cook Inlet beluga whales shift south into the mid-inlet during fall and winter months (Hobbs et al. 2005), they have a higher likelihood of impacts from noise associated with the project compared to the summer (when they are generally outside of the action area). Decibel levels associated with transportation vessels during operations are expected to be below criteria. Potential impacts on beluga whale behavior are anticipated to be localized in the action area, and would not result in population-level effects.

Physical Presence (Vessel and Aircraft)

An increase in vessel traffic is expected to occur from offshore activities and construction and operations of Amakdedori port. NFMS researchers have witnessed avoidance and overt behavioral reactions by Cook Inlet beluga whales when approached by small vessels (Lerczak et al. 2000). Blackwell and Greene (2003) observed tolerance of beluga whales to large cargo-freight ships at the Port of Anchorage. Beluga whales reacted to aircraft flying 500 to 700 feet away, by diving for longer periods, reducing surfacing time, and sometimes swimming away; however, they did not respond to aircraft flying 1,640 feet away (Richardson et al. 1995).

Localized effects on the behavior, movement patterns, or habitat use of Cook Inlet beluga whales may occur as a result of disturbance from vessel traffic associated with project activities. In Cook Inlet, beluga whales, including adults with calves, appear to exhibit site fidelity, returning to estuary areas even after a disturbance (Moore et al. 2000). Beluga whales continue to occupy upper Cook Inlet despite oil and gas development, vessel and aircraft traffic, and dredging operations. Moore et al. (2000) concluded that beluga whales appear to have become habituated to offshore oil and gas activities in central Cook Inlet.

Impacts to Cook Inlet beluga whales from the physical presence of project components are expected at some level of intensity. Studies on Cook Inlet beluga whale activity near Amakdedori port are limited. Although high levels of vessel traffic occur in Cook Inlet from fishing and existing industry activity, especially during the summer and early autumn months, it is unlikely that the level of increased activity from the project would result in discernible disturbance of any beluga whales that happen to transit in areas where such vessel traffic is already occurring. Furthermore, the extent of physical presence that would occur is expected to be localized; therefore, only affecting the area around Amakdedori port. Vessels associated with activities would have a transitory presence in any specific location, as do beluga whales, so there is likely a limited effect on beluga whales.

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The duration of time that Cook Inlet beluga whales may be exposed to physical presence of aircraft would be temporary, because aircraft support is expected to be intermittent, and short in duration. Based on the short duration of potential exposure to aircraft-related noise and visual disturbance at any given location when an aircraft passes over, it is expected that effects on Cook Inlet beluga whales would be limited to brief behavioral responses such as reducing surface time and diving. Impacts are not likely, because physical presence is expected to occur infrequently and is likely to be short-lived, and therefore not expected to cause more than a temporary effect on Cook Inlet beluga whales.

Injury and Mortality

Vessel Collision

Vessels in Cook Inlet generally transit year-round, primarily in the standard shipping routes used by other large vessels in Cook Inlet. Generally, beluga whales are most often observed within a few miles of shore, so the probability of vessel strikes is lower in the middle of Cook Inlet, but may increase as vessels near Amakdedori port. When vessels are transiting nearshore, speeds would decrease, and standard marine mammal disturbance guidelines would be implemented to avoid vessel strikes (which will be outlined in the Wildlife Management Plan). The probability of a vessel strike being lethal is low at speeds less than 8 knots. There is no indication that strikes would become a major source of injury or mortality in the action area (NMFS 2017a).

There are no records of lethal vessel strikes involving Cook Inlet beluga whales; therefore, impacts to the Cook Inlet beluga whale as a result of injury or mortality from vessel collisions would not be expected. The extent and duration for which injury or mortality would occur is therefore not included in this analysis.

Habitat Changes

Cook Inlet beluga whale habitat use is discussed in detail in Section 3.25. The Cook Inlet beluga whale's primary foraging locations include the Susitna River Delta (the Big and Little Susitna rivers), Eagle Bay, Eklutna River, Ivan Slough, Theodore River, Lewis River, and Chickaloon Bay and River (NMFS 2008a; 2016b). All of these locations are considerably north of the project area. Cook Inlet beluga whales are found further south in Cook Inlet during the fall and winter months, resulting in a higher probability of overlap during that time. Disturbance to habitat is discussed in the critical habitat section below.

Critical Habitat

Cook Inlet beluga whale critical habitat is discussed in detail in Section 3.25. In summary, Critical Habitat Area 2, the only designation that exists in the action area, includes nearshore areas along western Cook Inlet and Kachemak Bay (Figure 4.25-1). Area 2 is known fall and winter foraging and transit habitat for beluga whales, as well as spring and summer habitat for smaller concentrations of beluga whales. This area consists of less-concentrated spring and summer beluga use; however, it also includes known fall and winter feeding and transit areas.

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Figure 4.25-1: Federally Listed Marine Mammal Critical Habitat and Location within the Action Area

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The potential exists for seafloor disturbance to impact Cook Inlet beluga whales' physical or biological features (intertidal and subtidal waters of Cook Inlet with depths less than 30 feet mean lower low water and within 5 miles of high- and medium-flow anadromous fish streams [50 Code of Federal Regulations Section 226.220(c)(5)]) due to temporary disturbance and resuspension of sediments in the water column, including areas within 5 miles of anadromous fish streams. A discussion on anadromous fish streams in the project area is provided in Section 3.24. Because Cook Inlet beluga whales rarely feed on benthic fauna, it is not expected that these animals would be exposed to disturbances of the benthic environment (NMFS 2017a). See Table 4.25-1 for anticipated TES critical habitat impacted per marine component per alternative.

Table 4.25-1: Estimated Beluga Whale and Northern Sea Otter Critical Habitat Intersection between Alternatives 1, 2, and 3

	Port Construction*		Pipeline Route*		Lightering Locations	
	Beluga Whale Critical Habitat	Northern Sea Otter Critical Habitat	Beluga Whale Critical Habitat	Northern Sea Otter Critical Habitat	Beluga Whale Critical Habitat	Northern Sea Otter Critical Habitat
Alternative 1	10.5 acres	10.5 acres	3.2 miles	10.7 miles	None	None
Alternatives 2 and 3	76 acres	76 acres	7 miles	14.6 miles	Primary lightering location in Iniskin Bay is within critical habitat	Primary lightering location in Iniskin Bay is within critical habitat

Notes: *Acreages and mileage were calculated based on the amount of critical habitat (derived from US Fish and Wildlife Service geographic information system layers) that overlaps with project components. Where there was a discrepancy between layers and the actual Cook Inlet coastline (per high resolution aerial), the mean high tide line was used to define the edge of critical habitat.

Seafloor disturbance and habitat alteration in the form of increased turbidity and physical partitioning from project activities may have small, localized impacts to Cook Inlet beluga whale habitat, including critical habitat, at some level of intensity. The extent that habitat alteration would occur is expected to be localized and only affect the area around the proposed port. Potential effects from seafloor disturbance are likely to limit the foraging quality of the disturbed area during construction. The duration of time that Cook Inlet beluga whales may be exposed to habitat alteration would be temporary, because activities are anticipated to be of short duration, and possibly for a few years afterward in some locations. Impacts are unlikely, because the amount of affected habitat in the project area would be small compared to that available foraging habitat for Cook Inlet beluga whales.

4.25.2.2 Humpback Whale

Behavioral Disturbance

Underwater and Airborne Noise

Humpback whales (*Megaptera novaeangliae*) would have the potential to be affected by vessel noise associated with the construction and operations of Amakdedori port; avoidance would be the most likely response. Humpback whales would be anticipated to interrupt their normal behavior and swim away if approached by a vessel; after this response, surfacing, respiration,

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and diving cycles could be affected, although vessels moving slowly and in directions not toward the whales usually would not elicit such strong reactions (Richardson and Malme 1993). After single-disturbance incidents, at least some whales would be expected to return to their original locations. Lower Cook Inlet has a high volume of vessel traffic, especially during the summer months when humpback whales are present. Incremental additional noise from the anticipated low number of vessels associated with the project per day is unlikely to add significantly to the existing levels of noise. A detailed discussion on noise sources from project components can be found in Appendix K4.25.

The low-frequency, percussive noise produced by pile driving would be detectable to humpback whales several miles away. Noise as a result of construction of the port site under the pile-supported dock variant of Action Alternative 1 at Amakdedori would have the greatest potential behavioral impact on humpback whales. Pile driving noise may exceed injury thresholds as defined by regulatory agencies. Underwater sound levels from pile driving vary with size and type of piles, as well as the size and type of hammer, and will be further analyzed in subsequent permitting efforts required by the MMPA. Potential impacts to humpback whales from pile-driving activities at Amakdedori port are unknown as species presence is not well documented. However, the project would implement a robust monitoring strategy during pile driving. Other construction noises during development may include dredging and trenching; humpback whales would likely have behavioral responses to these noises, such as avoidance.

Noise from aircraft during construction and operations would be likely to affect humpback whales. The sounds produced by aircraft above the surface of the water do not pose a direct threat to the hearing of marine mammals that are in the water; however, short-term behavioral responses of cetaceans to helicopters have been documented in several locations, including Alaska (Patenaude et al. 2002).

Impacts to humpback whales from underwater and airborne noise are expected at some level of intensity. The extent of which project activity noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995); however, it would be expected to be localized and only have an effect in the immediate vicinity of project activities. The duration of time for which humpback whales may be exposed to underwater sound from vessels would be short-term and temporary during pipeline installation and other construction activities. However, exposure would only be expected when seasonal distribution and habitat selection overlap in time and space with project vessel activities. Impacts are unlikely, because underwater noise is expected to occur infrequently. Any potential impacts on humpback whale behavior would be localized in the project area, and would not result in population-level effects.

Physical Presence (Vessel and Aircraft)

Humpback whales' reactions to approaching boats are variable; ranging from approach to avoidance (Salden 1993). Humpback whales show general avoidance behavior to cruise ships and tankers at distances from 1.5 to 2.5 miles (Baker et al. 1983), but no reaction at distances beyond 0.5 mile when the whales were feeding (Krieger and Wing 1986). Additionally, humpback whales are especially responsive to fast-moving vessels (Richardson et al. 1995), exhibiting aerial behaviors such as breaching or tail/flipper slapping. However, temporarily disturbed whales often remain in the area despite the presence of vessels (Baker et al. 1998, 1992).

Impacts to humpback whales from the physical presence of vessels and aircraft are expected at some level of intensity. Humpback whale sightings near Amakdedori port are limited (Shelden et al. 2013). The extent to which physical presence would occur is expected to be localized, and

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only affect the area near Amakdedori port. The duration of time that humpback whales may be exposed to physical presence of aircraft or vessels would be short-term and temporary during construction and operations for the life of the project. Based on the short duration of potential exposure to physical presence at any given location when aircraft or vessels pass over, it is expected that effects on humpback whales would be limited to brief behavioral responses. Impacts are unlikely, because aircraft or vessel presence would be expected to occur for short durations and infrequently, and likely short-lived; therefore, it would not be expected to cause more than a temporary effect.

Injury and Mortality

Vessel Collision

Worldwide, the number of humpback whales injured by ship strikes is exceeded only by fin whales (Jensen and Silber 2003). There were 93 reports of humpback whale-vessel collisions in Alaska waters between 1978 and 2011, with only one confirmed record in upper Cook Inlet (Neilson et al. 2012). Between 2008 and 2012, the mean minimum annual human-caused mortality and serious injury rate for humpback whales based on vessel collisions in Alaska was 0.45, as reported in the NMFS Alaska Regional Office stranding database (Allen and Angliss 2015).

Impacts to the humpback whale as a result of injury or mortality from vessel collision would not be expected in the action area due to a lack of sightings in the analysis area. The extent and duration of time for which injury or mortality would occur is therefore not included in this analysis.

Habitat Changes

Seafloor disturbance and habitat alteration in the form of increased turbidity and physical partitioning from project activities may have small, localized impacts to small schooling fish and krill, which are important prey species for humpback whales; however, the effects would not be expected to impact humpback whales. Impacts to humpback whales from habitat changes would be expected at some level of intensity. These effects should be consistent with, or less than, what has been occurring throughout Cook Inlet. There may be direct loss of habitat from project components; however, because humpback whales rarely feed on benthic fauna, these animals would not be expected to be impacted by disturbances to the benthic environment (NMFS 2017a). Direct loss of habitat from construction of the port site under the pile-supported dock variant of Action Alternative 1 at Amakdedori would result in negligible habitat loss. The extent of which habitat alteration would occur is expected to be localized, and only affect the area around the Amakdedori port site as well as areas of habitat directly lost from the pipeline alignment during route construction. There may be temporary impacts to water quality as a result of construction, which could potentially impact the presence of prey species during construction only. This project would not occur in seasonal areas or migration routes where whales concentrate (Bettridge et al. 2015). Potential effects from seafloor disturbance would likely limit the foraging quality of the disturbed area during construction. The duration of time that humpback whales may be exposed to habitat alteration would be temporary, because activities are anticipated to be of short duration, and possibly for a few years after construction in some locations. Impacts are unlikely, because the amount of affected habitat in the action area would be small compared to the overall amount of available foraging habitat.

Critical Habitat

No critical habitat has been designated for humpback whales.

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4.25.2.3 Fin Whale

Behavioral Disturbance

Underwater and Airborne Noise

Fin whales (*Balaenoptera physalus*) are generally observed in and prefer the deep marine waters in offshore areas. Vessels in transit to the analysis area for construction and operations of Amakdedori port have the potential to intersect with the fin whales' range. Sound masking is of special concern for baleen whales that vocalize at low frequencies over long distances, because their communication frequencies overlap with anthropogenic sounds, such as shipping traffic. Fin whales have been shown to reduce their calling rate in response to boat noise (Watkins 1986). A detailed discussion on noise sources from project components can be found in Appendix K4.25.

Impacts to fin whales from underwater and airborne noise are expected at some level of intensity; however, most fin whales are expected to occur outside of the action area; noise associated with Alternative 1 is unlikely to reach the offshore, deep water areas where the fin whales mainly inhabit. Noise as a result of construction of the port site under pile-supported dock variant of Action Alternative 1 at Amakdedori would have the greatest potential behavioral impact on fin whales. Pile driving noise may exceed injury thresholds as defined by regulatory agencies. Underwater sound levels from pile driving vary with the size and type of piles, as well as the size and type of hammer and will be further analyzed in subsequent permitting efforts required by the MMPA. A detailed discussion on project noise is presented in Appendix K4.25. The extent of which project activity noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995); however, it would be expected to be localized and only affect the immediate vicinity of project activities. The duration of time that fin whales may be exposed to underwater sound from vessels or aircraft noise would be short-term and temporary during pipeline installation and construction activities. However, the exposure would only be expected when seasonal distribution and habitat selection overlap in time and space with project vessel activities. Impacts are unlikely, because underwater and airborne noise is expected to occur infrequently. Any potential impacts on fin whale behavior would be localized in the action area, and would not result in population-level effects. Mitigation and monitoring measures required through further project permitting are expected to reduce the exposure of fin whales to noise associated with the project.

Physical Presence (Vessel and Aircraft)

Fin whales are rarely observed in Cook Inlet, with most sightings occurring near the entrance of the inlet (Shelden et al. 2013, 2015, 2016) approximately 80 miles south of the action area. Fin whales may exhibit varying reactions to the presence of vessels, ranging from attraction to avoidance (NMFS 2017b). Impacts to the fin whale as a result of physical presence of vessels and aircraft is not expected in the action areas. The extent and duration for which injury or mortality would occur are therefore not included in this analysis.

Injury and Mortality

Vehicle Collision

Globally, fin whales are injured in collisions with vessels more frequently than any other whale (Neilson et al. 2012). Three of the 108 reported whale-vessel collisions in Alaska between 1978 and 2011 have been reported as fin whales, none of which have occurred in Cook Inlet (NMFS

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2015). Jahoda et al. (2003) studied the responses of fin whales in feeding areas when they were closely approached by inflatable vessels. The study concluded that close vessel approaches caused the fin whales to swim away from the approaching vessel and to stop feeding. These animals also had increases in blow rates and spent less time at the surface (Jahoda et al. 2003).

Impacts to the fin whale as a result of injury or mortality from vessel collision is not expected in the project area. The extent and duration for which injury or mortality would occur is therefore not included in this analysis.

Habitat Changes

Fin whales in the North Pacific prefer euphausiids and large copepods, followed by schooling fish such as herring, walleye pollock, and capelin. Information on the effects of sound on prey items of fin whales is limited. Because fin whales are not benthic feeders or feed on benthic fauna only rarely (NMFS 2017b), it would not be anticipated that these animals would be exposed to disturbances to the benthic environment.

Impacts to fin whales from habitat changes are expected at some level of intensity. The extent of which habitat alteration would occur is expected to be localized, and only affect the area around Amakdedori port. Direct loss of habitat from construction of the port site under the pile-supported dock variant of Action Alternative 1 at the Amakdedori would result in negligible habitat loss. Potential effects from seafloor disturbance, such as water quality and turbidity, are likely to reduce the foraging quality of the disturbed area during construction. The duration of time that fin whales may be exposed to habitat alteration would be temporary, because activities are anticipated to be of short duration, and possibly for a few years afterward in some locations. Impacts are unlikely, because the amount of habitat affected in the action area would be small compared to the overall amount of available fin whale foraging habitat.

Critical Habitat

No critical habitat has been designated for the fin whale.

4.25.2.4 Steller Sea Lion

Behavioral Disturbance

Underwater and Airborne Noise

Noise sources (described in Section 3.23, Wildlife) for non-listed marine mammals are the same for listed marine mammals. Steller sea lions (*Eumetopias jubatus*) have the potential to be affected by vessel noise associated with the project components. Because sea lions are cautious by nature, it is likely that loud, pulsed, frequent, or unfamiliar noises, such as pile driving at Amakdedori port, are likely to disrupt resting sea lions or animals foraging near the sound source (NMFS 2005). The greatest potential impact from noise generally occurs at haul-outs, and near rookeries, where animals could stampede and cause trampling and abandonment of pups (discussed in the exposure to aircraft noise section below). Because there are no rookeries near project components and most haul-outs are in designated critical habitat, far south of the project area, these effects are not expected. A detailed discussion on noise impacts from project components can be found in Appendix K4.25.

There are no studies documenting Steller sea lion's responses to pile driving. It is likely pinnipeds are more tolerant of noise associated with pile driving and other construction activity than cetaceans, and are not likely affected by such noise.

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Impacts to Steller sea lions from underwater and airborne noise are expected at some level of intensity. Noise as a result of construction of the port site under pile-supported dock variant of Action Alternative 1 at the Amakdedori would have the greatest potential behavioral impact on Steller sea lions. Pile driving noise may exceed injury thresholds as defined by regulatory agencies. Underwater sound levels from pile driving vary with the size and type of piles, as well as the size and type of hammer and will be further analyzed in subsequent permitting efforts required by the MMPA. A detailed discussion on project noise is presented in Appendix K4.25. The extent to which project activity noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995), but is expected to be localized and only affect the area around the project area. The duration of time that Steller sea lions may be exposed to underwater sound from vessels and aircraft would be short-term and temporary during pipeline installation, dredging, and construction activities. However, the exposure would only be expected when seasonal distribution and habitat selection overlap in time and space with project vessel and aircraft activities. Impacts are unlikely, because underwater noise would be expected to occur infrequently. Any potential impacts on Steller sea lion behavior would be localized in the project area, and would not result in population-level effects.

Physical Presence (Vessel and Aircraft)

Generally, sea lions in water show tolerance to close and frequently approaching vessels, and sometimes show interest in fishing vessels. They are less tolerant when hauled-out on land; however, they rarely react unless the vessel approaches within 330 to 660 feet (Richardson et al. 1995). Sea lion pups on land are vulnerable to trampling if adults are panicked by low-flying aircraft. Some Steller sea lions use areas around Amakdedori port, particularly near the mouth of Kamishak Bay; those individuals or groups could be disturbed by project activities. However, Cook Inlet has a high level of vessel activity during summer from recreation, commercial fisheries, barging, and other forms of commercial and scientific vessel traffic. Because of the frequent vessel activity in Cook Inlet, Steller sea lions in the area could be partially habituated to vessel presence.

Calkins (1979) reported that the reaction of Steller sea lions to aircraft is variable. Aircraft associated with the project would not be expected to operate in the vicinity of Steller sea lion haul-outs or rookeries; therefore, no Steller sea lions haul-outs would be disturbed by the noise or presence of aircraft. If any responses of Steller sea lions associated with aircraft were to occur, they are likely to be short-lived, and therefore are not expected to cause more than a temporary effect on Steller sea lions (NMFS 2017a). Additionally, in recognition of this vulnerability, Steller sea lion critical habitat has been defined to include air zones 3,000 feet above the terrestrial zones of designated haul-outs and rookeries.

Impacts from the physical presence of vessels on Steller sea lions foraging within the action area may occur. The extent to which vessel presence would occur is expected to be localized and would only affect the area around the proposed Amakdedori port. The duration of time that Steller sea lions may be disturbed by vessel presence would be temporary with short duration. The impacts are considered likely; however, physical presence would be expected to occur infrequently and likely to be short-lived, and therefore would not be expected to cause more than a temporary effect on Steller sea lions.

Injury and Mortality

Vessel Collision

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There is one suspected vessel collision with a Steller sea lion in Cook Inlet, reported near Homer in 2002, approximately 80 miles east of Amakdedori port where the majority of vessel traffic would be expected to occur (NMFS 2017a). Sea lions may become accustomed to repeated slow vessel approaches, resulting in minimal response (NMFS 2008b). Although low levels of occasional disturbance may have little long-term effect, areas subjected to repeated disturbance may be permanently abandoned. Regulations are in place to minimize disturbance of animals by humans, especially on rookeries (NMFS 2008b).

Impacts to Steller sea lions as a result of injury or mortality from vessel collision are not expected in the project area. Steller sea lions are unlikely to be encountered during construction and operations for the project, because they are primarily encountered along the Kenai Peninsula. The extent and duration of which injury or mortality could occur is therefore not included in this analysis.

Habitat Changes

The extent that habitat alteration could occur is expected to be localized and only affect the area around the proposed port, because the project area is not a common foraging location for the species. Potential effects from seafloor disturbance are likely to limit the foraging quality of the disturbed area during construction of the Amakdedori port and pipeline across Cook Inlet from Kamishak Bay to Nikiski. Localized, temporary habitat alteration should not affect Steller sea lions because the animals are highly mobile and rarely feed on benthic fauna; therefore, they are not exposed to disturbances to the benthic environment (NMFS 2017a). Temporary effects from turbidity may displace Steller sea lions from accessing prey species in the water column, but these effects are expected to be temporary and last only for the duration of construction of the project components. The duration of time that Steller sea lions may be exposed to habitat alteration would be temporary, because activities are predicted to be of short duration, and possibly for a few years afterward in some locations. Impacts are unlikely, because habitat alteration in the project area is expected to occur infrequently. The amount of habitat affected in the project area would be small compared to that available to Steller sea lion species for foraging.

Critical Habitat

Critical habitat of Steller sea lions would not be expected to be impacted by project activities because it is located southwest of the action area.

4.25.2.5 Northern Sea Otter

Behavioral Disturbance

Underwater and Airborne Noise

Noise sources (described in Section 3.23, Wildlife) for non-listed marine mammals are the same for listed marine mammals. Sea otters (*Enhydra lutris*) are generally resistant to the effects of sound; changes in presence, distribution, and behavior resulting from acoustic stimuli have not been commonly observed (Ghoul and Reichmuth 2012). Sea otters have the potential to be affected by vessel noise associated with the Amakdedori port and construction of the natural gas pipeline. Sea otters could be disturbed by underwater noise from the project. Sea otters exposed to noise may respond behaviorally (e.g., escape response) or physiologically (e.g., increased heart rate or hormonal stress response) (Atkinson et al. 2009). A detailed discussion on noise impacts from project components can be found in Appendix K4.25.

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Sea otters spend a great deal of time at the surface feeding and grooming (Wolt et al. 2012); therefore, their potential exposure to noise from underwater anthropogenic sound sources is lower than that of many other marine mammal species. Most of the noises associated with the project are in the effective hearing range of sea otters (0.125 kHz to 32 kHz; Ghoul and Reichmuth 2014). Only animals in immediate proximity to the sound source would be expected to exhibit a response. To date, the USFWS has not documented and is not aware of any evidence that serious injury, death, or stranding of sea otters can occur from exposure to industry noise (USFWS 2016). Any disturbance to sea otters from underwater noise associated with the project would be expected to be, at most, temporary and localized.

Impacts to northern sea otters from underwater and airborne noise are expected at some level of intensity. The extent that project activity noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995); it would be expected to be localized and only affect the project area. Noise as a result of construction of the port site under the pile-supported dock variant of Action Alternative 1 at the Amakdedori would have the greatest potential behavioral impact on sea otters. Pile driving noise may exceed injury thresholds as defined by regulatory agencies. Underwater sound levels from pile driving vary with the size and type of piles, as well as the size and type of hammer and will be further analyzed in subsequent permitting efforts required by the MMPA. A detailed discussion on project noise is presented in Appendix K4.25. The duration of time that sea otters may be exposed to underwater sound from vessels would be short-term and temporary during pipeline installation, dredging, and construction activities. However, the exposure would only be expected when seasonal distribution and habitat selection overlap in time and space with project vessel activities. Impacts would be unlikely, because underwater noise would be expected to occur infrequently. Any potential impact from underwater noise on sea otter behavior would be localized in the project area, and would not result in population-level effects.

Physical Presence (Vessel and Aircraft)

Vessel disturbance was ranked low as a threat to recovery, and as 'low importance' in the northern sea otter recovery plan (USFWS 2013). The reaction of sea otters to disturbance: 1) is highly variable between seasons, sexes, and populations; and 2) may be modified by experience (reactions often decline in intensity with habituation, and may increase where populations are harassed or hunted) (USFWS 2013). Although male sea otters sometimes habituate to heavy boat traffic, female sea otters, particularly those with pups, are sensitive to disturbance. Boat traffic could disturb the resting patterns of sea otters.

Sea otters spend approximately 80 percent of their time on the water surface (Wolt et al. 2012). Sea otters are slow swimmers relative to other marine mammals, and spend much of their time at the surface resting, grooming, and nursing their young. The behavior of individual sea otters could be modified by the physical presence of project-related vessels. Because sea otters spend much of their time at the surface, they could also be disturbed by the presence of vessel traffic. The most likely impacts could be the disturbance of sea otters that are hauled-out, and the displacement of females and pups that occur near the proposed Amakdedori port (USDOI, MMS 2003). If negative behaviors occur at all, these effects would be expected to be localized and have no population-level impact.

Impacts to northern sea otters from physical presence of vessel and aircraft would be expected at some level of intensity. The extent that physical presence of vessel and aircraft would occur would be expected to be localized and only affect the area around the Amakdedori port. The duration of time that sea otters may be exposed to physical presence of vessel and aircraft would be temporary, because aircraft support is expected to be intermittent, and of short

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duration. Based on the short duration of potential exposure to physical presence at any given location when aircraft pass over, it is expected that effects on sea otters would be limited to brief behavioral responses.

Habitat Changes

Organisms commonly consumed by sea otters, such as urchins, crabs, and clams, may be damaged by seafloor disturbance from project activities. Potential effects from seafloor disturbance would possibly limit the foraging quality of the disturbed area during construction of the Amakdedori port and the pipeline across Cook Inlet from Kamishak Bay to Nikiski. Impacts to northern sea otter habitat would be expected at some level of intensity. These effects should be consistent with or less than what has been occurring throughout Cook Inlet. The extent to which habitat alteration would occur would be expected to be localized, and only affect the area around the proposed port, because the project area is not a common foraging location for the species. Habitat loss was ranked as 'low importance' in the recovery plan for the southwestern stock of northern sea otters (USFWS 2013). Sea otters may easily disperse to unaffected habitat nearby. The project would not create large areas of affected habitat or any barriers to animal dispersal. The duration of time that sea otters may be exposed to habitat alteration would be temporary, because habitat alteration activities are predicted to be of short duration, and possibly extend a few years following construction in some locations. Impacts to habitat would be considered likely. The amount of habitat affected in the project area would be small compared to the currently available foraging habitat for sea otters.

Critical Habitat

There could be a direct loss and permanent modification of northern sea otter critical habitat by project activities planned in Cook Inlet. See Table 4.25-1 for the anticipated critical habitat impacted per marine component. The project is in Critical Habitat Unit 5: Kodiak, Kamishak, and Alaska Peninsula (Figure 4.25-1). In particular, bottom-contact stages of construction, the permanent placement of a causeway, and construction of the natural gas pipeline have potential to temporarily adversely affect critical habitat. All sea otter critical habitat primary constituent elements (discussed in detail in Section 3.25) would be directly affected. Although there is potential for seafloor habitat disturbance from the project, only a small portion of sea otter critical habitat occurs in the project area.

4.25.2.6 Steller's Eider

All phases of mine site activities (including the summer-only ferry operations variant) are anticipated to have no direct or indirect impacts on Steller's eider (*Polysticta stelleri*) because the species is not known to breed, stage, or migrate through the mine site. Steller's eiders are generally not found more than 60 miles inland, and therefore would be unlikely to occur at the mine site (USFWS 2002). The mine site is anticipated to have no impact on breeding, molting, or staging of Steller's eiders, because these life history stages are geographically removed from the mine site.

Additionally, no impacts to Steller's eiders are anticipated from the terrestrial portion of the transportation corridor or natural gas pipeline corridor (the portion that occurs west of Cook Inlet, including all potential variants), because there would be no elevated structures that could pose a collision hazard, such as power lines. Towers, power lines, and other overhead structures may pose a collision hazard to Steller's eiders, because they are known to fly low and fast over land and water, and are believed to migrate at night (USFWS 2014). A migration study conducted between 2002 and 2004 of all four eider species around Northstar Island, documented eiders flying at a mean altitude of approximately 20 feet above ground/sea level in

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a straight-line direction, and at high mean velocities around 45 miles per hour (Day et al. 2005). This low, fast, and direct method of flying increases the risk of colliding with structures that are near the ground level.

There would be potential for impacts to Steller's eiders due to the presence of moored vessels at lightering locations in Kamishak Bay and Iniskin Bay, and from the Amakdedori and Diamond Point port locations. Steller's eiders are known to molt and winter in the nearshore waters of Kamishak Bay (generally from late November through early April) and winter within Iliamna and Iniskin bays (Figure 4.25-2). They undergo a 3-week flightless molt (which may occur anytime from late July through late October) in nearshore waters, including Kamishak Bay. In Kamishak Bay, the primary molt location is around the Douglas River Shoals area, approximately 17 miles south of Amakdedori port where birds have been recorded beginning in late August through early September. Birds tend to move further north up the west side of Cook Inlet later in the fall and winter, as stormy weather conditions and icing begin to push birds north. Therefore, birds using the nearshore waters around Amakdedori port and further north, are generally later in the season after molt is complete. Steller's eiders wintering in Kamishak, Iliamna, and Iniskin bays are prone to disturbance from aircraft and vessels. The potential direct and indirect impacts to molting and wintering Steller's eiders may potentially include:

- behavioral disturbance from aircraft and vessel traffic at port locations;
- injury or mortality from collisions with structures and vessels at port and lightering locations; and
- loss of foraging habitat at Amakdedori port.

Potential impacts to Steller's eiders from port construction noise are not considered herein because the port would be constructed primarily during the summer months, when Steller's eiders are generally not present. Impacts from construction of the natural gas pipeline are also not expected to occur as construction is anticipated to occur primarily during summer months when Steller's eiders are not present in Cook Inlet. Potential impacts to eiders from vessel and aircraft noise are discussed under behavioral disturbance, below. Potential impacts to Steller's eiders from a spill are discussed in detail under Section 4.27, Spill Risk.

Behavioral Disturbance

Studies on Steller's eiders show variable degrees of tolerance to vessel traffic. They commonly overwinter in areas of high activity near the Homer Spit and the Unalaska airport, and do not flee in response to human activities on adjacent shorelines; however, they have been observed to be sensitive to boat traffic in Izembek Lagoon (USFWS 2012). In a study of responses of wintering waterfowl to aircraft traffic, Ward and Stehn (1989) found that Steller's eiders flushed when aircraft came within approximately 984 feet. Disturbance from boat traffic can cause Steller's eiders to fly away from preferred foraging and resting sites, thereby disrupting foraging or resting periods. Disturbance of sufficient frequency, duration, or severity can lower individual fitness through increased time spent in flight, and reduced time spent feeding or resting (USFWS 2012).

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Figure 4.25-2: Steller's Eider Molting and Wintering Locations within the Action Area

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Some studies have documented a variety of behavioral responses to vessel-related disturbance, including increased alert behavior, flight, swimming, and a reduction in foraging (Agness 2006). Waterbird responses to vessel traffic may be dependent on species, biological cycle (e.g., breeding, migrating, stopover, and wintering), and/or vessel attributes (e.g., vessel type, size, speed, and distance from the birds). Schwemmer et al. (2011) found that flush distances of four sea duck species differed substantially, with flush distance being positively related to flock size. The study also found indications of habituation in sea ducks in areas of channeled traffic. Because vessel traffic would follow established travel lanes and would approach nearshore habitats (used by molting Steller's eiders) very slowly as they approach the port, the potential for disturbance or collisions in the vicinity of Amakdedori port is limited. The majority of Steller's eiders molt and winter approximately 17 miles south of Amakdedori port around the Douglas River Shoals area (Larned 2006). Although Larned (2006) documented small groups of Steller's eiders around Amakdedulia Cove, these small groups would likely move out of the way while vessels approached the port. Because Steller's eiders prefer nearshore areas where water depths are shallow, vessel speeds would be slow. Vessel and aircraft traffic are anticipated to occur year-round at the port. The summer is the only time when Steller's eiders are not expected to be in the nearshore areas around the port. Molting Steller's eiders may begin to appear in Kamishak Bay (primarily around the Douglas River Shoals area) in July, with the peak of molting between August and October. Wintering Steller's eiders are anticipated to reach their high numbers in late winter and early spring, prior to their departure for the Alaska coastline and northern spring migration.

Vessel speeds are anticipated to be slow (i.e., less than 10 knots) while approaching and departing the port, providing time for any Steller's eiders in the immediate vicinity to move out of harm's way. Therefore, Steller's eiders may be temporarily disturbed around the Amakdedori port while vessels are docking at the port. Additionally, aircraft flying in and out of the airstrip may cause Steller's eiders to avoid the area at the east end of the runway (closest to Cook Inlet), and any areas directly under the flight approach path. Depending on the height of aircraft above the water on approach (when landing from the east), Steller's eiders are anticipated to fly, dive, or move out of the way while aircraft use the airstrip. Based on a study of king eiders (*Somateria spectabilis*) (an appropriate surrogate for Steller's eiders) in western Greenland, they dove underwater when aircraft approached, and over 50 percent remained submerged until the plane passed (Mosbech and Boertmann 1999). King eiders appeared sensitive to aircraft engine noise and flushed, dove, or swam away, sometimes leaving the area for several hours (Frimer 1994). Steller's eiders are anticipated to return to the area from which they were flushed after vessels or aircraft have passed. Because eiders typically fly close and fast to the water's surface at low altitudes (i.e., less than 20 feet)(Day et al. 2005), they are unlikely to be struck by aircraft landing at the port locations.

Although the majority of molting and wintering Steller's eiders tend to prefer shallow waters around Douglas River Shoals, a few small flocks of eiders may occasionally forage in the nearshore waters around the port.

Injury and Mortality

Because Steller's eiders tend to fly low and fast over water, they are susceptible to collisions with stationary or slow-moving objects, especially during periods of poor visibility. The chance of collisions increases with fog or darkness, especially if the port and vessels have many lights that could attract and disorient birds. Steller's eiders are believed to be attracted to artificial light, which may increase their risk of collision with structures and vessels (USFWS 2014). Therefore, there would be potential for direct injury and mortality to Steller's eiders from collision with the port and vessels using the port. Steller's eiders have been documented to collide with

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illuminated crab boats, and power lines and towers, especially during periods of inclement weather (USFWS 2012). Permanent structures mounted on the causeway and or dock would include a fuel pipeline for unloading barges, a powerline for vessel shore power, a water supply line for firefighting, and illumination and navigation lights. While most of these components would be located along the causeway at ground level, the navigation lights (and any lights on the causeway or wharf) may pose collisions hazards in an area where there is currently no artificial light. Additionally, the large bulk carrier ships that are moored at the lightering locations, along with any cranes to load concentrate into the bulk carrier ships would pose a collision hazard for eiders flying in Kamishak Bay. This is especially important if the bulk carrier ships have large flood lights that are not adequately shielded and point inward, away from the open ocean. As sea ice shifts during the winter, there would be potential for eiders wintering along the west edge of Cook Inlet to fly between protected bays and collide with vessels moored at the various lightering locations. Because the federally listed Alaska-breeding population of Steller's eiders mixes with the non-listed Russian population on the wintering grounds (including Cook Inlet), and the listed population is estimated to account for less than 1 percent of the total Pacific wintering population (USFWS 2014), there would be low potential that a bird from the listed population would collide with the port or a vessel.

The USFWS calculated the collision risk for Steller's eiders in the Chukchi Sea based on actual collisions events during exploratory drilling operations in 2012, which are detailed in the project Biological Assessment in Appendix G. Per the project description in Chapter 2, bulk carriers (which pose the greatest collision risk to Steller's eiders due to their large size, high gunwales, crane, and external lights) would be moored at lightering locations for 4 to 5 days, each with 27 annual trips by Handysize ships (smaller bulk carriers) multiplied by the 20-year life of the mine. It was determined that based on this anticipated level of vessel traffic (i.e., 2,700 vessel days), the collision rate for the federally listed Steller's eider would be 0.1 eider collision over the life of the project. Therefore, the potential for injury or mortality on molting and wintering Steller's eiders from the project would be low.

Habitat Changes

The construction of the Amakdedori port would result in a loss of potential nearshore water foraging habitat for Steller's eiders. The species generally forages for a variety of benthic species (including bivalves, gastropods, and crustaceans) in marine waters up to 30 feet deep (USFWS 2000). Since Steller's eiders prefer to winter in shallow waters, they are usually found within 1,200 feet of shore (USFWS 2002). The Amakdedori port would be constructed of an earthen causeway with a sheet pile wharf structure. The earthen causeway would extend from the port terminal to the wharf. In total, 10.5 acres of the marine environment would be covered with fill material (from the mean high water line out to and including the sheet pile wharf structure). One variant of the port is a pile-supported dock. This variant would involve the placement of approximately 253 piles (48-inch diameter each) into the marine environment with a combined footprint of 0.07 acre. Therefore, under the proposed alternative, there would be a loss of 10.5 acres of Steller's eiders' foraging habitat, and under the pile-supported dock variant, there would be a loss of 0.07 acre.

Climate Change

Potential impacts from climate change on Steller's eiders are not well-studied for the species' wintering and molting range. However, in their breeding range, the listed population of Steller's eiders are considered moderately vulnerable due to increased rates of shoreline erosion (in part due to reduced sea ice coverage), alterations in water temperatures that may alter prey base and change nesting habitats (thermokarst ponds and adjacent upland habitats)(Liebezeit et al.

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2012). Climate change is likely to impact their breeding habitat through increased storm surges (resulting in loss of breeding habitat), increased salinity in the intertidal zone, melting of permafrost, and vegetation changes (USFWS 2016). Additional climate-induced changes may include arctic water bodies draining and drying out during summer; increased productivity in some ponds due to increased nutrient input from thawing soil and warmer days; changes in seas ice coverage; and small mammal population cycle changes (Steller's eiders tend to nest in high brown lemming [*Lemmus trimucronatus*] years) (USFWS 2012). Because the federally listed population of Steller's eiders breed almost exclusively in the habitat around Utqiaġvik, there is little opportunity for the species to relocate if climate-assisted changes result in habitat loss (Liebezeit et al. 2012). These potential impacts from climate change are more specific to the species' breeding habitat, which does not occur anywhere near the project area.

The most likely result of climate change as it relates to wintering and molting areas of Steller's eiders around the project area are decreased levels of sea and shorefast ice in the Cook Inlet. Steller's eiders travel around Cook Inlet during the winter in response to varying levels of ice. If climate change results in warmer ocean temperatures, sea ice may become a lower limiting factor to the location where Steller's eiders winter. There is a potential that climate change may influence the benthic species on which Steller's eiders feed (due to ocean acidification, warmer ocean temperatures, etc.). Overall, impacts of climate change on Steller's eiders in lower Cook Inlet are uncertain. Lower levels of sea and shorefast ice may expose more foraging areas for the species during winter and early spring before the species migrates north to the breeding grounds.

4.25.3 Action Alternative 2 – North Access Route (Road and Ferry)

4.25.3.1 Cook Inlet Beluga Whale

A discussion on the differences in the affected environment of the Cook Inlet beluga whale between Alternative 1 and Alternative 2 is presented in Section 3.25. Cook Inlet beluga whales are expected to occur in similar densities throughout the marine environment across the proposed alternatives, and all impacts are anticipated to be similar for the two alternatives, except for the potential for the temporary modification of habitat resulting from an increase in turbidity and water quality during construction activities, which may potentially have impacts on beluga whale prey, disturbance from vessel presence, and vessel collisions. The transportation corridor and natural gas pipeline route presented in Alternative 2 is shorter than that proposed for Alternative 1; therefore, the loss or modification of available habitat, the impacts from more vessel presence, as vessels are required to travel longer, and the potential for a vessel collision is lower. Potential noise resulting from the pile-supported dock variant of Action Alternative 2 would produce more sound in the water than constructing a solid fill dock and would cause greater potential effects to beluga whales. Project components presented in Alternative 2 intersect with more Cook Inlet beluga whale critical habitat, and therefore fewer whales would be impacted under this alternative. See Table 4.25-1 for anticipated Cook Inlet beluga whale critical habitat to be impacted per marine component.

4.25.3.2 Humpback Whale

A discussion on the differences in the affected environment of the humpback whale between Alternative 1 and Alternative 2 is presented in Section 3.25. Humpback whales are expected to occur in similar densities of the natural gas pipeline corridor for Alternatives 1 and 2; however, humpback whales have been more frequently sighted along the Action Alternative 1 natural gas pipeline corridor south of Augustine Island. The potential for temporary and permanent modification of habitat and vessel collisions would be different for the natural gas pipeline

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corridor between Action Alternatives 1 and 2. The transportation corridor in Action Alternative 2 is shorter than that proposed for Action Alternative 1 and fewer sightings of humpback whales have been observed in marine waters surrounding Alternative 2 (see Section 3.25); therefore, the potential for a vessel collision is lower. Likewise, the impact to foraging habitat would also be lower. During construction, there may be a temporary decrease in water quality parameters, resulting in a potential to impact humpback whale prey and disturbance from vessel presence. Potential noise resulting from the pile-supported dock variant of Action Alternative 2 would produce more sound into the water than constructing a solid fill dock and would cause greater potential effects to humpback whales. There is no critical habitat designated for the humpback whale, and therefore no potential impacts analyzed with regard to critical habitat.

4.25.3.3 Fin Whale

A discussion on the differences in the affected environment of the fin whale between Alternative 1 and Alternative 2 is presented in Section 3.25. Fin whales are considered extralimital for Cook Inlet, and are not expected to be encountered under each alternative's proposed project activity. Likewise, the densities of fin whales are similar between the two alternatives. There is no critical habitat designated for the fin whale, and therefore no potential impacts analyzed with regard to critical habitat. Potential noise resulting from the pile-supported dock variant of Action Alternative 2 would produce more sound into the water than constructing a solid fill dock and would cause greater potential effects to fin whales. Therefore, differences to the affected environment between the proposed Alternatives 1 and 2 would not be expected.

4.25.3.4 Steller Sea Lion

A discussion on the differences in the affected environment of the Steller sea lion between Alternative 1 and Alternative 2 is presented in Section 3.25. Critical habitat for the Steller sea lion does not occur in the project areas for either Alternative 1 or Alternative 2; however, it is closer to the marine environment of Alternative 1. All impacts are anticipated to be the same for the two alternatives, except for the potential of temporary modification of habitat and potential disturbance from vessel presence. During construction, there may be a temporary decrease in water quality parameters, resulting in a potential to impact Steller sea lion prey, as discussed in Section 4.25. Likewise, the impacts from increased vessel presence, as the vessels are required to travel longer, is expected to be lower. The transportation corridor in Alternative 2 is shorter than that proposed for Alternative 1; therefore, the loss or modification of available habitat is lower. Potential noise resulting from the pile-supported dock variant of Action Alternative 2 would produce more sound in the water than constructing a solid fill dock, and would cause greater potential effects to Steller sea lions.

4.25.3.5 Northern Sea Otter

A discussion on the differences in the affected environment of the northern sea otter between Alternative 1 and Alternative 2 is presented in Section 3.25. Northern sea otters are expected to occur in the same densities throughout the marine environment across Alternatives 1 and 2, and impacts are anticipated to be the same between both alternatives. All impacts are anticipated to be the same for the two alternatives, except for the potential for the permanent loss or modification of habitat and the disturbance from vessel presence. Project components presented in Alternative 2 intersect with more northern sea otter potential foraging habitat, as well as critical habitat; therefore, fewer sea otters would be impacted under Alternative 2. Likewise, impacts from increased vessel presence, as vessels are required to travel longer, would be expected to be lower. Potential noise resulting from the pile-supported dock variant of Action Alternative 2 would produce more sound in the water than constructing a solid fill dock

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and would cause greater potential effects to the northern sea otter. See Table 4.25-1 for anticipated critical habitat to be impacted per marine component.

4.25.3.6 Steller's Eider

As detailed in Section 3.25, surveys conducted by Agler et al. (1995), Larned (2006), and ABR (2011a, 2015c) indicate that Iniskin and Iliamna bays provide overwintering habitat for several hundred Steller's eiders (generally from late November through April). Steller's eiders were found primarily in offshore waters in the middle portions of Iniskin and Iliamna bays, and occasionally in nearshore waters. Most birds occurred around a shallow shoal in the lower part of Iniskin Bay and in the middle of the channel between Cottonwood and Iliamna bays. More specifically, Steller's eiders winter in the waters directly in front of the Diamond Point port (and in the vessel approach lanes). Additionally, eiders winter immediately adjacent to the proposed lightering location in Iniskin Bay (Figure 4.25-2). Of the Steller's eiders that winter in Cook Inlet, only a fraction (i.e., less than 1 percent) is assumed to belong to the Alaska breeding federally listed population.

Impacts to Steller's eiders are anticipated to be identical to those from Alternative 1, except impacts would be shifted geographically north to Iliamna and Iniskin bays. These bays are narrower, more protected than Kamishak Bay, and contain a variety of benthic marine foraging habitat, which may be one of the reasons more Steller's eiders are found there during winter months. All potential impacts detailed above (e.g., behavioral disturbance, habitat changes, and potential for injury and mortality) are similar for Action Alternative 2.

The primary lightering location at the mouth of Iniskin Bay represents an increased potential for eider collisions due to its location at the mouth of a protected bay where Steller's eiders winter. Based on estimates for vessel collisions presented under Action Alternative 1, there is a potential for 0.1 eider collisions over the life of the project. This is likely to be higher due to the more restricted mouth of Iniskin Bay and since hundreds of eiders winter directly adjacent to the lightering location (Figure 4.25-2). If bulk carriers are moored at the lightering location in Iniskin Bay during periods of dense fog or low visibility and the bulk carrier's lights are illuminated, the potential for eider collision would be increased. If bulk carriers are moved to the alternate lightering location on the western side of Augustine Island, the risk of eider collision is likely lower, since fewer birds winter around Augustine Island. This would reduce the risk of collisions for eiders in Iniskin Bay with the bulk carriers during stormy weather conditions. Overall, impacts to Steller's eiders from Action Alternative 2 are anticipated to be similar to, but higher than Action Alternative 1 due to the presence of several hundred eiders throughout Iliamna and Iniskin bays.

The construction of the port at Diamond Point would result in a loss of potential nearshore marine benthic foraging habitat for Steller's eiders. The port at Diamond Point would be constructed of an earthen causeway with a sheet pile wharf structure. In total, 15 acres of the marine environment would be covered with fill material extending from the mean high water line out to and including the sheet pile wharf structure. In addition, there would be 61 acres of the marine environment that would be periodically dredged to allow vessels to reach the port. This would result in a loss of approximately 76 acres of wintering and foraging habitat in the marine benthic environment of Iliamna Bay. One variant of the port is a pile-supported dock (with no earthen causeway), which would involve the placement of approximately 518 piles (48-inch diameter each) in the marine environment with a combined footprint of 0.15 acre. Dredging of 57 acres would be necessary for this variant and therefore there would be a loss of approximately 57.2 acres of habitat.

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4.25.4 Action Alternative 3 – North Access Route (Road Only)

There are no new geographical areas covered by this alternative, and therefore, no new information for any TES. All information for this alternative is previously covered by Action Alternatives 1 and 2 above.

4.25.4.1 Summary of Key Impacts

In summary, Table 4.25-2 details the key issues for TES across all three alternatives. The No Action Alternative is not included, as there would be no impacts from the project. Since potential impacts to TES may occur in the marine environment, all terrestrial components of the project (mine site and transportation corridor) are considered to have no impact on TES. When possible, acreages of habitat that will be directly or indirectly impacted are included. For all TES, it is not possible to quantify the exact number of individuals that may be impacted by vessel collisions or strikes; therefore, the number is considered less than significant.

Table 4.25-2: Summary of Key Issues for TES

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Port			
Behavioral changes	Underwater noise could exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may temporarily displace marine TES. Wintering Steller's eiders may swim, dive, or fly away from approaching vessels and aircraft.		
Injury and mortality	Low potential for TES to collide with port infrastructure and vessels at lightering locations.		
Habitat changes	Loss of 10.5 acres of benthic marine foraging habitat with an earthen causeway port and 0.07 acre of habitat loss with a pile supported dock. These acreages are also within Cook Inlet beluga whale and Northern sea otter critical habitat. No lightering locations located inside Cook Inlet beluga whale and Northern sea otter critical habitat.	Loss of 76 acres of benthic marine foraging habitat with an earthen causeway port and 57.2 acres of habitat loss with a pile supported dock. These acreages are also within Cook Inlet beluga whale and Northern sea otter critical habitat. Primary lightering location in Iniskin Bay is within Cook Inlet beluga whale and Northern sea otter critical habitat.	Loss of 76 acres of benthic marine foraging habitat within Cook Inlet beluga whale and Northern sea otter critical habitat. Primary lightering location in Iniskin Bay is within Cook Inlet beluga whale and Northern sea otter critical habitat.
Natural Gas Pipeline			
Behavioral changes	Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may displace marine TES.	Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may displace marine TES.	Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may displace marine TES.
Injury and mortality	Potential for TES to collide with vessels during construction.	Potential for TES to collide with vessels during construction.	Potential for TES to collide with vessels during construction.

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Table 4.25-2: Summary of Key Issues for TES

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Habitat changes	3.2 miles of Cook Inlet beluga whale and 7 miles of Northern sea otter critical habitat intersect.	10.7 miles of Cook Inlet beluga whale and 14.6 miles of Northern sea otter critical habitat intersect.	10.7 miles of Cook Inlet beluga whale and 14.6 miles of Northern sea otter critical habitat intersect.

4.25.5 Cumulative Effects

A discussion on cumulative effects from potential future actions on non-threatened and endangered marine mammals is provided in Section 4.23, Wildlife, and is applied to threatened and endangered marine mammals in this section. Potential effects from an oil spill are discussed in Section 4.27, Spill Risk.

The following reasonably foreseeable future actions identified in Section 4.1, Introduction to Environmental Consequences, were carried forward in this analysis based on their potential to impact wildlife in the analysis area:

- Pebble Project buildout – develop 55 percent of the resource over 78 year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold
- Diamond Point Rock Quarry

**Indicates exploration activities only*

4.25.5.1 Steller's Eiders

Past, present, and reasonably foreseeable future activities have the potential to contribute to cumulative impacts to Steller's eiders. Additional development in the Cook Inlet and regions along the Alaska Peninsula has the potential to impact molting and wintering areas for Steller's eiders. Industrial developments can affect species through habitat loss, alteration, disturbance, and direct mortality. For Steller's eiders, there is a risk of collision with structures such as drilling rigs, buildings, communication towers, transmission lines, vehicles, vessels, and aircraft. Cumulative impacts to other locations of Steller's eiders molting and wintering habitat may incrementally lead to a decrease in fitness for this long-lived species, which does not breed every year. Steller's eiders' life history strategy is one dependent on long-lived adults that reproduce in select years of high lemming abundance. Therefore, adult survival during the non-breeding season is important to allow the species to recover. Hence, cumulative impacts to any Steller's eiders molting and wintering areas in Alaska are included in this analysis. Additional potential cumulative issues related to Steller's eiders include increased disturbance from aircraft and vessels in important molting, wintering, and staging areas, and mortality from collisions with towers, various types of infrastructure, and powerlines especially during periods of low light or reduced visibility (e.g., low-lying fog). Additionally, facilities with lighting can cause birds to be disoriented and increase the chance of collisions.

The primary potential future impacts to Steller's eiders would be from increased vessel traffic at port locations along the west side of Cook Inlet, especially if the Amakdedori port or Diamond Point port is used. Increased vessel traffic would increase the potential for eiders to collide with

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ships during the winter (late November through early April), especially during inclement weather conditions. There would also be potential for increased oil, fuel, and other chemicals to spill into the environment during winter months when eiders are present. This may occur due to Cook Inlet Oil and Gas Lease Sales, and increased vessel traffic associated with other mining and resource extraction projects (such as the Pebble Project buildout and Pebble South/PEB). Only the Diamond Point rock quarry project has the potential to directly remove Steller's eiders' wintering habitat from Cook Inlet. All other projects are anticipated to have indirect impacts on Steller's eiders. The Donlin Gold Project has the potential for adverse impacts to Steller's eiders through behavioral changes from increased barge traffic; injury or mortality from collisions with barges; or contamination, injury, or death from a fuel or chemical spill. However, impacts from the Donlin Gold Project would occur along the Kuskokwim River and Yukon-Kuskokwim Delta, and not in the Cook Inlet. Finally, projects that involve the erection of structures, such as powerlines, telecommunication towers, and wind turbines (e.g., the Kokhanok wind power plant) have the potential to create collision hazards to eiders.

4.25.5.2 Cook Inlet Beluga Whale

Past, present, and reasonably foreseeable future actions have the potential to contribute to cumulative impacts to the Cook Inlet beluga whale. Although the best available information indicated that human activities, including those associated with oil and gas development, were not a contributing factor in the stock becoming in danger of extinction (Allen and Angliss 2014), the Cook Inlet beluga whale stock is not showing signs of recovery and potential effects from human activities impeding on beluga recovery remain a concern. The human activities potentially affecting beluga whales would be from subsistence hunting and continued increased commercial vessel traffic. Noise is listed as a primary potential stressor for beluga whales in the Cook Inlet Beluga Whale Recovery Plan, and the pile driving associated with the Proposed Action would result in short-term, temporary increases in noise with no long-term lingering effects on the species. Increased vessel traffic could have moderate effects on beluga whales, however, beluga whales have experienced high vessel traffic in Cook Inlet for decades; therefore, such effects would be short-term with no long-term lingering effects on the species as no vessel strikes have been recorded in Cook Inlet. Other activities are either limited in their effects to produce noticeable impacts on beluga whales, or lack overlap with beluga whale life cycles and requirements. The contribution of the Proposed Action to effects on beluga whales would be negligible because vessel traffic would be low and the amount of noise would be short term.

4.25.5.3 Humpback Whale

Past, present, and reasonably foreseeable future actions have the potential to contribute to cumulative impacts to humpback whales. Increased vessel traffic could have moderate effects from disturbance and potential vessel strikes on humpback whales; however, such effects would have no long-term lingering effects on the species in Cook Inlet. The potential greatest implications of future actions on humpback whales would be increased commercial vessel traffic. Other activities are either limited in their effects to produce noticeable impacts on humpback whales, or lack overlap with humpback whale life cycles and requirements. The contribution of the Proposed Action to effects on humpback whales would be negligible.

4.25.5.4 Fin Whale

Past, present, and reasonably foreseeable future actions have the potential to contribute to cumulative impacts to fin whales. Perry et al. (1999) list the following factors possibly influencing the status of fin whales in the North Pacific: offshore oil and gas development as a "present or

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threatened destruction or modification of habitat," and vessel collisions as an "other natural or man-made factor." Vessel traffic would have negligible short-term effects on fin whales, considering their scarcity in the analysis area. The greatest implications of potential future actions on fin whales would be commercial vessel traffic. Other activities are either limited in their effects to produce noticeable impacts on fin whales, or lack overlap with fin whale life cycles and requirements. The contribution of the Proposed Action to effects on fin whales would be negligible.

4.25.5.5 Steller Sea Lion

Past, present, and reasonably foreseeable future actions have the potential to contribute to cumulative impacts to Steller sea lions. Any potential increase in mortality of Steller sea lion prey species in sea lion critical habitat, which resulted in a large decrease in prey available to the western stock of Steller sea lions, could result in potentially significant cumulative effect on both the stock and on the critical habitat. The primary potential for significant incremental contributions to cumulative adverse effects on Steller sea lions from routine operations could result from incremental increases in noise and disturbance at key terrestrial and foraging critical and other habitats of the western population stock, if such incremental increase resulted in Steller sea lions avoiding important feeding habitats or resulted in direct mortality. NMFS (2003) has concluded that there is some concern for the take of Steller sea lions due to encroachment by humans near critical terrestrial habitat sites (for example, rookeries, haul-outs) for viewing, research, or intentional harassment. Though vessel traffic could have moderate effects on Steller sea lions, such effects would be short-term with no long-term lingering effects on the species. The greatest implication for potential future actions on Steller sea lions would be from commercial vessel traffic. Other activities are limited in their effects to produce noticeable impacts on Steller sea lions, or lack overlap with life cycle requirements. The contribution of the Proposed Action to effects on Steller sea lions would be negligible.

4.25.5.6 Northern Sea Otter

Past, present, and reasonably foreseeable future actions have the potential to contribute to cumulative impacts to northern sea otters. The historical record demonstrates the extreme vulnerability of the sea otter to overharvest and must be considered a potential current and future threat to the southwest Alaska stock of sea otters. Multiple human actions have had potentially negative effects on the southwest Alaska stock of sea otters. These include mortality due to marine oil spills, take by Alaska Natives for subsistence and handicrafts, illegal intentional take, incidental take in fisheries, exposure to environmental contaminants, habitat degradation and loss, heightened risk of disease, and disturbance (USDOI, MMS 2003). Vessel traffic could have moderate effects on northern sea otters and related effects are thought to be short-term with no long-term lingering effects on the species. The greatest human activity effect on northern sea otters would be vessel traffic. Other activities are limited in their effects to produce noticeable impacts on northern sea otters, or lack overlap with northern sea otters' life cycles and requirements. The contribution of the Proposed Action to effects on northern sea otters would be negligible.

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Message

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EXECUTIVE SUMMARY

The objective of this report is to provide a hydrometeorological characterization of the Pebble Project Mine Study Area for a variety of purposes, including water balance modelling, engineering design, water rights applications, and environmental assessments. This report presents preliminary estimates, which will be updated as additional information is obtained from on-going data collection programs. The Mine Study Area (MSA) refers to the area surrounding the deposit that may contain the mine facilities and is comprised of the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek watersheds.

The climate of the MSA is classified as maritime continental; summer temperatures are moderated by the open waters of the Bering Sea and Cook Inlet, while winter temperatures are more continental in nature largely due to the presence of sea ice in Bristol Bay. Hydrometeorological values for the MSA were estimated on the basis of short-term site-specific data and long-term regional information. Meteorological data were initially collected in the MSA at the Cominco climate station, which was located near the eastern extent of the known project ore body during the period of August 1991 to December 1993. These data include intermittent records of temperature, precipitation, evaporation, and wind speed and direction. Additional climate stations were installed in the MSA in 2004, 2005, 2006 and 2007, and are all named using the prefix Pebble. This report presents the data collected by the Cominco station and the Pebble 1, Pebble 3, Pebble 4, Pebble 5, Pebble 5A and Pebble 6 meteorology stations. Each of these stations has at least one year of meteorological data collected by the end of 2010. Long-term regional climate data suitable for comparison to data collected in the MSA are only available from the airport in Iliamna, which is located approximately 17 miles (27 km) southeast and approximately 1000 ft (305 m) below the deposit at an elevation of 190 ft (58 m).

This report focuses on streamflow data collected prior to the end of 2010 from twenty-six (26) stream gaging stations on the North Fork Koktuli River (NK), South Fork Koktuli River (SK), and Upper Talarik Creek (UT). Three (3) of these stations are operated by the US Geological Survey (USGS). Continuous streamflow data were collected at a further four (4) locations in the MSA for various periods between 1991 and 1993; however, these data are not presented in this report due to their short periods of record and concerns about data quality. Groundwater and snowpack distribution sampling were undertaken from 2004 through 2009, and groundwater modelling is ongoing. Preliminary results from these investigations are included in this report.

The key findings of this study are summarized below. All meteorological values presented below were calculated for the Pebble 1 meteorological station, unless stated otherwise. All hydrological values are generally presented for the MSA, unless noted otherwise.

- The long-term average annual temperature is estimated to be 30.4°F (-0.9°C), with average monthly temperatures ranging from a high of 51.0°F (10.6°C) in July to 11.5°F (-11.4°C) in January.
- On average, temperatures are 4.5°F (2.5°C) cooler at Pebble 1 than at Iliamna.

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- Wind data from the six Pebble climate stations indicate that the wind direction and magnitude varies in the MSA. The average annual wind speed at these stations varied from a low of 10.9 mph (17.5 km/hr) at Pebble 3 in 2008 to a high of 18.6 mph (29.9 km/hr) at Pebble 4 in 2007.
- The maximum instantaneous wind speed recorded during the measurement period was 149 mph (239 km/hr) at the Pebble 5A station.
- Maximum solar radiation occurs in May and minimum radiation occurs in December, with respective rates of approximately 220 W/m^2 and 10 W/m^2.
- Relative humidity is high all year round with an annual average of 83%, and monthly average values ranging from a low of 75% in May to a high of 88% in October.
- Pond ice accumulation was estimated to be 42 inches (1067 mm) per year. Pond ice is expected to consistently occur between November and May, and may also occur into October and June.
- The mean annual pond evaporation is estimated to be approximately 10.4 inches (264 mm), with a maximum mean monthly value of 2.6 inches (66 mm) in June.
- The mean annual actual evapotranspiration (AET) is estimated to be 8.1 inches (206 mm).
- The sublimation rate is assessed at 4 inches (102 mm) per year. The 4 inches is assumed to be distributed fairly evenly throughout months of October through May.
- The observed mean annual precipitation at Pebble 1 during 2006 through 2010 was 37 inches (948 mm). The long-term mean annual precipitation value for Pebble 1 is estimated to be approximately 57 inches (1440 mm). This value is derived from a watershed model that was calibrated with all available measured flow data. The large difference between the measured and estimated precipitation is largely attributed to the poor catch efficiency of the precipitation gage.
- The measured long-term mean annual precipitation at Iliamna is 27 inches (680 mm). This value is believed to underestimate actual conditions because of suspected poor catch efficiency of the gage.
- The maximum 1-day precipitation recorded at Iliamna was 3.5 inches (89 mm), which was recorded in July. This corresponds to an estimated 7.3 inches (185 mm) for Pebble 1.
- Approximately 50% of precipitation is estimated to fall as snow.
- Measured annual maximum snowpack values ranged from 5 to 20 inches (127 to 508 mm) of snow water equivalent (SWE), but typically averaged about 10 to 14 inches (254 to 356 mm). Modelled annual maximum basin average SWE values are generally in the order of 20 inches (508 mm).
- Runoff results from rainfall and snowmelt, producing an annual hydrograph with two peak flow seasons. The first peak occurs in May as a result of snowmelt, while the second peak occurs between August and October as a result of rainfall events.
- Mean annual streamflow values were estimated for each of the 26 stream gaging stations in the MSA. The mean annual unit runoff at the gages on the lower reaches of the SK, NK, and UT basins ranged from 2.3 to 2.4 cfs/mi^2 (25 to 26 l/s/km^2) over the period of record. Considerable variability in runoff is evident, with the mean annual unit runoff for tributary streams ranging from 7.1 cfs/mi^2 to 1.3 cfs/mi^2 (78 to 14 l/s/km^2).
- The streams can be classified as either upland or lowland channels. Scaling relationships for estimating peak instantaneous flows for both channel types, for various flood events, were developed. For a drainage area of 10 mi^2, 10 year peak flows are estimated to be approximately 929 cfs (26 m^3/s) for upland channels and 353 cfs (10 m^3/s) for lowland channels.
- Low flows occur during both the summer and winter months, although flows in late winter tend to be the lowest of the year. Reaches of certain streams can go completely dry, particularly during the winter months. Unit 10-year 7-day low flow estimates are quite variable, even at the outlets of the

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three primary watersheds, and range from 0.31 cfs/mi^2 (3.4 l/s/km^2) at the outlet of the North Fork Koktuli River to 0.88 cfs/mi^2 (9.6 l/s/km^2) at the outlet of Upper Talarik Creek.

- The probable maximum precipitation (PMP) was estimated to be 18 inches (457 mm) for a 24 hr storm.
- The probable maximum flood (PMF) is not presented in this report and needs to be calculated for each facility based on the specifics of its design and location.
- The mean annual temperature trends for climate stations in the general region indicate temperatures have increased at an average rate of approximately 0.08 °F/year over the past 50 to 60 years, for a net change of approximately 5 °F (3°C). However, it appears that temperature changes in Alaska over the last century, and particularly over the last 60 years, can be more attributed to large scale climate oscillations than to climate change. It appears that we have recently entered a cooling phase, and correspondingly it is possible that the annual mean temperature trend may actually decline or remain relatively constant over the next two to three decades.
- The annual precipitation trends for climate stations in the general region are weak and inconsistent, which generally suggests that there has been little or no change in patterns of total annual precipitation.
- It appears that the severity of extreme precipitation events is increasing.
- Regional historical streamflow data indicate that annual hydrograph shapes are changing, with increasing winter flows and decreasing summer flows. These patterns are consistent with the expected effects of increasing temperatures.

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PEBBLE PROJECT

HYDROMETEOROLOGY
(REF. NO. VA101-176/40-1)

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HYDROMETEOROLOGY
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SECTION 1.0 - INTRODUCTION

The climate of the Pebble Project Mine Study Area is classified as maritime continental, with summer temperatures moderated by the open waters of the Bering Sea and Cook Inlet, and winter temperatures influenced by the presence of sea ice in Bristol Bay during the coldest months of the year. The Mine Study Area (MSA) refers to the area surrounding the deposit that may contain the mine facilities and is comprised of the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek watersheds. The area consists of low, rolling hills separated by wide, shallow valleys with sinuous drainage channels. The elevation in the vicinity of the MSA varies from approximately 580 feet at the confluence of the south and north forks of the Koktuli River to 3,074 feet on Groundhog Mountain. The deposit area in the pass between the South Fork Koktuli River and Upper Talarik Creek lies at approximately 1,000 feet elevation.

Hydrometeorological values for the MSA were calculated on the basis of short-term site-specific data and long-term regional information. The values were specifically derived for water balance modelling and engineering design purposes, but are also generally appropriate for other requirements including water rights applications and environmental assessments. When using the values, the assumptions made in the analyses and the limitations of the hydrometeorological data presented should be carefully considered. The locations of twenty-six flow gaging stations and six meteorological stations that were operated in the MSA prior to 2010 are shown on Figure 1.1 and indicated in Table 1.1.

All meteorological values presented in this report are specified for the Pebble 1 meteorological station, unless noted otherwise. This station is located near the western edge of the Pebble ore deposit at elevation 1560 feet. The hydrological values presented in this report are for various points located throughout the three watersheds that comprise the MSA.

1.1 METEOROLOGY

Meteorological data were initially collected in the MSA at the Cominco Climate Station, which was located near the eastern extent of the known Project orebody and operated from August 1991 to December 1993. Intermittent records of temperature, precipitation, evaporation, and wind speed and direction were collected at this site, but only the wind and temperature data are considered valid because of errors associated with the precipitation and evaporation data collection. In October 2004, two new climate stations were established in the MSA. These stations, identified as Pebble 1 and Pebble 3, were not fully operational until August 2005 and November 2005, respectively. An additional climate station, known as Pebble 4, was established in January 2007, and finally, stations Pebble 5, Pebble 5A, and Pebble 6 were installed during July/August 2007. All six stations collected air temperature, precipitation, and wind data. In addition, Pebble 1, 4, 5 and 6 collected evaporation, relative humidity, and solar radiation data. Pebble 3 and 4 were discontinued in early 2009. The assessment of meteorological conditions in the MSA is primarily derived from the five year (2006 – 2010) record collected at Pebble 1, and is supported

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by shorter term data collected at the other five stations. The 2005 data for Pebble 1 have not been included in this report, with the exception of temperature data, because they are believed to be of relatively poor quality. Stations Pebble 1, 3, 4, 5, 5A and 6 are located at elevations of 1560 ft, 1000 ft, 1200 ft, 1400 ft, 2300 ft, and 800 ft (476 m, 305 m, 366 m, 427 m, 701 m, and 244 m), respectively.

Regional climate data suitable for comparison to the MSA data are available from the airport at Iliamna, which is located approximately 17 miles (27.4 km) southeast of the project orebody at an elevation of 190 ft (58 m). A climate station has operated intermittently at this location since 1920, but almost continuously since 1942. Data from other regional stations were also reviewed when appropriate, but were not used directly.

Some meteorological parameters, and in particular precipitation, are very difficult to accurately measure in the challenging conditions of the MSA. Therefore, a side water balance model, as developed by Slumberger Water Services (PLP, 2011a), was used to estimate or validate values. This model was run using monthly inputs of temperature and precipitation and was calibrated with six years of measured streamflow and water level data from numerous locations throughout the MSA. The calibrated model was run for 68 years.

1.2 HYDROLOGY

Hydrological data were collected on the three major stream/river systems that comprise the MSA. These are the North Fork Koktuli River, the South Fork Koktuli River, and Upper Talarik Creek. This report summarizes the data collected between July 2004 and September 2010 at twenty-six continuous flow gaging stations on these systems. Three of these stations are operated by the US Geological Survey (USGS). Continuous streamflow data were also collected at four locations in the MSA for various periods between 1991 and 1993, but these data are not presented in this report because of concerns about their quality. Regional streamflow data are limited and largely pertain to river systems that are much larger than those in the MSA. Nonetheless, the available data provide some basis for assessing expected long-term flow patterns and these were examined and considered as part of the analyses.

1.3 GROUNDWATER AND SNOWPACK

In addition to climate and streamflow data, information on groundwater and snow cover conditions is also collected in the MSA. Groundwater levels are monitored and hydraulic conductivity conditions are assessed with an extensive series of monitoring wells, while snowpack data such as depth and snow water equivalent are collected at a number of snow survey sites. This information is very briefly discussed in this report.

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SECTION 2.0 - METEOROLOGY

2.1 TEMPERATURE

Monthly average temperatures for the Pebble climate stations and concurrent monthly temperatures for Iliamna are summarized in Table 2.1. A nearly continuous temperature record is available for the Iliamna Airport from 1942 through 2010, while temperature data are available for three locations within the Pebble MSA for varying periods from 2005 to present. The only complete temperature record during this period was collected at the Pebble 1 Meteorological Station (Pebble 1), and it contains 65 months of data. The correlation of concurrent mean monthly temperature data for Iliamna Airport and Pebble 1 (Figure 2.1) indicates that mean monthly temperatures at Pebble 1 were typically 4.5 °F (2.5 °C) colder than at the Iliamna Airport, which equates to a lapse rate of 3.3 °F/1000 ft (6.0 °C/1000 m). This rate is generally consistent with the standard normal or environmental lapse rate of 3.6 °F/1000 ft (6.5 °C/1000 m).

Long-term mean monthly temperature values (1942 to 2010) were simulated for the Pebble 1 meteorological station (el. 1560 ft) by subtracting 4.5 °F ft from the monthly Iliamna Airport temperature values. The simulated temperatures range from a high of 51.0 °F (10.6 °C) in July to a low of 11.5 °F (-11.4 °C) in January, as summarized in Table 2.2 and shown on Figure 2.2. The long-term mean annual temperature for Pebble 1 was estimated to be 30.4 °F (- 0.9 °C). The maximum and minimum hourly air temperatures recorded at Pebble 1 during the period of 2005 to 2010 are 75.9 °F (24.4 °C) and - 33.3 °F (- 36.3 °C), respectively, while the maximum and minimum temperatures recorded over the long-term at Iliamna are 91 °F (33 °C) and – 47 °F (- 44 °C) (WRCC, 2011).

Correlations between the concurrent mean monthly temperature data for Pebble 1 and that for Pebble 3, 4, 5, 5A, and 6 are presented on Figure 2.3. An analysis of the temperature differences indicates lapse rates ranging from 1.1 °F/1000 ft (2.0 °C/1000 m) to 3.5 °F/1000 ft (6.4 °C/1000 m). Also, correlations between the concurrent data for Pebble 5 and that for Pebble 5A, and for Pebble 6 (Figure 2.4), which are all located within the drainage basin of NK119A (see Figure 1.1), indicate a lapse rate of 2.5 °F/1000 ft (4.6 °C/1000 m). These rates are generally lower than expected and indicate substantial localized temperature variability. Because of this variability, and the difficulty of determining what lapse rate should be applied in what location, it is recommended that the standard normal lapse rate of 3.6 °F/1000 ft be used to translate the long-term Pebble 1 values to different elevations in the MSA. This can be done using the formula:

$$T = Ts - (3.6)(E-Es)/1000 \qquad (2.1)$$

Where:

- T = temperature of middle of elevation band (°F).
- Ts = temperature at Site Pebble 1 (°F).
- E = elevation of middle of elevation band (feet).
- Es = elevation of Site Pebble 1 (1560 feet).

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2.2 WIND

The average monthly wind speeds recorded at Pebble 1, 3, 4, 5, 5A and 6, for various monitoring periods between 2006 and 2010, are summarized in Table 2.3. Mean wind speeds recorded at Iliamna between 2000 and 2010 are also included in Table 2.3 for reference. The MSA is exceptionally windy, both in terms of the frequency and intensity of wind. Higher wind speeds are typically experienced at stations with greater elevation and/or exposure, as indicated by comparing the wind speeds recorded at Pebble 5A, the highest and most exposed climate station, to those at Pebble 3, which is lower and less exposed. The monthly mean wind speeds at the stations are typically greatest during the winter and lowest during the summer, and range from an average monthly low of 6.3 mph measured during July 2007 and again in August 2008 at Pebble 3, to a high of 28.9 mph measured during November 2006 at Pebble 1. Summer wind speeds measured at Pebble 5A are considerably greater than concurrent measurements at any of the other Pebble stations, which suggests that winter wind speeds at that site are also likely greater than at the other stations. Measured annual average wind speeds range from 10.9 mph (17.5km/hr) at Pebble 3 in 2008 to a high of 18.6 mph (29.9 km/hr) at Pebble 4 in 2007, with likely even greater wind speeds occurring at Pebble 5A. The maximum instantaneous wind speed measured within the MSA was 149 mph (239 km/hr) at the Pebble 5A Station.

Hourly wind speed data have been collected from 2006 through 2010 at the Pebble 1 climate station. Wind roses were developed from these data by the Hoefler Consulting Group, as presented on Figure 2.5. Pebble 1 is located near the proposed Open Pit at a relatively high and exposed site, and accordingly Pebble 1 typically experiences relatively high wind speeds, which are considered to be fairly typical of the Project Area as a whole. The wind was calm (less than 1.1 mph) at Pebble 1 for only 1.9% of the time, while wind speeds exceeded 25 mph for more than 20% of the time. Pebble 1 predominantly experienced winds from the northwest (25% of the record period) and from the east-southeast and southeast (32% of the record). However, it is known that the dominant wind direction can vary throughout the Project Area according to the influence of local topography. For more information regarding wind speed and wind direction variability, please refer to the annual data reports published by Hoefler Consulting Group and SLR International for the Pebble Limited Partnership (example: Hoefler, 2010).

2.3 SOLAR RADIATION

Site-specific incident solar radiation data have been collected at Pebble 1, 4, 5 and 6 for varying periods between 2006 and 2010. Monthly mean hourly incident solar radiation values (W/m^2) are presented in Table 2.4. It is evident that solar radiation in the MSA varies slightly by location but substantially by date. It is typically greatest in May and least in December, with average respective values of approximately 220 W/m^2 and 10 W/m^2. It can be generally assumed that incident solar radiation is greatest in June in the northern hemisphere, when the sun is at its highest and daylight hours are the longest; however, the fact that incident solar radiation is nearly always greater in May than in June in Table 2.4 suggests that cloud cover is likely much greater in June than in May at the Pebble MSA.

2.4 RELATIVE HUMIDITY

Site-specific relative humidity data have been collected at Pebble 1, 4, 5 and 6 for varying periods between 2006 and 2010. Monthly average percent relative humidity values are presented in Table 2.5. It

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is evident that relative humidity in the MSA is high all year round with an annual average of 83%, and mean monthly values ranging from a low of 75% in May to a high of 88% in October.

2.5 ICE GROWTH

Cumulative ice formation on ponds (including tailings ponds) over the course of the winter months was calculated using the modified Stefan equation (US Army Corps, 2004):

$$t_i = C \cdot \sqrt{AFFD} \qquad (2.2)$$

Where:

t_i = ice thickness (inches)
C = a coefficient dependent on wind and snow conditions and water body size (^{o}F days)
AFFD = the accumulated freezing degree days index

The AFFD in the MSA was calculated from average daily temperatures estimated for the MSA based on Iliamna data, with the MSA assumed to be an average 4.9 ^{o}F cooler than Iliamna, based on an elevation of 1560 ft and a lapse rate of 3.6 ^{o}F/1000 ft, as per Section 2.1 above. The coefficient C was obtained from Table 1 in the US Army Corps of Engineers Technical Note 04-3 (US Army Corps, 2004). A value of 0.8 was selected because it pertains to windy lakes with no snow cover, which is generally consistent with conditions in the MSA. Assuming no snow cover, a mean annual cumulative ice thickness of 42 inches (1067 mm) was calculated, with corresponding minimum, 95th percentile, and maximum cumulative annual values of 26 inches, 50 inches, and 54 inches, respectively. These values are generally consistent with conditions at Port Alsworth on Lake Clark, where the maximum recorded ice thickness is 51 inches. Based on MSA temperature values and ice cover observations from Port Alsworth, ice on ponds in the MSA can be expected to consistently exist between November and May, with some ice also commonly present in October and June.

2.6 EVAPORATION

The average annual measured evaporation value for the Pebble Project area (meteorological stations Pebble 1, 4, 5 and 6) is approximately 11.1 inches for the months of May through October, as summarized in Table 2.6. This value assumes a standard Class A pan coefficient of 0.7, but a more appropriate value for areas of high relative humidity and strong winds such as those at the Pebble Project area is likely 0.6 (Maidment, 1992). Accordingly, the measured pan data equate to an equivalent or lake evaporation value of 9.5 inches. However, evaporation also occurs in April and October, which is not included in these measurements. Based on the Penman-Monteith potential evapotranspiration values estimated below, the PET values in April and October represent approximately 70% and 45% of the September value, respectively, which when accounted for, increases the effective annual evaporation to approximately 10.4 inches.

Accurately measuring evaporation in remote and windy locations such as the Pebble Project area is very challenging, and despite the great efforts made to ensure accurate data collection, there is the potential for possible data errors. The general consistency of the values in Table 2.6 provides some validation of the data, but in addition, potential evapotranspiration (PET) values, which are generally representative of lake evaporation, were calculated. A number of different PET equations are available in the literature, but

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for this purpose the Thornthwaite and Penman-Monteith equations were selected because they are reasonably simple, commonly applied, and tend to give reasonably accurate results.

Using the Thornthwaite method, as outlined by Ponce (1989), the potential monthly PET was estimated based on the average monthly temperature in degrees Celsius at Pebble 1 according to the equation:

$$PET\ (inches) = 0.63(10T/I)^{a}$$

Where:

T = monthly average temperature (^{o}C).
I = the sum of the i values for the year, where $i = (T/5)^{1.514}$.
$a = 6.751x10^{-7}(I^{3}) - 7.71x10^{-5}(I^{2}) + 1.792x10^{-2}(I) + 0.49239$.

The resultant annual PET for the Pebble 1 site is 12.0 inches (May to September), which is very similar to the measured evaporation value. The estimated monthly distribution of PET is presented in Table 2.7.

The Penman-Monteith (P-M) model is considerably more complex than the Thornthwaite model, and uses a combination of radiative and aerodynamic terms for a coupled energy and mass balance to calculate PET. The P-M model also attempts to account for the control on PET exerted by plants, in the form of stomatal resistance. Temperature, wind, solar radiation and relative humidity data collected at Pebble 1 were all input to the model, and considerations were also made for albedo and plant characteristics at the Pebble 1 site. The resultant annual PET estimated by the model was 9.3 inches, which is very similar to the Thornthwaite PET and measured pan evaporation values. The estimated monthly distribution of PET is presented in Table 2.7.

The estimated PET values provide reasonable validation for the measured evaporation values. The measured values, along with estimated April and October values, were selected as the best representative MSA values. These values indicate a mean annual pond evaporation of approximately 10.4 inches, with a maximum mean monthly value of 2.6 inches in June.

2.7 ACTUAL EVAPOTRANSPIRATION

Actual evapotranspiration (AET) was calculated as part of a site wide water balance model discussed in Section 1.1. Typically, PET represents the evapotranspiration for a full vegetated cover on relatively flat tilled ground with no shortage of water, whereas AET is limited by the water available each month. For example, if the sum of snowmelt and rainfall in a given month is less than the PET, then the AET is less than the PET. Evapotranspiration is also limited by the soil moisture condition. Soil moisture capacity was estimated to be 4 inches (102 mm) for most sites and 14 inches (356 mm) for the high evaporation sites (wetlands).

The 4 inches value for most sites was estimated using the following information:

$$S_m = S_{max} * R_d * A$$

Where:

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S_m = soil moisture capacity
S_{max} = the maximum soil moisture for the MSA, conservatively estimated to be 2.4 inches for a 6.5 ft soil depth (NCEP, 2011).
R_d = the available water adjustment for rooting depth, estimated to be 1/3
A = the availability coefficient, estimated to be 50% in the MSA

The R_d value of 1/3 is based on an estimated vegetation rooting depth in the MSA of 20 inches (Canadell, 1996), and the recognition that soil compaction increases with depth and therefore soil moisture decreases with depth. Accordingly, it is assumed that the 20 inch rooting depth, which equates to 1/4 of the 6.5 ft soil depth, contains 1/3 of the available moisture.

The 14 inch value for high evaporation areas was somewhat arbitrarily selected to ensure that soil moisture would not limit evapotranspiration losses in wetland areas.

When the soil moisture was below capacity, the PET was reduced linearly with soil moisture as follows:

Adjusted evapotranspiration = $(S_2 + S_1)$ *f* (PET)/$(2S_m)$

Where:
S_m = soil moisture capacity.
S_1 = soil moisture at the beginning of the month.
S_2 = soil moisture at the end of the month.
PET = the calculated full PET after allowance for latitude and land cover type and condition.
f = the reduction factor for non-ideal conditions for evapotranspiration (0.5 for most sites and 0.86 for high evaporation sites).

The result of this modelling is a mean annual AET estimate of 8.1 inches (206 mm) at the elevation of the Pebble 1 monitoring station. Mean monthly values are presented in Table 2.7. The modelled AET annual value is only slightly less than the estimated PET values, which suggests that evapotranspiration is only slightly inhibited by moisture availability in the MSA.

2.8 SUBLIMATION

Sublimation is the process by which moisture is returned to the atmosphere directly from snow and ice without passing through the liquid phase (Liston and Sturm, 2004). In areas where winter precipitation comprises a large proportion of annual precipitation, sublimation can play a significant role in the annual water balance. For example, Liston and Sturm estimate that sublimation can result in the loss of 10%-50% of the total winter snowfall in Arctic regions. The Pebble Project is situated in a sub-Arctic environment that is subject to mean monthly temperatures that are below freezing for seven months of the year, which results in a good portion of the annual precipitation falling as snow. Furthermore, the climate in the MSA is characterized by frequent high winds that often result in blowing snow which, according to Schmidt (1982), may increase the rate of sublimation by two orders of magnitude when compared to sublimation rates from a static snow surface under the same atmospheric conditions. Due

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to this combination of high winds and ample snowfall, sublimation likely plays a notable role in the annual moisture budget in the MSA.

Several studies have been undertaken to simulate sublimation in Alaska, primarily for Northern Alaska, from the foothills of the Brooks Range to the Arctic Coast. Two such studies were undertaken by Bowling et al. (2004) and Liston and Sturm (2002). Both of these studies modelled variations in sublimation along a continual gradient from rolling uplands to the coastal plain. The characteristics of the coastal plain zone appear most comparable to those in the MSA, with mean wind speed similar but slightly lower than and mean percent relative humidity very similar to values measured in the study area. However, precipitation is considerably higher in the study area than in the coastal plain zone. Bowling suggests that sublimation in the coastal zone is precipitation limited, insinuating that if more snow were to occur in this zone sublimation rates would be higher. Therefore, it is assumed that sublimation rates in the MSA are slightly greater than those simulated for the coastal plain zone.

Maximum sublimation rates predicted by Bowling et al. and Liston and Sturm for their coastal plain zones occurred in 1995 and were 3.94 inches (100 mm) and 3.15 inches (80 mm), respectively. Bowling also estimated a sublimation value of 3.51 inches (89 mm) for a nearby, similar coastal location. As sublimation rates are expected to be at least as high in the MSA, a rate of 4 inches per year (102 mm per year) was selected as representative. Many studies have presented wide ranges of sublimation rates as percentages of total winter precipitation, including the range of 10%-50% discussed above. Other ranges include 5%-50%, 15%-41%, 20%-47%, 21%-34% and 23%-41% (Liston and Sturm, 2002; Bowling et al., 2004). When the sublimation rate of 4 inches per year (102 mm per year) is assessed as a percentage of the total winter (Nov-Apr) precipitation in the study area, the result is approximately 17%. This value lies at the low end of the ranges presented above, but this is not surprising given that the winter precipitation is generally much greater than at the sites for which these ranges were derived. Furthermore, the value is consistent with sublimation values derived using a Blowing Snow Model developed by Pomeroy et al. (1997), which was run using wind data collected at Pebble 1.

During the operation of the project there is potential for airborne dust to settle on the snow surface and theoretically affect the rate of sublimation, which would in turn impact the water balance of the project. No literature could be found that addresses this possibility. However, as stated above, sublimation in the MSA is thought to be driven primarily by the wind-blown transport of snow. As the proposed dust particles are also transportable by wind, it is assumed that they should have little impact on the mobility of the snow surface. It is therefore estimated that the effects of snow surface dust particulate on sublimation rates will be negligible. The assumptions about the potential effects of dust will be re-assessed at such time that more information becomes available.

In summary, the sublimation rate in the MSA is assessed at 4 inches per year (102 mm per year), based upon sublimation modelling studies conducted for Northern Alaska, and supported by common sublimation ranges presented in the relevant literature and by basic modelling of sublimation using site wind data. The 4 inches is assumed to be distributed fairly evenly throughout the snow occurrence months of October through May according to the results of the Pomeroy blowing snow model mentioned above. Monthly estimates of monthly average sublimation are provided in Table 2.8, and are assumed to apply to the entire MSA.

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2.9 PRECIPITATION

2.9.1 General

Precipitation in the region of the MSA is very difficult to accurately measure because of the consistently strong wind conditions. These conditions result in poor precipitation gage catch efficiency, particularly during the winter months. Accordingly, the historical precipitation records for the region, and in particular those at Iliamna, undoubtedly underestimate actual precipitation. The situation is likely even more pronounced in the MSA, where wind speeds are even greater than at Iliamna. As a result, a water balance model, as discussed in Section 1.1, was used as the primary basis to develop realistic estimates of precipitation in the MSA. This model was calibrated with extensive measured streamflow and groundwater level data, which are believed to be much more accurate than the measured precipitation. Inputs of precipitation were adjusted during the model calibration process to produce flow and groundwater level predictions consistent with the measured values.

2.9.2 Iliamna Precipitation Data

The long-term total monthly precipitation record (1942 to 2010) collected at the Iliamna Airport was used as the initial basis for synthesizing a corresponding long-term precipitation record for the Pebble Site. Of the 816 months of data in the Iliamna record, 84 were found to be incomplete. In order to complete the Iliamna record, 80 of the 84 monthly data gaps were infilled using data collected at Port Alsworth, which is located about 35 miles NNE of Iliamna on the shore of Lake Clark. Concurrent data for the two sites were compared using mass and double mass curves to determine the relationship between precipitation at the two locations. The mass curves illustrated that measured precipitation was about 70% higher at Iliamna than at Port Alsworth. A short term mass plot was then prepared to verify that there were no important seasonal variations masked within the plotting scale, and it was found that the 70% increase applied to all seasons. Consequently, a multiplier of 1.7 was used to infill gaps during the period of 1961 to 2009 in the Iliamna precipitation record. The remaining four months of missing data that had no concurrent Port Alsworth data were infilled using monthly averages or site data collected at Pebble 1. The completed precipitation record for Iliamna is summarized in Table 2.9 in terms of monthly and annual mean, minimum and maximum values. The average annual measured precipitation at the Iliamna Airport is 26.7 inches (678 mm). It is believed that the actual precipitation is likely greater due to undercatch of the precipitation gage, as is discussed in the following section.

2.9.3 Correlation between Iliamna and Pebble Site 1 Meteorological Station

The monthly precipitation data from the Iliamna Airport station were compared to concurrent data from the Pebble Site 1 meteorological station for the purpose of developing relations between these two datasets. Variations in precipitation are expected between the two locations as a result of factors such as:

- Orographic effects that result in greater precipitation at higher elevations. This is an important factor for frontal storm precipitation, but has little effect on convective storm precipitation that predominantly occurs during the summer months.

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- Poor and variable catch efficiency for both stations. The Iliamna station was not fitted with a wind shield and the Pebble Site 1 station, though outfitted with a Wyoming wind shield, is consistently subjected to extremely high winds. Both sites experience undercatch, but the degree of undercatch for each station is not known.
- Variations in storm tracking. Despite the reasonably close proximity of the two stations, with the Pebble Site 1 station located approximately 17 miles NW of the Iliamna station, storm systems appear to track differently over the two locations.
- Rain shadow effects that typically result in less precipitation on the leeward side of orographic features. At the Pebble site, this would be the northwest side of the hills because most storms are expected to arrive from the southeast.
- Natural variation of precipitation within a storm system.

Concurrent precipitation data collected from 2006 through 2009 at both Iliamna and Pebble Site 1 were used in the comparison. Site data collected prior to 2006 were not used in the assessment since those data are of relatively poor quality. During the comparison it was discovered that precipitation correlated differently during the summer and winter periods, largely because of the predominance of different storm systems at different times of year. Frontal storms occur in the winter while convective storms, which are less affected by elevation, are common in the summer. For the winter months (November through March) an orographic scaling factor of 1.10 per 100 m (328 ft) change in elevation was assumed, which is consistent with generally observed patterns in Coastal British Columbia (Loukas, 1994). This approach required the addition of another factor of 1.476 to provide agreement between measured precipitation at Iliamna and Pebble Site 1. This factor accounts for the fact that precipitation due to winter frontal systems is highly dependent on location as well as differences in elevation. For the non-winter months (April through October), the data suggest an orographic factor of 1.059 per 100 m (328 ft) change in elevation.

2.9.4 Pebble Site 1 Synthesized Long-Term Precipitation

To develop a long-term monthly precipitation time series for the Pebble Site 1 station, the relations derived above were applied to the long-term historical precipitation record for Iliamna. This resulted in a synthetic 68 year (1942 to 2009) monthly precipitation series that reasonably represents the precipitation values that would have been recorded at the Pebble Site 1 station over that period. However, as noted previously, the precipitation gages at both Iliamna and Pebble Site 1 likely did not measure the true precipitation, particularly during the winter months when the wind speeds are greatest and precipitation primarily occurs as snow. To account for this undercatch condition, a factor of 1.60 was applied to all of the calculated winter (November to March) precipitation values (those representing what the gage would have measured), and a factor of 1.25 was applied to all non-winter data. These factors were determined during the calibration purpose for the site wide watershed model discussed previously. The resulting long-term precipitation series, which is presented in Table 2.10, provides an estimate of the monthly precipitation that occurred at Pebble Site 1 from 1942 to 2009.

To summarize, estimates of long-term precipitation for the Pebble Site 1 station were generated by adjusting the long-term precipitation record for Iliamna by factors of 1.059 per 100 m change in elevation (orographic) and of 1.25 (undercatch) for the non-winter months of April to October, and

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by factors of 1.10 per 100 m change in elevation (orographic), 1.476 (location) and 1.60 (undercatch) for the winter months of November to March. The resulting mean annual precipitation is 56.6 inches (1438 mm).

2.9.5 Long-Term Precipitation for Locations Throughout the Mine Study Area

The previous sections discuss the generation of a long-term precipitation record for Pebble Site 1. However, precipitation estimates will almost certainly be required at other locations in the MSA. In order to generate precipitation estimates at these other locations, orographic and location factors can be applied to the Pebble Site 1 values. Different orographic factors were selected for winter and summer according to the coefficients determined when comparing the Iliamna and Pebble Site 1 data, and location factors were determined using a watershed model calibrated with streamflow records for multiple locations. To adjust Pebble Site 1 precipitation data to account for elevation changes, the following equation applies:

P = PS1*a^(H/328.1)

Where:

P = the monthly precipitation at the selected location (inches).
PS1 = the monthly precipitation at Pebble Site 1 (inches).
a = the orographic factor,
a_{winter} = 1.10
a_{summer} = 1.059
H = the difference in elevation between two locations (feet).

An example application of this scaling equation is as follows:

Location of Interest: X
Elevation of X: 1000 ft
Elevation of Pebble Site 1: 1560 ft
Month of Interest: June
Orographic factor for June (a): 1.059
Mean precipitation in June at Pebble Site 1: 2.4 inches

Therefore:

P = PS1*a^(H/328.1)
P = 2.4 *1.059^((1000-1560)/328.1)
P = 2.2 inches

Once precipitation has been adjusted for orographic effects, a location factor must be applied. Site specific location factors were determined through the water balance modelling process discussed previously. The location factors were derived through calibration of the model with the measured streamflow, and were determined for 21 sub-watersheds that are monitored with a hydrologic monitoring station. The summer and winter undercatch values for Pebble Site 1, presented above, were selected such that the location factor that applies to the Pebble Site 1 station is equal to 1. A summary of the location factors is provided in Table 2.11. To apply these

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factors, simply multiply the orographically corrected precipitation estimate by the location factor associated with the nearest downstream hydrologic monitoring station that is located within the same watershed for which the precipitation estimate is being calculated. In an attempt to simplify the above methodology for estimating precipitation in the study area, all of the previously discussed adjustments and corrections have been incorporated into the delineation of a precipitation map of the study area, which is presented on Figure 2.6. In order to estimate precipitation anywhere within the North Fork Koktuli, South Fork Koktuli or Upper Talarik watersheds, simply locate the point of interest on Figure 2.6 and read off the corresponding mean annual precipitation value.

2.9.6 Snowpack

The precipitation records from the MSA meteorological stations (2006 - 2010) do not differentiate between rainfall and snowfall. The portion of total annual precipitation falling as snow at Iliamna is in the order of 25% to 30%. Due to consistently lower temperatures in the MSA, it is reasonable to conclude that a greater portion of the total annual precipitation in the MSA will fall as snow. For the purpose of the monthly water balance model discussed previously, precipitation type was modelled as rain if the average monthly temperature was greater than -2 $^{\circ}$C and as snow if the average monthly temperature was below -3 $^{\circ}$C. Between these temperatures, the portion of precipitation falling as snow was varied linearly with the temperature. Using this methodology, snowfall at Pebble 1 was determined to comprise approximately 48% of the annual precipitation.

SNOTEL data for three locations southeast of the MSA (McNeil Canyon, Cooper Lake, and Anchor River Divide) are available from the US National Weather and Climate Centre, and are summarized in terms of snow water equivalent (SWE) on Figure 2.7. These stations, which range in elevation from 1200 to 1653 feet, indicate that the snowpack typically accumulates until early to mid-April, and then rapidly melts throughout late April and May. This pattern is consistent with the annual hydrograph patterns of streams in the MSA.

Snowpack depth is highly variable in the MSA site due to the occurrence of frequent and sustained high winds that redistribute the snowpack. To help quantify such a diverse snowpack, snow survey work was initiated in 2004, which included establishing numerous snow survey transects, including four permanent snow courses, and annually monitoring a further 12 to 23 transects within the Upper Talarik Creek and the North and South Fork Koktuli River watersheds. The snow survey transects were located such that they measured a variety of elevations and aspects, and surveys were conducted in early to mid-April in an effort to measure the maximum annual snowpack. Maximum annual snowpack depths from the snow survey are presented in Table 2.12. Measured snowpack values ranged from 5 to 20 inches of snow water equivalent (SWE), but typically averaged about 10 to 14 inches. Modelled basin average SWE values for the three watersheds, as presented in the 2004 through 2008 Pebble Project Environmental Baseline Document (PLP, 2011a), are generally in the order of 20 inches.

Ablation rates were also investigated during compilation of the Environmental Baseline Document. Ablation rates were calculated for approximately two week periods from early to mid-

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April until mid to late May at Pebble Snow Courses 1, 1A and 2 for the years of 2004 through 2008. The values were highly variable, and ranged from a low of -0.09 inches SWE per day to a high of 0.58 inches SWE per day, with an average ablation rate of 0.24 inches SWE per day. For more detailed information on ablation and snowpack data please refer to Chapter 7 of the Pebble Project Environmental Baseline Document (PLP, 2011a).

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SECTION 3.0 - HYDROLOGY

3.1 STREAMFLOW

The hydrologic analyses in this report are based primarily on streamflow data collected from twenty-six (26) stream gaging stations on the North Fork Koktuli River (NK), South Fork Koktuli River (SK), and Upper Talarik Creek (UT). These data are for the period of July 2004 to September 2010. Figure 1.1 shows the gage locations and identification codes.

Period of record monthly unit-discharge hydrographs for stream gaging stations that are near the outlets of three (3) major catchments in the MSA are presented on Figure 3.1, and corresponding average annual unit discharge hydrographs are provided on Figure 3.2. It is evident from these figures that all three primary drainages have very similar hydrograph patterns and annual unit runoff. There are some notable differences, however, with the NK having the lowest and highest monthly flows, and the SK and UT having the highest and lowest annual flows, respectively. Average monthly unit runoff values for the twenty-six (26) stations are presented in Table 3.1.

Chapter 7 Appendix 7.2A of the Environmental Baseline Document (PLP, 2011a) presents the methodology of the hydrologic analysis, includes detailed information on the locations of the stations, and presents the following findings based on the collected hydrology data:

- The mean annual discharge (MAD) values for all the MSA gages are presented in Table 3.2.
- The mean annual runoff at the gages on the lower reaches of the SK, NK, and UT basins (Stations SK100B, NK100A, and UT100APC3, respectively) ranged from 2.3 to 2.4 cfs/mi^2 over the period of record. Elsewhere, annual unit runoff varied from gage to gage because of catchment topography and precipitation, surface and subsurface flow exchanges along stream channels, and the inter-basin transfers of groundwater.
- The annual hydrographs for each gage show that large portions of the annual runoff occurred during the spring period due to snowmelt (30 percent to 35 percent of the annual runoff volume) and during the late summer/autumn period due to rainstorms (40 percent to 60 percent of the annual runoff volume).
- Groundwater plays a prominent role in the flow patterns of all the creeks and rivers that were studied, but its role was especially notable at SK100C, which goes dry seasonally because of upstream losses of surface flow to groundwater, and at UT119A, which gains such a substantial amount of flow from the SK that its hydrograph is dominated by baseflow.
- The highest mean annual unit runoff value was recorded at UT119A (7.1 cfs/mi^2), which is attributed to the substantial amount of groundwater that is transferred to it from the SK basin. An anomalously low mean annual unit runoff value was recorded at SK100C (1.3 cfs/mi^2), which is attributed to upstream losses of groundwater to the UT watershed, and the bypassing of additional groundwater beneath the gage prior to upwelling into the channel further downstream.
- High annual unit runoff values were recorded at SK119A (3.3 cfs/mi^2) and NK119A (3.1 cfs/mi^2) because of their high catchment elevations and the associated orographic enhancement of precipitation. SK124A recorded considerably lower annual unit runoff (around 2.3 cfs/mi^2), despite

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having similar basin characteristics, because of losses of surface flow to groundwater just upstream of the gage.

3.2 PEAK FLOW

Scaling curves generally appropriate for estimating peak instantaneous flows for natural drainages in the MSA are presented on Figures 3.3 and 3.4. Figure 3.3 is for lowland streams and Figure 3.4 is for upland streams. These figures were generated by combining mean annual peak flow data from the MSA with USGS regionally based flood-frequency relations. Details of this approach are provided in Appendix 7.2C of the Pebble Project Environmental Baseline Document (PLP, 2011a).

Figures 3.3 and 3.4 provide general scaling relations for the MSA. However, localized variability occurs even at specific scales, as is evident on Figure 3.5, which presents scaling trendlines and the mean annual maximum daily discharge values for the MSA gaging stations. These trendlines provided the foundation for the curves on Figures 3.3 and 3.4, and accordingly the variability of the data points about the trendlines should be considered when making peak flow estimates for particular drainages.

3.3 LOW FLOW

The 10-year, 7-day low flow (7Q10) is a commonly cited statistic in hydrology and fisheries studies. The 7Q10 for each gaging station was estimated by performing a frequency analysis on the annual series of minimum 7-day average flows in the record of each station. Separate analyses were performed for winter and summer low flows because different concerns may exist for each season. Summer was defined as July through September, and the rest of the year was considered winter. The Environment Canada frequency analysis program "LFA" was used to fit a Gumbel III distribution to the annual minima at each station for each season.

The results of the analysis are presented in Table 3.3. The summer low flows are greater than the winter low flows at all stations by an average factor of 2.4. The gaging stations that are known to go dry (SK100C, SK124A, NK119B) have 7Q10 values of 0 cfs, as expected.

The low flows are plotted versus drainage area on Figure 3.6 (winter) and Figure 3.7 (summer). The values for mainstem channel stations are connected by solid lines. The two plots show the following main patterns:

- Generally, low flows in the winter are lower than those in the summer.
- At any given drainage area, low flows in Upper Talarik Creek are equal to or greater than flows in the South or North Fork Koktuli Rivers. This is explained mainly by the more abundant aquifer storage in the UT basin, and also by the interbasin transfer of groundwater from the SK basin that enters the UT.
- At drainage areas of approximately 20 to 60 mi^2, the SK has lower flows than the NK and UT, because of the loss of surface flow to groundwater. Low flows increase in the SK at larger drainage areas due to the upwelling of groundwater further downstream.

Additional discussions regarding the low flows in the MSA are presented in Appendix B of the "Pebble Project Surface Water Hydrology Annual Technical Report 2009 -2010" (PLP, 2011b).

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SECTION 4.0 - FREQUENCY-MAGNITUDE ANALYSIS

4.1 INTENSITY-DURATION-FREQUENCY CURVES

Intensity-Duration-Frequency (IDF) curves for the MSA were generated according to the NOAA Atlas 14 Volume 7: Precipitation-Frequency Atlas of the United States, Alaska (NOAA, 2012), with adjustments for specific location and orographic effects. Since the extreme precipitation is derived from an annual maximum dataset, with no distinction of whether the storms were in the summer or winter, and since it's not possible to tell whether future extreme events will occur in summer or winter, a combined winter and summer orographic/location/undercatch factor of 2.1 was selected for the analysis. Discussions of the different factors are provided in Section 2.9. It should be noted that there is considerable uncertainty associated with this factor.

To validate the NOAA baseline values, the 2-year, daily precipitation event was calculated for Iliamna from the annual maximum daily precipitation series (1943 – 2010). This value was then converted to a 24-hour value using a factor of 1.13 (NOAA, 1973). A 24-hour precipitation depth of 1.95 inches was calculated, which agrees with the depth of 1.90 inches determined from the NOAA Atlas. The resulting IDF curves at the Pebble 1 Climate Station (elevation 1560 ft), for 30-minute to 10-day durations, are shown on Figure 4.1 and Table 4.1. Example 100 year values are 1.77 inches and 8.21 inches for the 1 hour and 24 hour storms, respectively.

4.2 PROBABLE MAXIMUM FLOOD

The probable maximum flood (PMF) is the flow resulting from the most severe combination of probable maximum precipitation (PMP) and basin hydrological conditions. The PMP is the precipitation that results from the worst possible meteorological conditions and is presented in Table 4.1 as 18 inches for 24 hours. The PMF is generally used for the design of facilities where substantial environmental risk or loss of life exists in the event of failure. It should be noted that the PMF is a purely hypothetical event that is sufficiently large to ensure that it is never exceeded, yet at the same time not so excessively large that design requirements are unnecessarily conservative.

In the MSA, snowmelt is an important consideration of the PMF and is dependent on the design of a facility. For example, a larger snowmelt component of the PMF is appropriate for a facility with no outlet as opposed to a facility with an outlet. Snowmelt is also dependent on the available snowpack within a catchment due to snowblow and varying annual accumulation based on location. Due to these varying snowmelt values, PMFs are not presented in this report and need to be calculated for each facility based on their design and location.

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SECTION 5.0 - CLIMATE CHANGE

The climate of the MSA has undergone substantial changes over the past century, most notably in terms of general trends of increasing seasonal and annual temperatures, and increases in the severity and duration of extreme precipitation events. Accordingly, there have also likely been some changes to snow accumulation, snow melt and streamflow patterns. Many of these changes, and particularly those pertaining to temperature, appear to be the result of strong atmospheric and oceanic climate forcings, rather than climate change, as it is commonly defined, and they are quite variable and localized. Regardless, however, it's important to be aware of the potential magnitude of possible future changes, and to incorporate this knowledge into the design process and planned operating procedures for the Pebble Project.

A report titled "Climate Change at the Pebble Project Site" was completed by Knight Piésold Ltd. in September 2009 (KP, 2009). The key findings of this report are as follows:

- A number of published works on climate change in Alaska are fairly consistent in stating that:
  - Alaska's climate has shown a strong warming trend over the past few decades and has experienced the largest regional warming of any state in the U.S.
  - Average annual temperatures have increased by approximately 5 °F (3 °C) since the 1960's.
  - Temperature increases are greatest in the winter months and lowest in the summer months.
  - Much of the recent warming occurred suddenly around 1977, coincident with the shift in the Pacific Decadal Oscillation (PDO), a large scale atmosphere and ocean regime shift.
  - Alaska has generally gotten wetter over the past few decades, although historical precipitation trends are not particularly strong or consistent. Increases in annual precipitation of up to 30% over the past century are often quoted.
  - The proportion of annual precipitation falling as snow is likely decreasing, which is consistent with increasing temperatures.
  - Trends in extreme precipitation are quite variable and dependent on the region, and
  - Projected future climate scenarios, as modeled by the UN Intergovernmental Panel on Climate Change (IPCC), indicate that over the next 100 years mean annual temperatures in the West Coast Region of Alaska, including the MSA, might increase in the order of 6 °F to 7 °F (3.5 to 4 °C) and mean annual precipitation might increase in the order of 15% to 20%. Other studies suggest similar increases in precipitation, but add that increased evaporation due to warmer temperatures will exceed precipitation increases, resulting in decreases in soil moisture and runoff. In contrast to this, the IPCC predicts increases of 20% to 40% for mean annual runoff.
- The mean annual temperature trends for climate stations in the general region of the MSA are generally consistent with the published information, with temperatures increasing at an average rate of approximately 0.08 °F/year, for a net change of approximately 5 °F (3°C) over the past 50 to 60 years.
- The most pronounced temperature increases in the region appear to be during the winter months of January to March, with a net change of approximately 8 °F (4.5°C) over the past 50 to 60 years.
- The smallest temperature increases in the region appear to be during the summer months of July to September, with a net change of approximately 3 °F (1.7°C) over the past 50 to 60 years.
- It appears that temperature changes in Alaska over the last century, and particularly over the last 60 years, can be more attributed to large scale climate oscillations than to climate change.

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- If one accounts for the fact that the major shift in the regional temperature patterns is coincident with a shift in the Pacific Decadal Oscillation (PDO), the increasing temperature trends for climate stations in the general region of the MSA reduce from approximately 0.08 °F/year to a more moderate average rate of approximately 0.02 °F/year, which corresponds to a net climate change related temperature increase of approximately 1 °F (0.5 °C) over the past 50 to 60 years.
- It appears that we have recently, or are currently, entering a cooling phase of the PDO. Correspondingly, it is possible that the annual mean temperature trend may actually decline or remain relatively constant over the next two to three decades.
- The annual precipitation trends for climate stations in the general region of the MSA are weak and inconsistent, which generally suggests that there has been little or no change in patterns of total annual precipitation.
- It appears that the proportion of annual precipitation that falls as snow is decreasing, which is consistent with IPCC findings.
- It appears that the severity of extreme precipitation events is increasing.
- Regional historical streamflow data indicate that annual hydrograph shapes are changing, with increasing winter flows and decreasing summer flows. These patterns are consistent with the expected effects of increasing temperatures, as demonstrated by the results of hydrologic models.
- Trends of annual peak instantaneous discharge are relatively flat or stable, but could possibly increase due to potential increases in extreme precipitation and/or snowmelt rates, and
- The uncertainty of hydroclimatic conditions are typically considered in the design process for a mine through the use of factors of safety and by incorporating adaptability into the designs and operating plans for the mine. Consequently, mine structures are inherently well-suited to accommodate possible effects due to climate change.

For additional details regarding the climate change refer to the climate change report (KP, 2009).

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SECTION 6.0 - CONCLUSIONS

The key findings of this study are summarized below. All meteorological values presented below were calculated for the Pebble 1 meteorological station, unless stated otherwise. All hydrological values are generally presented for the MSA, unless noted otherwise.

- The long-term average annual temperature is estimated to be 30.4°F (-0.9°C), with average monthly temperatures ranging from a high of 51.0°F (10.6°C) in July to 11.5°F (-11.4°C) in January.
- On average, temperatures are 4.5°F (2.5°C) cooler at Pebble 1 than at Iliamna.
- Wind data from the six Pebble climate stations indicate that the wind direction and magnitude varies in the MSA. The average annual wind speed at these stations varied from a low of 10.9 mph (17.5 km/hr) at Pebble 3 in 2008 to a high of 18.6 mph (29.9 km/hr) at Pebble 4 in 2007.
- The maximum instantaneous wind speed recorded during the measurement period was 149 mph (239 km/hr) at the Pebble 5A station.
- Maximum solar radiation occurs in May and minimum radiation occurs in December, with respective rates of approximately 220 W/m^2 and 10 W/m^2.
- Relative humidity is high all year round with an annual average of 83%, and monthly average values ranging from a low of 75% in May to a high of 88% in October.
- Pond ice accumulation was estimated to be 42 inches (1067 mm) per year. Pond ice is expected to consistently occur between November and May, and may also occur into October and June.
- The mean annual pond evaporation is estimated to be approximately 10.4 inches (264 mm), with a maximum mean monthly value of 2.6 inches (66 mm) in June.
- The mean annual actual evapotranspiration (AET) is estimated to be 8.1 inches (206 mm).
- The sublimation rate is assessed at 4 inches (102 mm) per year. The 4 inches is assumed to be distributed fairly evenly throughout months of October through May.
- The observed mean annual precipitation at Pebble 1 during 2006 through 2010 was 37 inches (948 mm). The long-term mean annual precipitation value for Pebble 1 is estimated to be approximately 57 inches (1440 mm). This value is derived from a watershed model that was calibrated with all available measured flow data. The large difference between the measured and estimated precipitation is largely attributed to the poor catch efficiency of the precipitation gage.
- The measured long-term mean annual precipitation at Iliamna is 27 inches (680 mm). This value is believed to underestimate actual conditions because of suspected poor catch efficiency of the gage.
- The maximum 1-day precipitation recorded at Iliamna was 3.5 inches (89 mm), which was recorded in July. This corresponds to an estimated 7.3 inches (185 mm) for Pebble 1.
- Approximately 50% of precipitation is estimated to fall as snow.
- Measured annual maximum snowpack values ranged from 5 to 20 inches (127 to 508 mm) of snow water equivalent (SWE), but typically averaged about 10 to 14 inches (254 to 356 mm). Modelled annual maximum basin average SWE values are generally in the order of 20 inches (508 mm).
- Runoff results from rainfall and snowmelt, producing an annual hydrograph with two peak flow seasons. The first peak occurs in May as a result of snowmelt, while the second peak occurs between August and October as a result of rainfall events.
- Mean annual streamflow values were estimated for each of the 26 stream gaging stations in the MSA. The mean annual unit runoff at the gages on the lower reaches of the SK, NK, and UT basins ranged from 2.3 to 2.4 cfs/mi^2 (25 to 26 l/s/km^2) over the period of record. Considerable variability in runoff is

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evident, with the mean annual unit runoff for tributary streams ranging from 7.1 cfs/mi^2 to 1.3 cfs/mi^2 (78 to 14 l/s/km^2).

- The streams can be classified as either upland or lowland channels. Scaling relationships for estimating peak instantaneous flows for both channel types, for various flood events, were developed. For a drainage area of 10 mi^2, 10 year peak flows are estimated to be approximately 929 cfs (26 m^3/s) for upland channels and 353 cfs (10 m^3/s) for lowland channels.
- Low flows occur during both the summer and winter months, although flows in late winter tend to be the lowest of the year. Reaches of certain streams can go completely dry, particularly during the winter months. Unit 10-year 7-day low flow estimates are quite variable, even at the outlets of the three primary watersheds, and range from 0.31 cfs/mi^2 (3.4 l/s/km^2) at the outlet of the North Fork Koktuli River to 0.88 cfs/mi^2 (9.6 l/s/km^2) at the outlet of Upper Talarik Creek.
- The probable maximum precipitation (PMP) was estimated to be 18 inches (457 mm) for a 24 hr storm.
- The probable maximum flood (PMF) is not presented in this report and needs to be calculated for each facility based on the specifics of its design and location.
- The mean annual temperature trends for climate stations in the general region indicate temperatures have increased at an average rate of approximately 0.08 °F/year over the past 50 to 60 years, for a net change of approximately 5 °F (3°C). However, it appears that temperature changes in Alaska over the last century, and particularly over the last 60 years, can be more attributed to large scale climate oscillations than to climate change. It appears that we have recently entered a cooling phase, and correspondingly it is possible that the annual mean temperature trend may actually decline or remain relatively constant over the next two to three decades.
- The annual precipitation trends for climate stations in the general region are weak and inconsistent, which generally suggests that there has been little or no change in patterns of total annual precipitation.
- It appears that the severity of extreme precipitation events is increasing.
- Regional historical streamflow data indicate that annual hydrograph shapes are changing, with increasing winter flows and decreasing summer flows. These patterns are consistent with the expected effects of increasing temperatures.

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SECTION 8.0 - CERTIFICATION

This report was prepared, reviewed and approved by the undersigned.

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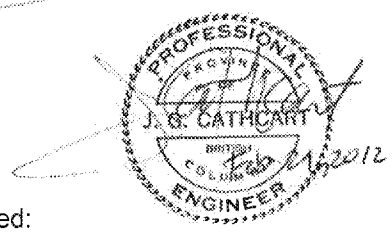

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TABLE 1.1

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
CLIMATOLOGY AND HYDROLOGIC STATIONS

Print: 2/24/2012 11:42

Climate Stations	Coordinates		Record Period
	Latitude	Longitude	
Pebble 1	59.903	-155.330	2005-2010
Pebble 3	59.838	-155.304	2005-2009
Pebble 4	59.831	-155.301	2007-2009
Pebble 5	59.902	-155.427	2008-2010
Pebble 5A	59.900	-155.478	2008-2010
Pebble 6	59.908	-155.205	2008-2010
Continuous Surface Hydrology Stations	**Coordinates**		**Record Period**
	Latitude	**Longitude**	
SK100A	59.833	-155.776	2004-2007
SK100B	59.793	-155.524	2004-2010
SK100B1	59.805	-155.474	2005-2007
SK100C	59.813	-155.414	2004-2010
SK100F	59.848	-155.281	2004-2007
SK100G	59.874	-155.285	2004-2007
SK119A	59.822	-155.428	2004-2010
SK124A	59.825	-155.367	2004-2010
NK100A	59.843	-155.719	2004-2010
NK100A1	59.850	-155.607	2006-2010
NK100B	59.934	-155.424	2006-2010
NK100C	59.930	-155.412	2004-2010
NK119A	59.918	-155.402	2004-2010
NK119B	59.927	-155.412	2006-2010
UT100B	59.787	-155.254	2004-2010
UT100C	59.804	-155.218	2006-2010
UT100C1	59.840	-155.164	2006-2010
UT100C2	59.880	-155.170	2006-2010
UT100D	59.908	-155.200	2004-2010
UT100E	59.918	-155.277	2004-2010
UT119A	59.791	-155.256	2004-2010
UT135A	59.884	-155.155	2006-2010
UT100-APC1	59.717	-155.303	2007-2010
UT100-APC2	59.702	-155.247	2007-2010
UT100-APC3	59.656	-155.211	2007-2010
UT106-APC1	59.700	-155.230	2007-2010

M:\1\01\00176\37\A\Data\hydromet\[Site Station Coordinates.xlsx]Station Data

NOTES:

1. THE CLIMATE STATIONS RECORD PERIOD CORRESPONDS TO THE TIME PERIOD THE CLIMATE STATION WAS OPERATIONAL.
2. THE HYDROLOGY STATIONS RECORD PERIOD CORRESPONDS TO THE AVAILABLE DATA FROM THE REV 6 DATASET.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	24FEB'12	ISSUED WITH REPORT VA101-176/40-1	MDH	NS	JGC

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TABLE 2.1

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
SUMMARY OF CONCURRENT SITE AND ILIAMNA MONTHLY TEMPERATURE DATA

Print: 2/24/12 11:54

Year	Month	Station Average Temperature (°F)							
		Cominco (elev. 1175 ft)	Pebble 1 (elev. 1560 ft)	Pebble 3 (elev. 1000 ft)	Pebble 4 (elev. 1200 ft)	Pebble 5 (elev. 1400 ft)	Pebble 5A (elev. 2300 ft)	Pebble 6 (elev. 800 ft)	Iliamna (elev. 190 ft)
1991	January	-----	-----	-----	-----	-----	-----	-----	17.9
	February	-----	-----	-----	-----	-----	-----	-----	14.3
	March	-----	-----	-----	-----	-----	-----	-----	23.3
	April	-----	-----	-----	-----	-----	-----	-----	36.4
	May	-----	-----	-----	-----	-----	-----	-----	44.7
	June	-----	-----	-----	-----	-----	-----	-----	49.9
	July	-----	-----	-----	-----	-----	-----	-----	55.5
	August	-----	-----	-----	-----	-----	-----	-----	53.3
	September	46.2	-----	-----	-----	-----	-----	-----	51.1
	October	33.3	-----	-----	-----	-----	-----	-----	-----
	November	19.4	-----	-----	-----	-----	-----	-----	25.0
	December	14.7	-----	-----	-----	-----	-----	-----	18.2
1992	January	18.0	-----	-----	-----	-----	-----	-----	20.6
	February	4.5	-----	-----	-----	-----	-----	-----	7.4
	March	19.6	-----	-----	-----	-----	-----	-----	21.1
	April	28.4	-----	-----	-----	-----	-----	-----	33.1
	May	38.1	-----	-----	-----	-----	-----	-----	41.7
	June	48.9	-----	-----	-----	-----	-----	-----	51.8
	July	53.6	-----	-----	-----	-----	-----	-----	56.2
	August	50.2	-----	-----	-----	-----	-----	-----	54.2
	September	35.2	-----	-----	-----	-----	-----	-----	-----
	October	27.1	-----	-----	-----	-----	-----	-----	33.1
	November	23.2	-----	-----	-----	-----	-----	-----	25.7
	December	16.2	-----	-----	-----	-----	-----	-----	18.8
1993	January	11.5	-----	-----	-----	-----	-----	-----	15.3
	February	18.7	-----	-----	-----	-----	-----	-----	21.4
	March	27.0	-----	-----	-----	-----	-----	-----	28.2
	April	37.0	-----	-----	-----	-----	-----	-----	40.0
	May	45.7	-----	-----	-----	-----	-----	-----	48.3
	June	50.4	-----	-----	-----	-----	-----	-----	54.1
	July	56.3	-----	-----	-----	-----	-----	-----	58.7
	August	52.2	-----	-----	-----	-----	-----	-----	56.7
	September	-----	-----	-----	-----	-----	-----	-----	48.1
	October	-----	-----	-----	-----	-----	-----	-----	39.6
	November	-----	-----	-----	-----	-----	-----	-----	28.6
	December	-----	-----	-----	-----	-----	-----	-----	27.8
2005	January	-----	14.5	-----	-----	-----	-----	-----	23.4
	February	-----	18.5	-----	-----	-----	-----	-----	22.7
	March	-----	25.0	-----	-----	-----	-----	-----	29.1
	April	-----	28.2	-----	-----	-----	-----	-----	33.8
	May	-----	44.8	-----	-----	-----	-----	-----	47.4
	June	-----	52.9	-----	-----	-----	-----	-----	54.5
	July	-----	57.2	-----	-----	-----	-----	-----	58.1
	August	-----	52.7	-----	-----	-----	-----	-----	57.0
	September	-----	43.7	-----	-----	-----	-----	-----	49.1
	October	-----	28.8	-----	-----	-----	-----	-----	35.0
	November	-----	8.6	-----	-----	-----	-----	-----	14.2
	December	-----	26.4	28.0	-----	-----	-----	-----	29.9
2006	January	-----	3.0	4.5	-----	-----	-----	-----	4.7
	February	-----	18.3	19.9	-----	-----	-----	-----	21.6
	March	-----	16.0	17.8	-----	-----	-----	-----	17.9
	April	-----	24.4	27.5	-----	-----	-----	-----	28.9
	May	-----	40.6	42.8	-----	-----	-----	-----	44.6
	June	-----	46.9	48.6	49.3	-----	-----	-----	51.0
	July	-----	51.1	52.5	51.8	-----	-----	-----	55.2
	August	-----	48.2	49.8	49.1	-----	-----	-----	52.7
	September	-----	44.8	46.2	45.9	-----	-----	-----	49.3
	October	-----	34.0	36.0	35.4	-----	-----	-----	40.0
	November	-----	7.9	10.4	9.9	-----	-----	-----	16.2
	December	-----	14.0	15.6	16.0	-----	-----	-----	17.5
2007	January	-----	10.0	11.8	11.7	-----	-----	-----	12.6
	February	-----	18.3	19.9	19.6	-----	-----	-----	22.9
	March	-----	0.5	3.0	2.5	-----	-----	-----	6.2
	April	-----	33.1	34.5	34.0	-----	-----	-----	36.6
	May	-----	39.2	40.6	40.3	-----	-----	-----	43.0
	June	-----	47.1	49.1	48.2	-----	-----	-----	51.4
	July	-----	52.0	53.6	52.9	52.8	-----	-----	56.4
	August	-----	52.2	53.4	53.1	52.5	-----	53.9	56.3
	September	-----	44.1	45.5	45.3	44.7	41.4	46.2	50.1
	October	-----	28.4	30.6	30.2	29.1	26.3	30.0	34.6
	November	-----	26.4	28.9	28.4	26.9	23.9	28.9	32.7
	December	-----	15.3	17.8	17.6	15.9	15.1	17.3	21.1
2008	January	-----	5.0	4.5	7.0	5.1	4.5	6.5	7.5
	February	-----	9.0	10.4	10.6	8.3	10.4	9.6	-----
	March	-----	18.5	17.4	19.8	17.7	17.5	20.4	22.7
	April	-----	21.7	20.3	23.0	21.8	20.4	24.0	27.8
	May	-----	37.0	34.5	38.3	36.8	34.5	40.6	42.6
	June	-----	45.0	42.4	45.9	45.9	42.4	47.7	49.1
	July	-----	48.4	45.7	49.6	49.4	45.7	51.3	53.9
	August	-----	49.8	47.8	50.9	50.5	47.9	51.2	54.0
	September	-----	42.4	39.9	43.7	43.0	39.9	44.5	47.8
	October	-----	22.5	21.4	24.3	23.2	21.4	23.4	29.0
	November	-----	12.7	12.6	14.7	13.4	12.5	13.7	18.3
	December	-----	17.4	16.0	18.7	17.8	16.0	17.6	22.9
2009	January	-----	9.3	-----	-----	9.6	9.4	9.4	12.4
	February	-----	13.1	-----	-----	13.6	11.8	13.9	15.4
	March	-----	10.9	-----	-----	11.5	-----	13.3	15.2
	April	-----	26.4	-----	-----	26.1	26.6	28.5	30.2
	May	-----	42.1	-----	-----	41.8	41.1	43.9	45.3
	June	-----	46.8	-----	-----	47.6	44.0	49.0	50.1
	July	-----	54.0	-----	-----	54.8	51.8	55.9	56.2
	August	-----	49.3	-----	-----	50.0	47.2	51.6	54.3
	September	-----	43.0	-----	-----	43.0	40.5	44.2	47.4
	October	-----	34.7	-----	-----	35.2	32.6	37.3	41.3
	November	-----	12.4	-----	-----	13.0	11.2	13.9	18.3
	December	-----	22.5	-----	-----	21.4	21.0	21.1	25.0
2010	January	-----	15.6	-----	-----	16.0	-----	15.6	17.8
	February	-----	19.8	-----	-----	20.0	19.8	21.9	24.9
	March	-----	14.5	-----	-----	-----	14.2	-----	19.0
	April	-----	26.4	-----	-----	-----	25.7	-----	30.8
	May	-----	39.3	-----	-----	-----	37.4	-----	43.5
	June	-----	46.1	-----	-----	-----	43.6	-----	50.7
	July	-----	47.1	-----	-----	-----	-----	-----	51.6
	August	-----	48.7	-----	-----	-----	-----	-----	53.4
	September	-----	45.4	-----	-----	-----	-----	-----	49.1
	October	-----	31.3	-----	-----	-----	-----	-----	-----
	November	-----	20.9	-----	-----	-----	-----	-----	-----
	December	-----	1.6	-----	-----	-----	-----	-----	-----

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NOTES:

1. ILIAMNA DATA FOR STATION AT ILIAMNA FAA AIRPORT, AS PUBLISHED ON WESTERN REGIONAL CLIMATE CENTER WEBSITE (WWW.WRCC.DRI.EDU).
2. THE PEBBLE STATION VALUES ARE PROVIDED BY HOEFLER CONSULTING GROUP.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	07JUN11	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

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TABLE 2.2

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
COMPARISON OF ILIAMNA AND MINE SITE AREA AVERAGE MONTHLY TEMPERATURE DATA

Print: 2/24/12 11:56

Station	Year	Temperature (°F)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Iliamna	2005	23.4	22.7	29.1	33.8	47.4	54.5	58.1	57.0	49.1	35.0	14.2	29.9	37.8
Mine Site		14.5	18.5	25.0	28.2	44.8	52.9	57.2	52.7	43.7	28.8	8.6	26.4	33.4
Difference		-8.9	-4.2	-4.1	-5.5	-2.6	-1.7	-0.9	-4.3	-5.4	-6.2	-5.6	-3.5	-4.4
Iliamna	2006	4.7	21.6	17.9	28.9	44.6	51.0	55.2	52.7	49.3	40.0	16.2	17.5	33.3
Mine Site		3.0	18.3	16.0	24.4	40.6	46.9	51.1	48.2	44.8	34.0	7.9	14.0	29.1
Difference		-1.7	-3.2	-1.9	-4.4	-3.9	-4.0	-4.1	-4.5	-4.6	-6.1	-8.4	-3.5	-4.2
Iliamna	2007	12.6	22.9	6.2	36.6	43.0	51.4	56.4	56.3	50.1	34.6	32.7	21.1	35.3
Mine Site		10.0	18.3	0.5	33.1	39.2	47.1	52.0	52.2	44.1	28.4	26.4	15.3	30.5
Difference		-2.5	-4.6	-5.7	-3.5	-3.8	-4.3	-4.4	-4.1	-6.1	-6.2	-6.3	-5.8	-4.8
Iliamna	2008	7.5	-	22.7	27.8	42.6	49.1	53.9	54.0	47.8	29.0	18.3	22.9	-
Mine Site		5.0	9.0	18.5	21.7	37.0	45.0	48.4	49.8	42.4	22.5	12.7	17.4	27.5
Difference		-2.5	-	-4.2	-6.1	-5.5	-4.1	-5.5	-4.2	-5.4	-6.6	-5.5	-5.5	-
Iliamna	2009	12.4	15.4	15.2	30.2	45.3	50.1	56.2	54.3	47.4	41.3	18.3	25.0	34.3
Mine Site		9.3	13.1	10.9	26.4	42.1	46.8	54.0	49.3	43.0	34.7	12.4	22.5	30.4
Difference		-3.1	-2.3	-4.3	-3.8	-3.2	-3.4	-2.2	-5.0	-4.4	-6.6	-5.9	-2.6	-3.9
Iliamna	2010	17.8	24.9	19.0	30.8	43.5	50.7	51.6	53.4	49.1	-	-	-	-
Mine Site		15.6	19.8	14.5	26.4	39.3	46.1	47.1	48.7	45.4	31.3	20.9	1.6	29.7
Difference		-2.1	-5.1	-4.5	-4.4	-4.2	-4.6	-4.4	-4.7	-3.8	-	-	-	-
Iliamna	est. long-term	16.0	18.1	22.2	32.2	43.0	51.2	55.5	54.6	47.7	35.3	24.7	17.8	34.9
Mine Site		11.5	13.6	17.7	27.7	38.5	46.7	51.0	50.1	43.2	30.8	20.2	13.3	30.4

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NOTES:

1. ILIAMNA DATA FOR STATION AT ILIAMNA FAA AIRPORT, AS PUBLISHED ON WESTERN REGIONAL CLIMATE CENTER WEBSITE (WWW.WRCC.DRI.EDU).
2. THE LONG-TERM MEAN MONTHLY TEMPERATURE VALUES FOR ILIAMNA ARE BASED ON THE FULL PERIOD OF RECORD: 1942-2010.
3. THE 2005-2010 MINE SITE TEMPERATURE VALUES ARE FOR THE PEBBLE 1 METEOROLOGICAL STATION AT EL. 1560 ft.
4. THE ESTIMATED LONG-TERM MINE SITE VALUES ARE FOR AN ELEVATION OF 1560 ft.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	07JUN'11	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

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TABLE 2.3

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
WIND SPEED DATA

Print: 2/24/12 12:02

Station	Year	Average Monthly Wind Speed (mph)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Pebble 1	2006	15.6	27.5	18.0	18.0	16.2	17.3	13.8	13.1	16.0	21.2	28.9	16.6	18.2
	2007	23.4	17.8	25.3	19.9	13.1	14.1	10.4	16.8	15.8	15.9	20.7	20.5	17.8
	2008	18.2	15.5	19.0	16.9	18.6	13.0	14.6	10.6	14.0	12.9	15.0	21.0	15.8
	2009	19.1	19.2	23.3	19.3	13.7	15.7	18.8	15.3	12.8	20.7	19.7	22.8	18.2
	2010	13.3	17.0	13.6	16.3	16.0	14.2	15.7	16.7	15.7	14.3	17.1	21.6	16.0
Average		**17.9**	**19.4**	**19.9**	**18.1**	**15.5**	**14.9**	**14.7**	**14.5**	**14.9**	**17.0**	**20.3**	**20.5**	**17.2**
Pebble 3	2006	10.7	14.3	11.2	11.2	9.8	9.6	8.5	8.1	8.3	11.6	17.7	14.1	11.3
	2007	14.8	11.0	17.0	12.3	7.2	8.5	6.3	9.4	8.9	10.1	15.0	16.3	11.4
	2008	14.4	13.9	12.1	11.1	9.9	7.8	8.7	6.3	8.6	11.4	13.1	13.9	10.9
Average		**13.3**	**13.1**	**13.4**	**11.5**	**9.0**	**8.7**	**7.8**	**7.9**	**8.6**	**11.0**	**15.3**	**14.8**	**11.2**
Pebble 4	2006	-	-	-	-	-	13.6	13.4	13.2	14.8	20.4	28.4	20.4	-
	2007	24.2	17.9	26.6	19.0	12.1	14.3	10.1	16.3	16.1	17.0	24.2	25.5	18.6
	2008	22.9	19.7	19.1	15.4	17.1	12.6	14.7	10.7	14.1	16.1	18.6	21.6	16.9
Average		**23.5**	**18.8**	**22.9**	**17.2**	**14.6**	**13.5**	**12.7**	**13.4**	**15.0**	**17.8**	**23.7**	**22.5**	**17.7**
Pebble 5	2007							8.7	13.6	14.6	11.7	20.0	17.9	-
	2008	17.1	11.9	15.1	13.6	15.6	11.4	12.5	8.3	11.0	10.1	11.1	17.4	12.9
	2009	16.1	17.6	13.4	17.4	11.3	14.1	15.6	12.6	9.7	14.8	13.2	16.7	14.4
Average		**16.6**	**14.8**	**14.3**	**15.5**	**13.4**	**12.8**	**12.3**	**11.5**	**11.8**	**12.2**	**14.8**	**17.3**	**13.7**
Pebble 5A	2007							12.9		24.4				-
	2008					23.6	16.1	19.1	13.0	19.7				-
	2009					12.9	22.1	25.3	20.0	14.5	21.4			-
Average						**18.3**	**19.1**	**19.1**	**16.5**	**19.5**	**21.4**			**-**
Pebble 6	2007								9.4	10.0	10.2	13.8	14.4	-
	2008	15.7	15.2	13.5	13.5	12.4	9.0	10.0	7.7	8.7	9.9	11.8	14.5	11.8
	2009	14.9	14.6	16.2	13.0	9.7	10.5	12.4	10.1	7.9	12.8	14.6	13.8	12.6
Average		**15.3**	**14.9**	**14.8**	**13.3**	**11.1**	**9.8**	**11.2**	**9.1**	**8.9**	**11.0**	**13.4**	**14.3**	**12.2**
Iliamna Average	2000 - 2010	**11.3**	**11.1**	**9.6**	**9.2**	**8.5**	**8.3**	**8.3**	**8.0**	**8.9**	**10.5**	**11.4**	**12.1**	**9.8**

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NOTES:

1. PEBBLE WIND SPEED VALUES ARE BASED ON SITE DATA COLLECTED BY HOEFLER CONSULTING GROUP.
2. THE PEBBLE 5A CLIMATE STATION DID NOT COLLECT RELIABLE WIND SPEED DATA DURING THE WINTER MONTHS, LIKELY DUE TO THE EFFECTS OF ICING ON THE ANEMOMETER.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	03MAR'11	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 2.4

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
MINE SITE INCIDENT SOLAR RADIATION

Print: 2/24/12 12:07

Station	Years	Mean Hourly Incident Solar Radiation (W/m^2)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Pebble 1	2006 - 2010	15	47	121	190	224	201	164	137	88	49	23	10	106
Pebble 4	2007 - 2008	17	53	126	172	193	201	159	141	67	57	23	11	102
Pebble 5	2008 - 2009	16	49	115	201	243	223	188	162	88	48	23	7	114
Pebble 6	2008 - 2009	16	49	112	198	230	213	181	159	85	49	23	8	110
Average	-	16	50	119	190	222	209	173	150	82	51	23	9	108

M:\1\01\00176\37\A\Data\hydromet\Solar Radiation\[Solar Radiation Summary_KT.xlsx]Table

NOTES:

1. INCIDENT SOLAR RADIATION DATA WERE COLLECTED BY HOEFLER CONSULTING GROUP.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10MAR'11	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

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Knight Piésold CONSULTING

TABLE 2.5

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
MINE SITE RELATIVE HUMIDITY

Print: 2/24/12 12:08

Station	Years	Mean Relative Humidity (%)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Pebble 1	2006 - 2010	84	84	82	85	75	79	84	86	86	90	88	85	84
Pebble 4	2007 - 2008	86	80	77	82	79	79	83	83	90	87	89	86	83
Pebble 5	2008 - 2009	85	84	90	97	76	77	80	81	86	90	87	85	85
Pebble 6	2008 - 2009	80	80	82	82	70	75	79	80	85	86	83	82	80
Average	-	84	82	83	87	75	77	82	82	87	88	87	85	83

M:\1\01\00176\37\A\Data\hydromet\Relative Humidity\[Relative Humidity Summary_KT.xlsx]Table

NOTES:

1. RELATIVE HUMIDITY DATA WERE COLLECTED BY HOEFLER CONSULTING GROUP.
2. THE DATA PRESENTED ABOVE ARE FOR COMPLETE YEARS ONLY.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10MAR'11	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

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TABLE 2.6

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
MEASURED PAN EVAPORATION

Print: 1/12/12 13:56

Year	Station	Elevation (m)	Pan Evaporation (inches)											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2005	Pebble 1	1560								2.4	0.9				
2006	Pebble 1	1560					2.7	2.9	2.9						
	Pebble 4	1200							2.6		1.3				
2007	Pebble 4	1200					2.3	3.0	2.1	2.1	1.3				
	Pebble 6	800									0.4				
2008	Pebble 1	1560					2.1	3.1	2.8	1.8					
	Pebble 4	1200					2.2	2.8	2.9	2.1	0.5				
	Pebble 5	1400						2.6	2.2	1.7	0.4				
	Pebble 6	800						2.7	2.1	1.7	0.2				
2009	Pebble 1	1560						3.7	4.3	2.8	1.5				
	Pebble 6	800						3.2	3.9	2.0	0.9				
Average							2.3	3.0	2.9	2.1	0.8				11.1

M:\1\01\00176\40\A\Data\Hydromet\[Site Evap Data summary.xlsx]Summary imp - Table 2.6

NOTES:

1. THE VALUES ARE BASED ON THE DATA COLLECTED BY THE HOEFLER CONSULTING GROUP AND PROVIDED BY SLR ON JUNE 6, 2011.
2. ALL VALUES INCLUDE A PAN COEFFICENT OF 0.7, AS SPECIFIED BY THE HOEFLER CONSULTING GROUP.
3. MONTHLY TOTALS THAT APPEAR TO CONTAIN ERRONEOUS MEASUREMENTS OR HAD MISSING DATA WERE NOT INCLUDED.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	25JAN'12	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 2.7

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
AVERAGE MINE SITE EVAPORATION/POTENTIAL EVAPOTRANSPIRATION

Print: 1/24/12 9:29

Type	Model	Evapotranspiration (Inches)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Potential Evapotranspiration	Thornthwaite	0	0	0	0	1.5	2.5	3.0	2.9	2.1	0	0	0	12.0
	Penman - Monteith	0	0	0	0.8	1.9	1.9	1.6	1.4	1.1	0.5	0	0	9.3
	Evaporation Pan Data (C = 0.7)	0	0	0	0.6	2.3	3.0	2.9	2.1	0.8	0.4	0	0	12.1
	Evaporation Pan Data (C = 0.6)	0	0	0	0.5	2.0	2.6	2.4	1.8	0.7	0.4	0	0	10.4
Actual Evapotranspiration	Soil Moisture Model	0	0	0	0	1.0	1.9	2.1	1.9	1.1	0.1	0	0	8.1
Pond Evaporation	**Evaporation Pan Data**	**0**	**0**	**0**	**0.5**	**2.0**	**2.6**	**2.4**	**1.8**	**0.7**	**0.4**	**0.0**	**0.0**	**10.4**

M:\1\01\00176\40\A\Data\Hydromet\[Site Evap Data summary.xlsx]Site Evap Estimate - Table 2.7

NOTES:

1. THE POTENTIAL EVAPOTRANSPIRATION VALUES ARE FOR THE PEBBLE 1 METEOROLOGICAL STATION AT EL. 1560 ft.
2. THE APRIL AND OCTOBER EVAPORATION PAN VALUES ARE ESTIMATED ACCORDING RATIOS OF THE MONTHLY THE PENMAN-MONTEITH VALUES.
3. THE EVAPORATION PAN VALUES WITH A COEFFICIENT OF 0.6 WERE SELECTED AS REPRESENTATIVE OF EXPECTED POND EVAPORATION AT AN ELEVATION OF 1560 FEET.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	24FEB'12	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 2.8

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
ESTIMATED MINE SITE SUBLIMATION

Print: 2/24/12 12:10

Year	Sublimation (inches)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2006	0.6	0.6	0.6	0.5	0.3	0.0	0.0	0.0	0.0	0.4	0.5	0.5	4

M:\1\01\00176\37\A\Data\hydromet\Sublimation\[Blowing Snow Model Sublimation Check.xlsx]Table

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	24FEB'12	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 2.9

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
SUMMARY OF LONG-TERM PRECIPITATION AT ILIAMNA AIRPORT

Print Feb/24/12 12:14:37

	Precipitation (inches)												
	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Minimum	0.0	0.0	0.0	0.1	0.0	0.2	0.2	1.3	1.0	0.2	0.2	0.1	15.4
Mean	1.3	1.2	1.2	1.1	1.1	1.7	2.6	4.8	4.5	3.1	2.1	1.7	26.7
Maximum	4.1	3.8	4.5	2.9	4.1	5.0	6.6	16.7	11.2	8.0	7.9	6.8	44.8

M:\1\01\00176\37\A\Data\hydromet\Precipitation\[Data Tables and Figures from Rods Model v2.xlsx]Hydromet Iliamna Table

NOTES:

1. THE VALUES PRESENTED ARE MONTHLY AND ANNUAL PRECIPITATION FOR THE PERIOD OF 1942 - 2009 AT THE ILIAMNA AIRPORT CLIMATE STATION.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	01MAR'11	ISSUED WITH REPORT VA101-176\40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 2.10

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
LONG-TERM SYNTHETIC PRECIPITATION AT PEBBLE SITE 1

Print Feb/24/12 12:17:20

Year	Mean Total Precipitation (inches)												
	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1942	3.3	4.1	5.0	4.6	3.2	3.6	5.7	8.2	4.5	2.9	4.9	1.2	51.0
1943	0.4	4.4	3.0	1.7	0.7	2.7	3.7	10.1	6.8	7.5	10.3	19.3	70.5
1944	4.7	4.8	4.4	0.1	4.5	1.7	5.5	11.9	7.5	4.2	6.1	5.9	61.1
1945	4.4	4.1	3.5	0.9	2.7	0.9	3.7	9.9	9.8	8.1	3.6	1.4	53.0
1946	5.9	4.1	11.3	2.8	3.8	3.8	5.0	10.9	6.2	11.4	3.8	10.5	79.4
1947	5.7	3.0	7.5	0.4	2.6	1.4	6.3	3.3	8.3	1.7	5.3	8.4	53.9
1948	3.3	1.7	3.5	1.1	0.7	2.0	7.7	7.8	6.6	2.9	3.0	9.8	50.2
1949	10.1	4.0	10.8	0.7	0.9	1.6	2.2	10.1	4.3	4.4	7.4	2.2	58.6
1950	1.8	0.5	0.3	2.5	0.5	6.2	3.2	10.1	6.4	3.8	0.5	1.8	37.9
1951	2.3	5.9	4.1	0.7	0.1	3.7	1.3	6.7	8.9	3.8	9.6	8.1	55.1
1952	4.6	4.9	4.8	2.8	2.2	1.7	5.8	5.6	4.3	6.7	8.9	4.6	56.7
1953	6.7	13.3	4.0	0.3	0.8	1.7	1.4	12.0	8.5	2.9	8.2	3.3	63.2
1954	2.0	4.3	7.6	1.4	0.6	0.4	7.9	10.8	5.7	4.6	9.3	2.4	56.9
1955	7.0	12.4	6.1	2.6	1.0	3.8	4.4	7.2	5.3	4.9	3.0	9.6	67.1
1956	3.3	6.2	1.8	2.0	1.9	1.5	4.2	4.4	7.0	5.8	4.4	1.3	43.8
1957	14.5	2.8	2.3	1.0	0.5	0.2	1.0	4.3	6.0	3.7	10.1	6.2	52.6
1958	6.8	2.5	4.5	1.1	2.4	3.1	4.5	6.9	5.6	5.6	5.1	3.7	51.8
1959	1.8	5.7	0.1	2.0	1.3	0.4	3.6	11.3	1.6	2.0	4.0	5.9	39.9
1960	9.4	2.0	0.2	2.0	3.5	2.8	7.9	10.4	10.1	3.7	3.6	3.5	58.9
1961	5.9	3.6	1.3	2.5	0.7	3.6	9.0	9.9	17.7	6.4	11.5	8.7	81.0
1962	4.0	4.0	2.2	0.9	4.0	4.3	1.8	4.5	3.9	3.0	2.1	5.0	39.9
1963	6.4	2.6	16.0	4.3	1.6	3.2	1.9	8.0	4.0	2.0	0.6	8.4	58.9
1964	0.4	8.5	6.1	3.3	3.3	2.6	2.2	8.2	5.5	6.8	2.7	2.5	52.1
1965	2.5	3.7	8.5	2.8	3.1	2.0	5.2	7.6	12.8	0.4	6.5	5.9	60.9
1966	1.8	4.7	4.6	0.4	4.1	1.2	5.2	13.0	5.3	4.2	9.3	3.0	56.7
1967	4.7	2.3	8.2	4.1	0.0	6.6	8.8	13.9	7.6	1.2	17.1	10.7	85.3
1968	3.6	4.0	0.4	1.7	4.1	0.8	0.4	3.3	3.2	5.4	1.9	3.6	32.3
1969	3.5	5.3	4.3	0.7	1.4	4.0	7.3	7.3	3.8	8.4	6.8	4.5	57.3
1970	1.1	7.1	9.3	2.7	0.5	4.9	3.3	8.3	2.7	4.8	13.0	12.9	70.5
1971	1.1	7.9	5.8	1.0	1.3	2.3	3.2	26.5	5.9	9.8	8.1	24.0	96.8
1972	6.5	2.7	2.8	1.1	1.3	4.2	3.7	3.8	12.1	4.5	5.1	2.5	50.4
1973	5.4	2.5	10.0	0.1	0.6	7.9	3.2	8.5	8.1	8.1	9.1	7.7	71.2
1974	5.3	1.1	8.4	2.1	0.7	1.9	5.7	4.7	7.0	3.1	11.1	4.1	55.1
1975	5.6	1.6	2.8	1.9	2.5	7.6	2.7	3.3	14.6	3.8	0.7	5.0	52.1
1976	2.8	1.4	6.3	2.7	1.5	1.8	3.3	4.0	5.9	1.5	14.0	7.3	52.6
1977	5.4	5.9	3.2	3.9	3.0	4.2	1.7	5.7	9.6	5.5	0.8	2.2	51.1
1978	1.8	6.0	1.4	1.3	2.6	4.7	5.1	4.8	4.7	6.6	11.3	13.1	63.4
1979	4.3	1.8	5.4	3.2	1.4	4.1	5.8	5.9	4.0	5.4	27.9	5.2	74.6
1980	4.9	6.3	3.3	2.2	1.9	7.0	10.5	12.8	8.6	7.6	5.1	0.2	70.4
1981	8.6	6.9	6.4	0.8	2.1	3.3	5.8	6.9	2.8	3.6	7.2	5.2	59.5
1982	2.1	1.0	3.4	1.4	0.9	4.0	6.0	4.1	14.7	4.8	6.4	3.0	51.8
1983	1.5	5.2	0.1	4.0	2.0	1.3	1.6	5.8	4.8	8.5	17.1	1.7	53.8
1984	8.0	7.6	1.1	1.0	1.3	0.6	0.9	8.2	2.5	2.3	6.8	10.8	51.1
1985	8.9	4.8	6.4	0.6	6.4	6.8	4.1	16.7	9.7	7.2	6.1	4.6	82.4
1986	8.3	1.7	0.0	0.8	3.2	0.7	5.9	9.8	10.5	5.0	14.2	9.7	69.8
1987	10.0	1.6	3.1	0.4	2.4	1.8	4.0	4.7	8.0	7.2	6.9	4.4	54.4
1988	7.6	4.5	9.2	3.1	1.3	2.1	0.7	7.9	4.1	5.6	6.0	7.6	59.7
1989	4.0	7.0	1.1	1.8	2.7	0.9	2.9	7.2	11.9	12.7	7.6	1.1	61.0
1990	6.6	7.9	3.9	1.2	2.2	1.1	3.5	3.9	7.1	4.9	10.3	11.5	64.0
1991	1.8	2.5	6.3	1.0	0.8	0.6	3.3	2.9	4.0	3.8	3.8	6.3	37.0
1992	4.7	2.4	7.8	0.3	0.3	2.3	2.9	8.4	1.9	2.6	5.4	7.6	46.8
1993	5.8	3.3	2.5	0.3	0.8	0.6	1.8	4.2	8.9	3.8	16.5	6.7	55.2
1994	8.3	1.5	1.7	1.7	2.3	2.7	5.0	3.5	3.2	3.5	20.6	9.6	63.8
1995	2.0	1.1	1.3	2.5	0.1	0.7	2.7	5.2	11.3	2.1	2.4	2.4	33.8
1996	1.6	5.3	3.8	0.8	1.2	2.9	3.6	11.5	5.3	1.5	2.2	2.4	42.2
1997	2.3	5.3	0.5	0.6	2.5	0.8	0.3	5.9	5.4	0.5	5.5	5.0	34.6
1998	1.8	2.3	2.6	2.0	1.5	1.2	2.4	7.7	2.3	2.3	2.9	3.6	32.6
1999	5.5	3.0	2.8	2.6	0.9	3.6	4.8	8.5	7.3	4.3	1.2	5.6	50.1
2000	5.5	4.6	3.9	0.6	0.3	1.6	5.4	6.5	9.6	6.1	11.9	7.0	63.1
2001	8.1	8.9	3.1	2.1	1.7	1.4	7.1	4.2	4.2	6.0	1.3	8.7	56.8
2002	6.0	6.8	0.1	1.9	2.1	0.9	3.0	6.1	9.9	9.1	13.2	3.1	62.3
2003	0.1	8.4	0.8	2.5	2.4	3.1	4.9	8.0	2.8	7.7	21.5	2.0	64.2
2004	1.3	4.6	3.4	2.4	2.2	2.3	2.8	2.1	11.7	6.3	13.4	6.9	59.3
2005	6.7	2.8	3.1	1.1	0.4	4.0	5.8	7.2	13.1	4.7	3.1	6.1	58.1
2006	0.2	6.0	4.5	1.2	0.8	3.6	1.7	12.3	6.9	6.0	3.3	4.5	51.2
2007	5.3	0.0	2.7	0.4	0.1	2.7	4.3	4.1	12.4	4.9	5.6	5.4	48.0
2008	5.8	1.3	0.7	1.1	1.6	1.1	4.5	2.3	11.5	5.4	4.1	4.1	43.5
2009	4.6	3.8	5.0	1.5	1.9	1.7	5.2	3.1	4.6	4.4	8.7	1.5	46.2
Mean	4.7	4.3	4.2	1.7	1.8	2.7	4.1	7.6	7.1	4.9	7.5	5.9	56.6
Minimum	0.1	0.0	0.0	0.1	0.0	0.2	0.3	2.1	1.6	0.4	0.5	0.2	32.3
Maximum	14.5	13.3	16.0	4.6	6.4	7.9	10.5	26.5	17.7	12.7	27.9	24.0	96.8

M:\1\01\00176\37\A\Data\hydromet\Precipitation\[Data Tables and Figures from Rods Model v2.xlsx]Hydromet Pebble 1 Table

NOTES:

1. THE VALUES PRESENTED ABOVE ARE FOR THE PERIOD OF 1942 - 2009 AT THE PEBBLE 1 CLIMATE STATION.
2. THE PEBBLE SITE 1 VALUES WERE SCALED FROM ILIAMNA AIRPORT BY APPLYING AN OROGRAPHIC FACTOR OF 1.059 per 100 m ELEVATION CHANGE AND AN UNDERCATCH FACTOR OF 1.1 FOR THE MONTHS OF APRIL THROUGH OCTOBER.
2. THE PEBBLE SITE 1 VALUES WERE SCALED FROM ILIAMNA AIRPORT BY APPLYING AN OROGRAPHIC FACTOR OF 1.10 per 100 m ELEVATION CHANGE, A LOCATION FACTOR OF 1.476, AND AN UNDERCATCH FACTOR OF 1.4 FOR THE MONTHS OF NOVEMBER THROUGH MARCH.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	01MAR'11	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

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TABLE 2.11

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEROLOGY REPORT
ESTIMATED LOCATION FACTORS

Print: 2/24/12 12:18

Watershed	Basin	Location Factor
South Fork Koktuli River	SK100A	1.00
	SK100B	1.12
	SK100C	1.14
	SK100F	1.01
	SK100G	0.95
	SK119A	1.10
	SK124A	1.10
North Fork Koktuli River	NK100A	0.93
	NK100B	0.93
	NK100C	0.92
	NK119A	1.04
	NK119B	0.93
Upper Talarik Creek	UT100APC1	1.00
	UT100B	0.95
	UT100C	0.93
	UT100C1	0.89
	UT100C2	0.90
	UT100D	0.90
	UT100E	0.90
	UT119A	0.97
	UT135A	0.95

M:\1\01\00176\37\A\Data\hydromet\Precipitation\[Climate Factors.xlsx]For Report

NOTES:

1. LOCATION FACTORS PROVIDED BY ROD SMITH OF SWS ON MAR 17, 2011.
2. LOCATION FACTORS ACCOUNT FOR LOCALIZED VARIATIONS IN PRECIPITATION AND SNOW BLOW.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	17MAR'11	ISSUED WITH REPORT VA101-176/40-1	NS	JGC	JGC

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TABLE 2.12

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGICAL REPORT
MAXIMUM SNOWPACK SUMMARY

Print: 2/24/12 12:21

Station	Elevation (feet)	Maximum Annual Snowpack Depth (inches SWE)					
		2004	2005	2006	2007	2008	Average
Pebble Snow Course 1	2,000	11	16	10	6	19	12
Pebble Snow Course 1A	2,000	8	14	8	5	17	10
Pebble Snow Course 2	1,200	10	12	8	6	16	10
Pebble Repeat Transects	Various	12	17	14	9	20	14
Average		10	14	10	6	18	12

M:\1\01\00176\37\A\Data\hydromet\Snowpack\[Snowpack_KT.xlsx]Table

NOTES:

1. SNOWPACK DATA WERE COLLECTED BY ABR INC.
2. SWE = SNOW WATER EQUIVALENT

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10MAR'11	ISSUED WITH REPORT VA101-176/40-1	KT	NS	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 3.1

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
SUMMARY OF MEAN MONTHLY UNIT RUNOFF (CFS/MI^2)

Print: 2/24/2012 14:23

Station	Month												
	January	February	March	April	May	June	July	August	September	October	November	December	Annual
SK100A	1.34	0.91	0.79	1.10	5.37	3.74	1.99	2.58	3.27	3.90	2.10	1.56	2.42
SK100B	1.26	0.71	0.55	0.72	6.47	4.36	1.96	3.10	3.95	4.63	2.26	1.54	2.65
SK100B1	1.00	0.51	0.37	0.52	6.98	4.33	1.66	2.71	3.36	3.97	1.85	1.24	2.42
SK100C	0.35	0.03	0.00	0.12	4.05	2.61	0.75	1.10	1.93	2.63	0.98	0.51	1.31
SK100F	1.30	0.73	0.57	0.72	5.78	4.11	1.82	2.48	3.57	4.35	2.21	1.58	2.49
SK100G	1.49	0.87	0.69	1.18	4.66	3.21	1.99	2.73	3.54	4.13	2.26	1.79	2.43
SK119A	1.00	0.51	0.37	0.73	9.94	5.64	2.61	3.79	5.78	5.30	2.36	1.31	3.32
SK124A	0.51	0.10	0.02	0.19	7.94	4.49	1.22	2.55	3.45	4.05	1.36	0.74	2.26
NK100A	0.95	0.63	0.52	0.89	6.71	3.80	1.96	2.54	3.12	3.72	1.98	1.28	2.36
NK100A1	0.86	0.59	0.51	0.90	6.86	3.92	2.12	2.64	3.30	3.89	1.98	1.20	2.40
NK100B	0.99	0.63	0.51	0.83	6.66	3.44	1.93	2.37	3.13	3.80	2.01	1.28	2.32
NK100C	1.02	0.69	0.56	0.79	5.05	2.78	1.64	1.79	2.54	3.20	1.80	1.27	1.98
NK119A	0.66	0.45	0.38	0.93	10.39	5.22	2.65	3.22	5.03	4.99	2.37	1.11	3.14
NK119B	0.26	0.07	0.02	0.27	4.74	1.81	0.43	0.94	1.75	2.27	0.83	0.38	1.17
UT100B	1.48	1.36	1.18	1.96	5.24	3.03	2.10	2.71	3.20	3.72	2.59	2.05	2.58
UT100C	1.25	1.14	1.01	1.75	4.63	2.86	1.92	2.26	3.10	3.53	2.33	1.71	2.30
UT100C1	1.02	0.90	0.75	1.47	4.34	2.51	1.62	1.97	2.73	3.22	2.14	1.53	2.04
UT100C2	0.96	0.84	0.68	1.51	4.85	2.96	1.76	2.10	3.08	3.58	2.18	1.50	2.19
UT100D	0.95	0.82	0.65	1.62	5.76	3.01	1.90	2.30	3.05	3.60	2.19	1.54	2.32
UT100E	1.68	1.53	1.33	2.04	6.92	3.42	2.39	2.65	3.52	4.29	2.82	2.29	3.01
UT119A	6.65	6.56	6.45	6.81	7.66	7.15	6.92	7.08	7.47	7.73	7.30	7.00	7.09
UT135A	1.03	0.91	0.74	1.63	4.06	2.56	1.39	1.64	2.74	3.25	2.42	1.58	2.01
UT100-APC1	1.55	1.43	1.26	1.99	4.96	2.95	2.12	2.76	3.45	3.99	2.71	2.11	2.61
UT100-APC2	1.49	1.35	1.16	1.96	5.25	2.94	1.99	2.72	3.59	4.28	2.83	2.12	2.64
UT100-APC3	1.42	1.30	1.14	1.70	3.74	2.56	1.98	2.46	3.11	3.63	2.52	1.93	2.30
UT106-APC1	1.90	1.74	1.52	2.48	4.97	3.64	3.09	3.45	3.75	4.06	3.26	2.59	3.04

M:\1\01\00176\37\A\Data\hydromet\Streamflow\[Streamflow Data.xlsx]T3.1

NOTES:

1. FOR A COMPLETE DATASET SEE THE REV 6 DATA (2004-2010) SUBMITTED TO PEBBLE LIMITED PARTNERSHIP.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	27JUL'11	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 3.2

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
SUMMARY OF MEAN ANNUAL DISCHARGE

Print: 2/24/2012 14:23

Station	Mean Annual Discharge (cfs)	Drainage Area (mi^2)	Mean Annual Runoff	
			(cfs/mi^2)	(in)
SK100A	259	106.9	2.42	32.9
SK100B	184	69.3	2.65	36.0
SK100B1	131	54.4	2.42	32.8
SK100C	49.0	37.5	1.31	17.7
SK100F	29.6	11.9	2.49	33.7
SK100G	13.4	5.5	2.43	33.0
SK119A	35.7	10.7	3.32	45.1
SK124A	19.3	8.5	2.26	30.7
NK100A	250	105.9	2.36	32.1
NK100A1	205	85.3	2.40	32.6
NK100B	86.6	37.3	2.32	31.5
NK100C	48.2	24.4	1.98	26.9
NK119A	24.4	7.8	3.14	42.6
NK119B	4.66	4.0	1.17	15.8
UT100B	222	86.2	2.58	35.0
UT100C	160	69.5	2.30	31.3
UT100C1	123	60.4	2.04	27.6
UT100C2	106	48.3	2.19	29.7
UT100D	27.7	12.0	2.32	31.5
UT100E	9.34	3.1	3.01	40.9
UT119A	28.7	4.1	7.09	96.2
UT135A	40.9	20.4	2.01	27.2
UT100-APC1	265	101.5	2.61	35.4
UT100-APC2	291	110.2	2.64	35.8
UT100-APC3	308	134.2	2.30	31.2
UT106-APC1	43.0	14.1	3.04	41.3

M:\1\01\00176\37\A\Data\hydromet\Streamflow\[Streamflow Data.xlsx]T3.2

NOTES:

1. FOR A COMPLETE DATASET SEE THE REV 6 DATA SUBMITTED TO PEBBLE LIMITED PARTNERSHIP.
2. NO COMPLETE YEARS OF RECORD EXIST FOR NH100-APC2 AND NH100-APC3.
3. VALUES ARE COMPUTED FROM COMPLETE YEARS OF RECORD.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	27JUL'11	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 3.3

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
10-YEAR, 7-DAY LOW FLOW ANALYSIS

Print Feb/24/12 14:32:05

Basin	Station	Basin Area (mi^2)	10-year, 7-Day Low Flow (Winter) (cfs)	10-year, 7-day Low Flow (Summer) (cfs)
South Fork Koktuli River	SK100A	106.92	65.8	111.0
	SK100B	69.33	23.3	57.9
	SK100B1	54.41	9.6	35.6
	SK100C	37.50	0.0	0.0
	SK100F	11.91	4.0	9.6
	SK100G	5.49	2.4	4.6
	SK119A	10.73	1.8	10.2
	SK124A	8.52	0.0	0.0
North Fork Koktuli River	NK100A	105.86	32.6	95.8
	NK100A1	85.34	28.6	89.4
	NK100B	37.32	9.6	36.6
	NK100C	24.35	6.5	21.2
	NK119A	7.76	1.8	7.9
	NK119B	3.97	0.0	0.0
Upper Talarik Creek	UT100-APC3	134.16	117.9	198.4
	UT100-APC2	110.16	91.8	128.3
	UT100-APC1	101.51	98.6	137.3
	UT100B	86.24	76.3	103.1
	UT100C	69.47	48.4	89.8
	UT100C1	60.37	29.6	53.3
	UT100C2	48.26	17.7	49.7
	UT100D	11.96	4.6	9.5
	UT100E	3.10	2.9	5.2
	UT106-APC1	14.14	16.4	35.9
	UT119A	4.05	22.9	23.0
	UT135A	20.42	8.0	13.7

M:\1\01\00176\37\A\Data\hydrology\LFA\[LFA.xlsx]Table 2 7Q10

NOTES:

1. BASED ON GAGE RECORDS FROM OCTOBER 1, 2004 THROUGH SEPTEMBER 30, 2010.
2. SUMMER IS DEFINED AS JULY 1 TO SEPTEMBER 30; WINTER IS FROM OCTOBER 1 TO JUNE 30.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	29JUL'11	ISSUED WITH REPORT VA101-176/40-1	LD1	JGC	JPH

AMERICAN OVERSIGHT

Knight Piésold CONSULTING

TABLE 4.1

PEBBLE LIMITED PARTNERSHIP
PEBBLE PROJECT

HYDROMETEOROLOGY REPORT
EXTREME PRECIPITATION ESTIMATES AT PEBBLE 1 CLIMATE STATION - ELEVATION 1560 FT

Project Return Period Precipitation Amounts (inches) Print Feb/24/12 14:19:21

Duration	1 yr	2 yrs	5 yrs	10 yrs	25 yrs	50 yrs	100 yrs	24 hr PMP
30 min	0.52	0.63	0.77	0.89	1.05	1.17	1.30	
1 hr	0.71	0.86	1.06	1.22	1.43	1.60	1.77	
2 hr	0.95	1.16	1.42	1.63	1.93	2.16	2.39	
3 hr	1.19	1.45	1.77	2.04	2.42	2.71	2.98	
6 hr	1.77	2.16	2.65	3.05	3.59	4.01	4.43	
12 hr	2.46	3.00	3.70	4.24	4.98	5.57	6.13	
24 hr	3.28	3.99	4.96	5.69	6.68	7.46	8.21	18.0
2 day	4.03	4.91	6.13	7.10	8.42	9.49	10.58	
4 day	4.49	5.48	6.87	7.98	9.58	10.86	12.22	
7 day	6.03	7.27	8.99	10.40	12.37	13.94	15.60	
10 day	6.97	8.34	10.23	11.74	13.82	15.50	17.22	

Precipitation Intensity (inches/hr)

Duration	1 yr	2 yrs	5 yrs	10 yrs	25 yrs	50 yrs	100 yrs	24 hr PMP
30 min	1.03	1.26	1.54	1.78	2.10	2.34	2.59	
1 hr	0.71	0.86	1.06	1.22	1.43	1.60	1.77	
2 hr	0.48	0.58	0.71	0.82	0.96	1.08	1.20	
3 hr	0.40	0.48	0.59	0.68	0.81	0.90	0.99	
6 hr	0.30	0.36	0.44	0.51	0.60	0.67	0.74	
12 hr	0.20	0.25	0.31	0.35	0.41	0.46	0.51	
24 hr	0.14	0.17	0.21	0.24	0.28	0.31	0.34	0.75
2 day	0.08	0.10	0.13	0.15	0.18	0.20	0.22	
4 day	0.05	0.06	0.07	0.08	0.10	0.11	0.13	
7 day	0.04	0.04	0.05	0.06	0.07	0.08	0.09	
10 day	0.03	0.03	0.04	0.05	0.06	0.06	0.07	

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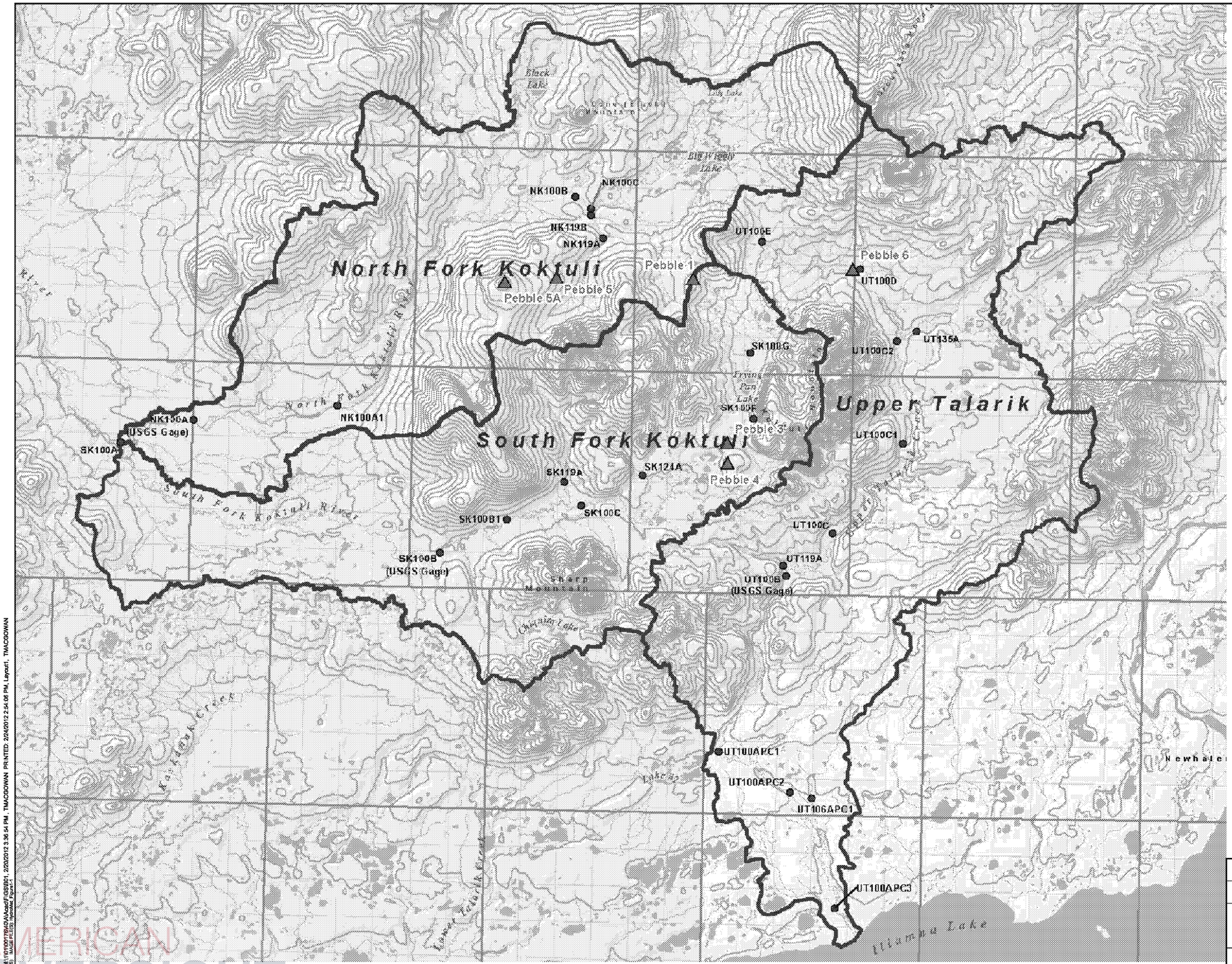
NOTES:

1. PROJECT VALUES ARE ESTIMATED FOR THE PEBBLE 1 CLIMATE STATION AT EL. 1560 FT.
2. ILIAMNA VALUES WERE GENERATED ACCORDING TO THE NOAA ATLAS 14 VOLUME 7: PRECIPITATION-FREQUENCY ATLAS OF THE UNITED STATES, ALASKA.
3. THE LOCATION AND OROGRAPHIC FACTOR FOR TRANSLATING THE 24-HR VALUES FROM ILIAMNA TO THE MINE SITE AT PEBBLE 1 (ELEVATION 1560 FT) WAS ESTIMATED TO BE 2.1. THIS VALUES WAS DERIVED ON THE BASIS OF THE SWS WATER BALANCE MODEL.
4. THE IDF VALUES CAN BE TRANSLATED TO OTHER LOCATIONS AT THE PEBBLE PROJECT USING LOCATION AND OROGRAPHIC FACTORS.
5. THE PMP ESTIMATE DOES NOT USE THE OROGRAPHIC FACTOR, BUT RATHER CONSIDERS THE LOWER VARIABILITY OF THE PMP ISOHYETS COMPARED TO THE CORRESPONDING RETURN PERIOD ISOHYETS.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	22FEB'12	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

AMERICAN OVERSIGHT



Legend

- Meteorological Stations
- Major Drainage Boundary
- Continuous Hydrologic Stations
- Stream
- Water Feature
- General Deposit Location
- Village Corporation Boundary

NOTES:

1. IMAGES PRODUCED BY HDR ALASKA.

0 1 2 3 4 5 miles

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

SURFACE HYDROLOGY STATIONS AND METEOROLOGICAL STATIONS (MINE STUDY AREA)

Knight Piésold CONSULTING

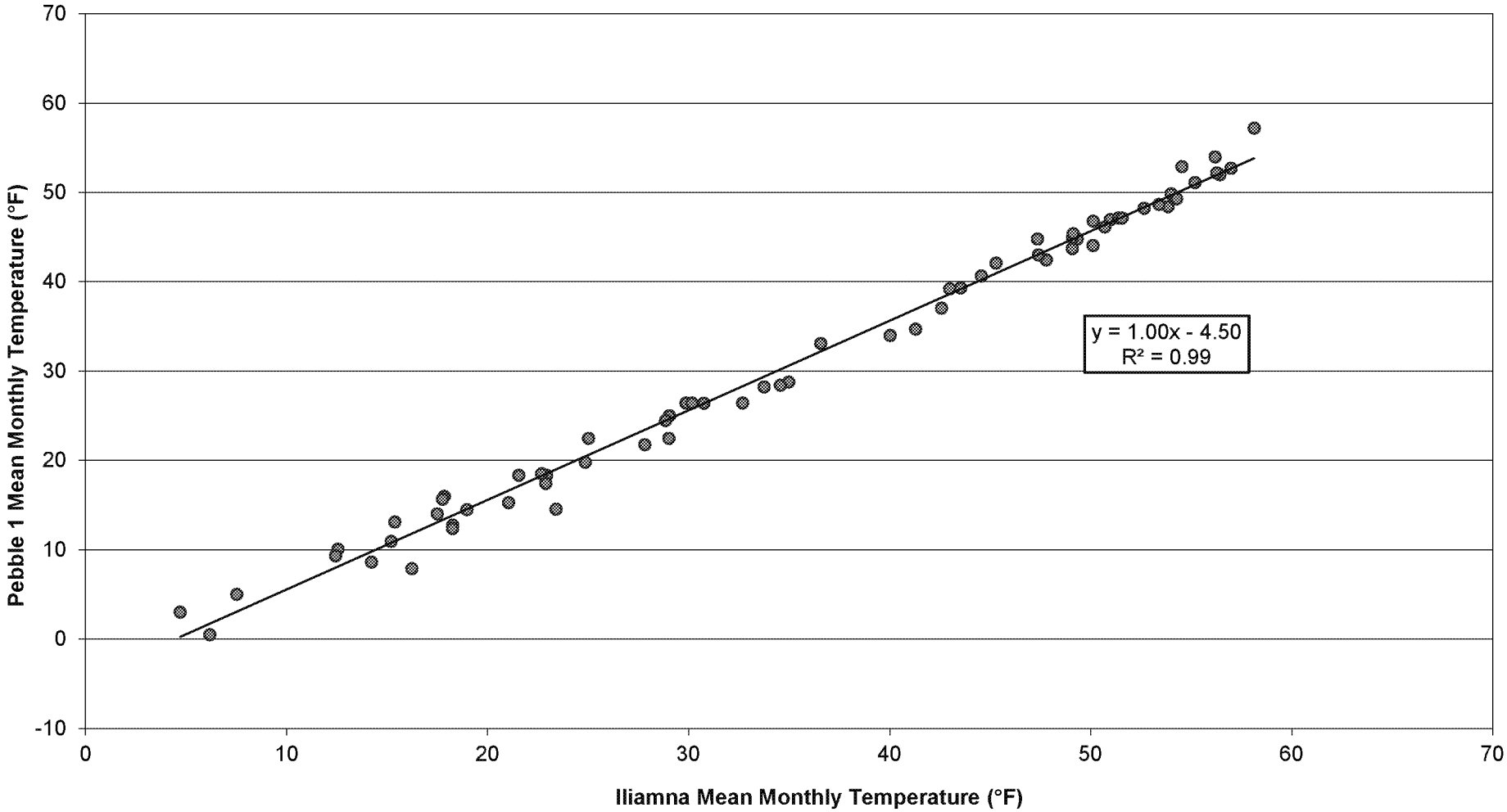
P/A NO	REF NO
VA1021-176/40	1

FIGURE 1.1 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	21FEB'12	ISSUED WITH REPORT	JGC	TAM	JGC	KJB

SAVED: M:\1\01\00176\40\A\Acad\FIGS\B01, 2/20/2012 3:36:54 PM , TMACGOWAN PRINTED: 2/24/2012 2:54:06 PM, Layout1, TMACGOWAN
XREF FILE(S): IMAGE FILE(S): HydroMet_Figure1-1

AMERICAN OVERSIGHT



REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	7JUN'11	ISSUED WITH REPORT	NS	KT	JGC

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

TEMPERATURE CORRELATION
PEBBLE 1 VS ILIAMNA

Knight Piésold CONSULTING

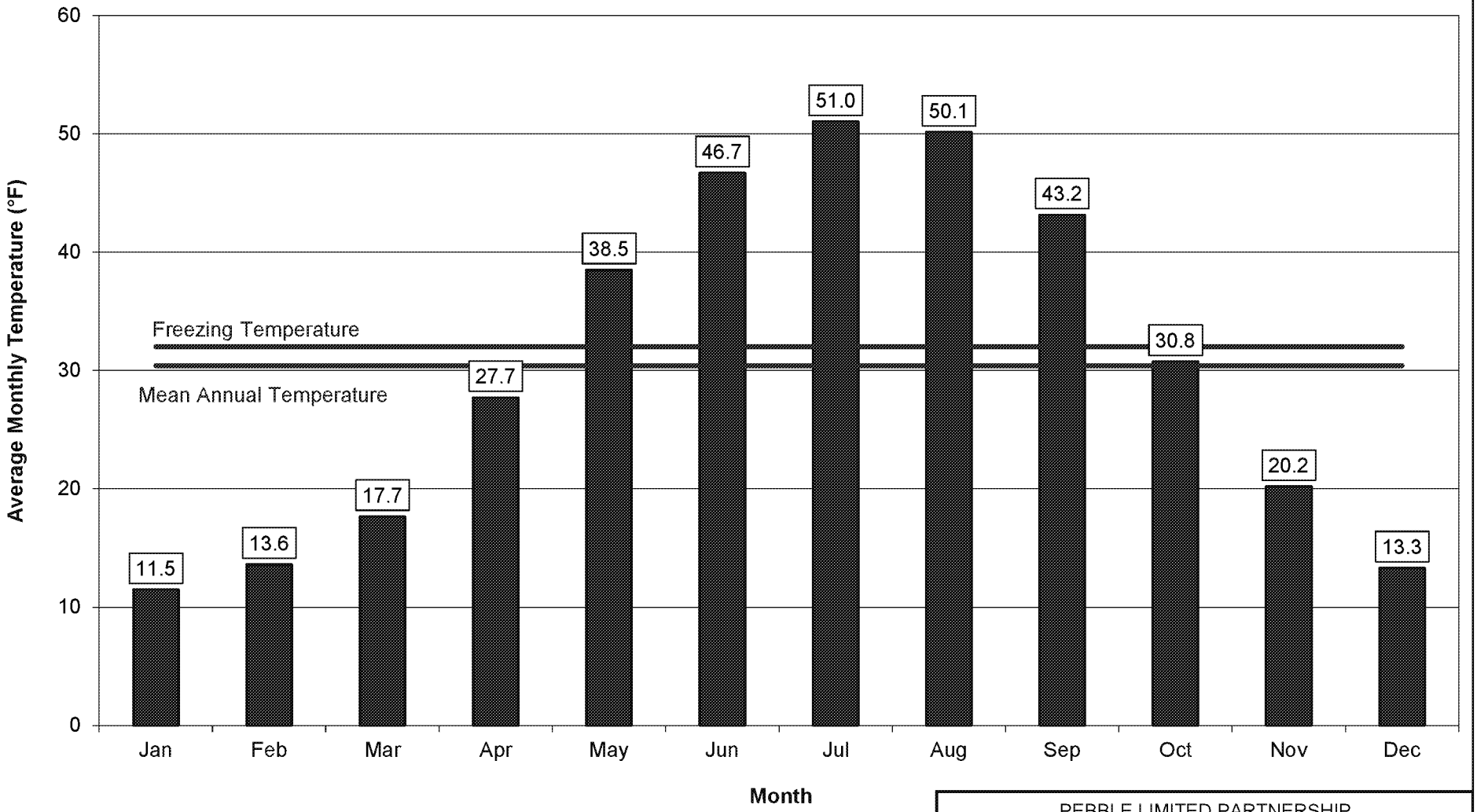
P/A NO. VA101-176/40

REF NO. 1

FIGURE 2.1

REV 0

AMERICAN OVERSIGHT



NOTES:
1. ESTIMATED AVERAGE MONTHLY TEMPERATURES ARE FOR THE PEBBLE 1 STATION AT AN ELEVATION OF 1560 FT.

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

ESTIMATED LONG-TERM AVERAGE MONTHLY TEMPERATURES FOR THE MINE SITE AREA

Knight Piésold CONSULTING

P/A NO. VA101-176/40

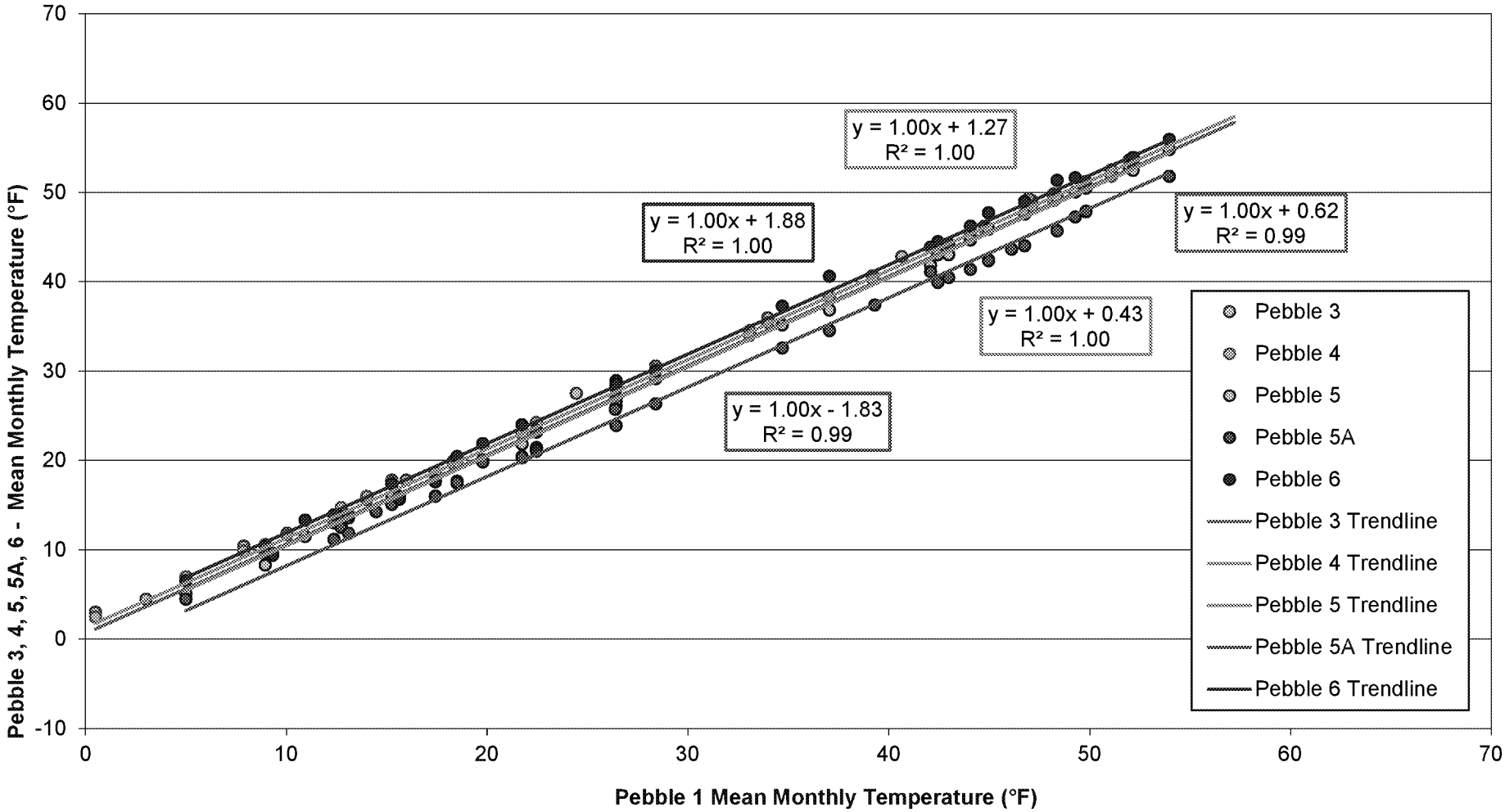
REF NO. 1

FIGURE 2.2

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	7JUN'11	ISSUED WITH REPORT VA101-176/40-1	NS	KT	JGC

AMERICAN OVERSIGHT



0	7MAR'11	ISSUED WITH REPORT	MDH	NS	JGC
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

TEMPERATURE CORRELATION
PEBBLE 1 VS PEBBLE 3, 4, 5, 5A, 6

Knight Piésold CONSULTING

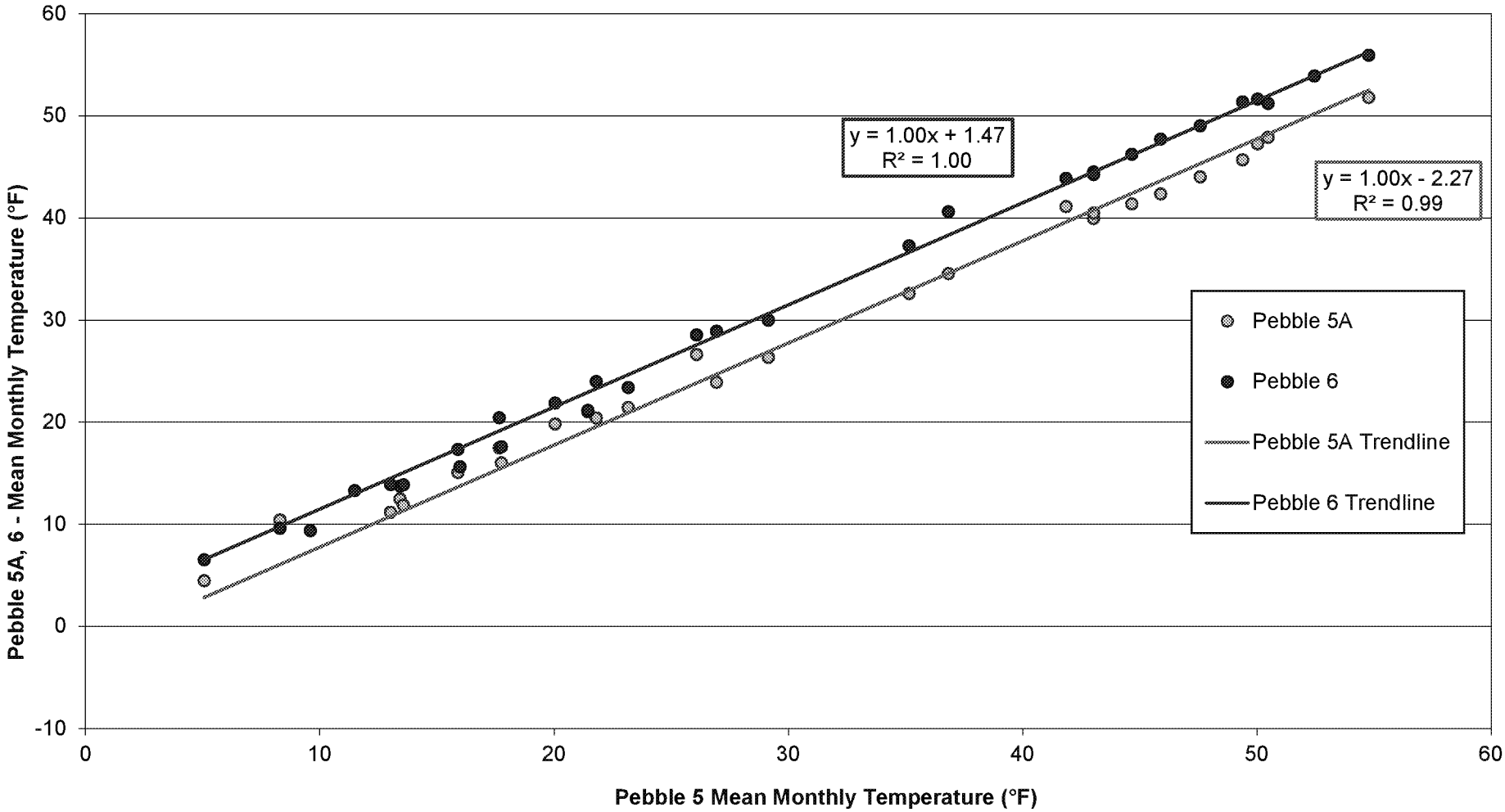
P/A NO. VA101-176/40

REF NO. 1

FIGURE 2.3

REV 0

AMERICAN OVERSIGHT



0	7MAR'11	ISSUED WITH REPORT	NS	KT	JGC
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

TEMPERATURE CORRELATION
PEBBLE 5 VS PEBBLE 5A, 6

Knight Piésold CONSULTING

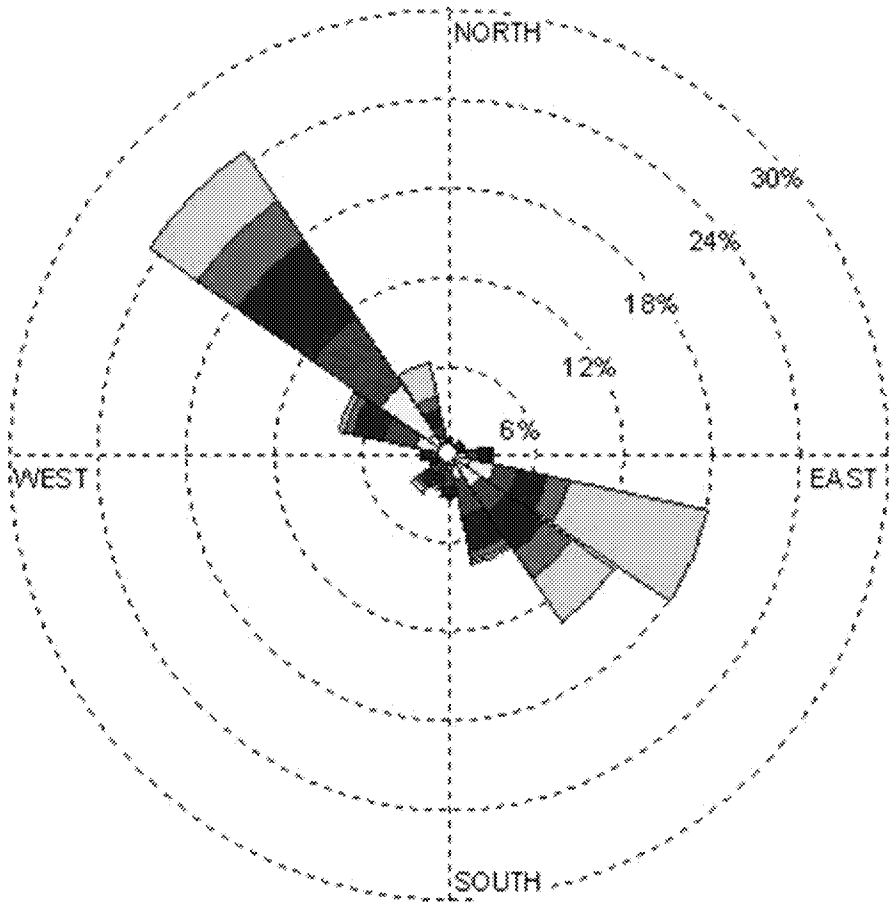
P/A NO. VA101-176/40

REF NO. 1

FIGURE 2.4

REV 0

AMERICAN OVERSIGHT



WIND SPEED
(Knots)

- >= 22
- 17 - 21
- 11 - 17
- 7 - 11
- 4 - 7
- 1 - 4

Calms: 1.91%

NOTES:
1. THIS FIGURE WAS PROVIDED BY SLR INTERNATIONAL CORPORATION.

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

WIND ROSE FOR PEBBLE 1 METEOROLOGICAL STATION

Knight Piésold CONSULTING

P/A NO. VA101-176/40

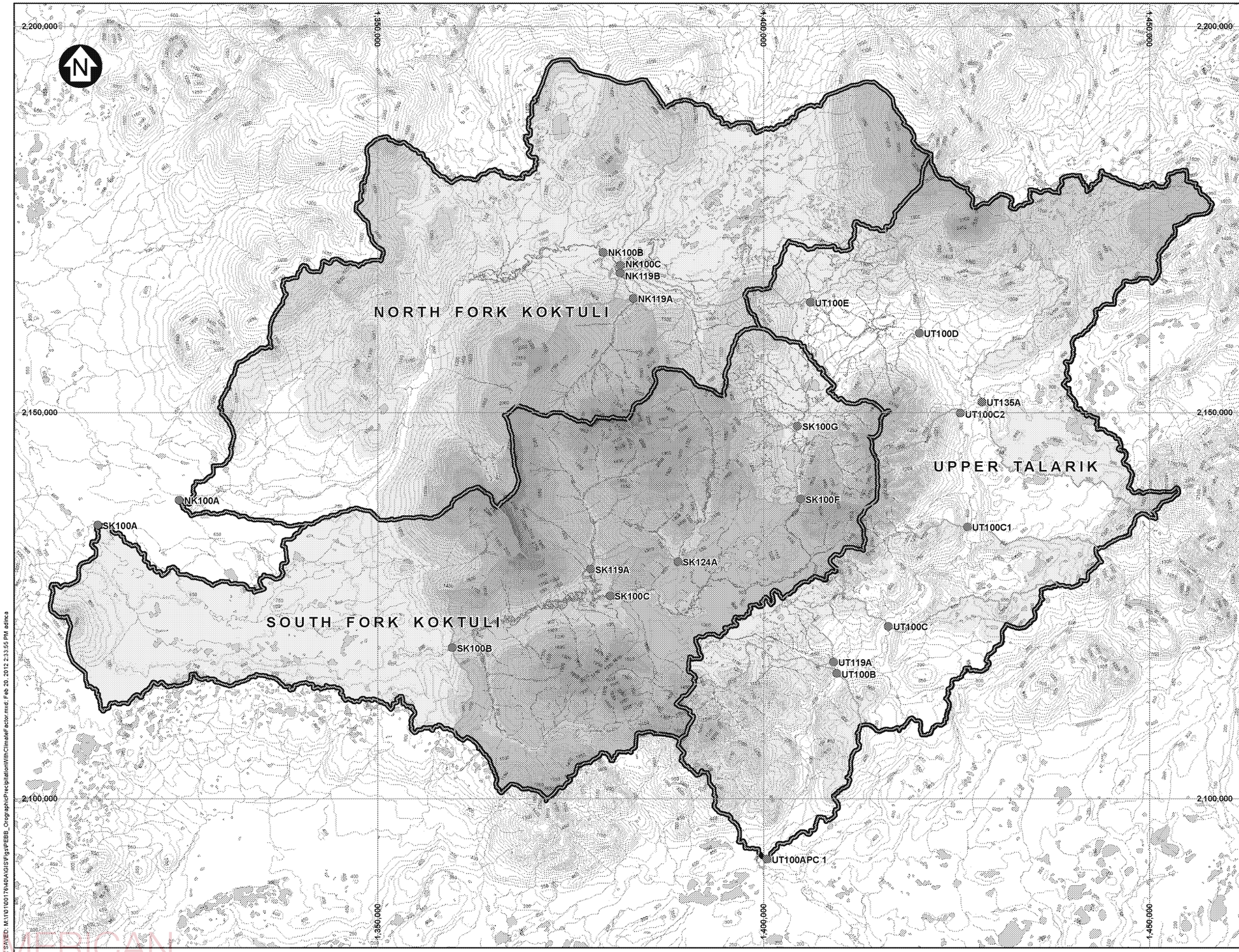
REF NO. 1

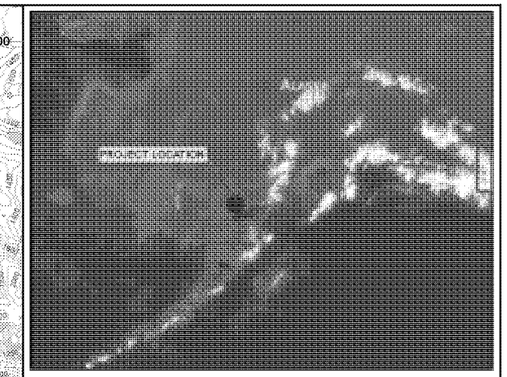
FIGURE 2.5

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	03MAR'11	ISSUED WITH REPORT	KT	NS	JGC

AMERICAN OVERSIGHT





LEGEND:

- GAUGE LOCATION
- DRAINAGE BASIN
- PRIMARY WATERSHED DIVIDE
- LAKE / RIVER

PRECIPITATION (INCHES)

- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 81

NOTES:

1. BASE MAP: USGS BASE MAPPING.
2. COORDINATE GRID IS IN FEET. COORDINATE SYSTEM: NAD 1983 STATEPLANE ALASKA 5 FIPS 5005 FEET.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:150,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.
4. CONTOUR INTERVAL IS FEET.
5. PRECIPITATION VALUES INCLUDE OROGRAPHIC AND LOCATION CONSIDERATIONS AND WERE ESTIMATED USING THE WMC WATER BALANCE MODEL.

SCALE 1 0.5 0 1 2 3 4 5 Miles

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

MEAN ANNUAL PRECIPITATION FOR MINE STUDY AREA

Knight Piésold CONSULTING

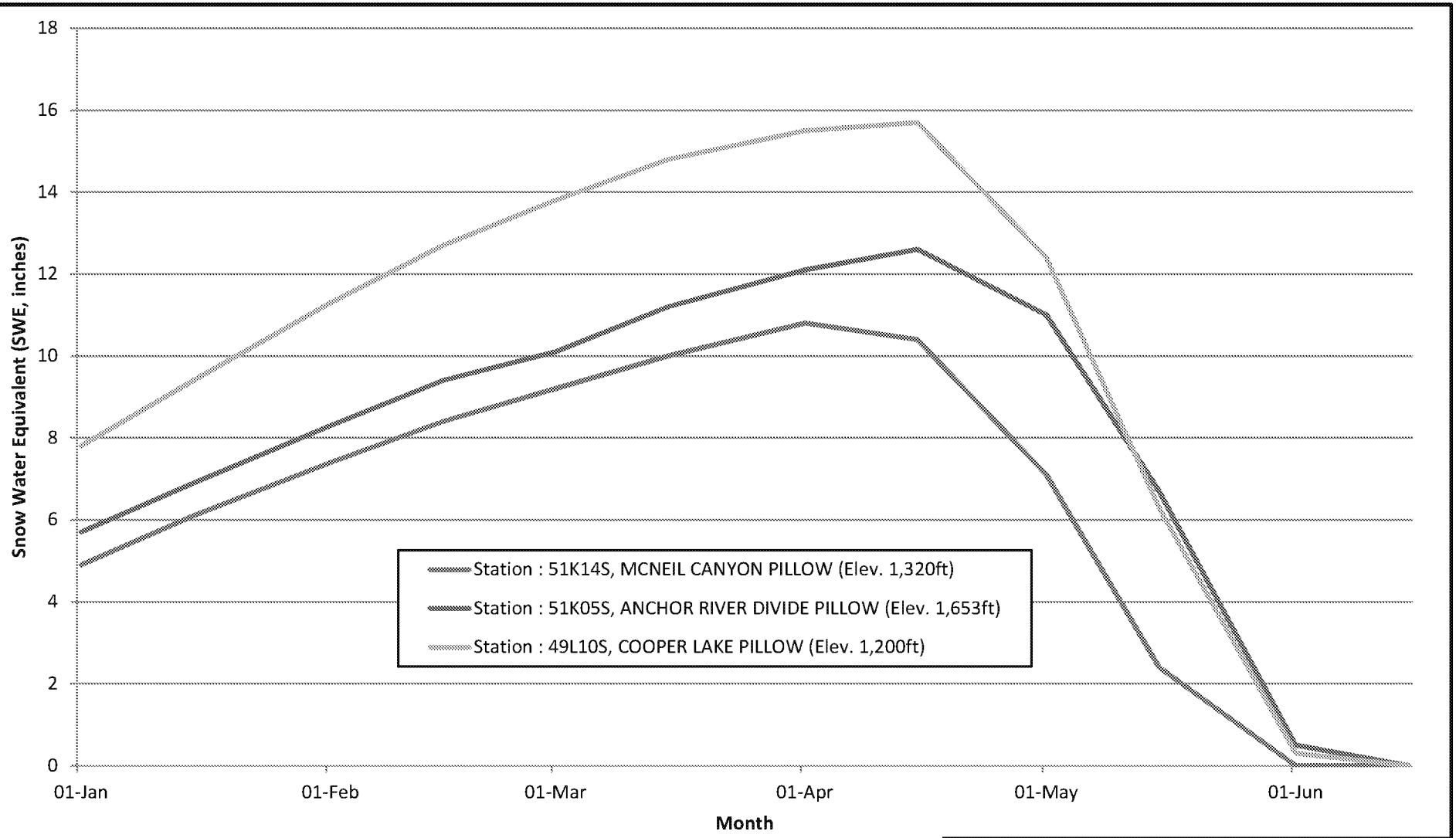
P/A NO.	REF NO.
VA101-176/40	1

FIGURE 2.6 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	20FEB'12	ISSUED WITH REPORT	NS	KS	JGC	KJB

KP FIGURE SAVED: M:\1\01\00176\40\A\GIS\Figs\PEBB_OrographicPrecipitationWithClimateFactor.mxd; Feb 20, 2012 2:33:55 PM adinca

AMERICAN OVERSIGHT



NOTES:

1. SWE VALUES ARE THE MEAN OF LONG-TERM DATA MEASURED ON THE 1st DAY AND 15th DAY OF EACH MONTH.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	03MAR'11	ISSUED WITH REPORT	KT	NS	JGC

PEBBLE PARTNERSHIP

PEBBLE PROJECT

REGIONAL SNOW PILLOW SUMMARY

Knight Piésold CONSULTING

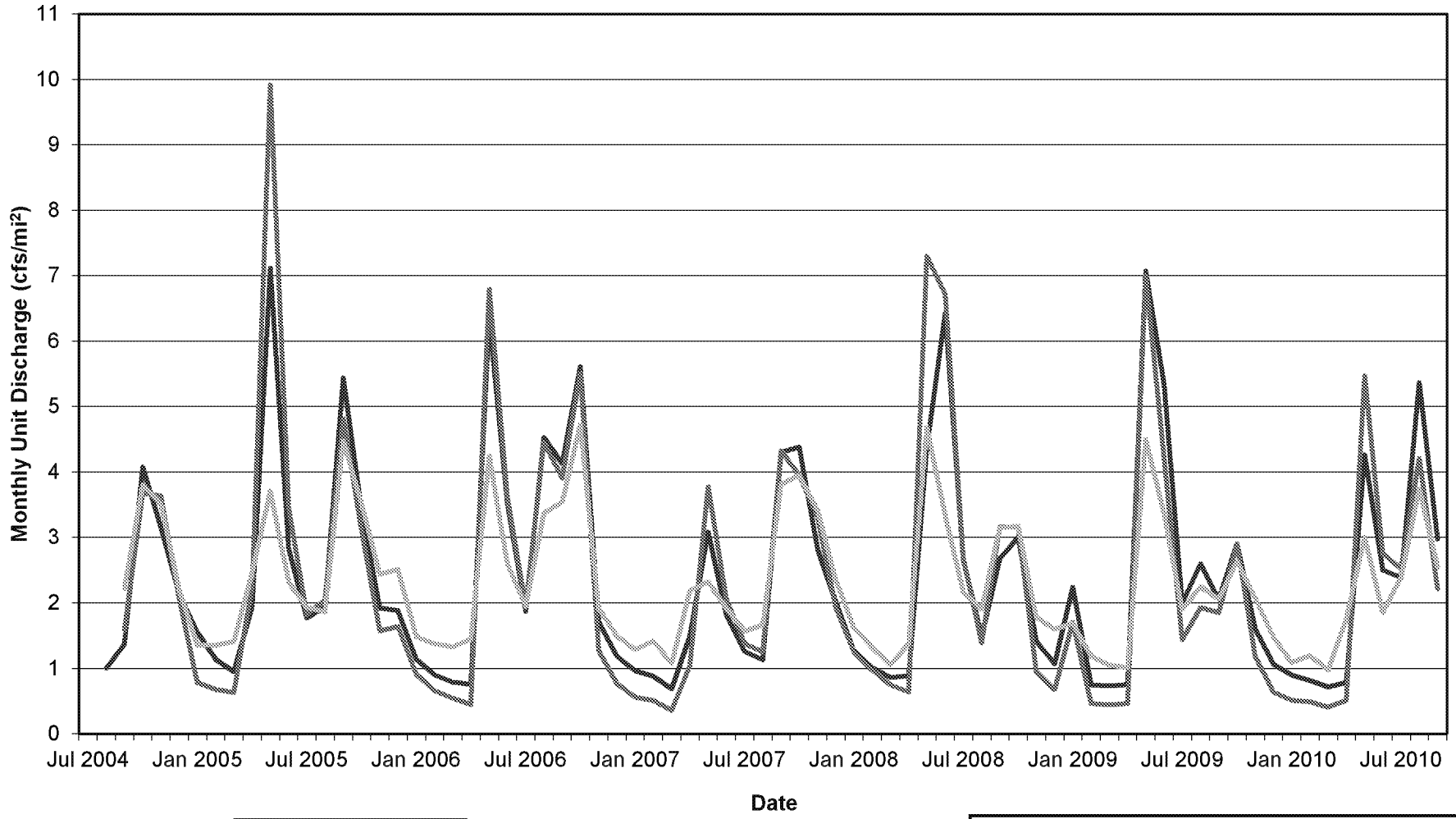
P/A NO. VA101-176/40

REF. NO. 1

FIGURE 2.7

REV 0

AMERICAN OVERSIGHT



REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11FEB'11	ISSUED WITH REPORT	NS	KT	JGC

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

MINE SITE AREA
MONTHLY UNIT-DISCHARGE HYDROGRAPHS

Knight Piésold CONSULTING

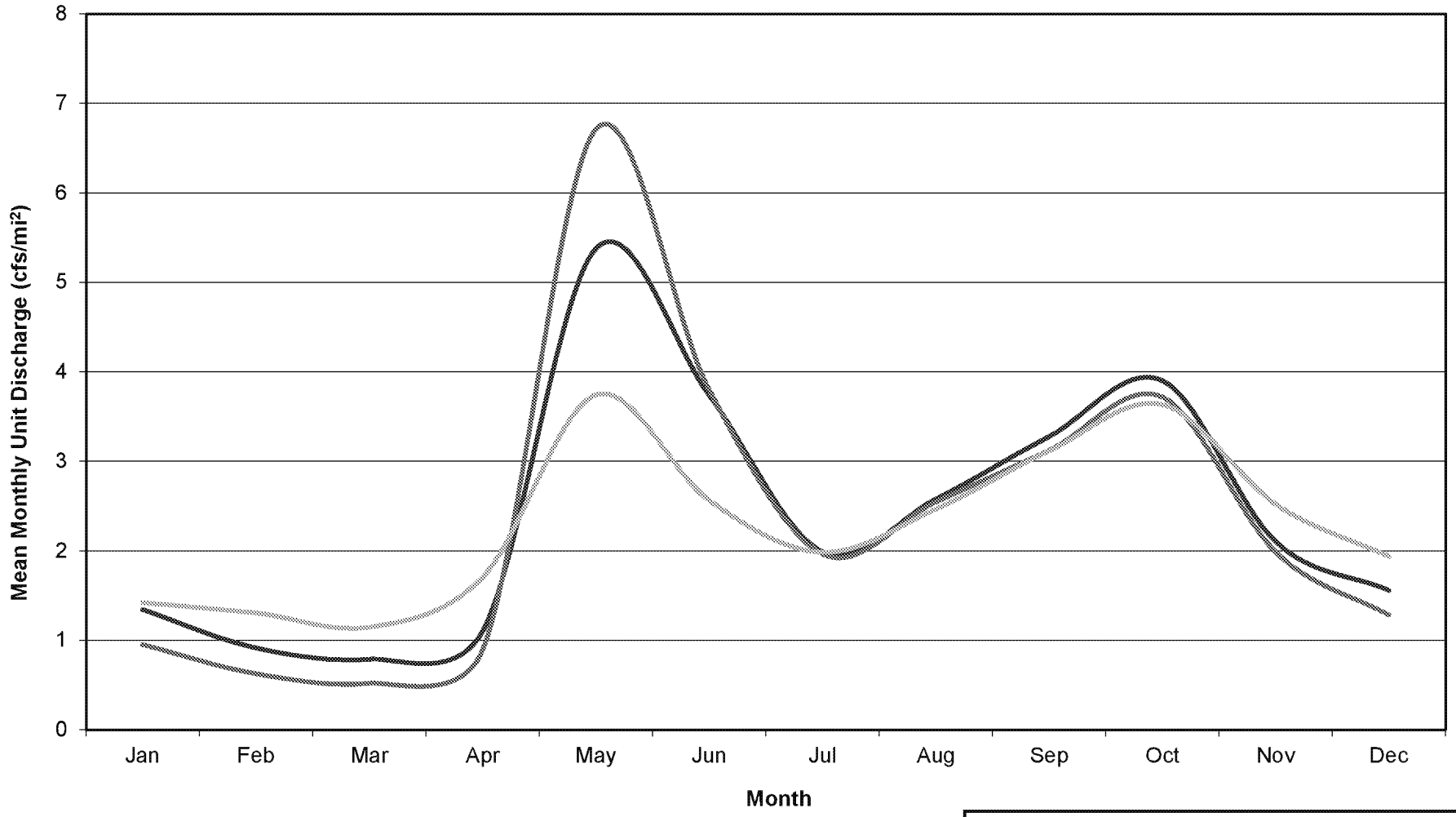
P/A NO. VA101-176/40

REF NO. 1

FIGURE 3.1

REV 0

AMERICAN OVERSIGHT



PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

MINE SITE AREA
MEAN ANNUAL UNIT HYDROGRAPHS

Knight Piésold CONSULTING

P/A NO. VA101-176/40

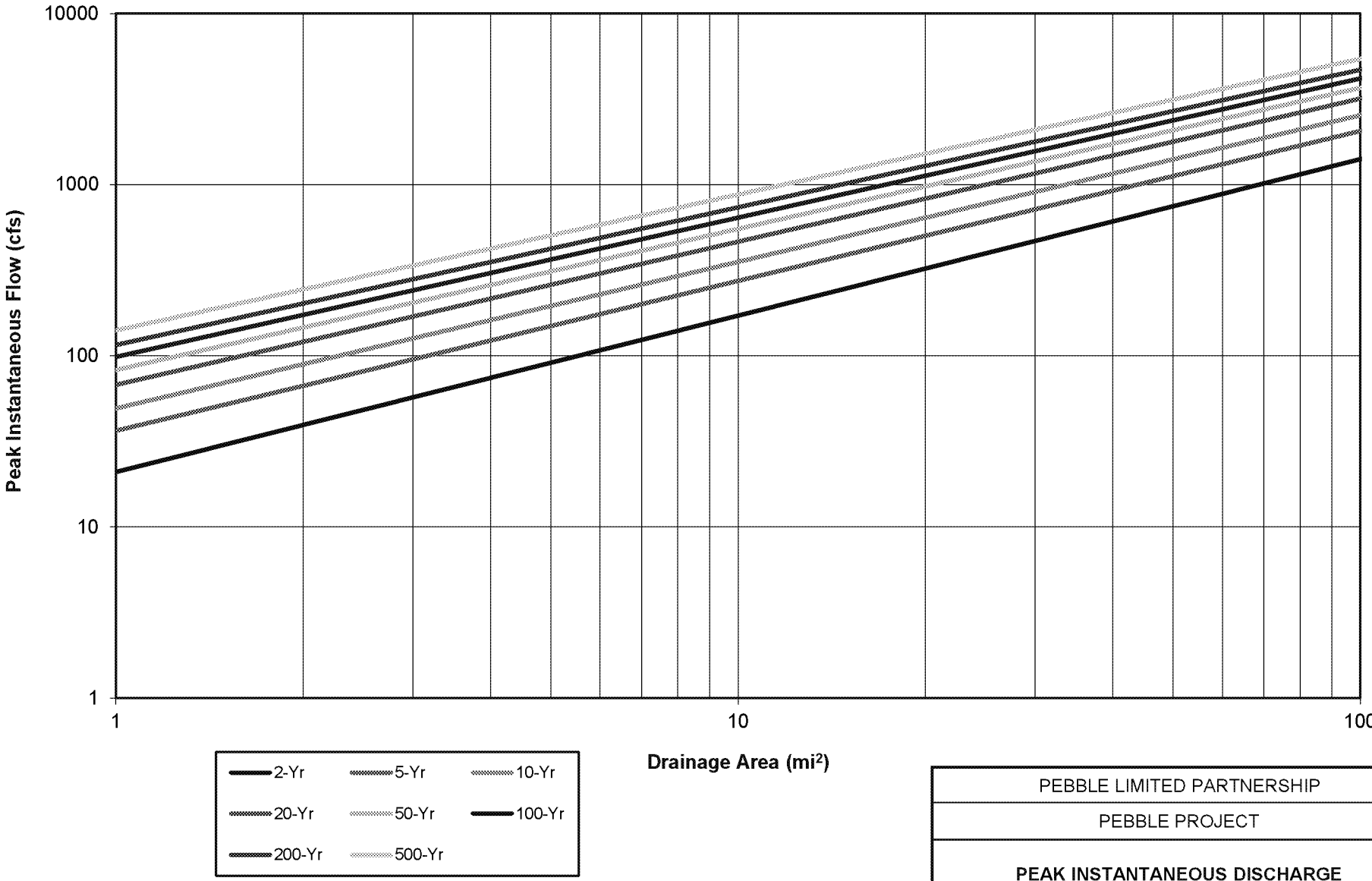
REF NO. 1

FIGURE 3.2

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	21FEB'12	ISSUED WITH REPORT	NS	JGC	JGC

AMERICAN OVERSIGHT



REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	16FEB'11	ISSUED WITH REPORT	NS	KT	JGC

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

PEAK INSTANTANEOUS DISCHARGE
LOWLAND CHANNELS

Knight Piésold CONSULTING

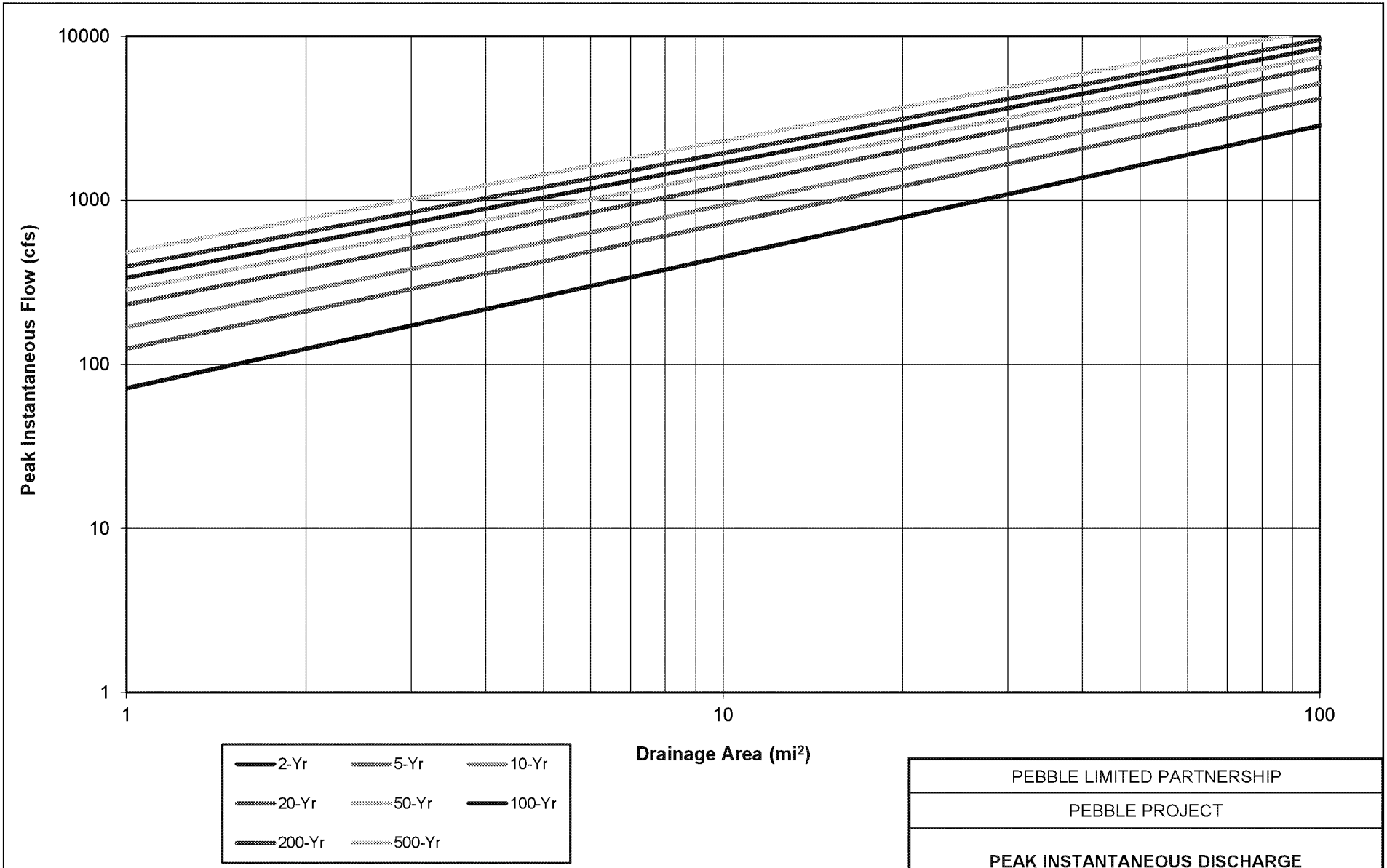
P/A NO. VA101-176/40

REF NO. 1

FIGURE 3.3

REV 0

AMERICAN OVERSIGHT



REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	16FEB'11	ISSUED WITH REPORT	NS	KT	JGC

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

PEAK INSTANTANEOUS DISCHARGE
UPLAND CHANNELS

Knight Piésold CONSULTING

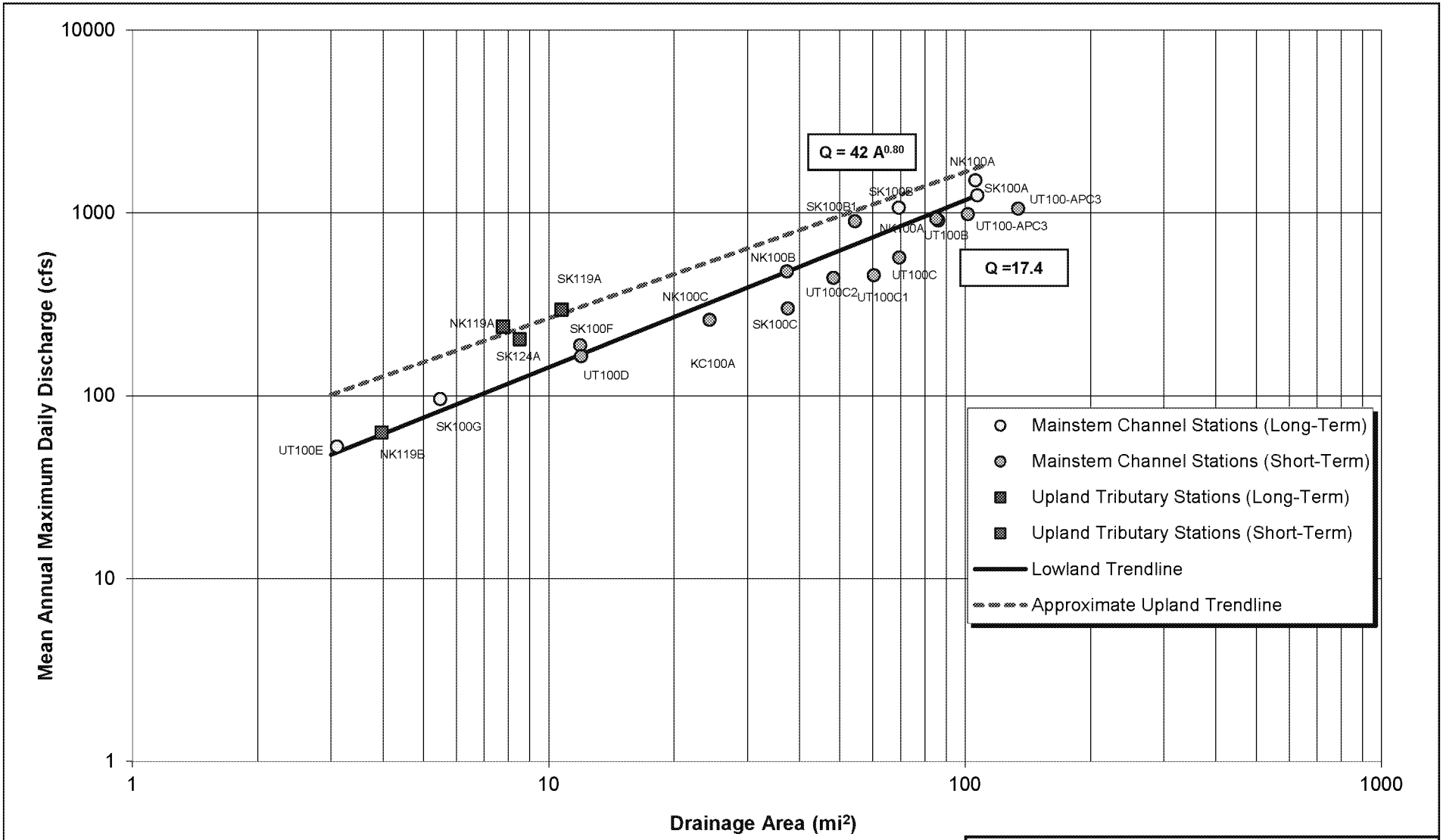
P/A NO. VA101-176/40

REF NO. 1

FIGURE 3.4

REV 0

AMERICAN OVERSIGHT



NOTES:

1. NK = NORTH FORK KOKTULI
2. SK = SOUTH FORK KOKTULI
3. UT = UPPER TALARIK
4. UT119A EXCLUDED FROM ANALYSIS
5. LONG-TERM = COMPLETE RECORD
6. SHORT-TERM = SOME PEAK FLOWS MISSING FROM RECORD

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	21FEB'11	ISSUED WITH REPORT	NS	KT	JGC

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

MEAN ANNUAL MAXIMUM DAILY DISCHARGE LOWLAND AND UPLAND CHANNELS

Knight Piésold CONSULTING

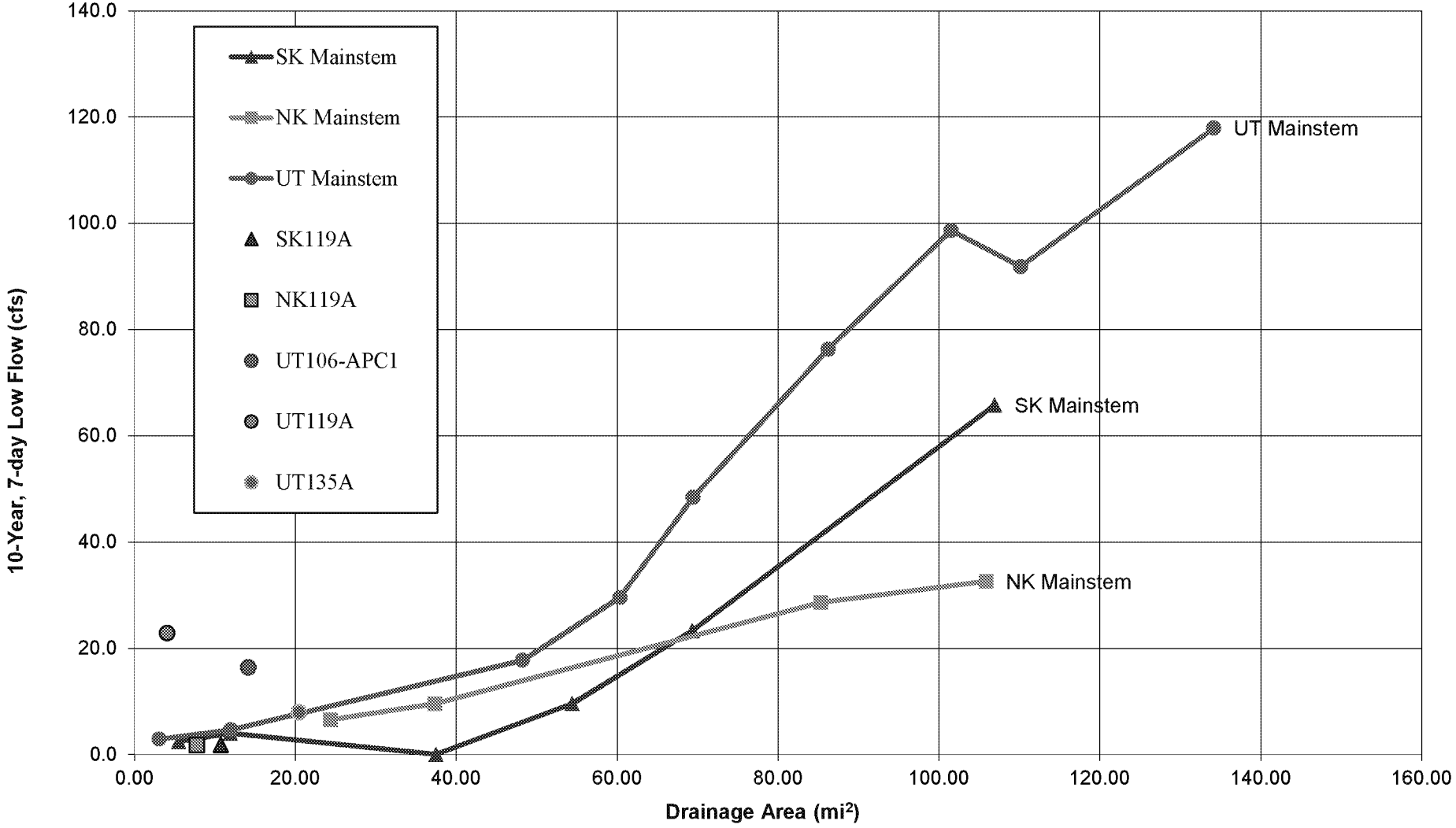
P/A NO. VA101-176/40

REF. NO. 1

FIGURE 3.5

REV 0

AMERICAN OVERSIGHT



NOTES:
1. WINTER IS DEFINED AS OCTOBER 1 TO JUNE 30.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	29JUL'11	ISSUED WITH REPORT	LD1	CJN	JPH

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

10-YEAR, 7-DAY LOW FLOW ANALYSIS WINTER

Knight Piésold CONSULTING

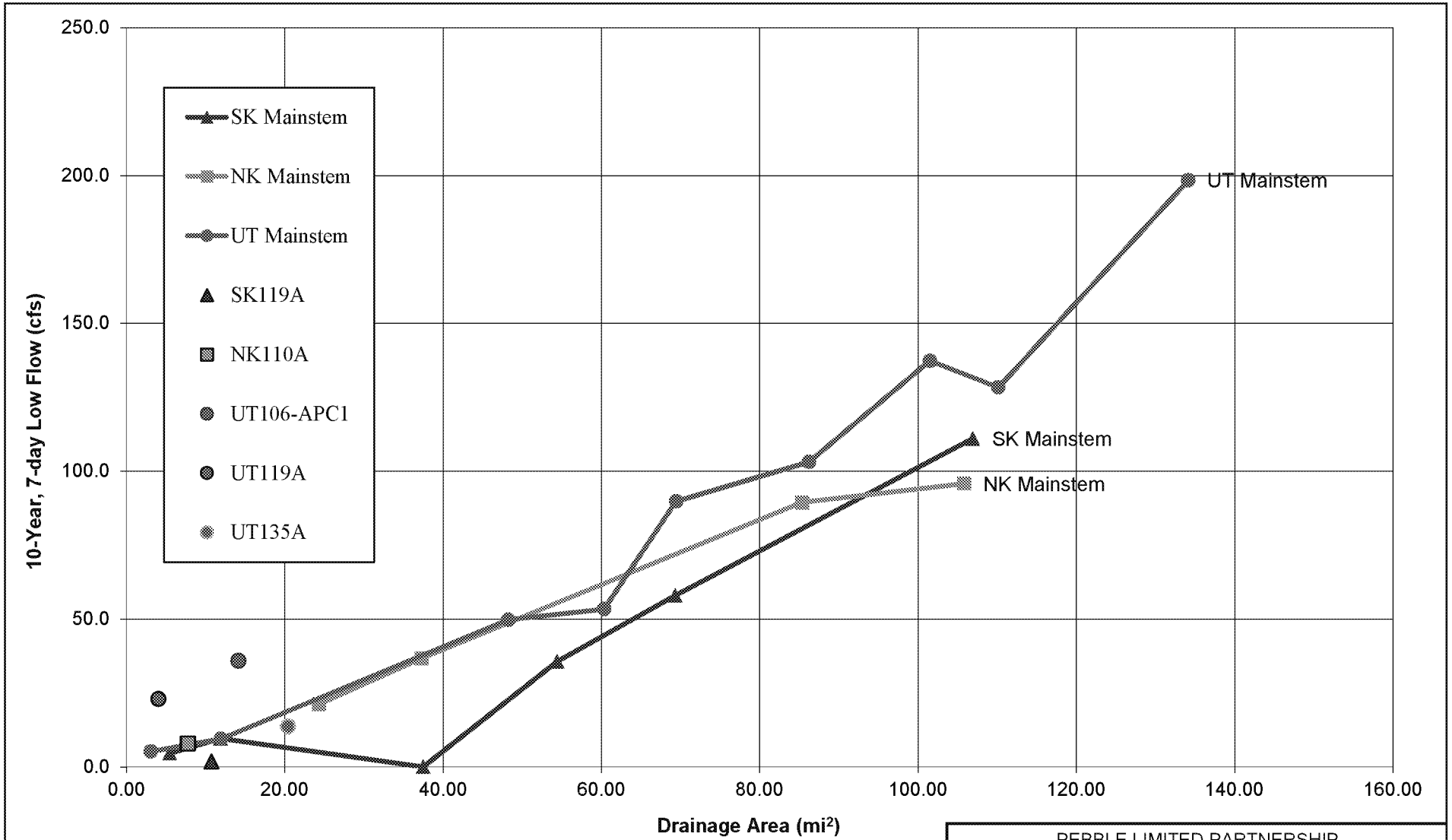
P/A NO. VA101-176/40

REF. NO. 1

FIGURE 3.6

REV 0

AMERICAN OVERSIGHT



NOTES:
1. SUMMER IS DEFINED AS JULY 1 TO SEPTEMBER 30.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	29JUL'11	ISSUED WITH REPORT	LD1	CJN	JPH

PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

10-YEAR, 7-DAY LOW FLOW ANALYSIS SUMMER

Knight Piésold CONSULTING

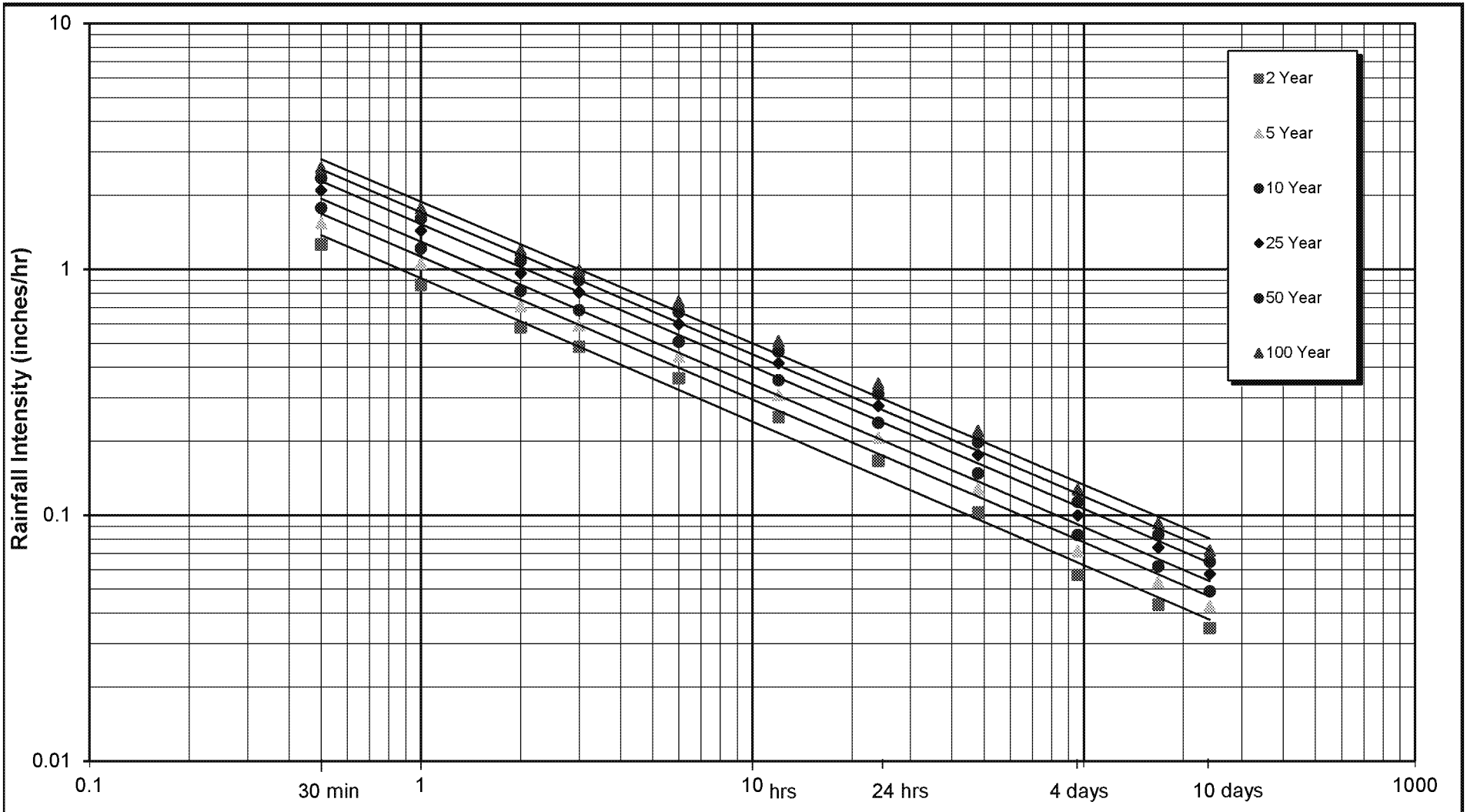
P/A NO. VA101-176/40

REF. NO. 1

FIGURE 3.7

REV 0

AMERICAN OVERSIGHT



PEBBLE LIMITED PARTNERSHIP

PEBBLE PROJECT

PRECIPITATION INTENSITY DURATION FREQUENCY
PEBBLE 1 CLIMATE STATION
ELEVATION 1560 FEET

Knight Piésold CONSULTING

P/A NO. VA101-176/40

REF NO. 1

FIGURE 4.1

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	22feb'12	ISSUED WITH REPORT	NS	KT	JGC

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 6:14:06 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]
Subject: FW: Pebble Project Appendix K4.11 Figures (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
I just tried to down load and do not have the password. I will resend on Monday when I get the password.

VR

Shane McCoy
Program Manager
(907) 753-2715

From: elizabeth.bella@aecom.com [mailto:elizabeth.bella@aecom.com]
Sent: Friday, November 02, 2018 4:18 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] Pebble Project Appendix K4.11 Figures

Elizabeth Bella has sent you 14 files using AECOM's File Transfer System.

Elizabeth Bella says:

Visual Resource figures are attached for Technical Appendix K4.11, as they are too large to send by email.

These files will be available for download until 11/9/2018

File	Description	Size
Figure_K4_11_01_TSFMainEmbankment_Viewshed.pdf		3,171KB
Figure_K4_11_02_TSFSouthEmbankment_Viewshed.pdf		2,903KB
Figure_K4_11_03_CoarseOreStockpile_Viewshed.pdf		3,457KB
Figure_K4_11_04_NorthFerryTerminal_Viewshed.pdf		2,552KB
Figure_K4_11_05_SouthFerryTerminal_Viewshed.pdf		2,760KB
Figure_K4_11_06_AmakdedoriPort_Viewshed.pdf		2,644KB
Figure_K4_11_07_NorthTransportationCorridor_Viewshed.pdf		4,567KB
Figure_K4_11_08_SouthTransportationCorridor_Viewshed.pdf		4,761KB
Figure_K4_11_09_EagleBayFerryTerminal_Viewshed.pdf		3,363KB
Figure_K4_11_10_PileBayFerryTerminal_Viewshed.pdf		2,875KB
Figure_K4_11_11_DiamondPointPort_Viewshed.pdf		2,507KB
Figure_K4_11_12_Alt2_TransportationCorridor_Viewshed.pdf		4,600KB

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Figure_K4_11_13_Kenai_Compressor_Viewshed.pdf	2,306KB
K4.11-14 through K4.11-19.pdf	9,225KB

Download all files (.zip)

If you are having trouble accessing the links in this email, you can view this message as a web page by copying the following link and pasting it into your browser:

Blockedhttps://sendfiles.aecom.com/message.aspx?msgId=ca373e93-2791-49dd-aa2f-0ea4edd51b5f

If you have any questions, please contact your project manager.
CLASSIFICATION: UNCLASSIFIED

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 5/15/2018 12:14:56 AM
To: Bob Loeffler [bobl@jadenorth.com]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendergast [kpendergast@rmconsult.com]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Pres William Evanoff [nondaltontribe@yahoo.com]; Wesley Furlong [wfurlong@narf.org]
CC: Rob Rosenfeld [robrosey@gmail.com]; Craig, Bill [bill.m.craig@aecom.com]; mnewman@narf.org
Subject: RFIs and responses to date
Attachments: 04_26_2018_RFI_027_Socioeconomics_Response.docx; 04_26_2018_RFI_028_TSF_IDF_Freeboard_Response.docx; 04_26_2018_RFI_029_Ferry_Propeller_Specs_Response.docx; 04_26_2018_RFI_002_Vegetation_Data_Crosswalk_Response.docx; 04_26_2018_RFI_004_Surface_Hyd_Data_Response.docx; 04_26_2018_RFI_005_Port_Stability_Response.docx; 04_26_2018_RFI_010_Tailings_Characteristics_Response.docx; 04_26_2018_RFI_011_Pipeline_HDD_Erosion_Response.docx; 04_26_2018_RFI_013_Iliamna_Lake_Landfall_Hazards_Response.docx; 04_26_2018_RFI_014_Mine_Site_Geotech_Data_Response.docx; 04_26_2018_RFI_015_TSF_Quarries_Response.docx; 04_26_2018_RFI_017_SEBD_Trace_Elements_BB_Response.docx; 04_26_2018_RFI_018_LGO_Liner_Response.docx; 04_26_2018_RFI_020_Water_Treatment_Response.docx; 04_26_2018_RFI_022_Water_Withdrawals_Response.docx; 04_26_2018_RFI_023_Pit_Wall_Stability_Response.docx; 04_26_2018_RFI_024_Reclamation_Response.docx; 04_26_2018_RFI_026_Lands_Response.docx

Shane

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RFI 002
Pebble Project EIS

Request for Information

Title/Subject:	**Grouped Vegetation Type GIS Data**
Requestor:	**Sasha Forland, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/3/2018**
Rationale:	**EBD Chapter 13 (Vegetation, BB) and Chapter 38 (Vegetation, CI) describe Project Vegetation Types (~50 types) and Grouped Vegetation Types (10 types). These chapters also include separate figure sets for these two classifications, indicating that spatial data exists for both. The 10 Grouped Vegetation Types were created for clearer display on maps, which is what is proposed for use in the EIS. However, the GIS dataset received to date does not include the layers for Grouped Vegetation Types (only the Project Vegetation Types). The spatial data is also necessary because the current alignment for the transportation corridor is not the same as what was studied as part of the 2004 – 2008 environmental baseline studies, so the cross-walk tables in the reports cannot be used directly. This gap was identified in the PDGA.** **The requested data is necessary to succinctly describe the affected environment and to analyze impacts to vegetation from the proposed project.**
Describe the Information Requested and Level of Detail:	**Please provide:** • **Spatial GIS vegetation data for the 10 Grouped Vegetation Types discussed in the Pebble Project EBD 2004 through 2008 (Chapters 13 and 38).** • **If GIS spatial data are not available, non-spatial data such as the crosswalk table(s) that PLP applied would be acceptable.** • **SEBD chapters for vegetation if available.**

Recipient Response Form

Date Received from USACE:	**4/27/2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1. Spatial data (GIS format) for the 10 Grouped Vegetation Types will be provided to USACE no later than 5/18/2018. 2. N/A 3. SEBD chapters for vegetation are not available.
List Number and Type of Response Attachments:	**None**
Date Returned to USACE:	**5/11/2018**

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any	Click here to enter text.

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Follow-up Related to this RFI (Communications, Clarifications):	

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RFI 004
Pebble Project EIS

Request for Information

Title/Subject:	**SEBD 07 SW Hydrology OCT15 - Missing Appendix 7A-E Figures and Tables**
Requestor:	**James Dietzmann/Nancy Darigo, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/3/2018**
Rationale:	**We are requesting all figures and some tables that accompany Appendix 7A, and all of Appendix 7D and Appendix 7E of the *Pebble Project Supplemental Environmental Baseline Data Report 2004 – 2012, 7. Surface Water Hydrology*. AECOM received the SEBD 07 SW Hydrology OCT15.pdf, and discovered that some tables and all figures from Appendix 7A, as well as Appendix 7D and Appendix 7E, were missing. Note that Appendix 7A is only missing Tables 30 through 64.** **The requested data is necessary to understand and succinctly describe the environment affected by the proposed action in accordance with CEQ regulations (40 CFR 1502.15), and to analyze impacts to hydrologic resources from the proposed project.**
Describe the Information Requested and Level of Detail:	**We need the missing figures and tables referenced above in Appendices 7A through 7E. There are at least 144 figures referenced starting on page 31/72 of the SEBD 07 SW Hydrology OCT15.pdf.**

Recipient Response Form

Date Received from USACE:	**4/27/2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**Revised SEBD Chapter 07 (Surface Water Hydrology—Bristol Bay), inclusive of appendices 7A-7F. The attached version is complete and supersedes all previously submitted versions of this chapter.**
List Number and Type of Response Attachments:	1. SEBD 07 SW Hydrology MAY2018.pdf
Date Returned to USACE:	**5/10/2018**

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 005
Pebble Project EIS

Request for Information

Title/Subject:	**Stability of Port Structures**
Requestor:	**Nancy Darigo/Craig Freas, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/18**
Rationale:	**The Project Description and EBD (Chapters 27, 29, and 30) provide limited information regarding geotechnical conditions at the Amakdedori port site and the stability of proposed structures. Additional information is needed to evaluate the potential for seismic and other geohazards impacts on port structures and related effects on the environment in accordance with CEQ regulations and EPA and Corps of Engineers dredge permitting. The requested information is part of typical state-of-engineering-practice for port structures in seismically active areas. Experience at similar structures in Cook Inlet suggest that, in the absence of such baseline data and stability analysis, the potential exists for structural failure and impacts to the environment.**
Describe the Information Requested and Level of Detail:	**1) Provide additional information (borehole data) on subsurface geotechnical conditions at the terminal, sheet pile cell jetty/wharf, and dredge stockpile.** **2) Provide a report of the "on-shore geophysical information" at the port mentioned on p.73 of the Project Description.** **3) Provide additional information on the geotechnical and chemical conditions (suitability) of the dredged material that would be used to construct the terminal, causeway, and jetty/wharf. Describe contingencies to the use of this material for construction if found to not be suitable.** **4) Provide additional design details for the sheet pile cell wharf structure; e.g., would it be closed cell, open cell, vertical walls with tie rods, etc? What is the proposed embedment depth of the sheet pile?** **5) Would the design of the sheet pile wharf take into account potential surcharge of the cells by the ship loaders? Would the wharf be pile-supported in this area?** **6) Provide stability analyses for the sheet pile wharf, dredge stockpile, sediment pond berm, and terminal patio under static and seismic loads, and at low tide for marine structures.** **7) Provide a description of materials, internal zoning, and seepage controls that would be used in construction of the containment berm around the Dredge Stockpile and Sedimentation Pond.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1) No borehole data has been collected for the proposed terminal. Initial data will be collected to support feasibility level engineering with those data supplemented prior to construction. Geophysical data collection that will confirm most of the design assumptions is being collected this summer (2018) and will be available in the fall. 2) Provided with this RFI. 3) PLP contractors will collect samples for geochemical analyses from the updated project footprint this summer. The updated project plan will require the use of imported fill to complete causeway and jetty construction. This material will either be trucked in from the closest material site on the road (a distance of three miles) or imported by barge from existing commercial sources.

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	4) The geotechnical conditions at the port site are expected to be variable and will be evaluated further by investigations planned for summer 2018; however, it is assumed so far that the bedrock at the marine terminal is sufficiently deep that marine structures will not need to be socketed and that sheet piles will be able to be designed for installation to a design embedment depth.Based on assumed geotechnical conditions, conceptual design development and experience with construction of similar structures at other sites, the following installation description may be expected at the Amekdedori marine terminal: Construction of the terminal will require installation of approximately 2200 lineal feet of protected rock slope along an access causeway and 2000 lineal feet (in plan) of steel sheet piles that may be 110-ft in length, with tie backs into the fill behind the sheets to provide sufficient lateral capacity. The sheet piles are in in 15 to 20 feet of water. The causeway will be constructed by infilling on top of the seabed with competent fill and rock protection for the slopes. The sheet piles will be installed using a vibratory hammer. If it is found that bedrock or similarly hard soil is found within 20-30 feet of the design seabed elevation, driving of the sheets for the last 1-2 feet may be required to anchor the sheets in the ground. If bedrock or similarly hard soil is found to be very shallow, pile socketing and a revised concept may be required. If investigations find that the seabed is susceptible to liquefaction under seismic conditions, soil improvement work such as stone column installation may be required. 5) If ship loaders are required for project, the design would address the potential surcharge. However, with the current concept of handling concentrate in containers, it is assumed that pile support will not be required. This will be confirmed by ongoing studies prior to detailed design and construction. 6) These analyses will be completed prior to detailed design to support engineering and construction. 7) The updated proposed project no longer requires the construction of a large dredge stockpile pile and sediment pond. Please notify us if any further action is required on this question.
List Number and Type of Response Attachments:	**DRAFT Amakdedori Onshore Geophysical Report.pdf**
Date Returned to USACE:	05/14/2018

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 010
Pebble Project EIS

Request for Information

Title/Subject:	**Tailings Characteristics**
Requestor:	**Nancy Darigo/Cecil Urlich, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/17/18**
Rationale:	**The Project Description and EBD Chapter 11 (Geochemical Characterization) provide limited details on 1) the planned bulk and pyritic tailings split of 88%-12% that determines the size of their respective TSF impoundments, and the location and size of the TSF Internal Embankment; and 2) the tailings thickening process to achieve 55% solids slurry. Additional information is needed to evaluate the overall constructability of the TSF, and potential risks to embankment stability and seepage chemistry from changed conditions during operations.**
Describe the Information Requested and Level of Detail:	**1) Describe how the 88%-12% split between bulk and pyritic tailings was determined and the confidence level in achieving the split during operations.** **2) Describe how much flexibility there is in the split percentage that would still allow the TSF Internal Embankment and impoundments to be constructed as planned.** **3) Describe contingency plans to adjust process operations and/or modify the TSF cell configurations if the planned split cannot be achieved. Explain if and how the TSF Internal Embankment design and construction would be impacted or adjusted.** **4) If higher than expected pyritic tails are produced from the process plant, would they be directed to the bulk tails impoundment? If so, how would that change the geochemistry of the bulk tailings?** **5) Describe the steps taken to reach the concept of a thickened 55%-solids slurry for the bulk tailings, versus a lower %-solids aqueous slurry.** **6) Provide examples of successful thickened TSFs in cold regions.** **7) Describe water balance mitigations if 55% thickening cannot be achieved.** **8) Provide any additional geochemical test work (e.g., acid-base accounting, net acid generation tests, humidity cell tests, etc.) on bulk or pyritic tailings conducted since 2010.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1: The split between the NPAG tailings and PAG tailing was estimated from batch flotation tests conducted on samples derived from core from drill holes throughout the pit area. The locations and intervals were selected to produce a representative sample set of ore grade material from the pit shell. The batch flotation tests simulated the processing of the ore in a process plant. The rougher flotation tailings (or NPAG tailings) content for each sample was obtained from the flotation test results. The rougher flotation tailings mass ranged from 81% to 94% of total tailings content of the individual ore samples. The average fraction was 88%. The pyritic tailings content for each sample was predicted from the cleaner flotation Lock Cycle test results. The cleaner flotation tailings mass ranged from 5.2% to 17.6% of total tailings content of the individual ore samples. The average fraction was 12%. 2: The current proposed alternative has been revised to remove the LGO stockpile. A separate pyritic tailings and PAG storage facility will be located in the area formerly designated for the LGO stockpile. Consequently, the current plan no

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	longer includes an internal embankment in the TSF. 3: If the split between the bulk and pyritic tailings deviated significantly from the predicted split, the embankment raise schedules for the TSF and pyritic tailings and PAG storage facility would be adjusted to accommodate the tailings volumes. 4: Pyritic tailings would not be directed to the bulk tailings storage facility. 5. A tradeoff study was conducted to optimize the water content of the tailings to pump to the TSF to minimize the volume of tailings slurry transferred from the process plant to the bulk and pyritic tailings storage facilities, and reduce the need to re-handle water from the slurry after settlement of the solids (supernatant water in the bulk and pyritic tailings storage facilities, and water from the seepage ponds associated with the bulk tailings storage facility). 6. To be provided no later than 5/30/18. 7. There would be no changes to the overall site water balance, the bulk or pyritic tailings storage facility embankment heights, or the embankment raise schedules if the 55% thickening could not be achieved. Additional tailings storage capacity would not be required as the differences in the settled density of the 55%-solids thickened tailings and higher water content tailings will be minimal. Additional pumping capacity would need to be provided to transfer the tailings slurry from the process plant to the tailings storage facilities, and for pumping additional supernatant water from the tailings storage facilities and water from the bulk tailings storage facility seepage ponds. 8: PLP will provide an update to the geochemistry EBD (SEBD) with the data transfer on 5/11/2018. Laboratory test work continued through 2013 and is therefore not all included in the SEBD. The data is currently being evaluated and a technical memorandum addressing the data will be submitted by 5/30/2018. Initial feedback is that the additional data period does not show any changes in observed trends.
List Number and Type of Response Attachments:	**One Report, delivered as part of the data transfer on May 11, 2018:** **The Pebble Partnership, 2018. Pebble Project Supplemental Environmental Baseline Data Report (2004-2012), Chapter 11, Geochemical Characterization, Bristol Bay Drainages. May.**
Date Returned to USACE:	May 11, 2018

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 011
Pebble Project EIS

Request for Information

Title/Subject:	**Pipeline HDD and Bluff Erosion**
Requestor:	**Nancy Darigo, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/17/2018**
Rationale:	**The Project Description provides limited information on: 1) the horizontal directional drilled (HDD) part of the pipeline at East Cook Inlet bluff, and 2) construction details where the pipeline crosses several incised drainages at the top of the bluff. Information on pipeline safety and erosion control is required under PHMSA and ADEC regulations, and the requested information is needed to evaluate the potential for bluff erosion/slope stability impacts and related effects on the environment.**
Describe the Information Requested and Level of Detail:	**1) Provide additional HDD details such as length, depth, and angle; and a cross-section from the HDD work area to the pipeline emergence at the seafloor.** **2) The Project Description indicates the west end of the HDD would be in "waters that are deep enough to avoid navigation hazards." What is this proposed water depth?** **3) Describe how the pipeline would be constructed across incised drainages at the top of the bluff, which either currently exist in several places along the proposed route, or could erode to the pipeline position over the project life.** **4) Describe plans for monitoring and maintenance of potential unexpected erosion beneath the pipe during both operations and after closure.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1) A conceptual HDD section is provided attached to this response. PLP contractors are currently collecting offshore data that will provide additional high-resolution sea bottom bathymetry data that will allow for refinement of the design during project detailed engineering. Based on NOAA chart data, an 1800' HDD would exit in approximately 12 feet of water at mean lower low water, while a 2000' HDD will exit in approximately 18-24 feet of water at mean lower low water. Current technology can easily accommodate a 2000' plus HDD for pipe in the 12" diameter range. 2) PHMSA code (49CFR 192.327) requires burial of a natural gas transmission pipeline with 36" of cover to at least 12' water depth, with the top of the pipe below the natural bottom, or protected by alternate means in deeper waters. Final details will be determined during detailed design, but PLP will at a minimum comply with PHMSA code requirements for pipeline cover. 3 and 4) The first approximately 9 miles of the alignment along the Stirling Highway are no longer proposed for construction as there is sufficient capacity in the existing Enstar line that runs past the compressor station location. It is our understanding that Questions 3 and 4 are therefore no longer relevant to the updated project. Please notify us if any further action is required on these questions.
List Number and Type of Response Attachments:	Pipeline Anchor Point Bluff HDD.pdf
Date Returned to USACE:	**May 10, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 013
Pebble Project EIS

Request for Information

Title/Subject:	**Iliamna Lake and Pipeline Landfall Hazards**
Requestor:	**Nancy Darigo/Jack Colonell/James Dietzmann, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**Limited information is available in the literature or EBD/SEBD (Chapter 7, Appendix B) on Iliamna Lake physical conditions and hazards such as wave heights, bathymetry, water level, shoreline erosion, ice conditions, or seiches (from major earthquakes or slumping). In addition, limited information is provided in the Project Description regarding potential ferry effects on shore erosion, or pipeline landfalls at the port and ferry terminals. Evaluation of pipeline safety and shore erosion is required under PHMSA and USACE regulations. The requested information is needed to evaluate potential impacts to ferry operations, lake port facilities, and the pipeline, and related impacts from project components on shore erosion. Ice rideup on the north shore of Iliamna Lake was a concern identified in scoping comments.**
Describe the Information Requested and Level of Detail:	**1) Provide additional available in-house data or anecdotal information from villages regarding: Iliamna Lake maximum wave height, bathymetry, seasonal and historical water level changes, shoreline erosion, ice coverage/seasons, ice thickness, ice movement/ridges, potential for shore ice rideup, and historical seiches or unusual flooding events.** **2) The Project Description indicates that the pipeline would be buried beneath 36" depth of cover on land, and that pipeline burial in Lake Iliamna would be similar to that of Cook Inlet crossing, which is described as "sufficiently deep to ensure that the top of the pipe is below the ground surface" from the point west of the HDD emergence on the seafloor at east Cook Inlet. This implies that the depth of cover would be minimal in shoreline areas of the port and ferry terminals. Clarify the depth of cover in the landfall transitions from offshore to onshore at the port and ferry terminals that would minimize potential shoreline erosion or navigation hazards.** **3) Provide additional information on ferry draft, speed, propeller size, ferry-generated wave heights, and the potential for ferry-induced shoreline or lake bottom erosion.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1) The current version of an assessment of lake ice conditions is attached (Iliamna Lake Ice Technical Memo.pdf). The coverage does not include the full proposed ferry route. PLP has requested a timeline from the consultant to expand the coverage to include the proposed route this and will notify USACE as soon as the schedule is confirmed. PLP has no additional data. 2) PLP contractors are currently collecting marine offshore data and will collect lake bottom data next month that will provide additional high-resolution sea bottom bathymetry data that will allow for refinement of the pipeline design during project detailed engineering. PHMSA code (49CFR 192.327) requires burial of a natural gas transmission pipeline with 36" of cover to at least 12' water depth, with the top of the pipe below the natural bottom, or protected by alternate means in deeper waters. Final details will be determined during detailed design, but PLP will at a minimum comply with PHMSA code requirements for pipeline cover. The pipeline will either

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	be HDD or trenched offshore to at least 12' water depths for both the lake and the Amakdedori shore transitions. 3) Please see attached Ferry Wave Modeling report for additional detail. a. Ferry draft – 16'-0" b. Speed – 6 knots on shore approach, 11 knots in open water c. Propeller size – 6'-0" – Note that there are 4 motors driving 4 propellers. Two are only used when breaking ice. d. Please see attached wave size model run's from PLP's consultant using Computational Fluid Dynamics (CFD) Numeca software. At the 6 kn berth approach speed, the hull generates a wave height of 4" at the hull, which dissipates within 30 ft from the hull. The ferry route is from north to south across the lake and the ferry will approach the shore perpendicularly. As such, there is limited potential for wake induced shoreline erosion associated with ferry operations. e. The hull is designed with two symmetrical ice breaking bows and the propellers are located away from the bows up in hull recesses. The ferry draft is 16'-0", the propeller diameter is 6'-0" and the propeller center is located at 12'-0" depth. The propellers will therefore not protrude below the keel of the vessel. The vessel will maintain a minimum under keel clearance of 6' when running and will be operating at low power as it approaches the shore. The ferry route is from north to south across the lake and the ferry will approach the shore perpendicularly. As such, there is limited potential for propeller induced lake bottom erosion associated with ferry operations.
List Number and Type of Response Attachments:	Ferry Wave Modeling.pdf Iliamna Lake Ice Technical Memo.pdf
Date Returned to USACE:	**05/11/2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 014
Pebble Project EIS

Request for Information

Title/Subject:	**Mine Site Geotechnical Data: GIS Layers and TSF Coverage**
Requestor:	**Nancy Darigo/Cecil Urlich/Courtney Brozovsky, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/3/2018**
Rationale:	**EBD/SEBD Chapters 3 and 6 provide figures showing geotechnical data collected at the Mine Site, but GIS layers with the locations of these data are not available in the current GIS data log, and some test pit data are missing from EBD Appendix 6A. A preliminary review indicates that little or no geotechnical data may be available in certain areas of the TSF. Geotechnical information forms the basis of dam foundation design and stability analysis, and is required under the Alaska Dam Safety Program. The information is needed in GIS to correlate to current mine plan details in order to evaluate the adequacy of data coverage for embankment stability impacts.**
Describe the Information Requested and Level of Detail:	• **Provide GIS layer(s) with test pits, geotechnical drillholes, and seismic line locations for the Mine Study Area (e.g., those shown on EBD Chap.6, Figures 6-3, 6-5, and 6-8; and SEBD Chapter 3, Figures 3-4 and 3-6).** • **Provide test pit data that is missing from the pdf file of EBD Chapter 6, Appendix 6A: pages 5 to 16 of Appendix 6A are not in the pdf.** • **Clarify what geotechnical data exists for the TSF South, Internal, and East Embankments and pyritic tailings storage cell. If data are lacking for embankment-specific design and stability analysis, collect additional drillhole data at these locations, and/or provide plans for additional data collection as design progresses.**

Recipient Response Form

Date Received from USACE:	**4/27/2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**1) GIS data (geodatabase) attached for test pit, geotechnical drill hole, and seismic line locations.** **2) See attached pdf of EBD Chapter 6 – Appendix 6A** **3) The proposed project has been updated and a revised footprint will be provided by 5/30/18. The 2018 site investigation program will include drilling and associated test work for all embankments where data is not currently available. Preliminary results are expected in September 2018.**
List Number and Type of Response Attachments:	1. GeotechnicalLocations.gdb 2. EBD Chapter 6 – Appendix 6A.pdf
Date Returned to USACE:	**05/11/2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI	Click here to enter text.

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(Communications, Clarifications):	

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RFI 015
Pebble Project EIS

Request for Information

Title/Subject:	**TSF Quarries**
Requestor:	**Nancy Darigo/Cecil Urlich, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**EBD Chapter 6 provides summary descriptions of geotechnical information by general area within the Mine Site, and some rock quality data for individual drillholes, but no analyses of the data for embankment fill purposes. Geotechnical analysis of fill suitability and seepage potential is required under the Alaska Dam Safety Program. The information is needed to evaluate embankment stability, seepage impacts, and overall constructability of the Tailings Storage Facility (TSF).**
Describe the Information Requested and Level of Detail:	• **Describe the types of rock that are available and suitable from Quarries A, B, and C for tailings and pond embankment construction, along with their durability and suitability for use as embankment fill and filter zones.** • **Quantify the available materials in the proposed quarries compared to the tailings and pond embankment tonnage needs.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**1. Rock types in Quarries A, B and C comprise one or more phases of the Kaskanak Batholith. These phases predominantly consist of medium-grained, equigranular to weakly porphyritic, hornblende-bearing biotite granodiorite. This rock type assignment is based on surface geological mapping and drill intersections in geotechnical drill holes within and adjacent to the quarries.** **The 2018 site investigation program will include investigation of Quarry A, B and C materials, including core drilling and associated material testing. Preliminary results are expected in September 2018.** **2. Quantification of available and required materials for the updated project will be provided no later than 5/25/18. Gross quantities for the material to be sourced from the quarries and the required tailings and pond embankments for the current project are listed in Table 21-4 of the project 404 permit application.**
List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	**5/11/2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 017
Pebble Project EIS

Request for Information

Title/Subject:	**SEBD Chapter for Trace Elements (Bristol Bay)**
Requestor:	**Allison Payne, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/3/2018**
Rationale:	**We have EBD Chapter 10 (Trace Elements) for Bristol Bay (BB) and Chapter 35 (Trace Elements) for Cook Inlet (CI), as well as SEBD Chapter 35 (Trace Elements) for CI. However, we have not received the SEBD trace element chapter for BB and it is not available on the pebble research website. This document is needed for describing the affected environment in the substrate/sediment quality sections of the EIS.**
Describe the Information Requested and Level of Detail:	**If available, provide the SEBD Trace Element chapter for BB.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**No additional trace element data was required for BB and therefore no SEBD for BB was produced.**
List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	**May 10, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 018
Pebble Project EIS

Request for Information

Title/Subject:	**LGO Stockpile Liner**
Requestor:	**Nancy Darigo/Cecil Urlich, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**The Project Description and associated figures provide limited construction details on the installation of the Low Grade Ore (LGO) stockpile. Additional information is needed to evaluate impacts to the project from potential slope instability and foundation conditions, and potential related effects on the environment.**
Describe the Information Requested and Level of Detail:	• **Would the liner be placed all at once or in stages? If in stages, how would each stage be anchored without benching on the long continuous side slopes (as shown on DA Application, Attachment A, Figure MX-003)? If all at once, would the liner be protected in some way from exposure to the elements, prior to LGO fill placement which could take years to build out?** • **Would the stockpile be constructed from the middle of the valley outward and then up both side slopes, or one side of the valley first?**

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Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**PLP has updated the proposed project and the LGO stockpile is no longer required. Please notify us if any further action is required on this RFI.**
List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	**May 11, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 020
Pebble Project EIS

Request for Information

Title/Subject:	**Water Treatment**
Requestor:	**Steve Rusak/Nancy Darigo, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/17/2018**
Rationale:	**Limited information is available in the Project Description on the proposed water treatment methodologies as applied to Mine Site wastewater. Testing data that describe the performance of proposed water treatment technologies specific to Mine Site wastewater streams are required under ADEC water discharge permitting. The information is needed to evaluate the feasibility of water treatment, the quality of discharged water, and evaluation of water quality impacts.**
Describe the Information Requested and Level of Detail:	**Provide bench scale testing data to describe the performance of proposed water treatment technologies.**

Recipient Response Form

Date Received from USACE:	**4/26/2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**Benchmarking studies summarizing information on water treatment plants using the technologies proposed at the Pebble Project have been prepared and are included as attachments to this response. The existing treatment plant information demonstrated that these technologies have been applied at other locations at treatment rates similar to those that will be required at the Pebble Project. Please note that the Pebble Project water treatment plant flows cited in these reports are not specific to the current proposed project. Updated flow information will be provided when the Water Management Plan is completed (RFI #19).**
List Number and Type of Response Attachments:	**Two Documents:** **Water Engineering Technologies, Inc., 2012. White Paper on Water Treatment Processes, prepared for Pebble Limited Partnership. July 24.** **HDR, 2017. Pebble Project, Water Treatment Process – Benchmark Update. December 6.**
Date Returned to USACE:	**May 10, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 022
Pebble Project EIS

Request for Information

Title/Subject:	**Water Withdrawals, Roads and Pipeline**
Requestor:	**James Dietzmann/Nancy Darigo, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/17/2018**
Rationale:	**There is little information in the Project Description regarding proposed water withdrawal locations and amounts for construction and operations activities along the pipeline and roads. The information is required under ADNR water use and ADF&G habitat regulations, and is needed to evaluate affected environment and environmental consequences for surface water hydrology resources.**
Describe the Information Requested and Level of Detail:	**Provide proposed water withdrawal locations and amounts for construction and operations activities along the roads and pipeline, such as water to be used for dust control and pipeline testing.**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**The requested data is provided in GIS format with this submittal.**
List Number and Type of Response Attachments:	**GIS layer**
Date Returned to USACE:	**May 10, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 023
Pebble Project EIS

Request for Information

Title/Subject:	**Pit Wall Stability**
Requestor:	**Nancy Darigo, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**The Project Description provides limited information necessary to evaluate the stability of the pit walls, the risk of slope failure, and potential related effects on the surrounding environment.**
Describe the Information Requested and Level of Detail:	**Provide stability analyses for representative pit wall sections, under both static and earthquake conditions, and during both operations (dewatered) and closure phases.**

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Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	The pit walls design criteria for the proposed project were based on information developed for previous renditions of the Pebble open pit. Given these previous pits were both larger and deeper than the current concept, PLP believes the slopes to be reasonable. Mining studies for the proposed project, including the details of the pit design and the stability analysis are ongoing, and will be completed this year. The stability analyses work is expected to be completed by July 31, 2018.
List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	**05/11/2018**

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Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 024
Pebble Project EIS

Request for Information

Title/Subject:	**Plans for Reclamation and Restoration**
Requestor:	**Sasha Forland, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/24/2018**
Rationale:	**There is limited information in the Project Description on reclamation that provides an understanding of short-term, long-term, and permanent effects on vegetation. We are requesting the additional information to assess the duration of effects on vegetation as a key impact characterization to analyze impacts to wildlife, wetlands and vegetation in the EIS.**
Describe the Information Requested and Level of Detail:	**For each project component (Mine Site, Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline Corridor):** • **Identify which features (e.g., pads, access roads, material sites) are considered short-term disturbance (i.e., will be removed and restored or reclaimed after construction).** • **Identify which features are considered long-term disturbance (i.e., will removed and restored or reclaimed during or after operations).** • **Identify which features are considered permanent (i.e., will remain through closure or post-closure).** • **Provide details on the reclamation and restoration plan (i.e., plans for grading/contouring, seeding or natural revegetation; identify areas that would be returned to pre-construction conditions, or those areas that would reclaimed as modified habitat).** • **Provide the percent of the disturbed area to be reclaimed or restored (for each main project component).** • **Provide details on restoration or reclamation material (seedbed preparation practices; seed, seed mix, plant parts, transplant, in situ material proposed; proposed fertilizer use; hydric soil considerations; alpine vegetation considerations; soil/materials stockpile plan; erosion prevention considerations; success monitoring).** • **Provide timing of planned restoration or reclamation activities (during or after operations, construction, closure, or post-closure phases).**

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Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**1)** No facilities will be reclaimed or restored after construction. All road material sites will be stabilized and progressively reclaimed, but will remain active to support ongoing road maintenance requirements through operation. Mine laydown areas will be retained for use through operations. All construction roads will continue to serve as site access roads. **2)** All features, except those listed in Question 3 below, are considered long-term disturbance and will be reclaimed after operations and closure activities are completed. As the project has no permanent Waste Rock Storage facility, no areas for progressive reclamation during operations have been identified. Interim reclamation of the growth medium stockpiles will be undertaken as material is placed to stabilize the facilities and maintain the viability of the material for use in final reclamation. **3)** The mine pit will be stabilized to meet the requirements of 11 AAC 97.200(c) and will become a pit lake. The bulk TSF will undergo dry closure and become a new landform. The pyritic tailings and PAG waste will be placed into the pit, the liner will be removed and the embankments flattened, and the facility will be reclaimed. When no longer required for

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post closure water management and treatment the seepage and water management ponds and the main water treatment plant will be removed and reclaimed. Power generation facilities, limited camp and storage facilities, access roads required for site maintenance and monitoring, and the mine water treatment plant will remain to support post closure water treatment, and site monitoring and stabilization activities. The site access road will be retained to support post closure access. The marine and lake port facilities will be removed and reclaimed after closure activities are completed.

4) All disturbed facilities will be reclaimed in accordance with post mining land use. Embankments associated with reclaimed facilities will be breached and flattened. Gravel pads and areas of fill will be contoured and graded to conform with the surrounding landscape and promote natural runoff and drainage.
5) All facilities, except those required for post closure operations, will be fully reclaimed.
6) All facilities will be reclaimed in accordance with State of Alaska requirements.

Seedbed Preparation - Growth media (whether applied or in situ) and the underlying subsurface will be prepared in such a manner as to retain moisture and allow adequate root development and penetration in those areas where infiltration and surface water retention are desired. The method of primary seedbed preparation will be ripping or scarifying (depending on the area) using heavy equipment. Highly compacted areas such as equipment lots and roads will be ripped in a linear fashion. If needed, the surface of growth media will be scarified after application just prior to seeding. The broken, roughened surface will serve to trap moisture, reduce wind shear, minimize surface erosion by increasing infiltration, and create micro habitats conducive to seed germination and development.

Soil Amendments - Vegetation test plots and/or interim reclaimed sites will be evaluated to determine the revegetation potential of applied growth media. It is not currently assumed that fertilizer will be required or desirable for establishing a permanent perennial cover. However, soil amendment will be utilized if required. In the event future, nutrient testing indicates a need for soil amendments, the procedures described below will be employed.

Prepared seedbeds will be amended prior to, after, or during (when a hydro-seeder is used) the seeding operation. Specific soil amendment requirements will depend on the quality of growth media used for an area. Growth media will be tested for standard soil agricultural constituents, including organic matter, nitrogen (N), phosphorus (P), and potassium (K). Based on results at other locations within Alaska, the general recommended rate of fertilizer application would be on the order of 100 to 500 lbs. per acre of 20N-20P-10K.

Seed and Seeding - The general reclamation seed mixes proposed for use are listed in the tables included below. The seed mixes consist of native species that have been used extensively in other Alaska reclamation activities. The mix may be modified over time to include forbs and woody species, depending on factors such as research results, changes in technology, changes in land management philosophy, and commercial availability. Native species would be the preferred mix. Seeding would be done via drill seeding, broadcast seeding via ground or aerial application, and/or hydro-seeding.

7) The timing of closure activities will be as described in Questions 1-3 above.

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Proposed Reclamation Seed Mix – (Hydric) Wetland

Common Name	Scientific Name	Percentage of Mix
'Egan' American sloughgrass	*Beckmannia syzigachne*	45%
'Norcoast' Bering Hairgrass	*Deschampsia beringénsis*	40%
'Arctared' Red Fescue	*Festuca rubra*	10%
'Alyeska' Polargrass	*Artagrostis latifolia*	5%

Proposed Reclamation Seed Mix – (Mesic) Upland

Common Name	Scientific Name	Percentage of Mix
'Arctared' Red Fescue	*Festuca rubra*	40%
'Norcoast' Bering Hairgrass	*Deschampsia beringénsis*	40%
'Wainwright' slender wheatgrass	*Elymus trachycaulus*	10%
'Gruening' Alpine Bluegrass	*Poa alpina*	10%
'Nortran' Tufted Hairgrass	*Deschampsia caespitosa*	0% unless substituted for Norcoast

List Number and Type of Response Attachments:	Click here to enter text.
Date Returned to USACE:	May 11, 2018

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Date Response was Received:	Click here to enter text.

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Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 026
Pebble Project EIS

Request for Information

Title/Subject:	**Detailed Land Status**
Requestor:	**Jessica Evans**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**The only publicly-available land status GIS data is from the BLM, and is 'general', which is accurate only to the scale of one square mile (one Section). The scale of the general land status is sufficient for analysis of land use, which is what was used in the Land Use EBD. However, this is an inappropriate scale to analyze land status for components like the road and the pipeline right-of-way.**
Describe the Information Requested and Level of Detail:	**GIS data for land status that is more detailed than the General Land Status available through BLM public information. Information should include owner of the land (e.g. the name of the Native Corporation in ownership).**

Recipient Response Form

Date Received from USACE:	**4/27/2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	All requested information was provided to USACE on February 23, 2018 (see LandStatus.gdb). Please advise if any additional information is required.
List Number and Type of Response Attachments:	None
Date Returned to USACE:	**May 10, 2018**

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Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 027
Pebble Project EIS

Request for Information

Title/Subject:	**Project Logistics and Employment for Socioeconomics and Transportation**
Requestor (Name):	**Jessica Evans**
Date Transmitted:	**4/26/2015**
Recipient (Individual or Agency):	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**There is little information in the Project Description regarding project logistics. More detailed information is needed in order to fully analyze the impacts to current transportation systems and determine the effects to the region's economy. Specifics like goals for local hire, the movement of employees to the work site, and the status of public access, are necessary for a NEPA-level review of impacts.**
Describe the Information Requested and Level of Detail:	**1.** How many flights per day (or week) would be coming into the airport at Iliamna, for workers and cargo? **2.** The PLP website states that the Transportation Corridor would be beneficial to the public. How? The road, ferry, ferry terminals, and Amakdedori port are described as "private" in the application document. At what point along the road would it be closed for public use? Will the road system remain in place after mine closure? Will a conveyance over the path of the ice breaking ferry be provided for winter travel by local residents? **3.** Would travelers on ATVs or snowmachines be allowed to cross the mine access roads, if the roads are not open to the public? **4.** What percent of employees would be local hire? The PLP website notes 75 percent Alaskan employees. Is this the goal for the project, or the makeup of the current operations of the company in Alaska? **5.** Would transportation or be provided for employees living in smaller communities in the region (e.g. Levelock or Dillingham)? **6.** Would local communities be able to tap into the natural gas pipeline as a source of fuel? As a follow up, if that is the case, would the pipeline remain in place for community use following the closure of the mine?

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1) Employees will work a two week on/two week off rotation during operations. For the purposes of evaluating logistics, it is assumed that 250 employees will come from surrounding communities, of which 50 will come from communities connected to the project sites by road, while 200 will require air transportation to Iliamna or Kokhanok. The remaining 600 employees will be flown in from Anchorage or Kenai. All employees will be bused between Iliamna and the mine site or between Kokhanok and the port site. Perishables and other consumables would be flown from Anchorage. Aircraft requirements are as follows: a. Weekly Twin Otter flights - 1 from outlying villages, 1 from King Salmon, 2 from Dillingham, 4 from Kenai (8 total) b. Weekly Q400 flights – 2 from Anchorage c. Weekly cargo flights – 1 from Anchorage (aircraft TBD DC6, 737 or similar) d. Unscheduled cargo – 6 x C130 flight/year as required e. Construction air travel – Similar regional schedule, 1 x Q400 daily from Anchorage, 1 x Q400 weekly from Kenai, 3 x weekly cargo flights, 12 x C130 flights/year as required

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	2) a. PLP will work with all local communities to identify the best solutions for use of the road & ferry for community transportation. This would most likely consist of escorted, scheduled conveys for private vehicle transport and coordination with PLP on third party commercial haul traffic on the road. Road traffic would be coordinated with scheduled third-party transportation by the ferry. Access to infrastructure would be limited to local residents and businesses. b. Gates will be located at appropriate points on the spur roads to Kokhanok and Iliamna to keep traffic off the main haul roads. c. The road will remain in place after closure as it will be required for closure and post-closure activities. d. PLP will work with local communities to identify the best solutions. This would most likely include the marking and maintenance of N-S and E-W routes on the lake that either avoid the ferry path by routing around the ports on land, or possibly that include the provision of crossing points on the ice. 3) Yes, known trails and crossing points would be signposted and appropriate traffic controls would be established to ensure public safety. 4) The 75% number referenced is the current mining industry level of Alaska hire. It is PLP's objective to maximize opportunities for local hire, firstly directly to residents of the project area, or those with close ties to the area, and then secondly to Alaska residents in general. However, it is likely that through construction significant non-Alaskan labor will be required to fill the anticipated 2,000 jobs required, potentially as high as 50%. During operations that number is expected to be substantially lower, with the great majority of jobs going to Alaskans. 5) Yes, as outlined in 1) above. 6) PLP will facilitate access to the pipeline for any entities that wish to connect. Furthermore, this is required by regulation for open access carriers. PLP anticipates requiring some pipeline gas to support post closure water management and treatment in the years after closure, although this demand is expected to decrease over time. The final disposition of the pipeline will be addressed in consultation with all stakeholders, including land owners and those who may utilize the gas supply.
	Click here to enter text.
Date Returned to USACE:	**05/04/2018**

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 028
Pebble Project EIS

Request for Information

Title/Subject:	**TSF IDF and Freeboard**
Requestor:	**Nancy Darigo/Cecil Urlich/James Dietzmann, AECOM**
Date Transmitted:	**4/26/18**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/24/18**
Rationale:	**Limited information is available in the Project Description regarding water balance and precipitation inputs to ensure that water discharge at the Tailings Storage Facility (TSF) can be managed sufficiently. Establishing precipitation inputs to the Inflow Design Flood (IDF) and freeboard is required under the Alaska Dam Safety Program, and is needed to evaluate dam stability and potential related effects on the environment.**
Describe the Information Requested and Level of Detail:	**1) Describe the weather data used to select the inflow design flood (IDF) and support TSF embankment design (freeboard, water management, dam raise schedule). 2) Demonstrate that water management and discharge can be adequately achieved on a continuous basis to allow for the development and continual maintenance of a tailings beach and the IDF volume and freeboard above the beach.**

Recipient Response Form

Date Received from USACE:	**April 26, 2018**
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	1: **The weather data used to select the inflow design flood is contained in the Pebble Limited Partnership Hydrometeorology Report, which is included as an attachment to this response.** **2: The demonstration that water management and discharge can be adequately achieved on a continuous basis to allow for the development and continual maintenance of a tailings beach and the IDF volume and freeboard above the beach will be addressed in the Water Management Plan, which will be submitted in response to RFI #19.**
List Number and Type of Response Attachments:	**One report:** **Knight Piésold Consulting, 2012. Pebble Limited Partnership, Pebble Project, Hydrometeorology. February 24.**
Date Returned to USACE:	**May 10, 2018**

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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RFI 029
Pebble Project EIS

Request for Information

Title/Subject:	**Ferry Propeller Design Specifications**
Requestor:	**Wes Cornelison, AECOM**
Date Transmitted:	**4/26/2018**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**5/10/2018**
Rationale:	**Propeller design specifications for the proposed ferry crossing Illiamna Lake are needed to analyze potential impacts to fish, particularly juvenile salmonids.**
Describe the Information Requested and Level of Detail:	**Please provide propeller design specifications including:** • **Propeller type** • **Number of propeller blades** • **Propeller speed** • **Propeller blade depth**

Recipient Response Form

Date Received from USACE:	Click here to enter text.
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	Ferry Length overall ..... 344' - 0" Ferry Breadth mld. .....72' - 0" Design Draft .....16' - 0" Number of Propellers ..... four (4) Propellers operating in open water (not breaking ice) .....two (2) Propeller diameter .....6'-0" Propeller center below waterline .....12'-0" Propeller speed at 6 kn (approaching landing) .....152 rpm Propeller speed at 11 kn (transit) .....195 rpm Propeller Blades.....4, located in a nozzle, fixed pitch The ferry is designed with two symmetrical ice breaking bows, so the propellers are in hull recesses away from the bows. The ferry draft is 16'-0", the propeller diameter is 6'-0" and the propeller center is located at 12'-0" depth. The propellers will therefore not protrude below the keel of the vessel.
List Number and Type of Response Attachments:	
Date Returned to USACE:	**May 10, 2018**

AECOM Intake Form

Date Response was Received:	Click here to enter text.
Received by (Name):	Click here to enter text.
Describe any Follow-up Related to this RFI (Communications, Clarifications):	Click here to enter text.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 6:10:17 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: FW: Pebble Project Appendix K4.11 Figures (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Here are links for figures associated with Append k4.11
VR

Shane McCoy
Program Manager
(907) 753-2715

From: elizabeth.bella@aecom.com [mailto:elizabeth.bella@aecom.com]
Sent: Friday, November 02, 2018 4:18 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] Pebble Project Appendix K4.11 Figures

Elizabeth Bella has sent you 14 files using AECOM's File Transfer System.

Elizabeth Bella says:

Visual Resource figures are attached for Technical Appendix K4.11, as they are too large to send by email.

These files will be available for download until 11/9/2018

File	Description	Size
Figure_K4_11_01_TSFMainEmbankment_Viewshed.pdf		3,171KB
Figure_K4_11_02_TSFSouthEmbankment_Viewshed.pdf		2,903KB
Figure_K4_11_03_CoarseOreStockpile_Viewshed.pdf		3,457KB
Figure_K4_11_04_NorthFerryTerminal_Viewshed.pdf		2,552KB
Figure_K4_11_05_SouthFerryTerminal_Viewshed.pdf		2,760KB
Figure_K4_11_06_AmakdedoriPort_Viewshed.pdf		2,644KB
Figure_K4_11_07_NorthTransportationCorridor_Viewshed.pdf		4,567KB
Figure_K4_11_08_SouthTransportationCorridor_Viewshed.pdf		4,761KB
Figure_K4_11_09_EagleBayFerryTerminal_Viewshed.pdf		3,363KB
Figure_K4_11_10_PileBayFerryTerminal_Viewshed.pdf		2,875KB
Figure_K4_11_11_DiamondPointPort_Viewshed.pdf		2,507KB
Figure_K4_11_12_Alt2_TransportationCorridor_Viewshed.pdf		4,600KB

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Figure_K4_11_13_Kenai_Compressor_Viewshed.pdf	2,306KB
K4.11-14 through K4.11-19.pdf	9,225KB

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If you are having trouble accessing the links in this email, you can view this message as a web page by copying the following link and pasting it into your browser:

Blockedhttps://sendfiles.aecom.com/message.aspx?msgId=ca373e93-2791-49dd-aa2f-0ea4edd51b5f

If you have any questions, please contact your project manager.
CLASSIFICATION: UNCLASSIFIED

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Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 6/4/2018 6:49:58 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; Isaacs, Jon [jon.isaacs@aecom.com]; Evans, Jessica [jessica.evans@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Cornelison, Wes [wes.cornelison@aecom.com]; Wright, Cara [cara.wright@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; John Eddins (jeddins@achp.gov) [jeddins@achp.gov]
CC: kevin.pendergast@bsee.gov; McGrath, Patricia [mcgrath.patricia@epa.gov]; douglass_cooper@fws.gov; courtenay@curyungtribe.com; Nathan Hill [manager@lakeandpen.com]; Charlene Vaughn [cvaughn@achp.gov]; john.mccall@bsee.gov; Matthew Newman [mnewman@narf.org]

Subject: Pebble EIS - Cooperating Agency Meeting
Attachments: 06_06_2018_Federal_State_Meeting_Agenda.docx; 06_01_2018_Revised_Draft_Cooperating_Agency_Plan.docx
Location: AECOM - 5th Floor, Large Conference Room 500 G Street, Suite 500 Anchorage

Start: 6/6/2018 4:00:00 PM
End: 6/7/2018 1:00:00 AM
Show Time As: Tentative

Recurrence: (none)

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 6/27/2018 4:30:26 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: comments on CH 3; scoping comments
Attachments: 05_16_2018_PreDraft_Sec3.26_Veg.docx; 05_16_2018_PreDraft_Sec3.16_SurfaceWater.docx

Patty,
My apologies for not sending earlier.

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, June 26, 2018 2:34 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: [Non-DoD Source] RE: comments on CH 3; scoping comments

Hello Shane -

EPA has reviewed the draft scoping report and we have no comments on the report, except that it should incorporate additional scoping comments received, including our scoping comments that will be submitted by the June 29 deadline.

Regarding comments on the draft sections of chapter 3 sent to us on June 5. We are reviewing sections 3.1, 3.5, 3.11, 3.14, 3.17, 3.18, and 3.22 and will submit comments by the July 5 deadline discussed during the cooperating agency meeting - sooner if we are able.

On June 6 and 7, I sent you emails regarding sections 3.16 (surface water hydrology) and 3.26 (vegetation). In your June 5 email, you sent us the figures from those sections, but not the text. If you would like us to review the text of those sections (as was identified for our review in the EIS outline), then please send the text to Molly and I.

Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Tuesday, June 26, 2018 2:21 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Subject: comments on CH 3; scoping comments

All,
Please provide any comments for the draft chapters as soon as you can, please remember we are looking for "what we missed" and if your agency does not believe it is capturing the correct information.

Also, a little reminder that scoping comments need to be submitted by 29 June.

VR

Shane McCoy

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3.16 SURFACE WATER RESOURCES

The Mine Site and most of the onshore Transportation and Natural Gas Pipeline corridors west of the Amakdedori Port site are within watersheds that drain into Bristol Bay (Figure 3.16-1). The combined drainage area of the Bristol Bay watershed is approximately 41,900 square miles (mi2) – an area bound by the Aleutian Range to the east and southeast, the Kuskokwim Mountains to the west, and the Kuskokwim River watershed boundary to the north.

3.16.1 Mine Site

The Mine Site is located within the upper portions of the North Fork Koktuli (NFK), South Fork Koktuli (SFK), and Upper Talarik Creek (UTC) watersheds (Figure 3.16-2 and Figure 3.16-3). As shown on Figure 3.16-2, the majority of the Mine Site facilities would be within the NFK watershed. The open pit, as well as the overburden stockpile, water management pond, and water treatment discharge – south, would be in the SFK watershed. Only the water treatment plant discharge – east and a short portion of the Mine Access Road would be in the UTC watershed.

3.16.1.1 Drainage Basins / Watersheds

Drainage basin characteristics of the NFK and SFK rivers and the UTC are described in this section, and features are summarized in Table 3.16-1.

Table 3.16-1: Mine Site Area Watersheds

Drainage Basin	Drainage Area (mi^2)	Channel Length (mi)	Basin Relief (ft)	Mean Basin Elevation (ft amsl)
NFK River	113	36	580 to 3,074	1,300
SFK River	107	40	580 to 2,760	1,150
UTC	135	39	46 to 3,074	1,000

amsl = above mean sea level

mi^2 = square miles

Source: Knight Piésold 2011

The watersheds listed in Table 3.16-1 are within the Nushagak-Big River Hills physiographic region, consisting of low rolling hills and wide, shallow valleys (Knight Piésold 2011). Glaciers are not present in the project area watersheds. Glacial and fluvial sediments of varying thickness cover most of the region at elevations below approximately 1,400 feet (ft) above mean sea level (amsl). Elevations above 1,400 ft amsl generally exhibit exposed bedrock mixed with thin veneers of surficial material. The hills tend to be moderately sloped with rounded tops, and the valley bottoms are generally flat. Occurrence of permafrost has not been recorded in the project area.

General characteristics common to the watersheds listed in Table 3.16-1 include:

- Main streams occupy valley bottoms 0.5 to 2 miles wide.
- Tributaries to the main streams are incised into the hilly terrain and typically occupy narrow valleys with bottom widths of only 0.1 to 0.2 mile.

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- The three main stream channels in the project area are highly sinuous and flow within floodplains containing wetlands and oxbow lakes.
- The upper parts of the three main valleys are represented by flat, poorly drained terrain.
- Areas of glacial drift deposits occur along lower hillslopes and near the headwaters of the main stream valleys, characterized by undulating terrain and numerous kettle lakes.

North Fork Koktuli River

The Koktuli River forms at the confluence of the NFK and SFK rivers, approximately 17 miles west of the Mine Site (Figure 3.16-3). The Koktuli River flows into the Mulchatna River, which is a tributary of the Nushagak River, the largest drainage within the Bristol Bay watershed. The Nushagak River watershed area is approximately 12,700 mi2 and flows into Bristol Bay near Dillingham, Alaska.

The NFK River watershed extends northeast from the confluence with SFK River to Groundhog Mountain, approximately 7 miles northeast of the Mine Site (Figure 3.16-3). The majority of the mine facilities would be in the upper NFK River watershed, including the tailings storage facility, low-grade ore stockpile, water management ponds, mill site and mill camp, and water treatment plant discharge location – north (Figure 3.16-2).

The watershed topography is relatively gentle, with elevations ranging from around 600 ft amsl near the confluence with SFK River to roughly 3,000 ft amsl at Groundhog Mountain. Lakes and small ponds are common in the upper portions of the NFK watershed, including Big Wiggly Lake, Lilly Lake, and Black Lake (Figure 3.16-3). Fewer lakes and ponds exist in the middle and lower portions of the watershed.

South Fork Koktuli River

SFK River extends east and north from the NFK River confluence (Figure 3.16-3). The open pit and associated sediment pond, overburden stockpile, and water treatment plant discharge location – south would be in the upper SFK River watershed (Figure 3.16-2).

The watershed topography is relatively gentle, with elevations ranging from approximately 600 ft amsl near the NFK/SFK confluence to 2,760 ft amsl on Kaskanak Mountain, a high point along the NFK/SFK watershed boundary. Lakes and small ponds are common in the upper and lower portions of the watershed, and are less common in the central portion. "Frying Pan Lake," approximately 1.5 miles south of the open pit, is a shallow residual waterbody in the upper SFK River valley (Knight Piésold 2011) (Figure 3.16-2). Frying Pan Lake is the largest lake in the project area, approximately 1 mile long and 0.5 mile wide, with a relatively uniform depth of approximately 3 ft.

Upper Talarik Creek

The UTC watershed extends north from the creek outlet at Iliamna Lake to the southern end of the Groundhog Mountain block (Figure 3.16-3). The water treatment plant discharge location – east, and a portion of the Mine Access Road, would be in the UTC watershed (Figure 3.16-2).

UTC flows south from its headwaters to Iliamna Lake, roughly 10 miles west of the Newhalen River outlet. The Iliamna Lake outlet is the Kvichak River, which flows into Bristol Bay northwest of King Salmon, Alaska. The watershed topography is relatively gentle, with elevations ranging from approximately 46 ft amsl at Iliamna Lake to 3,074 ft amsl on Groundhog Mountain. Lakes and small ponds exist throughout the watershed, present in relatively flat, poorly drained terrain.

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3.16.1.2 Streamflow

The majority of streamflow in the Bristol Bay region is generated from spring snowmelt runoff and runoff from fall rain events. The Mine Site watersheds are undisturbed; therefore, baseline streamflow presented in this section is representative of existing natural conditions. The annual pattern of streamflow in the Mine Site watersheds is characterized by high flows in spring due to snowmelt; lower flows occur during early to mid-summer; and a high flow period during late summer and fall due to rain events (Knight Piésold et al. 2011). Baseline surface water quality conditions at the Mine Site are presented in Section 3.18, Water Quality.

Groundwater/surface water interaction in the Mine Site watersheds is characterized by glacial and fluvial deposits of varying thicknesses that cover most of the project area below elevations of approximately 1,400 ft amsl. These deposits are an important factor related to surface water runoff and groundwater storage and exchange. In several locations, project studies concluded that subsurface flows follow former pre-glacial surface drainage pathways that were eventually buried by sediment deposits, resulting in cross-drainage transfer of subsurface flow relative to surface topography (Knight Piésold et al. 2011).

3.16.1.3 Gaging Stations

Since 2004, streamflow monitoring has been conducted on the NFK River, SFK River, and the UTC, as well as tributary streams within each watershed. Figure 3.16-3 depicts gaging station locations. Three gaging stations are operated by the U.S. Geological Survey (USGS), and the remaining 25 are operated by Pebble Limited Partnership (PLP). Stream gaging stations that collect continuous flow data during the open water season and the period of record are listed in Table 3.16-2. Table 3.16-3 presents periodic manual streamflow measurements collected at both continuous monitoring sites and at select locations within each watershed during early spring to capture low-flow conditions. The following gaging station summaries provide a description of streamflow at stations closest to the Mine Site. Specific stations were selected for the discussions that represent streamflow in the upper portion of each watershed near the Mine Site and streamflow near the mouth.

North Fork Koktuli River

There are six gaging stations along the main stem of the NFK River (Figure 3.16-3). Station NK100C is in the upper reaches of the NFK River, approximately 20 miles upstream of the SFK River confluence. NK100C is the closest gaging station to the Mine Site on the main stem of the NFK River, roughly 3.5 miles west of the NFK/SFK rivers watershed divide. At NK100C, the river drains an area of approximately 24 mi^2, including a large complex of lakes and wetlands, and flows through a narrow valley cut through glacial outwash and drift deposits. Channel habitat features in this reach are dominated by riffles and runs, and the instream sediments are dominated by coarse gravel. Flows at this site are buffered by upstream lakes and wetland storage (Knight Piésold et al. 2011). The average annual discharge at NK100C is 48 cubic feet per second (cfs) (Table 3.16-4). The lowest annual discharge was 37 cfs during the 2010 – 2011 water year, and the highest annual discharge was 63 cfs during the 2004 – 2005 water year. Streamflow measurements were recorded at NK100C during March and early April to characterize low-flow conditions (Table 3.16-3). At NK100C, low-flow discharge ranged from 8.3 cfs in March 2010 to 21.5 cfs in March 2005. Peak instantaneous discharge measurements were recorded in both spring and fall to characterize peak flows (Table 3.16-5). The lowest peak instantaneous discharge recorded was 117 cfs, between August and November 2011. The maximum peak instantaneous discharge recorded was 586 cfs, between April and July 2009.

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Station NK119A is in a tributary of the NFK River (the tributary is designated by PLP as Tributary 1.190). The mine bulk tailings storage cell would be within Tributary 1.190 (Figure 3.16-2). This tributary is a relatively steep, upland stream, with headwaters along the NFK/SFK rivers' watershed divide. The drainage area above NK119A is approximately 8 mi^2. The channel habitat features in this reach are dominated by short rapids with irregular scour pools; and the instream sediments are dominated by coarse gravels, some cobbles, and numerous boulders (Knight Piésold et al. 2011). The average annual discharge at NK119A is 24 cfs (Table 3.16-4). The lowest annual discharge was 15 cfs during the 2010 – 2011 water year, and the highest annual discharge was 36 cfs during the 2004 – 2005 water year. Streamflow measurements were recorded at NK119A during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge measurements ranged from 2 cfs in April 2011 to 4 cfs, measured in March 2005 and March 2009. Peak instantaneous discharge measurements were recorded in both spring and fall to characterize peak flows (Table 3.16-5). The lowest peak instantaneous discharge measured was 110 cfs, between April and July 2007. The maximum peak instantaneous discharge measured was 690 cfs, between August and November 2004.

South Fork Koktuli River

There are six gaging stations along the main stem of the SFK River (Figure 3.16-3). Station SK100F is in the upper reaches of SFR River, approximately 29 miles upstream of the NFK River confluence. SK100F is roughly 2.5 miles south of the Mine Site, just downstream from the outlet of Frying Pan Lake, and drains an area of approximately 12 square miles. The river at SK100F flows in a narrow valley between hillslopes of moraine deposits and weathered bedrock. The channel habitat features in this reach are riffles and runs, and a large pool. The instream sediments are dominated by very coarse angular gravels and some cobbles. The channel is entrenched, and the stage record indicates that high flows have not exceeded bankfull stage during the period of record (Knight Piésold et al. 2011). The average annual discharge at SK100F is 30 cfs (Table 3.16-4). The lowest annual discharge was 24 cfs during the 2006 – 2007 water year, and the highest annual discharge was 37 cfs during the 2010 – 2011 water year. Streamflow measurements were recorded at SK100F during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge ranged from 1 cfs between March and early April 2007, to 8 cfs in March 2005. Peak instantaneous discharge measurements were recorded in both spring and fall to characterize peak flows (Table 3.16-5). The lowest peak instantaneous discharge measured was 54 cfs, recorded between April and July 2007. The maximum peak instantaneous discharge measured was 249 cfs, recorded between April and July 2006.

Station SK119A is in an SFK River tributary (a tributary designated by PLP as Tributary 1.190), approximately 3.5 miles south of Kaskanak Mountain, a high point along the NFK/SFK rivers watershed divide. Tributary 1.190 enters SFK River approximately 21 miles upstream of the NFK River confluence. The tributary at the gaging station drains approximately 11 square miles near the outlet of a relatively steep, narrow tributary valley. At the gaging station, the creek flows within a narrow alluvial plain bounded by low terraces and colluvial hillslopes. The channel habitat features in this reach are riffles and runs, and the instream sediments are dominated by coarse gravels and cobbles. The stage record indicates that high flows have exceeded bankfull stage during the study period (Knight Piésold et al. 2011). The average annual discharge at SK119A is 35 cfs (Table 3.16-4). The lowest annual discharge was 27 cfs during the 2010 – 2011 water year, and the highest annual discharge was 51 cfs during the 2004 – 2005 water year. Streamflow measurements were recorded at SK119A during March and early April to characterize low flow conditions (Table 3.16-3). Low-flow discharge ranged from 2 cfs in March 2008 to 8 cfs in March 2005. Peak instantaneous discharge measurements were recorded in both spring and fall to characterize peak flows (Table 3.16-5). The lowest peak instantaneous

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discharge measured was 158 cfs, between April and July 2007. The maximum peak instantaneous discharge measured was 606 cfs, between August and July 2005.

Upper Talarik Creek

There are nine gaging stations along the main stem of UTC (Figure 3.16-3). Station UT100D is in the upper reaches of UTC, approximately 26 miles upstream of the mouth at Iliamna Lake, and roughly 2.5 miles east of the Mine Site (Figure 3.16-3). The drainage area above the station is approximately 12 square miles, consisting of mostly low-gradient wetlands and some adjacent upland, including the general deposit location. UTC meanders through floodplains and associated low terraces within a glacio-lacustrine basin. Channel habitat features in this reach are dominated by riffles and pools, and the instream sediments are dominated by medium gravel. The stage record indicates that high flows have exceeded bankfull stage during the study period (Knight Piésold et al. 2011). The average annual discharge at UT100D is 28 cfs (Table 3.16-4). The lowest annual discharge was 24 cfs during the 2006 – 2007 water year, and the highest annual discharge was 32 cfs during the 2007 – 2008 water year. Streamflow measurements were recorded at UT100D during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge ranged from 6 cfs in late March 2010 to 11 cfs in March 2005. Peak instantaneous discharge measurements were recorded in both spring and fall to characterize peak flows (Table 3.16-5). The lowest peak instantaneous discharge measured was 103 cfs, between August and November 2009. The maximum peak instantaneous discharge measured was 272 cfs, between August and November 2007.

Table 3.16-2: Streamflow Gaging Stations

Drainage	Gaging Station		Drainage Area (mi^2)	Period of Measurement Record[1]	Record Length[2] (Years)		
	Pebble ID	USGS ID			Measured[3]	Estimated by Regression	Total
NFK River	NK100A	15302250	106	2004-2012	8	-	8
	NK100A1	-	85	2007-2010	4	4	8
	NK100B	-	37	2007-2012	6	2	8
	NK100B1[4]	-	37	2011-2012	2	0	2
	NK100C	-	24	2004-2012	8	0	8
	NK100C1[4]	-	24	2011-2012	2	0	2
	NK119A	-	8	2004-2012	8	0	8
	NK119B	-	4	2007-2012	5	3	8
SFK River	SK100A	-	107	2004-2007	3	5	8
	SK100B	1532200	69	2004-2012	8	-	8
	SK100B1	-	54	2006-2007	2	6	8
	SK100C	-	38	2004-2012	8	0	8
	SK100F	-	12	2004-2012	5	3	8
	SK100G	-	5	2004-2007	3	5	8
	SK119A	-	11	2004-2012	8	0	8
	SK124A	-	9	2005-2010	6	2	8

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Table 3.16-2: Streamflow Gaging Stations

Drainage	Gaging Station		Drainage Area (mi^2)	Period of Measurement Record[1]	Record Length[2] (Years)		
	Pebble ID	USGS ID			Measured[3]	Estimated by Regression	Total
UTC	UT100-APC3	-	134	2007-2012	5	3	8
	UT100-APC2	-	110	2007-2012	5	3	8
	UT100-APC1	-	102	2007-2012	5	3	8
	UT100B	15300250	86	2004-2012	8	-	8
	UT100C	-	69	2007-2012	6	2	8
	UT100C1	-	60	2007-2010	4	4	8
	UT100C2	-	48	2007-2012	6	2	8
	UT100D	-	12	2004-2012	8	0	8
	UT100E	-	3	2004-2012	8	0	8
	UT106-APC1	-	14	2008-2012	2	6	8
	UT119A	-	4	2004-2012	8	0	8
	UT135A	-	20	2007-2010	0	8	8

Notes:

1. Calendar years that stream stage data were collected.

2. Complete water years of record (measured or estimated).

3. Refers to the number of years that stream stage data were collected for at least 3 months and used to compute discharge.

4. Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

mi2 = square miles

Source: Knight Piésold 2013, Table 7.2

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005 - 2012

Stream	Station	Drainage Area (mi^2)	2005		2006		2007		2008		2009		2010		2011		2012	
			Date Range March 7 – March 23		Date Range March 13 – April 1		Date Range March 17 – April 3		Date Range March 11 – March 28		Date Range March 14 – March 24		Date Range March 30 – March 31		Date Range April 1 – April 2		Date Range March 25 – March 31	
			Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)
NFK	Main Stem																	
	NK100A	105.86	68.3	0.6	50.4	0.5	40.4	0.4	84.5	0.8	48.5	0.5	46.6	0.4	11.9	0.1	35.0	0.3
	NK100A1	81.97	-	-	-	-	43.0	0.5	45.3	0.6	-	-	44.3	0.5	-	-	-	-
	NK100LF5	71.91	-	-	43.7	0.6	-	-	48.0	0.7	-	-	-	-	-	-	-	-
	NK100LF4	67.28	63.1	0.8	38.7	0.6	44.9	0.7	44.5	0.7	-	-	-	-	-	-	-	-
	NK100LF3	53.49	22.0	0.4	19.9	0.4	4.1	0.1	9.9	0.2	-	-	-	-	-	-	-	-
	NK100LF1	40.7	-	-	15.9	0.4	9.1	0.2	15.8	0.4	-	-	-	-	-	-	-	-
	NK100B	37.32	65.0	1.7	18.5	0.5	12.9	0.3	14.3	0.4	7.7	0.2	15.1	0.4	17.9	0.5	11.5	0.3
	NK100B1[1]	37.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.4	0.3
	NK100C	24.35	21.5	0.9	17.9	0.7	10.5	0.4	14.2	0.6	14.7	0.6	8.3	0.3	10.1	0.4	11.6	0.5
	NK100C1[1]	24.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	0.2
	Tributaries																	
	NK108	1.33	-	-	-	-	-	-	0.1	0.1	-	-	-	-	-	-	-	-

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005 - 2012

Stream	Station	Drainage Area (mi^2)	2005		2006		2007		2008		2009		2010		2011		2012	
			Date Range March 7 – March 23		Date Range March 13 – April 1		Date Range March 17 – April 3		Date Range March 11 – March 28		Date Range March 14 – March 24		Date Range March 30 – March 31		Date Range April 1 – April 2		Date Range March 25 – March 31	
			Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)
	LF1																	
	NK119A	7.76	3.7	0.5	2.8	0.4	2.4	0.3	3.6	0.5	3.7	0.5	2.5	0.3	2.3	0.3	2.4	0.0
	NK119B	3.97	4.3	1.1	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0
	NK119LF1	3.37	-	-	-	-	-	-	1.4	0.4	-	-	-	-	-	-	-	-
SFK	Main stem																	
	SK100A	106.92	125.0	1.2	79.7	0.7	69.0	0.6	87.8	0.8	63.5	0.6	73.5	0.7	-	-	-	-
	SK100LF11	90.0	-	-	-	-	-	-	-	-	13.9	0.2	-	-	-	-	-	-
	SK100LF10	87.17	-	-	12.7	0.1	11.6	0.1	24.8	0.3	15.2	0.2	-	-	-	-	-	-
	SK100LF9.6	80.68	-	-	-	-	-	-	-	-	0.2	0.0	-	-	-	-	-	-
	SK100B	69.33	45.7	0.7	27.7	0.4	26.7	0.4	38.3	0.6	22.3	0.3	29.6	0.4	34.7	0.5	14.7	0.2
	SK100LF9	68.56	-	-	35.7	0.5	30.7	0.4	36.3	0.5	31.9	0.5	-	-	-	-	-	-
	SK100LF8	54.41	26.8	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SK100	54.41	-	-	14.5	0.3	16.3	0.3	21.3	0.4	17.3	0.3	12.1	0.2	34.4	0.6	22.6	-

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005 - 2012

Stream	Station	Drainage Area (mi^2)	2005		2006		2007		2008		2009		2010		2011		2012	
			Date Range March 7 – March 23		Date Range March 13 – April 1		Date Range March 17 – April 3		Date Range March 11 – March 28		Date Range March 14 – March 24		Date Range March 30 – March 31		Date Range April 1 – April 2		Date Range March 25 – March 31	
			Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)
	B1																	
	SK100 LF7	51.76	9.6	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SK100 B2	51.57	-	-	-	-	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SK100 LF6	49.7	0.3	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SK100 C	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0
	SK100 LF5	0.29	-	-	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-
	SK100 LF4.9	28.34	-	-	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	-
	SK100 LF4	28.91	4.9	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SK100 D	16.22	6.1	0.4	0.0	0.0	0.0	0.0	0.7	0.0	-	-	-	-	-	-	-	-
	SK100 LF2	15.4	-	-	4.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-
	SK100 F	11.91	8.3	0.7	5.4	0.5	1.2	0.1	6.3	0.5	-	-	3.5	0.3	2.1	6.2	2.3	0.4
	SK100 G	5.49	6.0	1.1	3.6	0.7	2.1	0.4	4.0	0.7	-	-	2.7	0.5	-	-	-	-

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005 - 2012

Stream	Station	Drainage Area (mi^2)	2005		2006		2007		2008		2009		2010		2011		2012	
			Date Range March 7 – March 23		Date Range March 13 – April 1		Date Range March 17 – April 3		Date Range March 11 – March 28		Date Range March 14 – March 24		Date Range March 30 – March 31		Date Range April 1 – April 2		Date Range March 25 – March 31	
			Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)	Discharge (cfs)	Unit Runoff (cfs/mi^2)
	Tributaries																	
	SK116A	0.34	-	-	-	-	-	-	-	-	-	-	0.1	0.2	0.0	0.0	-	-
	SK117A	0.71	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0
	SK119A	10.73	7.6	0.7	2.5	0.2	-	-	1.8	0.2	-	-	2.8	0.3	2.3	0.2	3.0	0.3
	SK124A	8.52	3.0	0.4	0.5	0.1	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-
	SK131A	2.37	0.9	0.4	1.1	0.5	0.0	0.0	0.7	0.3	-	-	-	-	-	-	-	-
	SK133A	0.74	-	-	0.2	0.3	0.3	0.4	0.2	0.2	-	-	-	-	-	-	-	-
	SK134A	1.14	0.2	0.1	2.4	2.1	0.6	0.6	0.8	0.7	-	-	-	-	-	-	-	-
	SK136A	1.15	1.2	1.0	0.9	0.8	0.9	0.8	1.24	1.1	-	-	-	-	-	-	-	-
	SK136B	0.19	-	-	2.0	0.4	0.0	0.0	0.3	1.6	-	-	-	-	-	-	-	-
UTC	Main stem																	
	UT100-APC3	134.16	-	-	-	-	-	-	166.4	1.2	135.3	1.0	82.3	0.6	-	-	-	-

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	UT100-APC2	110.16	-	-	-	-	-	-	114.0	1.0	99.6	0.9	-	-	91.9	0.8	86.1	0.8
	UT100APC1	101.51	-	-	-	-	-	-	93.9	0.9	127.4	1.3	110.0	1.1	84.9	0.8	43.1	0.4
	UT100A	101.45	175.0	1.7	89.3	0.9	94.7	0.9	-	-	-	-	-	-	-	-	-	-
	UT100LF8	89.6	137.8	1.5	84.4	0.9	107.6	1.2	104.1	1.2	-	-	-	-	-	-	-	-
	UT100B	86.23	132.7	1.5	92.8	1.1	97.5	1.1	99.9	1.2	87.7	1.0	109.0	1.3	-	-	92.7	1.1
	UT100LF7	71.72	97.5	1.4	34.8	0.5	69.9	1.0	69.2	1.0	-	-	-	-	-	-	-	-
	UT100C	69.46	-	-	-	-	48.5	0.7	78.5	1.1	136.5	2.0	52.2	0.8	18.1	0.3	47.1	0.7
	UT100LF6	70.72	78.1	1.1	46.1	0.7	-	-	-	-	-	-	-	-	-	-	-	-
	UT100LF5	65.35	-	-	49.1	0.8	47.8	0.7	50.2	0.8	-	-	-	-	-	-	-	-
	UT100C1	60.37	-	-	-	-	32.4	0.5	43.2	0.7	-	-	33.7	0.6	-	-	-	-
	UT100LF4	59.57	-	-	28.2	0.5	-	-	-	-	-	-	-	-	-	-	-	-
	UT100LF3	48.56	-	-	27.1	0.6	-	-	-	-	-	-	-	-	-	-	-	-
	UT100C2	48.26	-	-	-	-	18.9	0.4	25.3	0.5	-	-	24.0	0.5	26.0	0.5	10.3	0.2
	UT100D	11.96	10.5	0.9	8.3	0.7	6.4	0.5	10.0	0.8	6.6	0.6	5.7	0.5	7.9	0.7	8.9	0.7
	UT100LF1	6.36	6.8	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UT100E	3.1	4.6	1.5	3.9	1.3	3.5	1.1	4.2	1.3	4.4	1.4	3.4	1.1	3.9	1.3	3.3	1.1
	Tributaries																	
	UT119A	4.05	24.7	6.1	22.	5.6	22.9	5.7	21.6	5.3	21.5	5.3	24.6	6.1	26.2	6.5	28.0	6.9

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					8													
	UT119B	1.72	1.2	0.7	0.7	0.4	0.1	0.0	0.1	0.1	-	-	-	-	-	-	-	-
	UT119LF1	2.32	-	-	-	-	-	-	15.7	6.8	-	-	-	-	-	-	-	-
	UT122LF1	0.06	1.1	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UT123LF1	1.49	-	-	-	-	-	-	1.1	0.8	-	-	-	-	-	-	-	-
	UT132LF1	1.24	-	-	-	-	-	-	0.5	0.4	-	-	-	-	-	-	-	-
	UT135A	20.42	22.3	1.1	-	-	7.6	0.4	13.7	0.7	-	-	-	-	-	-	-	-
	UT136LF1	1.57	-	-	-	-	-	-	0.6	0.4	-	-	-	-	-	-	-	-
	UT138A	2.75	1.1	0.4	0.6	0.2	-	-	1.0	0.4	-	-	-	-	-	-	-	-
	UT141A	1.66	1.0	0.6	1.0	0.6	1.2	0.7	1.4	0.8	-	-	-	-	-	-	-	-
	UT146A	1.86	2.7	1.4	-	-	0.0	0.0	0.6	0.3	-	-	-	-	-	-	-	-

Notes:

1 Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

mi2 = square miles

cfs = cubic feet per second

Source: Knight Piésold 2013, Table 7.4

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Table 3.16-4: Mine Site Annual Streamflow Summary 2004 - 2012

Drainage	Station	Drainage Area (mi^2)	Annual Discharge by Water Year (cfs)									Annual Unit Runoff by Water Year (cfs/mi^2)								
			2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean	2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean
NFK	NK100A	105.86	316.5	262.6	201.8	300.4	215.5	211.4	198.2	271.0	247.2	2.99	2.48	1.91	2.84	2.04	2.00	1.87	2.56	2.33
	NK100A1	85.34	260.9	214.5	169.0	238.7	181.2	182.0	171.5	221.8	205.0	3.06	2.51	1.98	2.80	2.12	2.13	2.01	2.60	2.40
	NK100B	37.32	112.8	88.7	68.2	99.9	74.4	70.8	64.2	95.4	84.3	3.02	2.38	1.83	2.68	1.99	1.90	1.72	2.56	2.26
	NK100B1[1]	37.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	NK100C	24.35	63.2	49.8	40.6	53.7	44.5	37.5	36.7	53.6	47.5	2.60	2.04	1.67	2.21	1.83	1.54	1.51	2.20	1.95
	NK100C1[1]	24.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	NK119A	7.76	35.5	22.2	20.0	28.2	21.7	21.6	14.8	26.6	23.8	4.57	2.86	2.58	3.63	2.79	2.78	1.91	3.43	3.07
	NK119B	3.97	6.5	4.7	3.1	5.5	3.5	3.2	2.5	5.3	4.3	1.63	1.19	0.77	1.38	0.87	0.81	0.64	1.32	1.08
SFS	SK100A	106.92	303.9	279.4	215.1	274.9	259.8	235.2	221.5	284.7	259.3	2.84	2.61	2.01	2.57	2.43	2.20	2.07	2.66	2.43
	SK100B	69.33	229.0	190.0	145.4	199.7	187.0	162.0	149.3	207.5	183.7	3.30	2.74	2.10	2.88	2.70	2.34	2.15	2.99	2.65
	SK100B1	54.41	166.3	131.3	68.8	144.8	139.8	110.3	99.2	151.7	130.3	3.06	2.41	1.82	2.66	2.57	2.03	1.82	2.79	2.39
	SK100C	37.50	65.7	49.5	32.8	55.0	51.8	35.6	37.8	53.0	47.6	1.75	1.32	0.87	1.47	1.38	0.95	1.01	1..41	1.27
	SK100F	11.91	35	30.4	24.1	32.6	30.1	26.7	24.3	37.4	30.1	2.94	2.55	2.03	2.74	2.53	2.24	2.04	3.14	2.53
	SK100G	5.49	16.3	13.3	12.3	14.0	12.7	11.8	10.3	14.7	13.2	2.9	2.4	2.2	2.5	2.3	2.1	1.8	2.6	2.40

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Table 3.16-4: Mine Site Annual Streamflow Summary 2004 - 2012

Drainage	Station	Drainage Area (mi^2)	Annual Discharge by Water Year (cfs)									Annual Unit Runoff by Water Year (cfs/mi^2)								
			2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean	2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean
												7	3	4	4	1	5	7	8	
	SK119A	10.73	50.9	34.6	27.4	38.6	33.6	32.1	26.9	37.3	35.2	4.74	3.22	2.55	3.59	3.13	3.00	2.51	3.47	3.28
	SK124A	8.52	26.2	18.8	14.9	21.4	19.8	15.7	14.0	24.0	19.4	3.08	2.21	1.75	2.52	2.32	1.84	1.64	2.82	2.27
UTC	UT100-APC3	134.16	346.16	344.9	286.0	351.1	309.6	302.1	320.9	331.5	324.1	2.58	2.57	2.13	2.62	2.31	2.25	2.39	2.47	2.42
	UT100-APC2	110.16	110.16	319.5	253.6	319.2	267.3	265.7	265.0	333.0	293.6	2.95	2.90	2.30	2.90	2.43	2.41	241	3.02	2.67
	UT100-APC1	101.51	101.51	284.4	230.0	288.5	244.5	238.9	234.9	385.2	261.8	2.84	2.80	2.27	2.84	2.41	2.35	2.31	2.81	2.58
	UT100B	86.24	86.24	243.2	190.0	251.0	213.5	191.7	199.1	240.4	221.4	2.81	2.82	2.20	2.91	2.48	2.22	2.31	2.79	2.57
	UT100C	69.47	69.47	170.6	134.2	185.7	145.4	140.3	146.3	163.7	157.5	2.50	2.46	1.93	2.67	2.09	2.02	2.11	2.36	2.27
	UT100C1	60.37	30.37	133.0	103.6	144.2	111.0	103.2	108.3	131.4	121.3	2.25	2.20	1.72	2.39	1.84	1.71	1.79	2.18	2.01
	UT100C2	48.26	48.26	115.1	92.6	125.1	99.2	88.3	87.6	111.8	104.7	2.45	2.38	1.92	2.59	2.05	1.83	1.81	2.32	2.17
	UT100D	11.96	30.4	29.9	23.8	31.9	26.9	24.1	24.6	31.1	27.8	2.54	2.50	1.99	2.67	2.25	2.01	2.06	2.60	2.33
	UT100E	3.10	3.10	9.8	8.3	10.5	9.5	7.5	8.0	8.8	9.0	3.04	3.17	2.66	3.39	3.08	2.41	2.58	2.85	2.90
	UT106-APC1	14.14	14.14	47.4	39.5	48.5	41.9	39.8	39.8	45.6	43.8	3.37	3.35	2.79	3.43	2.96	2.82	2.81	3.22	3.09
	UT119A	4.05	4.05	29.3	26.5	28.2	30.5	28.6	28.5	31.6	29.2	7.47	7.24	6.53	6.96	7.54	7.05	7.04	7.80	7.20

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Table 3.16-4: Mine Site Annual Streamflow Summary 2004 - 2012

Drainage	Station	Drainage Area (mi^2)	Annual Discharge by Water Year (cfs)									Annual Unit Runoff by Water Year (cfs/mi^2)								
			2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean	2004 - 2005	2005 - 2006	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	2011 - 2012	Mean
	UT135A	20.42	20.42	44.4	36.4	47.3	36.3	33.0	32.6	40.9	39.9	2.34	2.17	1.78	2.32	1.78	1.62	1.60	2.00	1.95

Notes:

1 Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

mi2 – square miles

cfs – cubic feet per second

Source: Knight Piésold 2013, Table 7.3

Table 3.16-5: Annual and Seasonal Maximum Instantaneous Discharge at Select Gaging Stations – Mine Site, 2004 – 2012

Period	Maximum Instantaneous Discharge (cfs)												
	SK100A	SK100B	SK100C	SK100F	SK119A	NK100A	NK100B	NK100C	NK119A	UT100-APC2	UT100B	UT100C2	UT100D
Aug – Nov /04	1,219	1,140	293	161	527	2,240	--	376	690	--	1,620	--	267
Apr – Jul /05	1,199	1,080	--	172	427	2,000	--	--	278	--	1,280	--	--
Aug – Nov /05	1,100	1,440	--	151	606	1,446	--	--	470	--	926	--	200
Apr – Jul /06	1,781	1,560	--	249	--	1,866	--	284	404	--	1,230	--	--
Aug – Nov /06	1,484	1,090	295	174	476	1,910	--	225	334	--	952	--	169
Apr – Jul /07	489	380	116	54	158	687	230	132	110	--	404	--	--

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Table 3.16-5: Annual and Seasonal Maximum Instantaneous Discharge at Select Gaging Stations – Mine Site, 2004 – 2012

Period	Maximum Instantaneous Discharge (cfs)												
	SK100 A	SK100 B	SK100 C	SK100 F	SK119 A	NK100 A	NK100 B	NK100 C	NK119 A	UT100-APC2	UT100 B	UT100C 2	UT100 D
Aug – Nov /07	1,197	1,060	315	--	377	1,560	438	--	307	--	1,140	699	272
Apr – Jul /08	--	1,310	--	--	386	1,540	655	304	334	--	1,210	598	--
Aug – Nov /08	--	629	199	--	223	1,410	461	179	291	995	596	433	140
Apr – Jul /09	--	1,710	--	--	484	2,310	--	586	306	--	1,340	--	--
Aug – Nov /09	--	496	156	--	196	793	403	--	241	650	475	282	103
Apr – Jul /10	--	799	--	--	284	1,300	--	--	264	--	685	--	--
Aug – Nov /10	--	1,440	284	--	513	1,920	672	136	--	1,404	875	532	--
Apr – Jul /11	--	777	--	--	234	1,040	--	163	124	--	796	--	156
Aug – Nov /11	--	782	231	--	278	1,430	478	117	364	1,015	675	373	157
Apr – Jul /12	--	1,200	--	--	--	1,510	--	--	205	--	812	--	--
Aug – Sep /12	--	1,510	331	233	475	2,000	760	404	482	--	1,400	825	270
2004 Cal. Yr.	1,219	1,140	293	161	527	2,240	--	376	690	--	1,620	--	267
2005 Cal. Yr.	1,199	1,440	--	172	606	2,000	--	--	470	--	1,280	--	--
2006 Cal. Yr.	1,781	1,560	--	249	--	1,910	--	284	404	--	1,230	--	--

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Table 3.16-5: Annual and Seasonal Maximum Instantaneous Discharge at Select Gaging Stations – Mine Site, 2004 – 2012

Period	Maximum Instantaneous Discharge (cfs)												
	SK100 A	SK100 B	SK100 C	SK100 F	SK119 A	NK100 A	NK100 B	NK100 C	NK119 A	UT100-APC2	UT100 B	UT100C 2	UT100 D
2007 Cal. Yr.	1,197	1,060	315	--	377	1,560	438	--	307	--	1,140	--	--
2008 Cal. Yr.	--	1,310	--	--	386	1,540	655	304	334	--	1,210	598	--
2009 Cal. Yr.	--	1,710	--	--	484	2,310	--	--	306	--	1,340	--	--
2010 Cal. Yr.	--	1,440	--	--	513	1,920	--	--	--	--	875	--	--
2011 Cal. Yr.	--	782	--	--	278	1,430	--	163	364	--	796	--	157
2012 Cal. Yr.	--	1,510	--	--	--	2,000	--	--	482	--	1,400	--	--
Max Recorded	1,781	1,710	331	249	606	2,310	760	586	690	1,404	1,620	825	272
Mean Spring	1,157	1,102	116	158	329	1,532	443	294	253	--	970	598	156
Mean Autumn	1,250	1,065	263	180	408	1,634	535	239	397	1,016	962	524	197
Mean Annual	1,349	1,328	304	194	453	1,879	547	282	420	--	1,210	598	212

Notes:
The fall 2004 peak flow was assumed to be the peak flow for the 2004 calendar year.
cfs = cubic feet per second
Source: Knight Piésold 2013, Table 3, Appendix 7C

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3.16.1.4 Meteorological Inputs to Water Balance Modeling

The Mine Site analysis area is in a transitional climatic zone with strong maritime influence. Summer temperatures are moderated by the open waters of Iliamna Lake, the Bering Sea, and Cook Inlet. Winter temperatures are more continental because of the presence of ice on Iliamna Lake and sea ice in Bristol Bay during the coldest months. Winter weather systems typically travel into the region from the Bering Sea to the west, from along the Aleutian Island chain to the southwest, and from the Gulf of Alaska to the south (Hoefler 2010).

Design and implementation of a Mine Site water management plan is essential for developing fresh water requirements and supply for mine process water, appropriate design of water management and treatment systems, and minimizing the potential for uncontrolled discharges of untreated contact or tailings water. As part of the water management plan, surface water and groundwater balance models were developed for the Mine Site that are used to understand surface water and groundwater systems and interaction (Schlumberger 2011). The groundwater balance model is discussed in in Section 3.17, Groundwater.

The surface water balance model was calibrated using continuous streamflow records from 15 streamflow gaging stations for the period of record between 2004 and 2008. [Note: Ongoing efforts are focused on validating and recalibrating the Site Water Balance Model using data collected since 2008]. The model was also used to validate site meteoric data and precipitation variability across the site. A meteorological data collection program was designed and implemented to provide data representative of the Mine Site analysis area. Meteorological data have been collected from eight monitoring stations (Figure 3.16-4) (SLR 2013). The stations are labeled Pebble 1, Pebble 3, Pebble 4, Pebble 5, Pebble 5A, Pebble 6, Pebble 8 in the general Mine Site analysis area, and the Iliamna Air Quality station in Iliamna, Alaska. The closest long-term meteorological records are from the Iliamna Airport; where possible, the Iliamna Airport data were adjusted to site conditions by correlating the airport data with site data (Schlumberger 2011).

Precipitation

Monthly precipitation data from the Iliamna Airport were adjusted for location and elevation, and then correlated with precipitation data from the Pebble 1 meteorological station. Two correlation factors were applied for developing a relationship between the airport and Pebble 1 locations. One correlation factor was applied to account for undercatch of snow at the Iliamna Airport precipitation gage. The other correlation factor was applied to address orographic factors for winter and summer periods to account for the elevation difference between the Iliamna Airport and Pebble 1 locations (Schlumberger 2011).

The watersheds of the NFK and SFK rivers and the UTC were divided into subcatchments, and each subcatchment is associated with a gaging station (Figure 3.16-5). To account for rain shadow and wind transfer of snow, and to balance the precipitation and measured flows, each subcatchment was provided a multiplier of precipitation that ranged from 1.0 to 1.5 (Schlumberger 2011). The Iliamna precipitation multiplier applied to each subcatchment was adjusted to match subcatchment streamflow. Table 3.16-6 provides a summary of the precipitation multiplier, annual net precipitation, and recharge by subcatchment.

Snowmelt

Snowmelt was estimated for each month of the water balance model using a temperature index method (Schlumberger 2011). Comparison of the snow pack data, measured precipitation at Iliamna Airport, and measured snow pack at a regional station (Fishtrap Creek) indicated that

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measured precipitation from Iliamna Airport provided an adequate index for snowpack in the analysis area. The water available each month was determined based on the sum of snowmelt and rainfall, after accounting for available snow after sublimation.

Other Meteorological Data

Other meteorological data collected include temperature, radiation, wind speed, relative humidity, evaporation, and sublimation. Where applicable, the site data sets were correlated with the Iliamna Airport data set for each water balance model component. Site meteorology is further discussed in Chapter 3.1.

Water Balance Calibration

The water available for runoff in each subcatchment was calculated based on climate and meteorological inputs and outputs, surface detention and storage, and groundwater storage and discharge. The input parameters of the water balance were adjusted until streamflows calculated by the water balance were reasonably close to measured streamflows (Schlumberger 2011). In addition to calibrating the model to measured streamflows, the model was used to verify that changes in storage calculated by the water balance model were consistent with observed changes in groundwater elevation. The relationship between water balance calculated streamflow and measured streamflow for subcatchments NK119A, SK100F, and UT100D are shown in Figure 3.16-6, Figure 3.16-7, and Figure 3.16-8, respectively. [Note: Figures are in preparation] These stations were selected to show subcatchment calibration results from each watershed (NFK and SFK rivers and UTC watersheds), as well as their downstream proximity to the Mine Site.

Table 3.16-6: Summary of Precipitation Multiplier, Annual Net Precipitation, and Recharge by Subcatchment

		Ppt	Contributing Area		Precipitation	Net Precipitation		Recharge [a]		
Area #	Gage	multiplier	ft^2	mi^2	inches	ft^3	inches	ft^3	inches	percent
Area 1	SK119A	1.3	298,178,040	10.7	54.5	1,191,993,265	47.8	334,532,779	13.4	28
Area 2	SK124A	1.25	237,610,491	8.5	51.6	864,237,812	43.6	322,355,662	16.3	37
Area 3	SK100F	1.16	332,162,241	11.9	46.3	989,692,813	36.1	327,913,040	11.8	33
Area 4	SK100B	1.4	1,932,589,191	69.3	54.5	2,344,151,364	47.8	970,852,638	19.8	41
Area 5	SK100C	1.25	1,045,354,109	37.5	48.6	1,524,235,563	38.5	1,855,903,928	45.8	122
Area 7	UT119A	1.24	112,868,531	4.0	46.3	345,572,228	36.7	236,373,492	25.0	68
Area 8	SK100A	1.1	2,980,498,233	106.9	49.1	2,512,332,141	28.8	1,854,031,901	21.2	74
Area 9	UT100D	1.12	333,381,389	12.0	43.6	912,891,861	32.9	338,857,865	12.2	37
Area 10	UT100B	1.17	2,403,713,258	86.2	45.8	5,868,093,486	34.7	2,894,584,029	17.7	51
Area 11	UT100APC1	1.2	2,827,828,636	101.4	43.8	1,183,941,341	33.6	382,493,729	10.8	32
Area 12	NK119B	1.12	110,869,015	4.0	46.3	339,849,664	36.9	43,252,070	4.7	13
Area 13	NK100C	1.07	678,761,824	24.3	43.1	1,827,609,470	32.3	736,475,117	13.0	40
Area 14	NK119A	1.23	216,360,293	7.8	52.5	824,787,447	45.7	184,227,553	10.2	22
Area 15	NK100A	1.12	2,950,846,064	105.8	43.9	5,527,541,531	34.1	1,750,809,416	10.8	32

Source: Table 7 from Appendix 8-1I, EBD Chapter 8.

3.16.1.5 Surface Water Use

With the exception of the local communities of Iliamna, Nondalton and Newhalen, the project area encompasses remote areas with very little documented public water use. Domestic water use in the communities surrounding the project area is largely supplied by groundwater wells, but some residents likely collect surface water for personal use. Within the Mine Site itself, limited surface water is used by local residents for hunting, fishing and other subsistence activities.

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PLP has applied for surface water rights for some of the main drainages within the Mine Site area, including the SFK, the NFK (PLP designated tributary 1.190), and UTC (DNR 2018). PLP has received multiple Temporary Water Use Permits (TWUPs) for exploration activities between 2004 and 2013. The TWUPs give PLP permission to withdraw a certain number of gallons of water per day, up to a specified annual limit, from specified sources.

3.16.1.6 Flood Magnitude and Frequency

[NOTE: RFI placeholder for figures and tables from Appendix 7A and all of Appendix D and Appendix E of Pebble Project Supplemental Environmental Baseline Data Report 2004-2012, Chapter 7 Surface Water Hydrology requested in RFI 004. This section will be revised following receipt of RFI response.]

3.16.2 Amakdedori Port

3.16.2.1 Drainage Basins/Watersheds

Amakdedori Port is within the Tuxedni-Kamishak Bay watershed of the greater Cook Inlet watershed. The Aleutian Range west of the port forms the divide between the Kvichak and Cook Inlet watersheds. The terrain is rocky and undulating at elevations of some 800 ft AMSL at the divide, and drops down to more gentle slopes and wetlands around the port area. There are fewer kettle ponds east of the divide. Streams flow generally south and eastward in the port area, draining into Kamishak Bay. The port site is just north of the mouth of Amakdedori Creek, a meandering stream fed by snowmelt, rainfall and groundwater (Glass 1999). No detailed hydrologic data is available for Amakdedori Creek.

3.16.2.2 Streamflow

No streamflow gaging stations are present within the port area (USGS 2018). The closest known stream gage data are from Williams Creek and an unnamed creek (Y valley) approximately 30 miles northeast of the port. Data from these streams are limited, and the watersheds are more mountainous and likely hydrologically distinct from the port area.

3.16.2.3 Flood Magnitude and Frequency

The port site area is listed as a mapped area in the Federal Emergency Management Agency (FEMA) Flood Mapping database (FEMA quadrant 0200125250A), but no flooding data are available for this area (FEMA 2018 https://msc.fema.gov/portal/search). Amakdedori Creek, just south of the port site, meanders within a floodplain containing wetlands.

3.16.2.4 Surface Water Use

There is no known or documented surface water use at the proposed port site.

The mouth of Amakdedori Creek is just south of the proposed port. The Creek has been advertised as a destination for recreational fishing, but its use has not been documented.

3.16.2.5 Marine Water

Available Information

Environmental baseline data (EBD) for the western landfall of the Natural Gas Pipeline were collected in the Iniskin and Iliamna bays area, 25 to 30 miles north of the proposed Amakdedori Port site. Amakdedori lies on the western shore of Kamishak Bay, with meteorology and

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oceanography characteristics more similar to Lower Cook Inlet (LCI) than the more sheltered locations where EBD were collected. Therefore, the EBD relate to a distinctly different marine environment than that of Amakdedori, and the EBD data cannot be used to describe the meteorology of the proposed Amakdedori Port site and west-side Cook Inlet Natural Gas Pipeline landfall.

The Supplemental EBD (SEBD) includes observations in Ursus Cove and Rocky Cove (UCRC), 15 to 20 miles northeast of Amakdedori, at the northern extent of Kamishak Bay. The SEBD includes physical and chemical water quality data that could be considered representative of Amakdedori, and were considered in developing the following discussion. Because site-specific meteorological and oceanographic information pertinent to Amakdedori was not included in either EBD or SEBD, the following discussion was developed based on data available in publicly available sources, as well as relevant anecdotal descriptions provided by residents and others who have personal familiarity with the region.

Meteorology and Wave Climate

With regard to Amakdedori's suitability as a port site, the most important meteorological aspects are its exposure to wind and the resultant waves (especially from northeast and east), and the presence of sea ice (Section 3.16.2.5.5). Meteorological data for the vicinity of Amakdedori are available from the National Oceanic and Atmospheric Administration (NOAA) weather station AUGA2, on the northeast-facing shore of Augustine Island. Data provided from this station are well-suited for evaluating Amakdedori's exposure to winds from the northeast and east, but not to exposure to winds from the southeast.

Since 2005, wind speed and direction, atmospheric pressure, air temperature, and dewpoint have been measured and recorded at AUGA2 at 30-minute intervals. Data capture have been nearly perfect (> 99 percent) in all years except 2014, when the station apparently was inoperative January through April. Table 3.16-7 lists results of analysis of AUGA2 wind speeds for the 5 complete years of data recording (2012 through 2017, excluding 2014) for wind directions between true north and east, and lists the occurrences of wind speeds exceeding 20 meters per second (m/s). The criterion of 20 m/s was chosen because, for fetch lengths typical of LCI (e.g., 40 to 60 kilometers), waves of 3 to 4 meters in height are attainable at this wind speed, and waver occurrence will be similar to that for wind speeds exceeding 20 m/s.

Table 3.16-7: Augustine Island wind speeds > 20 m/s from North to East (0 to 90°)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total records > 20 m/s	278	434	106	34	1	0	0	8	56	134	163	466
Percent of records > 20 m/s	3.7	6.4	1.4	0.5	0.0	0.0	0.0	0.1	0.6	1.5	1.9	5.2

1 For 2012-2017, except 2014

° = degrees

> = greater than

m/s = meters per second

Source: NOAA weather station AUGA2 http://www.ndbc.noaa.gov/histsearch.php?station=auga2

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Direct measurements of waves collected at two NOAA buoys were used to assess wave conditions in LCI:

- NOAA buoy #46106 was deployed 7 miles west of Anchor Point (59.760°N, 152.090°W) from December 15, 2007 to February 19, 2010 (http://www.ndbc.noaa.gov/station_page.php?station=46106)
- NOAA buoy #46108 was deployed 9 miles west-southwest of Homer (59.597°N, 151.829°W) on May 11, 2011, and has continued to collect data to date, although with some interruptions, usually occurring in winter months(http://www.ndbc.noaa.gov/station_page.php?station=46108)

Of the two, NOAA buoy #46106 was best situated to monitor waves from all directions that might affect Kamishak Bay. Records from this buoy (as well as NOAA buoy #46108) include wave height, dominant wave period, and mean wave direction measured at 1-hour intervals. Maximum wave heights from both northeasterly and southwesterly directions often ranged from 3 to 3.5 meters and occasionally exceeded 4 meters.

To assess the reasonableness of using these measured wave conditions as design criteria for Amakdedori Port, a wave forecast was performed with wave forecasting equations from the U.S. Army Corps of Engineers (USACE) Coastal Engineering Manual [REFERENCE]. Wave height and period were computed for wind speeds of 20 and 25 m/s, for fetch lengths typical of LCI and exposure of Kamishak Bay (Table 3.16-8). In addition, minimum storm durations were calculated to develop the wave conditions and the depths at which the waves begin to "shoal" as they enter shallower water.

Table 3.16-8: Amakdedori Port – Estimated Wave Conditions

Wind Speed		Fetch Length[1]		Significant Wave Height[2]		Dominant Wave Period[3]	Minimum Duration Required[4]	Deepwater Wave Length[5]		Shoaling Depth[6]	
m/s	kt	kilometers	n. mi.	meters	feet	s	hours	meters	feet	meters	fathom
20	40	80	43	4.0	13.2	8.0	5.5	100	328	25	14
		50	27	3.2	10.6	7.0	4.0	76	249	19	11
		30	16	2.6	8.6	6.3	3.0	62	203	15	9
25	50	80	43	5.3	17.5	9.0	5.0	126	413	32	18
		50	27	4.2	13.9	7.5	3.7	88	289	22	12
		30	16	3.3	10.9	6.5	2.7	66	217	16	9

n. mi. = nautical mile

1 Fetch = length of water surface over which wind is generating waves

2 Significant wave height = mean height of highest one-third of waves

3 Dominant wave period = period of waves most evident in sea surface

4 Minimum duration = length of time required for seas to be fully developed

5 Deepwater wave length = length of waves before seabed restricts waves

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6 Shoaling depth = depth at which waves begin to "feel" effect of seabed

The extent to which waves would affect the immediate vicinity of the Amakdedori Port site will require a detailed analysis of wave interaction with the complex seabed topography, as well as refractive effects of Augustine Island and the southern shore of Kamishak Bay. A more detailed statistical analysis of data from both NOAA buoys would provide an evaluation of probabilities and consequent risks associated with extreme conditions of wind and waves.

During Environmental Impact Statement (EIS) scoping meetings in April 2018, the following remarks were recorded from Mr. Chester Passic, Commander in the U.S. Coast Guard (USCG):

> *MR. CHESTER PASSIC: "I'm a commander in the United States Coast Guard. I'm the captain of a Coast Guard vessel Hickory stationed here in Homer. I do all of the aids to navigation in the Cook Inlet, the buoys and the lights. We maintain them year-round. We do not keep buoys in Cook Inlet for six months a year because of the weather and ice, and we can't keep buoys in Cook Inlet at that time. Kamishak Bay where the deepwater port is proposed is one of the worst places in the world to operate in terms of combination of tide, current, winds, weather. And I don't know if -- I think the Corps needs to investigate the deepwater port there. My concern would be that we can't keep aids to navigation for the vessels going in and out of there."*

Marine Water Properties

The proposed Amakdedori Port site is on the open coast of Kamishak Bay. Water properties such as salinity and temperature can be expected to be similar to those of LCI (see Muench and Schumacher 1980 for typical values). However, some freshening of surface waters in the immediate vicinity of Amakdedori Creek might occur; while under southerly winds, greater freshening could occur as a result of flows from sources to the south, such as McNeil and Kamishak rivers. The extent of any freshening is dependent on the flows from those sources and the persistence of southerly winds. The freshening of surface waters would be manifest as a thin, low-salinity lens overlying the saltier water, which would be mixed quickly into the water column by any wave action produced by brisk winds.

The SEBD include physical and chemical data from UCRC, which are more likely to be similar to the Amakdedori Port site because of greater exposure of UCRC to LCI oceanographic conditions. However, these data also include measurements from Ursus Lagoon, and therefore evidence of freshening by upland sources. For the 2012 sampling period (August), mean water temperatures for the several stations occupied ranged from 12.9 degrees Celsius (^{0}C) to 14^{0}C, while mean salinities ranged from 22.8 to 25.7 parts per thousand (‰). Maxima and minima for both temperature and salinity were within a unit (i.e., ≤ 1^0 or 1‰) of the mean, suggesting a fairly homogenous water column. Turbidity ranged from near zero to 13 Nephelometric Turbidity Units (NTU), and was probably more reflective of different exposures to wave activity.

In the SEBD report water quality summary, seasonal trends in temperature and salinity were stated in general terms. Although temperatures exhibited the usual seasonal warming trend to mid-summer and then subsequent cooling, temperatures were also a function of water depth, indicating the role of insolation as a factor in temperature trends. Salinity decreased from spring to late summer, reflecting the influence of upland water sources on coastal waters, and then increased in autumn months. The SEBD report states that turbidity was: "generally moderate, except near the shoreline during windy periods, and did not exhibit any obvious trends that would indicate point-source inputs."

Chemical analyses were reported in the SEBD for most water sampling stations, but only one (about 17 miles northeast of Amakdedori), might be considered analogous to the port site. Listed in SEBD Table 34-8, Station MRC20 is about 2 miles east of Tignagvik Point in water depth of about 15 meters. Analyses were performed for both surface and bottom water samples,

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and none of the inorganic constituents exceeded the corresponding National Recommended Water Quality Criteria (USEPA 2009). Total suspended solids were 5 milligrams per liter (mg/L) at both surface and bottom, indicating a well-mixed and relatively clear water column. Organic constituents in marine water were analyzed only in 2004 (EBD Table 34-7), with the majority not being detected. The water quality summary in the SEBD [reference specific SEBD] states: "hydrocarbon concentrations, as well as metal and trace element concentrations in 2008, showed little to no effect from anthropogenic sources."

The amount of suspended solids and accompanying turbidity in waters adjacent to the proposed Amakdedori Port site would be a function of seabed composition (e.g., silt, mud, sand), for which no information is available. Nautical chart #16640 for the area suggests that seabed nearby is "hard." If this is representative of seabed at the port site, it would suggest that suspended solids are of naturally low concentrations and that water is relatively clear (i.e., low turbidity). However, under energetic wave conditions, any loose sediment on the seabed would be stirred upward into the water column, thereby increasing suspended solids and turbidity until wave activity subsided. Further inferences cannot be reliably made without knowledge of seabed composition at the proposed site.

Marine Water Dynamics – Tides, Currents, and Storm Surge

At Nordyke Island (about 6 miles south-southeast of Amakdedori), the mean tide range is 3.93 meters, while the maximum diurnal range is 4.63 meters. Prevailing currents are those associated with the tide, and will generally be aligned with bottom contours of the seabed.

Storm surge occurs when strong winds cause a change in mean sea level. An elevation of sea level is called a "positive" surge, while a depression of sea level is a "negative" surge. Strong winds from the northeast or east could produce a positive storm surge in Kamishak Bay. However, the relatively steep slope of the seabed near the proposed port site would minimize the effect of a storm surge if it occurred. The small inlets to the north and south of the proposed port site would be more vulnerable to storm surge. Anecdotal information would be useful as an initial approximation of the probability of occurrence of surge, and such information could support more formal evaluation regarding possible surge conditions.

Although storm surge is unlikely to be a major concern, the exposure of the Amakdedori Port site to waves from directions ranging from northeast around to southeast is noteworthy. Although some sheltering from waves arising from northeasterly winds might be provided by Augustine Island, the port site's exposure to waves from the Gulf of Alaska through Kennedy Entrance should be evaluated. Neither the Augustine weather stations, nor the NOAA buoy near Homer, are situated to gather data on winds from east to southeast. Some anecdotal information on wave conditions at Amakdedori is available, but has not yet been explored to its fullest extent.

Sea Ice

The Marine Ice Atlas for Cook Inlet (Mulherin et al. 2001) includes three sets of maps depicting various measures of ice conditions for each biweekly interval between December 1 and March 31 for the period of January 1986 to April 1999 (14 winters). The maps were developed from ice charts constructed by the National Weather Service (NWS), using a combination of remote sensing observations (aerial and satellite photography) and visual reports.

The first map set shows mean sea ice concentration and stage of its development. The second set shows probability of occurrence for ice at *any* stage of development. The third set shows probability of occurrence at any stage of sea ice development *and at least* 5/10 concentration, meaning the sea surface is 50 percent covered by sea ice. Table 3.16-9 presents a distillation of

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the information provided by the map sets for the segment of Kamishak Bay that encompasses the Amakdedori Port site. Distances listed in Table 3.16-9 were scaled from the maps in Mulherin et al. (2001), and are accurate to within 3 km of the sea ice features to which they apply.

The EBD report contains several maps of maximum ice concentrations observed in Cook Inlet and published by National Ice Center (NIC 2008). The NIC maps are all from either January or February; one each for years 2001-2008. The ice coverage of the Amakdedori area is generally consistent with the more detailed representations from Mulherin et al. (2001), presented in Table 3.16-9.

Table 3.16-9: Ice Conditions: West Kamishak Bay, vicinity of Amakdedori (January 1986 – April 1999)

Dates	Map Set 1		Map Set 2		Map Set 3	
	Ice Thickness (cm)	Distance (km) to ice-free area	Probability of any ice coverage	Distance (km) to < 25% prob. of occurrence	Probability of > 5/10 coverage	Distance (km) to < 25% prob. of occurrence
1-15 Dec.	0 -10	10	75-100%	15	75-100%	15
16-31 Dec.	0 -10	10	50-75%	15	50-75%	15
1-15 Jan.	0 -10	15	50-75%	30	50-75%	30
16-31 Jan.	10 -30	25	50-75%	45	50-75%	45
1-15 Feb.	10 -30	40	50-75%	45	50-75%	45
16-28/28 Feb.	10 -30	40	75-100%	45	75-100%	45
1-15 Mar.	10 -30	40	75-100%	50	75-100%	45
16-31 Mar.	0 -10	20	50-75%	30	50-75%	25

cm = centimeter(s)

km = kilometers

Source: Mulherin et al. 2001

3.16.3 Iliamna Lake

3.16.3.1 Available Information

Iliamna Lake is the largest lake in Alaska. Approximately 120 km long by 35 km wide, its surface area is about 2,600 square kilometers. Its greatest depth is more than 300 m, but its mean depth is only 44 meters. Iliamna Lake discharges into the Kvichak River, which flows into Bristol Bay.

Environmental information for Iliamna Lake is contained in Appendix B, "Iliamna Lake Study" (ILS) of the EBD. Study objectives of the ILS were to describe existing water quality through collection of water and sediment samples, and zooplankton from deeper-water locations, in addition to studying contaminant accumulation in mussels, related to nearby water quality and sediment content. No meteorological information or limnological data, other than the water quality observations, were included in the ILS. Consequently, that information was developed for this discussion as needed from publicly available sources.

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3.16.3.2 Meteorology and Wave Climate

With regard to the viability of the proposed ferry crossing of Iliamna Lake, the most important meteorological aspects are its exposure to wind and the resultant waves (especially from northeast and east), and the presence of lake ice. Meteorological data for Iliamna Lake are available from Iliamna Airport, for which the record extends from the 1940s; however, no statistical summary other than the Iliamna wind rose was located (Figure 3.16-9) [Note: Figure is in preparation, based on Fig. B23 from EBD-App.B].

Figure 3.16-9 indicates winds at Iliamna are essentially bimodal, either from the east or north, with direction likely governed by local terrain. For the 4 years of meteorological studies included in the EBD (2005-2008), maximum hourly mean wind speeds ranged from 9 to 10 m/s (summer), to 19 to 21 m/s (winter) for 2005-2007, but were somewhat less at 7 to 11 m/s for least windiest year of 2008.

A cursory (i.e., non-statistical) review of data from both Iliamna and Igiugig (at the western end of Iliamna Lake), available at National Climatic Data Center (https://www.ncdc.noaa.gov/data), showed that maximum wind speeds of 40 miles per hour (mph) are common, and therefore a useful estimator for properties of wind-generated waves.

Using wave forecasting equations from the USACE Coastal Engineering Manual (REF), for a fetch[1] length of 35 miles from the proposed ferry crossing to the northeastern end of Iliamna Lake, a significant wave height[2] of 3 meters and dominant wave period[3] of 6.5 seconds were calculated. Anecdotal information, collected at scoping meetings, suggests that 40 mph might be a gross underestimate of maximum wind speeds experienced on Iliamna Lake, as noted below:

Pg. 49 [REFERENCE]

> *"You know, I'm looking at their new travel plan, and I spent many years in Igiugig in the fall, and it probably blows 100 miles an hour at Lake Iliamna three to five times a year. 100 miles an hour. They want to cross it all the time."*

3.16.3.3 Lake Water Properties

Included in the ILS are results of monthly collections (May-October, 2005-2007) of water quality conditions at five "deeper-water" stations (sample depths to 20 meters) in bays (Knutson, Northeast, Pile, and Roadhouse), as well as UTC at the northeastern end of Iliamna Lake. Talarik Creek is the station closest to the North Ferry Terminal. Four shallow nearshore stations (Bucket Lake, Whistlewing Bay, Flat Island, and Finn Bay) were also sampled.

At the five deeper-water stations, samples were collected for analysis of water quality, sediment, and zooplankton. At the shallow nearshore stations, mussels were also collected for analysis of muscle tissue (see Section TBD). Ambient water measurements included dissolved oxygen, temperature, specific conductance, oxidation reduction potential, pH, turbidity, and water clarity. Sediment samples were collected for laboratory analysis of major ions and trace elements. The physical and chemical data collected and presented in the ILS provide a robust base for evaluation of Iliamna Lake water quality in the vicinity of the North Ferry Terminal.

In their summary, investigators noted that concentrations of nutrients and major ions found during the 2005-2007 study were similar to concentrations from a study conducted at Iliamna Lake nearly 40 years before. The single exception was for sodium, which was present at nearly

[1] Fetch = length of water surface over which wind is generating waves
[2] Significant wave height = mean height of highest one-third of waves
[3] Dominant wave period = period of waves most evident in sea surface

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twice the concentration found in the earlier study. However, only a few ions (copper, lead, aluminum, iron, manganese, and alkalinity) had concentrations outside benchmarks established by the Alaska Department of Environmental Conservation (ADEC) for freshwater. The investigators attributed the latter to geological influences, and noted their consistency with previous studies conducted at Iliamna Lake and other area watersheds. Implications of the biological sampling are addressed in Section TBD.

3.16.3.4 Lake Ice

Although ambient air temperatures are sufficiently cold for lake ice to form November through March each winter (Figure 3.16-10) [Note Figure is in preparation based on Figure B22 from EBD-App. B], Table 3.16-10 denotes start of freezeup as early as mid-Novembe,r and final breakup often as late as mid-May for years 2002-2015.

Table 3.16-10: Iliamna Lake Freezeup and Breakup Dates (2002 – 2015)

Year	Freeze Start	Freeze Final	Breakup Start	Breakup Final
2002	12/4/2001	2/9/2002	5/5/2002	5/22/2002
2003	12/29/2002			4/18/2003
2004	12/21/2003	1/9/2004	4/21/2004	5/11/2004
2005	1/8/2005	2/7/2005	3/13/2005	5/5/2005
2006	11/25/2005	1/21/2006	5/19/2006	5/27/2006
2007	11/27/2006	12/26/2006	5/4/2007	5/22/2007
2008	12/18/2007	1/7/2008	5/11/2008	5/23/2008
2009	11/20/2008	12/30/2008	5/11/2009	5/28/2009
2010	12/12/2009	1/18/2010	5/9/2010	5/24/2010
2011	12/4/2010	12/30/2010	5/12/2011	5/30/2011
2012	11/30/2011	12/25/2011	5/15/2012	5/25/2012
2013	11/19/2012	12/19/2012	4/10/2013	5/16/2013
2014	12/12/2013	2/16/2014	4/19/2014	5/5/2014
2015	1/24/2015			4/8/2015

Source: [Note: Reference to be added]

Figure 3.16-10 depicts ice coverage in Iliamna Lake for years 2002-2015, with the lighter shade indicating at least 10 percent ice coverage, and the darker shade at least 50 percent coverage.

The foregoing data and graphs suggest that winter crossings of Iliamna Lake could be problematic, at least January through April. Anecdotal information collected during scoping appears to support this conclusion. An example is provided below.

Pg. 19 [REFERENCE]

> *"Any construction along that corridor will require maximum construction and maintenance efforts as mitigation for the unfriendly territory environmentally. East winds during the May to June break-up period on Iliamna Lake propagating from the Kokhanok/Bruin Bay area tend to pile up* [sic] *humongously large piles of ice on the north shore of Iliamna Lake, sometimes 40 to 60 feet high."*

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3.16.3.5 Lake and Sea Ice Hazards

The ice-covered season at Iliamna Lake is highly variable. Complete freeze-over can start between late October and mid-March, and last 2 to 5 months before breakup. The average length of the ice-covered season is expected to be about 115 days, based on 15 years of data collected in several southwestern Alaska lakes (Verrier and Kirchner 2016). Limited data are available on ice thickness in Iliamna Lake; anecdotal reports indicate that it can be about 4 feet thick in late spring (Billmeier 2016), but can range from several inches to several feet at the same time over a short distance (ADF&G 2008). Lake ice hazards, such as pressure ridges driven by wind, are known to occur in Iliamna Lake (Billmeier 2015; Andrew 2017). Ridges that are big enough to be pushed up on shore have been documented in similar lakes in other cold regions of North America and Europe (Lake Ice 2018). Ice jams, piles, and over-ice flooding can also occur at river mouths entering the lake during breakup. [Note: RFI Placeholder: Request submitted for additional Iliamna Lake ice information in RFI 013; to be inserted here if available.]

Sea ice in lower Cook Inlet has been documented by Mulherin et al. (2001), Pentec et al. (2011), and NOAA National Ice Center (2018) based on several decades of data. Ice in Kamishak Bay typically starts forming by mid-December with floes several inches thick, and reaches its maximum extent by late January to mid-February, occurring as pancake ice up to 1 foot thick in inner Kamishak Bay by this time. Sea ice reaches Augustine Island at its maximum extent in about half of the years. Thicker stamukhi ice, caused by tidal stranding of ice cakes on top of each other, can also form along the shore of Kamishak Bay. Sea ice typically recedes from Augustine Island by mid-March, with floes often present in inner Kamishak Bay into April. Although landfast ice is rare in Kamishak Bay, floe density is quite variable, ranging from ice-free to 100 percent coverage at its maximum extent. Sea ice floes propelled by tidal currents have been known to cause damage to vessels and docks, and related oil spills in areas of similar ice coverage in upper Cook Inlet.

The eastern side of lower Cook Inlet is typically ice-free most winters, although ice may extend as far south as Anchor Point during colder winters (Mulherin et al. 2001; Pentec et al. 2011). The probability of any sea ice occurring in this area ranges from zero to 25 percent.

3.16.4 Transportation Corridor

The sections below summarize baseline surface water data, where available, across the Transportation Corridor. The road corridor spans multiple watersheds, from its starting point at the southeastern edge of the Nushagak watershed within the Mine Site, across the greater Kvichak watershed, including Iliamna Lake, to the Aleutian Range watershed divide, and finally entering the greater Cook Inlet watershed east of the divide.

The surface water hydrology in the watersheds surrounding the Mine Site is well characterized, as described above (e.g., HDR 2011; Knight Piésold 2011; SLR 2011). The northernmost segment of the Transportation Corridor (northern half of the Mine Access Road) is within the well-studied UTC watershed, for which abundant data are available. Limited data are available for the southern segment of the Mine Access Road. No known surface water investigations have been conducted along the South Access Road.

Climatic factors influencing surface water across the corridor are the same or similar to those described above for the Mine Site. There are no glaciers within the road corridor watersheds. There is no known permafrost within the Transportation Corridor; however, permafrost has been observed within the general area (Detterman and Reed 1973), and may be present at depth in isolated zones, such as on north-facing slopes. Section 3.14, Soils, addresses the occurrence of permafrost.

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3.16.4.1 Drainage Basins/Watersheds

Mine Access Road

The Transportation Corridor begins at the Mine Site, which straddles the watershed divide between the SFK and UTC watersheds, within the greater Bristol Bay watershed. The road begins at an elevation of approximately 1,700 feet amsl among gently rounded hills and wide valleys of the Nushagak-Big Hills physiographic region (Wahrhaftig 1965, 1994). The northern half of the Mine Access Road would roughly parallel the UTC watershed, crossing a number of small tributaries by way of culverts, with a bridge across the main stem of the UTC.

Iliamna Spur Road

The Iliamna Spur Road Corridor heads eastward out of the UTC drainage and enters the Newhalen River watershed. The Newhalen River is one of the larger streams in the area, with a drainage area of 3,451 square miles at the mouth (Knight Piésold et al. 2011). It is the main outlet of the large glacial Lake Clark to the north/northeast of the project area, draining glaciated mountainous headwaters, and therefore has high suspended sediments. The Newhalen River flows southward through poorly drained lowland/wetland areas with abundant kettle ponds. Numerous small tributaries feed into the river before it reaches its outlet into Iliamna Lake, 3 miles southwest of the village of Iliamna. A bridge would be constructed across the Newhalen River along the Iliamna Spur Road.

Just south of the intersection with the Iliamna Spur Road, the Transportation Corridor turns southwest, paralleling an unnamed drainage that flows southward and drains into Iliamna Lake just south of the North Ferry Terminal. The corridor drops in elevation southward as the terrain flattens out over glacial and fluvial deposits, with abundant kettle ponds and wetlands (Wahrhaftig 1965, 1994). The Mine Access Road terminates at the North Ferry Terminal at an elevation of approximately 50 feet amsl.

South Access Road

The northern two-thirds of the South Access Road and the Kokhanok Airport Spur Road are in the Kvichak watershed, west of the Aleutian Range divide. Here within the Aleutian Range physiographic province, the terrain consists of low, rounded ridges of exposed bedrock, and valley bottoms dominated by wetlands, streams, and abundant kettle ponds (Wahrhaftig 1965, 1994). Bedrock exposures are common, with less-abundant surficial deposits of ground moraine and alluvium (Detterman and Reed 1973). Elevations range from 50 feet amsl at the shores of Iliamna Lake to about 800 feet amsl near the divide. Streams flow in sinuous patterns through the varied upland terrain, eventually meandering downgradient northward into Iliamna Lake.

This segment of the road would require four bridges, including the Gibraltar River Bridge near Iliamna Lake, Bridge Lake Bridge, and two unnamed creek bridges just west of the divide. The corridor passes within a mile of Gibraltar Lake, a prominent elongate lake trough approximately 7 miles long by 0.5 mile wide, of unknown depth. Gibraltar lake is fed by small streams on the southern and western sides, including Dream Creek and Emerald Creek, and likely by groundwater; and drains north into the Gibraltar River and then into Iliamna Lake.

East of the Aleutian Range divide, the final segment of the Transportation Corridor drops into the Tuxedni-Kamishak Bay watershed of the greater Cook Inlet watershed. The terrain east of the divide is rocky and undulating, with elevations close to 800 feet amsl at the divide, dropping down to more gentle slopes and wetlands nearing the coast at sea level. There are fewer kettle ponds east of the divide. Streams flow in sinuous patterns through the varied terrain, eventually draining south and east into Kamishak Bay. The road corridor here would include two bridges,

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including Bridge Lake Bridge just east of the divide, and an Unnamed Creek Bridge close to the port. The terminus of the road corridor is adjacent to Amakdedori Creek, a meandering stream fed by a number of small lakes and tributaries, which drains eastward into Kamishak Bay.

3.16.4.2 Streamflow

Mine Access Road

The Mine Access Road would cross multiple small tributaries within the UTC watershed by way of culverts before crossing the main stem channel of the UTC by way of a bridge. UTC flow is supplied by snowmelt, rainfall runoff, and groundwater, and has a drainage area of 135.2 square miles, and a mean annual discharge of 225 cfs (Knight Piésold 2011). Streamflow of the UTC watershed is fully described under Section 3.1.6.1, Mine Site, above. Smaller drainages and tributaries of the Kvichak watershed that drain into Iliamna Lake are also generated by snowmelt and rainfall runoff, and likely have significant groundwater interaction. Streams within the Mine Access Road corridor flow southward and drain into Iliamna Lake.

Iliamna Spur Road

The Iliamna Spur Road would include a substantial bridge over the Newhalen River, which is one of the highest flow streams in the area, with a drainage area of 3,451 square miles at the mouth (Knight Piésold et al. 2011). A USGS gaging station was installed at the Newhalen River (ID 15300000) close to the village of Iliamna in 1951, and was active through 1986. PLP installed two new gaging stations in 2008: one at the same USGS site (NH100-APC3), and the other installed 8 miles downstream (NH100-APC2). The Newhalen River has a mean annual unit runoff rate of 2.6 cubic feet per square mile (or approximately 35 inches of annual basin runoff depth) (Knight Piésold et al. 2011). There is a substantial hydrograph peak in spring/early summer from snow and glacial melt. Snowmelt runoff is stored in several large lakes upstream of the gaging station, resulting in delayed peak flows in July and August, which are the highest annual flows. As with other local drainages, flows decline within late summer/autumn months, with the lowest flows occurring in late winter (Knight Piésold et al. 2011).

South Access Road

Drainages in the project area south of Iliamna Lake have not been the focus of any known hydrologic studies to date. Streams and tributaries along the South Access Road corridor are likely generated by spring snowmelt, runoff from rain events, and groundwater. Groundwater contributes to streamflow east of the divide, within the Tuxedni-Kamishak watershed, particularly in the winter months (Glass 1999). There is no known stream gage data in proximity to the road corridor here. The closest known stream gage data are from Williams Creek and an unnamed creek in locally named Y valley, about 30 miles northeast. Data from these streams are limited, and the watersheds are more mountainous and likely hydrologically distinct from the road corridor area.

3.16.4.3 Flood Magnitude and Frequency

The Mine Access Road would require a bridge across the UTC east of the Mine Site. At the proposed bridge site, the UTC meanders within a floodplain containing wetlands, oxbow lakes, and associated low terraces. The Iliamna Spur Road would require construction of the Newhalen River Bridge. Upstream of the bridge site, the Newhalen River flows within a wide floodplain containing wetlands, which narrows at the bridge site.

Along the South Access Road, the Gibraltar River meanders within a floodplain containing wetlands and oxbow lakes at the site of the proposed bridge. Limited information is available on

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floodplains and flood data for other streams that would require bridge and culvert crossings. The southernmost section of the South Access Road is listed as a mapped area in the FEMA Flood Mapping database (FEMA quadrants 0200125250A and 0200124875A), but no flooding data are available for this area (FEMA 2018 https://msc.fema.gov/portal/search).

3.16.4.3 Surface Water Use

Most of the length of the Transportation Corridor passes through remote areas with no documented public water use.

The Iliamna Spur Road would cross the Newhalen River, addressed above. A hydropower project (Tazimina Hydro) was installed 9 miles upstream from the confluence of the Newhalen and Tazimina rivers. As of 2012, the run-of-the-river–type hydropower plant supplied over 95 percent of the power for the communities of Iliamna, Newhalen, and Nondalton (INNEC 2012 – http://innelectric.com/index.html). The hydropower system uses the natural waterfalls at the site to provide the mechanical energy to spin power-generating turbines, and there is no dam required. Streamflow is therefore not significantly affected, and no water is removed from the drainage for power production.

The community of Kokhanok is just east of the South Ferry Terminal, and the Kokhanok Spur Road extends to the community. Unlike most nearby communities that use groundwater, the Kokhanok Water System extracts surface water from Iliamna Lake for drinking water supplies (ADEC Drinking Water Watch 2018).

3.16.4.4 Surface Water Extraction Sites

[NOTE: Section will be developed based on response to RFI 022.]

3.16.4.5 Stream Crossing Bank Erosion/Scour

Erosion of stream banks is generally caused by an increase in flow during flooding events. There are no known studies of current stream bank erosion along the Transportation Corridor.

A total of seven bridges would be constructed along the corridor, with the remaining crossings using culverts. Bridges and culverts modify stream morphology, and can lead to scour, or localized erosion around the infrastructure. The Mine Access road would include a bridge over the Upper Talarik Creek; the Iliamna Spur Road would include a bridge over the Newhalen River; and the South Access Road corridor would include five bridges over various ponds and streams. Freshwater fish field studies planned for the 2018 season include stream crossing identification and habitat mapping, which may include sampling of stream substrate along the South Access Road (PLP 2018).

3.16.5 Natural Gas Pipeline Corridor

Available surface water data in the Natural Gas Pipeline Corridor are the same as that described above for the Transportation Corridor, with the exception of the Cook Inlet crossing and the segment of corridor along the Kenai Peninsula. [Note: This section will be updated with more information regarding the affected environment of the main Cook Inlet crossing of the Pipeline Corridor.]. Recent project updates no longer include pipeline construction along the 9-mile stretch south of Happy Valley (citation? Info from Bill, PLP communication May 10, 2018), so the project area will no longer include sections of corridor close to Stariski Creek. When the revised project area is available, this document will be updated to describe surface water characteristics along the revised pipeline corridor.

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3.16.5.1 Drainage Basins/Watersheds

The drainage basin/watershed descriptions for most of the Natural Gas Pipeline Corridor are the same as those already provided for the road corridor. See Section 3.16.4, above under Transportation Corridor.

3.16.5.2 Streamflow

The streamflow data for most of the pipeline corridor are the same as the data already provided for the road corridor. See Section 3.16.4, Transportation Corridor.

3.16.5.3 Surface Water Use

The surface water use data for most of the Natural Gas Pipeline Corridor are the same as the data already provided for the road corridor. See Section 3.16.4, Transportation Corridor.

3.16.5.4 Surface Water Extraction Sites

[NOTE: Section will be developed based on response to RFI 022.]

3.16.5.5 Stream Crossing Bank Erosion/Scour

The stream crossing bank erosion/scour information for most of the Natural Gas Pipeline Corridor is the same as that already provided for the road corridor. See Section 3.16.4,Transportation Corridor.

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3.26 VEGETATION

The analysis area for vegetation is the same as that described in Wetlands/Special Aquatic Sites and Waterbodies (Section 3.22). It encompasses the nine Hydrologic Unit Code (HUC) 10 watersheds that could potentially be directly or indirectly impacted by the project, with a total area of approximately 6,420,000 acres. Due to the area size, it was not possible to obtain detailed information on all vegetation communities within it. A subset of this area was therefore chosen for detailed study and mapping, referred to hereafter as the "mapping area." The mapping area is approximately 45,000 acres, divided by major project component: the Mine Site mapping area, the Transportation/Natural Gas Pipeline Corridor mapping area, the Amakdedori Port mapping area, and the Natural Gas Pipeline Corridor mapping area (Figure 3.26-1). The project area, or area of the direct project disturbance footprint, is contained entirely within the mapping area.

The description of vegetation in the mapping areas is based on information provided in Chapters 13 and 38 of the Environmental Baseline Document (EBD) (3PPI and HDR 2011, HDR and 3PPI 2011), as well as more recent information provided in the Preliminary Jurisdictional Determination Report (HDR 2018) (Appendix J) and associated Geographic Information System (GIS) database that reflects changes in the project area since publication of the EBD. The affected environment for vegetation overlaps with and provides support for other resources that are addressed in other sections of this Environmental Impact Statement (EIS), primarily Wildlife Values (Section 3.23) and Wetlands/Special Aquatic Sites and Waterbodies (Sections 3.25). Vegetation is also important aspect of social environment disciplines such as Recreation (Section 3.5) and Food and Fiber Production (Subsistence) (Section 3.9).

The affected environment for vegetation includes predominant vegetation communities and other land cover types, such as open water and barren areas, which may be directly or indirectly affected by project activities. The affected environment for vegetation will be described in terms of the extent and characteristics of predominant types found in the four mapping areas. Confirmed or reported populations of species on the Alaska Center for Conservation Science (ACCS) rare vascular plant species list are also addressed in this section. There are no federally listed threatened, endangered, or candidate plant species expected to occur within the project area.

3.26.1 Analysis Methodology

As part of the project's environmental baseline study program, researchers analyzed vegetation field data and aerial photo signatures to develop a system for describing and identifying vegetation types (EDB Chapter 13 - 3PPI and HDR 2011, EBD Chapter 38 - HDR and 3PPI 2011). This classification system is based on the Alaska Vegetation Classification (Viereck et al. 1992), supplemented by Wibbenmeyer et al. (1982), and expanded as necessary to accommodate interpretation of available aerial imagery. Vegetation data were collected within the mapping area and included estimates of the percent cover of each plant species, site photographs, and classification of vegetation types. The vegetation classification system incorporated information on canopy cover, needleleaf versus broadleaf tree species, shrub height and density, and dominant species. Mapping was digitized on aerial photography at a scale between 1:1,200 and 1:1,500. Details on vegetation study methodology and field data collection can be found in Chapters 13 and 38 of the EBD (3PPI and HDR 2011, HDR and 3PPI 2011) and a quick reference guide to the environmental baseline study classification system, including vegetation type definitions and representative photos, is in included in Appendix C of the Preliminary Jurisdictional Determination Report (HDR 2018 – included as Appendix J).

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Field studies and mapping conducted as part of the environmental baseline program encompass the portion of the mapping area within the Bristol Bay watershed and the west side of the Cook Inlet watershed. The pipeline crossing of Cook Inlet and the pipeline corridor and compressor station on the Kenai Peninsula were not included in the field studies and mapping prepared for the project. Therefore, this analysis makes use of existing landcover classification data for Northern, Western, and Interior Alaska developed by the ACCS (Boggs et al. 2016) to expand the mapping for this project component. ACCS landcover types were developed using best-available data derived from 18 regional landcover maps that have been developed over the last 31 years. For maps derived from satellite imagery, a 30 meter (m) pixel size or finer was used and for maps derived from aerial photography a scale of 1:63,360 or finer was used (Boggs et al. 2016) In order to make the data comparable to the data collected for the Pebble Project, ACCS landcover types were reclassified with the best-corresponding vegetation types based on comparison of the dominant growth forms (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf) from each classification system. A segment of the Cook Inlet pipeline crossing, where there were no data, was classified as open water.

Forty-eight project vegetation types were identified in the mapping area (Table 3.26-1). For clearer display on maps, the project vegetation types were aggregated into 10 vegetation structure types (Table 3.26-2), based on dominant growth form (forested, shrub, or herbaceous), vegetation density (open or closed canopy), and average height (dwarf, low, or tall) (EBD Chapter 13 - 3PPI and HDR 2011, EBD Chapter 38 -HDR and 3PPI 2011). A complete list of plant species from project vegetation and wetlands plots is included in Appendix B of the Preliminary Jurisdictional Determination Report (HDR 2018 – included as Appendix J). The following discussion will focus on the grouped vegetation communities, which are summarized in this section for each of the four project component mapping areas.

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Figure 3.26-1: Vegetation Mapping Overview

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Table 3.26-1: Summary of Project Vegetation Types in the Mapping Area

Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
Forest (≥10% cover of trees over 10 feet in height)			
Closed White Spruce Forest	CWSF	Closed forest dominated by white spruce	Upland
Open White Spruce Forest	OWSF	Open forest dominated by white spruce	Upland
White Spruce Woodland	WSW	Woodlands dominated by white spruce. The openings between the trees may be dominated by mosses and lichens, herbs, and/or shrubs.	Upland
Black Spruce Woodland	BSW	Woodlands dominated by black spruce. The openings between the trees may be dominated by mosses and lichens, herbs, and/or shrubs.	Wetland
Closed Broadleaf Forest	CBF	Closed forests dominated by broadleaf tree species	Upland
Open Broadleaf Forest	OBF	Open forests dominated by broadleaf tree species	Upland
Broadleaf Woodland	BW	Woodland dominated by broadleaf tree species	Wetland / Upland
Closed Mixed Forest	CMF	Closed forests co-dominated by needleleaf and broadleaf tree species	Upland
Open Mixed Forest	OMF	Open forests co-dominated by needleleaf and broadleaf tree species	Upland
Mixed Forest Woodland	MFW	Woodlands co-dominated by needleleaf and broadleaf trees	Upland
Dwarf White Spruce Scrub	DWSS	Open forests and woodlands dominated by white spruce. If trees 10 feet or taller cover at least 10% of the area, the scrub class does not apply.	Upland
Scrub (<10% cover of trees over 10 feet in height, >25% shrub cover)			
Closed Willow Tall Shrub	CWTS	Thickets of tall willows. In some sites, shrub birch may be mixed with the willow.	Upland
Closed Alder Tall Shrub	CATS	Thickets of tall alder	Upland
Closed Alder-Willow Tall Shrub	CAWTS	Mixed species thickets of tall alders and willows	Wetland / Upland
Open Alder Tall Shrub	OATS	Open stands of tall alder	Upland
Open Alder-Willow Tall Shrub	OAWTS	Tall, open shrub stands co-dominated by alder and willow	Upland
Open Willow Tall Shrub	OWTS	Open stands of tall willow	Upland
Closed Willow Low Shrub	CWLS	Thickets of low willow. In some	Wetland

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Table 3.26-1: Summary of Project Vegetation Types in the Mapping Area

Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
		sites, shrub birch may be mixed with the willow.	
Closed Alder-Willow Low Shrub	CAWLS	Mixed-species thickets of low alder and willows	Wetland / Upland
Closed Alder Low Shrub	CALS	Thickets of low alder	Upland
Open Sweetgale-Graminoid Bog	OSGB	Bogs and fens dominated by sweetgale (>25 percent cover)	Wetland
Open Mixed Shrub-Sedge Tussock	OMSST	Tussock tundra co-dominated by low shrubs and tussock-forming graminoids	Wetland
Open Dwarf Birch-Ericaceous Shrub Bog	ODBESB	Bogs with abundant mosses, ericaceous shrubs, and dwarf birch	Wetland
Ericaceous Shrub Bog	ESB	Bogs with abundance mosses and ericaceous shrubs, but only sparse dwarf birch	Wetland
Low Ericaceous Shrub Tundra	LEST	Shrublands dominated by low ericaceous shrubs	Upland
Open Dwarf Birch Scrub	ODBS	Open stands of dwarf birch and/or shrub birch (>8 inches tall)	Wetland / Upland
Shrub Birch-Willow	SBW	Open or dense shrub stands co-dominated by willows and birch	Upland
Open Willow Low Shrub	OWLS	Open stands of low willow	Wetland
Open Willow Low Shrub Fen	OWLSF	Fens characterized by open stands of low willows	Wetland
Open Alder-Willow Low Shrub	OAWLS	Low, open shrub stands co-dominated by alder and willow	Wetland
Open Alder Low Shrub	OALS	Open stands of low alder	Upland
Dwarf Ericaceous Shrub Tundra	DEST	Dwarf ericaceous shrublands that do not satisfy the requirements of other Project Vegetation Types	Upland
Dwarf Ericaceous Shrub Tundra - Hummocks	DEST-H	Dwarf ericaceous shrublands growing on moderate to large hummocks (> 6 inches tall)	Upland
Dwarf Ericaceous Shrub Tundra - Equisetum	DEST-EQ	Dwarf ericaceous shrublands with abundant horsetails (>25 percent coverage)	Upland
Dwarf Ericaceous Shrub Tundra - Carex	DEST-C	Dwarf ericaceous shrublands with abundant sedges (>25 percent coverage)	Upland
Dwarf Ericaceous Shrub-Lichen Tundra	DESLT	Dwarf ericaceous shrublands on lichen dominated (>60 percent coverage) ground	Upland
Herbaceous (<10% of tree cover and <25% of shrub cover)			
Halophytic Dry Graminoids	HDG	Dominated by beach rye grass; site	Upland

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Table 3.26-1: Summary of Project Vegetation Types in the Mapping Area

Project Vegetation Type	Abbreviation	Definition[1]	Predominantly Occurs in Wetlands or Uplands
		may be dry or wet	
Bluejoint Tall Grass	BTG	Abundant bluejoint reedgrass; other herbs and grasses may be present but are not co-dominant	Upland
Bluejoint-Herb	BH	Abundant bluejoint reedgrass interspersed with other low-growing species	Upland
Subarctic Sedge-Moss Wet Meadow	SSMWM	Graminoid-dominated communities, found on wet soils, that do not satisfy the requirements of other Project Vegetation Types	Wetland
Fresh Sedge Marsh	FSM	Dominated by members of the sedge family (e.g., sedges, cottongrass) rooted in standing water, and often near open water	Wetland
Mesic Herbs	MH	Herb-dominated communities that occur on mesic sites and do not satisfy the requirements of other Project Vegetation Types	Upland
Fresh Herb Marsh	FHM	Dominated by emergent in persistent standing water	Wetland
Aquatic Herbaceous	AH	Dominated by submerged plants or plants with floating leaves	Wetland
Other			
Partially Vegetated	PV	Sparse (10-25 percent) cover of vascular plants	Upland
Barren	BARE	Very sparse (<10 percent) cover of vascular plants	Wetland / Upland
Open Water	OW	Unvegetated to very sparsely vegetated open water, including streams, rivers, lakes, and ponds	Waters
Snow	SNOW	Persistent snowfields	Upland

1 Forest density classes (closed, open, woodland) are differentiated base on tree canopy coverage (>60%, 25-59%, 10-24%, respectively). Shrub density classes (closed thickets, open) are differentiated based on shrub canopy cover (>75%, 25-75%, respectively). Shrub height classes (tall, low, dwarf) are differentiated based on average shrub height (>5 feet tall, 5 feet to 8 inches tall, <8 inches tall, respectively).

Source: EBD Chapter 13 - 3PPI and HDR 2011, HDR 2018

Table 3.26-2: Grouped Vegetation Types in Mapping Area

Grouped Vegetation Type[1]	Number of Acres[2]	Percent of Mapping Area[2]
Open/Closed Forest	2,896	6
Open Tall Shrub[3]	3,433	8
Closed Tall Shrub[3]	4,033	9
Open Low Shrub	4,893	11

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Table 3.26-2: Grouped Vegetation Types in Mapping Area

Grouped Vegetation Type[1]	Number of Acres[2]	Percent of Mapping Area[2]
Closed Low Shrub	352	<1
Dwarf Shrub	18,983	42
Dry to Moist Herbaceous	1,354	3
Wet Herbaceous	1,818	4
Open Water	5,317	12
Other	1,928	4
Total Mapping Area	**45,007**	**100**

1 Project Vegetation Types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

3 Includes approximately 3 acres from a Tall Shrub (Open-Closed) landcover class that could not be cross-walked with certainty in to an "Open" or "Closed" group; for the purposes of this summary table it was divided evenly between the Open Tall Shrub and Closed Tall Shrub groups.

NOTE: Source: EBD Chapter 13 - 3PPI and HDR 2011, EBD Chapter 38 - HDR and 3PPI 2011.

The predominant vegetation throughout the mapping area includes white spruce forests and woodlands, mixed forests, tall and low shrubs of birch, willow, and alder, and low ericaceous shrub. Forests and woodlands are generally restricted to valley bottoms and toe slopes. Across peatlands, black spruce woodlands and low ericaceous and shrub birch scrub are common, often with tussock-forming sedges, or various sedges and grasses. Dwarf alpine scrub with considerable lichen cover and bare ground is common in the higher elevations with shallow soils (3PPI 2008).

3.26.2 Mine Site Affected Environment

The Mine Site mapping area comprises 20,526 acres of the overall mapping area and is located in the upper watersheds of the North Fork and South Fork Koktuli River It also includes a small portion of the Upper Talarik Creek watershed. The mapping area was selected to provide coverage of potential development areas and alternative development areas as well as additional surrounding area to provide comparative context (EBD Chapter 13 - 3PPI and HDR 2011).

The Mine Site lies within the Nushagak-Big River Hills physiographic division, which is an area of low, rolling hills separated by wide shallow valleys. The main streams occupy wide valley bottoms and tributaries are incised into the hilly terrain and typically occupy narrow valleys. (Netterman and Reed 1973; EBD Chapter 4 - Knight Piesold Ltd. 2001).

The mapping area consists of the Lime Hillsecoregion characterized by sharp mountain ridges with steep headwalls and broad U-shaped valleys. The ridges and mountainsides are covered with colluvial rubble, while the valleys contain glacial moraines and outwash with some alluvial deposits along rivers. This ecoregion supports predominately tall and low shrub communities of willow, birch, and alder. Spruce forests and woodlands are confined to valley bottoms and mountain toeslopes. (Nowacki et al. 2000, Nowacki et al. 2001).

Based on field observations during vegetation studies for the environmental baseline program, the Mine Site mapping area is characterized as one ecological zone (low scrub shrub) that supports a dense low or dwarf shrub understory. In general the vegetation of the low scrub shrub ecological zone is made up of dwarf ericaceous (heath family) shrubs, willows, and

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alders. Dwarf ericaceous shrubs and barren patches cover the mountain tops and the mountain hillsides area is covered in with tall shrubs interspersed with low willow stands and patches of bluejoint grass or wet sedge and shrub meadows. Dwarf ericaceous shrubs cover the dry, gravelly glacial terraces, with bluejoint grasses lining numerous swales. (EBD Chapter 13 -3PPI and HDR 2011).

Vegetation types in the Mine Site mapping area, including the area and proportion of the mapping area that each type comprises, are listed in Table 3.26-3 and shown in Figure 3.26-2. The Mine Site mapping area is characterized by a predominance of shrub types, representing approximately 80 percent coverage. Among the shrub types, the dwarf shrub group was the most common, accounting for over half of the mapped area. Herbaceous vegetation types represent approximately 10 percent. Forested vegetation types represent less than one percent of the entire mapped area and other land cover types such as open water, partially vegetated, snow, and barren represent less than 10 percent of the mine mapping area. Table 3.26-3 shows the grouped vegetation types within the Mine Site mapping area, the project vegetation types that grouped types are comprised of, and the acreage and percentage of the study area that each type comprises.

Human-caused soil or vegetation disturbance in the Mine Site mapping area was minimal and appeared to be limited to four-wheeler trails or campsites (EBD Chapter 14 - 3PPI and HDR 2011).

Table 3.26-3: Summary of Grouped Vegetation Types and Associated Acreages in the Mine Site Mapping Area

Grouped Vegetaion Type[1]	Project Vegetation Types	Number of Acres[2]	Percent of Mapping Area[2]
Open/Closed Forest	BSW, BW, CBF, CMF, CWSF, DWSS, MFW, OBF, OMF, OWSF, WSW	<1	<1
Open Tall Shrub	OATS, OAWTS, OWTS	865	4
Closed Tall Shrub	CATS, CAWTS, CWTS	1,953	10
Open Low Shrub	OALS, OWLS, OAWLS, OSGB, OMSST, SBW, OWLSF, LEST, ESB, DBESB, ODBS	2,931	14
Closed Low Shrub	CAWLS, CWLS	209	1
Dwarf Shrub	DESLT, DEST, DEST-H, DEST-C	10,470	51
Dry to Moist Herbaceous	BTG, BH, MH	1,007	5
Wet Herbaceous	AH, FHM, FSM, SSMWM	1,194	6
Open Water	OW	478	2
Other	BARE, PV	1,418	7
Total Mine Site Mapping Area		**20,526**	**100**

1 Project Vegetation Types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: EBD Chapter 13 - 3PPI and HDR 2011, HDR 2018.

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Figure 3.26-2: Mine Site Mapping Area Vegetation

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3.26.3 Transportation and Natural Gas Pipeline Corridor Affected Environment

The Transportation/Natural Gas Pipeline Corridor mapping area covers approximately 20,128 acres of the overall mapping area. The mapping area extends eastward from the Mine Site and is generally 2,000-feet wide, centered on the proposed road centerline. It ranges up to 8,000-feet wide for approximately 8 miles on the north side of Iliamna Lake to account for other potential road alignments in this area. The mapping area includes the 24 miles of the Mine Access Road (5 miles of this road falls within the Mine Site mapping area) from the Mine Site to the north ferry terminal at Iliamna Lake, an 18-mile crossing of the lake to the south ferry terminal, and the South Access Road (37 miles) between the lake and Amakdedori Port on Cook Inlet. It also includes spur roads to Iliamna Airport (7 miles) and Kokhanok Airport (1 mile). The pipeline would run adjacent to the road bed shoulder within this mapping area and would cross Iliamna Lake on the lake bed.

The Transportation/Natural Gas Pipeline Corridor crosses multiple watersheds in the Bristol Bay drainage, including the Upper Talarik Creek, Newhalen River on the north side of Iliamna Lake, Gibraltar Lake on the south side, and Iliamna Lake watershed on both sides of the lake. The corridor crosses one main watershed in the Cook Inlet drainage (the Amakdedori Creek-Kamishak Bay watershed) with a very small section crossing the Paint River watershed.

This corridor is located within three physiographic divisions: Nushagak-Big River Hills, Nushagak-Bristol Bay Lowlands, and Aleutian Range. The terrain includes a range of types, from flat to moderately undulating near the Pebble Deposit, gently sloping and colluvial terrain along the north shore of Iliamna Lake, and mountainside slopes and generally rolling terrain to narrow valley bottoms through the Aleutian Range. (Netterman and Reed 1973; EBD Chapter 4 – Knight Piesold Ltd.).

Two ecoregions comprise the Transportation/Natural Gas Pipeline Corridor mapping area, Lime Hills and the Alaska Peninsula. The ecoregion divide starts near Iliamna Lake with most of the Mine Access Road falling within the Lime Hills ecoregion and the ferry terminal and South Access road falling within the Alaska Peninsula ecoregion. The Lime Hills ecoregion is characterized by sharp mountain ridges with steep headwalls and broad U-shaped valleys. This ecoregion supports predominately tall and low shrub communities of willow, birch, and alder. Spruce forests and woodlands are confined to valley bottoms and mountain toeslopes. The Alaska Peninsula ecoregion is characterized by smooth glacial moraines and colluvial shields on the north side and rugged deeply cut fjordlands on the south side. Dominant vegetation is low shrublands of willow, birch, and alder interspersed with ericaceous heath and Dryas-lichen communities. Alpine tundra and glaciers are on mountaintops. (Nowacki et al. 2000, Nowacki et al. 2001).

Vegetation types in the Transportation/Natural Gas Pipeline Corridor mapping area, including the area and proportion of the mapping area that each type comprises, are listed in Table 3.26-4 and shown in Figures 3.26-3 and 3.26-4. This mapping area is characterized by a predominance of shrub types, representing approximately 74 percent coverage. Among the shrub types, the dwarf shrub group was the most common, accounting for approximately 41 percent of the mapped area. Forested vegetation types represent approximately 14 percent of the cover types. Herbaceous vegetation types represent 4 percent of the entire mapped area and other land cover types such as open water, partially vegetated, and barren represent less than 10 percent of the mapping area.

Human-caused soil or vegetation disturbance in the Transportation/Natural Gas Pipeline Corridor mapping area was minimal and appeared to be limited to four-wheeler trails, roads and building pads near the village of Iliamna, Kokhanok Airport, and the shore of Iliamna Lake (EBD Chapter 14 – 3PPI and HDR).

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Table 3.26-4: Summary of Grouped Vegetation Types and Associated Acreages in the Transportation/Natural Gas Pipeline Corridor Mapping Area

Grouped Vegetaion Type[1]	Project Vegetation Types	Number of Acres[2]	Percent of Mapping Area[2]
Open/Closed Forest	BSW, BW, CBF, CMF, CWSF, DWSS, MFW, OBF, OMF, OWSF, WSW	2,883	14
Open Tall Shrub	OATS, OAWTS, OWTS	2,533	13
Closed Tall Shrub	CATS, CAWTS, CWTS	2,013	10
Open Low Shrub	OALS, OWLS, OAWLS, OSGB, OMSST, SBW, OWLSF, LEST, ESB, ODBESB, ODBS	1,931	10
Closed Low Shrub	CAWLS, CWLS	142	<1
Dwarf Shrub	DESLT, DEST, DEST-H, DEST-C	8,196	41
Dry to Moist Herbaceous	BTG, BH, MH	297	1
Wet Herbaceous	AH, FHM, FSM, SSMWM	600	3
Open Water	OW	1,117	6
Other	BARE, PV	416	2
Total Transportation/Natural Gas Pipeline Corridor Mapping Area		**20,128**	**100**

1 Project Vegetation Types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: EBD Chapter 13 - 3PPI and HDR 2011, EBD Chapter 38 - HDR and 3PPI 2011, HDR 2018.

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Figure 3.26-3: North Transportation/Natural Gas Pipeline Corridor Mapping Area Vegetation

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Figure 3.26-4: South Transportation/Natural Gas Pipeline Corridor Mapping Area Vegetation

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3.26.4 Amakdedori Port Affected Environment

The Amakdedori Port mapping area comprises approximately 3,973 acres of the overall mapping area and is located in the Amakdedori Creek-Frontal Kamishak Bay watershed on the western shoreline of the Cook Inlet. This mapping area is within a region composed of marine, coastal, and estuarine habitats. The mapping area includes an onshore area to encompass shore-based facilities at the port as well as an off-shore area for waterside structures and improvements associated with the marine facility.

The Amakdedori Port lies within the northern part of the Aleutian Range physiographic division (Netternman and Reed 19973) and the Alaska Peninsula ecoregion (Nowacki et al. 2000, Nowacki et al. 2001). Topography is generally flat with dunes located closer to the gravel beach shoreline of Cook Inlet. Dominant vegetation in the Alaska Peninsula ecoregion is low shrublands of willow, birch, and alder interspersed with ericaceous heath and Dryas-lichen communities. Alpine tundra and glaciers are on mountaintops.

Vegetation types in the Amakdedori Port mapping area, including the area and proportion of the mapping area that each type comprises, are listed in Table 3.26-5 and shown in Figure 3.26-5. The Amakdedori Port mapping area extends into the Cook Inlet and therefore is comprised primarily of open water, representing approximately 85 percent of the mapping area. Among the vegetated community types, shrub types are the most common, accounting for approximately 10 percent of the mapped area. Herbaceous vegetation types represent less than 2 percent and other land cover types such as partially vegetated and barren represent approximately 2 percent of the Amakdedori Port mapping area. Forested vegetation types are absent from this mapping area.

No human-caused soil or vegetation disturbance was reported for the Amakdedori Port mapping area.

Table 3.26-5: Summary of Grouped Vegetation Types and Associated Acreages in the Amakdedori Port Mapping Area

Grouped Vegetaion Type[1]	Project Vegetation Types	Number of Acres[2]	Percent of Mapping Area[2]
Open Tall Shrub	OATS, OAWTS, OWTS	34	<1
Closed Tall Shrub	CATS, CAWTS, CWTS	65	2
Open Low Shrub	OALS, OWLS, OAWLS, OSGB, OMSST, LEST, ESB, ODBESB, ODBS	31	<1
Closed Low Shrub	CAWLS, CWLS	1	<1
Dwarf Shrub	DESLT, DEST, DEST-H	317	8
Dry to Moist Herbaceous	BTG, BH, MH, HDG	48	1
Wet Herbaceous	FHM, FSM, SSMWM	24	<1
Open Water	OW	3,381	85
Other	BARE, PV	73	2
Total Amakdedori Port Mapping Area		**3,973**	**100**

1 Project Vegetation Types were aggregated into vegetation type groups based on the dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source: EBD Chapter 38 - HDR and 3PPI 2011, HDR 2018.

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Figure 3.26-5: Amakdedori Port Mapping Area Vegetation

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3.26.5 Natural Gas Pipeline Corridor Affected Environment – Kenai Peninsula/Cook Inlet

The Natural Gas Pipeline mapping area comprises approximately 380 acres of the overall mapping area and is located in the Stariski Creek-Frontal Cook Inlet. This mapping area includes a 30-foot wide corridor to account for potential temporary construction impacts associated with a buried steel pipeline that would extend eastward from the Amakdedori Port, crossing the seafloor of Cook Inlet for approximately 94 miles, then transition onshore on the Kenai Peninsula to connect to an existing pipeline near Happy Valley. Beginning at the port, the pipeline would be located within the Transportation/Natural Gas Pipeline Corridor, which is discussed above.

The Natural Gas Pipeline Corridor on the Kenai Peninsula lies within the Cook Inlet Basin ecoregion characterized by gently sloping lowlands. Ericaceous shrubs are dominant in open bogs. Mixed forests of white and Sitka spruce, aspen and birch grow on better-drained sites and grade into tall shrub communities of willow and alder on slopes along the periphery of the basin. (Nowacki et al. 2000, Nowacki et al. 2001).

Vegetation types in the Natural Gas Pipeline Corridor mapping area, including the area and proportion of the mapping area that each type comprises, are listed in Table 3.26-6 and shown in Figure 3.26-6. The Natural Gas Pipeline Corridor mapping area crosses the Cook Inlet and therefore is comprised primarily of open water, representing approximately 90 percent of the mapping area. Among the vegetated community types, open/closed forest accounts for approximately 3 percent. Shrub and herbaceous vegetation types each represent less than 1 percent of the mapped area.

Human-caused disturbance in this mapping area is evidenced by the ACCS landcover types Urban, Agriculture, and Road, listed in Table 3.26-6, which were grouped into the “other” vegetation type. This represents 6 percent of the mapping area.

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Table 3.26-6: Summary of Grouped Vegetation Types and Associated Acreages in the Natural Gas Pipeline Mapping Area

Grouped Vegetation Type	Landcover Classes[1]	Number of Acres[2]	Percent of Mapping Area[2]
Open/Closed Forest	White Spruce or Black Spruce-Deciduous (Open-Closed), White Spruce or Black Spruce (Open-Closed)	13	3
Open Tall Shrub	Tall Shrub (Open-Closed)	3	<1
Closed Tall Shrub			
Dry to Moist Herbaceous	Herbaceous (Mesic)	2	<1
Wet Herbaceous	Herbaceous (Wet)	<1	<1
Open Water	Freshwater or Saltwater	341	90
Other	Urban, Agriculture, Road	21	6
Total Acreage in Natural Gas Pipeline Mapping Area		**380**	**100**

1 Vegetation mapping for the Natural Gas Pipeline mapping area on the Kenai Peninsula is based on the Alaska Natural Heritage Program, Alaska Center for Conservation Science, Vegetation Map and Classification for Northern, Western, and Interior Alaska (Boggs et al. 2016). The landcover classes were cross-walked into corresponding Grouped Vegetation Types for this project based on the review of dominant growth form (tree, shrub, or herb), vegetation density (open or closed canopy), and average height (tall, low, or dwarf) from each data set. In some instances, a direct correlation was not applicable so the data is summarized using a broader scale. For example, Boggs et al. (2016) vegetation classification does not break down the Tall Shrub landcover type by "Open" and "Closed", so the acreages for this group is combined to report totals for one Tall Shrub category (Open-Closed).

2 All numbers are rounded. Apparent inconsistencies in sums are the result of rounding.

Source Boggs et al. 2016

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Figure 3.26-6: Natural Gas Pipeline Corridor Mapping Area Vegetation

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3.26.6 Rare and Sensitive Plants

The ACCS maintains a rare plant list for Alaska, tracking occurrences of over 300 rare plant species (ACCS 2018a; Nawrocki et al. 2013), some of which occur in the project area. However, no special statewide protections are afforded species on this list. ACCS ranks the species with a code that describes their population status on a global level (G-rank) and on a statewide level (S-rank). The status levels are ranked on a scale of one to five, where five is a common species with demonstrably secure populations, and one is a critically imperiled species whose populations are vulnerable to extirpation or extinction. Locations of rare and sensitive plants known or suspected in the mapping area are listed in Table 3.26-7. Precise coordinates of rare or sensitive plants are not provided on the ACCS online database to protect the location of the plants, but general locations are described.

Table 3.26-8 depicts locations of incidental observations of ACCS tracked vascular plant species that were recorded during Pebble Project surveys. In order to be confirmed and receive a state herbarium accession number, voucher specimens must be collected or carefully photographed for review and approval by a qualified botany expert. Researchers collected specimens in some but not all cases. The plant identification status is listed in Table 3.26-8. Observations that have not been confirmed by the University of Alaska Fairbanks herbarium should be considered unverified reports of tracked species.

[Note: Rare and Sensitive Plant Data will be added at a later time].

Table 3.26-7: Rare and Sensitive Plants in the Mapping Area

Number of Individuals	Common Name	Scientific Name	ACCS Ranking	Watershed and Basin
Mine Site Mapping Area				
Transportation/Natural Gas Pipeline Corridor Mapping Area				
Amakdedori Port Mapping Area				
Natural Gas Pipeline Mapping Area (Kenai Peninsula/Cook Inlet)				

Source: ACCS 2018.

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Table 3.26-8: Rare Plant Species Observed during Project Surveys

Common Name	Scientific Name	ACCS Ranking (Global and State)[1]	Project Vegetation Type	Plot No., Location Description	Plant Identification Verification Status (Voucher Specimen Number)
Mine Site Mapping Area					
Carex bebbii	Bebb's sedge	G5S1	Bluejoint Herb	3PP3845, N of Kaskanak Mt.	Identity not positively confirmed (no voucher specimen)
Transportation/Natural Gas Pipeline Corridor Mapping Area					
Rumex beringensis	Bering Sea dock	G3S3	Dwarf Ericaceous Shrub Tundra	3PP5207,	Dwarf Ericaceous Shrub Tundra
Within Pebble Project Survey Area but Outside of EIS Mapping Area					
Carex crawfordii	Crawford's sedge	G5S3	Bluejoint Herb	3PP13707; Two miles SE of Crazy Lady Lake	Confirmed[2] – voucher transferred to UAF Herbarium
Eriophorum viridicarinatum	Green-keel cottongrass	G5S2	Subarctic Sedge Moss Wet Meadow	3PP16383, NE of sharp Mt.	Identity not positively confirmed (no voucher specimen)
Primula tschuktschorum	Chukchi primrose	G2G3, S2S3	Subarctic Sedge Moss Wet Meadow	3PP9789, Three miles N of Kaskanak Mt.	Confirmed[2] – voucher transferred to UAF Herbarium
			Bluejoint Herb	3PP20066a -20067, 1.5 miles E of Cone (Black) Mt.	Identity not positively confirmed (no voucher specimen)
			Subarctic Sedge Moss Wet Meadow	3PP09557, One Mile N of Cone (Black) Mt.	Identity not positively confirmed (voucher specimen collected)
Rumex beringensis	Bering Sea dock	G3S3	Mesic Herb	3PP16329, Between Newhalen and Upper Talarik River	Confirmed[2] – voucher transferred to UAF Herbarium
			Partially Vegetated	3PP2147, Six miles SE of Koktuli River confluence	Confirmed[2] – voucher transferred to UAF Herbarium

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Table 3.26-8: Rare Plant Species Observed during Project Surveys

Common Name	Scientific Name	ACCS Ranking (Global and State)[1]	Project Vegetation Type	Plot No., Location Description	Plant Identification Verification Status (Voucher Specimen Number)
			Mesic Herb	3PP10506, Between Newhalen and Upper Talarik River	Confirmed[2] – voucher transferred to UAF Herbarium
			Partially Vegetated	3PP7947, Between Newhalen and Upper Talarik River	Confirmed[2] – voucher transferred to UAF Herbarium
			Open Willow Low Shrub	3PP8369, Unknown	Identity not positively confirmed (no voucher specimen)
Stellaria umbellata	Unspecified starwort	G5, S2S3	Open Willow Low Shrub	3PP8369, Unknown	Identity not positively confirmed (no voucher specimen)
Elocharis kamtschatica	Kamchatka spikerush	G4, S2S3	Halophytic Graminoid Wet Meadow	HDR 1265 Iniskin Bay	Confirmed[2] - voucher specimen was transferred to UAF Herbaruim (MD04-388 and HDR 1265)

1 ACCS ranks plants with a code that describes their population status on a global (Gx) and on a statewide (Sx) level, where X represents a rank from 1 to 5, where 5 is a common plant with demonstrably secure populations, and 1 is a critically imperiled plant whose populations are vulnerable to extirpation or extinction. If a rank is uncertain, it is described as a range between two numbers (for example, S2S3) or with a question mark (for example, G5?). Tracked species are those with a state ranking of S1 through S4.

2 Identify of voucher specimen was confirmed by C. Parker of the University of Alaska Fairbanks herbarium.

Source: EBD Chapter 13 - 3PPI and HDR 2011, EBD Chapter 38 - HDR and 3PPI 2011.

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Message

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 10/25/2018 11:07:30 PM
To: Schultz, Thomas [thomas.schultz@aecom.com]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Linda Daugherty [linda.daugherty@dot.gov]; David Seris [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; David Hassell [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; Mary Colligan [mary_colligan@fws.gov]; Katherine McCafferty [Katherine.A.McCafferty2@usace.army.mil]; John McCall [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Kyle Moselle [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble Project Draft EIS - Chapter 2 Figures

Hello everyone – I want to note that there are five figures that are not yet ready. We believe these figures will add value to the chapter for lay readers but are not necessary for agency reviewers to understand the alternatives. We will provide the missing figures when available. Thanks, Bill

---

From: Schultz, Thomas
Sent: Thursday, October 25, 2018 2:16 PM
To: Bob Loeffler; Brooke Merrell; Curyung Tribal; Linda Daugherty; David Seris; Douglass Cooper; David Hassell; J. Loichinger; Joan Kluwe; John Eddins; Kevin Pendegast; Mary Colligan; Katherine McCafferty; John McCall; Patty McGrath; Molly Vaughan; Kyle Moselle; Nathan Hill; Pres William Evanoff; Wesley Furlong; POA Special Projects
Cc: Craig, Bill
Subject: Pebble Project Draft EIS - Chapter 2 Figures

All,

Please follow the link below to download a compressed folder containing the current DEIS chapter 2 figures. Let me know if you have any issues downloading the figures.

https://app.box.com/s/rdh9ci7bxj8pzppbnwdft9ffpbnndgbb

Thanks!

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/15/2018 4:21:22 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: revised deliverables (UNCLASSIFIED)
Attachments: 11_10_2018_Pebble_Deliverable_Schedule.xlsx

CLASSIFICATION: UNCLASSIFIED

All,
I have been traveling with limited bandwidth so I did not send the revised deliverables list. Some of the technical (App K) sections listed on the original deliverable list are not going to be needed.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED

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Pebble Project EIS Deliverable Schedule - EIS Sections and Inputs - Draft EIS

Ch.	Document	To USACE	Notes
01 Purpose and Need for the Proposed Action		**24-Oct-18 A**	A = Actual date of transmission
02 Alternatives Including Applicant's Proposed Alternative		**23-Nov-18 A**	
03 Affected Environment		**9-Nov-18**	
x	3.1 Intro to Affected Environment	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	3.2 Lands	9-Nov-18	
x	3.3 Needs & Welfare	1-Nov-18 A	
x	3.4 Environmental Justice	2-Nov-18 A	
	3.5 Recreation	16-Oct-18 A	
	3.6 Commercial and Recreational Fisheries	9-Nov-18	
	3.7 Cultural Resources	9-Nov-18	*date moved from 11/2 to accommodate SRBA data received 11/1
	3.8 Historic	9-Nov-18	
	3.9 Subsistence	9-Nov-18	
x	3.10 Health and Safety	2-Nov-18 A	*date advanced from 11/6
x	3.11 Aesthetics	2-Nov-18 A	
x	3.12 Transportation and Navigation	1-Nov-18 A	
	3.13 Geology	9-Nov-18	
	3.14 Soils	9-Nov-18	
	3.15 Geohazards	9-Nov-18	
	3.16 Surface Water	9-Nov-18	
	3.17 Groundwater	9-Nov-18	
	3.18 Water and Sediment Quality	5-Nov-18 A	
x	3.19 Noise	9-Nov-18	

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	3.20 Air Quality	9-Nov-18	
	3.21 Food and Fiber Production	2-Oct-18 A	
	3.22 Wetlands	9-Nov-18	
x	3.23 Wildlife Values	9-Nov-18	
	3.24 Fish Values	9-Nov-18	
x	3.25 TES	2-Nov-18 A	*date advanced from 11/9
	3.26 Vegetation	9-Nov-18	

04 Environmental Consequences **9-Nov-18** Ch3-4+Tech Apps to be transmitted together as bundles

x	4.1 Intro to Environmental Consequences	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	4.2 Lands	9-Nov-18	
x	4.3 Needs & Welfare - Socioeconomics	1-Nov-18 A	
x	4.4 Environmental Justice	2-Nov-18 A	
	4.5 Recreation	16-Oct-18 A	
	4.6 Commercial and Recreational Fisheries	9-Nov-18	
	4.7 Cultural	9-Nov-18	*moved with 3.7, see note above
	4.8 Historic	9-Nov-18	
	4.9 Subsistence	9-Nov-18	
x	4.10 Health and Safety	2-Nov-18 A	*date advanced from 11/6
x	4.11 Aesthetics	2-Nov-18 A	
x	4.12 Transportation and Navigation	1-Nov-18 A	
	4.13 Geology	9-Nov-18	
	4.14 Soils	9-Nov-18	
	4.15 Geohazards	9-Nov-18	
	4.16 Surface Water	9-Nov-18	
	4.17 Groundwater	9-Nov-18	
	4.18 Water and Sediment Quality	9-Nov-18	
x	4.19 Noise	5-Nov-18 A	
	4.20 Air Quality	9-Nov-18	
	4.21 Food and Fiber Production	2-Oct-18 A	

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	4.22 Wetlands	9-Nov-18	
x	4.23 Wildlife Values	9-Nov-18	
	4.24 Fish Values	9-Nov-18	
x	4.25 TES	2-Nov-18 A	*date advanced from 11/9
	4.26 Vegetation	9-Nov-18	
	4.27 Spill Risk	14-Dec-18	

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EPA-0135-0002022

05 Mitigation and Monitoring		**9-Nov-18**	**received 11/06/2018**
06 Consultation and Coordination		**2-Oct-18 A**	
07 List of Preparers		**18-Oct-18 A**	
08 List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent		**18-Oct-18 A**	
09 References		**9-Nov-18**	
Appendices		**9-Nov-18**	
	Appendix A Public Involvement (Scoping Report)	N/A (PDF of Report)	
	Appendix B Alternatives Development	N/A (USACE review if needed)	*USACE/CA review of earlier drafts incorporated
	Appendix C Mailing List	N/A (USACE review if needed)	
	Appendix D Comments Received on the Draft EIS and Corps Responses (Comment Analysis Report)	N/A (Placeholder for DEIS)	
	Appendix E Permits, Approvals, and Consultations Required	31-Oct-18 A	
	Appendix F Draft Clean Water Action 404(b)(1) Analysis	TBD	
	Appendix G ESA Biological Assessment (FWS)	N/A (PDF of BA)	
	Appendix H ESA Biological Assessment (NMFS)	N/A (PDF of BA)	
	Appendix I EFH Assessment	N/A (PDF of EFHA)	

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	Appendix J PJD	N/A (PDF of PJD)	
	Appendix K Technical Appendices	See below	
	Chapter 3 Technical Appendices		Ch3-4+Tech Apps to be transmitted together as bundles
	K3.1 Intro to Affected Environment	16-Oct-18 A	Dates may vary slightly to optimize bundle transmission
	K3.6 Commercial and Recreational Fisheries	9-Nov-18	
	K3.8 Historic Properties	9-Nov-18	
	K3.9 Subsistence	9-Nov-18	
	K3.13 Geology	9-Nov-18	
	K3.14 Soils	9-Nov-18	
	K3.15 Geohazards	9-Nov-18	
	K3.16 Surface Water	9-Nov-18	
	K3.17 Groundwater	9-Nov-18	*This section may not have a technical appendix
	K3.18 Water and Sediment Quality	9-Nov-18	
	K3.22 Wetlands	9-Nov-18	
	K3.24 Fish	9-Nov-18	
	K3.26 Vegetation	9-Nov-18	
	Chapter 4 Technical Appendices		
	K4.10 Health and Safety	2-Nov-18 A	*date advanced from 11/6
	K4.11 Aesthetics	2-Nov-18 A	
	K4.13 Geology	9-Nov-18	
x	K4.14 Soils	9-Nov-18	
	K4.15 Geohazards	9-Nov-18	

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	K4.16 Surface Water	9-Nov-18	*This section may not have a technical appendix
	K4.17 Groundwater	9-Nov-18	*This section may not have a technical appendix
	K4.18 Water and Sediment Quality	9-Nov-18	
	K4.20 Air Quality	9-Nov-18	
	K4.22 Wetlands	9-Nov-18	
	K4.23 Wildlife	9-Nov-18	*This section may not have a technical appendix
	K4.24 Fish	9-Nov-18	
	K4.25 TES	2-Nov-18 A	*date advanced from 11/9
	Appendix L Programmatic Agreement	N/A (Placeholder for DEIS)	
	Appendix M Migitation, including Compensatory Mitigation Plan	9-Nov-18	
	Appendix N Project Description	N/A (PDF of PD)	

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EPA-0135-0002025

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 5/15/2018 12:13:49 AM
To: Bob Loeffler [bobl@jadenorth.com]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendergast [kpendergast@rmconsult.com]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Pres William Evanoff [nondaltontribe@yahoo.com]; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; mnewman@narf.org; Rob Rosenfeld [robrosey@gmail.com]
Subject: beginning of dissemination of info for 06/06/18 CA
Attachments: 05_11_2018_Pebble_Project_Updates_to_Proposed_Project.pdf; RFI_Tracking_Spreadsheet.xlsx; 03_20_2018_Pebble_Technical_Note_on_Project_Options_Screening_Criteria.pdf; 05_11_2018_Pebble_Project_Section_Leads.docx

All,
Attached are some of the documents for your agencies review. I will continue forwarding information including an agenda and location, draft scoping report, draft Chapter 2 and draft chapter and other materials, so your team has a chance to review and provide you with items to bring up at the managers meeting. Please also note the project website will have this info on it as soon as possible.

I will send all of the information received to date, not requesting comments, but rather for visibility for all. It will be in several emails.

VR,

Shane

Shane

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Pebble Project Environmental Impact Statement

SECTION LEADS

Name	Company	Role
Bill Craig	AECOM (Anchorage)	Project Manager Author, Chapter 2: Alternatives
Jennifer Frownfelter	AECOM (OR)	Principal-in-Charge
Elizabeth Bella	AECOM (Anchorage)	Deputy PM – Technical Author, Section 3.1: Introduction to Chapter 3, Affected Environment Author, Section 4.1: Introduction to Chapter 4, Environmental Consequences
Tara Bellion	AECOM (Fairbanks)	Deputy PM – Financial
Discipline Leads		
Jon Isaacs	AECOM (Anchorage)	Social Environment Discipline Lead
Jessica Evans	AECOM (Anchorage)	Social Environment Discipline Deputy Lead
Wes Cornelison	AECOM (Anchorage)	Biological Sciences Discipline Lead
Cara Wright	AECOM (Anchorage)	Physical Sciences Discipline Lead
Subject Matter Experts – Social		
Jessica Evans	AECOM (Anchorage)	Author, Sections 3.2 and 4.2: Land Ownership, Management, and Use
Jason Weiss	AECOM (DC)	Author, Sections 3.3 and 4.3: Needs and Welfare of the People (Socioeconomics)
Jenifer King	AECOM (WA)	Author, Sections 3.4 and 4.4: Environmental Justice
Anne Ferguson	AECOM (CO)	Author, Sections 3.5 and 4.5: Recreation
Jonathan King	Halcyon Consulting (Anchorage)	Author, Sections 3.6 and 4.6: Recreation & Commercial Fisheries
Burr Neely	AECOM (WA)	Author, Sections 3.7 and 4.7: Cultural Resources Author, Sections 3.8 and 4.8: Historical Resources
Kaley Volper	AECOM (Anchorage)	Author, Sections 3.9 and 4.9: Food and Fiber (Subsistence)
Heather Patterson	AECOM (OR)	Author, Sections 3.10 and 4.10: Health & Safety
Louise Kling	AECOM (OR)	Author, Sections 3.11 and 4.11: Aesthetics
Corrine Cogger	AECOM (Anchorage)	Author, Sections 3.12 and 4.12: Transportation & Navigation

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Name	Company	Role
Subject Matter Experts - Physical		
Allison Payne	AECOM (Anchorage)	Author, Sections 3.13 and 4.13: Geology Co-Author, Sections 3.16 and 4.16: Surface Water Hydrology
Paul Myerchin	AECOM (Anchorage)	Author, Sections 3.14 and 4.14: Soils
Nancy Darigo	AECOM (Anchorage)	Author, Sections 3.15 and 4:15: Geohazards
James Dietzmann	AECOM (WY)	Co-Author, Sections 3.16 and 4.16: Surface Water Hydrology
Jack Colonell	AECOM (Anchorage)	Co-Author, Sections 3.16 and 4.16: Surface Water Hydrology
Ryan Mills	AECOM (Vancouver, Canada)	Co-Author, Sections 3.17 and 4.17: Groundwater Hydrology
Richard Henry	AECOM (CO)	Co-Author, Sections 3.17 and 4.17: Groundwater Hydrology
Steve Rusak	AECOM (Anchorage)	Author, Sections 3.18 and 4.18: Water & Sediment Quality
Mark Storm	AECOM (CA)	Author, Sections 3.19 and 4.19: Noise
Caitlin Shaw	AECOM (CO	Author, Sections 3.20 and 4.20: Air Quality
Cara Wright	AECOM (Anchorage)	Author, Sections 3.21 and 4.21: Spill Risk
Subject Matter Experts - Biological		
Paul Hamidi	AECOM (WA)	Author, Sections 3.22 and 4.22: Wetlands/Special Aquatic Sites
Andrew Fisher	AECOM (Anchorage)	Author, Sections 3.23 and 4.23: Wildlife Values Co-Author, Sections 3.25 and 4.25: Threatened and Endangered Species
Mark Allen	Normandeau (WA)	Co-Author, Sections 3.24 and 4.24: Fish Values
Sagar Thakali	AECOM (PA)	Co-Author, Sections 3.24 and 4.24: Fish Values
Derrick Risso	Ecosystem Sciences (OR)	Co-Author, Sections 3.24 and 4.24: Fish Values
Sheyna Wisdom	Fairweather Science (Anchorage)	Co-Author, Sections 3.25 and 4.25: Threatened and Endangered Species
Sasha Forland	AECOM (Anchorage)	Co-Author, Sections 3.26 and 4.26, Vegetation
Maria Shepherd	AECOM (ID)	Co-Author, Sections 3.26 and 4.26, Vegetation

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RFI #	Topic	Date sent to PLP	Date sent to other	Date requested for response	Date of response	Response (Sent data/projected date of submittal)
1	Data Gap/Scoping/website materials	2/7/2018			3/2/2018-various; media came 3/23/2018	Various
2	Vegetation_Data_Crosswalk	4/27/2018		5/11/2018	5/11/2018	Response received; GIS spacial data provided no later than 05/18/2018
3	Subsistence_GIS_Data	5/14/2018	ADNR			
4	Surface_Hyd_Data	4/27/2018		5/11/2018	5/10/2018	Response received/ Supplimental baseline data report
5	Port_Stability	4/27/2018		5/11/2018	5/11/2018; final 05/14/2018	Response received; field work this summer-Bore Hole data; geophysiscal analysis/geotechnical;Stability analysis-TBD
6	Seepage_Analysis	4/27/2018		5/11/2018		Outstanding: 06/30/18
7	Air_Quality_Emission_Inventories	4/27/2018		5/11/2018		7/31/2018
8	Embankment_Stability	4/27/2018		5/11/2018		6/8/2018
9	AQ_Dispersion_Model	4/27/2018		5/11/2018		7/31/2018
10	Tailings_Characteristics	4/27/2018		5/11/2018	5/11/2018	Response Received; One Report SEBD Ch11; examples of successful TSF/thickened bu 05/30/2018
11	Pipeline_HDD_Erosion	4/27/2018		5/11/2018	5/10/2018	Response received

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12	Pebble_Air_Quality_AQRV_Vis_Deposition	4/27/2018		5/11/2018		7/31/2018
13	Iliamna_Lake_Landfall_Hazards	4/27/2018		5/11/2018	5/11/2018	Response Received; Ferry Wave model and Illiamna Lake Ice Tech Memo
14	Mine_Site_Geotech_Data	4/27/2018		5/11/2018	5/11/2018	Response received; GIS data and EBD Ch 6-App 6a; Revised footprint bu 5/30/2018; prelim results of drilling and test for embankments September 2018
15	TSF_Quarries	4/27/2018		5/11/2018	5/11/2018	Response received; additional info for Quarry A, B, C for tailing and pond embankment-Sept 18; Quantification of materials due no later than 5/25/15
15.5	Quantities of materials	5/25/2018				
16	Ecological_Zones	4/27/2018		5/11/2018	5/11/2018	Response received; no wetland SEBD; PhotoSignature Guide and GIS spacial data by 05/18/2018
17	SEBD_Trace_Elements_BB	4/27/2018		5/11/2018	5/10/2018	Response received
18	LGO_Liner	4/27/2018		5/11/2018	5/11/2018	Response Received
19	WMP_GW_Streamflow	4/27/2018		5/11/2018		6/30/2018
20	Water_Treatment	4/27/2018		5/11/2018	5/10/2018	Response received; two supporting documents
21	WQ_Predictions	4/27/2018		5/11/2018		
22	Water_Withdrawals	4/27/2018		5/11/2018	5/10/2018	Response received: GIS layer sent
23	Pit Wall Stability	4/27/2018		5/11/2018	5/11/2018	Response received; stability analysis expected to be completed July 31, 2018

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24	Reclamation	4/27/2018		5/11/2018	5/11/2018	Response received
25	Cultural_Resources	4/27/2018		5/11/2018	5/10/2018	Response received; need the data and additional surveys to be provided 31 July 2018
26	Lands	4/27/2018		5/11/2018	5/10/2018	Response received/ data received 02/28/2018
27	Socioeconomics	4/27/2018		5/11/2018	5/4/2018	Response received
28	TSF_IDF_Freeboard	4/27/2018		5/11/2018	5/10/2018	Response received; one supporting document (Hydrometerology report)
29	Ferry_Propeller_Specs	4/27/2018		5/11/2018	5/10/2018	Response received
30	Marine_Mammal_Acoustic	4/27/2018		5/11/2018		5/18/2018
31	HDD	5/1/2018		5/15/2018	5/3/2018	Response received
32	Project Options	5/10/2018		5/24/2018		
33	Shallower dredge at port	5/10/2018		5/24/2018		
34						
35	Material Sites Details and Blasting info	5/14/2018		5/29/2018		
36	Waterbody Substrate and turbidity	5/14/2018		5/29/2018		
37	Construction Schedule	5/14/2018		5/29/2018		
38	Equipment Noise	5/14/2018		5/29/2018		
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51

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:38:35 PM
To: Wesley Furlong [wfurlong@narf.org]; POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: RE: Figures Append K Section 4.11 7-10 (UNCLASSIFIED)
Attachments: 11_03_2018_Figure_K4_11_10_PileBayFerryTerminal_Viewshed.pdf

CLASSIFICATION: UNCLASSIFIED

Wesley,
Thanks for pointing the mistake out.

VR

Shane McCoy
Program Manager
(907) 753-2715

-----Original Message-----
From: Wesley Furlong [mailto:wfurlong@narf.org]
Sent: Saturday, November 03, 2018 2:17 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>; Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; Pres William Evanoff <nondaltontribe@yahoo.com>
Cc: Craig, Bill <bill.m.craig@aecom.com>
Subject: [Non-DoD Source] RE: Figures Append K Section 4.11 7-10 (UNCLASSIFIED)

Shane,

Appendix K 4.11 Figure 10 was not included in this email, only Figures 7-9. Your next email contained only Figures 11-13.

Wesley James Furlong
Staff Attorney
Native American Rights Fund

sent via mobile device

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Saturday, November 3, 2018 2:07 PM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US)

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<Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Figures Append K Section 4.11 7-10 (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED

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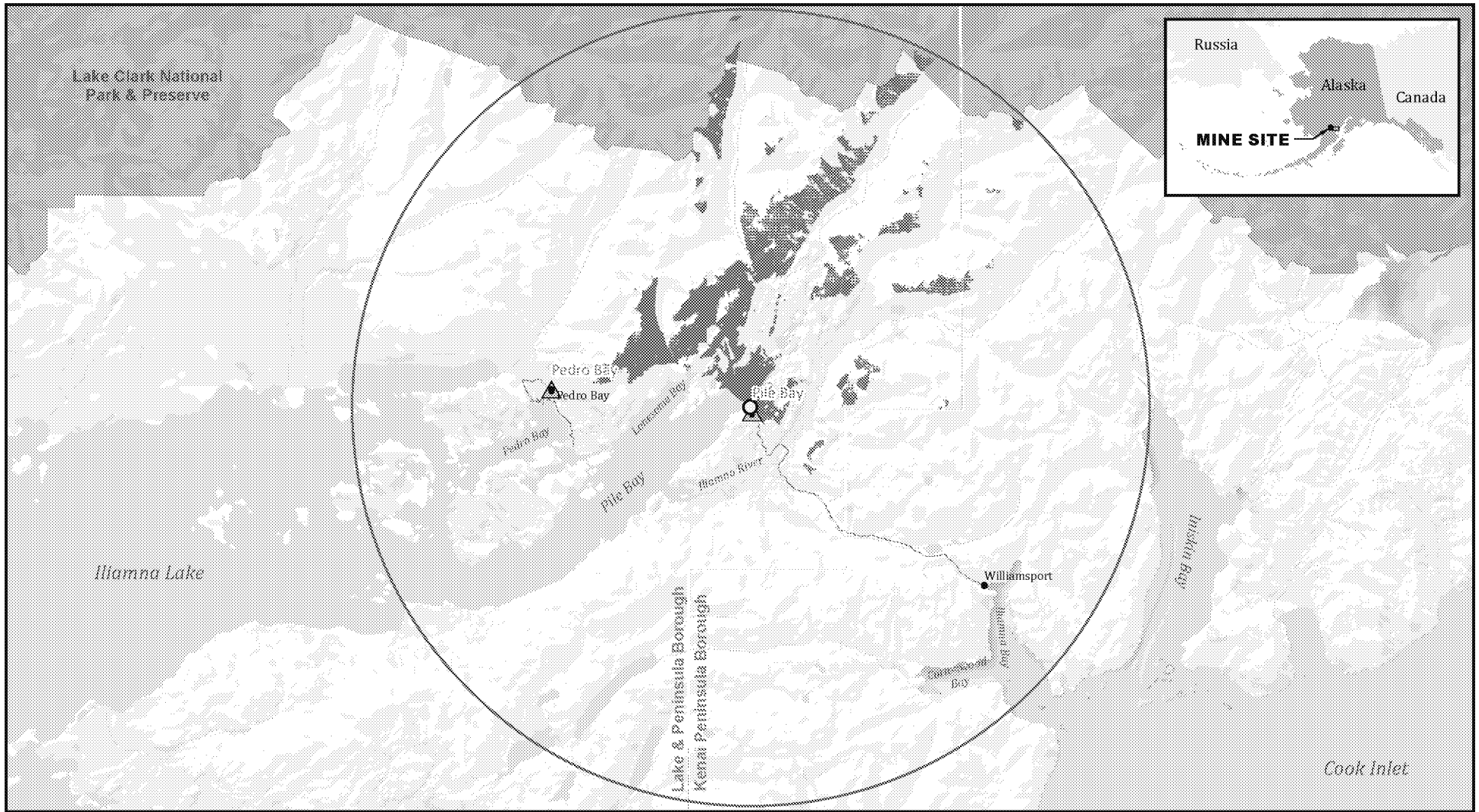

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Viewshed*
- Analysis Area (15 mi radius)

Alternative 2
- Pile Bay Ferry Terminal Maintenance Shop

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge

*Viewshed and visibility potential are based on base-earth digital elevation data and do not account for screening effects from vegetation. Actual visibility may be substantially less.

ALTERNATIVE 2 PILE BAY FERRY TERMINAL VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-10

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Message

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 10/24/2018 4:36:17 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA [linda.daugherty@dot.gov]; David Seris [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; Forland, Sasha [sasha.forland@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]; Urlich, Cecil [cecil.urlich@aecom.com]; Frownfelter, Jennifer [jennifer.frownfelter@aecom.com]
CC: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Subject: RE: Pebble Cooperating Agency Meeting
Attachments: 20181024 Cooperating Agency Meeting.pdf

Good morning - slides for today's cooperating agency meeting are attached.

-----Original Appointment-----
From: Craig, Bill
Sent: Wednesday, October 17, 2018 1:18 PM
To: Craig, Bill; Bob Loeffler; Brooke Merrell; Curyung Tribal; Daugherty, Linda (PHMSA; David Seris; Douglass Cooper; Hassell, David (PHMSA; J. Loichinger; Joan Kluwe; John Eddins; Kevin Pendegast; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US; McCall, John; Mcgrath.patricia@epa.gov; Molly Vaughan; Moselle, Kyle W (DNR; Nathan Hill; POA Special Projects; Pres William Evanoff; Wesley Furlong; Forland, Sasha; Isaacs, Jon; Urlich, Cecil; Frownfelter, Jennifer
Cc: McCoy, Shane M CIV USARMY CEPOA (US)
Subject: Pebble Cooperating Agency Meeting
When: Wednesday, October 24, 2018 12:30 PM-4:30 PM (UTC-09:00) Alaska.
Where: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Attached are slides for today's cooperating agency meeting.

<< File: 20181024 Cooperating Agency Meeting.pdf >>
Shane will be providing additional information on the meeting next week but asked that I send the teleconference and WebEx information. Additional materials/handouts will be distributed before the meeting for those calling in.

Draft Agenda:
1. Review of alternatives to be analyzed in detail
2. Format and level of detail for Chapter 2
3. Update on Appendix B (addressing USACE/CA comments, next version will be Draft EIS)
4. Review of select alternatives:
a. Filtered tailings (dry stack)
c. Other mine locations
d. Underground mining

-- Do not delete or change any of the following text. --

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 9/17/2018 9:31:46 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Bill Craig [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Correct version of the Alternatives memo
Attachments: 09_14_2018_AppendixB_Alts_Development_DRAFT.PDF

All,
Attached is the correct version. My apologies for sending previous email.

Attached is the more robust discussion on alternatives. We are not requesting comments, however if your agency has comments and can provide them NO LATER THAN Close of Business October 3, we will incorporate as much as possible. Comments received after October 3 will be considered after the release of the draft EIS.

Thanks

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 9/17/2018 9:11:49 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Bill Craig [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: 09_14_2018_Appendix_B_Alt_ Dev_Table_Draft.docx
Attachments: 09_14_2018_Appendix_B_Alt_ Dev_Table_Draft.docx

All,
Attached is the more robust discussion on alternatives. We are not requesting comments, however if your agency has comments and can provide them NO LATER THAN Close of Business October 3, we will incorporate as much as possible. Comments received after October 3 will be considered after the release of the draft EIS.

Thanks

Shane McCoy
Program Manager

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APPENDIX B – ALTERNATIVES DEVELOPMENT PROCESS

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1.0 PURPOSE OF APPENDIX

This appendix further explains the alternatives development process for the Pebble Project; summarizes each step of the process; and provides the option screening criteria and results for evaluation of a reasonable range of alternatives in the Environmental Impact Statement (EIS).

1.1 CONTEXT AND REQUIREMENTS

The federal regulations governing the National Environmental Policy Act (NEPA) state in 40 CFR 1502 that the alternatives section "is the heart of the environmental impact statement." The regulations require federal agencies to "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." The Council on Environmental Quality (CEQ) guidance clarifies that:

> *In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.* [1]

Alternatives screening is also pertinent to Clean Water Act (CWA) 40 CFR Part 230 Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (hereafter identified as 404(b)(1) guidelines), which require the analysis of practicable alternatives to the proposed discharge. The 404(b)(1) guidelines specify that:

> *Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 CFR 230.10(a)).*

The 404(b)(1) guidelines define a practicable alternative as one that is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.10(a)(2)).

For actions subject to NEPA, where the U.S. Army Corps of Engineers (USACE) is the permitting agency, the analysis of alternatives required for NEPA environmental documents will in most cases provide the information for the evaluation of alternatives under the 404(b)(1) guidelines. The alternatives development process for the Pebble Project considers a broad range of alternatives in sufficient detail to address both NEPA and CWA Section 404(b)(1) requirements.

1.2 OVERVIEW OF THE ALTERNATIVES DEVELOPMENT PROCESS

Scoping yielded a wide variety of comments that provide input to the alternatives development process. The EIS team used a structured alternatives development process to recognize the project's large geographic footprint, the various project components, and the substantive input in scoping by the public, stakeholders, and agencies.

To fully consider the wide range of issues identified in the scoping comments, this alternatives development process used the concept of "options," which consist of variations of components of the proposed project. For example, an option for transporting concentrate from the mine site could

[1] Council on Environmental Quality, Executive Office of the President, Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations. 46 Fed. Reg. 18026 (March 23, 1981) As Amended (1986).

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be a slurry pipeline instead of using trucks. Individual pipeline route variations would also be considered as options.

The four steps followed for alternatives development are summarized below.

Step 1: Developed the criteria for screening options to the proposed action. To narrow the range of options considered in detail in the EIS, criteria were organized around four screening tests. Each option must: 1) meet the purpose and need; 2) be reasonable; 3) be practicable in light of the overall project purpose; and 4) not increase adverse environmental impacts. The screening criteria are more fully described in Section 1.4, below.

Step 2: Identified options to address scoping concerns, compiled options that were suggested during the scoping process, and identified options that were previously evaluated by Pebble Limited Partnership (PLP) when developing the proposed project design. These options represented the initial range of alternatives and are identified in Table B-1, and organized by project component.

Step 3: Applied screening criteria from Step 1 to the options developed in Step 2. The criteria were used to determine reasonable options for detailed analysis in the EIS. Results of this screening are included in Table B-1, including rationale for the options dismissed from further analysis.

Step 4: Packaged options that met all of the screening criteria into viable action alternatives for detailed analysis in the EIS (i.e., an action alternative is a complete functioning project that includes power, a port, transportation, and mine site facilities).

1.3 SCREENING CRITERIA FOR THE FULL RANGE OF ALTERNATIVES

The EIS team screened options around four criteria, described below. The criteria screening steps were followed sequentially. If an option clearly did not meet one of the test-screening criteria, it was dismissed from further consideration, and did not proceed to the subsequent screening tests.

The objective of these criteria was to guide the screening process, but not to mechanically generate outcomes that substitute for professional judgment. By nature, these criteria were not fine filters. It was not the purpose of the option screening process to judge between trade-offs or make close calls, which would instead be addressed in the analyses within the EIS.

1.3.1 Screening – Purpose and Need

The project purpose and need is a key element of alternatives development. The purpose and need statements for the project are provided in Chapter 1 of the EIS.

The overall project purpose, determined solely by USACE, is used for evaluating practicable alternatives under the 404(b)(1) guidelines, and was therefore used as the first screening test. The overall project purpose must be specific enough to define the applicant's needs, but not so restrictive as to preclude discussion of a range of alternatives. USACE has determined that the overall project purpose is to develop and operate a copper-gold-molybdenum mine in Alaska to meet current and future demand for commodities, including copper, gold, and molybdenum.

Options that did not meet the USACE's determination of overall project purpose were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

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1.3.2 Screening – Reasonable Options

Screening criteria for reasonable options drew on the NEPA regulatory intent of reasonable alternatives, which includes those that are practical or feasible, using common sense. Options that would not pass this test of reason include:

- Those that are not practical because they would not allow the mine operator to generate profit.
- Those that could not feasibly attain most of the basic objectives of the project.
- Those suggested during scoping that are not specific or are substantially similar to other options being considered.
- Those suggested during scoping that were based on a misunderstanding of the proposed project, regulations, or conclusions of other reports or studies.

This screening test for reasonable options is limited to the general factors listed above. Screening for technical, economic, and logistic considerations is included in the subsequent screening test for practicable options.

Options that were assessed as not reasonable were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

1.3.3 Screening – Practicable Options

Only options that are determined to be practicable based on the 404(b)(1) guidelines can be considered by USACE during the permit decision process. Therefore, options that progressed through the screening criteria above were evaluated for practicability.

In terms of practicability, the 404(b)(1) guidelines provide a two-fold definition of a practicable alternative (40 CFR 230.10(a)(2)):

1. A practicable alternative is one that is available and capable of being done after taking into consideration cost, existing technology, and logistics.
2. The three practicability criteria (cost, existing technology, and logistics) apply in light of the overall project purpose.

Cost or economic practicability considers the relative cost effectiveness of technologically feasible and operationally efficient component options. If project costs of implementing an option exceed reasonable or practical limits, the option could be considered not practicable. In the screening stage, rough order-of-magnitude cost comparisons were made, because detailed engineering and costs could not reasonably be developed for each option. Where the order-of-magnitude cost review is not sufficient to decide whether an option is economically practicable, it will be advanced for additional review, and additional information will be gathered before reaching a screening conclusion.

The practicability considerations of existing technology and logistics are evaluated to minimize the risk of an option causing a component to be unable to perform its intended function efficiently. Options that make project components too complex or use unproven technology increase the risk of operational failure and accidents. Options identified for a specific project component may be subject to technical constraints that affect the workability of the option. For example, topography, resource needs, spatial relationships of one component to another, temporal sequences, operating considerations, or engineering data for a specific option may influence whether a particular option is capable of meeting the project objectives. The existing technology and logistics criteria consider the ability of each option in meeting these challenges.

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Options that were assessed as clearly not practicable in terms of cost, existing technology, and logistics in light of the overall project purpose were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

1.3.4 Screening – Environmental Impacts

The 404(b)(1) guidelines require an evaluation of both practicability and environmental effects to determine whether there are practicable alternatives to the proposed project that would have less adverse impacts on the aquatic ecosystem, so long as the alternative does not have other significant environmental consequences (40 CFR 230.10(a)). Therefore, options that progressed through the screening criteria above were evaluated and compared for their relative extent and nature of impacts on the physical, biological, and socioeconomic environments.

Based on this assessment, options that clearly have a high potential to increase the overall adverse environmental impacts were dismissed from further consideration as an action alternative option for evaluation in the EIS. Options that have potentially greater adverse impacts to one or more resources, but potentially fewer adverse impacts to other resources (i.e., trade-off of adverse impacts but may not be an overall increase), and options that clearly provide avoidance or minimization advantages (i.e., an environmental benefit) progressed as viable options to be evaluated as components of action alternatives in the EIS. Additionally, should two feasible options be generated to avoid or minimize an impact, but one of those options was determined to have potentially greater adverse impact on the environment—the option with greater impacts may be recommended for elimination from further study.

1.4 ALTERNATIVES DEVELOPMENT RESULTS

The USACE and cooperating agencies reviewed the outputs of each step in the alternative development process. The end result was to identify a reasonable range of action alternatives for full analysis in the EIS. PLP's proposed project is the proposed action for analysis in this EIS. Table B-1 provides details on the options considered, the screening results, and the status of each option (i.e., proposed action, alternative, or dismissed). The components and subcomponents of PLP's proposed action are included in Table B-1 for comparative purposes. Figure B-1 depicts the access and pipeline alignments considered. Figure B-2 illustrates the mine layout option considered.

The options that met screening criteria and marked as alternatives in Table B-1 were packaged into action alternatives (i.e., an alternative must be a functioning project and include power, a port, transportation, and mine facilities). As a result of this alternatives development process, two action alternatives were identified for detailed analysis in the EIS. The action alternatives vary from the proposed action in key engineering design, siting, and operational features. These alternatives address concerns raised in scoping and provide a reasonable range of alternatives for comparison. Action alternatives are described in Chapter 2 of the EIS.

NEPA regulations also require that a No Action alternative be analyzed. In this case, the No Action alternative would assume that the mine, transportation facilities, port, and pipeline would neither be permitted nor constructed as currently proposed.

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Location – Pebble Project / Deposit	LOC-001	***Origination*** – Pebble Limited Partnership (PLP) Proposed Action ***Description*** – The proposed project involves development of a copper-gold-molybdenum porphyry deposit (Pebble Deposit) located on state land in the Bristol Bay region of southwest Alaska.	☑ Proposed ☐ Alternative ☐ Dismissed
Location – Whistler Project	LOC-002	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. Based on the project Purpose and Need Statement "to develop and operate a copper-gold-molybdenum mine in Alaska in order to meet current and future demand for commodities, including copper, gold, and molybdenum", potential copper-gold-molybdenum porphyry and massive sulfide deposits in Alaska that are in exploration or advanced exploration were assessed. ***Description*** – The Whistler mineral property is a gold-copper porphyry deposit located in the Yentna mining district northwest of Anchorage. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Whistler was classified as an exploration-phase project by Giroux (2016). Exploration to date at the Whistler property has characterized 122 million tons (versus 6.5 billion tons of measured and indicated for Pebble) of resources (gold, copper, and silver) as indicated—no resources have been characterized as measured. Gold resources are estimated at 1.77 million oz, copper at 343 million lb, and silver at 6.13 million oz. To date, over 230,000 feet of core have been drilled, and exploration expenditures exceed $50 million. By comparison, exploration to date at Pebble has characterized 6.5 billion tons of measured and indicated resources; measured and indicated gold estimates are 70.6 million oz, copper at 56.9 billion lb, silver at 345 million oz, and molybdenum at 3.4 billion lb (note that there are no molybdenum resources identified in the Whistler deposits); and PLP expenditures to date on exploring	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		and developing the Pebble Project are over $850 million. Based on the exponential difference in resources and expenditures, it is concluded that this option is not reasonable because it is not economically feasible for PLP to acquire and develop the Whistler property. The Whistler property is not as advanced as the Pebble Project—no environmental, social, or community studies have been undertaken for the Whistler property; capital and operating costs have not been developed; and no economic analysis has been completed (Giroux 2016). Recommendations presented by Giroux (2016) are for additional drilling throughout the Whistler deposits. ***Why Dismissed*** – This option is not reasonable because it would not allow the mine operator to generate a profit.	
Location – Pyramid Project	LOC-003	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. See LOC-002 regarding Purpose and Need. ***Description*** – Pyramid is a copper-gold-molybdenum porphyry deposit located on the southwestern tip of the Alaska Peninsula southwest of Anchorage. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Pyramid was classified as an early-stage exploration project by SRK (2018). Exploration to date at the Pyramid property has characterized only inferred resources of 24.5 million tons of copper,74 million tons of molybdenum, and 488,000 ounces of gold. Through 2017, the amount of core drilling at Pyramid was 42,100 feet, compared with over 1 million feet of core drilling at Pebble. Therefore, it is concluded that this option is not reasonable because resources at Pyramid are inferred, but not measured/indicated; are	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		exponentially less than those measured/indicated at the Pebble Project; and that based on the amount of money expended to date by PLP (over $850 million) to explore and develop the Pebble Project, it is not economically feasible for PLP to acquire and develop this property. ***Why Dismissed*** – This option is not reasonable because it would not allow the mine operator to generate a profit.	
Location – Outside of Alaska	LOC-004	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. ***Description*** –This option involves acquisition, development, and operation of a copper-molybdenum massive sulfide deposit located outside of Alaska. ***Screening*** – 1. Purpose and Need Test: Does not meet the U.S. Army Corps of Engineer's (USACE's) overall project purpose to develop and operate a copper-gold-molybdenum mine in Alaska. ***Why Dismissed*** – This option does not meet the purpose and need of the project.	☐ Proposed ☐ Alternative ☑ Dismissed
Location – within Alaska	LOC-005	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. ***Description*** –This option involves development and operation of a multi-metals massive sulfide deposit located in of Alaska. ***Screening*** – 1. Purpose and Need Test: Meets the Purpose and Need 3. Reasonable Test: Five massive sulfide deposits in Alaska (Arctic, Delta, Niblack, Palmer, and Sun) were evaluated. Indicated resources ranged from 26	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		million tons (Arctic) to no indicated resources (Delta and Palmer). By contrast, for the Pebble deposit over 12 billion tons of measured (591 million tons), indicated (6.5 billion tons), and inferred (4.9 billion tons) resources are reported. Therefore, it is concluded that this option is not reasonable because resources at the five massive sulfide deposits are at best indicated at 26 million tons but mostly inferred, and are exponentially less than those measured/indicated at the Pebble Project. Based on the amount of money expended to date by PLP (over $850 million) to explore and develop the Pebble Project, it is not economically feasible for PLP to acquire and develop these properties. ***Why Dismissed*** – This option is not reasonable because it would not allow the mine operator to generate a profit.	
Layout – Mine Layout Option 3	LAY-001	***Origination*** – PLP's May 11, 2018 update changed the proposed mine layout to Mine Layout Option 3, which will be the basis for PLP's application moving forward. ***Description*** – This option is part of the Proposed Action, which is based on a mining plan that sends all ore directly to the mill. It has two separate Tailings Storage Facilities (TSFs); a lined pyritic TSF with space to store potentially acid-generating (PAG) waste in the North Fork Koktuli River (NFK) East site; and an unlined bulk tailing TSF in the NFK West site. A lined water management pond (WMP) would be situated in the NFK North site. The bulk TSF would have a dry closure. The pyritic tailings and PAG waste would be relocated to the pit lake at closure, and the pyritic TSF and WMP would be reclaimed. This option facilitates post-closure placement of PAG waste and pyritic tailings in the pit lake, and enables a higher efficiency for the storage of bulk tailings. This option removes the need to store low-grade ore and manage associated runoff, and provides greater water storage capacity for upset conditions. The WMP is downgradient of impacted areas, facilitating capture and storage of extreme runoff events. This option	☑ Proposed ☐ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		also allows for safe, passively managed long-term storage of the pyritic tails and PAG waste in the pit lake.	
Layout – Mine Layout Option 1	LAY-002	***Origination*** – This mine layout option was PLP's Proposed Action in the December 2017 Department of the Army (DA) permit application. PLP's May 11, 2018 update changed the proposed mine layout to Option 3 (LAY-001). ***Description*** – This option is based on a mining plan that requires stockpiling capacity for lower-grade ore (LGO) that is processed late in the mine life. A single TSF with separate cells for bulk and pyritic tailings would be constructed in the NFK West site, with an internal embankment between the cells. The pyritic TSF would be lined. The bulk TSF would not be lined. PAG waste and LGO would be stored in a lined facility in the NFK East site. WMPs would be constructed north of the NFK East site. The bulk TSF would have a dry closure. The pyritic TSF would have a wet closure. The LGO/PAG waste storage facility would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable mine layout option. 3. Practicable Test: This layout was originally part of PLP's proposed action, and is assumed practicable in terms of cost, existing technology, and logistics. 4. Environmental Impacts Test: The smaller WMP would reduce the total footprint and impacts to wetlands. However, this option requires maintenance of the pyritic TSF in a subaqueous state, and seepage collection into perpetuity. The exposed LGO and PAG waste rock would also be likely to become acidic when exposed to the atmosphere, resulting in acidic drainage and increased metals leaching. There is significant public concern that tailings could flow from a dam failure, and doubt that a TSF can be maintained in a subaqueous state into perpetuity.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Why Dismissed – This option would increase overall adverse impacts. Although there would be a reduction in some impacts from the smaller WMP, the need to maintain the pyritic TSF and capture and treat seepage water into perpetuity makes this option more environmentally damaging than the proposed LAY-003. Additional water quality impacts would result from storing the LGO and PAG waste rock in open stockpiles. Although mitigation in the form of collecting and treating the water could be effective, preventing the LGO and PAG waste rock from becoming acidic is preferable.	
Layout – Mine Layout Option 2	LAY-003	***Origination*** – This mine layout option was evaluated by PLP when developing the proposed project design. ***Description*** – This option is based on a mining plan that would send all ore directly to the mill. The TSF would be constructed in the NFK West site, and consist of a single cell with an internal area to store the pyritic tailings so that they remain subaqueous. A lined WMP with space to store PAG waste would be constructed in the NFK East site. The tailings would have wet closure, and the WMP would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable mine layout option. 3. Practicable Test: This option is practicable. It requires less fill material, because there is no internal embankment, and it requires that all tailings be maintained in a subaqueous state in perpetuity. There are no proven methods of segregating two tailings streams in one cell that would permanently keep the pyritic tailings separate from the bulk tailings during operations, as the TSF progressively increases in size, to prevent the co-mingling of the two supernatant waters, and prevent contact of the two entrained waters concurrently with maintaining the flow-through seepage concept of the bulk TSF.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		4. Environmental Impact Test: Seepage water quality for the main embankment would be impacted by the pyritic tails. Re-handling of the pyritic tails for storage in the pit lake would be precluded, and they would need to be maintained in a subaqueous state into perpetuity. The dam would need to be inspected and maintained into perpetuity to prevent dam failure and tailing flows. Removes need to store LGO and manage associated runoff. Provides greater water storage capacity for upset conditions. ***Why Dismissed*** – This option would increase overall adverse impacts from reduced seepage water quality and the requirement to maintain the TSF into perpetuity.	
Mine Size – EPA Restricted Mine Size	LAY-004	***Origination*** – An alternative suggested during scoping was to restrict the size of the mine to what the EPA found appropriate in the 2014 Watershed Assessment. ***Description*** – This option would restrict the size of the mine to what the EPA found appropriate in the 2014 Watershed Assessment. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable because EPA did not make a determination in the Watershed Assessment that any of the three mine scenarios they considered would be "appropriate." ***Why Dismissed*** – This is option is not reasonable. See LAY-005, which considers the smallest mine size scenario EPA considered. LAY-004 is dismissed because the suggestion is based on a misunderstanding of the EPA Watershed Assessment, and is likely the same—or very similar to—LAY-005.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Mine Size – Smaller Mine Pit Size	LAY-005	***Origination*** – Consideration of a smaller pit mine size was evaluated by USACE as a potential means to reduce project footprint, as well as surface, water, and other environmental impacts. ***Description*** –This option examines the Pebble 0.25 mine scenario, the smallest mine size considered by the EPA in the 2014 Watershed Assessment. Under this option, 0.23 billion metric tons of ore would be mined, with a throughput of 31,100 metric tons per day (tpd). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable because it would not allow a profitable project, considering the investment in infrastructure that would be required. See TPD-002 for evaluation of the 50,000 tpd option. An optimization study showed that option TPD-002 would not have a positive net present value, due to the fixed infrastructure component of the costs. ***Why Dismissed*** – This option is not reasonable because it would not allow the mine operator to generate a profit. See also TPD-002.	☐ Proposed ☐ Alternative ☑ Dismissed
Mine Size – Larger Mine to Develop More of the Known Deposit	LAY-006	***Origination*** – Evaluation of options to maximize the potential economic benefits of developing the deposit, such as a larger and longer-lived mine, was suggested during scoping. ***Description*** –This option would increase the mine site and duration of operations to develop more of the known and inferred resource of the overall deposit. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		2. Reasonable Test: The proposed project would only develop 10 percent of the measured, indicated, and inferred resource. It is reasonable to consider if additional resources can be developed without increased impact. 3. Practicable Test: Practicability is unknown at this time, but Northern Dynasty has communicated to shareholders that expanded development is possible (Northern Dynasty 2013). 4. Environmental Impacts Test: This option would increase environmental impacts by generating additional tails and other noneconomic material that would need to be stored on site. Additionally, the mine would operate longer, prolonging the duration of operations impacts. ***Why Dismissed*** – This option would increase overall adverse impacts. Although this option fails the test to be considered as an alternative in the Environmental Impact Statement (EIS), an expanded mine will be considered in cumulative effects in Chapter 4 of the EIS.	

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Mining Type – Surface Mining	MNG-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which includes developing the resource using open pit mining methods.	☑ Proposed ☐ Alternative ☐ Dismissed
Mining Type – Underground Mining	MNG-002	***Origination*** – Underground mining was evaluated by PLP when developing the proposed project design, and was suggested for consideration during scoping. ***Description*** – This option would develop the resource using underground mining methods. The proposed project would develop the portion of the deposit that is close to the surface. If the mine were expanded in the future (see LAY-006), underground methods such as block caving would likely be proposed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Evaluating underground mining methods is reasonable for an EIS. 3. Practicable Test: The portion of the Pebble Deposit proposed to be mined is at the surface, with minimal overburden or overlying waste rock. Underground mining of this portion of the deposit would be expected to result in a mine roof collapse, ground surface subsidence, and sinkhole formation. Existing underground mining techniques cannot be used to mine the proposed project because the remaining surface material would collapse. ***Why Dismissed*** – This option is not practicable using existing technology for the portion of the deposit that is proposed to be mined. Underground block caving is a method that would be considered in the future if mine expansion is proposed (PLP RFI 062 Response). An expanded mine scenario is considered in the EIS, Chapter 4, under cumulative impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Mining Type – Surface and Underground Mine	MNG-003	***Origination*** – A combination of surface and underground mining was evaluated by PLP when developing the proposed project design, and was suggested for consideration during scoping. ***Description*** – This option would develop the resource using both open pit and underground mining methods. The proposed project would develop the portion of the deposit that is close to the surface. If the mine were expanded in the future (see LAY-006), some combination of surface and underground methods would likely be proposed. See also MNG-002. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Evaluating a combination of surface and underground mining is reasonable for an EIS. 3. Practicable Test: The portion of the Pebble Deposit included in the proposed project is at the surface, with minimal overburden or overlying waste rock. Underground methods to include block caving of this portion of the deposit would be expected to result in a mine roof collapse, ground surface subsidence, and sinkhole formation. Existing underground mining techniques cannot be used to safely mine the proposed project because the remaining surface material would collapse. ***Why Dismissed*** – This option is not practicable using existing technology for the portion of the deposit that is proposed for mining. Underground block caving is a method that would be considered in the future if mine expansion is proposed (PLP RFI 062 Response). An expanded mine scenario is considered in the EIS, Chapter 4, under cumulative impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Material Handling – Truck and Shovel	MNG-004	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which involves use of large shovels to load ore into haul trucks. The trucks would transport the ore from the pit to the crusher.	☑ Proposed ☐ Alternative ☐ Dismissed
Material Handling – In-Pit Crushing and Conveying	MNG-005	***Origination*** – In-pit crushing and conveying was evaluated by PLP when developing the proposed project design. PLP completed an engineering evaluation of in-pit crushing and conveying in response to Request for Information (RFI) 032, which requested feasibility information for several project options. ***Description*** – This option would use in-pit crushing and conveying methods for material handling that would begin several years into the start of operations, and operate through the end of the mine life. This option would require the excavation of a dedicated crusher pocket and ramp to transport ore via a conveyor to the processing facility. The additional excavation associated with the crusher pocket and ramp would generate additional PAG waste, which would exceed the space available for PAG waste storage in the pyritic TSF, and require the development of a separate PAG waste storage facility. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable material handling option. 3. Practicable Test: In-pit crushing is a practicable material handling option, but it is more commonly implemented at some point later in mine life, as the open pit is developed, and the installed crushing and conveying system can remain stationary for an extended period. 4. Environmental Impacts: This option would provide only a limited net reduction in trucking, and therefore diesel consumption and emissions; but would increase the overall impacted footprint and wetland impacts because of the crusher	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		pocket and ramp infrastructure and the need to create a separate PAG waste storage facility. ***Why Dismissed*** – This option would increase overall adverse impacts, with only a limited net saving in terms of diesel fuel usage and net emissions.	
Truck Fuel – Diesel	MNG-006	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, in which large-haul trucks are equipped with diesel engines and would use most of the anticipated diesel supplies. This option requires the shipment of diesel to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Truck Fuel – Liquefied Natural Gas	MNG-007	***Origination*** – Liquefied natural gas (LNG) for truck fuel was evaluated by PLP when developing the proposed project design. Use of alternative truck fuel was also suggested during scoping. ***Description*** –Under this option, LNG would be produced using an on-site plant consisting of modules that could be trucked, and LNG storage tanks manufactured off site. An engineered footprint for the facility has not been developed, but it would have a footprint of approximately 1 acre, based on similar facilities reviewed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Using LNG haul trucks is reasonable, because equipment manufacturers such as Caterpillar have been actively working to develop commercially available LNG powered haul trucks. 3. Practicable Test: On-site production of LNG would be feasible because there would be a natural gas pipeline to the Mine Site and LNG plants of the size required are readily available and transportable. However, LNG powered haul trucks are not commercially available for the mining industry and are not proven	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		to be viable on a production basis. There are currently no trucks available in the required size range. ***Why Dismissed*** – This option is not practicable in terms of existing technology. LNG trucks can be considered later in the EIS process as a mitigation measure if this technology advances prior to completion of the EIS and Record of Decision.	

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Facility Location/ Process Type – On-site Concentrate Production	PRO-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action in which the initial processing of ore would be conducted on site to produce a concentrate that would be transported off site for smelting. PLP estimates the annual production to be approximately 660,000 tons of copper-gold concentrate and 16,500 tons of molybdenum concentrate.	☑ Proposed ☐ Alternative ☐ Dismissed
Facility Location– Off-site Ore Processing	PRO-002	***Origination*** – Off-site ore processing was evaluated by PLP as an option when developing the proposed project design. Evaluation of alternative locations for ore processing was also suggested during scoping. ***Description*** – Off-site ore processing would involve transporting all ore away from the project area for processing. This would involve transportation of 180,000 tons of ore from the mine site to the mill site daily. This would require approximately 100 times the proposed truck, ferry, lightering barge, and ship traffic. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider off-site transport if it would reduce the size and impact of mine site facilities such as the tailings storage facilities. 3. Practicable Test: Off-site processing presents a series of challenges in terms of cost and logistics which likely make this option not practicable. Associated issues are as follows: • Introduces inefficiencies as it requires the use of large amounts of energy and equipment to transport the non-mineralized portion of the ore. • Requires transportation of more than 100 tons of unprocessed rock every minute which would require almost continuous truck traffic, 24 hours per day every day of the year.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		• The increased amount of infrastructure required off site and for transportation purposes would broaden the project footprint. • Off-site processing would result in increased project costs. 4. Environmental Impact Test: There would be increased traffic and potentially additional infrastructure required to transport the rock resulting in elevated air emissions, diesel consumption, visual impacts, noise levels, dust, wildlife impacts, and wetland impacts. Increases risk of accidents and spills caused by adverse road conditions, inclement weather, landslides, debris blockages, etc., that would require emergency vehicles and could further impact the environment and temporarily block the transport corridor. ***Why Dismissed*** – This option would increase overall adverse impacts and would likely not be practicable in terms of costs and logistics.	
Facility Location /Process Type – On-site Ore Processing (Metal Production)	PRO-003	***Origination*** – On-site metal processing was evaluated by PLP as an option when developing the proposed project design. ***Description*** – On-site ore processing would construct a smelter and produce metals on site (copper, gold, and molybdenum) instead of a concentrate product. On-site smelting would require additional land for the facility and disposal of smelting waste. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider this option if it would reduce transportation impacts. 3. Practicable Test: On-site ore processing is likely feasible in terms of technology but smelting at a large existing established ore processing facility would be much less expensive.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		4. Environmental Impacts Test. On-site smelting would reduce trucking and ship traffic but increase mine site air emissions. Increased air emissions would result from increased natural gas usage (thermal heating of the ore and increased power generation) and heavy metals escaping the ore heating step. The additional smelting and waste disposal facilities would increase wetland impacts. ***Why Dismissed*** – This option would increase overall adverse impacts.	

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
180,000 tons per day	TPD-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which includes mine throughput of 180,000 tpd over a 20 year mine life. It is a revision of the previously proposed 160,000 ton per day throughput. A throughput of 180,000 tpd eliminates the need for a LGO/PAG storage facility that would require four additional years of processing at the end of operations. This option reduces the mine footprint from the originally proposed 160,000 tpd throughput.	☑ Proposed ☐ Alternative ☐ Dismissed
50,000 tons per day	TPD-002	***Origination*** – This option was evaluated by PLP as an option when developing the proposed project design. ***Description*** – Mine throughput of 50,000 tpd with a mine life of 71 years. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: An optimization study showed that this option does not provide a positive financial return. The small throughput of the 50,000 tons per day project does not have a positive net present value, due to the fixed component of the costs. It is not reasonable to consider an option that would not provide a positive financial return. ***Why Dismissed*** – This option is not reasonable because it would not allow the mine operator to generate a profit.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
160,000 tons per day	TPD-003	***Origination*** – This option was evaluated by PLP as an option when developing the proposed project design. ***Description*** – This throughput option of 160,000 tpd would require construction of a large lined pad for storing potentially acid generating LGO until this ore would be processed during the later years of mine operations. This option was replaced by the 180,000 tpd throughput as the Proposed Action production parameter. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider this option because it was proposed by PLP originally. 3. Practicable Test: This size plant is appropriately sized to efficiently process the targeted 1.5 billion ton ore resource using a standard processing plant design and equipment. An optimization study has demonstrated that this option produced a positive financial return. 4. Environmental Impacts Test: A lower throughput is based on previous project designs to store the LGO and PAG waste rock in a separate location for processing in the last four years of operation. This design would create additional mine facility footprint that would need to be restored at the time of closure. There would be no change in the footprint of other mine and transportation facilities compared to the 180,000 tons per day option. The LGO stockpile would generate poor quality run-off water and seepage (acid rock drainage and metals leaching) that would need to be collected, managed, and treated. ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed
320,000 tons per day	TPD-004	***Origination*** – This option was evaluated by PLP as an option when developing the proposed project design.	☐ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Description – Mine throughput of 320,000 tpd over an 11 year mine. It is assumed that this throughput option would result in the same mine pit and TSF footprint over a shorter period. Due to higher production levels, it would likely increase the size of the processing facilities, accelerate the tailings deposition rate and TSF embankments raise schedule, and increase the volume of concentrate transported over a shorter period of time. This in turn would increase the volume of truck and ferry traffic on the transportation system, and increase activities associated with the port facility, including the number of lightering and marine ore transport vessels. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider higher throughput rates. 3. Practicable Test: Construction and commissioning of a new plant this size would present significant execution, manpower, logistical, cost management, and other challenges that elevate project risk. It would require additional processing facilities. The significantly shorter mine life is not long enough to ensure that project operations can pass through several economic cycles and potential fluctuation in metals prices. However, it is likely practicable. 4. Environmental Impacts Test: This option would cut the life of mine operations nearly in half, reducing the time period of operational impacts. The footprint of mine pit and tailings storage facilities would remain the same, but would require addition footprint for processing facilities. This throughput level would nearly double the volume of ore processed over the Proposed Action, increasing the volume of ore concentrate truck traffic on the road and ferry system. It would also increase the frequency of activities associated with marine transport, including lightering operations and marine ore ship traffic.	☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Why Dismissed **–** While this option would reduce the period of operations, it would increase overall environmental impacts including the processing facility footprint, and truck, ferry and marine operations traffic levels over the Proposed Action.	

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Table B-1: Preliminary List of Project Options Being Considered

Gold Recovery			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Gravity	GR-001	***Origination*** – PLP Proposed Action ***Description*** – The proposed option is to use gravity separation methods to recover gold.	☑ Proposed ☐ Alternative ☐ Dismissed
Secondary Gold Recovery	GR-002	***Origination*** – The use of a cyanide leach circuit for ore recovery was examined by PLP and recommended for consideration in scoping comments as a means to increase the efficiency of ore recovery. ***Description*** –This option involves construction of a cyanide leach circuit at the mine site to process the pyritic tails. A cyanide leach circuit could recover additional gold from the process. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option. 3. Practicable Test: Cyanide leaching is a common practice and would likely be technologically and economically feasible. 4. Environmental Impacts Test: Cyanide is toxic to aquatic organisms, wildlife, and humans. PLP has proposed to forgo a cyanide leach circuit and the additional gold recovery it would provide because of public concern for the use and transportation of cyanide. The leach facility would have a large footprint that would impact wetlands. ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Power Source – Thermal (Burn Natural Gas)	POW-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which involves power generation using natural gas as a fuel source. PLP is proposing to build a power plant at the Mine Site with a capacity of 270 MW. The plant would be fueled with natural gas delivered from the Kenai Peninsula to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Power Source – Renewable Energy	POW-002	***Origination*** – Renewable energy power options were evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, PLP would construct and power the mine using renewable energy resources such as wind turbines and run of river hydropower. Also considered under this option is supplementing the natural gas power plant production with renewables. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Using renewable energy is a reasonable option to consider. 3. Practicable Test: The two separate renewable options listed below were considered under this option. These options would supply power intermittently and in small quantities relative to the need and would not eliminate the need for the proposed natural gas power plant and pipeline. These options would intermittently supply power that would decrease the demand on the proposed natural gas power plant, potentially resulting in decreased usage of natural gas. Both options would require additional access roads and ground disturbance to transmit power to the mine. • Wind – Wind energy generation is intermittent and must be paired with other energy sources or storage mechanisms to provide a stable consistent supply.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		There are no identified wind energy resources in the vicinity capable of providing a significant and consistent portion of the project energy. • Run of River (ROR) Hydropower – No suitable locations that could generate a significant amount of ROR hydropower could be identified. Additionally, in winter, rivers may freeze making this power source intermittent and additional energy sources would be needed. 4. Environmental Impacts Test: The construction of wind farms, ROR hydropower plants, and associated infrastructure would be additive to the proposed power plant and would increase the project footprint. The option likely would result in additional impacts to wetlands, wildlife, and aquatic resources but potentially decrease emissions from burning natural gas. ***Why Dismissed*** – While this option would potentially decrease the consumption of natural gas and associated emissions, it would not replace the need for the natural gas power plant and pipeline. The additional costs of building renewable energy systems for what would be supplemental power make the option not practicable. Also, the potential reduction in emissions does not appear to offset the likely additional impacts to wetlands, wildlife, and aquatic resources.	
Power Source – Purchase Power from Existing Grid	POW-003	***Origination*** – Purchasing power from the existing grid was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, power would be purchased from existing third party providers and transmitted to site via a High Voltage Direct Current (DC) transmission. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Purchasing power is a reasonable option to consider.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		3. Practicable Test: There is no significant power generating capacity in the Cook Inlet area in general, and on the Kenai Peninsula in particular, to service the anticipated project demand. Construction of additional generation capacity would be required regardless of where it is situated. This option is not practicable. ***Why Dismissed*** – The option is not practicable; there is no excess capacity in the existing grid.	
Power Source – Use Alternative Fuel Sources/Delivery Methods	POW-004	***Origination*** – Evaluation of alternative fuel sources and delivery methods was suggested during scoping due to concern with gas line leaks or ruptures and potential long term consequences that a subsea pipeline can have on the environment. ***Description*** – The most likely alternative energy sources would be diesel fuel and LNG, both of which could be delivered to the proposed Amakdedori Port via barge. Transportation from the port to the Mine Site could be by truck or pipeline. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Considering alternative energy sources is reasonable. 3. Practicable Test: Both diesel and LNG options are technologically feasible. The Donlin Gold Final EIS looked at a diesel power plant alternative and estimated that a similar sized power plant (227 MW) would require approximately 80 million gallons of diesel per year. Use of diesel would require increased storage at the port and a pipeline or 4,200 truck trips per year, each truck hauling three tank trailers. Diesel is readily available in Cook Inlet. Use of LNG would require a supply of LNG, a purpose built LNG barge, an LNG receiving terminal and storage tanks at Amakdedori. It would also require regasification at Amakdedori for transportation to the mine site by pipeline or	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		trucking LNG to a mine site storage tank where it would be regasified and fed to the power plant. The former ConocoPhillips LNG export facility in Nikiski has been sold and the export permit was allowed to expire and LNG is not currently barged in Alaska. 4. Environmental Impacts Test: Transporting an additional 80 million gallons of diesel increases the potential for spills. Emissions from the proposed power plant would be increased if diesel was used instead of natural gas. See also Section 4.21 which explains there would be few expected effects from natural gas pipeline leaks to soil or water bodies because the gas would dissipate rapidly. Use of LNG would avoid the need for the natural gas pipeline segment under Cook Inlet between the Kenai Peninsula and Amakdedori. ***Why Dismissed*** – Diesel would increase environmental impacts from spills and increased emissions. LNG is not practicable; it is not currently barged in Alaska, would require costly infrastructure, and provides no obvious benefit over the proposed natural gas pipeline other than avoiding the segment between the Kenai Peninsula and Amakdedori. The EIS will assess the risk to the pipeline from seismic events.	
Power Plant Location – On-site	POW-005	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which includes construction of a new 270 MW power plant at the Mine Site to power the mine. This option would not require the construction of high voltage transmission lines to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Power Plant Location – Off-site with High Voltage Transmission Lines	POW-006	***Origination*** – Off-site location of the power plant was evaluated by PLP when developing the proposed project design. ***Description*** –This option would require a new power plant to be built at an alternative location such as the Kenai Peninsula or Amakdedori. High voltage transmission lines would be constructed and used to transmit the power to the Mine Site.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider off-site generation combined with high-voltage and transmission lines. 3. Practicable Test: Off-site power production is technologically feasible. If power generation was located on the Kenai Peninsula, it would require high-voltage transmission lines via underwater cables crossing both Cook Inlet and Iliamna Lake, and overhead lines on the Kenai Peninsula, from Amakdedori to a south ferry terminal, and the North Shore Ferry Terminal to the Mine Site. Underwater cables would be more costly to install and maintain than a natural gas pipeline. Overhead lines would be subject to wind and ice buildup, resulting in potential reliability risks. Undergrounding the overland portions of the transmission lines would be cost prohibitive, as undergrounding generally costs an order of magnitude greater than overhead lines, and would be more costly than the gas line. In addition, transmission losses occur over long distances, making this less efficient than a gas line to provide on-site generation. If power generation was located proximate to Amakdedori, similar issues would remain, though lessened given the reduced distance. However, the gas line under Cook Inlet would still be required. In addition, off-site generation would not offer sufficient redundancy in the event of a disruption to the transmission line and associated power supply. This option is likely not practicable due to cost. 4. Environmental Impacts Test: Construction and operation of high voltage transmission lines would result in greater visual impacts than a gas line. ***Why Dismissed*** **–** Off-site power production while practicable considering technology, would be much more costly and does not provide the stability and reliability benefits that	

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		would come from on-site power production. In addition, overhead transmission lines, and possibly the power plant (depending on location) would result in increased visual impacts.	
Gas Source – Pipeline to a Source on the Kenai Peninsula	POW-007	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action. Under this option, the proposed pipeline (about 177 miles in length) would tie in to the existing natural gas distribution system on the Kenai Peninsula and be routed to Amakdedori and then follow the transportation corridor to the Mine Site. The pipeline would be on the bottom of Cook Inlet and Iliamna Lake. The pipeline would be twelve inches in diameter.	☑ Proposed ☐ Alternative ☐ Dismissed
Gas Source – Pipeline to a Source on the West side of Cook Inlet	POW-008	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – This option would follow an alternative route to the north to access existing natural gas supplies such as Beluga on the west side of Cook Inlet. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider a route that avoids crossing deep water in Cook Inlet. 3. Practicable Test: There is no accessible gas infrastructure, pipeline capacity, and available tie-in locations on the south-western side of the Cook Inlet. A potential tie-in location on the west side would be at Beluga, approximately 170 miles to the north (requiring an approximately 250+ mile pipeline to accommodate terrain). 4. Environmental Impacts Test: Accessing existing gas supplies for this option would require crossing Lake Clark National Park or if a subsea route would increase the length of the pipeline route in critical habitat for the endangered	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Cook Inlet beluga whale and the threatened northern sea otter (compared to the proposed route). ***Why Dismissed*** – This option would increase overall adverse impacts.	
Gas Source – Connect to Donlin Gold Gas Pipeline	POW-009	***Origination*** – Evaluation of an alternative pipeline route to connect with the natural gas pipeline for the proposed Donlin Gold Mine was suggested during scoping. ***Description*** –Under this option, the pipeline would follow an alternative route to the north allowing it to connect to the proposed Donlin Gold natural gas supply pipeline. A tie-in route to the nearest point along the proposed Donlin Pipeline would be longer than 155 miles and would cross at least 8 to 10 substantial rivers. Routing could avoid major mountain ranges. The proposed Donlin Gold Mine natural gas pipeline has not yet been constructed; timing for development and operation is not known. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider connection to the proposed pipeline given that Donlin Gold recently received federal permits for construction of the pipeline. 3. Practicable Test: The Donlin Gold Pipeline is planned to be 14-inch diameter, serving a 230MW power plant, based on an operating flow rate of 47 million standard cubic feet per day (mmscfd), with a design capacity of up to 73.1 mmscfd. The Pebble Project proposes a 270MW power plant, which could more than double the necessary capacity of the pipeline, which would not be practicable given its design. ***Why Dismissed*** – The Donlin Gold Pipeline, as planned, is unlikely to provide sufficient natural gas capacity to support the Pebble Project. In addition, the Donlin Pipeline is not	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		yet constructed and timing for its development is not certain, making this option not practicable.	
Gas Source – Northern Gas Pipeline Route to Kenai Peninsula (Ursus Cove)	POW-010	***Origination*** – Evaluation of a pipeline alignment north of Augustine Island was suggested during scoping due to concern that placing the pipeline near Augustine Island/Volcano would make it vulnerable to seismic and volcanic hazards. ***Description*** –Increasing the distance from Augustine Island by routing to the north is impracticable for the Amakdedori Port but routing the pipeline to Diamond Point to the north would achieve the purpose of the suggested option. Access option ACC-014 considers a port at Diamond Point in Iliamna Bay and routing the pipeline to this port would achieve the goal of increasing separation from Augustine Island. The pipeline under this option would be routed into Ursus Cove, run overland to Cottonwood Bay, and then continue to Diamond Port. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option for the North Access Route (ACC-002). 3. Practicable Test: Practicability – The route to Ursus Cove is relatively free of seabed obstructions and rock-like features all the way into the cove, compared to a route through Iliamna Bay to a proposed Diamond Point port. Rocks, boulders, and boulder type features in Ursus Cove only appear much closer to the shore which makes routing and installation safer and easier and also allows for moored installation. A route to Amakdedori north of Augustine Island would place the pipeline approximately the same distance or closer than the proposed route and therefore is not a practicable route to achieve the goal of this option. Access Options ACC-014 and ACC-015 evaluate port sites in Iliamna Bay, more than 20	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		miles north of Augustine Island. It is feasible to route the natural gas pipeline to that location. 4. Environmental Impacts Test: A route to Ursus Cove and then to Diamond Point would have additional impacts from the overland portion but would have a shorter segment in Cook Inlet. The option represents tradeoffs and is carried forward for detailed analysis.	
Gas Source – Northern Gas Pipeline Route to Kenai Peninsula (Direct Route to Iliamna Bay)	POW-011	***Origination*** – This option was evaluated by PLP as a conceptual route directly into Iliamna Bay and Diamond Point. ***Description*** – Under this option, the pipeline route would follow a more direct route to Iliamna Bay and Diamond Point than POW-010. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider a more direct, shorter pipeline. 3. Practicable Test: A 12-inch diameter subsea pipeline has a specific minimum curvature radius and therefore a limited ability to navigate areas of the seafloor with dense obstructions. A direct pipeline route into Iliamna Bay is not practicable because of boulders and rocky seabed near to and into the Bay that could not be avoided with this option. RFI 063 summarizes PLP's reconnaissance data for a direct route which indicated the presence of, and progressive increase in, rocks, boulders, and rock like features on the seabed. The concentration of rocks and boulders reaches its maximum density at the mouth of Iliamna Bay and continues into the bay. The rock-prone area starts approximately 13 miles from the landing point and is consistent to the landing point. It is interpreted that the rocks and boulders are likely from a combination of glacial outwash and ice-rafted deposits.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Why Dismissed – This option is not practicable due to boulders and other seabed issues.	
Gas Source – Other	POW-012	***Origination*** – Evaluation of practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the Alaska Department of Transportation and Public Facilities, was suggested during scoping. ***Description –*** The commenter requested evaluation of alternative pipeline routes but did not suggest specific locations. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: PLP's Proposed Action in the December 2017 DA permit application included a gas pipeline alignment that would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 mines to a compressor station near Anchor Point. PLP's May 11, 2018 update changed the pipeline origin point to a compressor station north of Anchor Point, removing the requirement for the first 9 miles of pipeline construction along the Sterling Highway. Therefore, this option is no longer reasonable as it pertains to an old project design. ***Why Dismissed*** – This option is not reasonable because it is based on an old design.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Access Road – South Access Route (Road and Ferry)	ACC-001	***Origination*** – PLP Proposed Action ***Description*** – This road and ferry route option is part of the Proposed Action which includes the construction of two double-lane roads as the main access route to the mine for the transportation of materials, equipment, and concentrate. Road route: The mine access road would go from the Mine Site to the North Shore Ferry Terminal Site (ACC-006) on the north shore of Iliamna Lake. As a variant of the proposed action, an alternative ferry terminal site location would be considered just to the east of the proposed ferry terminal site in the bay, the North Shore East Ferry Terminal Site (ACC-006a). On the south shore of Iliamna Lake, the port access road would go from the Kokhanok West Ferry Terminal Site (ACC-010) to the Amakdedori Port Site (ACC-013). As a variant of the Proposed Action, the port access road would go from the Kokhanok East Ferry Terminal Site (ACC-011) to the Amakdedori Port Site (ACC-013). This option would also include an Iliamna spur road (which would include a crossing of the Newhalen River) and a Kokhanok spur road (which would include a crossing of the Gibraltar River if the Kokhanok West Ferry Terminal Site is included). Ferry route: The route would include a ferry crossing of Iliamna Lake from north to south. Natural Gas Pipeline route: The natural gas pipeline would follow the mine and port access roads and ferry route. This option would require the following: Total miles of road: 77 (Kokhanok West Ferry Terminal); 72 (Kokhanok East Ferry Terminal) Miles of road from Mine Site to the North Shore Ferry Terminal Site: 29	☑ Proposed ☐ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Total number of stream crossings: 39 (Kokhanok West Ferry Terminal site to Amakdedori Port site); 30 (with variant Kokhanok East Ferry Terminal site to Amakdedori Port site) Total number of major river crossings: 2 (Kokhanok West Ferry Terminal site to Amakdedori Port site); 1 (with variant Kokhanok East Ferry Terminal site to Amakdedori Port site)	
Access Road – North Access Route (Road Only)	ACC-002	***Origination*** – Evaluation of an access road option north of Iliamna Lake to eliminate the need for a lake crossing was suggested during scoping. ***Description*** – This road-only route option was evaluated by PLP when developing the proposed design as an option that would not require a ferry to cross Iliamna Lake. Road route: The mine/port access road would stay north of Iliamna Lake, connect with the existing Pile-Bay Williamsport Road in the vicinity of Pile Bay, and then continue to the Diamond Point/Iliamna Bay Port Site (ACC-014) on Cook Inlet. The road would bypass all but 5 miles of the existing Pile Bay-Williamsport road. The road would traverse approximately 1.7 miles of tidal flats between Williamsport and Diamond point. This option would eliminate the need for a spur road to Iliamna as the route would cross an existing road that connects Iliamna with Nondalton, providing access to infrastructure at Iliamna. Ferry route: The route would not include use of a ferry. Natural Gas Pipeline route: The western portion of the natural gas pipeline would follow the road route. The eastern portion of the pipeline would follow a route overland between Cottonwood Bay and Ursus Cove. Concentrate Pipeline: A concentrate transport pipeline may be included with this option. This option would require the following:	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Total miles of road: 82 Number of stream crossings: 71 Number of major river crossings: 4 ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a route that PLP has evaluated and studied extensively and is a reasonable route. 3. Practicable Test: A road only route provides the advantages of reliable year-round access and minimizes the need to re-handle cargo/concentrates. The option may also allow the inclusion of a concentrate pipeline for the project. There is no need to build the associated infrastructure for a ferry. This option would provide access to Cook Inlet which is generally accessible year round. This option would require a large number of stream crossings. This option also crosses many wetlands. The route is also more mountainous than other access routes, traversing side slopes and crossing perpendicular to drainages, including crossings of larger streams and minor rivers. Five miles of the existing Pile Bay-Williamsport Road require improvements to accommodate large trucks. The Diamond Point/Iliamna Bay Port Site (ACC-014) and access road would be subject to tidal flat filling. The port would require some dredging to 20 feet of Mean Lower Low Water (MLLW) (RFI 063) and may require blasting for access roads. This location could not accommodate deep draft vessels and would require lightering barges to transfer ore concentrate to deep draft bulk ships anchored at mooring locations.	

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		4. Environmental Impacts Test: This route would cross fewer wetland acres than a southern route (ACC-001) but more than a road and ferry northern route (ACC-003), resulting in a difference in acres of fill. The Iliamna Spur Road would be eliminated, reducing impacts along these road miles. The road portion from Pile Bay to Williamsport would require more maintenance compared to a southern route (ACC-001) given the steep terrain. This route would require more stream crossings than a southern route (ACC-001) or a road and ferry northern route (ACC-003). There would be less subsistence concerns and no lake navigation or transportation concerns compared to a road and ferry route (ACC-001 or ACC-003). The route would place mine traffic near Pedro Bay. The option represents tradeoffs and is carried forward for detailed analysis. If a concentrate pipeline was also included, the footprint would be slightly larger but there would be a decrease in truck traffic.	
Access Road – North Access (Road and Ferry)	ACC-003	***Origination*** – This road and ferry route option is a route evaluated by PLP while looking at routes that remain entirely north of Iliamna Lake. Use of the existing road and resources at Pile Bay and Williamsport was suggested during scoping. ***Description*** – Road route: The mine access road would stay north of Iliamna Lake from the Mine Site to the Eagle Bay Ferry Terminal Site (ACC-008) on the northern shore of Iliamna Lake. On the eastern shore of Iliamna Lake, the port access road would go from the Pile Bay Ferry Terminal Site (ACC-009) to the Diamond Point/Iliamna Bay Port site, using parts of the existing Pile-Bay Williamsport Road, continuing to the Diamond Point/Iliamna Bay Port Site (ACC-014) on Cook Inlet. This road would bypass all but 5 miles of the existing Pile Bay-Williamsport road. The road would traverse approximately 1.7 miles of tidal flats between Williamsport and Diamond Point.	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		This option would eliminate the need for a spur road to Iliamna as the route would cross an existing road that connects Iliamna with Nondalton, providing access to infrastructure at Iliamna. Ferry route: The route would include a ferry crossing of Iliamna Lake from west to east. Natural Gas Pipeline route: The natural gas pipeline would follow the road alignment for ACC-002 because Iliamna Lake is too deep on the east of the lake for laying the pipeline on the bottom (the steep underwater cliffs would stress the pipeline bends). The eastern portion of the pipeline would follow a route overland between Cottonwood Bay and Ursus Cove. This route was proposed as an option by PLP. This option would require the following: Total miles of road: 50 Number of stream crossings: 34 Number of major river crossings: 1 ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a route that PLP has evaluated and is a reasonable route. 3. Practicable Test: Thicker lake ice on the eastern side of the lake would make ferry operation more challenging; however, feasibility has been demonstrated by the long-term operation of an ice breaking ferry on Williston Lake in British Columbia. Water depth and lake bed topography may preclude the use of s sub-lake gas pipeline along this alignment.	

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Creation of open leads in the lake ice would prevent cross ice traffic intersecting the ferry route and requiring the delineation of alternate traffic routes. Five miles of the existing Pile Bay-Williamsport Road require improvements to accommodate large trucks. The Diamond Point/Iliamna Bay Port Site (ACC-014) and access road would be subject to tidal flat filling. The port would require some dredging to 20 feet of MLLW (per RFI 063) and may require blasting for access roads. This location could not accommodate deep draft vessels and would require lightering barges to transfer ore concentrate to deep draft bulk ships anchored at mooring locations. 4. Environmental Impacts Test: This route would cross fewer wetland acres than a southern route (ACC-001) or an all-road northern route (ACC-002), resulting in fewer acres of fill. The Iliamna Spur Road would be eliminated, reducing impacts along these road miles. The road portion from Pile Bay to Williamsport would require more maintenance compared to a southern route (ACC-001) given the steep terrain. The addition of a ferry route would require construction of two ferry terminals, resulting in placement of fill, and would result in greater transportation and potential navigation concerns along the ferry route in the eastern portion of the lake. There would be subsistence concerns with the ferry route being within areas important for subsistence seal harvesting. The option represents tradeoffs and is carried forward for detailed analysis. The route would place mine traffic near local communities including Iliamna, Nondalton, Pedro Bay, and Pile Bay. Additional transfer of materials with barges increases the risk of spills or loss of fugitive material during transfer operations.	

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Access Road – West Access Route	ACC-004	***Origination*** – This road option is a road-only access route evaluated by PLP when developing the proposed design as an option that would not require a ferry to cross Iliamna Lake. ***Description*** – Road route: The road would go from the Mine Site around the west end of Iliamna Lake and continue to the Amakdedori Port site on Cook Inlet. This option would also include an Iliamna spur road. Ferry route: This option would not require a ferry. Natural Gas Pipeline route: The natural gas pipeline would likely follow the road. Concentrate Pipeline: A concentrate transport pipeline may be included with this option. This option would require the following: Total miles of road: 160 Total number of stream crossings: 129 Total number of major river crossings: 4 ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider routing the road around the west end of Iliamna Bay. 3. Practicable Test: A road-only route provides the advantages of reliable year-round access and minimizes the need to re-handle cargo/concentrates. The option would also allow the inclusion of a concentrate pipeline for the project.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		There is no need to build the associated infrastructure for a ferry. This option would provide access to Cook Inlet which is generally accessible year round. This option has a longer road footprint, with more wetlands and streams crossed. 4. Environmental Impacts Test: This access route has the highest occurrence of wetlands, with the highest environmental impact to wetlands. If a concentrate pipeline were also included, the footprint would be slightly larger. ***Why Dismissed*** – This option would increase overall adverse impacts.	
Access Road – Bristol Bay Access Route (Road Only)	ACC-005	***Origination*** – Evaluation of alternative port sites was suggested during scoping due to concerns with the potential ecological impact of the project. ***Description*** – This road option is a road-only access route that was evaluated by PLP when developing the proposed design as an option that utilized other port sites than Cook Inlet. Road route: The road would go from the Mine Site to a port site on Bristol Bay. Ferry route: This option would not require a ferry. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative port locations. 3. Practicable Test: This would be the longest road route option. Construction of associated port would have the potential for logistical conflicts with fishing operations in Bristol Bay. Additionally, Bristol Bay is ice bound for a large portion of the year. As Bristol Bay is shallow, a long trestle or causeway into the bay would be required, or alternatively lightering to a moored bulk vessel.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		4. Environmental Impacts Test: This option would have increased impacts associated with the construction of a port road and the longest road route. Resulting impacts include increased emissions and visual impacts. The route would traverse mainly lowlands, which would have more impact to wetlands. There would be impacts to local residents in communities near the road. ***Why Dismissed*** – This option would increase overall adverse impacts.	
Ferry Terminal Location – North Shore Ferry Terminal	ACC-006	***Origination*** – PLP Proposed Action ***Description*** – This ferry terminal site option is part of the Proposed Action which includes the construction of a ferry terminal on the north shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake. The ferry route would be north-south. This location is associated with the South Access Route (Road and Ferry), ACC-001. As a variant to this option, an additional site slightly to the east within the same bay as the North Shore Ferry Terminal is included, the North Shore East Ferry Terminal Site variant. This option would include the following: Number of ferry miles to Kokhanok West Ferry Terminal Site (ACC-010): 19 Number of ferry miles to Kokhanok East Ferry Terminal Site (ACC-011): 25	☑ Proposed ☐ Alternative ☐ Dismissed
Ferry Terminal Location – North Shore East Ferry Terminal	ACC-006a	***Origination*** – Evaluation of this ferry terminal location was suggested during scoping. ***Description*** – This ferry terminal site option is a variant of the Proposed Action which includes the construction of a ferry terminal on the north shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake. The ferry route would be north-south. This location is associated with the South Access Route (Road and Ferry), ACC-001. The site is slightly east of the North Shore Ferry Terminal Site (ACC-006) within the same bay.	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Screening – This option is currently being evaluated.	
Ferry Terminal Location – Iliamna and Kokhanok Ferry Terminals	ACC-007	***Origination*** – Evaluation of ferry terminals closer to existing infrastructure was suggested during scoping to reduce impacts to Gibraltar River and Upper Talarik Creek. ***Description*** – Under this option, the north shore ferry terminal would be located in or near the communities of Newhalen and Iliamna but away from the Newhalen River. The Iliamna spur road would therefore be the main mine access road route to connect the Mine Site to this ferry terminal. This option location could be included with South Access Route (Road and Ferry), ACC-001. The south shore ferry terminal would be located north of the Kokhanok airport. The road from this ferry terminal to Amakdedori Port would follow a route similar to that described under ACC-001 for the Kokhanok East Terminal Site variant to avoid crossing the Gibraltar River. The ferry route would be north-south and approximately 21 miles. This option location could be included with South Access Route (Road and Ferry), ACC-001. ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider options that have potential to avoid and minimize impacts. 3. Practicable Test: Ice conditions and water depth at Iliamna are not suitable for a ferry terminal. Existing community use of the area may not be compatible with ferry route and a terminal. 4. Environmental Impacts Test: There would be additional impacts to the communities of Iliamna, Newhalen, and Kokhanok caused by changes in vessel traffic impacting current vessel and floatplane use, and heavy mine trucks traversing through the community. This location is closer to high use areas for subsistence seal harvesting.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Why Dismissed – This option would increase overall adverse impacts.	
Ferry Terminal Location – Eagle Bay Ferry Terminal	ACC-008	***Origination*** – This ferry terminal option was evaluated by PLP when developing the proposed design as an alternative north shore ferry terminal location suitable for either a north-south lake transit or an east-west transit. ***Description*** – Under this option, the north shore ferry terminal would be located in Eagle Bay. A road would connect the Mine Site to the terminal. A spur road to Iliamna would not be included in this option as the mine access road would cross the existing road from Iliamna to Nondalton and provide community access. This option location is associated with the North Access Route (Road and Ferry), ACC-003. The location could be included with South Access Route (Road and Ferry), ACC-001. This option would include the following: Number of ferry miles to Kokhanok West Ferry Terminal Site (ACC-010): 24 Number of ferry miles to Kokhanok East Ferry Terminal Site (ACC-011): 27 Number of miles to Pile Bay Ferry Terminal Site (ACC-009): 33 ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This location appears to be a reasonable option with ability to accommodate ferry traffic and road connection. 3. Practicable Test: This location is sheltered for ferry operations and protected from prevailing winds. There may be navigability issues associated with the water depth in the area. Ice in the bays is thicker and more persistent than in the open lake west of Newhalen.	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		This option minimizes the road footprint within the Upper Talarik Creek drainage. 4. Environmental Impact Test: This site may have different or additional impacts such as shallower water, persistent ice within Eagle Bay, and more navigational hazards.	
Ferry Terminal Location – Pile Bay Ferry Terminal	ACC-009	***Origination*** – This ferry terminal option was evaluated by PLP when developing the proposed design. ***Description*** – This option considers an eastern shore ferry terminal location suitable for use with a northern access route and the Eagle Bay Ferry Terminal as a western ferry terminal site. This option location is associated with the North Access Route (Road and Ferry), ACC-003. This option would include the following: Number of ferry miles to Eagle Bay Ferry Terminal Site (ACC-008): 33 ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is an existing port facility and reasonable to consider. 3. Practicable Test: There may be navigability issues associated with the water depth in the area. Ice within the bay may be more persistent than in the open lake to the west. This location would use portions of existing infrastructure and the more sheltered port location at Diamond Point. 4. Environmental Impacts Test: There may be possible impacts to subsistence seal harvesting, and additional impacts to the community of Pile Bay.	☐ Proposed ☑ Alternative ☐ Dismissed
Ferry Terminal Location –	ACC-010	***Origination*** – PLP Proposed Action	☑ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Kokhanok West Ferry Terminal		***Description*** – This ferry terminal option is part of the Proposed Action which includes the construction of a ferry terminal on the south shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake to a port site on Cook Inlet. The ferry route would be north-south. The south ferry terminal would be at the Kokhanok West Ferry Terminal Site approximately five miles west of Kokhanok. This option would include a Kokhanok spur road. This option is associated with the South Access Route (Road and Ferry), ACC-001.	☐ Dismissed
Ferry Terminal Location – Kokhanok East Ferry Terminal	ACC-011	***Origination*** – Evaluation of alternative ferry terminal locations was suggested during scoping. ***Description*** – This ferry terminal option was evaluated as a variant of the Proposed Action for an alternative southern shore ferry terminal location. The south ferry terminal would be approximately five miles east of the community of Kokhanok at the Kokhanok East Ferry Terminal Site. This option would include a Kokhanok spur road. This option is associated as a variant of the South Access Route (Road and Ferry), ACC-001. The port access road would follow a shorter route (five miles shorter) than from ACC-010 to the Amakdedori Port Site and would not require a crossing of the Gibraltar River. ***Screening – This option is currently being evaluated.***	**Status under review**
Ferry Terminal Location – Utilize Alternative Ferry Terminal Sites	ACC-012	***Origination*** – Evaluation of alternative ferry terminal locations was suggested during scoping. ***Description*** – The suggested option requested consideration of alternative ferry sites and locations compared to the Proposed Action but did not specify locations. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		2. Reasonable Test: The six ferry terminal options described in this table are the most feasible locations, and cover a variety of logistical and environmental considerations. This option is not reasonable to carry forward because other substantially similar but more specific locations are being considered, meeting the intent of the scoping comment. ***Why Dismissed*** – Several ferry terminal location options were developed and incorporated into this table. This option is not reasonable to carry forward because other substantially similar but more specific locations are being considered, meeting the intent of the scoping comment.	
Port Location – Amakdedori Port Site	ACC-013	***Origination*** – PLP Proposed Action ***Description*** – This port site option is part of the Proposed Action which includes the construction of a port on Cook Inlet to transfer diesel fuel, materials, equipment, and concentrate using barges. The port location would be at Amakdedori. This option is associated with the South Access Route (Road and Ferry), ACC-001 option. This port site would utilize the Offshore Lightering-Amakdedori option (ACC-022).	☑ Proposed ☐ Alternative ☐ Dismissed
Port Location – Diamond Point/Iliamna Bay Port Site	ACC-014	***Origination*** – Evaluation of an option for a port site at Diamond Point in Iliamna Bay was suggested during scoping. ***Description*** – This port site option was examined by PLP in the process of developing the Proposed Action. The port site would be located at Diamond Point in Iliamna Bay. This port site option is associated with the North Access Routes (ACC-002 and ACC-003). This port site would utilize the Offshore Lightering-Iniskin option (ACC-023). The approach at the Diamond Point port would use a channel for barges and tugs to access the loading dock, requiring dredging to a depth of 20 feet MLLW (per RFI 063).	☐ Proposed ☑ Alternative ☐ Dismissed

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Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Channels are typically more prone to sedimentation requiring maintenance dredging and therefore greater under keel clearance is recommended compared to the depth of 15 feet MLLW described at the Amakdedori Port Site (ACC-013). Dredged material would either be utilized in construction of the causeway and dock or disposed of onshore. The total volume of dredged material for the 20 feet MLLW channel is 650,000 cubic yards, of which a minimum of 50% is estimated to be used in the barge dock construction which will require approximately 615,000 cubic yards of fill for construction. Any rocks encountered in the channel would be moved to the side of the channel or used in the dock construction. Any remaining dredged material and any material from maintenance dredging would be disposed of on-shore in a bermed facility located on uplands west of the dock site. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Diamond Point appears to be a reasonable option. 3. Practicable Test: The port location is sheltered and access for this option could utilize portions of the existing Pile Bay road. The port site and access road includes construction and placement of fill within the intertidal zone in Iliamna Bay. The port would require initial and maintenance dredging and blasting for access roads. This location could not accommodate deep draft vessels and would require lightering barges to transfer ore concentrate to deep draft bulk ships anchored at mooring locations. 4. Environmental Impacts Test: This option uses some areas already impacted by development and may avoid bear migration areas. Dredge and fill impacts would be greater in the intertidal zone.	
Port Location – Knoll	ACC-015	***Origination*** **–** This port site option was examined by PLP in the process of developing the Proposed Action.	☐ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Head/Iniskin Bay Port Site		***Description*** – This port site would be located at Knoll Head in Iliamna Bay and is associated with the North Access Routes (ACC-002 and ACC-003). This port site would utilize the Offshore Lightering-Iniskin option (ACC-023). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative port locations. 3. Practicable Test: This option requires challenging access and port site construction and would require significant earthworks with associated impacts. This option would have prohibitive road construction cost. 4. Environmental Impacts Test: Access to this port would require crossing Iliamna Bay via a causeway and includes substantial placement of fill within the intertidal zone in Iliamna Bay and Iniskin Bay. ***Why Dismissed*** – The environmental impacts would be greater than the Proposed Action (and ACC-014 – Diamond Point).	☑ Dismissed
Port Location – Fortification Bluff/Rocky Point Port Site	ACC-016	***Origination*** – This port site option was examined by PLP in the process of developing the Proposed Action. ***Description*** – Under this option the port location would be at Fortification Bluff/Rocky Point which is approximately 15 miles north of Amakdedori, and would require 26 additional road miles from the port access road route to this port site, compared to the Proposed Action (ACC-001). This option is associated with the South Access Route (Road and Ferry), ACC-001 option. The natural gas pipeline would not be co-located along the road, and would be routed through Amakdedori as described in ACC-001. This port site would utilize the Offshore Lightering-Amakdedori option (ACC-022).	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider other port locations. 3. Practicable Test: This option requires a longer access road and more challenging port site construction than other options which would increase the total amount of road construction for the project. Shore approach routing options for the gas pipeline are not available due to the proximity to Augustine volcano. This option has a requirement for a steep access road to the shore which poses operational safety challenges. 4. Environmental Impacts Test: Baseline data indicates that this offshore area is a more a productive habitat with higher utilization by a wider variety of species than other options. ***Why Dismissed*** **–** This option would increase overall adverse impacts.	
Port Location – Williamsport Port Site	ACC-017	***Origination*** **–** Use of the existing road and resources at Pile Bay and Williamsport was suggested during scoping. ***Description*** **–** This port site option was examined by PLP in the process of developing the Proposed Action. The port location would be at the existing Williamsport location in Iliamna Bay. This port site option would be included with the North Access routes (ACC-002 and ACC-003) and may include the Eagle Bay Ferry Terminal Site (ACC-008) and Pile Bay Ferry Terminal Site (ACC-009) options. This option would require improvements to the existing port facilities. This port site would utilize the Offshore Lightering-Iniskin option (ACC-023). ***Screening*** **–**	☐ Proposed ☐ Alternative ☑ Dismissed

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider use of existing facilities. 3. Practicable Test: Williamsport is inaccessible by sea except for brief periods at the peak of extreme high tides which occur a few days each month (USACE 1995). A 1995 Environmental Assessment by USACE (Navigation Channel Feasibility Report and Environmental Assessment: Williamsport) indicates that a considerable amount of initial and ongoing maintenance dredging would be required to accommodate barges between the mouth of Iliamna Bay and Williamsport. The existing sea bottom is two or three feet above mean lower low water (MLLW) near the landing and it would be necessary to dredge 22 to 23 feet of material to obtain the desired depth of -20 feet MLLW. The dredged material would need either onshore or offshore disposal. Existing uses of Williamsport may not be compatible with the level of activity proposed by PLP. ***Why Dismissed*** – The initial and maintenance dredging requirements make this option impracticable.	
Port Location – Utilize Alternative Port Sites	ACC-018	***Origination*** – Utilizing alternative port sites was suggested during the scoping period. ***Description –*** The commenter requested consideration of alternative port sites and locations compared to the Proposed Action but did not suggest specific locations. ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The five port site options described in this table are the most feasible locations, and cover a variety of logistical and environmental considerations. The suggested option is not reasonable because it is not	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		specific; however, the intent of the suggestion is fulfilled through evaluation of ACC-013 through ACC-017. ***Why Dismissed*** – Several port site options were considered (see ACC-013 through ACC-017). This non-specific option is not a reasonable option and can therefore be dismissed in favor of the five location specific options.	
Dock Type – Fill Dock	ACC-019	***Origination*** – PLP Proposed Action ***Description*** – PLP has proposed to construct a fill dock and sheetpile bulkhead at the port location.	☑ Proposed ☐ Alternative ☐ Dismissed
Dock Type – Pile Supported Dock	ACC-020	***Origination*** – USACE is evaluating an option for a pile supported dock to satisfy requirements for minimization of impacts to Waters of the U.S. ***Description*** – This option would construct a pile supported dock rather than a fill dock at the port site. ***Screening – This option is currently being evaluated.***	**Status under review**
Port Operations– Shore Side Loading	ACC-021	***Origination*** – Shore side loading was evaluated by PLP when developing the proposed project design. ***Description*** – This type of loading was originally proposed as an option by PLP when developing the Proposed Action, but was eliminated in project design updates in May 2018. Bulk carriers would be loaded directly at the port site (rather than at lightering locations) and would require a deep draft navigation channel and turning basin of approximately 50 feet of water depth. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option. This was PLP's original proposed action so is assumed economically and technologically feasible.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		3. Practicable Test: This option involves the loading of a bulk carrier directly at the dock side which minimizes concentrate re-handling and leads to improved safety and reliability. All locations where this could take place require dredging or causeway construction to allow for shore side loading of bulk carriers. It is estimated that initially, 10 million cubic yards would need to be dredged and another 10 million yards may need to be dredged over the life of the mine to maintain the design depth. Dredging operations for this option would increase impacts to waters of the US and requires the placement of dredge spoils. 4. Environmental Impacts Test: Dredging would have environmental impacts to marine habitat and shoreside habitat where dredged material would be placed; dredging would result in a higher volume of fill compared with other loading options such as lightering; maintaining the deep-draft navigation channel and turning basin would require annual maintenance dredging that would be a long-term effect. Shoreside loading would potentially lessen impacts to ESA-listed species or habitat including sea otter critical habitat. ***Why Dismissed*** – This option would increase overall adverse impacts.	
Port Operations– Offshore Lightering - Amakdedori	ACC-022	***Origination*** – PLP Proposed Action ***Description*** – The lightering option is the Proposed Action developed by PLP and requires approximately 15 feet of water depth at the dock which can be achieved naturally at Amakdedori without dredging.	☑ Proposed ☐ Alternative ☐ Dismissed
Port Operations– Offshore Lightering - Iniskin	ACC-023	***Origination*** – The Iniskin Bay lightering option was developed as an alternative by PLP when looking at alternative port sites such as Diamond Point/Iliamna Bay (ACC-014). ***Description*** – Under this option, concentrate would be offloaded from trucks to transfer barges at port sites to be transported to lightering locations where larger transport barges would be moored. Concentrate would then be loaded to transport barges for	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		transport across Cook Inlet. An additional mooring location from those identified in ACC-022 has been identified at Iniskin Bay off the Iniskin Peninsula that is closer to the Diamond Port site. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The Iniskin Bay option has adequate water depth for the bulk carrier ships and affords good protection; it is a reasonable option. 3. Practicable Test: Similar to ACC-022. 4. Environmental Impacts Test: This option would have less environmental impact to the marine environment than a large dock facility. There would be less removal or placement of fill required. There is risk of material spills during transfer to/from lighter barges.	
Other Access Options – Mandatory Bridges at Stream Crossings	ACC-024	***Origination*** **–** An option to require bridges at all anadromous stream crossings was suggested during scoping. ***Description*** **–** This option would make it mandatory for bridges to be built any time the access route crosses a stream or river that supports anadromous fish. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Not reasonable as ADF&G would specify the crossing requirements necessary to protect anadromous fish which may be achieved by other means such as culverts rather than bridges. ***Why Dismissed*** **–** This option is not reasonable. Other forms of stream crossings such as culverts are often appropriate structures. The design and permitting process would select appropriate crossing structures to address the environmental concerns and reduce impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Other Access Options – Revised Project Alignment via Micro-Siting	ACC-025	***Origination*** – Consideration of micro-siting practices for the access roads was evaluated by USACE as a potential means to avoid environmental impacts. ***Description*** – Use micro-siting practices to avoid local impacts to wetlands, stream crossings, guiding, lodges, wildlife, visual resources, archeological, and historical resources. Avoid or minimize or stay outside a buffer area important to resources. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable to consider as a component of an action alternative for evaluation in the EIS because it lacks specificity and is essentially mitigation. Additionally, the intent of this option will be accomplished as impact assessment is completed for the Draft EIS, resource agencies and the public review and comment on the Draft EIS, and the Applicant is asked to revise the proposed project to better avoid and minimize impacts. Additionally, micro-siting practices will be demonstrated by the Applicant when they document the steps and measures they have taken to avoid and minimize environmental impacts of their proposed action. Mitigation measures included in PLP's design, which are integral components of the proposed action, will be included in Chapter 5 of the EIS and will be considered during the NEPA impact analysis in the EIS for the proposed action and applicable components of other action alternatives. ***Why Dismissed*** – This option is not reasonable. Dismissal of this option would not preclude future consideration of micro-siting as mitigation to avoid or minimize specific impacts identified through the NEPA impact analysis or as required by resource agencies during project permitting as the project design and permitting advances.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Other Access Options – Summer Only Ferry Operations	ACC-026	***Origination*** – An option to restrict ferry options to the open water season was suggested during scoping. ***Description*** – Ferry would only be allowed to operate in the open water season when no ice breaking is necessary. There would need to be infrastructure to allow ore stockpiling, an area identified for storage, and other logistical considerations associated with ceasing ferry operations during lake ice conditions. ***Screening – This option is currently being evaluated.***	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Concentrate Transport – Truck	CTR-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which involves containerized transport of ore concentrate by utilizing the road and ferry access route (South Access Route (Road and Ferry), ACC-001). This option would use trucks to carry concentrate containers truck from the Mine Site. Concentrate would be transported to the port location, loaded onto a ferry, and re-handled at lightering locations. This option does not allow for the inclusion of a concentrate pipeline in the proposed project. This option may also be included with the North Option Route (Road and Ferry), ACC-003.	☑ Proposed ☐ Alternative ☐ Dismissed
Concentrate Transport – Pipeline	CTR-002	***Origination*** – Evaluation of an option for an ore concentrate pipeline was suggested during scoping due to concerns with ferrying ore concentrate across Iliamna Lake. ***Description*** – This option would not require the re-handling of cargo/concentrate and allows for the inclusion of a concentrate pipeline in the proposed project. A single, approximately 7-inch diameter, steel pipeline with appropriate corrosion protection, would be used to transport the concentrate. The concentrate pipeline and the gas pipeline would be collocated in a single trench located at the toe of the road embankment, which would increase the average width of the road corridor footprint by 3 to 5 feet. Pump stations would be required to move concentrate through the pipeline. This option may be applied with North Access routes and considered with the South Access routes. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need 2. Reasonable Test: This is a reasonable option. 3. Practicable Test: This option is technologically feasible and would be an efficient way to move large volumes of material and reduce truck traffic. This option would require a water treatment plant and a discharge permit at the port site and would result in a small reduction (<1 cfs) in water available for discharge at the Mine Site. Treatment at the port site would remove toxic pollutants, including	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		metals, to limits identified in an Alaska Department of Environmental Conservation (ADEC) and/or EPA discharge permit. Additionally, water depth and lake bed topography would likely preclude the use of a sub-lake gas pipeline along the South Access routes alignments or the lake portion of the North Access Route 2. 4. Environmental Impacts Test: This route includes trade-offs in terms of the environmental impacts. This route would result in additional fill impacts associated with a wider corridor but reduced trucking. This option is carried forward as an alternative to be considered in detail in the EIS.	
Concentrate Transport – Rail	CTR-003	***Origination*** – Transporting ore concentrate by rail was evaluated by PLP when developing the proposed project design. ***Description*** – This option would require the construction of railroad from the Mine Site for the transportation of ore concentrate. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is a reasonable option to consider. 3. Practicable Test: Construction of a railroad to move the volume of materials necessary for the proposed project would not be efficient or cost effective. The cost to construct railroads in Alaska is about five times the cost to construct roads. Railroads grades are typically limited to grades of 1 percent or less, with longer bridges. The additional cost of the track, railroad ballast, hardware, and associated equipment is a significant investment. Railroad construction in Alaska costs roughly $9 million per mile, remote road construction costs roughly $1.7 million per mile. Railroads can provide greater efficiencies where high volumes of materials are transported daily, but the total volume of transported	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		materials projected for the Pebble project is low compared to typical railroad operations. Transport of concentrate, fuel, reagents and consumables is estimated to be 35 truck round trips per day for the project. The large cost to construct a railroad for the relatively low volume of freight would not be cost effective. ***Why Dismissed*** – This option would increase overall adverse impacts. It may not be practicable to achieve grade requirements.	

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Table B-1: Preliminary List of Project Options Being Considered

Reclamation and Closure Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Closure – Retain Mine Road	RCA-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which includes utilizing and maintaining mine access roads for all mine reclamation and closure transportation needs after operations. This option utilizes the existing infrastructure for mine access during post closure support activities.	☑ Proposed ☐ Alternative ☐ Dismissed
Closure – Iliamna Airport and Existing Roads	RCA-002	***Origination*** – This closure option was evaluated by PLP when developing the proposed project design. ***Description*** –This option would utilize existing infrastructure (Iliamna airport and Pile Bay-Williamsport Road) for all mine reclamation and closure transportation needs after operations. The mine access road would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option to consider. 3. Practicable Test: This option utilizes Iliamna airport and/or the existing Pile Bay road; however, neither have the capacity to meet the post closure logistical requirements. The existing Pile Bay Road, if utilized as part of an alternative, would not by itself meet the ground transportation needs for reclamation and closure if other access roads are not maintained. The option would rely on helicopter transport of fuel, materials, WTP reagents, and supplies which would be inefficient, very expensive, and less safe than surface transportation. ***Why Dismissed*** – This option is not practicable because the existing infrastructure would not support the reclamation and closure transportation needs.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Storage Method– Thickened Tailings Storage	TSF-001	***Origination*** – PLP Proposed Action ***Description*** – Thickened tailings storage is the Proposed Action for bulk tailings. The option is not suited for pyritic tailings that need to remain saturated to prevent them from oxidizing and generation ARD and metals leaching. Thickened tailings are slurry tailings that have been mechanically dewatered, sometimes with settling additives, to create a more viscous molasses-like material. They typically have a solids content (mass of solids to total mass of the combined solids and liquid mixture) of 45 to 65 percent. They are piped to the TSF by centrifugal pumps or positive displacement pumps depending on the topography, distance, head loss, and viscosity. They still require an embankment dam for containment, either a full dam like for slurry tailings, or a lower dam depending on the viscosity. These dams need to be periodically raised to hold the tailings and supernatant water. Some mines discharge thickened tailings from the dam and create a slurry tailings type of TSF with a steeper beach. Other mines discharge thickened tailings from a central tower to produce a cone-shaped TSF with a tailings surface sloped towards the dams. Thickened tailings do not segregate as much as slurry tailings so that they are relatively consistent particle distributions across the TSF. The yield strength (applied pressure that must be exceeded to make the fluid flow) of the consolidated tailings is 0.4 to 1.6 pounds per square foot (psf), partly depending on the degree of initial thickening.	☑ Proposed ☐ Alternative ☐ Dismissed
Storage Method– Slurry Tailings Storage	TSF-002	***Origination*** – This option is the Proposed Action for the pyritic tailings and was considered by PLP for the bulk tailings. ***Description*** – Slurry tailings are a slightly dewatered product of the milling process. The slurry is a water-like material that is moved by pipeline to the TSF. The slurry typically has a solids content of 10 to 40 percent and can flow down-gradient by gravity or be moved by centrifugal pumps depending on the topography, distance and head loss. The high water content requires that the tailings be stored behind a dam that must be periodically raised to hold the tailings and supernatant water. The tailings gradually segregate as they flow away from the discharge with coarser particles closest to the discharge points and finer particles further away. A beach slopes away from each	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		discharge point to the supernatant the pond. The tailings consolidate to a yield strength of up to 0.4 psf. The supernatant water is removed to the extent possible and reclaimed for mill use or treated and discharged. Some mines use cyclones to split the slurry into coarser and finer fractions and use the coarser fraction as dam raise fill. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable tailing method to consider. 3. Practicable Test: Slurry tailings are the most common method of tailings disposal and have been successfully produced and managed under a wide range of operating conditions for both bulk and pyritic tailings. The feasibility of this method is reliable and proven at the proposed Pebble scale under these environmental conditions. 4. Environmental Impacts Test: Slurry TSFs entrain more water and have larger supernatant ponds than thickened tailings TSFs. Therefore they have more potential energy than thickened tailings, and pose a greater risk to the environment should there be an operational problem or a dam failure. PLP has proposed thickened tailings to conserve water and reduce this risk (TSF-001). ***Why Dismissed*** – This option would increase overall adverse impacts.	
Storage Method– Paste Tailings Storage	TSF-003	***Origination*** – Paste tailings storage was suggested via scoping comments as a potentially efficient and effective method of storage. ***Description*** –This option is only applicable to the bulk tailings and not the pyritic tailings that would need to stay saturated to prevent ARD generation and metal leaching. Paste tailings are essentially thickened tailings, thickened with high-density thickeners, cement, and other additives to a toothpaste-like material. They typically have a solids content of 60 to 75 percent and a yield strength of 1.6 to 2.0 pounds per square foot. They are typically moved by pipeline, but require positive displacement	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		pumps. Paste tailings particles do not segregate so tailings characteristics would be relatively uniform throughout the TSF. However, paste tailings are mostly used as backfill in underground mine workings where transport and placement of the paste is aided by gravity, and are typically not disposed of in TSFs. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: TBD 3. Practicable Test: Paste tailings require specialized high density thickeners and are the least common TSF. Positive displacement pumps are usually required for transportation to the TSF site resulting in potential plugging of pipelines with high-density tailing and increased pumping energy requirements. Producing a consistent paste would be a major challenge with the processing as small changes in the orebody, especially clay-sized particles, can greatly influence the paste characteristics such as yield strength and beach slope. 4. Environmental Impacts Test: Paste tailings require additional transportation infrastructure and on-site facilities for handling cement and other thickeners which would require a large footprint and added impact to the environment. The method would produce a more stable TSF than thickened tailings, but essentially offers no more environmental benefits than thickened tailings. ***Why Dismissed*** **–** Paste tailings are mostly used in underground workings, and have minimal surface TSF history and interest. A paste TSF would be significantly more costly to operate than a thickened TSF and would provide minimal environmental benefit above that of the Proposed Action.	
Storage Method– Dry Stack	TSF-004	***Origination*** **–** This storage method was evaluated by PLP when developing the proposed project design.	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
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Tailings (for Bulk Tailings only)		***Description*** – This option of dry stack tailings is only suited for bulk tailings because the pyritic tailings need to stay saturated to prevent ARD generation and metal leaching. Filtering tailings removes water using mechanical filters and results in tailings with 75 to 85 percent solids content and a yield strength of over 3 pounds per square foot. This creates a soil-like material or "dry cake" that is transported by conveyor or truck to a "dry stack" TSF. These TSFs do not require dams unless possibly for perimeter berms. The tailings are placed by bulldozers and compactors as in conventional earthwork construction. ***Screening – This option is currently being evaluated.***	
Storage Method– Submarine Disposal Storage	TSF-005	***Origination*** – This storage method was evaluated by PLP when developing the proposed project design. ***Description*** – This option would place the tailings and other mine waste in a water body such as in a lake or seawater to maintain a saturated condition into perpetuity. The concept is to discharge tailings by gravity to a location and depth where they are less likely to oxidize and leach out toxic metals, and where marine life is less abundant. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option would maintain PAG material in a saturated condition without the need for an on-land TSF and maintenance of dams and other water control features. However, there are concerns about performance histories of previous and current submarine disposal operations. It is likely not possible to obtain permits for storing tailings in an existing waterbody in or near Bristol Bay, as well as significant public opposition to the storing of bulk tailings in water bodies in general. This is not a reasonable option. ***Why Dismissed*** – This option is not reasonable.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Storage Method– Remove or Make All Tailings Inert	TSF-006	***Origination*** – This method was proposed via scoping comments as a measure to reduce local environmental impacts due to tailings storage. ***Description*** –This option would involve transporting all of the tailings from the project area to another disposal area, or making the tailings inert to eliminate the ARD and metal leaching potential. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Trucking tailings away from the project area is not reasonable because it would require round-the-clock transport. The project would generate tailings at a rate that would require a truck with triple trailers to leave the mine site approximately every minute. This would require new roads to connect to the existing road system. The costs to transport the tails hundreds of miles would be exorbitant and cost prohibitive. Treating the tailings appears to be a reasonable option to consider. 3. Practicable Test: Treating the pyritic tailings to make them inert (the bulk tailings are considered inert) would require additional treatment facilities that would need space in the project area and would introduce new containment structure needs. Methods of making tailings inert include separating pyritic tailings to create a larger bulk TSF and smaller pyrite TSF (this is already the proposed action), returning the pyritic tailings to the completed pit at closure to allow natural subaqueous storage (this is also already the proposed action), adding cement to create a cementitious-type material, buffering by mixing in alkaline material like crushed limestone to neutralize the acidity, and refining processes to extract more metals and reduce their metals content in the tailings.	☐ Proposed ☐ Alternative ☑ Dismissed

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Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		4. Environmental Impacts Test: Treating the tailings to make them inert by separating the bulk and pyritic tailings and returning the pyritic tailings to the completed pit at closure is the Proposed Action. Adding cement or limestone to make tailings inert would require the transport of very large volumes of these additives including possibly developing quarries, and constructing additional infrastructure and treatment facilities in the project area. Revising mining methods to extract richer ore would result in more waste rock with higher ARD and ML potential. Treatment facilities and associated containment structures would require additional space, with resultant increased environmental impacts. ***Why Dismissed*** – The option to move the tailings to another area is not reasonable and is cost prohibitive. Treating the pyritic tailings with cement or limestone provides no environmental benefits over the Proposed Action, which would separate the pyritic from the bulk tails and keep them inert by maintaining them during mining in a subaqueous condition, and return them to the completed pit during closure for permanent subaqueous storage.	
Storage Method– Truck Tailings to Canada	TSF-007	***Origination*** – Evaluation of an option to truck all waste to Canada was suggested during scoping. ***Description*** –This option would involve transporting all of the tailings from the project area to a disposal area in Canada. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Trucking tailings away from the project area is not reasonable because it would require round-the-clock transport. The project would generate tailings at a rate that would require a truck with triple trailers to leave the mine site approximately every minute. This would require new roads	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		to connect to the existing road system. The costs to transport the tails hundreds of miles would be exorbitant and cost prohibitive. ***Why Dismissed*** – This option is not reasonable and is cost prohibitive.	
Tailings Dam – Centerline Construction	TSF-008	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which includes the use of centerline construction for the bulk tailings TSF embankment. Centerline construction optimizes the robustness and stability advantages of downstream construction, with the efficiency advantages of upstream construction. The centerline dam begins with a starter dam, and subsequent raises are placed directly above the starter dam or previous raise, and over the downstream face, and over the tailings adjacent to the dam. The centerline of the dam crest is maintained in the same vertical plane. The outer part of the dam expands downstream as the dam is raised. The inner part of the dam has raises that stagger over the tailings with the upstream toe of each raise on the same vertical plane. A variation of the centerline method is to bend the centerline either in either the upstream or downstream direction to optimize stability and cost. Centerline dams can be built out of rock, soil and tailings.	☑ Proposed ☐ Alternative ☐ Dismissed
Tailings Dam – Downstream Construction	TSF-009	***Origination*** – This construction method was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option downstream tailings dam construction is considered only for the bulk TSF instead of the centerline method (the pyritic TSF is proposed as a downstream dam). Downstream tailings dams can be constructed using rock, soil or tailings in various combinations. Construction starts with a starter dam in the same way as for a centerline dam. Subsequent stages (raises) are built on top of the downstream slope of the previous dam. The centerline of the dam crest moves downstream. Downstream dams are constructed in the same way as conventional water storage dams, except for being raised in stages as mining progresses instead of all at once.	**Status under review**

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Tailings Management			
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		Screening – This option is currently being evaluated.	
Tailings Dam – Upstream Construction	TSF-010	***Origination*** – This construction method was evaluated by USACE. ***Description*** – Tailings dams built by the upstream method of construction are raised by using rock, soil and tailings in various combinations as dam fill. A starter dam is first built in the same manner as a centerline or downstream dam. Trapezoidal shaped raises are built on top of each other at an offset toe-to-crest design, moving the dam crest and centerline upstream so that the upstream part of the dam is located over tailings in the TSF. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative dam construction methods. 3. Practicable Test: Upstream raises are the oldest and most economic type of tailings dam construction. An upstream dam contains about one-third of the fill volume of a downstream dam, and one-half the volume of a centerline dam. This would result in construction time savings conducive to Pebble's short construction seasons, and hence reduced costs. However, fill can only be placed on tailings that have had time to consolidate and thereby provide a strong foundation for the raises. Otherwise, the underlying tailings could be saturated to the extent they could liquefy as a result of seismic activity and cause the dam to fail. A rate of tailings rise of 15 to 30 feet per year is considered to be the upper limit of allowing sufficient time for tailings consolidation to provide a stable tailings foundation for upstream raise construction. The planned rate of tailings rise at Pebble is at the upper end of this range and likely too fast to allow enough time for consolidation. Therefore	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		an upstream raise is likely not feasible because of the fast rate of tailings rise and liquefaction potential in a high seismic potential area. 4. Environmental Impacts Test: The need for less dam material means less material needs to be quarried or borrowed for dam fill resulting in less environmental impacts. However, the higher potential for tailings liquefaction results in a higher risk of dam failure and inundation of the land and water bodies by tailings. ***Why Dismissed*** – PLP is proposing a centerline dam for the bulk TSF and downstream dam for the pyritic TSF which are considered more stable construction methods and reduce the risk of dam failure. Upstream construction is dismissed from further consideration because of potential environmental impacts from a higher risk of dam failure.	
Storage Method– Emergency Storage for TSF	TSF-011	***Origination*** – Scoping comments expressed concern regarding the stability of and environmental impacts of a TSF failure due to an unexpected event such as seismic activity or unexpected water volumes. ***Description*** –This option would require an emergency storage/overflow containment area to minimize risk of tailings spills from excessive buildup of water in the TSF. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The dam design would require that the dams accommodate a 200 year flood event when the TSF was at maximum capacity (both events at the same time). An emergency storage facility would provide redundancy but at the expense of having to build a separate facility that would require the disturbance and use of additional land. Any redundancies that could be achieved would be more economically achieved by more robust TSF, WMP,	**Status Under Review**

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		seepage collection and sediment pond facilities. The concerns this option are intended to address are already designed into the proposed project so this option is not reasonable. ***Why Dismissed*** – The option is not reasonable because the suggestion is already part of the proposed project.	
Tailings Production – Segregated Bulk/Pyritic Tails	TSF-012	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which involves keeping both bulk and pyritic tailing streams separate. Separate tailings streams are a by-product of the mining process so no additional steps are required. This option would require separate TSFs for bulk and pyritic tails.	☑ Proposed ☐ Alternative ☐ Dismissed
Tailings Production – Blended Bulk/Pyritic Tails	TSF-013	***Origination*** – This option was evaluated by PLP as a potential tailings production and storage method. ***Description*** – Under this option bulk and pyritic tailings streams would be combined into one for the purpose of having a single TSF. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option to consider. 3. Practicable Test: This option requires an additional step to blend tailings streams and maintaining more water in the TSF to keep the pyritic tailings subaqueous to mitigate ARD and metal leaching potential. The entire facility would need to be managed in perpetuity to maintain the wet closure and to collect and treat seepage. A blended facility would also need to be lined, which would hinder the flow-through design concept of the bulk TSF and thereby prevent the bulk tailings from dewatering over time and becoming a stable landform.	☐ Proposed ☐ Alternative ☑ Dismissed

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EPA-0135-0002113

Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		4. Environmental Impacts Test: The blended tails would result in a large volume of tailings, and hence seepage water, that would need to be managed for potential ARD metal leaching. The wet closure would have a long-term post-closure dam failure risk higher than the proposed project. ***Why Dismissed*** – This option would increase overall adverse impacts because the pyritic tails would "contaminate" the bulk tails and require subaqueous storage in perpetuity.	
Bulk Tailings Basin –Unlined	TSF-014	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which would discharge thickened bulk tailings into an unlined basin and provide TSF solids and water management in a manner that results in the TSF groundwater level sloping down towards the main embankment, and the seepage passing through a collection system built under the main embankment and being collected by the bulk TSK main seepage collection pond.	☑ Proposed ☐ Alternative ☐ Dismissed
Bulk Tailings Basin – Lined	TSF-015	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – This option has the bottom of the bulk TSF fully lined so that the bulk tailings would not be in contact with the ground surface. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: TBD 3. Practicable Test: It would be possible to fully line the bulk TSF although it would increase costs. However, lining of the bulk TSF will create a bathtub of water in the lower part of the TSF because the liner will impede the planned flow through of seepage through the tailings and main embankment. This will	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		result in saturated lower tailings that could be susceptible to static and seismic liquefaction during operations and through closure and post-closure, even in thickened tailings several hundred feet deep. Technologies have been evaluated to connect drains into bottom liners to enhance seepage, but they have not been proven and implemented on a similar scale. 4. Environmental Impacts Test: This option would result in poor consolidation of tailings that would lead to long term saturation of the deeper tailings and susceptibility to static and seismic liquefaction. This would defeat the drainage objective of the proposed thickened TSF. The ultimate result would be higher potential mobility of the tailings and prevention of the tailings from consolidating over time by gradual drainage and ultimately become a stable landform as proposed. ***Why Dismissed*** – This option would increase overall adverse impacts because the liner would retain water in the bulk tails and increase the risk of dam failure and tailings mobility.	
Pyritic Tailings Basin – Lined	TSF-016	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which has the bottom of the pyritic tailings TSF fully lined so that the pyritic tailings would not be in contact with the ground surface. Additionally, this option allows for pyritic tailings to be stored sub-aqueously without the circulation of seepage water.	☑ Proposed ☐ Alternative ☐ Dismissed
Pyritic Tailings Basin – Unlined	TSF-017	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option the pyritic TSF would be unlined. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		2. Reasonable Test: It is reasonable to consider an unlined facility. 3. Practicable Test: It is practicable with existing technology to build an unlined TSF and it would reduce costs. 4. Environmental Impacts Test: PLP has proposed a lined pyritic TSF to allow subaqueous storage during operations. The liner would also reduce the volume of pyritic tailings-contaminated seepage from the facility that would need to be collected and treated. PLP has also proposed to move the pyritic tails and PAG waste to the completed pit at closure and reclaim the TSF, eliminating the need for the pyritic TSF to be perpetually maintained. ***Why Dismissed*** – This option would increase overall adverse impacts.	
TSF Location – NFK West TSF Location	TSF-018	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action and would store the bulk tails two to three miles west of the proposed pit. The pyritic tails would be stored at the NFK East location (TSF-021).	☑ Proposed ☐ Alternative ☐ Dismissed
TSF Location – NFK North TSF Location	TSF-019	***Origination*** – This TSF location was evaluated by PLP when developing the proposed project design. ***Description*** – This option would store pyritic tailings about two miles north of the proposed open pit. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This location has been studied previously and is a reasonable option to consider.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		3. Practicable Test: This site is close to the process plant, has sufficient storage capacity for all tailings, and allows for the segregation of bulk and pyritic tailings. This option has the highest efficiency making it the least costly option. 4. Environmental Impacts Test: The catchment area of the site is high and the total anadromous stream miles impacted and impacted acres of wetlands for this site are high. ***Why Dismissed*** – This option would increase overall adverse impacts.	
TSF Location – NFK East TSF Location	TSF-020	***Origination*** – PLP Proposed Action ***Description*** – This location is proposed by PLP to store the pyritic tailings about one mile west of the proposed open pit. The bulk tailings would be stored at the NFK West location (TSF-019).	☑ Proposed ☐ Alternative ☐ Dismissed
Combined TSF and Operating Pond	TSF-021	***Origination*** – This option was evaluated by USACE to avoid impacts associated with a separate water management pond. ***Description*** – This option would add the Operating Pond (part of the main water management pond) to the bulk TSF. It would result in additional water stored in the bulk TSF and would eliminate the need for or reduce the size of the main water management pond. The objective would be to perform all bulk tailings and water management operations at one facility instead of two facilities. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider options that potentially reduce footprint. A combined pond is proposed for the Donlin Gold Mine. 3. Practicable Test: This option is compatible only with the slurry tailings disposal method (TSF-002). The option is not compatible with the thickened tailings disposal objective of ultimate drainage and consolidation of the tailings to a	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		stable landform. Production of thickened tailings requires the dewatering of tailings as part of the milling process. The bulk TSF is planned to store thickened tailings that have been previously dewatered to the extent that they would be discharged to the bulk TSF at a solids content of 55%. This plan will result in a drier and more stable tailings deposit than would result from slurry tailings discharge. A combined bulk TSF/Operating Pond facility could be achieved by either not thickening the tailings and thereby depositing slurry tailings, or building an internal embankment within the combined facility to separate the thickened tailings from water. 4. Environmental Impacts Test: The proposed main water management pond has a footprint of approximately 925 acres, of which about 750 acres contains the normal operating pond level, and the remaining 175 acres is for the maximum operating pond level and probable maximum flood (PMF). Much of this area is wetlands. If the bulk TSF also contained the Operating Pond, there would be a reduction in impacts to Waters of the U.S. However, a combined bulk TSF/Operating Pond facility that combined non-thickened tailings and water would be a slurry TSF that is contrary to the environmentally safer consideration of a thickened TSF, and in conflict with current global mining objectives of developing drier TSFs as best available technology regardless of water supply factors, and moving the industry towards zero tailings dam failures. A combined bulk TSF/Operating Pond facility with separate thickened tailings and water storage areas would require a bulk TSF area and a water retention area separated by a divider dam, and would require a footprint that will be larger than the planned bulk TSF footprint, but could be similar to the combined footprints of the proposed separate bulk TSF and main water management pond facilities.	

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Why Dismissed – The option conflicts with the objective of thickened tailings and does not offer any environmental advantages over the proposed action.	

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Table B-1: Preliminary List of Project Options Being Considered

PAG Waste Rock			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Storage Method– Store PAG with Pyritic Tails	PAG-001	***Origination*** – PLP Proposed Action ***Description*** – All potentially acid generating waste rock would be stored in the pyritic TSF. All PAG waste rock would be returned to the pit at closure with the pyritic tailings for permanent subaqueous storage.	☑ Proposed ☐ Alternative ☐ Dismissed
Storage Method– Store PAG in LGO stockpile	PAG-002	***Origination*** – This option was PLP's Proposed Action in the December 2017 DA permit application. PLP's May 11, 2018 update changed the process and would place all PAG in the pyritic tails TSF. ***Description*** – This option would store PAG with the LGO stockpile. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is no longer viable because PLP is not proposing an LGO stockpile. ***Why Dismissed*** – The Proposed Action no longer has an LGO stockpile and therefore the option is not reasonable.	☐ Proposed ☐ Alternative ☑ Dismissed
Storage Method– Separate WRF Storage	PAG-003	***Origination*** – This storage method was evaluated by PLP when developing the proposed project design. ***Description*** – This option would involve the construction of a separate permanent facility for waste rock. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Separate waste rock facilities are common at mines and this is a reasonable option to consider. 3. Practicable Test: This option requires the construction of a separate facility and water management and access infrastructure. The facility would be exposed to	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

PAG Waste Rock			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		the air and hence would generate ARD and ML that would need to be collected and treated. Additional collection and treatment facilities and infrastructure would be needed. 4. Environmental Impacts Test: Construction of the associated infrastructure would increase wetland impacts for no environmental benefit. ***Why Dismissed*** – This option would increase overall adverse impacts associated with construction of a separate facility and PAG waste rock would likely generate acid rock drainage over time.	

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Water Treatment	WTP-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action which involves water treatment technology to meet the Alaska water quality discharge standards. To meet the water quality standards in receiving body per *Alaska Water Quality Criteria Manual*, and to meet the mine plan requirements, two water treatment plants (WTPs) would be required. WTP #1 near the Open Pit and WTP#2 near the Main WMP. WTP #1 would use chemical precipitation and filtration for metals removal. WTP#2 would use chemical precipitation followed by Reverse Osmosis (RO) for meeting total dissolved solids (TDS)/sulfate limits, and biological selenium removal.	☑ Proposed ☐ Alternative ☐ Dismissed
Enhanced Water Treatment	WTP-002	***Origination*** – Evaluation of an option that treats water for discharge to meet the water quality of the natural receiving waters was suggested during scoping. ***Description*** –This option would require the water quality of all discharged water to be the same as receiving water. Additional water treatment steps would likely be required to achieve this. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It appears this suggestion was made without an understanding of the regulations that apply to water discharges. PLP would be required and has committed to achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the enhanced treatment makes this option not reasonable. ***Why Dismissed*** – PLP would be required and has committed to achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		standards are developed by ADEC to be protective of aquatic life; therefore, there is no benefit of additional treatment of the water making this option not reasonable.	
Enhanced Water Treatment – Zero Metal Discharge	WTP-003	***Origination*** – Evaluation of an option that would result in zero discharges of metals into the watershed was suggested during scoping. ***Description*** – This option would require there to be zero metal content in discharged water. In order to meet zero metal content, chemical precipitation followed by RO, and an additional ion exchange (IX) step would be required to completely remove the metals. The treatment system would essentially generate ultrapure water for discharge by providing a treatment that is well beyond what is required to meet the water quality standards, thereby resulting in "over treatment." This water is expected to have very low TDS or mineral content, and is likely to be "too clean" for discharge (i.e., some constituents have minimum standards). In order to address potential toxicity associated with this flow, addition of certain constituents is likely required to make it amenable for discharge resulting in some metal content. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It appears this suggestion was made without an understanding of the regulations that apply to water discharges. PLP would be required and has committed to achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the additional treatment that would be required makes this option not reasonable. ***Why Dismissed*** –PLP would be required and has committed to achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, there is	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		no benefit of treating the water to make it cleaner than required making this option not reasonable.	
Enhanced Water Treatment – Reverse Osmosis	WTP-004	***Origination*** – Evaluation of an option that would require reverse osmosis for all water treatment was suggested during scoping. ***Description*** –This option would utilize chemical precipitation followed by Reverse Osmosis (RO) processing for water treatment at both water treatment plants (WTP#1 and WTP#2). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: PLP would be required and has committed to achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the additional treatment that would be required makes this option is not reasonable. ***Why Dismissed*** – RO-based treatment is primarily required for TDS and sulfate removal. Because both TDS and sulfate are below the discharge limits in the influent water to WTP#1, RO is not required. Chemical precipitation followed by filtration would be sufficient to meet the discharge limits for WTP#1, and RO based treatment can be limited to just WTP#2. The option of using RO at both WTPs is not reasonable and would unnecessarily increase the carbon footprint, facility size, and the residual solids disposal requirements.	☐ Proposed ☐ Alternative ☑ Dismissed
Airtight Structure for Emissions Collection	AIR-001	***Origination*** – Evaluation of an option that covers the development with an airtight structure in order to contain ARD from getting into the air was suggested during scoping.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Description – This option calls for the development and construction of an airtight structure that covers the Mine Site. Any fumes or gasses would be cleaned before the air can be re-released into the atmosphere. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Design for this type of structure is not reasonable, as there is no air quality concern with emissions from ARD. An airtight structure would be the largest structure in the world. ***Why Dismissed*** – This option is dismissed because it is not reasonable and the suggestion is based on a misunderstanding of potential acid rock drainage impacts.	

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Figure B-1: Access Options

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Figure B-2: Mine Layout Options

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 8/9/2018 8:31:22 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: no response needed FYSA
Attachments: 08_08_2018_List_of_Current_RFIs.xlsx

All,
As we gear up to get into the workshops and revisions to the dEIS Chapters 3 and 4, I would like to share a list of information request topics that have been generated to date. Not all of the RFIs are relevant to your areas of expertise or jurisdiction by law, but as your teams begin their preparation for the development of the analysis, it may be helpful for them to know what the Corps has asked for from the applicant. We will be posting the RFIs to the public website, but if there are specific RFIs not on the site that may assist your team, please send an email and we will get you the responses/requests as we can. This should reduce the number of redundant requests and help inform future information needs.

Thank you and your teams in assisting in the development of the analysis.

Shane McCoy
Program Manager

-----Original Message-----

Hi Shane,

As requested, attached is a current list of RFIs with RFI # and RFI subject.

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RFI #	RFI Subject
001'	Data Needs and Proposed Timelines for Information
002'	Grouped Vegetation Type GIS Data
003'	ADF&G Subsistence GIS Data from Technical Papers
004'	SEBD 07 SW Hydrology OCT15 - Missing Appendix 7A-E Figures and Tables
005'	Stability of Port Structures
006'	Seepage Analysis
006a	Followup Questions on Seepage Analysis
007'	Air Quality Emission Inventories
008'	Embankment Static and Seismic Stability
008a	Followup on Embankment Stability
009'	Air Quality Dispersion Modeling
010'	Tailings Characteristics
011'	Pipeline HDD and Bluff Erosion
012'	Air Quality Related Values
013'	Iliamna Lake and Pipeline Landfall Hazards
014'	Mine Site Geotechnical Data: GIS Layers and TSF Coverage
015'	TSF Quarries
015a'	Followup Questions on RFI 015 Response - TSF Quarries
015b	Followup Questions on RFI 015 Response - TSF Quarries
016'	Ecological Zone Descriptions and GIS Layers
017'	SEBD Chapter for Trace Elements (Bristol Bay)
018'	LGO Stockpile Liner
019'	Water Balance, Groundwater Model, and Streamflow Reduction
020'	Water Treatment
021'	Water Quality Predictions at Mine Site
021a	Followup Request on RFI 021 - Water Quality Predictions at Mine Site
021b	Follow-up Questions on RFI 021 - Water Quality Modeling
022'	Water Withdrawals, Roads and Pipeline
022a'	Water Extraction and Supply at Port Facilities
022b	Followup Request for RFI 022 Regarding Hydrostatic Test Water
023'	Pit Wall Stability
024'	Plans for Reclamation and Restoration

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025'	Cultural Resources Survey Data
026'	Detailed Land Status
027'	Project Logistics and Employment for Socioeconomics and Transportation
027a'	Followup Questions on RFI 027 - Aircraft and Noise
028'	TSF IDF and Freeboard
029'	Ferry Propeller Design Specifications
030'	Marine Mammal Impacts Analysis - Acoustic Information
031'	HDDs under Rivers
032'	Conceptual Design and Feasibility Information for Options in March 20, 2018 Technical Note
032a'	Followup Requests on RFI 032 - Conceptual Design and Feasibility Information for Options in March 20, 2018 Technical Note
033'	Project Option for Shallower Port Dredging Depth
034'	Visual Resource Data
034a	Visual Resource Data
035'	Material Site Details and Blasting Information
036'	Waterbody substrate and turbidity
037'	Construction Schedule and Site Access During Construction
038'	Noise: Mine Site Equipment/Vehicle Roster
039'	Amakdedori – Oceanographic Data
040'	Mine Site Water GIS Data
041'	Airport Traffic Data
042'	History of Exploration in Alaska
043'	Diesel Tanks at Mine Site
044'	Cultural Resources Place Names
045'	Concentrate Containers – Spill and Integrity Data
046'	2010 Fish Habitat Modeling
047'	Mine-related changes in water temperatures in project area tributaries
048'	Revised Habitat Series Analysis
049'	Water Quality Reference Document
050'	Soil Surface Samples Data
051 '	HDD Water Handling

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052'	Incident Risk Assessment for Ice Breaking Ferry
053'	Water Chemistry Field Measurements
054'	Dry Stack Tailings
055'	PAG-Pyritic Tailings Storage Facility, Construction and Closure
056'	Compensatory Mitigation Plan
057'	Drinking Water Data
058'	Safety Control Area
059'	Project Optimization Study Cited with Regard to Throughput in PLP Technical Note on Project Options and Screening Criteria
060'	Diesel Hauling by Truck, Ferry and Marine Vessel – Transport and Spill Data
061'	Wildlife Resources References
062'	Scenario for Expanded Development of Pebble
063'	Diamond Point Port Water Depth and Pipeline Alignment
064'	Regulation of Effluent Discharges

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:09:50 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures Append K Section 4.11 8, 14-19 (UNCLASSIFIED)
Attachments: 11_08_2018_Figure_K4_11_08_SouthTransportationCorridor_Viewshed.pdf; 11_03_2018_K4.11-14_through_K4.11-19.pdf

CLASSIFICATION: UNCLASSIFIED

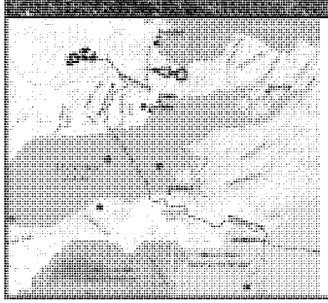
VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

Simulation Information

Viewing direction:	West
Latitude:	59°50'41.62"N
Longitude:	154°41'56.69"W
Distance to project:	26 miles

Source: PLP 2018-RFI 034d.

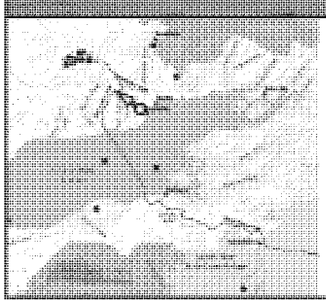
US Army Corps of Engineers.

SIMULATION
KOP: ROADHOUSE MOUNTAIN
WEST TOWARD MINE SITE

PEBBLE PROJECT EIS **FIGURE K4.11-14**

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

Simulation Information

Viewing direction:	Northwest
Latitude:	59°44'11.12"N
Longitude:	154°58'40.80"W
Distance to project:	23 miles

Source: PLP 2018-RFI 034d.

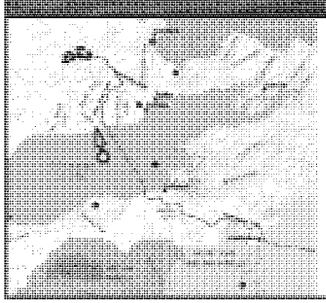
US Army Corps of Engineers.

SIMULATION
KOP: NEWHALEN RIVER
NORTHWEST TOWARD MINE SITE
(NO FACILITIES VISIBLE)

PEBBLE PROJECT EIS **FIGURE K4.11-15**

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

Simulation Information

Viewing direction:	North
Latitude:	59°33'12.64"N
Longitude:	155°16'52.58"W
Distance to project:	29 miles

Source: PLP 2018-RFI 034d.

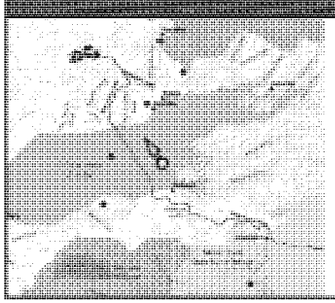
US Army Corps of Engineers

SIMULATION
KOP: ILIAMNA LAKE WEST
NORTH TOWARD
NORTH FERRY TERMINAL

PEBBLE PROJECT EIS **FIGURE K4.11-16**

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

Simulation Information

Viewing direction:	South
Latitude:	59°31'58.50"N
Longitude:	154°48'57.36"W
Distance to project:	35 miles

Source: PLP 2018-RFI 034d.

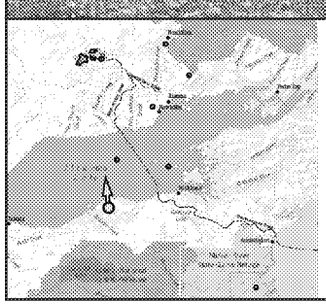
US Army Corps of Engineers.

SIMULATION
KOP: ILIAMNA LAKE EAST
SOUTH TOWARD
SOUTH FERRY TERMINAL

PEBBLE PROJECT EIS **FIGURE K4.11-17**

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

10 0 10 20
Miles

Simulation Information

Viewing direction:	East
Latitude:	59°23'24.48"N
Longitude:	155°13'40.75"W
Distance to project:	40 miles

Source: PLP 2018-RFI 034d.

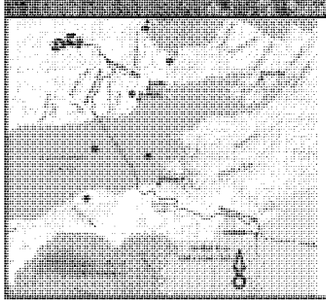
US Army Corps of Engineers

SIMULATION
KOP: BIG MOUNTAIN
EAST TOWARD
SOUTH FERRY TERMINAL

PEBBLE PROJECT EIS **FIGURE K4.11-18**

AMERICAN OVERSIGHT





Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Known Observation Point

Other Features

- Wild and Scenic River
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

Simulation Information

Viewing direction:	North
Latitude:	59° 7'19.11"N
Longitude:	154°14'20.34"W
Distance to project:	72 miles

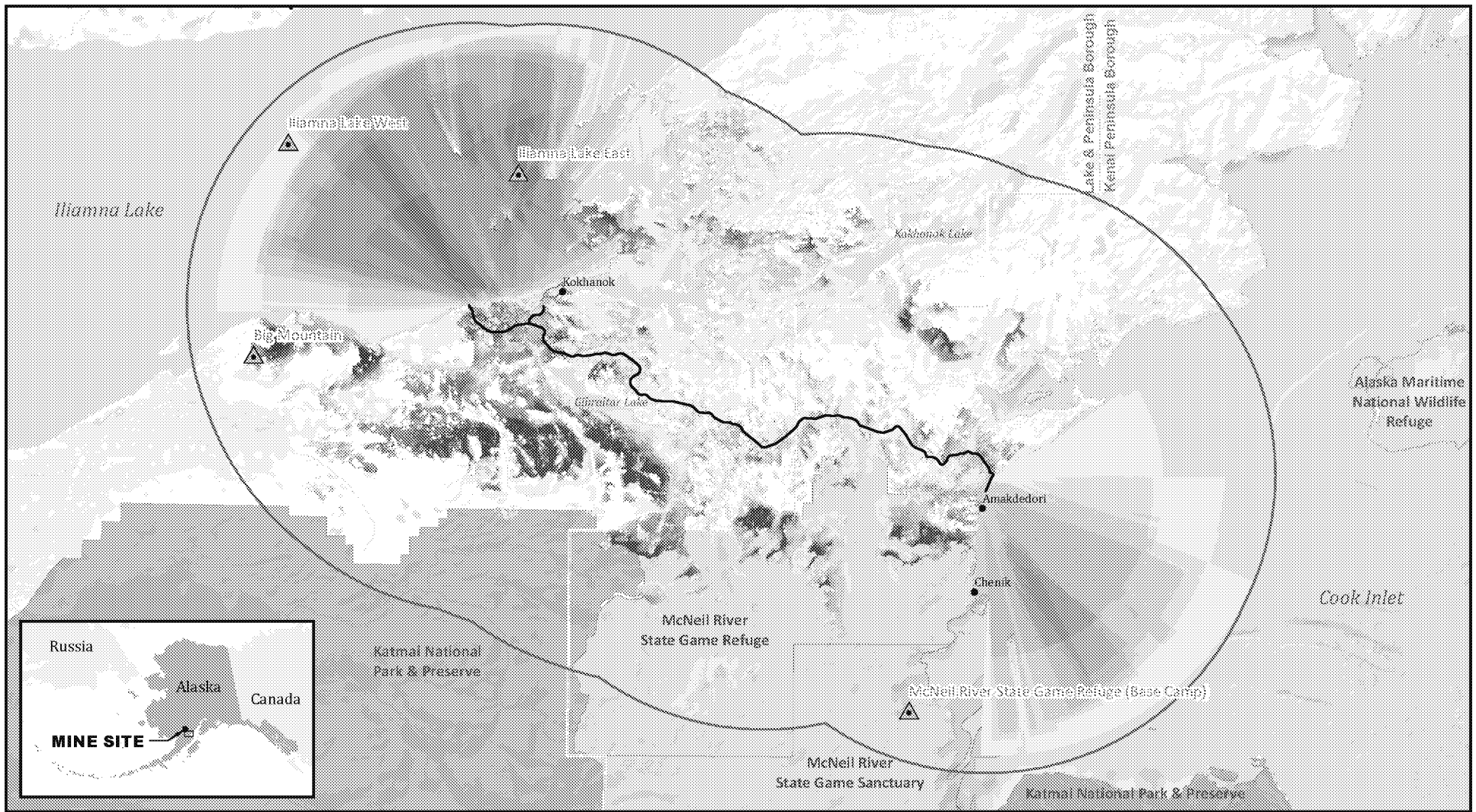
Source: PLP 2018-RFI 034d.

US Army Corps of Engineers.

SIMULATION
KOP: McNEIL RIVER BASE CAMP
NORTH TOWARD AMAKDEDRI
(NO FACILITIES VISIBLE)

PEBBLE PROJECT EIS **FIGURE K4.11-19**

AMERICAN OVERSIGHT



Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

4 0 4 8
Miles

Viewshed Analysis
- Key Observation Points
- Analysis Area (15 mi radius)

Visible Area/Land Cover
- Higher
- Lower

Visible Area/Bare Earth
- Higher
- Lower

Alternative 1
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- National Park
- State Game Refuge/ Sanctuary

ALTERNATIVE 1 SOUTH TRANSPORTATION CORRIDOR VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-8

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Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 10/24/2018 4:35:01 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA [linda.daugherty@dot.gov]; David Seris [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; Forland, Sasha [sasha.forland@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]; Urlich, Cecil [cecil.urlich@aecom.com]; Frownfelter, Jennifer [jennifer.frownfelter@aecom.com]
CC: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]

Subject: Pebble Cooperating Agency Meeting
Attachments: 20181024 Cooperating Agency Meeting.pdf
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: 10/24/2018 8:30:00 PM
End: 10/25/2018 12:30:00 AM
Show Time As: Tentative

Recurrence: (none)

Attached are slides for today's cooperating agency meeting.

Shane will be providing additional information on the meeting next week but asked that I send the teleconference and WebEx information. Additional materials/handouts will be distributed before the meeting for those calling in.

Draft Agenda:
1. Review of alternatives to be analyzed in detail
2. Format and level of detail for Chapter 2
3. Update on Appendix B (addressing USACE/CA comments, next version will be Draft EIS)
4. Review of select alternatives:

a. Filtered tailings (dry stack)
c. Other mine locations
d. Underground mining

-- Do not delete or change any of the following text. --

Join Webex meeting
Meeting number (access code): Conference Line/Code / Ex. 6

Join from a video system or application
Dial Conference Line/Code / @aecom.webex.com
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Join by phone

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US Toll

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If you are a host, go here to view host information.

IMPORTANT NOTICE: Please note that this Webex service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 5/24/2018 7:26:54 PM
To: Bob Loeffler [bobl@jadenorth.com]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Pres William Evanoff [nondaltontribe@yahoo.com]; Wesley Furlong [wfurlong@narf.org]
Subject: FW: Preliminary Scoping Issues Report
Attachments: COVER.docx; Appendix A_Federal Register NOI.pdf; Appendix B_Media and Outreach.pdf; Appendix C_Public Meeting Sign-in Sheets.pdf; Appendix D_Public Meeting Materials.pdf; Preliminary Scoping Issues Report_051818.docx

All,
Attached is a very preliminary report from comments received to date in the scoping period. I have been out sick, so I am a little behind in sending info for the June 6 CA meeting. I will be sending more information today and tomorrow.

Shane

-----Original Message-----
From: Evans, Jessica [mailto:jessica.evans@aecom.com]
Sent: Monday, May 14, 2018 1:02 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: Bella, Elizabeth <elizabeth.bella@aecom.com>; Craig, Bill <bill.m.craig@aecom.com>; Bellion, Tara <tara.bellion@aecom.com>
Subject: [Non-DoD Source] Preliminary Scoping Issues Report

Shane,

Attached is the complete Preliminary Scoping Issues Report. This includes:

* A document cover
* The report (in Word)
* Appendices A through D

Please send confirmation of receipt, so we can be sure that the attachments made it through.

Thanks,

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
jessica.evans@aecom.com <mailto:jessica.evans@aecom.com>

AMERICAN OVERSIGHT

AECOM

700 G Street, Suite 500, Anchorage, Alaska 99501

T 1-907-562-3366 F 1-907-562-1297

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US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: January 5, 2018

REFERENCE NUMBER: POA-2017-271

WATERWAY: Multiple

An application has been received in this office from Pebble Limited Partnership (applicant) to discharge fill material into and perform work within waters of the United States. The project site is located in Southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough. The project consists of four primary project elements: a mine site, a port at Amakdedori, transportation corridor, and natural gas pipeline. The submitted application is available on the Corps website at www.poa.usace.army.mil/Missions/Regulatory/Permitting-Section-Homepage/Department of the Army Permit Application POA-2017-271 submitted by Pebble Limited Partnership.

The Corps has determined and notified the applicant that an environmental impact statement level of analysis will be required for the review of the Department of the Army Permit application. As such, the Corps will conduct public scoping after publishing a Notice of Intent to develop an EIS in the federal register. The Notice of Intent will include a list of public scoping locations. Times and dates for these locations will subsequently be advertised via Corps Public Notice and website as well as local media outlets.

Please contact Sheila Newman, Regulatory Division Program Manager at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at poaspecialprojects@usace.army.mil if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

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NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

For Immediate Release:
March 30, 2018
Release No. 18-006

Contact:
John Budnik, 907-753-2615
John.P.Budnik@usace.army.mil

Scoping for Department of the Army Permit Application 2017-271-Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District requests public input regarding the scope of the environmental impact statement level of analysis for Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership.

The Pebble Project has been in the public eye for many years and there have been multiple public input and comment opportunities from other agencies. This public body of information has helped to inform the Corps' preliminary scope for the environmental impact analysis.

The Corps is now asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures.

Since Jan.5, the permit application has been publically available on the Alaska District's website. On Jan.12, the application was mailed via CD to 35 federally recognized Alaska Native Tribes alongside invitations for government-to-government consultation throughout the entire evaluation process including the EIS. The Corps maintains the application as well as additional scoping information at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska, 99506-0898

Beginning April 1, scoping input can be entered directly into the project website at www.pebbeprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

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Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

Meeting locations and times are indicated below. A video explaining major project components will be available for viewing. The Corps will have representatives available to answer questions regarding the Department of the Army permit application review process. Individuals may come in at any time during open hours and to provide scoping input. A Yupik translator will be available at the meetings.

Naknek
Monday, April 9
Naknek School
3:30 PM – 7:30 PM

Kokhanok
Tuesday, April 10
Tribal Hall
3:30 PM – 7:30 PM

Homer
Wednesday, April 11
Homer High School,
5:00 PM – 9:00 PM

Newhalen
Thursday, April 12
Newhalen School
3:30 PM – 7:30 PM

New Stuyahok
Friday, April 13
Community Building
1:00 PM to 4:30 PM

Nondalton
Monday, April 16
Tribal Center
3:30 PM – 7:30 PM

Dillingham
Tuesday, April 17
Dillingham Middle School
5:00 PM – 9:00 PM

Igiugig
Wednesday, April 18
Community Building
3:30 PM – 7:30 PM

Anchorage
Thursday, April 19
Dena'ina Center
11:00 AM – 9:00 PM

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

# # #

AMERICAN OVERSIGHT

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
April 6, 2018
Release No. 18-007

Contact:
John Budnik, 907-753-2615
Public.affairs3@usace.army.mil

Corps extends public scoping period for Department of Army permit application 2017-271 Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District has allotted more time for the public scoping period for the environmental impact statement level of analysis for Department of Army permit application 2017-271 submitted by Pebble Limited Partnership.

An additional 60 days has been added to the original 30-day public scoping period that began on April 1. Therefore, interested parties that would like to provide scoping input have until June 29 to submit.

The Corps is asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures. The permit application is available on the project website at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Scoping input can be entered directly into the project website at www.pebbleprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter. Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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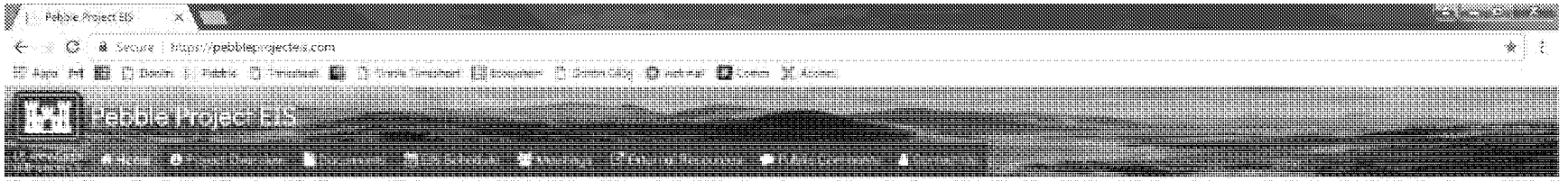

Welcome

The U.S. Army Corps of Engineers invites you to participate in the Pebble Project Environmental Impact Statement (EIS) process. Pebble Limited Partnership proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska, approximately 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton. A 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Kime Site is proposed as the energy source for the mine. The Transportation Corridor includes an 18-mile crossing of Lake Iliamna and an Amakdedori Port facility on the western shore of Cook Inlet.

The proposed mine requires many federal and state permits. The EIS provides the basis for the U.S. Army Corps of Engineers and other federal agencies to evaluate federal permit applications.

Your input can make a real difference in understanding:

- Issues and concerns that should be addressed in the EIS
- The way in which land and resources might be affected by the project
- Ideas on alternatives and ways to minimize impacts

We hope this website will answer your questions and make it easy for you to participate. Please add your name to our mailing list if you would like to be mailed our newsletters. If you have any questions that are not answered on the website, please contact us.

This site is being continually updated. Check back often for updates.

What's New?

Monday, April 30, 2018
Scoping meeting transcripts now available

Thursday, April 19, 2018
Applicant Video Available

Friday, April 6, 2018
USACE extends scoping public comment period by 60 days.

Sunday, April 1, 2018
Submit your Scoping Comments

Wednesday, March 28, 2018
Newsletter #1 Available

Friday, March 23, 2018
Scoping Package is Available

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Contact Us

AMERICAN OVERSIGHT

Pebble Project EIS

Pebble Project EIS

Project Overview | Mine Site | Transportation Corridor | Amakdedori Port | Natural Gas Pipeline | Applicant Video

Project Overview

Pebble Limited Partnership (Applicant) has applied for permits to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure. The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. In addition to the Mine Site, the project would have three other major components: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline.

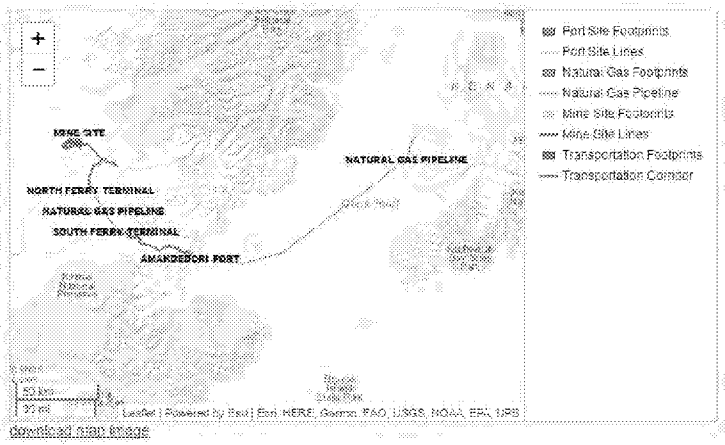
The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of the applicant and by a subsidiary of the applicant's parent company, Northern Dynasty. Neither the applicant nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Rights to develop on State of Alaska land may be acquired when necessary locations for mine development have been determined and permits awarded. The Transportation Corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act.

The proposed project would have a mine life of approximately 20 years. During that time, there would be:

- a total of 1.2 billion tons of material mined over the life of the project;
- mining rate up to 90 million tons per year;
- milling rate up to 58 million tons per year;
- annual copper-gold concentrate production of 600,000 tons; and
- annual molybdenum concentrate production of 15,000 tons.

The project would have an operating schedule of two 12-hour shifts per day for 365 days per year, and employ approximately 2,000 personnel for construction and 850 for operations.

A more detailed project description from the applicant to the U.S. Army Corps of Engineers can be found here.



Download map image

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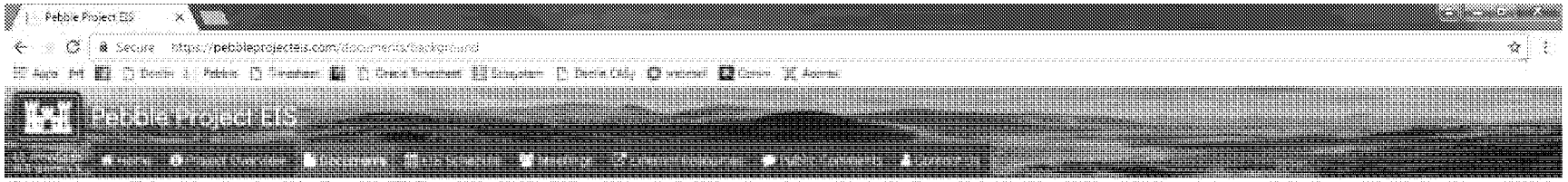

Documents

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Background Documents | Scoping Documents | EIS Documents | Newsletters | Project Library

Permit Application Documents

	Title	Date
Download	Department of the Army Permit Application	12/01/2017
Download	Department of the Army Permit Application CRM Upload Consolidated Replaces	12/01/2017
Download	Department of the Army Permit Application, Attachment A1	12/01/2017
Download	Department of the Army Permit Application, Attachment A2	12/01/2017
Download	Department of the Army Permit Application, Attachment A3	12/01/2017
Download	Department of the Army Permit Application, Attachment A4	12/01/2017
Download	Department of the Army Permit Application, Attachment A5	12/01/2017
Download	Department of the Army Permit Application, Attachment A6	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs	12/01/2017
Download	Department of the Army Permit Application, Attachment A6, MX1-16 mine xs_Optimized	12/01/2017
Download	Department of the Army Permit Application, Attachment C	12/01/2017
Download	Department of the Army Permit Application, Attachment D	12/01/2017

Federal Register Notices

	Title	Date
Download	Federal Register Notice of Intent	03/30/2018

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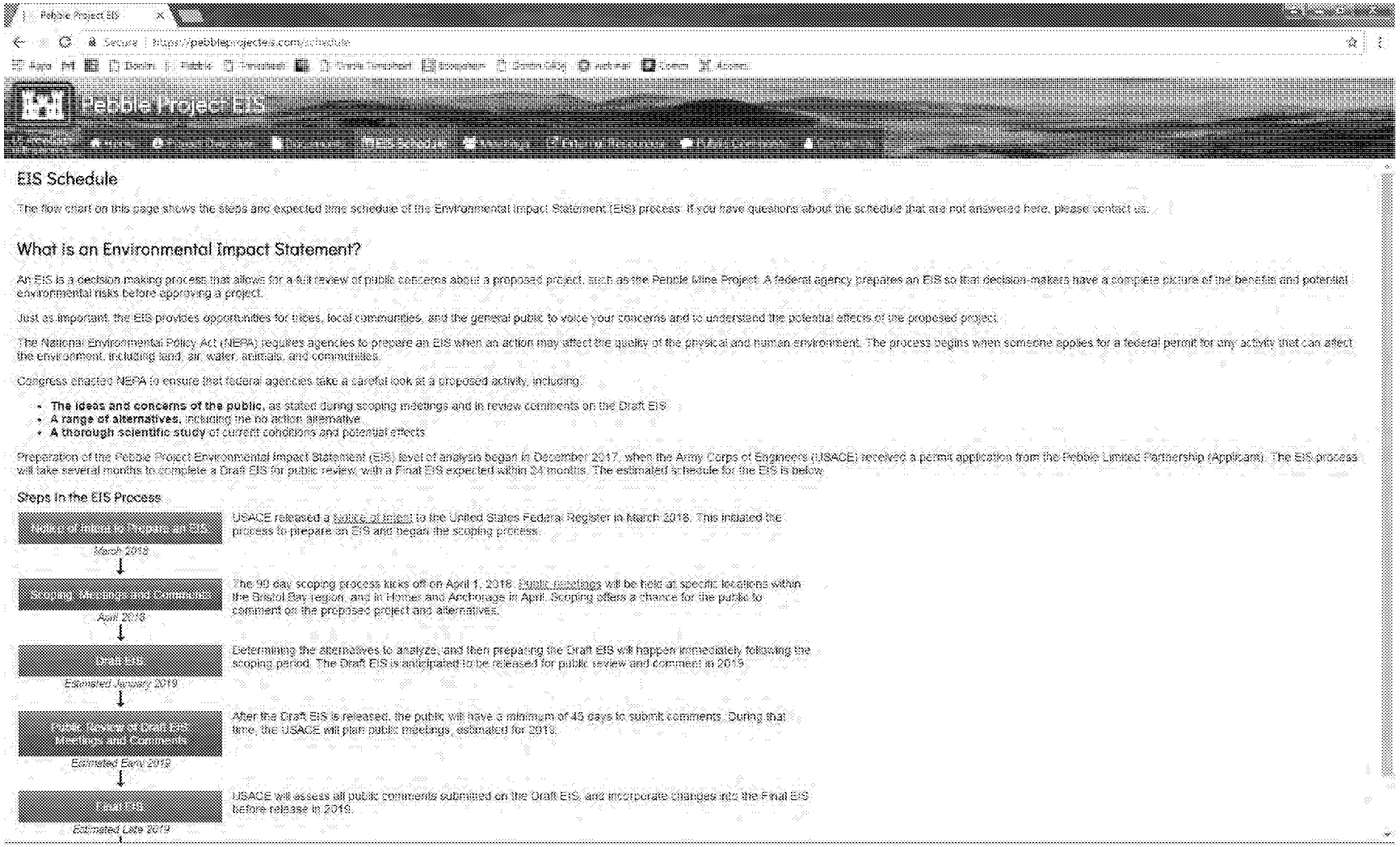

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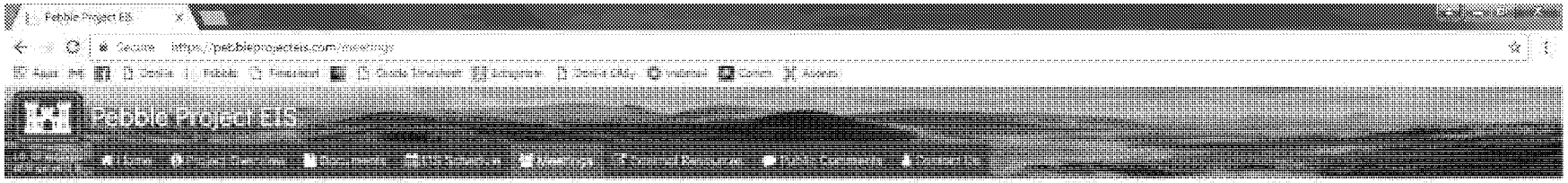

Scoping Meeting Schedule

The U.S. Army Corps of Engineers hosted public meetings in nine communities to give a presentation on USACE's role in permitting for the Project and the Environmental Impact Statement (EIS) process. The purpose was to inform communities about the EIS and gather comments from the public about concerns. Full transcripts are located here. You can view all comments as they are submitted here.

Community	Date & Time	Location
Naknek	Monday, April 9, 2018 3:30 PM - 7:30 PM	Naknek School
Kokhanok	Tuesday, April 10, 2018 3:30 PM - 7:30 PM	Community Hall
Homer	Wednesday, April 11, 2018 5:00 PM - 9:00 PM	Homer High School
Newhalen	Thursday, April 12, 2018 3:30 PM - 7:30 PM	Newhalen School
New Stuyahok	Friday, April 13, 2018 1:00 PM - 4:30 PM	Community Building
Nondalton	Monday, April 16, 2018 3:30 PM - 7:30 PM	Tribal Center
Dillingham	Tuesday, April 17, 2018 5:00 PM - 9:00 PM	Middle School
Igiugig	Wednesday, April 18, 2018 3:30 PM - 7:30 PM	Community Building
Anchorage	Thursday, April 19, 2018 11:00 AM - 5:00 PM	Denali'ina Center

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Public comments during this scoping phase will be accepted during the scoping period, scheduled to run from April 1, 2018 to June 29, 2018.

Submit your comment

There will be an additional public comment period in January 2019 when the Draft EIS is released.

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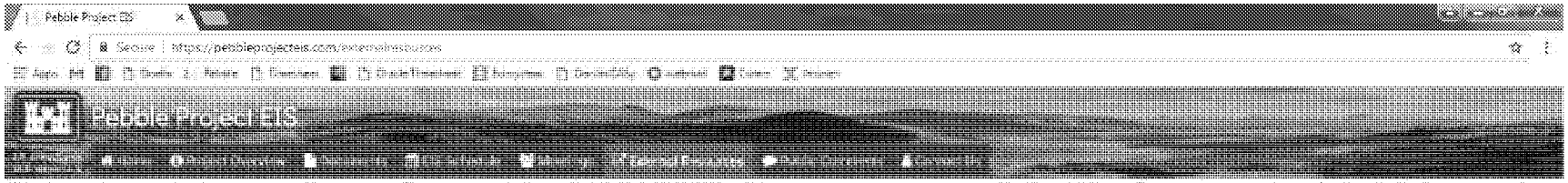

External Resources

This site provides external links as a convenience to our users. The appearance of external links on this site does not constitute endorsement by USACE of the external sites/documents or the information, products or services contained therein.

Council of Environmental Quality: Citizen's Guide to NEPA

Alaska Department of Natural Resources: Permitting Large Mine Projects in Alaska

Alaska Department of Natural Resources: Pebble Project

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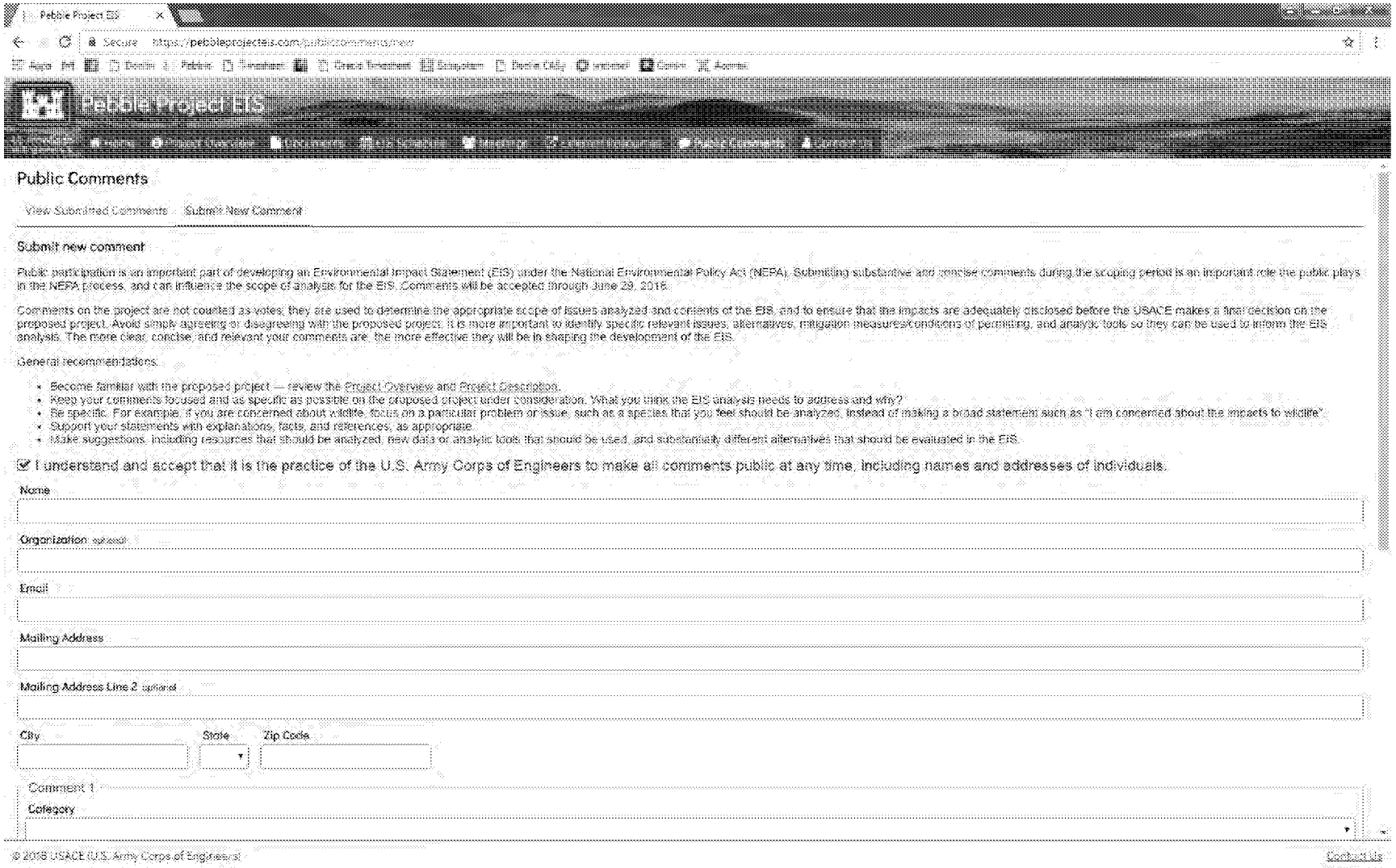

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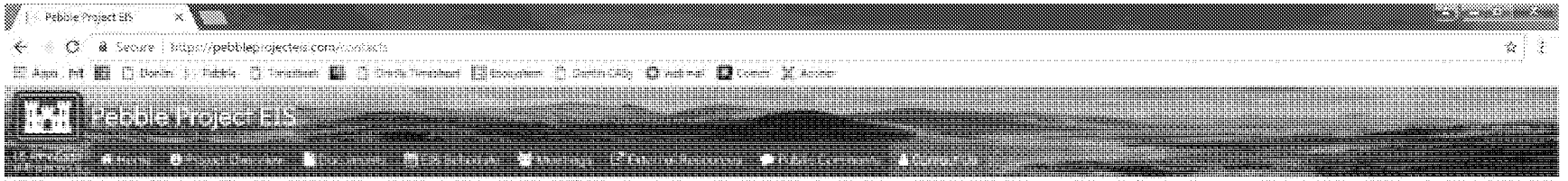

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Lead Agency

U.S. Army Corps of Engineers
http://www.poa.usace.army.mil

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DEPARTMENT OF THE ARMY PERMIT APPLICATION POA-2017-271, SCOPING PACKAGE

SCOPING PACKAGE CONTENTS

1. Public Scoping for the Pebble Project EIS
2. Pebble Limited Partnership (Applicant) Project Description
3. How Alternatives will be Developed
4. What Resources will be Analyzed in the EIS?
5. What is NEPA?
6. Roles and Responsibilities
7. EIS Schedule
8. EIS Outline
9. How to Comment
10. Pebble Project Comment Form
11. Frequently Asked Questions

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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action to express their views and concerns, and to offer suggestions on the scope of analysis. Public input may include ideas for alternatives to the proposed action that could have lesser environmental impacts.

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be avoided or lessened.

Public meetings will tentatively be held during the scoping period of April 1st to June 29th, 2018, in the following communities:

- Anchorage*
- Dillingham*
- Homer*
- Igiugig
- Kokhanok
- Naknek
- Newhalen
- New Stuyahok
- Nondalton

* To avoid long wait times, an open public testimony format will not be used.

Please check our website for the current meeting schedule.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to come to a scoping meeting and give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Scoping comments can be submitted through June 29, 2018.

* Comments received/postmarked after June 29 will be considered but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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PEBBLE PROJECT DESCRIPTION

Pebble Limited Partnership (PLP), proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. The Pebble Deposit is located approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit, and Kokhanok, which is located 3 miles to the northeast of the proposed road from the port site to the south ferry terminal on Lake Iliamna (see Figure 1).

PEBBLE PROJECT COMPONENTS

The Pebble Project as proposed consists of four facility and operations components:

Mine Site and Associated Facilities (see Figure 2)

- **Open pit mine**, developed in stages, with each stage expanding the area and deepening the previous stage. Final dimensions of the open pit would be approximately 6,500 feet long and 5,500 feet wide, with depths between 1,330 and 1,750 feet.
- **Mine site mineral processing facilities** include a crushing plant, coarse ore stockpile, grinding plant, froth flotation circuits to produce concentrates, and concentrate filters to remove moisture before shipment.
- **Copper-gold concentrate** would be loaded into covered bulk shipping containers and transported by truck to the Amakdedori Port. **Molybdenum concentrate** would be bagged and containerized before shipping to Amakdedori Port.
- **Tailings Storage Facility** located within the North Fork Koktuli watershed:
  - 1.1 billion tons storage volume.
  - separate cells for bulk and pyritic (lined) tailings.
  - four embankments: main (600 feet high), south (350 feet high), and east (60 feet high) perimeter embankments and an internal embankment (420 feet high) separating the bulk and pyritic tailings cells.
- **Low Grade Ore Stockpile** up to 330 million tons of mineralized material, segregated by relative value, and PAG waste rock, placed on an engineered liner to control seepage losses through the stockpile.
- **Waste rock** – Non-potentially acid generating (NPAG) waste rock would be used to construct various mine site structures, including the TSF embankments and mine site roads. PAG waste rock would be stored within the LGO stockpile until mine closure, and then back-hauled into the open pit.
- **Overburden Stockpile** segregated to the southwest of the open pit, and surrounded by a berm of non-mineralized rock to contain the material and increase stability.
- **Water Supply, Management and Treatment** consists of five components:
  - potable water well field and treatment plant.
  - two water management ponds (open pit and LGO/main).
  - sediment ponds.
  - three seepage ponds (south, west, and main embankment).
  - two water treatment plant/three discharge locations (north, south and east).

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- **Personnel camps** include a main construction camp to accommodate 1,700 workers, later refurbished for 850 rooms for operations.
- **Power generation** capacity and distribution infrastructure: 230 megawatt delivery capacity fired by natural gas and a 69-kilovolt distribution system.

Amakdedori Port Site (See Figure 3)

- **Ore carrier vessels** up to 40,000 dead weight tons and 700 feet in length, up to **25 Handysize ships will be required annually** to transport concentrate.
- Up to **30 marine line-haul barge loads of supplies and consumables** will be required annually. **Two ice-breaking tug boats** will be used to support marine facility operations.
- **2000 foot earthen access causeway** extending out to a marine jetty located in 15 feet of natural water depth.
- **Access channel and turning basin,** dredged to 50 foot depth.
- **Shore-based facilities** to receive and store containers and fuel, two, 2-MW natural gas power generators with an emergency diesel generator, a natural gas compressor station, maintenance facilities, employee accommodations, and offices.
- **Fuel storage** consisting of four 1.25 million gallon tanks inside a lined and bermed area

Transportation Corridor (see Figure 3)

Road System Connecting Amakdedori Port to the Mine Site

- **Private, double-lane road extending 30 miles south from the Mine Site to North ferry terminal** on the north shore of Iliamna Lake.
- **Private, double-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port** on Cook Inlet.
- **Eight bridges**, six of which would be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There would be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River.
- Daily transportation of concentrate, fuel, reagents and consumables would require **up to 35 truck round trips per day for each leg of the road**, including three loads of fuel per day.
- **Village surface road connections** from the Transportation Corridor to Iliamna, Newhalen, and Kokhanok.

Ferry Service and Terminals on Lake Iliamna

- **18 mile ferry crossing of Lake Iliamna.**
- **All-season icebreaking ferry** with 12 crew members.
- **Inbound supplies from the Amakdedori Port to the Mine Site** and **outbound copper-gold and molybdenum concentrates, backhauled waste, and empty containers.**
- **Average of one round trip ferry per day.**
- **Two ferry terminals** with 40 foot rock/aggregate causeway, container handling and storage facilities, office and maintenance buildings, and local power supply.

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Natural Gas Pipeline System (see Figure 1)

- **188 mile 10-12 inch diameter natural gas pipeline**, buried 3 feet deep onshore, in five segments:
  - starts on the eastern shore of Cook Inlet at Happy Valley near Anchor Point along the Sterling Highway.
  - 94 mile subsea pipeline crosses Cook Inlet to the Amakdedori Port Site.
  - 35 mile buried pipeline adjacent to the road from port site to south ferry terminal.
  - 18 mile pipeline across Lake Iliamna.
  - 30 mile buried pipeline adjacent to the road from north ferry terminal to Mine Site.
- **Two gas fired compression stations**, one on the eastern end at Anchor Point, and one at the Amakdedori Port.
- **Buried fiber optic cable** adjacent to pipeline.

PROJECT CONSTRUCTION

- **The project would take approximately four years to construct,** on four main project components – Mine Site, Amakdedori Port, Transportation Corridor, and Pipeline.
- **Transportation infrastructure to access the site is the first step**, along with Pre-production Phase environmental protection systems and temporary facilities that support construction crews (camps at port site, mine site, ferry terminals).
- **Initial access to the mine site within one year,** followed by earthworks, plant facilities, tailings storage embankments, stockpile foundations/liners, and water treatment facilities.
- **Natural gas line installation** will occur during the second and third construction years.
- **Completion of Pre-production Open Pit, power plant and processing facilities** in year 4.
- **Construction employment** estimated at 2,000 workers.

PROJECT OPERATIONS

- **Project operating life of 20 years**, **three mining phases** – pre-production, production and stockpile reclaim.
- **Conventional open pit mine** – drill, blast, truck and shovel operation.
- **Blasting events** – once to twice a day.
- **Tailings Storage Facility water management** – Control, collection, and recovery of tailings water for recycling or treatment prior to discharge; seepage collection system below impoundment structures; freeboard to contain inflow design flood.
- **Total material mined** – 1.2 billion tons over the life of the project.
- **Mining rate** up to 90 million tons per year, **milling rate** up to 58 million tons per year.
- **Annual concentrate production** – 600,000 tons copper gold, 15,000 tons molybdenum.
- **Operations employment** estimated at 850 workers, two shifts per day, 365 days/year.

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PROJECT CLOSURE

- **Reclamation and closure jurisdiction** – Alaska Department of Natural Resources Division of Mining, Land, and Water, and Alaska Department of Environmental Conservation.
- **Design for Closure** – early consideration of requirements for Closure and post-Closure site management.
- **Segregation of the bulk and pyritic tailings storage cells** to facilitate Tailings Storage Facility closure.
- **Potentially Acid Generating waste rock** backhauled to mine pit for subaqueous storage.
- **Comprehensive water management plan** that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of flow changes on stream flow and fish habitat.
- **Removal of mill and other infrastructure** not required for closure and reclamation.
- **Reclamation of disturbed areas** through grading, use of top soil as need and revegetated.
- **Road system retained** as needed for post-Closure activities and monitoring.
- **Pit lake water quality will be monitored;** water will be treated and discharged before levels approach elevation where groundwater flows outward from the open pit.

For more details, see Attachment D Project Description, Department of Army Application for Permit (POA-2017-271) on www.PebbleProjectEIS.com.

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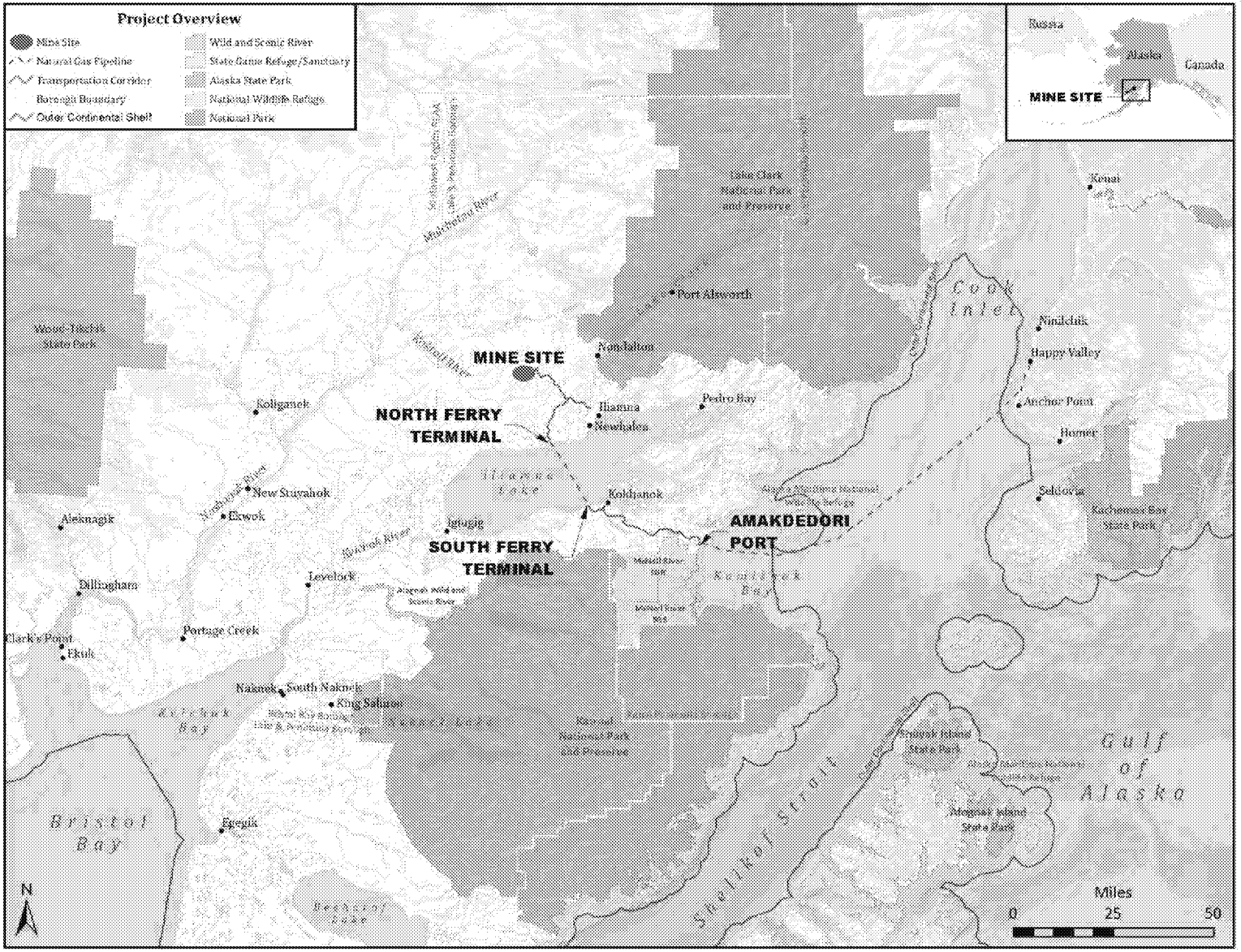

Figure 1. Project Overview

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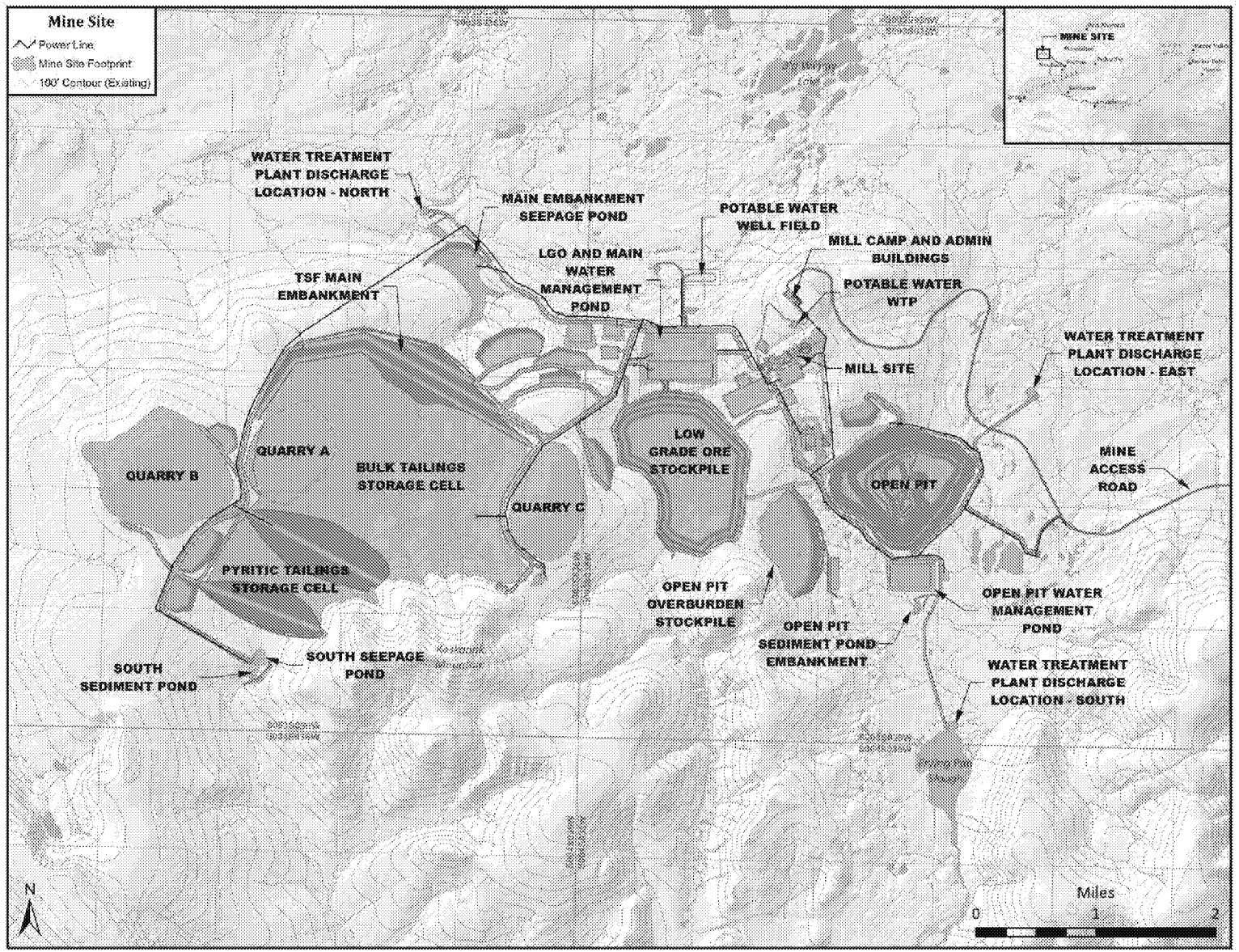

Figure 2. Mine Site and Associated Facilities

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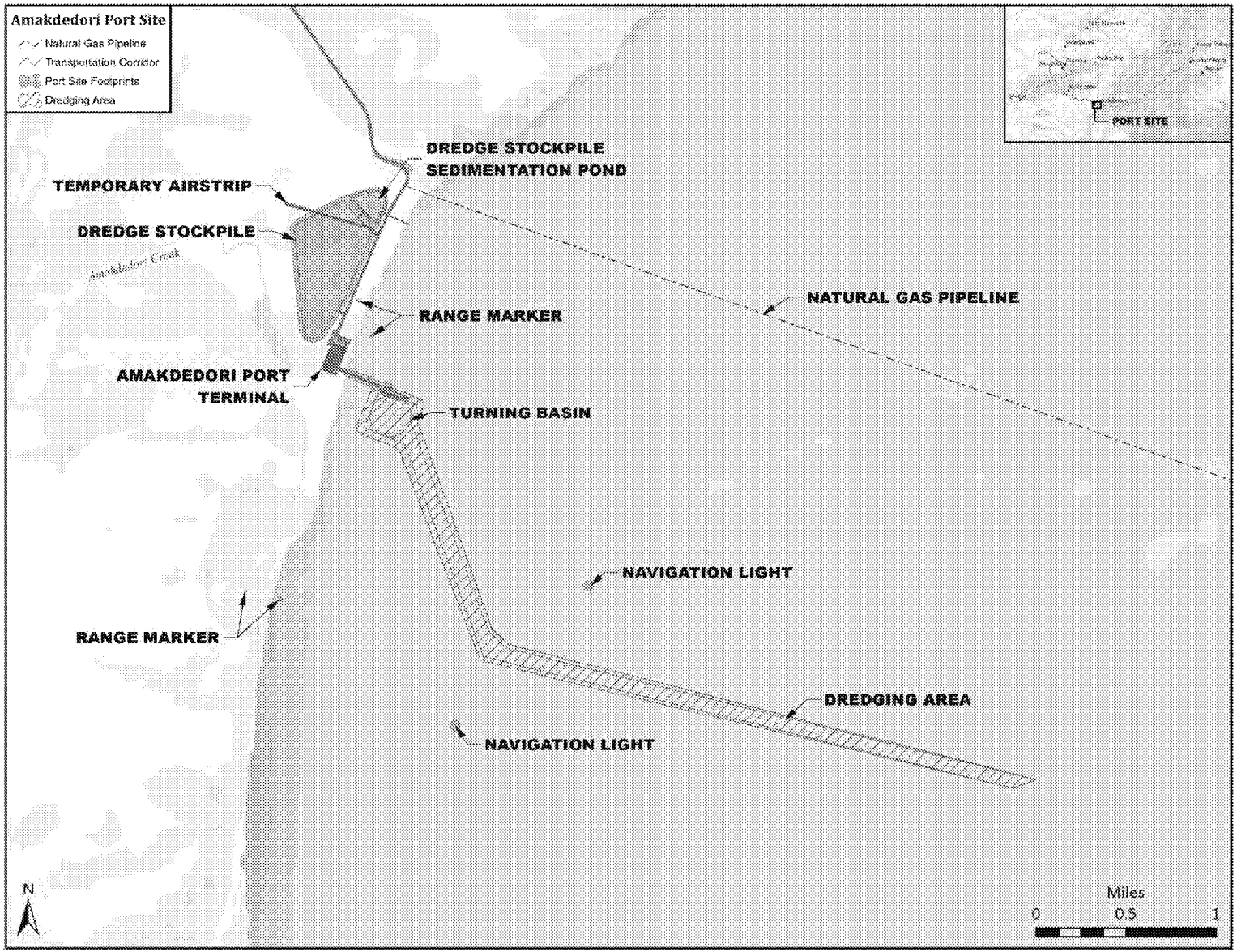

Figure 3. Amakdedori Port Site

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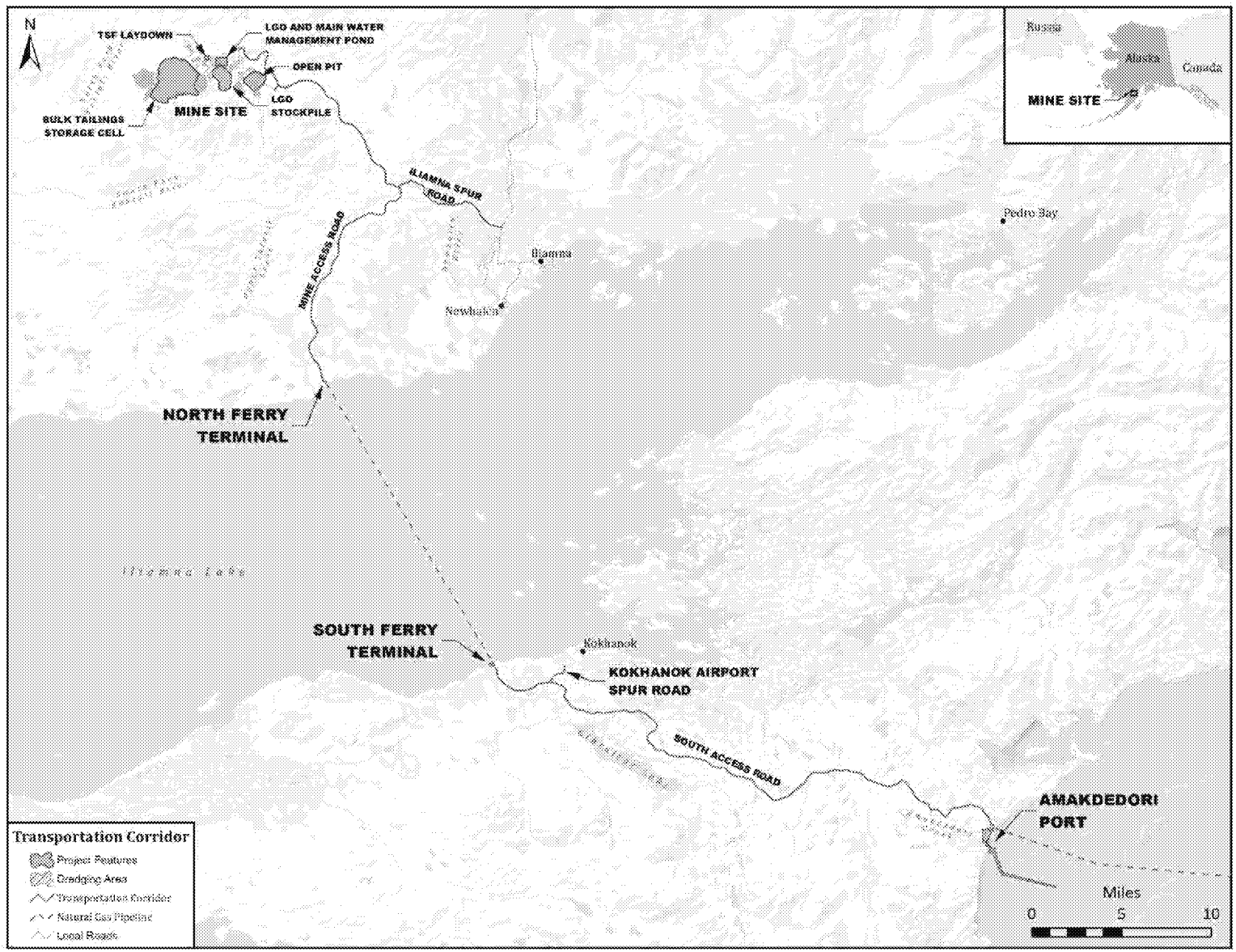

Figure 4. Transportation Corridor

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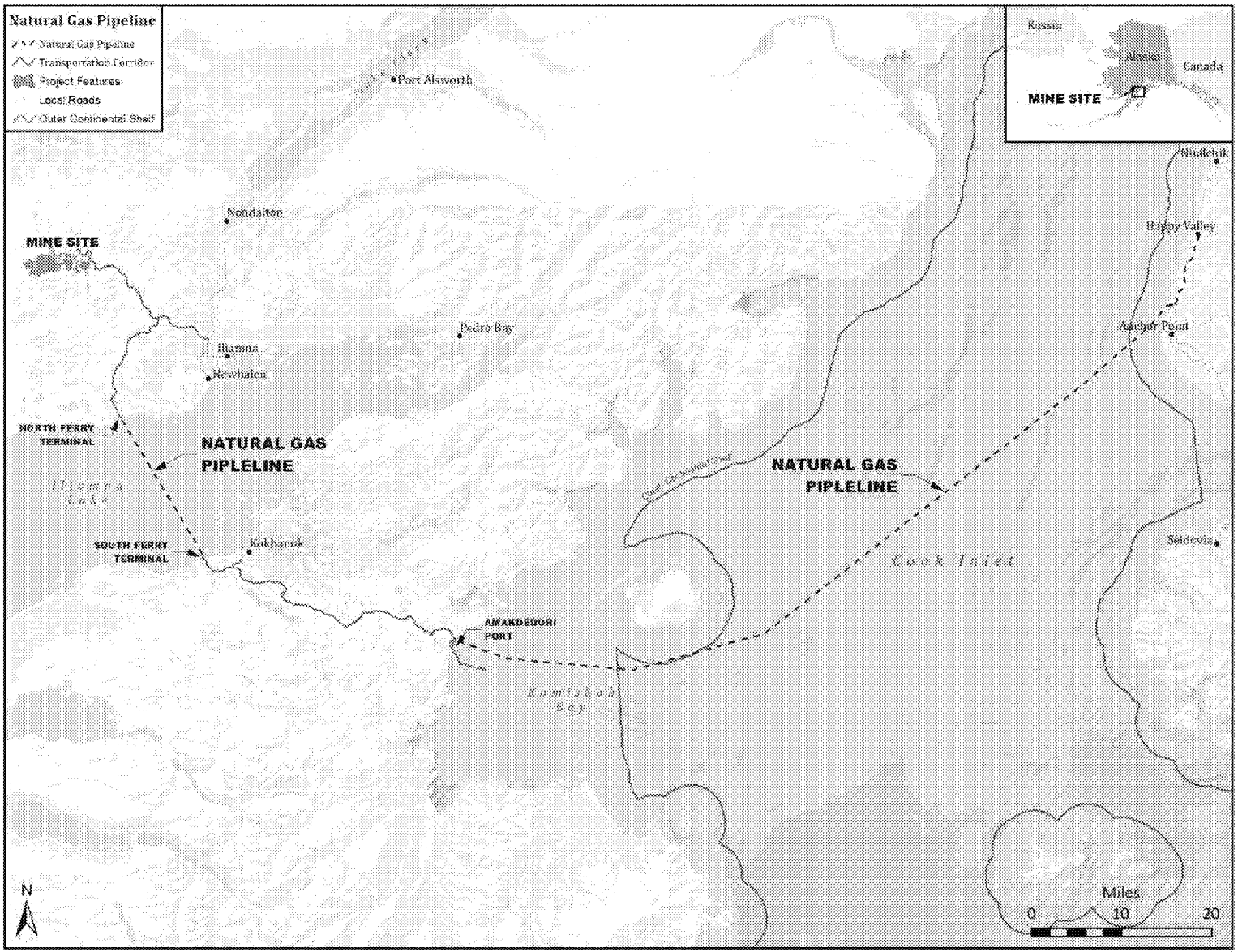

Figure 5. Natural Gas Pipeline

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How Alternatives will be Developed for the Pebble Project Environmental Impact Statement (EIS)

1. Identify need to which the United States Army Corps of Engineers (USACE) – Alaska District is responding and identify the overall project purpose. State the applicant's objectives for the project.
2. Compile a range of alternatives to be considered that meet the overall project purpose with consideration of the applicant's objectives. The alternatives compilation will include the no action alternative, any alternatives considered by the applicant, and alternatives suggested during the scoping process.
3. Determine whether identified alternatives are reasonable in accordance with the National Environmental Policy Act.
    a. Reasonable is based on the consideration of the overall project purpose including stated objectives as well as technology, economics, and common sense.
    b. Determine whether an alternative meets the overall project purpose inclusive of objectives.
        i. Alternatives that do not meet the overall project purpose will be eliminated at this stage.
        ii. Alternatives that meet the overall purpose will move forward.
    c. Alternatives that meet the overall project purpose will be reviewed to determine whether the alternative was available to the applicant during project planning (past 10 years).
        i. Alternatives identified as reasonable but were not available to the applicant will be removed at this time.
        ii. Alternatives that were available will move forward.
    d. Alternatives will be reviewed for technical feasibility (can these alternatives be accomplished using existing technology and equipment?).
        i. Alternatives determined to not be technically feasible will be removed at this stage.
        ii. Alternatives determined to be technically feasible will move forward.
    e. Alternatives will be reviewed for economic feasibility.
        i. Any alternative claimed to not be economically feasible by the applicant will require an economic analysis to support statement.
        ii. An alternative proven to not be economically feasible will be removed at this time.
        iii. Alternatives determined to be economically feasible will move forward.
    f. Alternatives will be reviewed using common sense.
        i. Alternatives that increase adverse environmental impacts will be removed at this time.
        ii. Alternatives will also be reviewed for logistical feasibility. Alternatives that are not logistically feasible will be removed at this time.

Identified REASONABLE ALTERNATIVES with significantly LESSER impacts will be evaluated in the EIS along with the NO ACTION alternative and the applicant's PROPOSED alternative.

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How Alternatives are Screened for Practicability

Due to the USACE specific authorities, alternatives must also be screened for practicability. The practicability determination is described below. Ultimately, the USACE must identify the **least environmentally damaging practicable alternative (LEDPA)** in the Record of Decision prior to making a decision under Section 404 of the Clean Water Act.

1. From the identified reasonable alternatives, further identify practicable alternatives in accordance with Clean Water Act Section 404(b)(1) of the Clean Water Act (the Guidelines). The Guidelines state practicable means the project is available and capable of being done after taking into consideration **cost**, **existing technology** and/or **logistics** in light of the overall project purpose including the applicant's objectives. Logistics and existing technology have at this point been screened in our determination of reasonable alternatives and are included below only for completeness and explanatory purposes. *An alternative needs to fail only one practicability factor to be determined not practicable*.
    a. Costs – Cost is analyzed in the context of the overall scope/cost of the project and whether it is unreasonably expensive. This determination is typically made in relation to comparable costs for similar actions in the region or analogous markets. Cost is to be based on an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost must be current with respect to the time of the alternatives analysis. Because one alternative costs more than another does not mean that the more expensive alternative is impracticable. It is important to note that in the context of this definition, cost does not include economics.
    b. Existing Technology – The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available.
    c. Logistics – The alternatives evaluated may incorporate an examination of various logistics associated with the project (e.g., placement of facilities within a specified distance to major thoroughfares, utilization of existing storage or staging areas, and/or safety concerns that cannot be overcome).
    d. Availability – The Guidelines state that if an alternative is otherwise practicable, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, the fact that an applicant does not own an alternative parcel, does not preclude that parcel from being considered as a practicable alternative. This factor is normally a consideration as a logistics and possibly cost limitation.
    e. Two tests are specified in the Guidelines for alternatives when the basic purpose of a project does not require siting within special aquatic sites such as wetlands. The basic purpose of this project is mining. The type of mining proposed (transitional metal-copper, gold, molybdenum) does not require siting within special aquatic sites. Therefore:
        i. It is presumed that alternatives that do not affect special aquatic sites such as wetlands are available

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ii. It is presumed that alternatives in sites that are not special aquatic sites will have a LESSER ADVERSE impact on the aquatic ecosystem

Once an otherwise practicable alternative has been identified, the applicant (Pebble Limited Partnership) will be required to clearly demonstrate to the USACE that both of these presumptions have been rebutted or the alternative will be considered in the determination of the LEDPA.

**All practicable alternatives are also reasonable alternatives.

2. The final step in developing alternatives is to construct detailed descriptions for the reasonable alternatives that have been retained and carried forward for evaluation in the EIS.

How the Public Can Provide Useful Guidance on Alternatives that should be Considered in the EIS

The purpose of scoping is to determine the alternatives that should be considered in the analysis and determine the extent and nature of issues by which each alternative should be evaluated.

Scoping is an important opportunity for all citizens to provide specific suggestions for alternatives that should be considered in preparing the EIS, and issues that should be addressed in that process. The following guidelines may be useful in submitting comments during the scoping period (*examples shown in italics*):

1. Keep in mind the reasonable alternative screening criteria described above – any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (*mining methods, water treatment, tailings management*), the port site, the transportation corridor and modes (*rail*), and the natural gas pipeline.
3. You can suggest changes in location of project components (*road, port site, mine components*).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (*construction of a rail connection may eliminate truck traffic and reduce dust levels*).

The USACE will make the results of the scoping process publically available by publishing the Scoping Report on the project website (pebbleprojecteis.com) and will also communicate information for newsletters.

How Alternatives will be evaluated in this EIS

Once reasonable alternatives have been identified for evaluation as above, the USACE will evaluate each alternative in relation to the following:

- Conservation
- Economics
- Aesthetics

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- General environmental concerns
- Wetlands
- Historic properties (inclusive of sacred sites or areas of community and/or spiritual significance)
- Fish and wildlife values (inclusive of endangered species, marine mammals, fisheries and wildlife)
- Flood hazards
- Floodplain values
- Land use (inclusive of transportation corridors)
- Navigation
- Shore erosion and accretion
- Recreation
- Water supply and conservation
- Water quality
- Energy needs
- Safety
- Food and fiber production (this would include subsistence activities)
- Mineral needs
- Considerations of property ownership
- The needs and welfare of the people

In the EIS, we will develop a framework to analyze each of these issues with emphasis on issues that rise to the highest level of importance.

During scoping, we are also asking you to help us determine which of these factors are of highest concern to you, to provide information of specific concern regarding any factor listed, and to identify any other specific issues that are not listed. As with your comments related to alternatives, please be as specific as possible when identifying other issues or expanding on issues identified above. This will help us develop the analytical framework moving forward.

For alternatives identified as practicable, the USACE will ultimately make the following determinations:

1) Whether the alternative is the least environmentally damaging practicable alternative,

2) Whether the LEDPA will cause or contribute to the violation of applicable state or federal laws, such as water quality standards or the Endangered Species Act,

3) Whether the LEDPA will result in significant degradation of waters of the United States

4) Whether the LEDPA includes appropriate and practicable steps have been taken to minimize the adverse impacts of the project on wetlands and other waters.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.
For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.
For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects.
For example: wetland fill from one project, combined with the wetland fill from a separate project.

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What is NEPA?

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA's goal is to help the federal government make decisions with full understanding of the potential environmental consequences associated with federal projects or authorizations. A thorough understanding of consequences allows us to identify potential actions that can be taken to protect, restore, or enhance the environment.

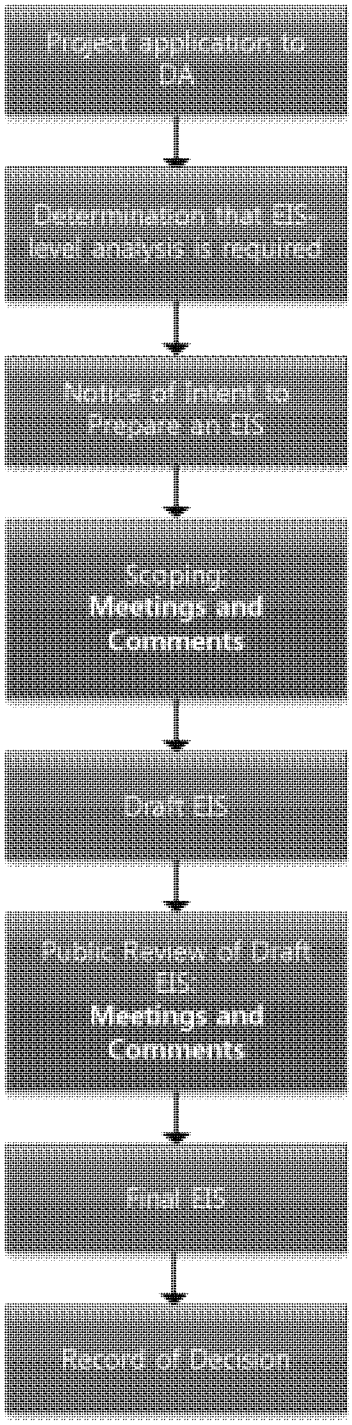
As the USACE prepares to review the submitted permit application, it must conduct a detailed study of:

- how the project will be built,
- the consequences of the project (good or bad) on the environment and for communities,
- alternative ways to develop the project that still meet the project's purpose and needs while better protecting people and the environment, and
- measures that can be taken to avoid or lessen any harmful impacts of the project.

Transparency

Before a decision is made and throughout its analysis, the federal government must ask citizens to voice concerns and suggest alternatives to ensure decisions on federal actions are well informed.

Steps in the EIS Process



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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of anlaysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. As lead agency, the USACE is responsible for identifying, inviting, and assigning roles to cooperating agencies including agencies that also have permitting decisions to make for the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisiplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide the interdisciplinary team that will develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, developing the Draft and Final EIS, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

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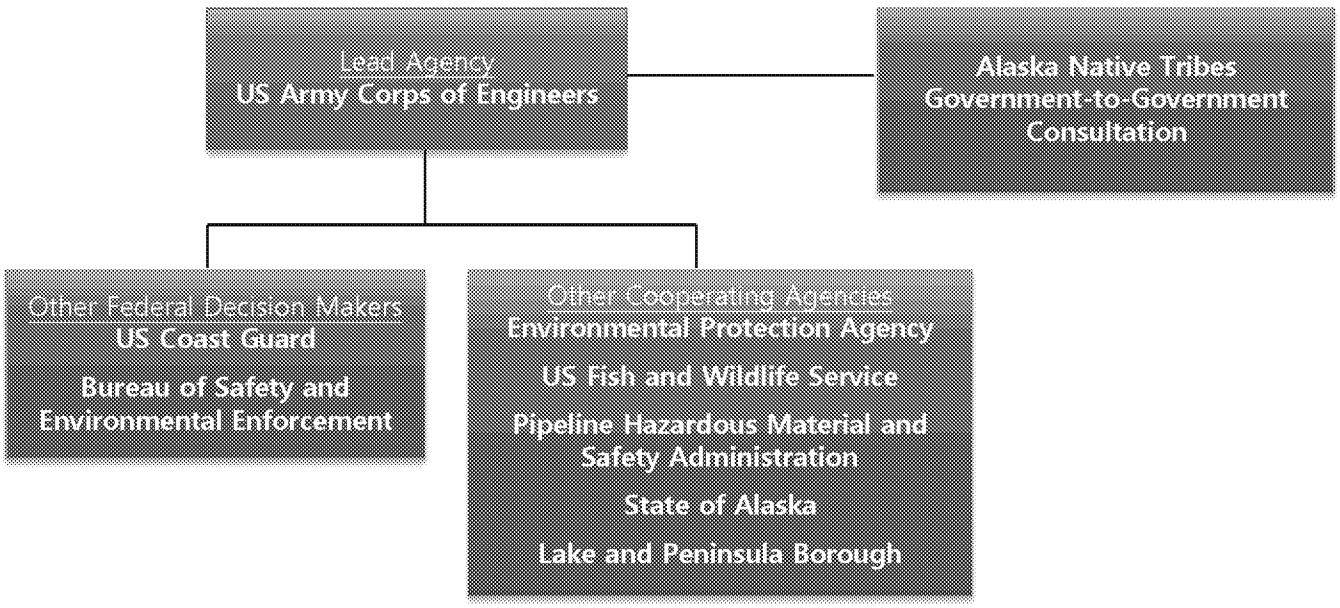
Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirity of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Lead and Cooperating Agencies



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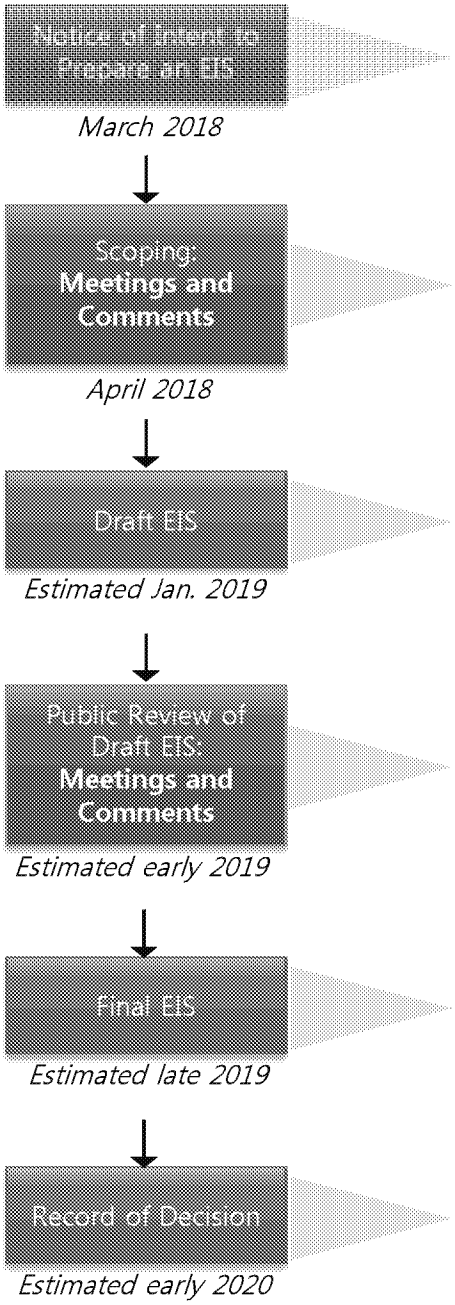
EIS Schedule

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began in December 2017, when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership (Applicant). The EIS process will take several months to complete a Draft EIS for public review, with a Final EIS expected within 24 months. The estimated schedule for the EIS is below.

Steps in the EIS Process



The USACE released a Notice of Intent to the United States Federal Register in March 2018. This initiated the process to prepare an EIS and began the scoping process.

The 30 day scoping process kicks off on April 1, 2018. Public meetings will be held at specific locations within the Bristol Bay region, and in Homer and Anchorage in April. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period. The Draft EIS is anticipated to be released for public review and comment in 2019.

After the Draft EIS is released, the public will have a minimum of 45 days to submit comments. During that time, the USACE will plan public meetings, in the same locations that occurred during scoping, estimated for 2019.

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release in 2019.

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application. This is estimated to be released in 2020.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. The EIS will be organized into chapters to address the specific requirements in the National Environmental Policy Act (NEPA). By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and providing comments.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consiquences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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How to Comment

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

General recommendations

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings. The website for the Pebble Project EIS is www.PebbleProjectEIS.com.
- **Learn about the steps in the NEPA process** and opportunities for submitting to the U.S. Army Corps of Engineers (USACE). Public comment periods are during scoping, and at the draft EIS.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through April 30.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed before the USACE makes a final decision on the permit application. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS. For a citizen's guide to NEPA, visit https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.

Tips for Writing Effective Comments

- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Support your statements** with explanations, facts, and references, as appropriate.
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29, 2018.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publically available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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From:

Please place first-class postage here.

Program Manager
US Army Corps of Engineers Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK 99506-0898

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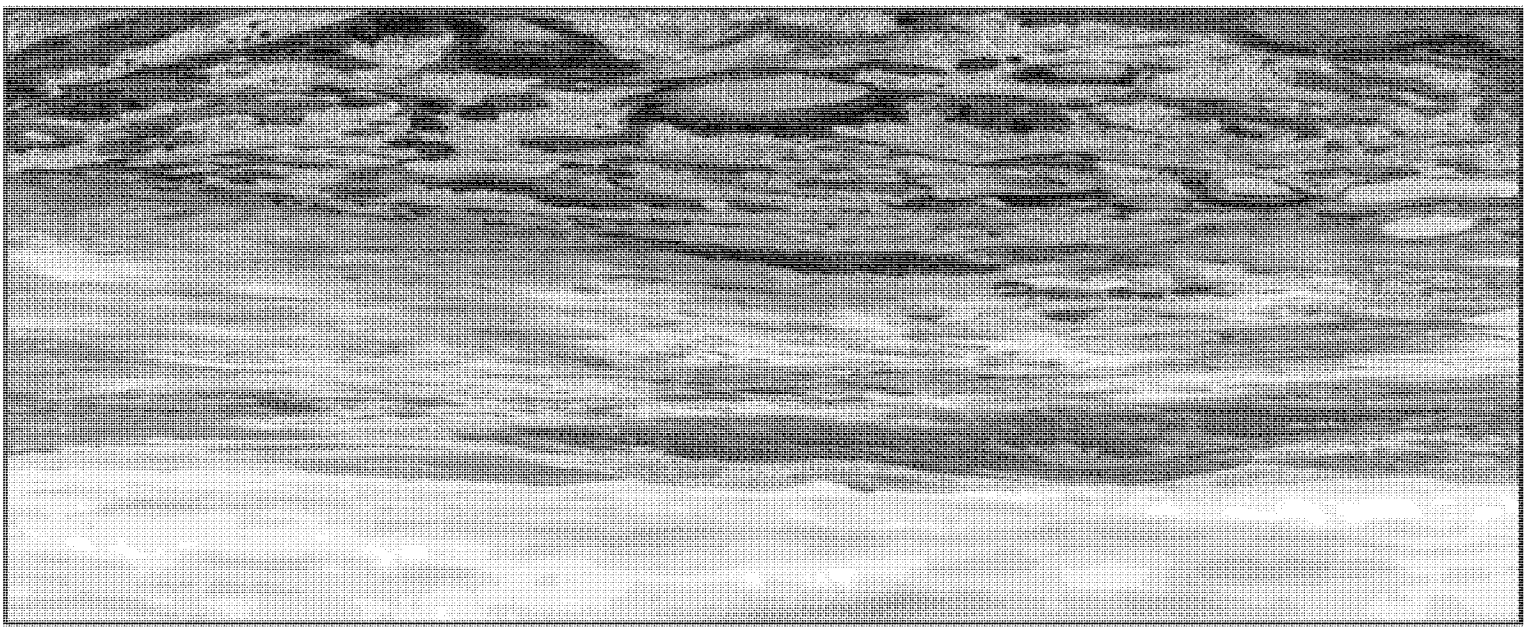

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Frequently Asked Questions

What is the U.S. Army Corps of Engineers' relationship with the applicant?

The U.S. Army Corps of Engineers (USACE) has no relationship with the applicant and is neither for or against the project. The USACE has a responsibility to review the applicant's proposed project with the same objectivity as it would any permit application and make a permit decision under the USACE statutory authorities.

Is the Pebble Project already approved and going to be built?

No.

What is the USACE's role in reviewing this project?

The applicant has applied for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. It is the USACE's responsibility to evaluate their application and ultimately make permit decisions (approval or denial) under the USACE's Clean Water Act and Rivers and Harbors authorities.

Why is the USACE conducting an EIS for this project?

The National Environmental Policy Act (NEPA) mandates an EIS-level of analysis should be conducted for review of any potential federal authorizations that could "significantly affect the quality of the human environment." The USACE has reviewed the permit application and has determined that the proposed project could "significantly affect the quality of the human environment."

Are any other federal decisions required based on the applicant's submittal of the permit application?

Two additional federal agencies have federal decision making authority: the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement, and the U.S. Coast Guard.

Will the USACE seriously consider the No Action Alternative and what factors might lead to its selection?

The USACE cannot be pre-decisional, therefore, the process will be required to analyze and consider the No Action Alternative. In the context of USACE's evaluation, the No Action Alternative constitutes an action that would not include the discharge of fill material into waters of the United States.

What is the role of cooperating agencies that do not have federal decisions to make?

The role of cooperators invited due to specific expertise is to support the lead agency in developing the environmental analysis and providing technical assistance at the request of the lead agency.

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What is the role of federally recognized Alaska Native Tribes in the EIS process?

Thirty five federally recognized Alaska Native Tribes have been asked to consult directly with the USACE as lead agency throughout the entire decision making process to include the development of the environmental impact statement.

When and how will my comments be considered in preparing the EIS?

Public comments can be submitted at any time during the preparation of an EIS. Formal requests for comment occur during two important phases of an EIS:

- During the Scoping Period, the public is asked to comment on the issues and potential impacts that should be addressed in the EIS. The public is also asked to suggest alternatives to the proposed action that should be considered for evaluation in the EIS.
- Once the Draft EIS is released for public review and comment, the public is given the opportunity to submit comments in written form via the project website and orally at public meetings on the Draft EIS.
- All comments submitted will be put into the record, analyzed, and considered in determining the scope and potential impacts within the EIS and in making changes to the Draft EIS during the preparation of the Final EIS.
- The USACE is required to prepare responses to comments submitted on the Draft EIS; comments submitted and response will be included in the Final EIS.

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Pebble Project EIS

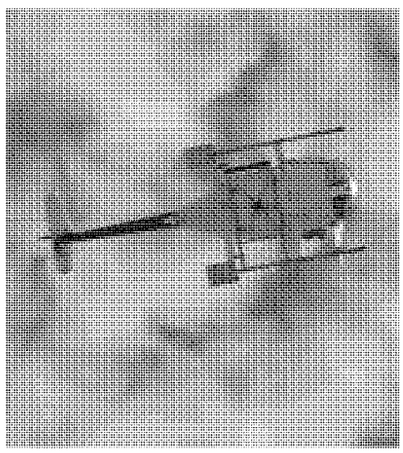
NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.

2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.

3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

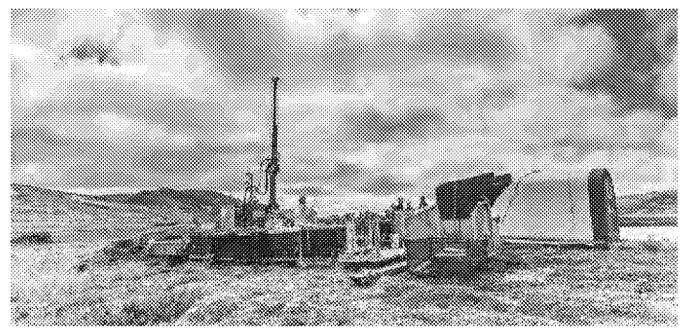
ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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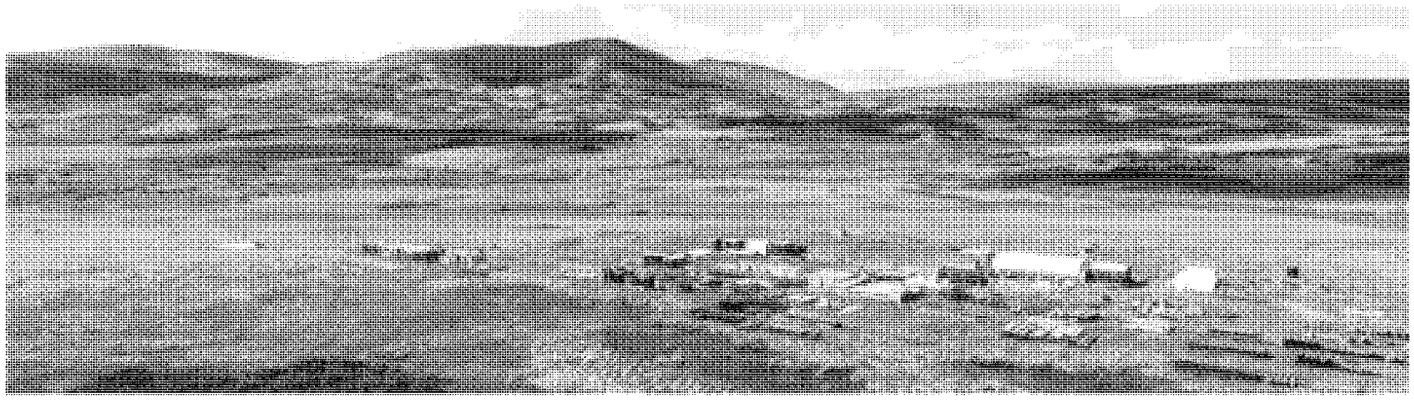

Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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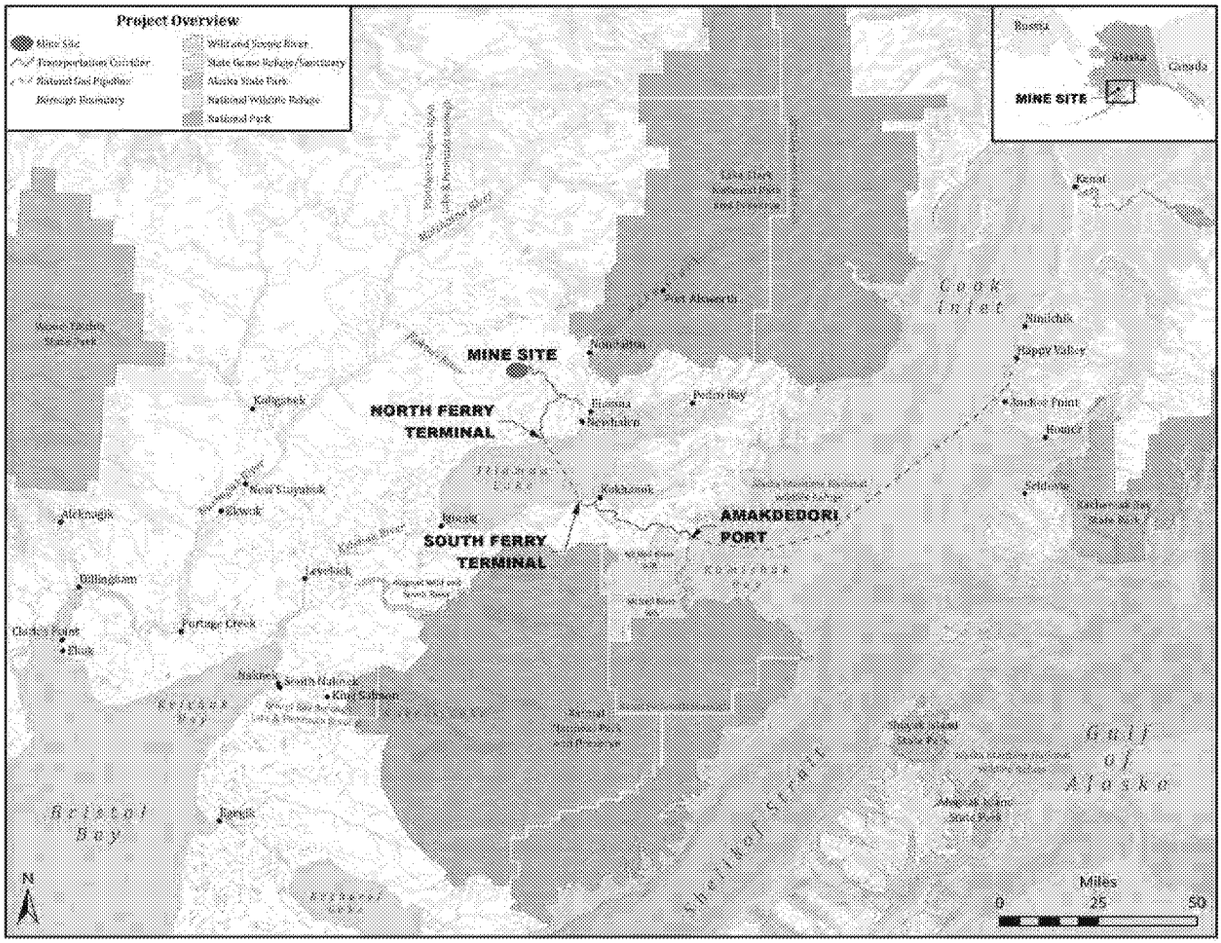
Project Overview
Mine Site
Transportation Corridor
Natural Gas Pipeline
Borough Boundary
Wild and Scenic River
State Game Refuge/Sanctuary
Alaska State Park
National Wildlife Refuge
National Park
Russia
Alaska
Canada
MINE SITE
MINE SITE
NORTH FERRY TERMINAL
SOUTH FERRY TERMINAL
AMAKDEDORI PORT
Kenai
Cook Inlet
Nikiski
Happy Valley
Anchor Point
Homer
Seldovia
Kachemak Bay State Park
Tyonek
Kenai Mountains-Turnagain Arm National Heritage Area
Kenai Peninsula Borough
Matanuska-Susitna Borough
Lake Clark National Park and Preserve
Point Alsworth
Susitna Flats State Game Refuge
Redoubt Bay
Kalgin Island
Ladd Landing
Kalgin Island
Kalgin Island Unit
Kalgin Island State Park
Kalgin Island Unit
Kalgin Island Unit
Kalgin Island Unit

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ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 08, 2018, April 09, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed _____
Joleesa Stepetin

Subscribed and sworn to before me
this 9th day of April, 2018

_____
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

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To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Naknek	Mon. April 9, 2018	3:30 – 7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30 – 7:30 pm Tribal Hall
Homer*	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30 – 7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00 – 4:30 pm Community Bldg
Nondalton	Mon. April 16, 2018	3:30 – 7:30 pm Tribal Center
Dillingham*	Tue. April 17, 2018	5:00 – 9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30 – 7:30 pm Community Building
Anchorage*	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 15, 2018, April 16, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin
Joleesa Stepetin

Subscribed and sworn to before me
this 16th day of April, 2018
Britney Thompson
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

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Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

AFFP

Notice of Public Meetings

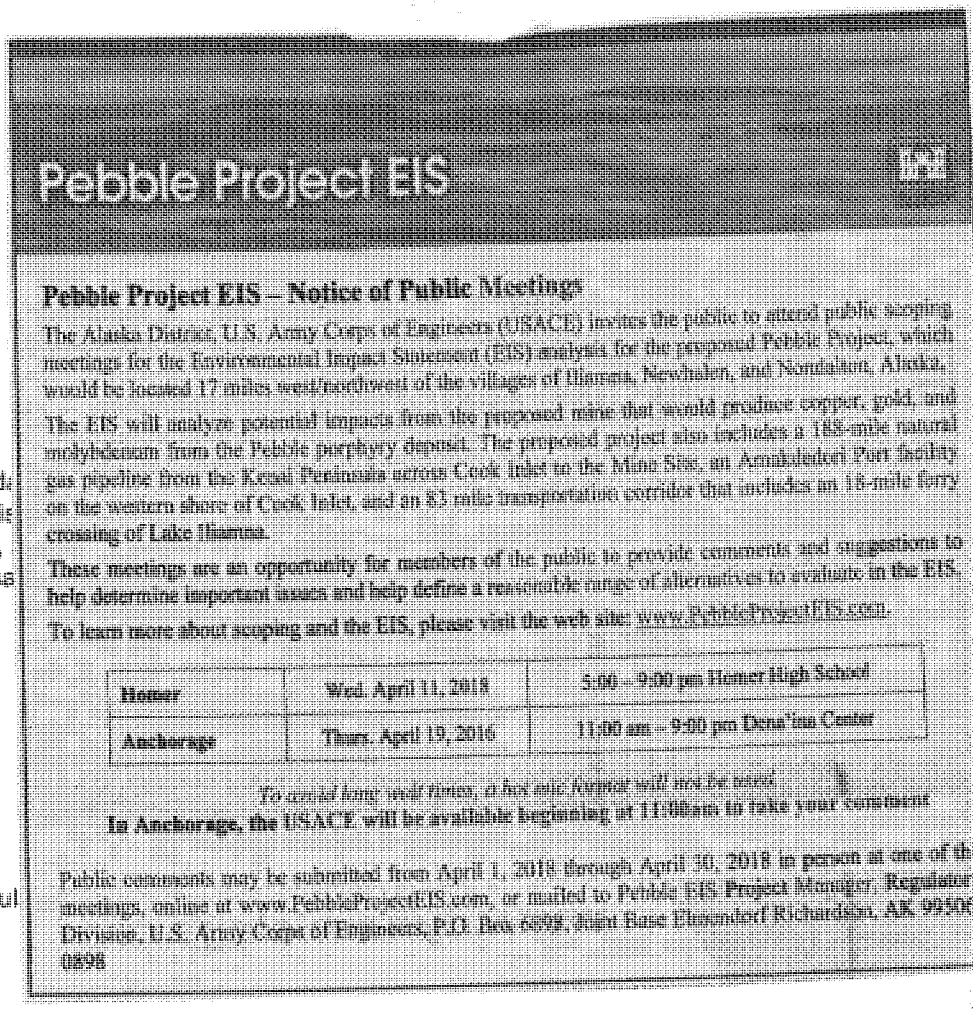
Affidavit of Publication

STATE OF ALASKA }
COUNTY OF KENAI } SS

Denise Reece, being duly sworn, says:

That she is Principal Clerk of the Homer News, a d
newspaper of general circulation, printed and publis
Homer, Kenai County, Alaska; that the publication,
of which is attached hereto, was published in the ss
newspaper on the following dates:

April 05, 2018, April 12, 2018



Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Homer	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Anchorage	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

To avoid long wait times, a box size keypad will not be used.

In Anchorage, the USACE will be available beginning at 11:00am to take your comments.

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898

That said newspaper was regularly issued and circul
on those dates.
SIGNED:

Denise Reece
Principal Clerk

Subscribed to and sworn to me this 12th day of April 2018.

Mary Von Beaudion, Notary Public, Kenai County, Alaska

My commission expires: August 29, 2020

MARY VON BEAUDION
Commission Expires
NOTARY
PUBLIC
AUGUST 29, 2020
STATE OF ALASKA

00001218 13002507

Jessica Evans
AECOM
700 G. Street, Suite 500
ANCHORAGE, AK 99501

AMERICAN OVERSIGHT

US Army Corps of Engineers

Invites You to Attend Public Scoping

for the

Pebble Project EIS

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The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the Pebble Limited Partnership's proposed project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts, benefits, and alternatives from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Maureen Knutsen	self/~~husband~~	Personal Matters / Ex. 6
2. HENRY F. Fischer Jr	Self employed	
3. William REGAN	RETIRED	
4. Dorothy M Larson	BBNC	
5. Marilyn A Hanson	housewife	
6. Paul Hansen Sr	Subsistence Fisherman	
7. Sharon Thompson	resident	
8. ~~Alex~~ Williams	PLP / Self	
9. Richard Russell	formerly ADFG but now just for myself	
10. Peter Andrew	BBNC	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Henry		
12. Ted Shangin		
13. Joe Chythlook	BBNC	
14. Quinhagak	BBNC	
15. Daniel J. O'Hara	Bristol Bay Borough	
16. Everett Thompson	Bristol Bay Fisherman Local	
17. Dylan Manuso	Bristol Bay Fisherman	
18. Mellisa Manuso	BB resident	
19. Lindsay Layland	BB resident	
20. Russell Phelps	BBNC	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. George Wilson Jr	BBFA/personal	
22. Russell Nelson	BBNC	
23. John Christensen	Native Village of Port Heiden	
24. Jodi Hagenlocker	Naknek	
25. Cody Lawson	D. Mayhan	
26. MegAnna Schlais	Naknek	
27. Pete Cavasso	KS/Naknek	
28. CaroLAnn Hester	Naknek Set Gillnet Fisher	
29. Beth Hill		
30. Anna Hoover	Egegik Drifter	

Personal Matters / Ex. 6

Peter Andrews

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Eddie Clark	Egegik Setnetter	Personal Matters / Ex. 6
32. Dale Peters	NO MINE! NO WAY!! NAKNEK SETNETTER LOCAL BUSINESS OWNER	
33. Veronica Wood	Naknek Resident	
34. Eseta Sherman	Small Business	
35. Joshua Gumlickpak	Alushagak Drifter	
36. Paul Hansen Jr	Fisherman Driftnet	
37. Rose Chr Hansen	Naknek Resident	
38. Annette CARLUS	Naknek resident	
39. Josey Wood	Resident	
40.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. William Weatherby		
42. Kate Conley	Lake & Peninsula Borough	
43. John Wise		
44. BECKY SAVO	resident BBB	
45.		
46.		
47.		
48.		
49.		
50.		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Wesley Foster		Personal Matters / Ex. 6
52.		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Gerald Andrew		
2. David McAlister		
3. Paul Chukwak		
4. Joe Chythlook		
5. John Nelson Jr	self	
6. Sheila M. Hobson		
7. Jim Tilly	self	
8. Michelle Ravenmoon	Lake & Penn Borough Assembly	
9. Steve Nowatak		
10. Joe Hyde		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Agnes Mike		
12. Marlene Tilly		m
13. Rickterff Marsha Rickterff		
14. Matt Matt Rickterff		
15. Kimberly Williams		
16. NATHAN HILL	LAKE + PENINSULA BOROUGH	m
17. Trofim Wassillie		
18. Mariana Eknaty		
19. Diedre Hill	B.B.N.C. / land owner	d
20. Mollie Gatzke		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Viola Paul		
22. Greg Andrew Jr.		
23. Sergie Chukwak	Levelockville	
24. Luke Zackar		
25. Gustie Tallekpalek	Levelock AK	
26. Gilbert Andrew	Kokhanok AK	
27. Laura Evan-Andrew	Kokhanok, AK	
28. Nicll Newyaka Jr.	Kokhanok AK	
29. Avery. Gill	KDLG	
30. Cynthia Olympic-Andrew	Kokhanok	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Alesia Newyak	Kokhanok	
32.	[illegible]	Kokhanok	
33.	Fran Andrew	Kokhanok	
34.	Jimmy Ekuty	Kokhanok	
35.	Natalia Wassillie	Kokhanok	
36.	Marisa Hobson	Kokhanok	
37.	Isaiah Mike	Kokhanok	
38.	Joseph Zackar	Kokhanok	
39.	John Clawkwak	Levelock	
40.	Martha Kernak	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	✓
41. Alice Cobb	Kokhanok		
42. John F. Gust	Kokhanok		
43. Gregory Wassillie	Kokhanok		
44. Samuel Madrid	Kokhanok		
45. Gemi Heath (Hester)	Kokhanok		
46. Joe A Paine	Kokhanok		
47. Alexander Tallekpalek			
48. Joe Woods	Kokhanok		
49. Raymond Apokedak	Levelock		
50. Nicholas Chocknok	Kokhanok		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Brittany Rush		Personal Matters / Ex. 6
52. Evangaline Chunak		
53. Sonia Delkittle		
54. ~~Megan Kloff~~		
55. SAMMARA chunak	Kokhanok	
56. Helen chunak	Kokhanok	
57. Cara Pellegrino	Kokhanok	
58. Shelby Gallio	Kokhanok	
59. Jordan Pufka	Kokhanok	
60. Charlene Roehl	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Test.ify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marlene Nielsen		
62. Sharolyn Chocknok		
63. Jootsie Roehl	handed in	
64. Troy Anderson		
65. Kathy Wassillie		
66. Nancy Wassillie		
67. Jesse Davis		
68. Loney Moses		
69.		
70.		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. DAN BOONE	[redacted] NONE	
2. JACK POLSTER	"	
3. Eileen Sheridan	Cook Inlet Keepers	
4. Gary Sheridan	"	
5. Wilma Williams	me	
6. Royce Page	none	
7. JACK ALLAROICE	NONE	
8. JOHN WHITTIER	NONE	
9. Amanda Kelly	none	
10. Janet Fink	nmc	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Sera Baxter		
12. John Allardice		
13. MICHELLE MICHAUD		
14. Chris Perry		
15. Milli Martin		
16. BRYAN ZAK		
17. SHIRLEY EVANS		
18. Georgeanna Heaverley		
19. Shlomo Sherman		
20. Jan Jezek		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Bern Levine	none	
22. Linda Layland	n/A	
23. Emilie Springer	UAF	
24. Martha Crow	fisherwoman	
25. Charles Crampton	farmer-none	
26. Barbara Reilly		
27. Larry Shone	None	
28. Mili Lundgren	Fisherman	
29. Mike Lundgren	Fisherman	
30. Clyde Bogard	Interested Alaskans who use our fishery	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Jeff Middleton		
32. Dennis Andrews		
33. Shelley Gill	Eye of the Whale.org	
34. Michael Yourkowski		
35. Rae Lewis	Salmon Lover	
36. George Matz		
37. John Mcall	BBG	
38. MATT HAKALA		
39. Lorena Brown	Salmon State	
40. Jessie Nelson	Cook Inlet Aquaculture Lower Inlet Setter	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Beaver Nelson	Cook Inlet Seiner	
42. Brad Cameron	Sportsfisherman	
43. Janette Latimer	Nurse	
44. Lisa Krebs	Bristol Bay Fisherman	
45. Tricia Curran	Tender owner in B. B.	
46. George Smallwood	Keeper	
47. Marika Carey		
48. Shine Carey		
49. Kyle Schneider	Sportfisherman/Educator	
50. Donna Adarhold	self	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Charlie Franz		
52. Claire Neaton	comfish	
53. Jim PLYMIRE	BEAR COVE FISHERIES LLC	
54. Jinky Handy		
55. Malcolm Milne	North Pacific Fisheries Assoc.	
56. Revelle Russell	North Pac Fisheries Assoc UCIDA	
57. Jennifer Hakala	NPFA	
58. GARY AULT		
59. Andrew Snegirev		
60. Jaime Gable		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Jon James Sharp	human	Personal Matters / Ex. 6
62. Chessie Sharp		
63. Laura McIntoe		
64. MARK MASSIOU		
65. Reba Temple	fisherman	
66. Ron KEFFER	CAN	
67. Carolyn Maolerd	teacher/salmon advocate	
68. STEVE BAIRD		
69. Jane Mile		
70. Catie Bursch	Fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Wendy Wayne		Personal Matters / Ex. 6
72. Lolita Brache		
73. Tess Dally		
74. Charles Lindsay	VCIDA	
75. Renie Cannava		
76. Peter Cannava		
77. Joey Kraszeski		
78. Solstice Kraszeski		
79. LOGAN SANDER		
80. Barb Buzzelli Aust		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. PAT & Lyle Bellamy		
82. Cheryl Rykaczewski	MARICULTURE OYSTER FARMER – ASSN.	
83. McKIBBEN JACKINSKY	HOMER NEWS / PREVAILING WRITER	
84. Sharon Brooks	resident	
85. Laura Luttrell		
86. ROB LUND	RESIDENT	
87. Karen Murdock	resident	
88. Thomas McDonough	resident	
89. Wesley & Sharon Henny	resident	
90. LuAnne M. Nelson	resident	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. Brandon Hill	Cook Inletkeeper	
92. Tim Scheffel DO	Private-Healthcare	
93. Stu Schmutzler	private	
94. Amanda Campbell		
95. Sean Campbell		
96. Kathryn Carssow	private	
97. MAKO HAGGERTY	self	
98. Amy Christiansen	self	
99. Shevaun Miller	self	
100. Amy Woodruff	self	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Brenda Dolma	Alaskan (self)	
102. Drue Smith	Alaskan	
103. Erin Knudtson	"	
104. Patricia Cue	Kachemak Bay Conservation Society	
105. Dina Cheerman	Alaskan	
106. Tim Steinberg	Alaskan	
107. Laurie Daniel	Alaskan	
108. Katie Dawson	Alaskan	
109. Tammy Cornwell	Alaskan / tourism	
110. David Schaible	Alaskan	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Phil. P Brudie	local fisherman	
112. Joe Symbersky	Local fisherman	
113. Dawn Symbersky	business owner	
114. Roberta Highland	Kachemak Bay Society Community	
115. Ernest Suoja	Local	
116. Bill Wiehe	Local	
117. Leon Smith		
118. Trisha J. Davis	Superfund Site Survivor	
119. Mark Munro	Fisherman Bear View Air Taxi	
120. Matthew Martushev	Commercial fisherman	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. NATACHA MCCANN		
122. John Mink		
123. SARAH ROBERTSON	HOMER BIRTH & WELLNES	
124. GLENN CALDWELL		
125. Jeff Dean		
126. Skywalker Payne		
127. Daniel Laylands	COOK INLET RESIDENT 35yr Bristol Bay Summer	
128. DAVE BACHRACH		
129. Doug Reid		
130. Deborah Smith	Cook Inlet Keeper Supporter	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Lynn Temple		
132. MARY FEISCHE		
133. KARA CLEMENS		
134. AndreaVanDinther	Bear Guide	
135. Sofia Loboy		
136. Isabella Loboy		
137. Hudson Loboy		
138. Joe Loboy		
139. Jeanne Parker	teacher	
140. Russell Miller		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Alison Ohara		Personal Matters / Ex. 6
142. Miranda Weiss	Citizen voter mother	
143. GREGORY FRIES	VOTER/CITIZEN	
144. Morgan Edminster	Fisherman/voter/citizen	
145. EDWIN O. KILCHER	COMMERCIAL BARGE & BUSINESS	
146. Charlotte Adamson	Farmer	
147. Francie Roberts	Citizen	
148. LACEY UELSKO	COMMERCIAL FISH	
149. Penelope Haas	ADF&G/Commercial fishing	
150. Todd Gustafson		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Mark Schollenberger		
152. RICHARD HARNESS	SEASIDE ADVENTURE	
153. TORREY SHORT	Wildland Firefighter	
154. Elaine Burgess		
155. Dorla Harness	citizen	
156. Cynthia Morelli	fish eater	
157. Lynn Takeeda Spence		
158. SHERYL BAECHLER	HOMER CITIZEN LANDOWNER BTES	
159. Tim Whip		
160. JACK CUSHING	HOMER CITIZEN	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Susan Cushing	Homer Resident	
162. Ivan Wood Bed	Homer Resident	
163. Shannon McBride-Morin	Kachemak Bay Wilderness Lodge. Homer	
164. Lars	Homer Resident	
165. Ben	Homer Resident	
166. Maggie Goedeke	Homer Resident	
167. Robert Johnson	Alaska resident, fisheries biologist, tribal employee	
168. Monica Zappa	Ninilchik, AK setnetter	
169. Peter Andrew	BBNC	
170. Rika Mouw	resident	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. Jenifer Dickson	Homer	
172. Sherri Burt	Seldovia	
173. Peggy Palmer	Homer	
174. Aaron Ford	Homer	
175. Nicole Arevalo	myself	
176. JUDY GONSALVES	BRISTOL BAY FISHERMAN HOMER RESIDENT	
177. Charlie Christoffersen	Kenai	
178. Zenovia Prokopief-Talleknalek	Levelock	
179. Jordan Jackinsky		
180. Brad Thornburgh	Homer	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181. Betty Siegel	-	
182. Daniel Del Missier		
183 Stephanie Luniga	—	
184. Wes Schacht	Homeroid	
185. Jodi Andrews		
186. Christine Kulcheski		
187. Mikee Flora	Bristol Bay Fisherman	
188. Taylor Andrade	Homer Resident employed in Tourism.	
189. Kyla Dammann		
190. Anne Wieland	—	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191. Bob Moore	AK Resident 48 yrs.	Personal Matters / Ex. 6
192. Mercedes Becker	Ak resident 21 yrs	
193. Karen Northrop	AK resident 21+yrs	
194. Ruby Haigh	AK resident 66yr	
195. Carrie Oats	AK resident 19yrs.	
196. Cal Loomer	AK Resident	
197. Pete Beck	AK RESIDENT	
198. TRISH BOYER	AK RESIDENT	
199. Michael Mosley	Ak Resident	
200. Tim Osmar	Ak Resident	

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201. Beverly Cronen		
202. Louis Dupree		
203. Amanda Miotke		
204. Diedre Hill	B.B.N.C.	
205. Karen Schmidt		
206. Kim McNett	Kachemak Bay Conservation Society	
207. NANCY HILLSTRAND	PIONEER ALASKAN FISHERIES INC	
208. Jeffrey Lee		
209. Joey Allred		
210. Karianna Derr	Homer	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211. Timothy Gervais	fisherman	
212. Ruby		
213. Margaret		
214. Meghan		
215. Eileen Mullen	fisherwoman	
216. Martin Kenne		
217. Sue Mauger		
218. Wayne Anderson	—	
219. Anders Gustafson	Bristol Bay Heritage Land Trust Homer Local Guide	
220. Leah Evans	Homer	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
221. Mary Edminster	Homer	
222. Scott Bartlett	Homer	
223. Aimee Sulczynski		
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Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Raymond Wassille			YES ✓
2. Tasha Hobson	Student		NO.
3. Wyatt Wassilie			no
4. Lem Batchelder			NO
5. Greg Anelon	self		yes ✓
6. Myrtle Anelon	INL		yes ✓
7. Ethel Adcox			
8. James R Lamont Sr.			NO
9. Verna Kolyaha	Pedro Bay		NO
10. Wade	Student		Nope

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Benfoss	Pedro Bay	[illegible]	[illegible]
12. Avery Lill	KDLG	[illegible]	
13. Keith Jensen	Pedro Bay	[illegible]	
14. Kara Jensen	Pedro Bay Tribe	[illegible]	
15. Wynn Knighton	Pedro Bay		
16. Molly Dischner	UTBB		
17. Ira W. Nickoli / Jim Nickoli	none		
18. Terry Wassillie	Newhalen Tribal Council		
19. Samantha Herrick	Pedro Bay		
20. Mike Clark	Iliamna		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. [illegible]			
22. RANDY ALVAREZ			
23. Heather Hase			
24. [illegible]			
25. Kim Williams			
26. Chasity Anelon			
27. Alex Wassillie			
28. Lisa Reimers			
29. [illegible]			
30. Lenere Anelon			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Nathan Kilbride	—		
32. Maxine Wassillie			
33. Lydia Olympic	—		
34. Joe Chythlook	BBNC		
35. Russell Nelson	Resident of BB		
36. Norman Van Vactor	Bristol Bay Economic De		
37. Margie Olympic	Newhalen		
38. Agnes Rychlinsky	Newhalen		
39. Chip Embretson	Ikamna		
40. Harvey Anderson	Iliamna Natives		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Bill Cornell			
42. Joanne Wassille			
43. Annie Wassille			
44. Cathleen Gust			
45. Sheena Ishmael			
46. Sarah Armstrong			
47. Tim Foster			
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Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

Father Alexie YES ✓

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. John Hanson Sr.	NSTC		
2. (Wally) Wassilie Gusty Sr.	New Stuyahok Traditional Council		
3. Blunka Stephan Blunka			
4. Ronald A Hastings	community member		
5. Wonhola Adrian Wonhola	Community member		
6. Timothy Wonhola	" "		
7. Mike Oyaluk	" "		
8. John Hanson Jr.	" "		
9. Kim Williams			
10. Tatianna Oyaluk			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Gustie Kusmp			
12. Moxie Andrew Jr.			
13. Mathena Gust			
14. MaryAnn Gust			
15. Evan Kusma Sr.			
16. DENNIS Andrew			
17. Bobby Larson			
18. Thomas Tilden			
19. Tatianna Gumlickpuk			
20. Charlie & Gumlickpuk			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Myrtice Evelt	Nunamta Aulukestai		
22. Joe Clythlord	BBNC		
23. Gusty S Blunda Sr			
24. Wass Neketa Sr.			
25. Mary Wonhola			
26. Andrew Wyagon			
27. Peter Christopher Sr.	Stuyahok Ltd.		
28. Lucas Barr	pupil		
29. Marie Paul	BBNC		
30. [signature] Alannah Hurley	UTBB		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Lindsay Layland	NTBB		
32. Frances A. Nelson	New Koliganek Village Council		
33. Jent McBrown Jen tell	New Koliganek Villiage council		
34. Mary Ann Wassilie	New Stuyahok		
35. Michael Gust			
36. Matrona Andrew			
37. Irene Wonhola			
38. Natalia Christopher	New Stuyahok		
39. Natalia Oyaluk	New Stuyahok		
40. Glen Olympic			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

11

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Natalia Wassillieq			
42. Blunka Wassillieq Sr			
43. Bjorn Olson	[redacted]		
44. Wassili Andrews			
45. Harvey Demantle			
46. SERGIE IVALUK			
47. Annie Chunak			
48. Ivan Blunka			
49. Thomas Woodman			
50. L. Alexie Carlson			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51.	Nina P. Gust			
52.	James Acoral			
53.	mike yuraluk			
54.	Phillip Pavella			
55.	Michael P Gumlickpik			
56.	Gustie Hanson Sr			
57.	Peter Ogaluk			
58.	Demitri Gust			
59.	John Wonhola			
60.	Wassillie Blunka			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok 13

~~Newhalen~~ – April ~~12~~, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
~~51.~~ 61 Nancy Waskey		Personal Matters / Ex. 6	
~~52.~~ 62 Dolores Larson			
~~53.~~ 63 Tim Pavella			
~~54.~~ 64 Faith Andrew			
~~55.~~ 65 Mary Olympic			
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Luther E. Hobson Jr.	R		
2. Charlotte Beaude			
3. Christina Salmon	Lake & Penn ~~the~~ Borough Assembly		
4. Jackie C Hobson			
5. John B Branson			
6. Michelle Ravenmoon	Lake & Penn & Borough Assembly		
7. Tim Vogel			
8. Darcelle Balluta	Lake & Pen		
9. Paul Hobson Hobson SR.			
10. June Tracey			yes

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ventura Sanmiego	Kijik Corp.		
12. Billy Trefon Jr	Nondalton Tribal Council		
13. Timothy Hobson	None Nondalton		
14. George Allen Alexie	" "		
15. Natalia Mattila Martila	Nondalton Tribal		
16. Elizabeth A. Ralph	" "		
17. Virginia Delkittie	Nondalton		
18. Melvin Trefon	NONDALTON		
19. Clara Trefon	Nondalton		
20. Doug Weedmark	Nondalton		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Clarence Delkittie	Tribe		
22. Bjorn Olson	UTBB		
23. Alannah Hurley	UTBB		
24. Wesley Samuel Farlong	NARF		
25. Molly Dischner	UTBB		
26. EVANOFF Will Evanoff	Tribal Council		
27. Kristy Jeffries	Nondalton Tribal Council		
28. Sarah O'Neal	UW		
29. Briana Delkittie	Nondalton Tribal Council		
30. Nenita Wilson			

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Michelle Wilson	Nondalton Tribal Council		
32. SunflowerDelkittie	Nondalton Tribal Council		
33. Darlene Nolan	NND T. Member		
34. Ronny Kakaruk	Nondalton Tribe Member		
35. Fawn Silas	———		
36. TeresaRidcteroff	P-O Box 73 " "		
37. Illeah Aaberg	PO Box 43		
38 Chris Cooker	P.O. Box 43		
39. ROD KAKARUK	PO Box 116		
40. Harry Harshakoff	PO Box 35 Kwik		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Kim Williams	BBNC		
42. Ivan Washington			
43. Eric Tallekpalek			
44. Myrtle Evelt	Nunamta Aulukestai		
45. Mark Roden	EVS		
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Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Alannah Hurley	Yup'ik		Yes plz
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AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Marie Paul	BBNC	n
2. Bertha Parian-Lockuk	UTBB	
3. Myrtle Ishnook (Ishnook)		
4. William P Johnson		
5. Helen Aderman	BBNA Marine Mammals	
6. Wassiliisia Bernis	BBNA - CAO	
7. Wassiliisia Bernis	self	
8. Dave Bowker	-	
9. Patricia Treydte	Self	
10. Everette Hyderson	BBNC	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Karl Hill		Personal Matters / Ex. 6
12. Sam Everslage		
13. Tom Everslage		
14. Deborah McLean		
15. Katherine Carscallen		
16. Jimmy Coppenrath		
17. Susie Jenkins-Baito		
18. Courtenay Carty		
19. Violet Kung		
20. Tod Larson		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Deven Lisac		Personal Matters / Ex. 6
22. Elaine Phillips		
23. Stephen Boyd		
24. Myra Olsen		
25. David Wetter		
26. Morgan Allen		
27. Christopher Manos	BBNA	
28. Shannon Clouse		
29. Nadia Clouse		
30. Kathi Clouse		

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Avery Gill	KDLG	Personal Matters / Ex. 6
32. Bobby Gardiner	CRVC	
33. Annalee Carty		
34. Charlene Savo		
35. Alexey Wassily SR.	Clark's Pt. Tribal.	
36. LaRhea Angasan		
37. COWAHGASAH	NV	
38. NV OSEN		
39. Andy Aderman		
40. Alisha Fokson		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Bruce Ilutsik	Aleknagik Traditional Council	Personal Matters / Ex. 6
42. Jean Barrett	City of DLG	
43. Hailey Carty		
44. Lara Collis		
45. Nicole Krause		
46. Susanna Henry	U.S. Fish & Wildlife Service	
47. Malcolm Wright		
48. Bernina Venua		
49. Cory Howard		
50. Steve Wassily		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Kenton Woody		
52. Andrea Hurley		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Cate Gomez		
132. Robert Himschoot		
133. Doug Johnson		
134. Gayla Hoseth		
135. Terry D. Mann		
136. Valencia Mann		
137. Thomas Tilden		
138. Dan Dunaway	me	
139. Gary Cline	Self	
140. Thomas Woods	Self	

Personal Matters / Ex. 6

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US Army Corps of Engineers

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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
251. Mark Nolen		
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Personal Matters / Ex. 6

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
371. Ethel J. Nelson		Personal Matters / Ex. 6
372. George L. Nelson		
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
481. Tim Williams	BBNC Curyung Tribe	
482. Cody Larson		
483. Diane Wetter		
484. Jackie Nelson		
485. Chenice Johnson		
486. [illegible]	Bristol Bay Economic Dev. Corp	
487. [illegible]	UAF	
488. Ingrid Andrew	interested	
489. Wassillie Tikka	BB	
490. Moses L Kritz III	BB	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
491. Sharon Clerk	self nonprofit	
492. Mike Lisac	Self	
493. Alannah Hurley	UTRB	
494. Glen Szymoniak	schol Dist	
495. Izzy Ross	Self	
496. Susan Flensburg	self	
497. Frederick Angasan III	Self	
498. Greyy Maxmiller	Self	
499. Richard Alty	Self	
500. Page O'Connell	self	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
501. Hannah Hendrickson		Personal Matters / Ex. 6
502. Rebekah Fonkert		
503. Holly Wyatt		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Betsy Hostetter		Personal Matters / Ex. 6	
2. Andy Smith			
3. Nick Smith			
4. Alannah [illegible]	JTBB		
5. Christina Salmon			✓
6. Keilan Salmon			
7. Karl Hill	IVC		✓
8. Glen R. Alsworth Sr. / Glen R. Alsworth Sr	LPBoro		
9. Everette Anderson			
10. Renae Zackar		[illegible]	✓

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US Army Corps of Engineers

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Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Lindsay Laykind	UTBB		
12. RANDY ALVAREZ			
13. Dannikak Salmon	NA		
14. JON Alvarez			
15. Audra Gooden			
16. Michelle Ravenmoon	[redacted]		
17. Charlie Gifford			
18. Whit Gooden			
19. John Chukwak			
20. Gregory Zacker			

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Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Jeff Bringhurst	Self		
22. Olga Zackar			
23. Anna Perino	Self		
24. Avery Wilson			
25. Tayne Salmon	self		
26. Jem Gooden			
27. Annie Wilson			
28. Julie Salmon	self		
29. Alicia Zackar	self		
30. Olivia Simyon	self		

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US Army Corps of Engineers.

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Alice Zackar	self		
32. Dallia Andrew	self		
33. Ruth Simyon	self		
34. Sharolynn Zackar	self		
35. Yako Nicholi	Self		
36. Sandra Alvarez	Self		
37. Denise Chythlook	Self		
38. Dennis Andrew Sr	self		
39. Gerry Nelson	self		
40. Alexanna Salmon	self		

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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Lydia Olympic	—		
42. [illegible]	Self		
43. Tatyana Zocka	Self		
44. Terek Anelon	Own		
45. Sharyl Wassillie	own		
46. Steve Routh			
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Mytova Evlt	Nunamta Aulukestai		
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Mischa E Wanns	BBNC	
2. Gene M. Wardell		
3. Charles McKee c/o P.O. # 243053	self	
4. Taryn Kiekow Heimer	NRDC	
5. Rick Delkittie Sr.	Nanwalek tribe	
6. Kerry Adler	self	
7. Kim Williams	BBNC / Curyung Tribe	
8. Joseph James	Pan-American Invest mts.	
9. Joe Blogs		
10. Dana Stewart	DES.IT	

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AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Mark McCullough		Personal Matters / Ex. 6
12. RAINBOW AZURE	Turtle Mtn Chippewa & Yakama Tribe	
13. Jill Burke	Bloomberg BNA	
14. Sue Bauer	–	
15. Adriane Christensen	Pedro Bay	
16. RAYN ABBERA	PEDRO BAY	
17. Nelli Williams		
18. Daniel J. Michels	Crystal Creek Lodge King Salmon	
19. Chris Bruns	None	
20. Jenny Weis		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Tim Sohn	Journalist	
22. Ron Benkert	ADF&G	R
23. Doug Griffin	Southwest Alaska Municipal Conference - (SWAMC)	
24. Ryan Astalos		
25. Melissa Thayne	Alaskan	
26. Gerald Protzman		
27. Howard J. Grey		
28. Don Perrin		
29. Mariah Oxford	Pebble Watch	
30. MARC LESTER	ANCH. DAILY NEWS	

Personal Matters / Ex. 6

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Anna Kohl		
32.	Marilyn Houser	None	
33.	Emily Fehrenbacher	Salmon State	
34.	Eric Booton	Trout Unlimited	
35.	Brooke Merrell	NPS	
36.	Jim Posey	PALAC	
37.	Phil Walczak	KTUU	
38.	Carl Portman	RDC	
39.	Leslie Tose	USACE	
40.	Beth Verga	KTUU-TV	

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US Army Corps of Engineers

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Elwood Brehmer	ASOC	
42. Mary Romero	—	
43. Jeremy Graut	—	
44. Alex DeMarBan	Anchorage Daily News	
45. Jennifer Worrell	Alaska Miners Assoc.	
46. Terry L Levy	Alaskan	
47. Nicole O'Hara	ABC/Fox Alaska	
48. MARIANNA MAN	RDC	
49. Abe Williams	Bristol Bay Fisher	
50. Deantha Crockett	Alaska Miners	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Emily Carlson	KTVA	
52. John Thompson	KTVA	
53. Nick Hubbard		
54. Jason Brune		
55. Emily Vullo		
56. Jack Colonell		
57. KRISTEN ULLERY		
58. BRIAN KRAFT		
59. Charlotte MacG		
60. George Edwardson	Self	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Maryann K. Johnson	Portage Creek	
62. Charlie Johnson	Portage Creek	
63. Gayla Hoseth	Dillingham	
64. Myrtice Evalt	Dlg	
65. Shayna Wisdom	Fairweather Science	
66. Stephanie Patton	—	
67. Lance Powell	—	
68. John Holman	—	
69. Sherry Dugan	—	
70. Carrie Cecil	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Myra Olsen		
72. Thomas Pebler		
73. Destinee Holstrom		
74. George Holstrom Jr		
75. Ceara Mishlee		
76. Molly Vaughan	EPA	
77. Dennis Hyppett	TY	
78. Agnes Rychnovsky		
79. Marina Barner		
80. Jalen Konukpeok	N/A	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Barbara Hood	NA	
82. Nancy Pfeiffle	Human	
83. Brian Baeck		
84. Frank Wake	None	
85. Jess Hilyer	None	
86. Pat Abney	None	
87. Jamie Dithmas	—	
88. Sheldon Wardell	None	
89. Chris Wiita	N/A	
90. Nick Hansen		

Personal Matters / Ex. 6

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. MARIUS PANZARELLA		Personal Matters / Ex. 6
92. Cathe Heroy		
93. Leila Pyle		
94. Karlene Leeper		
95. Kate Sandvig		
96. Russ Miller		
97. Kay Heafner		
98. Glen M. Gustafson		
99. MIKE COOPER		
100. Julian & Jean		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Kerry Wilkins		Personal Matters / Ex. 6
102. Kim Ansakuck		
103. Vivian Mendenhall		
104. Andria Agli		
105. Elijah Good-Farm		
106. Travis Rector		
107. Janice Stamper		
108. [illegible]		
109. Jessica Speed		
110.		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Johanna Grasso		
112. Cecilia Kleinkauf		
113. Barbara Crews		
114. Libby Roderick		
115. Kate Nilsson		
116. Rich Stromberg		
117. Laura Sherman		
118. Lucy Terry	Eskimo	
119. Bill Jaso		
120. & Susan Hooker		

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US Army Corps of Engineers.

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. Thomas Tilden	self	Personal Matters / Ex. 6
122. BROOKS LARSON	self	
123. Tyler Henegan	Self	
124. RYAN PETERSON	—	
125. Francesca DeBrock	—	
126. Laura Miller	Self	
127. PAMELA TESCHE	self	
128. Daniel McIntosh	Self	
129. Jessi Thornton	Cook Inletkeeper	
130. VICTORIA Lytle	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Ronda Pokupec		Personal Matters / Ex. 6
132. [illegible]	—	
133. Julie K Wahl	Citizens Climate Lobby Sierra Club AK Center	
134. Barbara Norris	AK Center	
135. Rachelle Griffitts	student - UAA Environmental Engineering	
136. DAVE COOLIDGE	—	
137. Jeanette LeClair		
138. Wassiliisia Gumlickpuk		
139. Dr. Stephanie Quinn-Davidson, PhD	self - Salmon/fisheries scientist	
140. [illegible] Dunn	Student ES APU	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Michelle Leffingwell	Self / Bear Trail Lodge Local Fisherman Yoga(+)Ak	Personal Matters / Ex. 6
142. Margaret M. Anderson	Alaskan	
143. Thomas Harman	Fisherman	
144. Brenda I Waitman	Igiugig Lodge LLC	
145. Norman Straub	Intricate Bay Lodge	
146. Spencer Waitman	Igiugic Lodge LLC	
147. Becky Bitzer	Alaskan	
148. David Theriault	Fisherman	
149. Raschad Galimba		
150. Ann James	Born & raised Alaskan	no

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Karen Button	resident	
152. CHRIS KLOSTERMAN	TRYCK AK ALASKA	
153. Micaela Hogan	volunteer	
154. Susan NIMAN	Resident	
155. # Bill Shermonit	self (AK resident)	
156. RICHARD KNIGHT	RESIDENT	
157. Carolyn E. Phillips	None	
158. George Pletnikoff, Jr	Unangax̂	
159. Jessica Barnes	Resident	
160. Brian Coyle	Resident	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Laura Chartier	N/A	
162. KAREN GONDERINGER		
163. THOMAS A. SCHWARTZ	N/A	
164. Myranda Walso		
165. Jeff Parker	Attorney for BOFA/EVC	
166. Su Chun	N/A	
167. Dayle Sanborn		
168. Gerard Farkas	Alaska Resident	
169. Steven Silber	Chulitna Lodge - Lake + Penn Borough Resident	
170. Andrew Conno	N/A	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. LARRY RUNDQUIST		Personal Matters / Ex. 6
172. Steven McNicholas		
173. Derek Hansen		
174. Dianne E. Osterhaus		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
381. James Wilson	Mat Su. Bonanch	Personal Matters / Ex. 6
382. Mary Kay Ryckman	Self	
383. Rochelle Harrison	self griezyskins fak	
384. Verna Kolyaha	Pedro Bay	
385. Mark Newman	self	
386. Kelly Kass	Self	
387. Neverley Wake	EPA Tribal Coordinator	
388. Everette Anderson	BBNC	
389. Myrtle J. Lonsdale	CDOK Inlet	
390. Ron Tenny	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391. Sarah E Anderson		
392. Harry M. Walker		
393. C. Steffens		
394. S. Rooth		
395. Jennifer Wardell		
396. Brian Kotl		
397. Jeanne Hanson		
398. Sylvia Panzacella	No Pebble Mine!	
399. Lindsey Kenyon	ERM	
400. Oleksandr Lushchyk		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
401. Carolyn Brodie		
402. Erik Koppenol		
403. W. R Hamme		
404. Kathrine Consenstein		
405. CAMILLE COLLINS		
406. MARK Miller		
407. Felicia Miller		
408. Vincent Vek		
409. Riki Lebman		
410. SUE WARD		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411. Barbara Loutrel		
412. Peter F Aluard	Alc citizen/resident	
413. Kristen Collins		
414. Sophie Tidler		
415. Shirley Kelly	Bristol Bay Fisher	
416. CHRISTOPHER JOHN EGGENDING	BRISTOL BAY FISHERMAN	
417. PAUL CREUS	Individual	
418. P. Derochick	Individual	
419. Dawnell Smith	Individual	
420. Tom Whitsett	Individual	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421.	Lisa Alexia		Personal Matters / Ex. 6
422.	Michael Alexia		
423.	Susan Terwilliger		
424.	Jenna DiFolco		
425.	Maria Tahenakos		
426.	Bryce Niver	No Pebble!	
427	Brian Canton		
428.	JACK FOSTER		
429.	Art Allen		
430.	Ryan VanderBie		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431. Lindsey Diamond		
432. Raymond Koegser		
433. Oliver Garrett		
434. Elijah Kahula	Save Bristol Bay	
435. R. Lytle		
436. Evan Anderson		
437. STEPHAN C. PALIWODA	RETIRED ARCHITECT (former Corps of Engineers employ	
438. Kayla Muller		
439. Kenneth Ahmaogak		
440. Paul Frost		

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441. Judy Caminer		
442. Lenny Anderson		
443. David J. Haamaid	Sons	
444. Richard L. Anderson	"	
445. Brad Waitman	Igiugig Lodge	
446. Ming Stephens	None	
447. Regis Pappert	Self	
448. Austin Quinn-Davidson		
449. Rebecca King	Alaskan	
450. Alex Nelsen	Ak Resident	

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
451. Kori Blake	Save Bristol Bay	
452. James Affone	Save the Earth	
453. Suzanne Stewart	Beluga Whale Alliance	
454. DAVID FARCY	NONE	
455. Erin Borowski	none	
456. Angelica Whitley		
457. Ryan Witten	None	
458. Maya Heubner	none	
459. Darla Munguia	None	
460. Christina Howell	None	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461. Kassidy O'Connell		
462. William J. Schreck	NA	
463. Robert Wiy	—	
464. Keenan	—	
465. Yasuhiro Ozuru	—	
466. Sam Magee		
467. Kelly Drummond	—	
468. Andrey Anderson	—	
469. [illegible]	—	
470. Merle Jerue	—	

Personal Matters / Ex. 6

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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
611. Jeremy Tayhi		
612. Braelan Michael Welsch		
613. Joel Hadley		
614. Elizabeth Welsh		
615. Gracee Hadley		
616. Carl Johnson		
617. M. Eka. Alexa		
618. Bernhard Richert		
619. Sera Schroeder		
620. Sammie Ellsworth		

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
621.	Carissa Churchill		
622.	STEVEN CALLAGHAN		
623.	Adan Kurr		
624.	Breena Weller		
625.	Jessica Henderson		
626.	Abraham Henderson		
627.	Vickie Harman		
628.	Levi Oyster		
629.	E. Morris		
630.	M. Ammann	ne Pebble	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
631. Makenna Hanson	UAA- alumni	
632. Rachel James		
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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Anchorage – April 19, 2018

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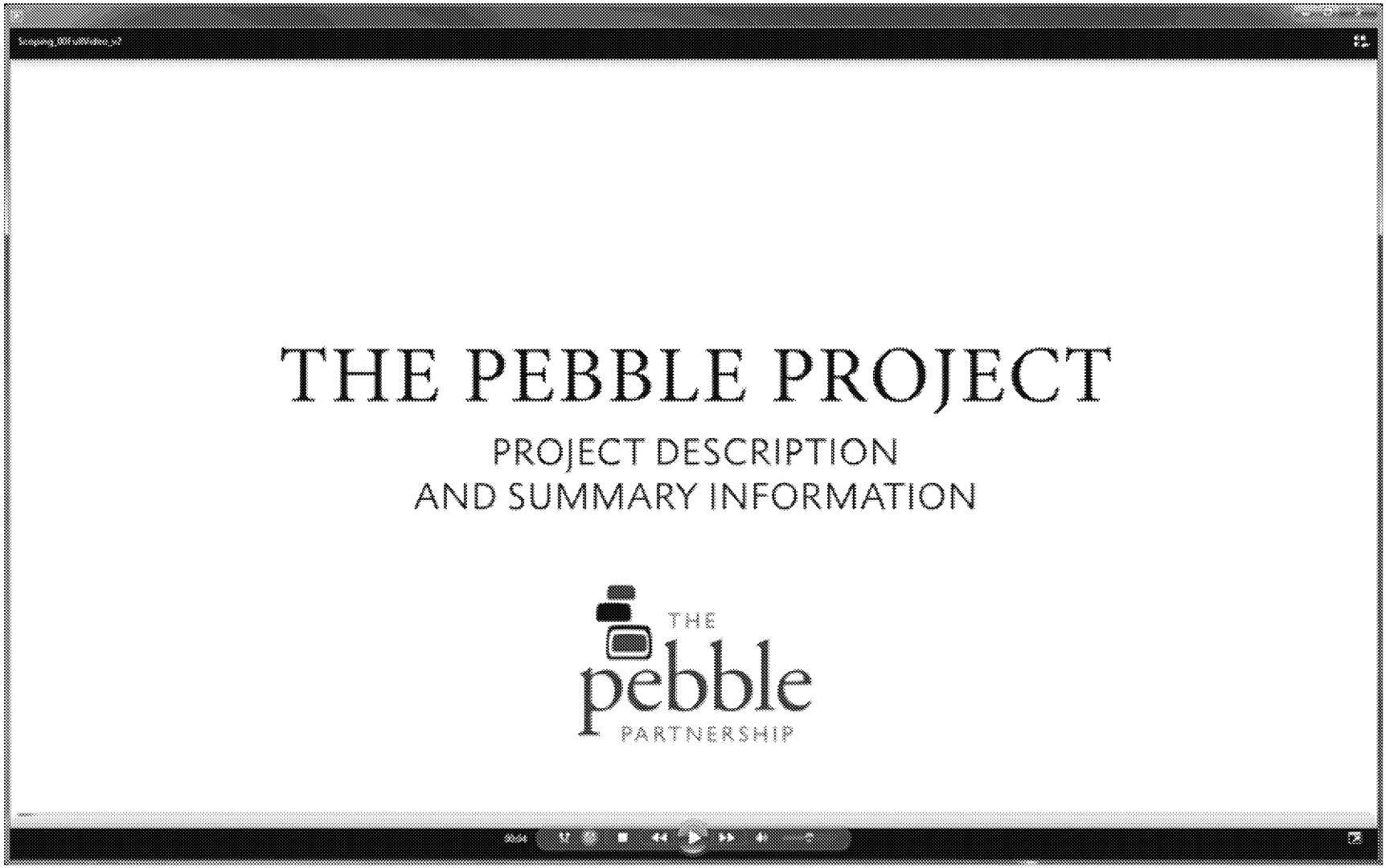


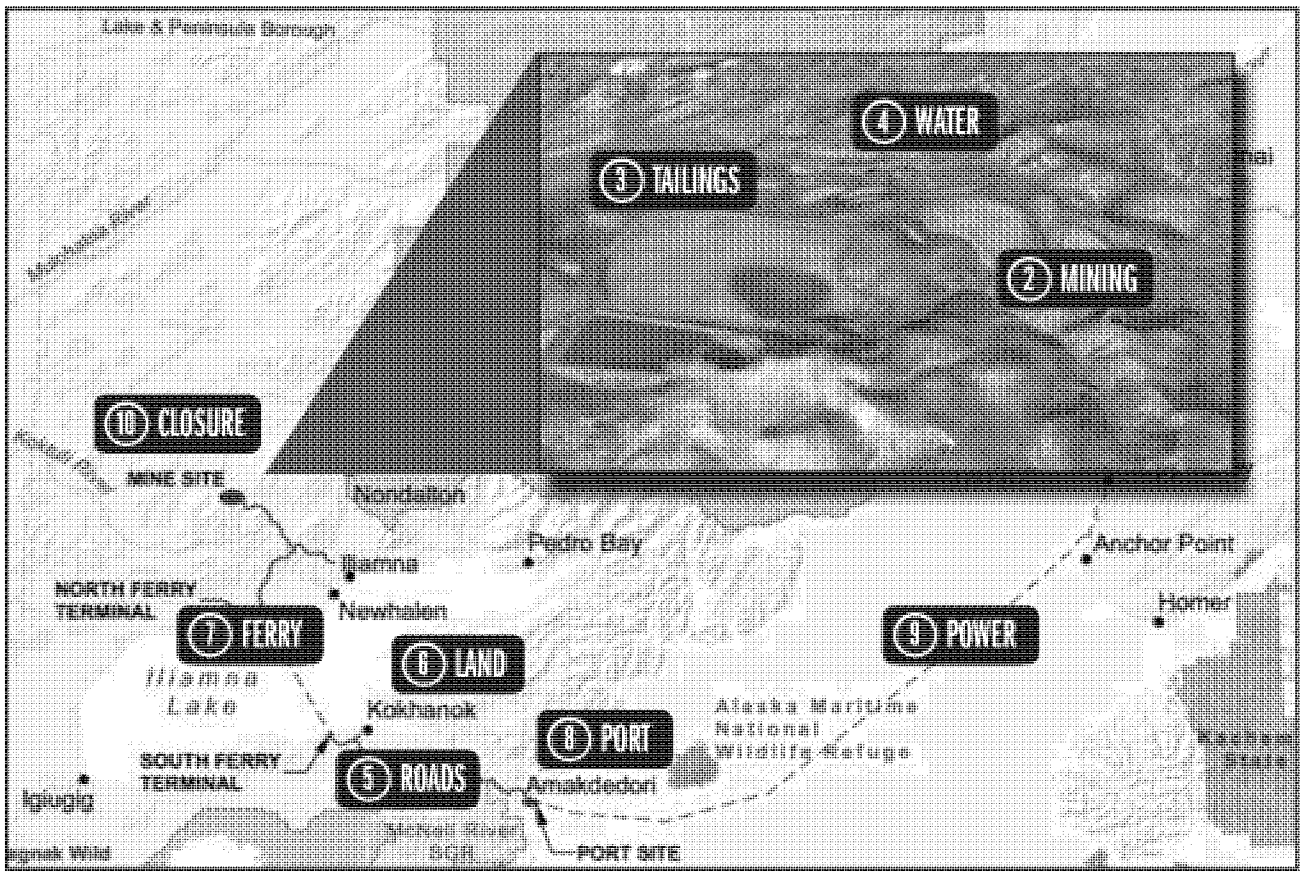
AMERICAN OVERSIGHT

THE PEBBLE PROJECT

1 OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) in southwest Alaska as an open-pit mine, with associated infrastructure.

PROJECT DESCRIPTION DETAILS



SUMMARY INFORMATION

- Located on state of Alaska land
- Project operating life of 20 years
- Employment of 2,000 people for construction and 850 for operation
- Gas pipeline from Anchor Point and gas-fired power plant at site
- Road and lake ferry to Cook Inlet
- Segregated storage of bulk and pyritic tailings

THE pebble PARTNERSHIP

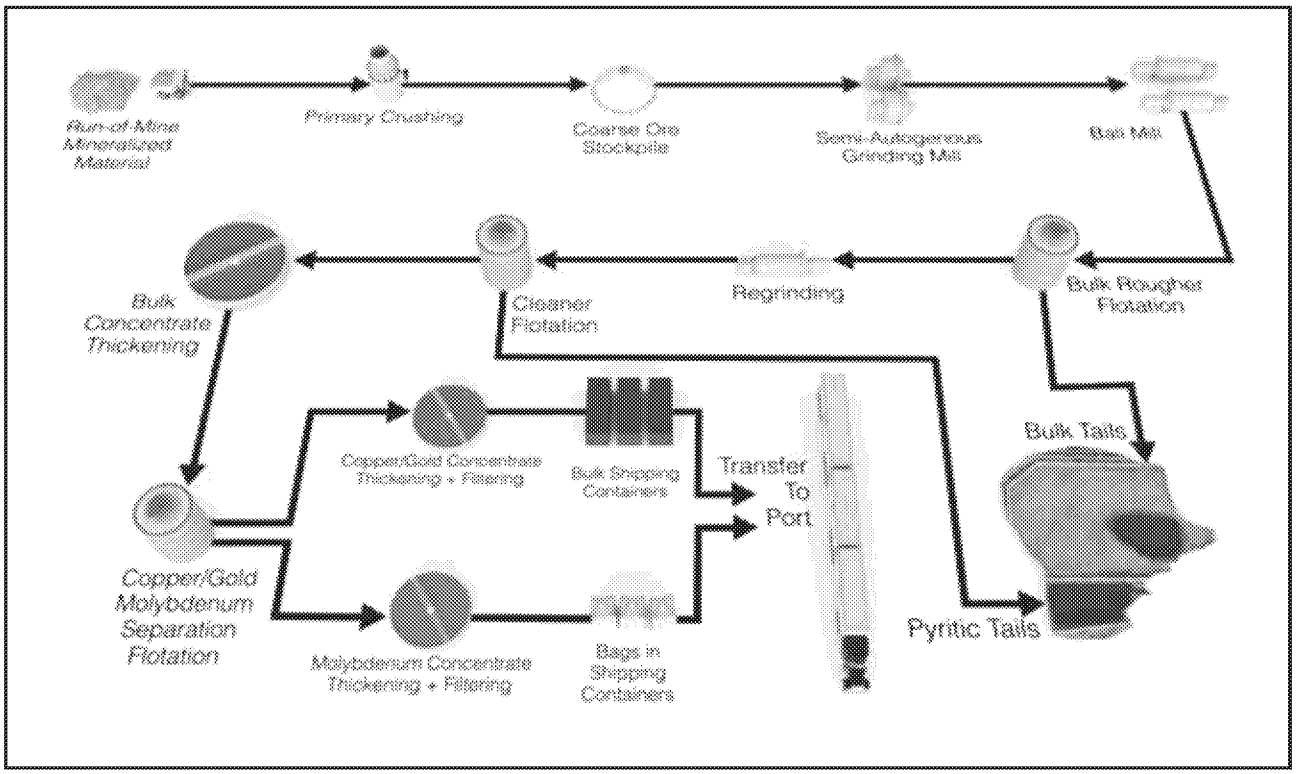
AMERICAN OVERSIGHT

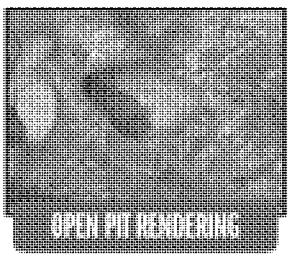
MINING & PROCESSING

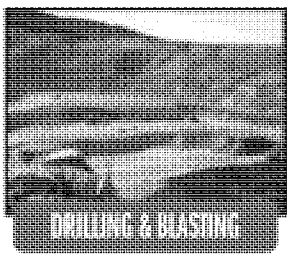
2 MINING

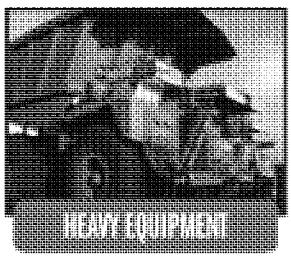
The Project will mine approximately 1.1 billion tons of mineralized material throughout the 20-year mine life.

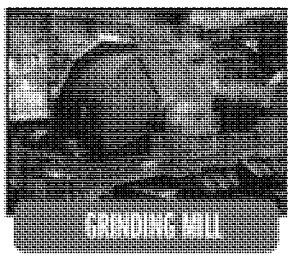
AN OVERVIEW OF MINERAL PROCESSING




OPEN PIT RENDERING


DRILLING & BLASTING


HEAVY EQUIPMENT


GRINDING MILL

SUMMARY INFORMATION

- Mining rate up to 90 million tons per year
- Milling rate up to 58 million tons per year
- Annual copper/gold concentrate production of 600,000 tons
- Annual molybdenum concentrate production of 15,000 tons

THE pebble PARTNERSHIP

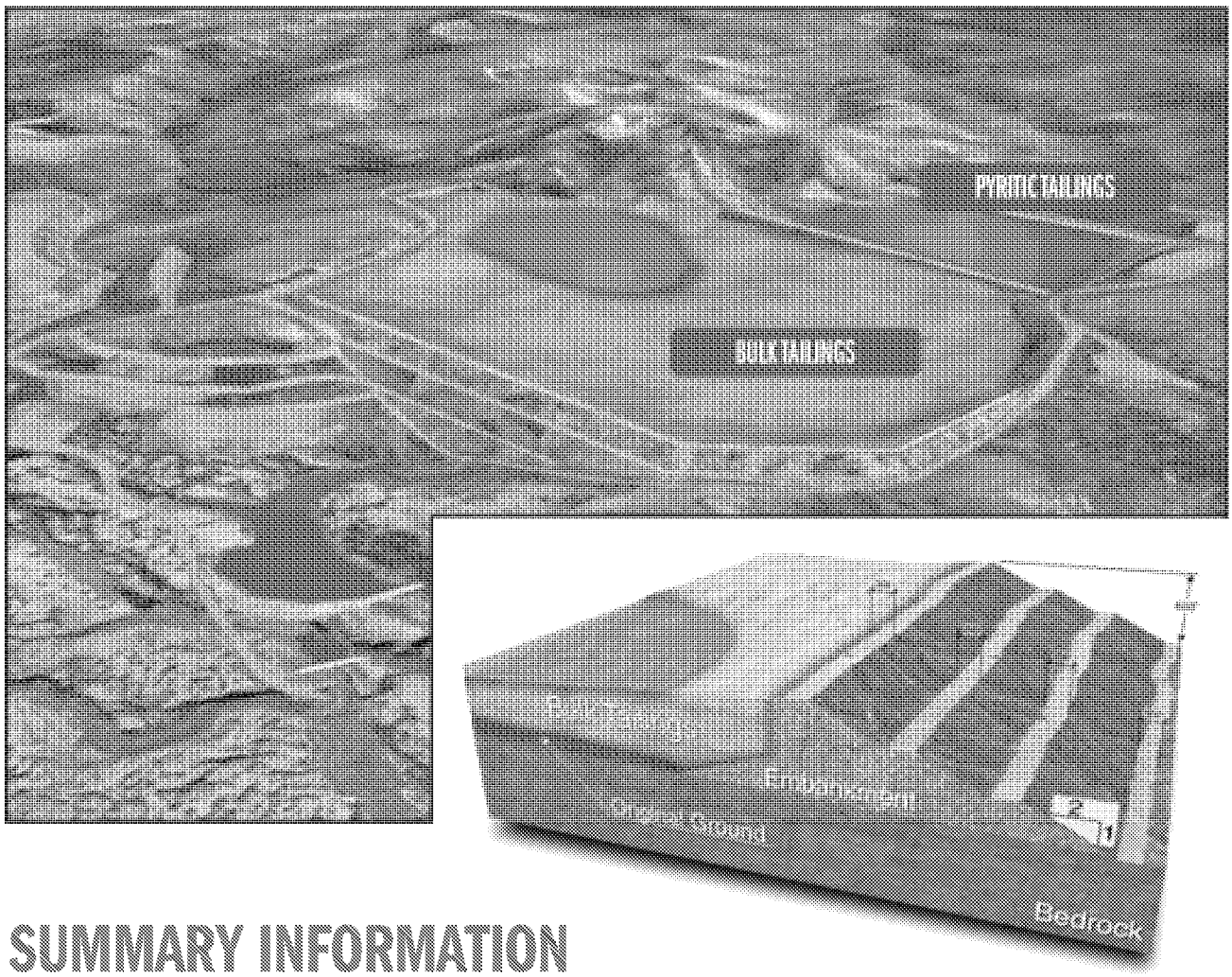
AMERICAN OVERSIGHT

TAILINGS STORAGE

③ TAILINGS

Pebble Limited Partnership (PLP) conducted a multiyear, multidisciplinary evaluation to select a Tailings Storage Facility (TSF) location that meets all engineering and environmental goals. It will store ground-up material after minerals have been extracted.

TAILINGS STORAGE FACILITY



SUMMARY INFORMATION

- Designed to meet Alaska Dam Safety Program standards
- Separate cells for bulk and pyritic tailings
- Minimize water storage in bulk tailings to keep water away from embankment
- Fully-lined cell for pyritic tailings with water cover
- Rock-filled embankments (600' high at main embankment)
- Seepage collection facilities for all embankments

THE pebble PARTNERSHIP

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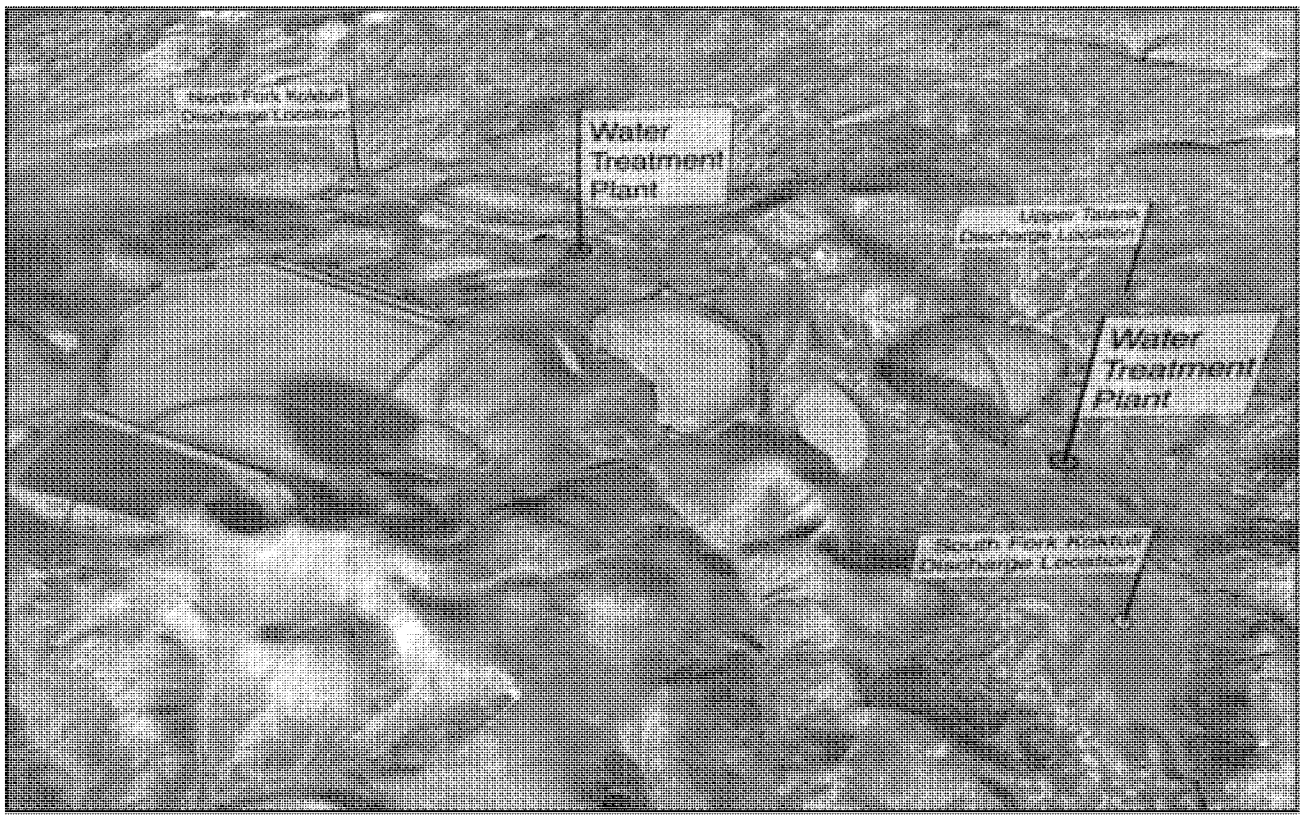
WATER MANAGEMENT

4 WATER

Pebble Limited Partnership (PLP) has designed the water management plan to minimize the volume of water diverted from natural flows and to treat and condition all water to meet quality standards before discharge.

MONITORING AND TREATMENT



SUMMARY INFORMATION

- All water is tracked and managed from rainfall to discharge
- One water treatment plant for pit-related water
- One water treatment plant for tailings, stockpile, and process contact water
- All water treated and conditioned to meet quality standards before release
- Discharge locations in each of three drainages
- No mixing zones will be required
- Discharge managed based on downstream habitat needs

THE pebble PARTNERSHIP

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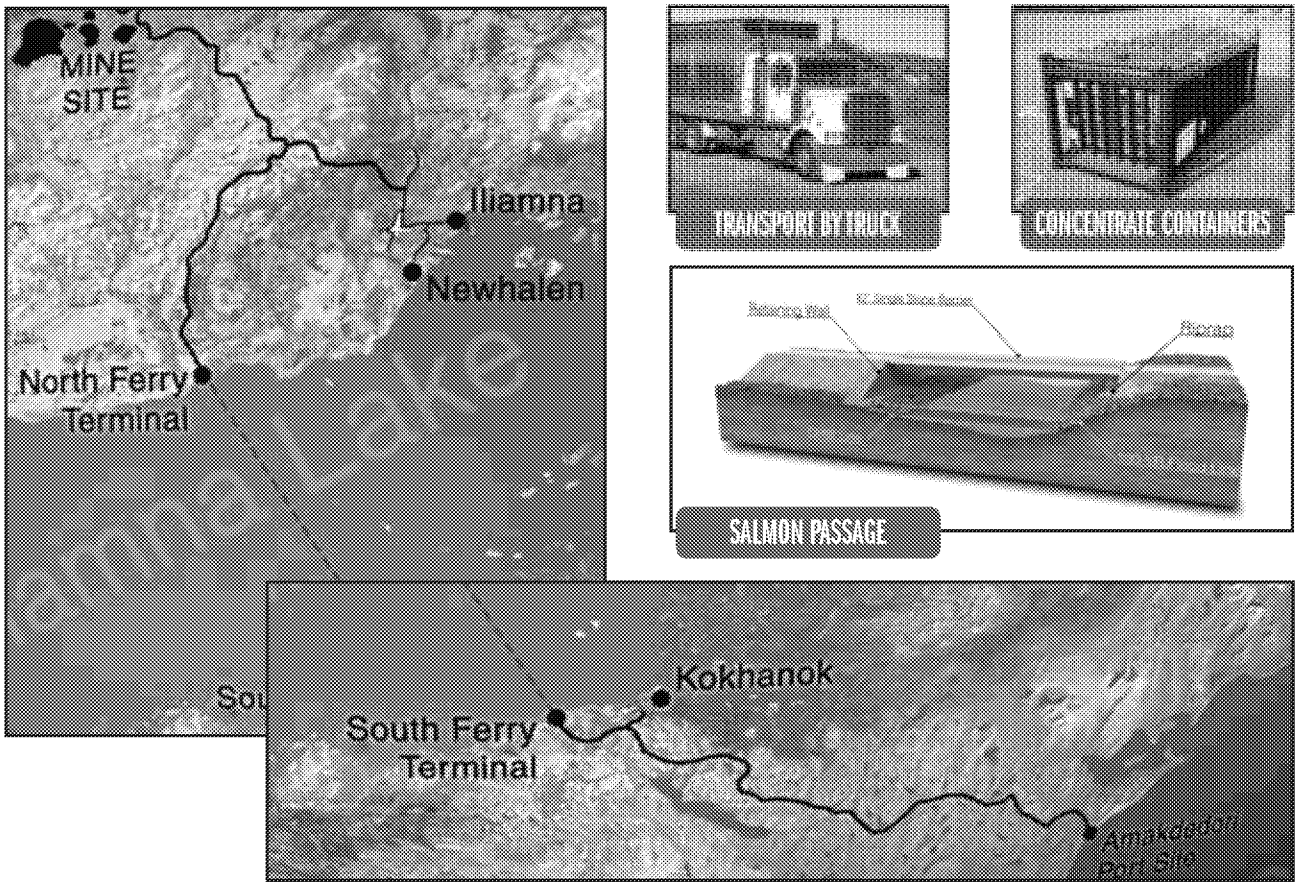
ROADS & TRANSPORT

5 ROADS

An 83-mile transportation corridor runs from the mine site to a port site on Cook Inlet. The route was selected to minimize impact on wetlands, minimize stream crossings, and avoid area of known subsistence and recreational use.

NORTH & SOUTH ROAD SEGMENTS



SUMMARY INFORMATION

- Personnel flown to Iliamna Airport and driven to mine site
- 30-mile (north segment) and 35-mile (south segment) private roads
- Spur roads connecting to the villages of Iliamna, Newhalen, and Kokhanok
- Stream crossings designed to state of Alaska standards
- Up to 35 round trips by truck each day (one by ferry)
- Concentrate hauled in bulk containers with locking lids
- Fuel hauled in 6350-gallon sealed tank containers

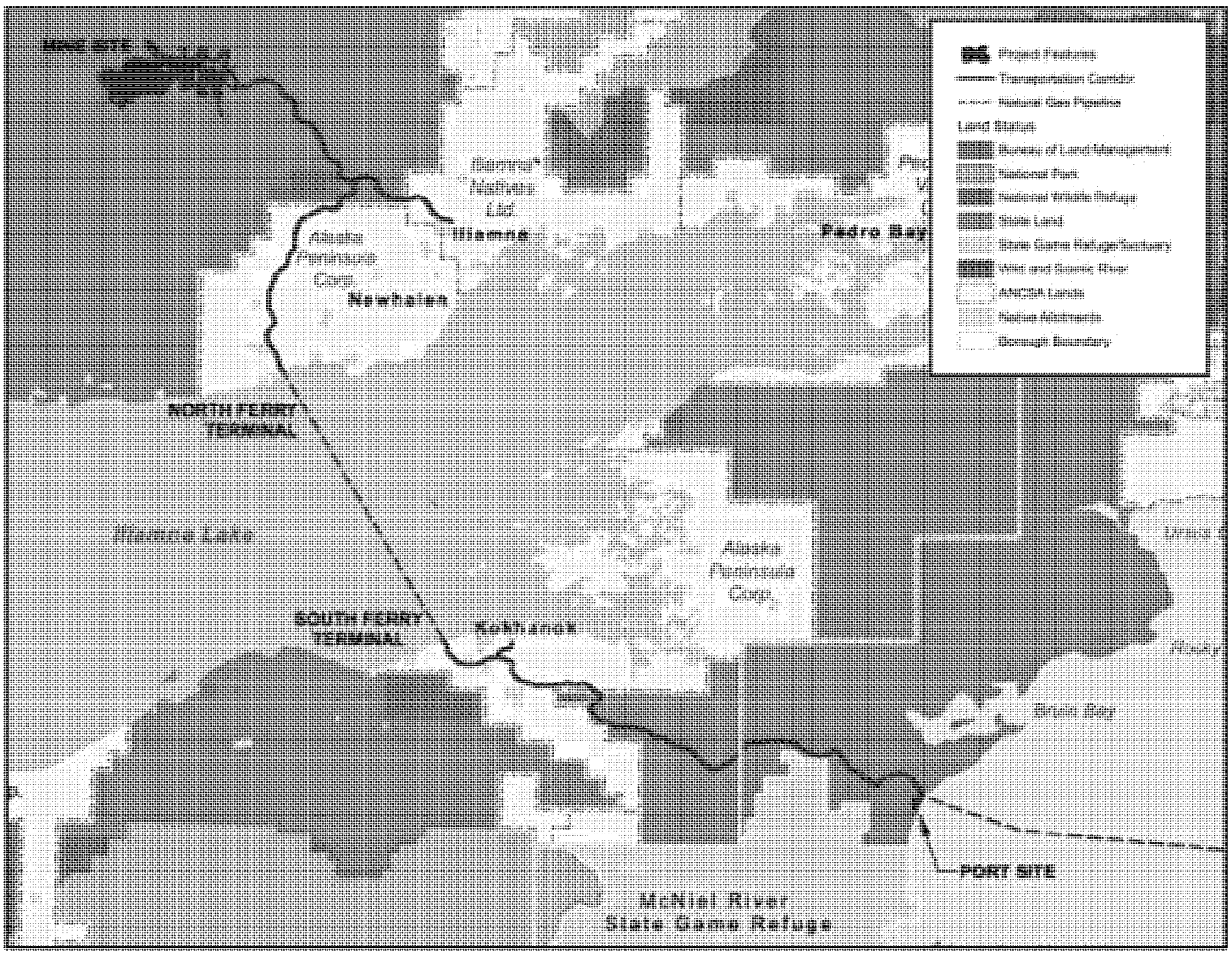
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

LAND STATUS

The mine site — including the pit, tailings storage, and all primary facilities — is located on state of Alaska land. The transportation corridor includes state of Alaska and ANCSA land.

MINE SITE & CORRIDOR LAND OWNERSHIP



SUMMARY INFORMATION

- Access Road = 65% state of Alaska + 35% Alaska Peninsula Corporation
- Iliamna Airport Spur = 55% state of Alaska + 45% Iliamna Natives Limited
- Iliamna Lake Crossing = 100% state of Alaska
- Kokhanok Airport Spur = 100% Alaska Peninsula Corporation

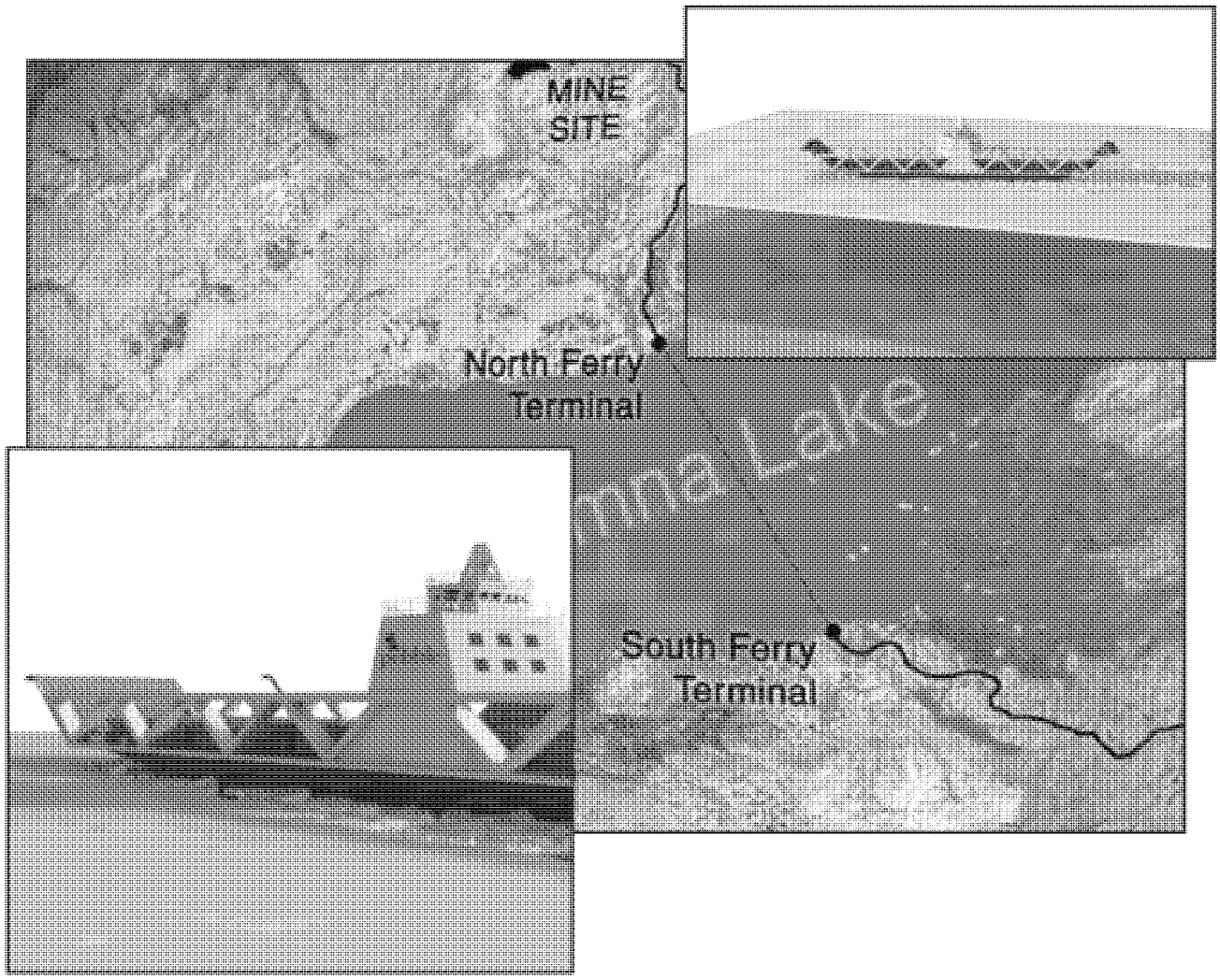
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

FERRY & TERMINALS

A custom-built ice breaking ferry will transit Iliamna Lake year round, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates.

ILIAMNA LAKE CROSSING



SUMMARY INFORMATION

- The one-way ferry trip across Iliamna Lake is about 18 miles
- An average of one round trip per day will be required
- Vessel is designed to operate year-round, in all ice conditions
- Symmetrical forward and aft with two ice-breaking bows
- 12 crew members may be accommodated on the ferry

THE pebble PARTNERSHIP

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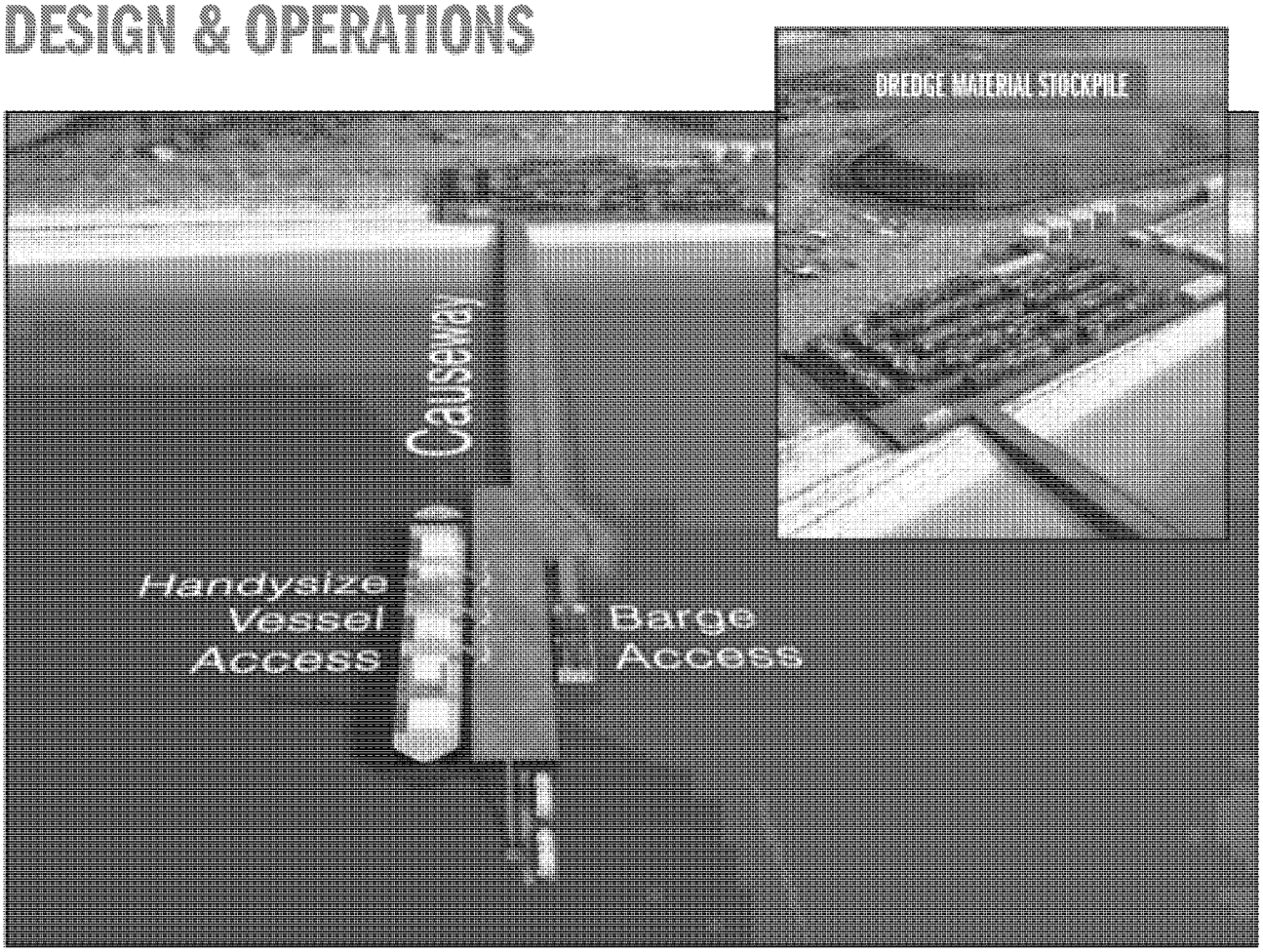
AMAKDEDORI PORT

PORT

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site.

DESIGN & OPERATIONS



SUMMARY INFORMATION

- 50-foot deep channel dredged to provide access for Handysize bulk carriers
- Mineral concentrate will be direct-loaded from the containers onto the vessels
- Equipment and supplies delivered by barge
- Shore-based facilities will receive and store containers and fuel
- Up to 25 concentrate shipments annually
- Up to 30 marine barge loads annually

THE pebble PARTNERSHIP

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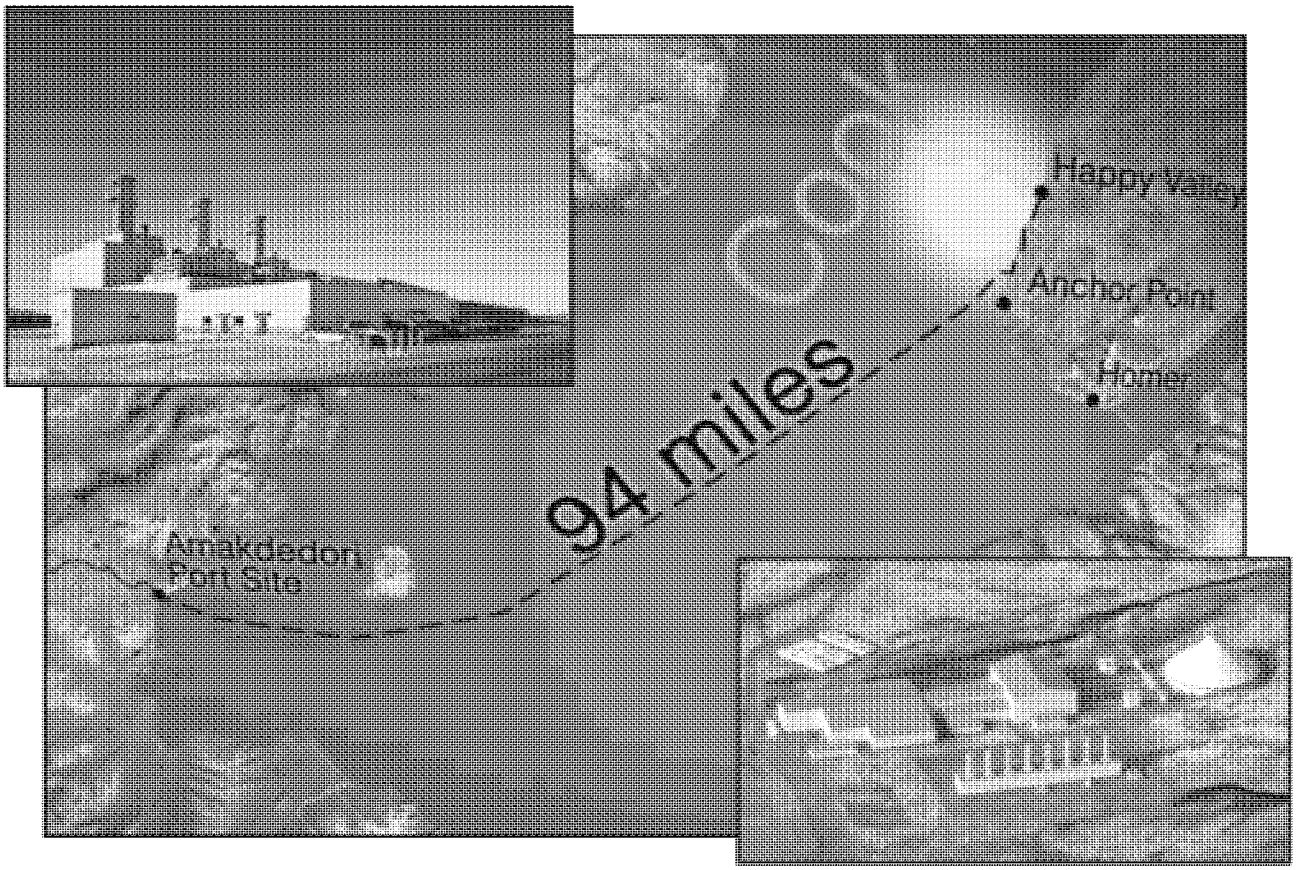
POWER GENERATION

The power plant will be sized to meet the anticipated load of 230 megawatts using high-efficiency turbine or reciprocating engine generators operating in a combined-cycle configuration.

NATURAL GAS PIPELINE + POWER PLANT



SUMMARY INFORMATION

- Pipeline will connect to existing gas supply infrastructure near Happy Valley
- Buried pipe will transport gas to a compressor station near Anchor Point
- 94-mile subsea pipeline across Cook Inlet will come ashore near port site, follow road to site, and cross the bed of Iliamna Lake
- Gross flow rate of 50 million standard cubic feet per day
- 10" pipeline on land, 12" pipeline for water crossings
- Emergency backup power provided by diesel generators

THE pebble PARTNERSHIP

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CLOSURE & RECLAMATION

10 CLOSURE

Pebble Limited Partnership (PLP) is committed to conducting all mining operations, including reclamation and closure, in accordance with all local, state, and federal regulations.

PEBBLE: DESIGNED FOR CLOSURE

RECLAMATION

AFTER...

5 YEARS

Most buildings removed

Terrain resculpted

Native plants resown

20 YEARS

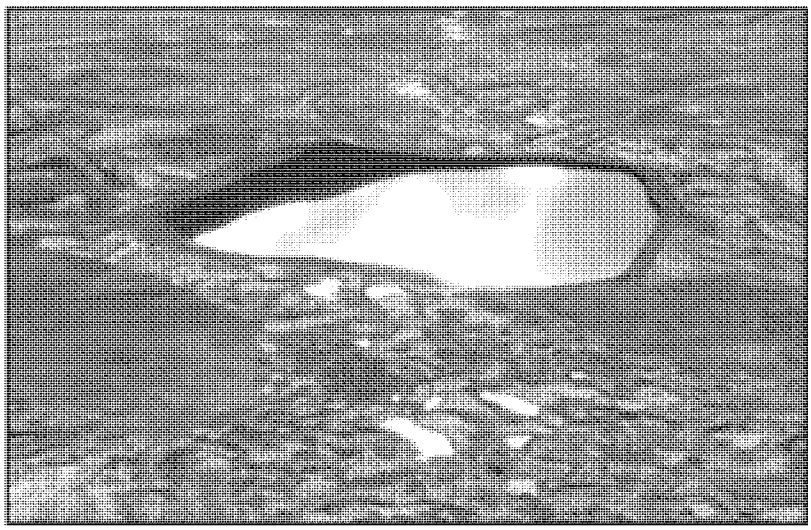
Vegetation well-established in reclaimed areas

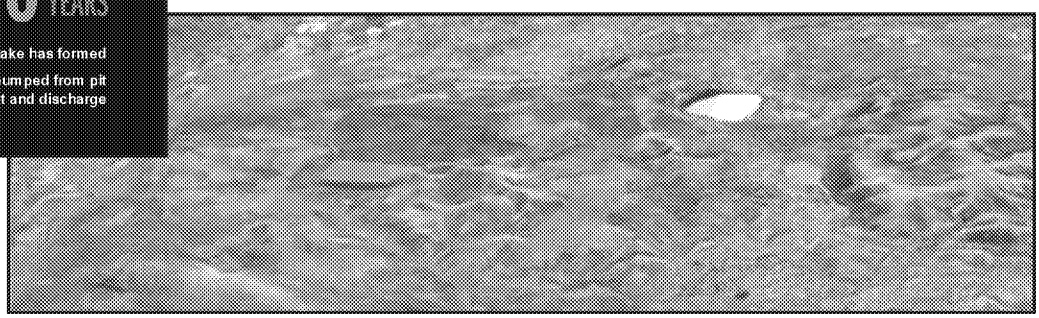
Pit continues to fill with water

30 YEARS

Pit lake has formed

Water is pumped from pit for treatment and discharge





SUMMARY INFORMATION

- Removal of mill and other facilities not used after closure
- Hauling of PAG waste rock into the open pit for under water storage
- Recontouring and placement of overburden for revegetation
- Plan and infrastructure for long term water management and treatment
- Financial assurance for closure and long term site management is required before construction

THE pebble PARTNERSHIP

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Tips for Writing Effective Comments

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings.
- **Learn about the steps in the NEPA process** and opportunities for submitting comments to the U.S. Army Corps of Engineers.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through June 29.
- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS.

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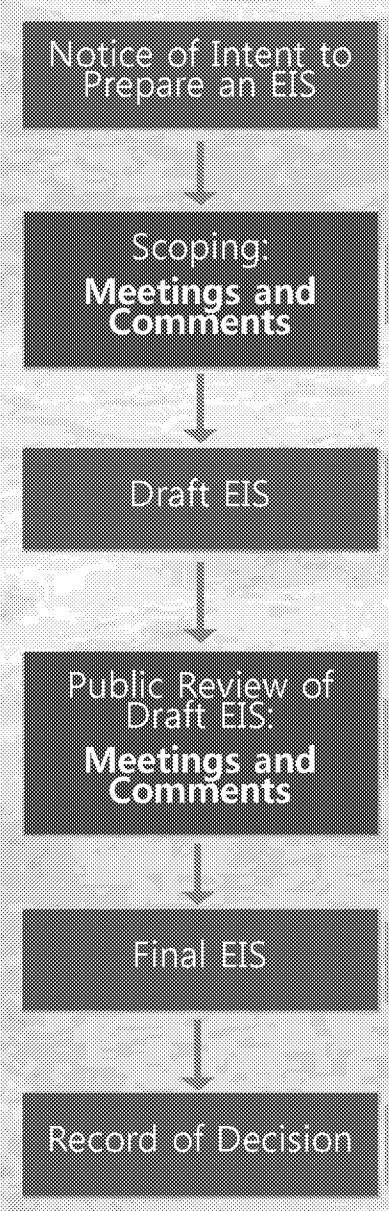
The National Environmental Policy Act

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership. The EIS process will take several months to complete a Draft EIS for public review, and several months to incorporate public comments into the draft to develop the Final EIS.

Steps in the EIS Process



The USACE released a Notice of Intent to the United States Federal Register. This initiated the process to prepare an EIS and began the scoping process.

The scoping process kicks off on April 1, 2018. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period.

After the Draft EIS is released, the public will have a chance to submit comments. During that time, the USACE will plan public meetings to collect comments.

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release.

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application.

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How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and commenting on.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consequences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.

For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.

For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. For example: wetland fill from one projects.

For example: wetland fill from one project, combined with the wetland fill from a separate project.

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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of analysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS.

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisciplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide an interdisciplinary team to develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirety of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

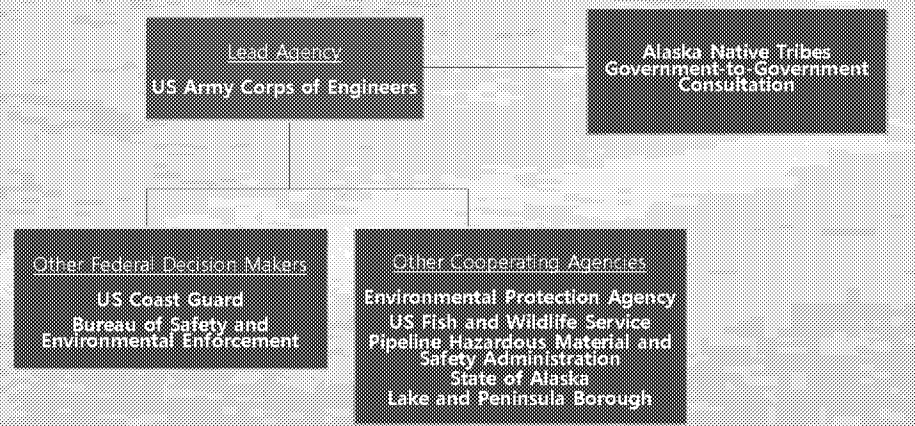
- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

Lead and Cooperating Agencies



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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action that could have lesser environmental impacts.

In addition to Anchorage, Public meetings were held in April in the following communities:

- Naknek
- Kokhanok
- Homer
- Newhalen
- New Stuyahok
- Nondalton
- Dillingham
- Igiugig

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods-ways in which potential negative impacts could be avoided or lessened.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Let us know what aspects of the proposed project are important to you!

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to give your comment orally to a dedicated court reporter or electronically submit using one of the dedicated laptop computers. You can also submit hand-written comments, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson
AK 99506-0898

Scoping comments can be submitted through June 29, 2018.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publicaly available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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fold here



fold here

Program Manager
US Army Corps of Engineers
Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

Please place first-class postage here.

From:

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FACT SHEET

Pebble Limited Partnership Project Proposed Natural Gas Pipeline

Background

The Bureau of Safety and Environmental Enforcement (BSEE) is a cooperating agency on the Environmental Impact Statement that the United States Army Corps of Engineers, Alaska District, is preparing for the Pebble Limited Partnership project.

The Pebble Limited Partnership is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The proposed project infrastructure will include an approximately 230-megawatt power plant that will be fueled using natural gas. Natural gas would be supplied to the site using a roughly 190-mile pipeline that would connect to the project site from a tie-in on the Kenai Peninsula near Happy Valley.

While BSEE has no regulatory oversight of onshore mining, our role will include a Pipeline Right-of-Way grant approval process for the proposed pipeline crossing federal waters of the Outer Continental Shelf in Cook Inlet.

Proposed Pipeline

The gas pipeline alignment, as currently proposed, would start near Happy Valley on the Kenai Peninsula and travel south paralleling the Sterling Highway for approximately 9 miles to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the proposed Pebble port site near the mouth of Amakdedori Creek. A second compressor station and offtake point is located at the port site. The pipeline then follows the proposed road alignment from the port to the mine site, including crossing Iliamna Lake on the lake bed for approximately 18 miles. BSEE's jurisdiction for the proposed pipeline will likely only cover 63 miles, the portion that crosses federal waters of Cook Inlet.

The pipeline, as currently proposed, would be constructed of steel and designed to have a gross flow rate of 50 million standard cubic feet of natural gas per day. The onshore portions of the pipeline would be 10-inch diameter, while the offshore portion would be constructed using heavy wall 12-inch diameter pipe with negative buoyancy. All appropriate federal regulations would be followed in the design, construction, and operation of the pipeline.

Right-of-Way Decision Process

Pipeline right-of-way requirements for permitting are detailed in the 30 Federal Code of Regulations Part 250—Oil And Gas And Sulphur Operations In The Outer Continental Shelf Subpart J—Pipelines and Pipeline Rights-of-Way.

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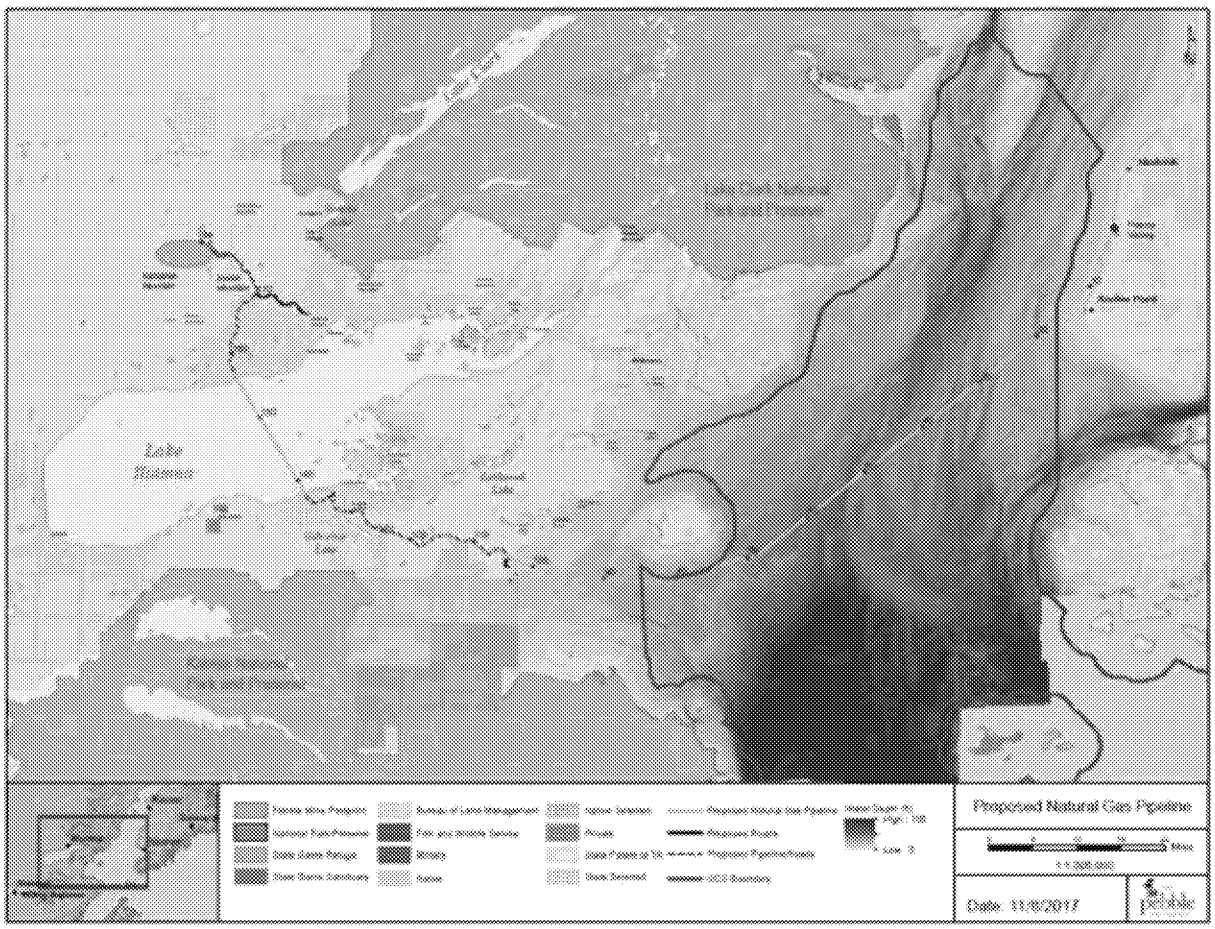
Applications for permits must be submitted to the BSEE Regional Supervisor and will include detailed information about the right of way, including consideration of effects from water currents, storm or ice scouring, soft bottoms, mudslides, earthquakes, permafrost, and other relevant environmental factors.

While the pipeline in this case will ultimately be regulated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, BSEE's interest is to have the requisite level of information that enables a well-informed right-of-way decision process, with the knowledge that environmental and safety factors have been considered and addressed.

Pebble Project Proposed Natural Gas Pipeline



-- BSEE --

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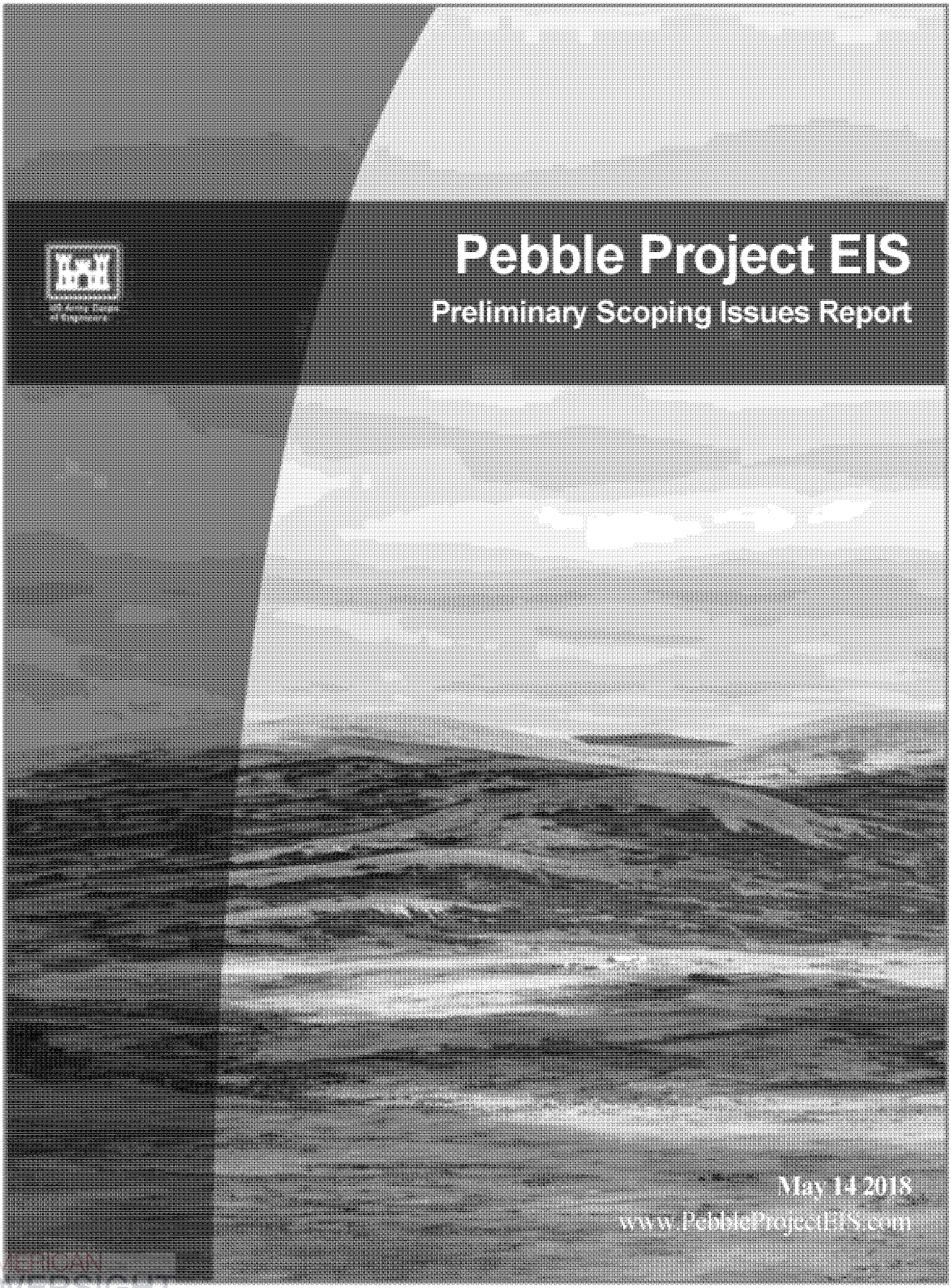

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No table of figures entries found.

[Note: List of Figures is a placeholder for figures included in the final Scoping Report]

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LIST OF ACRONYMS AND ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
CEQ	Council on Environmental Quality
CWA	Clean Water Act
EIS	Environmental Impact Statement
EO	Executive Order
G2G	government-to-government
MW	megawatt
NEPA	National Environmental Policy Act
PLP	Pebble Limited Partnership
USACE	U.S. Army Corps of Engineers

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1.0 INTRODUCTION

This Preliminary Scoping Issues Report has been developed as an interim product, intended for the U.S. Army Corps of Engineers (USACE) to share the types of issues that have been received thus far in the scoping period with cooperating agencies. The final comprehensive product, the Scoping Report, will be developed at the conclusion of the scoping period.

2.0 PROJECT OVERVIEW AND SCOPING PROCESS

2.1 BACKGROUND

The Alaska District, USACE intends to prepare a Draft Environmental Impact Statement (EIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble Project. The EIS will assess potential effects of a range of alternatives.

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The proposed project would require approximately four years to construct, with a projected mine life of 20 years. The proposed project would include excavation of an open pit that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 megawatts (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the mine site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point. The pipeline would follow the Sterling Highway south for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow the mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the mine site.

2.2 NOTICE OF INTENT

An application for a Department of the Army permit was submitted by PLP pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. On March 29, 2018, USACE issued a Notice of Intent in the Federal Register to prepare an EIS for the proposed project. The Notice of Intent is included in Appendix A and the Public Notice is included in Appendix B.

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2.3 SCOPING PROCESS

2.3.1 Scoping Process Overview

The scoping period began on April 1, 2018. On March 30, 2018, the USACE issued a press release to announce the opening of the 30-day comment period and to provide information for how to submit comments. On April 6, 2018, their second press release extended the scoping period by 60 days to continue through June 29, 2018. See Appendix B for both press releases.

Scoping is conducted to assist in determining the scope of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. The Council on Environmental Quality (CEQ) defines scoping as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). The scoping process provides an opportunity for people potentially affected by the project to express their views and concerns and to contribute to the completeness of the EIS.

This Preliminary Scoping Issues Report includes the initial results of the scoping comment analysis as well as appendices with pertinent documents (e.g., the Notice of Intent, sign-in sheets, and other scoping materials).

2.3.2 Public Notice, Press Releases, and Other Media

Prior to the scoping period start, the USACE began organizing public meetings and developing materials.

The project website (www.PebbleProjectEIS.com) went live on March 19, 2018. The website includes information about the project and EIS process. The USACE will use the website to disseminate important information to the public, such as the public meeting schedule. The website also provides an online form for the public to submit scoping comments. Comments that have been submitted are available to view in as close to real time as possible. Screen shots of the website (dated May 7, 2018) are in Appendix B.

On March 20, 2018, the USACE mailed hard copies of a Scoping Package to 35 identified Tribes in the Project Area. The complete Scoping Package (in Appendix B) includes:

- Information about the scoping process;
- A description of the project;
- The process for developing alternatives;
- A list of resources to be analyzed in the EIS;
- Information on the National Environmental Policy Act (NEPA);
- Roles of the various participating organizations;
- An EIS schedule and outline; and
- Information on submitting comments and a comment form.

To advertise the scoping period, the USACE began mailing the project's Newsletter #1 on March 29, 2018. The newsletter provided details on the public meeting schedule as well as information on how to submit comments. It was sent to every post office box in 33 communities, as well as 140 other organizations and individuals on a mailing list; a total of 3,670 newsletters were mailed. The USACE also ran announcements in the Bristol Bay Times, the Homer News, and the Anchorage Daily News. Finally, a flyer was emailed to communities for distribution on April 6, 2018. Newsletter #1, newspaper affidavits, and the flyer can be found in Appendix B.

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2.4 PUBLIC SCOPING MEETINGS

Public meetings were held in nine communities, including Anchorage. A total of 914 participants signed in to the public meetings (see Appendix C for sign-in sheets). The primary purpose of the public meetings was to give the public a forum for submitting comments, and an opportunity to talk to the USACE about the EIS and the Department of the Army permit application. Table 1 shows the meeting locations and the number of people who signed in.

Table 1: Scoping Meetings

Date	Community	Location and Time	Number Signed In
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM	45
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM	68
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM	223
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM	47
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM	65
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM	46
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM	88
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM	47
April 19, 2018	Anchorage	Dena'ina Center, 11:00am-9:00 PM	285

2.4.1 Meeting Description

The format of the public meetings varied depending on the location. In general, a brief introduction by the USACE was given. A 17-minute video describing the project was shown (or available to be watched), and the public was given multiple ways to comment. Time was allotted for members of the public to speak directly with USACE staff, State of Alaska staff, or in some locations, other cooperating agency staff. AECOM (the third party NEPA contractor) staff were also present.

In Naknek, Kokhanok, Newhalen, New Stuyahok, Nondalton, and Igiugig, the USACE provided a microphone ("hot mic") where participants could speak their comments out loud in front of other meeting attendees. Comments were transcribed by a court reporter, either during the hot mic session or individually after the session. In Homer, Dillingham, and Anchorage, two court reporters were available to take comments one-on-one; no hot mic was provided.

At all meetings, laptop computers were provided for the public to submit comments electronically to the project website. The online comment form included an interactive map; commenters could mark a point on the map that corresponds to their comment. Paper comment forms were available for handwritten or typed comments, which could be submitted to the USACE at a meeting or mailed later.

2.4.2 Meeting Materials Description

The USACE requested that the PLP create a video that described their proposed project and mining process. The resulting 17-minute video gives an introduction to the surrounding environment, project components and footprint, water management and mining process, and reclamation. At some meetings this video was shown after the USACE introduction, and at others it was shown on a repeating loop.

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Ten posters prepared by the PLP to describe the project, the mining process, and reclamation were displayed. The USACE displayed posters describing both the NEPA process, and how to write effective comments. The Anchorage meeting also included posters on the scoping process, the EIS outline, resources to be discussed in the EIS, and roles of cooperating agencies.

The USACE also provided the Scoping Package, paper comment forms, and a handout from the Bureau of Safety and Environmental Enforcement, a cooperating agency. A screenshot of the video, as well as all posters and handouts are in Appendix D.

2.4.3 Additional Agency Involvement

[Note: Agency involvement will be summarized after the scoping period has ended.]

2.4.4 Government-to-Government Consultation

[Note: Specific government-to-government activities will be summarized after the scoping period has ended.]

2.4.5 Next Steps in the NEPA Process

Scoping is the first opportunity for public involvement under the NEPA process. An additional opportunity for public comment will follow the release of the Draft EIS. A Notice of Availability will be published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment in early 2019. The Draft EIS comment period will include public hearings.

Public comments shape the NEPA process by identifying project-related questions and issues of concern. Typically questions are in reference to the project, existing environment, extent of temporal and spatial impacts, or potential consequences to the human environment from the proposed action. Substantive questions and issues of concern are grouped by subject matter in this scoping report. This information is used in the alternatives development process, the study of the affected environment, and in the process to analyze environmental consequences (or impacts).

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3.0 SCOPING COMMENT SUMMARY

This section contains a description of the scoping comment analysis process and a summary of the public scoping comments received to date. The public comment summary includes the following:

- Description of the scoping comment analysis process (description of the comment database, development of the coding structure, identification and coding of comments, comment summary process); and
- A summary of issues identified to date, categorized by physical environment, biological environment, social environment, or NEPA process.

3.1 SCOPING CONTENT ANALYSIS PROCESS

Public and agency comments were analyzed and categorized using a process called "content analysis." The analysis process included:

1. Importing and organizing all submission content into a comment database;
2. Developing a coding structure;
3. Review of submissions to assign codes to relevant comments; and
4. Preparation of a narrative report of analysis results.

The goals of the content analysis are to:

1. Ensure that every submission (every received set of comments, submitted by any means, is defined as a "submission") is considered;
2. Identify the concerns raised by commenters;
3. Represent the breadth and depth of the public's viewpoints and concerns as fairly as possible; and
4. Present those concerns in a way that facilitates consideration of comments.

All comments were treated equally. Emphasis was on the content of a comment, rather than who wrote it or the number of submitters who agreed with it.

3.1.1 Scoping Comment Database

Names, contact information, and comment text for commenters who submitted comments were entered into an electronic database. The majority of the comments were submitted to the USACE in electronic format through the project website comment form. Some comments were received by the USACE via email or postal service. As comments were received they were made available to the public to view on the project website. Hard-copy comments, including those delivered by postal service or submitted in person at public meetings, were scanned and entered into the database and also posted to the project website.

The content of the comments was filtered using various database queries and identifying potential form letters (see form letter discussion below). Any submission identified as having the same commenter information and content, regardless of delivery format (e.g., hard-copy letter, email) or date, was counted as one submission.

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3.1.2 Form Letters

Form letters are defined as any submissions with the same content. Electronic comments were pre-screened in the database, using various queries to identify similar content and thus potential form letters. If consistent content was identified, a form letter record with that content was created in the database and additional submissions with the same content were placed into that form letter category.

3.1.3 Coding Structure Development

Submission content was sorted into categories to represent commenters' concerns and rationale through a coding structure. Codes provide an efficient and accurate grouping of similar comments; coded concerns are referred to as "comments" in this report.

The aim of the coding structure is to identify applicable project elements, environmental resources, and planning processes in submissions. An initial coding structure was developed based on expected issues and concerns; this structure will continue to be developed as more submissions are received to identify any additional concerns.

3.1.4 Comment Identification and Coding

Submissions were reviewed to identify substantive comments that will be used to formulate the issues and analysis conducted in the EIS process. Individual statements within the submission are identified as a comment and then assigned to a category/topic by an automated system. Submissions may contain more than one comment, each coded separately based on the issue and the specific rationale. This form of analysis allows for specific comments to be captured and then grouped under the umbrella of a general resource issue.

3.2 PUBLIC COMMENT SUBMITTAL SUMMARY

3.2.1 Submittals Received

In total, XXX comments were received up to June 29, 2018. XXX form letters were received.

[Note: Comment statistics will be summarized after the comment period is complete.]

3.3 COMMENT SUMMARY PROCESS

[Note: Comment content will be summarized into a final narrative summary for the final version of this report.]

The intent of the narrative summary is to provide representative summaries that capture, with a minimum of repetition, major topic areas or concerns expressed during the public scoping period. The topic areas or concerns contained in the summary of public comment will be used to develop the issues, alternatives, and mitigation strategies that will be analyzed in the EIS process.

During the summary writing process, comment analysts review coded comments to understand the overall content of the comment and to identify topic areas or concerns in similar comments from different respondents. Similar comments are summarized into concise narrative statements and organized by the theme categories.

Comments are organized in two broad categories below:

- Summary of Public Comment – Resource Topics. This section provides issues identified in scoping comments organized by resource topic (e.g., air quality,

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socioeconomics, and fish). This section summarizes resource-specific comments, such as comments concerning fish and wildlife habitat loss, loss of recreational access, and dust and emissions along the access roads and at the mine site.

- Summary of Public Comment – NEPA Process and Regulatory Compliance. This section provides a summary of public comments on the NEPA process and alternatives. Topics include the public involvement process, project purpose and need, other laws and regulations, tribal consultation, cooperating agencies, and the no action alternative. Public comment suggestions for proposed action alternatives and mitigation measures are also included.

3.4 SUMMARY OF PUBLIC COMMENT – RESOURCE TOPICS

3.4.1 General Resources

A variety of general comments were received indicating that the EIS should analyze the direct, indirect, and cumulative impacts on resources in the Project Area.

3.4.2 Physical Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific physical resources, including:

- Air quality;
- Climate change;
- Geology and seismic activity;
- Surface and groundwater hydrology impacts;
- Noise impacts;
- Fuel spill risks and releases;
- Hazardous materials stored and transported to and from the mine site;
- Natural gas supply and pipeline safety;
- Tailings dam; and
- Water resources – quality and quantity.

3.4.2.1 Air Quality

Comments were received regarding impacts to air quality from construction, fugitive dust emissions, vehicle equipment emissions and mining activities. These include:

- Dust pollution from the mine and roads, and what chemicals may be used to control dust.
- Impacts to air quality including impacts from transporting ore and materials, or loading and shipping ore and concentrate.
- Emissions from the power plant.
- Impacts related to fugitive dust.
- Prevailing winds creating waves on the pyritic tailings facility which could allow oxidation of the tailings resulting in acid generation.
- Impacts from air pollutants emitted during mine operations and contribution to greenhouse gas emissions from the power plant.
- Greenhouse gas emissions as a result of the proposed project and all alternatives.

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3.4.2.2 Climate Change

Comments were received about the impacts of climate change to the environment and how climate change trends may interact with effects of the proposed project.

3.4.2.3 Geology and Seismic Activity

Comments were received regarding impacts to the geology of the project area, including concerns that major faults occur in the proposed Project Area.

- Describe how the proposed project facilities would withstand earthquakes, particularly the tailings storage facility.
- Include detailed information about seismically active areas, geological faults and tectonic activity, and corresponding design features.
- Analyze impacts to bedrock, surface geology, gravel resources, paleontological resources, and landforms from all proposed project components.
- Analyze impacts from volcanic activity, especially at Amakdedori.

3.4.2.4 Surface and Groundwater Hydrology

Comments were received on impacts to groundwater systems and aquifers from tailings, transportation of groundwater, and how it moves underground. A thorough understanding of the groundwater and surface water hydrology and how they relate to each other should be demonstrated.

- Analyze impacts from the mining process lowering the groundwater table and what that will do to surface water hydrology in nearby streams.
- Address earthquake impacts on hydrology characteristics.
- Explain the water balance model of the project.

3.4.2.5 Noise

Comments were received on impacts of noise pollution as a result of project construction and mining operations.

- Discuss noise impacts of blasting in the project area, and describe the blasting methods that would be used.

3.4.2.6 Fuel Spill Risks and Releases

Comments were received about the potential for fuel and oil spills or accidental releases, including adequate response capacity to clean up spills in various conditions, and potential impacts to natural resources or environment from spills or release.

- Analyze impacts of spills of diesel and natural gas to every resource discussed in the EIS.
- An earthquake could rupture the gas pipeline under the lake when salmon are migrating and kill the fish.
- Explain who is responsible for spill response on Cook Inlet and Iliamna Lake. Response plans should be developed for all parts of the project.

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3.4.2.7 Hazardous Materials

Comments were received about the potential for hazardous material storage, spills, and impacts to resources or the environment and, in particular, address chemicals associated with mine process and storage of materials (arsenic, acids).

- The revised mine plan calls for no cyanide to be brought in to the region.
- Address impacts of hazardous and solid waste generated from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and evaluated into the Draft EIS.
- Describe how blasting agents will be transported and managed.
- During the copper extraction process an alcohol is added during the flotation along with a collector chemical called potassium amyl xanthate (or the potassium salt of an alkyl dithiocarbonate), which can be toxic.

3.4.2.8 Natural Gas: Pipeline and Gas Supply

Comments were received on the impacts of the proposed project on the supply, demand and cost of natural gas in the proposed Project Area and Cook Inlet.

- Lower costs of fuel in rural Alaska as result of potential new gas supply and spur/distribution systems.
- The supply of available natural gas in Cook Inlet may not be sufficient to provide power to the proposed project.
- Alternative energy sources should be examined. Many of the minerals to be mined will go into solar panels, wind turbines, and hydro turbines. The PLP could support the industries they will be supplying by utilizing alternative, renewable energy sources.
- Explain if the use of natural gas by PLP would affect existing railbelt supply and users.

Comments were received on the design, route, construction, and safety and reliability of the natural gas pipeline.

- That part of Alaska has exceptionally high tides – routinely greater than 20 feet. Please consider this when analyzing an underwater gas pipeline.
- There are safe and secure methods to construct a pipeline that would cross existing submarine cables. The pipeline owner/operators should enter into a cable crossing agreement to ensure the safety and security of both the fiber cables and the gas pipeline.
- There are no pipelines in Cook Inlet this long. In Nikiski, it is surprising how rapidly the seabed can change. This can cause unforeseen problems in maintenance. While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay has probably the worst winter sea conditions of anywhere this side of the Bering Sea.
- At Iliamna Lake, maintenance could be difficult when the lake is frozen.
- The route for this pipeline means that it will be sitting at the base of Augustine Volcano.

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3.4.2.9 Tailings Dam

Comments were received regarding concern for the stability of the tailings dam, potential for tailings dam failure, and impacts of such a failure.

- Describe the impacts of dam failure and recognize the public concern of the stability of the tailings dam. Specifically, the USACE should consider the impacts to biological and social environments of a dam failure as a result of an earthquake.
- Analyze impacts of a tailings dam failure to every resource discussed in the EIS.
- Look at examples of other tailings dam failures (in Spain, Canada, Australia, and others in the United States). Some dams have failed because of engineering, some because of earthquakes.
- Analyze impacts from tailings leaks and leaching, not just failures.
- Tailings dam engineering has improved considerably over the decades. Pebble's tailings dam design will have to be approved to adequately protect the environment before the project will be permitted.
- Analyze impacts from rainfall causing overtopping of the tailings dam.

3.4.2.10 Water Quality and Quantity

Comments were received concerning a detailed analysis and discussion of the physical and chemical impacts on all water resources.

- Analyze impacts to water quality and quantity from construction and operation.
- Analyze pit water and tailings dam management.
- The mine site water balance should be estimated for each phase of the mine development.
- The proposed pit will be contaminated during closure like the Berkeley Pit in Montana and be forever toxic to wildlife and waterfowl.
- Analyze erosion, turbidity, temperature changes.
- Ferry crossing concerns, including changes in shoreline erosion and turbidity, and pollution from the proposed ferry.
- Composition of the (potential) contaminants from all project sources, including blasting.
- Prevailing winds will create waves on the pyritic tailings facility which will allow oxidation of the tailings.
- Risks associated with acid rock drainage from mine project components, including the waste rock facility, leaching, and pathways for acid rock drainage. Acid rock drainage was noted as a potential source of impact on many resources, such as water quality, wetlands, fish, and subsistence food resources.
- Describe how acid rock drainage, the tailings, and metals leaching would be managed and treated post-closure.
- Analyze the potential for wastewater to enter streams and rivers.

3.4.3 Biological Resources

Comments indicated that the EIS should analyze the direct, indirect and cumulative impacts on specific biological resources, including:

- Vegetation and ecosystems;

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- Fish and aquatic resources;
- Wetlands and special aquatic sites;
- Wildlife and non-Threatened and Endangered Species (TES) birds and mammals; and
- Threatened and Endangered Species.

3.4.3.1 Vegetation and Ecosystems

Comments were received concerning potential for disturbance from project construction and operations, and on invasive species. Comments were also received concerning terrestrial, lake, and marine habitat impacts from project construction and operations.

- Analyze impacts to rare and sensitive plants (including removal).
- Address how fugitive dust would affect vegetation within the project area and beyond.
- Address risk for invasive (non-native) species introduction by marine barges and the ferry; include ballast water management.
- Analyze ecosystems as unique in the Bristol Bay area, in the degree to which they remain unaffected by commercial development and other human technologies. Evaluate how the proposed project could alter the biological and human ecosystems and landscape.
- Analyze the potential direct, indirect, and cumulative effects of all components and all phases (including reclamation and restoration) of the proposed project on terrestrial, marine, and freshwater ecosystems.
- Analyze impacts that habitat fragmentation from Amakdedori Port and the mine access road would have on bear movements.

3.4.3.2 Fish and Aquatic Resources

Comments were received related to potential impacts to fish (King Salmon, Sockeye Salmon, Silver Salmon, Pink Salmon, Chum Salmon, Dolly Varden/Arctic char, Rainbow Trout, and Grayling) populations, abundance, diversity, migratory patterns, contamination, and potential for displacement from project components.

- Address effects of ferry traffic on resident and migrating fish in Iliamna Lake: the potential for the ferry to cause erosion of the lake shoreline and the effect of that on fish; the effect of the ferry on salmon spawning and rearing habitat; the effect of increased noise on salmon productivity; the potential for increased turbidity and its effect on salmon; the potential for ferry traffic to cause wave action that could harm the fry on their way to the ocean; the potential for ferry propellers to entrain fish and cause mortality, and the potential for fish to avoid the area around the ferry and not come back to the area.
- Address effects of gravel pits on stream hydrology and fisheries.
- Iliamna Lake creatures are poorly studied and additional baseline studies are needed.
- Water withdrawal and capture, storage, treatment and release of wastewater associated with the mine could impair the fish habitat functions of streams, wetlands, and aquatic resources.
- Address the potential for fish to become contaminated from mining chemicals or fuel spills.

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- Evaluate how the proposed project road to Iliamna Lake would impact fish species as road traffic will create of dust that may contain copper and other heavy metals that could enter the watershed and affect resident aquatic organisms including salmon.

Comments were received regarding the impacts of the mine access road crossing streams and anadromous waters, and the impacts of those stream crossings on fish.

- Current plans will impact more than 5 miles of anadromous streams.
- The construction process would build an 80-mile road system with 200 stream crossings.
- Analyze bridge and culvert impacts to fish, including fish passage and habitat condition change.
- Proposed road corridor has been designed to minimize impact on wetlands, minimize stream crossings and avoid areas of known for subsistence and recreational use.

Comments were received regarding the impacts to aquatic resources, including introduction of invasive species.

- Shipping from foreign ports may result in ballast water transporting invasive species such as green crab, which would have a devastating impact on the ecosystem and commercial shellfishery.
- Require a shellfish population (scallops, razor clams, and hardshell clams) baseline assessment and impact assessment regarding the dredging project prior to any dredging work at Amakdedori Port. Base recommendations on the impacts this dredging will have on the shellfish populations of Western Cook Inlet. The proposed channel dredging could affect the sedimentation deposition rate on adjacent beaches and nearshore shellfish habitat.

3.4.3.3 Wetlands and Special Aquatic Sites

Comments were received on filling of wetlands and alternations of wetlands habitat, fragmentation, and loss of wetland habitat as a result of project activities.

- Include delineation of all wetlands that could be affected by the proposed project.
- Estimated mine site to fill 3,190 acres of wetlands and water bodies, nearly three times the maximum set by the EPA for Bristol Bay in 2014.
- Impacts to wetlands dewatering and hydrological changes, pollution to wetlands, impacts on wetlands functions, clearing and removal of wetland vegetation, degrading wetland vegetation from all proposed Pebble project components and during construction, operation, and closure phases.
- Given the extent of streams, wetlands, lakes and ponds both overlying the Pebble deposit and within adjacent watersheds, excavation of a massive mine pit and construction of large tailing impoundments and waste rock piles would result in discharge of dredged or fill material into these waters.

3.4.3.4 Wildlife and non-TES Birds and Mammals

Comments were received related to potential impacts to wildlife (including terrestrial and marine mammals), and on potential impacts to migratory birds and waterfowl populations; abundance, diversity, migratory patterns and potential for displacement; and attraction of birds to tailing ponds.

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- Describe how the project construction, operation, and closure would change wildlife patterns and behavior. Noise from mining, the mine access roads, ferry traffic could all impact behavior.
- Assess how wildlife can acclimate to construction and operation impacts.
- Analyze how noise levels from construction or large vessel traffic may deter bears from coming to McNeil River Falls, or could affect bear behavior and change or end the use of McNeil River by bears.
- Examine how increased contact between bears that use the McNeil River and humans could result in food conditioning of bears or direct bear mortality by humans.
- The proposed ferry could strike marine mammals (seals) in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry.
- Ferries could impact the migration pattern of wildlife.
- Take advantage of traditional knowledge on freshwater seals in Iliamna Lake, there is a Freshwater Seal Commission.
- The transportation of mining materials across Cook Inlet has potentially negative effects for local marine mammals, particularly underwater noise pollution that impacts the use of sonar in marine mammals such as whales, dolphins, and seals, and about the speed of the cargo ships carrying materials.
- Consider noise in the water created by the proposed ice-breaker ferry and the impacts to fish and wildlife.
- The Bristol Bay watershed is unique in that it provides habitat for more than 190 birds. Additionally, there are more than 40 species of water birds here and confirmed breeding sites for more than 22 species.
- Describe what steps the developers propose to keep tailings ponds/lakes free from pollutants or physically restrict birds from trying to land on them.
- Analyze impacts from noise, blasting, and other human interference to birds.
- Blast control can mitigate noise impacts to birds, like they do with birds at the airport.
- Address effects of the project on birds and migratory waterfowl that are used for subsistence.

3.4.3.5 Threatened and Endangered Species

- The proposed port site is designated Critical Habitat for the Cook Inlet Beluga Whale and the Northern Sea Otter, both listed as endangered; and Iliamna Lake is home to freshwater seals that have been considered in the past for Endangered Species Act status.

3.4.4 Social Resources

Comments indicated that the EIS should analyze the direct, indirect and cumulative impacts on specific social resources, including:

- Socioeconomics;
- Subsistence;
- Traditional way of life;
- Archaeological and cultural resources;
- Land ownership, management, and use;
- Transportation and navigation;

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- Recreation;
- Environmental justice;
- Public health and safety;
- Visual resources; and
- Wilderness characteristics.

3.4.4.1 Socioeconomic Impacts

Comments were received regarding the economic impacts to local communities, regional economy, and national economy.

- PLP should give the USACE an independently prepared economic feasibility analysis, which is usually done for other mines like Donlin. Without the economic feasibility analysis, the USACE could be analyzing and the public could be commenting on a mine that will never be built due to a lack of funds.
- The impact of the use of Iliamna Lake and the proposed transportation corridors/pipelines on sport fishing and the sport fishing-related economy should be evaluated.
- Consider the socioeconomic impacts to Bristol Bay's recreational fisheries. More than 37,000 angling trips are taken to Bristol Bay each year, which supports dozens of businesses, and a $91 million annual economy.
- The project could destroy the Bristol Bay commercial sockeye salmon fishery.
- The project could damage the Bristol Bay wild salmon brand because the watershed would contain a mining district and no longer be pristine.
- Consider that the project would create a boom and bust economic cycle that would ultimately leave people without jobs.
- The mining company will bring their own workers and not train local people to work at the mine.
- The Pebble Mine would bring much needed economic opportunity to a region by creating jobs during construction and operation.
- Residents are moving closer to much larger metropolitan regions to seek opportunities that do not currently exist near their homes in the region.
- Consider that the Kennicott Copper Mine was located in the watershed of the Copper River which did not affect the value of the salmon fishery in that region.
- The population would increase during construction and heavily impact local communities.
- EIS should look at the long term social impacts, such as trapping and life style change impacts.
- The commercial salmon fishing economy sustains 20,000 jobs; 20,000 jobs will be lost if this mine goes forward.
- People need jobs and fish.
- Analyze impacts on the bear viewing industry near the proposed Amakdedori Port.
- There were inquiries about if there would be compensation to commercial fishermen if there is a disaster and fish prices go down like was done with Exxon Valdez.
- The project will kill the hearts and souls of the people; our way of life has no value.
- Consider that fish taxes are important to the finances of the Bristol Bay Borough.

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- Review social benefits like education opportunities, and potential reduction in the high cost of living in the region due to transportation improvements.
- PLP should consider using regional Native corporations that are already in the pipeline construction and maintenance industry.

3.4.4.2 Food and Fiber Production – Subsistence

Comments were received related to potential impacts to food and fiber production (subsistence) and subsistence resources like harvest, sharing, and traditional use areas. Comments were also received on contamination concerns and/or avoidance of subsistence resources.

- Consider that impacts to any subsistence resource (e.g., fish, wildlife, vegetation) would impact subsistence as well.
- Consider the importance of the salmon fishery to subsistence and the heavy reliance on fish for all users in the area.
- Analyze impacts on subsistence resources including wildlife migration, habitat for growing food, traditional use areas, fisheries, berries and other edible plants, and the cumulative effects from other mining activity.
- Analyze impacts of potential contaminants entering into the air or water and affecting subsistence resources, including effects on subsistence resources due to potential accidental spills, and bioaccumulation of toxins in subsistence resources, and effects
- Impacts to the residents along Iliamna Lake who rely on access to small islands for the harvest of bird eggs in the spring.
- We are in fear for our subsistence way of life. Leave our dinner table alone!
- Helicopter traffic during exploration displaced caribou from the project area and this would also occur during construction and operations of the mine. Also address Koktuli.
- Helicopter traffic impacts on spring waterfowl hunting, geese. Operations air traffic could be significant, there should be no fly zones, and address caribou hunting impacts.
- Helicopter traffic during exploration disrupted subsistence activities and this would occur during construction and operations of the mine.
- Many species of fish are used for subsistence harvest, not just salmon.
- Analyze potential beneficial impacts to subsistence as cash income earned from jobs could support subsistence activities. Cash income could be available to fund the boats, motors, fuel, and nets necessary to maintain subsistence activities.
- A sudden influx of noise, people, and heavy equipment over ancestral hunting and fishing lands would have a devastating effect on the intangible riches the sustainable Dena'ina subsistence culture has to offer.

Comments were received on impacts to important locations for subsistence activity from the project, including:

- The proposed road in the Talarik watershed is an important moose hunting area.
- The road corridor would go through our winter moose hunting area.
- Helicopter traffic during exploration at Pebble displaced caribou from the project area and this would also occur during construction and operations of the mine.
- We depend on king salmon from the Koktuli River.

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- The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
- The mountain behind Nondalton is traditional subsistence area.
- The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.

3.4.4.3 Traditional Culture and Way of Life

Comments were received related to potential cultural impacts and the desire to maintain traditional practices. Includes comments related to traditional land use areas (cultural continuity), and traditional ecological knowledge.

- Fully disclose the potential impacts of project-related activities on local Alaska Native traditional ways of life. Local culture and environment has already changed from what it was historically, and this may affect the ability to pass values on to future generations.
- Traditional ecological knowledge should be studied and incorporated into the Draft EIS. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants, and other resources of the region.

3.4.4.4 Archeological and Cultural Resources

Concerns were expressed about impacts to archaeological and cultural resources subject to Section 106 of the National Historic Preservation Act.

- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- There are ancestral burial grounds at/near the proposed Amakdedori port.
- Amakdedori has been used as a site for a cultural camp.
- Analyze impacts to irreplaceable Native Alaskan rock art sites. This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.
- Analyze impacts to cultural resources (historical and pre-historical sites) and direct destruction of cultural resources from all project components.

3.4.4.5 Land Ownership, Management and Use

Comments were received about land status (ownership), land management, and land use for the project areas.

- The proposed mine site and many project components including the port site and a majority of the transportation corridor are proposed on state-owned lands. Mine construction, operation, and closure would limit any access to these lands and transportation corridor to private entities only.
- A pattern of land use change would occur in the region long-term with additional mining deposits explored for development.
- Review any trails that could be impacted by the project.

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- The Pebble Mine will be built on state land set aside decades ago in Western Alaska specifically for mining.
- Ensure that activities are consistent with land use plans and goals of all landowners, including the State of Alaska, and Alaska Native corporations.
- Analyze the effect of project components on the public use of the surrounding area with regards to trails and waterfront usage.
- Explain the security status of the ferry terminals, the mine access road, and Amakdedori Port, including when and how the public may or may not access or cross project facilities.
- Explain if local Tribal governments have included the mine access road in their Indian Reservation Roads Program that would make it public, versus private roads as stated by PLP.

3.4.4.6 Transportation and Navigation

Comments were received regarding the impacts to transportation systems, including airports, roads, rivers, and trails as a result of the project.

- Evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts at Iliamna Lake, Kamishak Bay, and Cook Inlet. The Draft EIS should evaluate how the ferry crossing and vessel traffic could disrupt schedules, local access and local boaters.
- An ice-breaking ferry across Iliamna Lake would create difficulties and hazardous situations for people travelling across the ferry route on snowmachines.
- Analyze impacts from increased air traffic during all project phases.
- Concerns about traffic on the Sterling Highway.
- The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
- The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 mph.
- A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.
- The Amakdedori Port location experiences very strong onshore winds that could be hazardous.
- Consider the impact of travel restrictions from road and ferry and who is benefiting.
- It will be difficult to maintain the Amakdedori Port dredged channel due to sediment transport in that area.

3.4.4.7 Recreation

Comments were received on impacts to recreation and tourism; recreational hunting and fishing; usage near the mine, along river systems, and in transportation/pipeline corridor during construction and operation. This includes comments on disruption of recreational experiences (bear viewing, sport fishing).

- Consider the effects of project components on recreational hunting and existing guided hunting operations (e.g., changes to access, disturbance of wildlife from helicopters or vehicle traffic).

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- Concerns about impacts to fish, and how impacts to species could be detrimental to the sport fishing community and businesses.
- The proposed project would bring an influx of the number of people in the Iliamna area that would want to recreate, sport fish and hunt, including mine employees and support industry personnel.
- Displacement of wildlife would impact the experience of people.

3.4.4.8 Environmental Justice

Comments were received relating to disproportionate, adverse impacts to low income and minority communities as result of the proposed project.

- Analyze impacts related to environmental justice include food security and subsistence resources, health impacts from pollution and exposure to increased industrial activities and noises, increased risk of injury and exposure to hazardous materials, increased exposure to outsiders and the cascading social and psychological problems that brings.
- The economic benefits will not be for the people of the region but the impacts will.
- The environmental justice risk outweighs the benefits.

3.4.4.9 Public Health

Comments were received on impacts to local communities' public health and infrastructure as a result of the project (disease, contaminants, lifestyle changes, behavioral health, and physical health).

- Analyze public health concerns related to development and infrastructure development in rural communities.
- The short and long-term impacts from all stages of the project include increased risks of accidents and injuries, exposure to hazardous materials, negative impacts on food, nutrition, and subsistence, increased potential for infectious diseases, and risks to health and human services from population-stressed infrastructure and services
- Consider the social and psychological impacts the stress this project has already put on people and the communities who live in the project area. It is important for the EIS to consider stress, social and psychological impacts.
- Evaluate the potential impacts of development on indigenous women, and increased rate of violence as a result.
- Fully discuss the potential that the proposed project could be associated with behavioral health impacts, such as increased use of drugs and alcohol. More disposable income in communities may increase the use of alcohol and drugs.
- An influx of people could bring diseases to an area with minimal healthcare available that may not be able to handle large capacities of patients.

3.4.4.10 Visual Resources and Aesthetics

Comments were received on visual impacts.

- Evaluate the impacts to visual resources with the potential to diminish the visual experience of visitors and local residents.
- Consider visual impacts to recreation, and secondary industries like flightseeing operators and wildlife viewing guides.

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- The project will have permanent and significant impacts on the appearance of the landscape as viewed from key observation points, planes, etc. and will in turn impact use and enjoyment of the area by many.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.

3.4.4.11 Wilderness Characteristics

Comments were received related to wilderness characteristics and values.

- This area has wilderness characteristics, and is adjacent to a National Park.
- The potential impact on the Koktuli, Nushagak and its tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake have an undeniable wilderness quality that could be impacted by the proposed project. The impact of the loss of pristine wilderness, specifically in the Gibraltar, Talarik, and Koktuli drainages should be considered and, when possible, quantified.

3.4.5 NEPA Process and Regulatory Compliance

Comments were received on the NEPA process and need for compliance with regulations including:

- The general NEPA process;
- The purpose and need of the proposed project;
- Cumulative effects analysis;
- Government to government consultation;
- The proposed action and project alternatives;
- Mitigation measures;
- Monitoring and adaptive management;
- Bonding and reclamation;
- Data and available information; and
- Research and evaluation needs.

Comments were received about the overall NEPA and EIS process, the permit application to the USACE, due process, and the scoping meetings. These types of comments generally do not inform preparation of the EIS as to the project purpose and need, resources/level of impacts to be analyzed, or alternative to the proposed action that should be considered in the EIS. A summary of the general NEPA process comments includes the following:

- The Pebble Mine application is incomplete. The USACE should suspend its NEPA process/ not release a Draft EIS without more information from PLP. Foundational information for major parts of Pebble's proposal, including the proposed transportation corridor, port or use of Iliamna Lake, are lacking from their application. The data PLP supplied is more than 10 years old and thus is not reliable for analyzing project impacts.
- The Pebble Mine application is not incomplete. The Pebble Mine plan and application has recently been revised to satisfy EPA guidelines.
- There should be opportunities at each public hearing for oral comments in an open public forum. Everyone should have the opportunity to hear the comments of fellow concerned citizens. Open oral comments provide new information and learning opportunities not only for USACE and their contractors, but for all attendees. Please

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change your scoping format for future meeting to include an opportunity to express concerns through an open oral comment period.

- The limited number of scoping hearings and failure to host scoping hearings in communities within the Nushugak and Kvichak River drainages means that the opinions and voices of local populations have not been accounted for.
- Extend the scoping period beyond 30 days. Tribes in Bristol Bay are requesting at least 120 days for this scoping period.
- A 30 day scoping process is sufficient. Few projects have been talked about for as long and with such passion as the Pebble Mine and at this point, no new information about possible adverse effects will come to light.
- The USACE should compare PLP's plans to the EPA's analysis before moving forward with permitting.
- The USACE needs to acknowledge that the current permit application could be the initial phase in a much broader mine development plan. Reviewing just phase one of the project unlawfully segments environmental review, shortchanges the public interest, and risks untold impacts to the Bristol Bay region's world-class fisheries. The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- PLP should get a fair permitting process.
- The EIS process is being rushed; the USACE took more time to prepare the Donlin Gold EIS.

Comments were received that the USACE should initiate formal consultation and coordination with tribal governments. This includes comments on formal consultation and coordination under EO 13175.

Coordination with other agencies is an important part of the NEPA process. Comments were received on how the USACE should seek and promote full and broad-scope participation by federal and state resource agencies and tribal government entities as cooperating agencies, and undergo comprehensive formal consultation with appropriate entities. Comments were also received on how the USACE should extend cooperating agency invitations to interested tribal governments, as well as local, state, and federal agencies with special expertise and involve cooperating agencies on the full scope of the proposed Pebble Project.

3.4.5.1 Purpose and Need of the Action and USACE Permits

Comments were received regarding the purpose and need of the action, and the public interest of the project for the purpose of USACE permitting.

- Explain how an EIS process can proceed without more commitment from financial backers.
- PLP says their project would help with mineral independence but they will export all of the mined minerals.
- The USACE should accept the purpose and need statement contained in the permit application from PLP.
- The Pebble EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing regulations for NEPA (40 CFR 1502.13). This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

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- The Draft EIS should reflect not only the purpose and need of the project proponent, and the USACE, but also the broader public interest and need based on the scoping comments.

3.4.5.2 Cumulative Effects Analysis Process

Comments were received on how the cumulative effects analysis should be thorough, well-defined, and complete.

- Describe how the Draft EIS process considers cumulative effects, and identify the geographic scope and timeframe for the cumulative effects analysis.
- Consider the cumulative impacts of fully mining the entire 11 billion-ton deposit. Pebble Limited Partnership has repeatedly said, as recently as September 2017, their project is, "a multi-generational opportunity. Its size and scale will lead to a very, very long life mine." Based on statements such as this, and official records indicating they plan to mine up to 11 billion tons of ore, it is reasonably foreseeable that Pebble intends to expand its mine far beyond what is currently proposed.
- There are 20 large-scale active mining claims in the Bristol Bay watershed that this project could encourage by providing the transportation and power infrastructure.
- The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- Needs a cumulative effects analysis on culture.

3.4.5.3 Proposed Action and Alternatives

Comments requested more detailed information on the project plans, such as the water management plan, transportation plans, and spill response plans.

- The design and operational plans for the proposed project and alternatives should be evaluated. Alternatives to the proposed project were suggested.
- All of the pyritic tailings should be removed and not stored on the land in perpetuity.
- There is no need to dredge the proposed port to -50 feet; a shallower depth should be evaluated.
- A port at Diamond Point in Iliamna Bay should be evaluated against the proposed Amakdedori Port.
- The USACE should consider finding an alternative location to take the rocks for processing.
- As an alternative to a tailings ponds dam for waste storage, all waste should be trucked to Canada and stored in Canada, since the company is Canadian.
- The USACE must look at a range of alternatives beyond Pebble's mine site and include alternatives for mining copper and gold somewhere other than Bristol Bay.
- The USACE does not need to explore alternatives to Pebble's proposed mine site as being somewhere other than Bristol Bay because it already 100 miles from the bay and should be deemed a reasonable distance.
- The previous plan involved a road along the northeastern side of Iliamna Lake, and was justifiably criticized for the devastation that it would have brought to the village of Pedro Bay and the many salmon-bearing streams that it would have crossed. Now the proposed project includes roads and a ferry across Iliamna Lake. This would place a different part of the basin at great risk, and requires continual barge traffic across this large and windy lake. This is very likely to prove disastrous, and then the

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operators of the mine will compel the state as a whole and the residents of this basin to accept some other plan such as a road around the lake in the eastern or western end. These will be equally bad ideas.

- The USACE should consider alternatives to permit 50 percent or 100 percent of the current known resources to be mined. A larger and longer mine plan more fully benefits economic development in the state of Alaska and the USA.
- The road system would cross numerous anadromous streams. It would be best to require bridges at all of these crossings. Oregon and Washington states have been working for many years to bring back their salmon runs. Recreating salmon habitat including headwaters has proven to be extremely hard.
- Apply a realistic scope to assess mine impacts. The time frame of analysis is small at 20 years; the applicant's website notes that the mine can operate for 200 years and could have 11 billion tons of ore. Examine the full extent of mining the deposit.
- More alternatives should be considered, including a combination of simultaneous open pit and underground mining, a larger open pit mine, or a longer lived open pit mine. It may be possible to mine with open pits for the shallower portions, and mine by underground mining the deeper or eastern portions of the Pebble deposit.

3.4.5.4 Mitigation Measures

Comments were received related to the need for project mitigation, and suggestions for mitigation measures.

- PLP has not given any mitigation plans for sociocultural impacts.
- The mine may go into production without enough safeguards, or conditions to mitigate, and then go bankrupt and impact the environment.
- Tribes and the public should be involved in the mitigation planning, and monitoring of the proposed project.
- The sociocultural impacts cannot be mitigated.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- Consider and recognize the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- Water takes the path of least resistance, so rainfall will attempt to make its way to the river bodies, but this can be mitigated with runoff ponds and filtrated release.
- Take measures to decrease whale strikes by ships.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.

3.4.5.5 Monitoring and Adaptive Management

Comments were received in regards to the need for monitoring plans during operations and after closure of the mine.

- The history of multiple open pit mining sites has shown that the open reservoirs put in place to hold contaminated water and processing liquids have routinely been compromised by leaking and / or by drastic failure of containment levees. While they highlight the measures taken to put these toxins in containment, they fail to address the long term maintenance and mitigation of the toxins to make them inert.

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- Explain what oversight and monitoring would be applied to meet minimum detrimental environmental conditions, by whom, and under what authority.
- Explain if there would be a fund for additional environmental monitoring while the project is ongoing.

3.4.5.6 Bonding and Reclamation

Comments were received related to reclamation activities, bonding, and setting up escrow fund for restoration. Mechanisms for treatment in perpetuity post closure (i.e., plan for permanent water treatment, the entity that would pay post closure costs – secure financing in perpetuity).

- Local communities would be hooked up to the gas line, as well as a maintenance crew watching over the hazardous tailing piles and dams. Describe bonding to cover these costs if something happens to PLP.
- It appears PLP has organized and financed the project so that there is no ongoing substantial entity to bear the costs of any environmental cleanup caused by the mine, its operation, or eventual closure. Explain what provision has been made for them to post say a $500 million bond to cover such damage.
- The reclamation bond the company would agree to would never be enough.

3.4.5.7 Data and Available Information

Comments were received that suggested specific, documents, articles, or other information that should be utilized when developing the Draft EIS.

- Review research on fiber optics cable placement on tundra by Rorik Peterson at the University of Alaska Fairbanks. In addition, the USACE should review mapping provided by GCI regarding fiber optic cable placement of the TERRA-SW and KKFL cable crossings in Cook Inlet and Iliamna Lake that would intersect with the proposed natural gas pipeline.
- Regarding impacts to shellfish populations, review the following:
    - Alaska Department of Environmental Conservation (ADEC): CISCP sensitive areas section - https://dec.alaska.gov/spar/ppr/plans/scp_ci/CISCP_DSensitive_Areas_Jan2017.pdf, page D40-41.
    - Collapsed or recovering shellfish fisheries in the state of Alaska IR.1J.2002.06.pdf Preliminary Report to the Alaska Board of Fisheries COLLAPSED OR RECOVERING SHELLFISH FISHERIES IN THE STATE OF ALASKA, ALASKA DEPARTMENT OF FISH AND GAME, Division of Commercial Fisheries, Regional Information Report 1 1J02-06, OCTOBER 1999.
- Acknowledge how Traditional Ecological Knowledge information may be used and how to ensure that sensitive information is protected and follow a set of protocols for use of this information.
- Review spills in Cook Inlet. In a study by the Cook Inlet Regional Citizen's Advisory Council, 70 of the 88 were caused by structural or mechanical failures.
- Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries news release: 2018 Bristol Bay Sockeye Salmon Forecast.

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- The Economic Importance of the Bristol Bay Salmon Industry. Prepared for the Bristol Bay Regional Seafood Development Association by Gunnar Knapp Mouhcine Guettabi Scott Goldsmith. April 2013.
- There is a recent text book edited by Dr. Carol Anne Woody that should be a resource for the EIS.

3.4.5.8 Research and Evaluation Needs

Comments were received regarding the lack of baseline research, monitoring, and evaluation needs, or data gaps for the project.

- The USACE should suspend its NEPA process until the PLP presents sufficient environmental baseline and economic data about its proposal so as to reasonably inform the NEPA process.
- No new baseline documents or data were submitted with PLP's application to the USACE in December 2017. The only publicly available baseline documents compiled by PLP are now more than a decade old, with data collected from 2004 to 2008. Those baseline studies failed to include newly proposed project components such as the transportation corridor, Iliamna Lake, and the proposed port site.
- Baseline data for the proposed Amakdedori Port and Kamishak Bay may be lacking in terms of what is known about water currents, shifting sands/silts and ice and how these physical conditions may affect trenching.
- ADF&G lacks assessment tools for the shellfish that live in Cook Inlet. Current baseline studies for these species do not exist. In light of the possible increase in sediment deposition rate resulting from dredging in the area of the Pebble Project, the USACE should require a shellfish population baseline assessment and impact statement regarding the dredging project prior to any dredging work beginning in Amakdedori Bay.
- No baseline data exists for the proposed port and use of Iliamna Lake, or the 83-mile transportation corridor making it impossible to analyze the potential impacts these activities would have on sensitive salmon habitat, tributaries, and adjacent wetlands.
- An extensive and thorough baseline study on bear populations including numbers, movement, diet, and feeding areas should be done.
- There is a lack of baseline studies on newly added mine components for an informed permit process, such as wastewater discharges to Frying Pan Lake.

3.4.6 Non Substantive Comment

Submissions without substantive comment that are not specific to a particular issue are considered non-substantive. These include comments in support of or in opposition to the applicant's proposed project.

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APPENDIX A – NOTICE OF INTENT

APPENDIX B – PUBLIC NOTICES

APPENDIX C – MEETING SIGN-IN SHEETS

APPENDIX D – MEETING MATERIALS

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/3/2018 10:07:09 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures Append K Section 4.11 7-10 (UNCLASSIFIED)
Attachments: 11_03_2018_Figure_K4_11_09_EagleBayFerryTerminal_Viewshed.pdf; 11_03_2018_Figure_K4_11_10_PileBayFerryTerminal_Viewshed.pdf; 11_03_2018_Figure_K4_11_07_NorthTransportationCorridor_Viewshed.pdf

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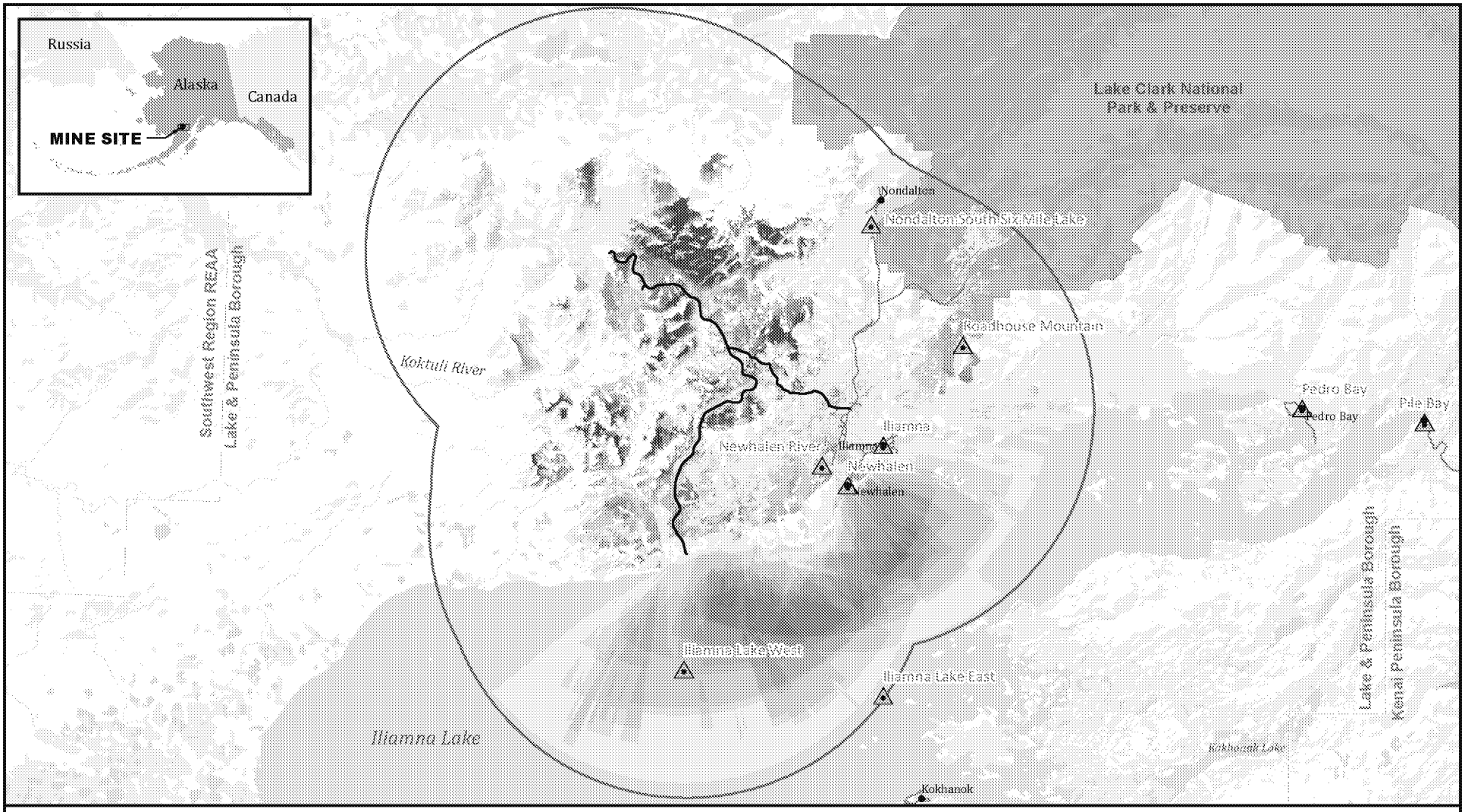

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

5 0 5 10
Miles

Viewshed Analysis
- Key Observation Points
- Analysis Area (15 mi radius)

Visible Area/Land Cover
- Higher
- Lower

Visible Area/Bare Earth
- Higher
- Lower

Alternative 1
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- National Park

ALTERNATIVE 1 NORTH TRANSPORTATION CORRIDOR VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-7

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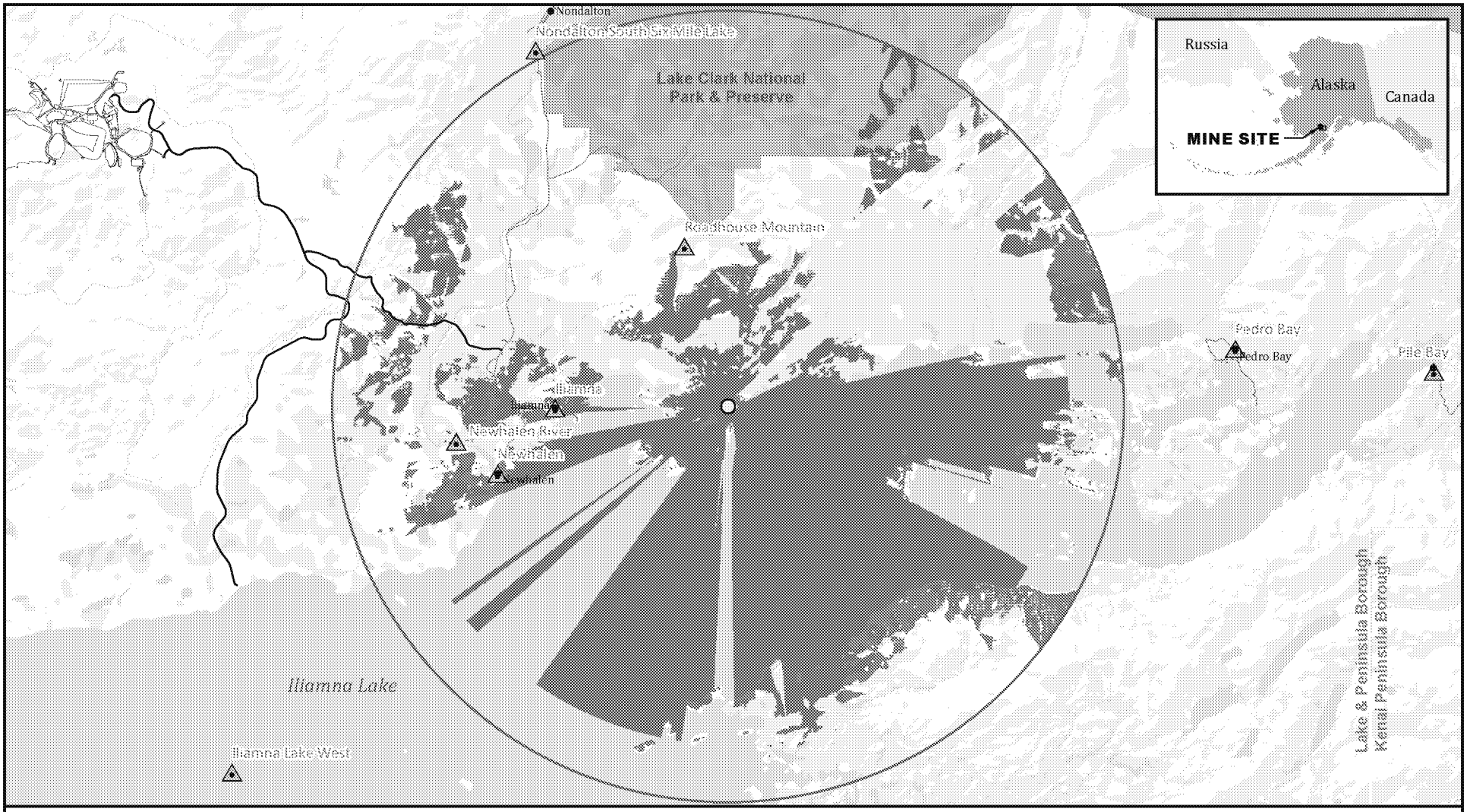

Sources: HDR 2018-RFI 034a

US Army Corps of Engineers

2 0 2 4
Miles

Viewshed Analysis
- Key Observation Points
- Viewshed*
- Analysis Area (15 mi radius)

Alternative 1
- Mine Site

- Transportation Corridor

Alternative 2
- Eagle Bay Terminal Maintenance Shop

Other Features
- Local Roads
- Borough Boundary
- National Park

*Viewshed and visibility potential are based on base-earth digital elevation data and do not account for screening effects from vegetation. Actual visibility may be substantially less.

ALTERNATIVE 2 EAGLE BAY FERRY TERMINAL VIEWSHED ANALYSIS

PEBBLE PROJECT EIS

FIGURE K4.11-9

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:16:36 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures (UNCLASSIFIED)
Attachments: 3_16_16_DomesticWaterUseSourcesCommunities.pdf; 3_16_17_WaterSupplyWellsnearPipelineTerminus.pdf

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Sources: PLP 2018; ADEC; ADNR; ADOT&PF

US Army Corps of Engineers.

0.5 0 0.5 1

Miles

Community Water System

Non-Community Water System

"Well Locations (ADNR WELTs)"

GPS

Property Parcel

PLSS Centroid

*Some well locations are approximate.

Other Features

Local Roads

DOMESTIC WATER SOURCES IN VICINITY OF NEWHALEN AND ILLIAMNA COMMUNITIES

PEBBLE PROJECT EIS

FIGURE 3.16-16

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Sources: PLP 2018; ADEC; ADNR; ADOT&PF

US Army Corps of Engineers.

900 0 900 1,000

Feet

Well Locations (ADNR WELTs)*

GPS

Property Parcel

PLSS Centroid

*Some well locations are approximate.

Alternative 1

Project Infrastructure

Other Features

Local Roads

WATER SUPPLY WELLS NEAR PIPELINE TERMINUS ON KENAI PENINSULA

PEBBLE PROJECT EIS

FIGURE 3.16-17

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 10/20/2018 7:57:02 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: please review and provide comment by 11/2/2018 (UNCLASSIFIED)
Attachments: Ch7_ListofPreparers_reviewdraft_2018.10.18.docx; Ch8_ListofCopies_reviewdraft_2018.10.18.docx

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All,
Attached are two Word files, the review drafts of Chapter 7 and Chapter 8. There are no CAs listed as reviewers. There are no figures associated with these chapters. Please review and provide comments by 11/2/2018. Thanks.

VR

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7.0 COOPERATING AGENCIES AND PREPARERS

Table 7-1: Lead Agency and Cooperating Agencies

Contributor	Project Role	Education/Background	Years of Experience
Lead Federal Agency			
US Army Corps of Engineers			
Alaska District, Regulatory Division P.O. Box 6898 JBER, AK 99506-0898 Sheila Newman, Deputy Chief			
Shane McCoy	Program Manager		10
Katherine (Katie) McCafferty	Project Manager		13
Cooperating Agencies			
US Fish and Wildlife Service Anchorage Fish and Wildlife Conservation Office 4700 BLM Road Anchorage, AK 99507			
Patty McGrath Mining Advisor US Environmental Protection Agency, Region 10 1200 Sixth Avenue Seattle, WA 98101 Molly Vaughan NEPA Reviewer US Environmental Protection Agency Region 10 Alaska Operations Office 222 W. 7th Avenue #19 Anchorage, AK 99513-7588			
John Eddins Advisory Council on Historic Preservation 401 F Street NW, Suite 308 Washington D.C. 20001			
Linda Daugherty David Hassell Office of Pipeline Safety US Department of Transportation Pipeline and Hazardous Materials Safety Administration 1200 New Jersey Avenue, SE Washington, DC 20590			
Kyle Moselle Associate Director Alaska Department of Natural Resources Office of Project Management and Permitting 400 Willoughby Ave, Suite 400 Juneau, AK 99801			
Courtenay Carty Tribal Administrator Curyung Tribal Council P.O. Box 216 Dillingham, AK 99576			
Wesley (Wes) Furlong Point of Contact for Nondalton Tribal Council Native American Rights Fund 745 W. 4th Avenue, Suite 502 Anchorage, AK 99501-1736			

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Table 7-1: Lead Agency and Cooperating Agencies

Contributor	Project Role	Education/Background	Years of Experience
Nathan Hill Manager Lake and Peninsula Borough P.O. Box 495 King Salmon, AK 99613 Robert (Bob) Loeffler Consultant to Lake and Peninsula Borough Lake and Peninsula Borough P.O. Box 495 King Salmon, AK 99613			
Kevin Pendergast	BSEE Pipeline ROW Decision Maker	Professional Engineer CPG	18
John McCall	BSEE Pipeline ROW Reviewer	Petroleum and Civil Engineer	5
Jeffrey Missal	BSEE NEPA and Environmental Compliance Review	Environmental Protection Specialist	12
David Seris	USCG 17th District Waterways Management Branch	B.S., Applied Science US Coast Guard Academy	27
Joan Kluwe, PhD	National Park Service, Alaska Regional Office, National Park Service Cooperating Agency Representative	Ph.D., Natural Resources; B.S. and M.S., Forestry	30

Table 7-2: List of Preparers

Contributor	Project Role	Education/Background	Years of Experience
Third Party EIS Preparers (Prime Contractor – AECOM)			
Jennifer Frownfelter	Principal-In-Charge	M.S. Public Policy	21
Bill Craig	Project Manager	B.S., Environmental Studies	28
Tara Bellion	Deputy Fiscal Project Manager; Administrative Record; Comment Analysis; Subject Matter Expert - Subsistence	B.S., Marine Science	24
Elizabeth Bella, PhD	Deputy Technical Project Manager	Ph.D., Ecology	19
Jon Isaacs	Social Environment - Discipline Lead; Lead - Public Involvement	B.A., Environmental Studies	42
Cara Wright	Physical Environment - Discipline Lead	M.S., Economic Geology	30
Wes Cornelison	Biological Environment - Discipline Lead	M.S., Biology	18
Nancy Darigo, PG, CEG	Physical Environment - Subject Matter Expert	M.S., Geology; Professional Geologist, Certified Engineering Geologist	31
Bill Killam	Senior Advisor	B.A., Anthropology, Sociology, and Psychology	44

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Table 7-2: List of Preparers

Contributor	Project Role	Education/Background	Years of Experience
Cecil Urlich, PE	Mining - Subject Matter Expert	M.Sc., Geotechnical Engineering; Professional Engineer	43
Anne Baldrige	Senior Advisor	MBA, Finance and Accounting B.S., Geology	40
Gary Reimer	Senior Advisor	B.A., Political Science Studies	35
Jessica Evans	Public Involvement – Assistant Lead; Comment Analysis; Social Environment - Assistant Discipline Lead; Lands - Subject Matter Expert	M.S., Bioregional Planning	9
Sasha Foreland	Biological Environment - Subject Matter Expert; Project Technical Quality Lead	B.S., Biology	20
Allison Payne	Physical Environment – Subject Matter Expert	M.S. Geology/Volcanology	12
Tom Damiana	Air Quality – Subject Matter Expert	M.S., Aerospace Engineering	21
Linsey DeBell	Air Quality– Subject Matter Expert	M.S., Earth Science	18
James Dietzmann	Surface Water Hydrology - Subject Matter Expert	B.S., Watershed Science	24
Richard Henry	Surface and Groundwater Hydrology – Subject Matter Expert	Ph.D., Geochemistry	41
Paul Myerchin	Soils - Subject Matter Expert	B.S., Geology	20
Burr Neely	Cultural Resources - Subject Matter Expert	M.A., Northern Studies/Cultural Resource Management	18
Jennifer Williams	Engineer – Failure Modes Effects Analysis	Geotechnical Engineer	20
Andrew Fisher	Birds, Wildlife - Subject Matter Expert	B.S., Wildlife, Fish, and Conservation Biology	13
MacNamara Shoulders	Fish, Aquatic Resources and EFH – Subject Matter Expert	B.S., Biology	36
Richard Greer	Birds, Wildlife, Threatened and Endangered Species - Senior Advisor	PhD., Zoology	34
Maria Shepherd	Birds, Wildlife, Wetlands, and Vegetation - Subject Matter Expert	B.A., Zoology	31
Paul Hamidi, PWS	Wetlands and Vegetation - Subject Matter Expert	B.S., Forestry; M.S., Forestry; Professional Wetland Scientist, Certified Soil Scientist	20
Sagar Thakali	Toxicology – Subject Matter Expert	Ph.D., Environmental Engineering	17
Usha Vedigari, PhD	Human Health - Subject Matter Expert	Ph.D., Environmental Science	28

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Table 7-2: List of Preparers

Contributor	Project Role	Education/Background	Years of Experience
Louise Kling	Visual Resources - Subject Matter Expert	B.S., Ecology; M.S., Landscape Ecology (pending thesis defense)	24
Thomas Schultz	GIS	B.S., Environmental Science	11
Kelsey Tranel	Technical Editing and Word Processing	B.A., Liberal Studies	8
Third Party EIS Preparers' Subcontractors			
Michael D. Gray Morrison Maierle	Physical Environment – Subject Matter Expert	B.A., Geology	32
Jim Aldrich, PE, PH Arctic Hydrologic Consultants	Surface Water Hydrology – Senior Advisor	M.S., Environmental Science	40
Sheyna Wisdom Fairweather Science	Marine Wildlife, Threatened and Endangered Species, and ESA Compliance – Subject Matter Expert	M.S., Marine Science	20
Patty Murphy E3 Environmental	Tribal Relations and Public Outreach	Expert Stakeholder Engagement Coordinator	26
Derek Risso Ecosystem Sciences	Aquatic Resource Mitigation – Subject Matter Expert	M.S., Fisheries and Wildlife Science	21
Jonathan King Halycon Consulting	Social Environment – Subject Matter Expert	M.S., Natural Resource Economics	22
Dilip Mathur, PhD Normandeau Associates	Fish, Aquatic Resources and EFH – Subject Matter Expert	Ph.D., Fisheries Management and Biometrics	50
Joseph Meyer, PhD Applied Limnology Professionals	Toxicology – Senior Advisor	Ph.D., Zoology	42
Edmund "Ned" Gaines Brice Environmental	Archeological Resources – Senior Advisor	M.A., Anthropology	19

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8.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT HAVE BEEN SENT

8.1 FEDERAL AGENCIES

Advisory Council on Historic Preservation

Bureau of Indian Affairs

Bureau of Ocean Energy Management

Bureau of Safety and Environmental Enforcement

US Army Corps of Engineers

US Coast Guard, 17th District

US Department of the Interior, Fish & Wildlife Service

US Department of Transportation, Pipeline and Hazardous Materials Safety Administration

US Environmental Protection Agency

US National Park Service

US National Oceanic and Atmospheric Administration, National Marine Fisheries Service

US Senate Committee on Environment and Public Works

8.2 TRIBAL GOVERNMENT

Aleknagik Traditional Council

Chignik Bay Tribal Council

Chignik Lagoon Village Council

Chignik Lake Traditional Council

Clarks Point Village Council

Cook Inlet Tribal Council

Curyung Tribal Council

Egegik Village Council

Ekuk Village Council

Ekwok Village Council

Igiugig Village Council

Iliamna Village Council

Ivanof Bay Tribal Council

Native Tribe of Kanatak

King Salmon Tribal Council

Kokhanok Village Council

Levelock Village Council

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Manokotak Village Council

Naknek Village Council

Nanwalek IRA Council

Native Tribe of Kanatak

Native Village of Perryville

New Koliganek Village Council

New Stuyahok Traditional Council

Newhalen Tribal Council

Ninilchik Traditional Council

Nondalton Tribal Council

Pedro Bay Village Council

Pilot Point Tribal Council

Port Graham Tribal Council

Port Heiden Village Council

Portage Creek Village Council

Seldovia Village Tribal Council

South Naknek Village Council

Traditional Council of Togiak

Twin Hills Village Council

Ugashik Traditional Council

United Tribes of Bristol Bay

8.3 STATE GOVERNMENT

Alaska Department of Commerce-Division of Community Economic Development

Alaska Department of Environmental Conservation

Alaska Department of Fish and Game (ADF&G)

ADF&G-Division of Commercial Fisheries

ADF&G-Division of Habitat

ADF&G-Division of Sport Fish

ADF&G-Division of Subsistence

ADF&G-Division of Wildlife Conservation

Alaska Department of Natural Resources (ADNR)

ADNR-Division of Agriculture

ADNR-Office of History and Archeology

ADNR-Division of Geological and Geophysical Surveys

AMERICAN OVERSIGHT

ADNR-Division of Mining, Land, and Water

ADNR-State Pipeline Coordinator Services

Alaska Department of Health and Social Services

Alaska Department of Transportation and Public Facilities

8.4 PUBLIC OFFICIALS

8.4.1 Federal Congressional

Office of US Senator Lisa Murkowski

Office of US Senator Dan Sullivan

Office of US Congressman Don Young

8.4.2 State of Alaska

[Individuals/Offices to be updated following the results of the November 6, 2018 election]

Office of State Governor Bill Walker

Office of State Senator Gary Stevens

Office of State Senator Lyman Hoffman

Office of State Senator Peter Micciche

Office of State Representative Gary Stevens

Office of State Representative Bryce Edgmon

Office of State Representative Mike Chenault

Office of State Representative Louise Stutes

Office of State Representative Paul Seaton

8.4.3 Local Government

[Individuals/Offices to be updated following the results of the November 6, 2018 election]

Bristol Bay Borough Mayor Daniel O'Hara

City of Alegnagik Mayor Kay Andrews

City of Chignik Mayor Rodney Intagliata

City of Clarks Point Mayor Joseph Wassily

City of Dillingham Mayor Alice Ruby

City of Egegik Mayor Scovi Deigh

City of Ekwok Mayor Luki Akelkok, Sr.

City of Homer Mayor Bryan Zak

City of Kenai Mayor Brian Gabriel

City of Kachemak Mayor William Overway

City of Manokotak Mayor Melvin Andrew

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City of New Stuyahok Mayor Justin Ashoak

City of Newhalen Mayor Susanna Wassillie

City of Nondalton Mayor Joanna Trefon

City of Pilot Point Mayor Janice Ball

City of Port Heiden Mayor Jeffrey Orloff

City of Togiak Major Teodoro Pauk

City of Seldovia Mayor Dean Lent

Kenai Peninsula Borough Mayor Charlie Pierce

Kodiak Island Borough Mayor Daniel Rohrer

Lake and Peninsula Borough Mayor Glen Alsworth, Sr.

Municipality of Anchorage Mayor Ethan Berkowitz

8.4.4 Alaska Native Claims Settlement Act Corporations

Akhiok-Kaguyak, Incorporated

Alaska Peninsula Corporation

Aleknagik Natives Limited

Bay View Incorporated

Becharof Corporation

Bristol Bay Native Corporation

Chignik Lagoon Native Corporation

Chignik River Limited

Choggiung Limited

Chugach Alaska Corporation

Cook Inlet Region Corporation, Incorporated

Ekwok Natives Limited

Far West, Incorporated

Igiugig Native Corporation

Iliamna Natives Limited

Kijik Corporation

Koliganek Native Limited

Koniag, Incorporated

Levelock Limited

Manokotak Natives Limited

Ninilchik Native Association Corporation

Oceanside Corporation

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Olsonville Incorporated

Paug-Vik Incorporated Limited

Pedro Bay Corporation

Pilot Point Native Corporation

Saguyak Incorporated

Seldovia Native Association, Incorporated

Stuyahok Limited

Tanalian Incorporated

The Port Graham Corporation

Togiak Natives Limited

Twin Hills Native Corporation

8.5 APPLICANT

Pebble Limited Partnership

8.6 OTHER ENTITIES

Alaska Association of Historic Preservation

Alaska Historical Society

Alaska Trekking

Alaska Public Media

Alaska Public Radio Network

Alaska Journal

Alaska Journal of Commerce

Alutiiq Museum

Associated Press

Bristol Bay Fisherman's Association

Bristol Bay Economic Development Corporation

Bristol Bay Native Association

Bristol Bay Regional Seafood Development Association

Bristol Bay Subsistence Regional Advisory Council

Center for Alaskan Coastal Studies

Commercial Fishermen for Bristol Bay

Cooper Landing Historical Society

The Cordova Times

CSP2

Eagle Spirit Studies Corporation

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EarthJustice

Earthworks

Fishermen's News

HDR, Inc.

Kasilof Regional Historical Association

Kenai Historical Society

National Resources Defense Council

Nunamta Aulukestai

Pacific Seafood Processors Association

Pratt Museum

Renewal Resources Coalition

SalmonState

Save Bristol Bay (Trout Unlimited)

Soldotna Historical Society

Southcentral Subsistence Regional Advisory Council

Stop Pebble Mine

Trout Unlimited

Trustees for Alaska

Turner

United Fishermen of Alaska

Wild Salmon Center

8.7 LIBRARIES AND UNIVERSITIES

Alaska Resources Library and Information Services, Anchorage

Bristol Bay Borough Libraries (serving King Salmon, Naknek, and South Naknek)

Dillingham Public Library, Dillingham

Georgetown University, Washington, DC

Homer Public Library, Homer

Kenai Community Library, Kenai

Soldotna Public Library, Soldotna

University of Alaska/Alaska Pacific University Consortium Library, Anchorage

Z.J. Loussac Public Library, Anchorage

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AMERICAN OVERSIGHT

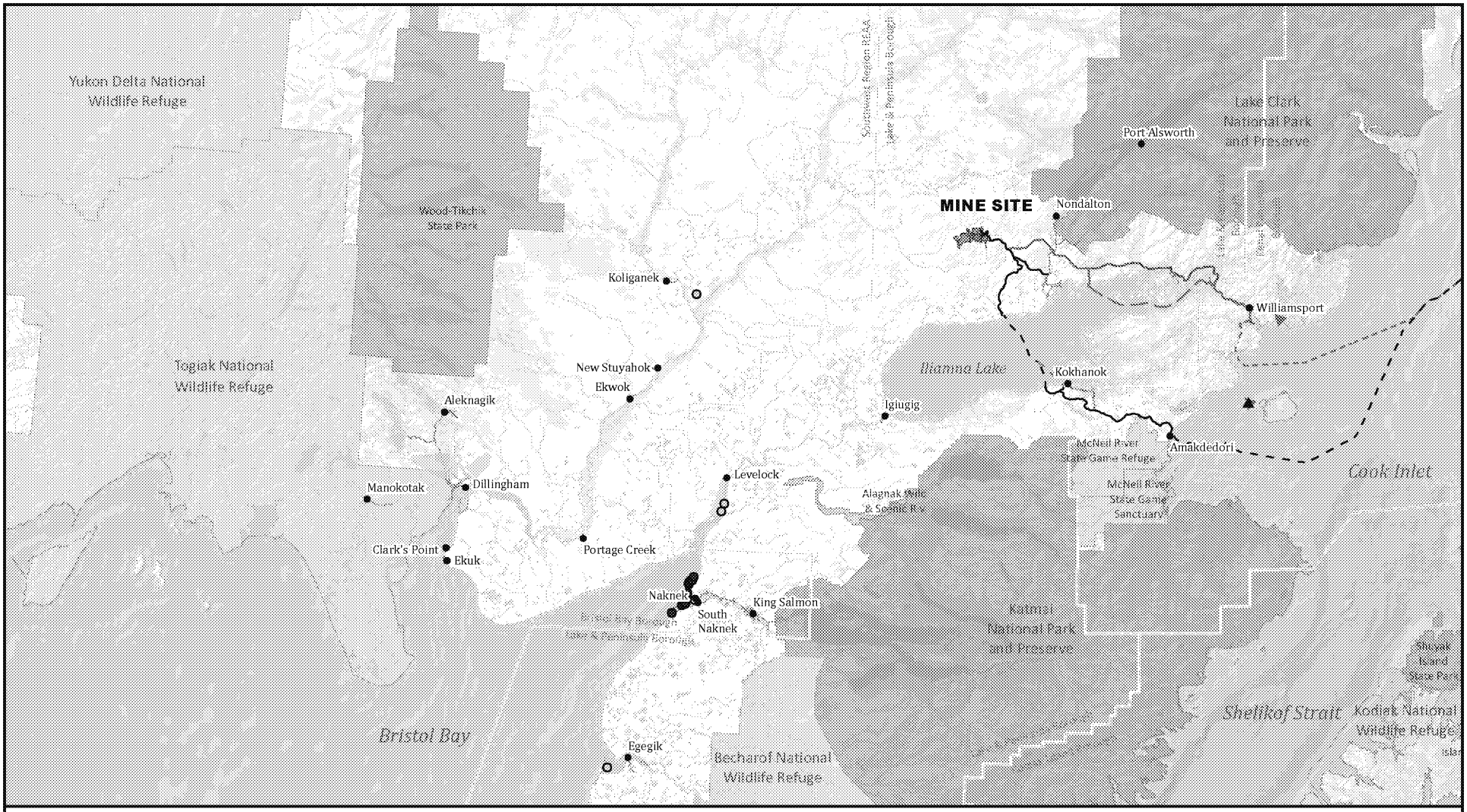
Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 7:02:58 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: Figures AppK 3.9 (UNCLASSIFIED)
Attachments: Figure_K3_09_07_Marine_CommGroup1.pdf; Figure_K3_09_08_Marine_CommGroup2.pdf

VR

Shane McCoy
Program Manager
(907) 753-2715

AMERICAN OVERSIGHT



Sources: PLP 2018; Krieg et al. 2009; Holen et al. 2011 (Study years 2005 and 2007)

US Army Corps of Engineers

15 0 15 30
Miles

Marine Mammal and Marine Invertebrate Harvest Areas
- Marine Invertebrates (Point)
- Marine Mammals (Point)
- Marine Invertebrates
- Marine Mammals

Alternative 1
- Lightering Locations
- Mine Site

- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor

- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads

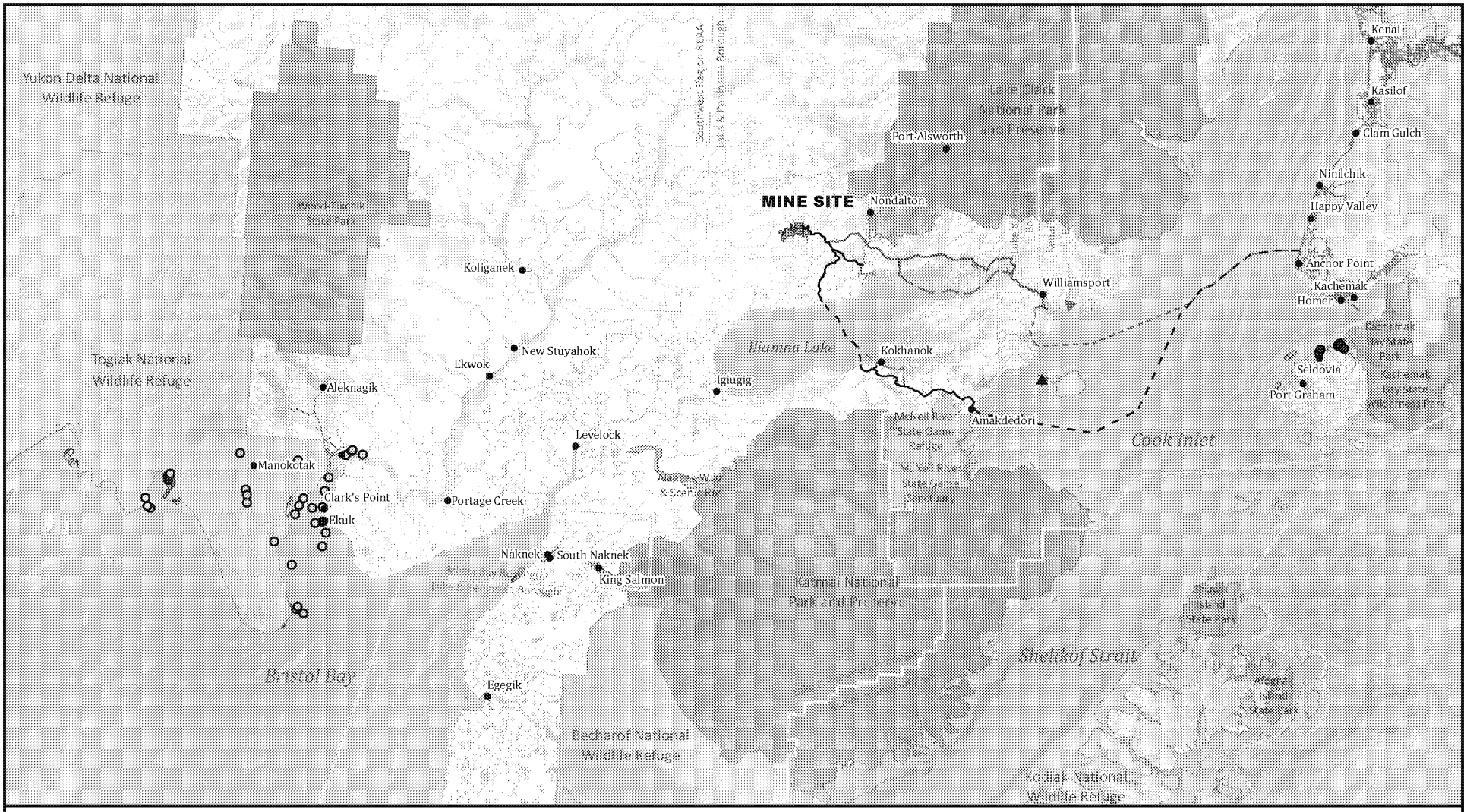
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

MARINE MAMMAL AND MARINE INVERTEBRATE HARVEST AREAS: KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-7

AMERICAN OVERSIGHT



Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

US Army Corps of Engineers

15 0 15 30
Miles

Marine Mammal and Marine Invertebrate Harvest Areas
- Marine Invertebrates (Point)
- Marine Mammals (Point)
- Marine Invertebrates (Line)
- Marine Invertebrates
- Marine Mammals

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

MARINE MAMMAL AND MARINE INVERTEBRATE HARVEST AREAS: ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

PEBBLE PROJECT EIS

FIGURE K3.9-8

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 2:41:05 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: figures for the previous email...more figures to come (UNCLASSIFIED)
Attachments: 3_13_01_Pebble_Project_Area_Geology.pdf; 3_13_02_Mine_Site_Surficial_Geology.pdf; 3_13_03_Mine_Site_Bedrock_Geology.pdf; 3_13_04_Bedrock_Blasting_Intervals.pdf; 3_15_01_Earthquakes_Active_Faults.pdf; 3_15_02_Seismic_Hazard_Map.pdf; 3_15_03_Geotechnical Data Coverage.pdf; 3_15_04_Active_Volcanoes.pdf

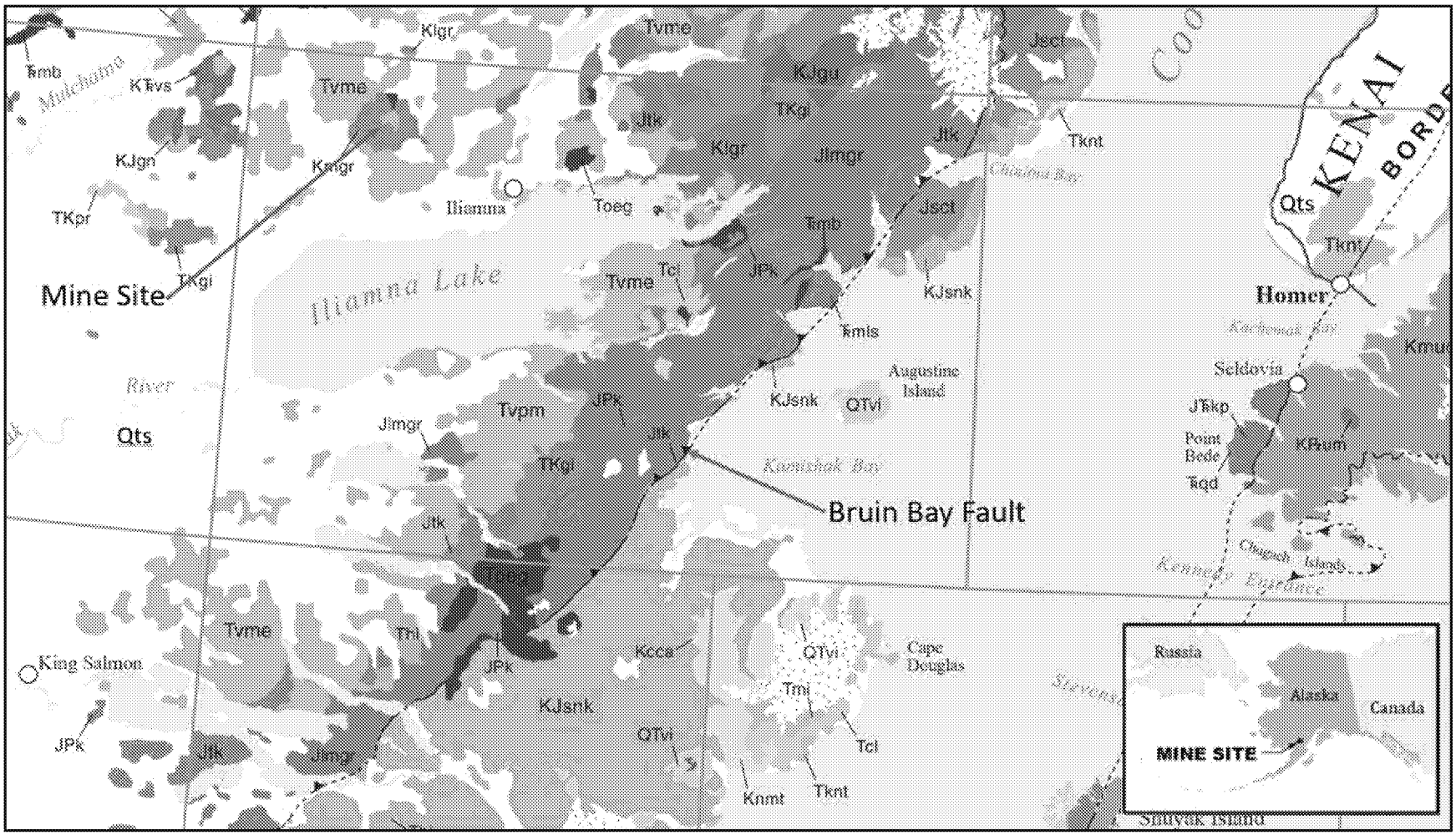
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: Wilson et al 2015

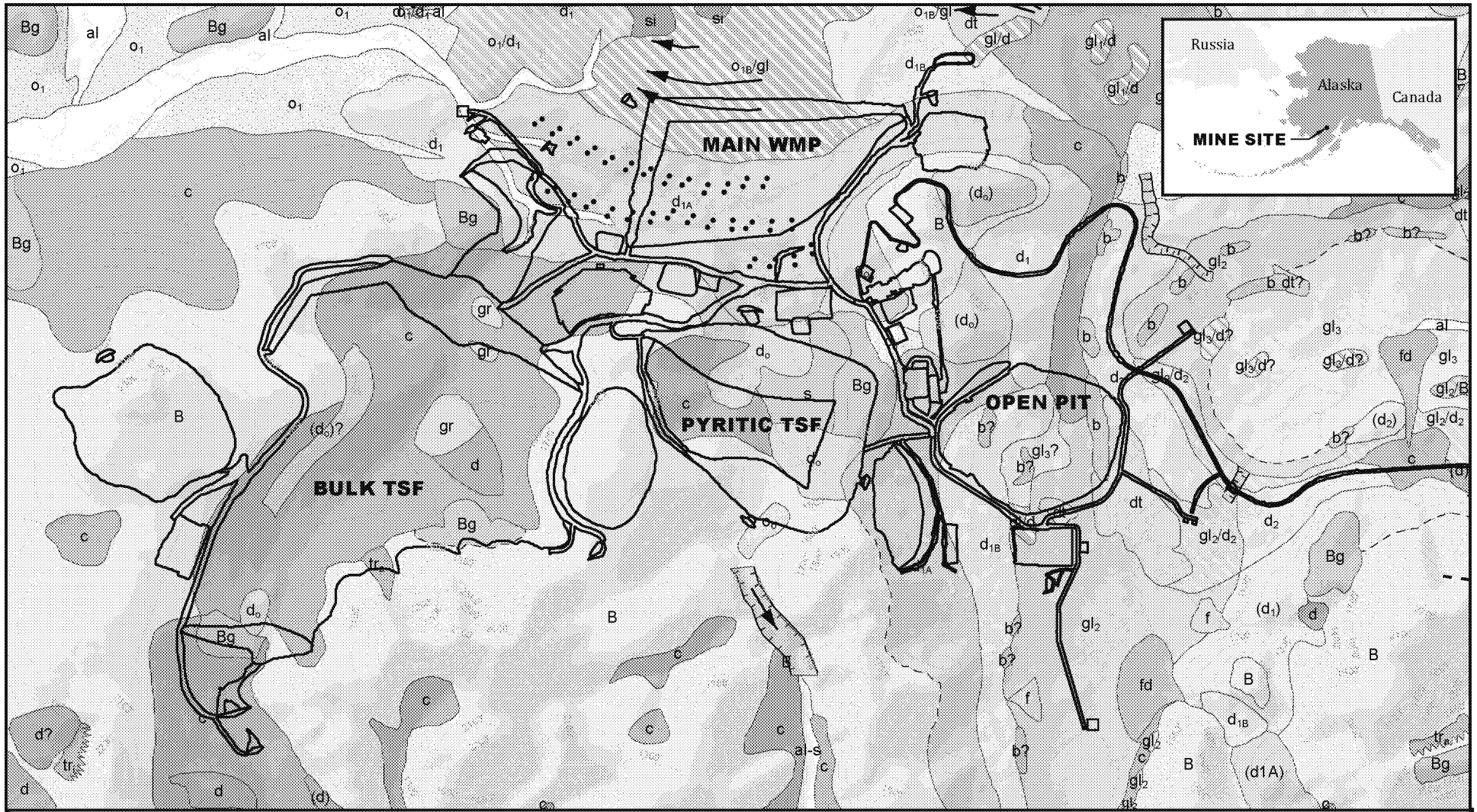
US Army Corps of Engineers

PEBBLE PROJECT AREA GEOLOGY

PEBBLE PROJECT EIS

FIGURE 3.13-1

AMERICAN OVERSIGHT



Sources: Pebble; USGS; ADNR; Northern Dynasty Minerals

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Project Features

Surficial Geology Linear Features
- Contact
- Crest of moraine ridge
- Drainage Channel
- Fault
- Meltwater channel

Surficial Geology Map Units

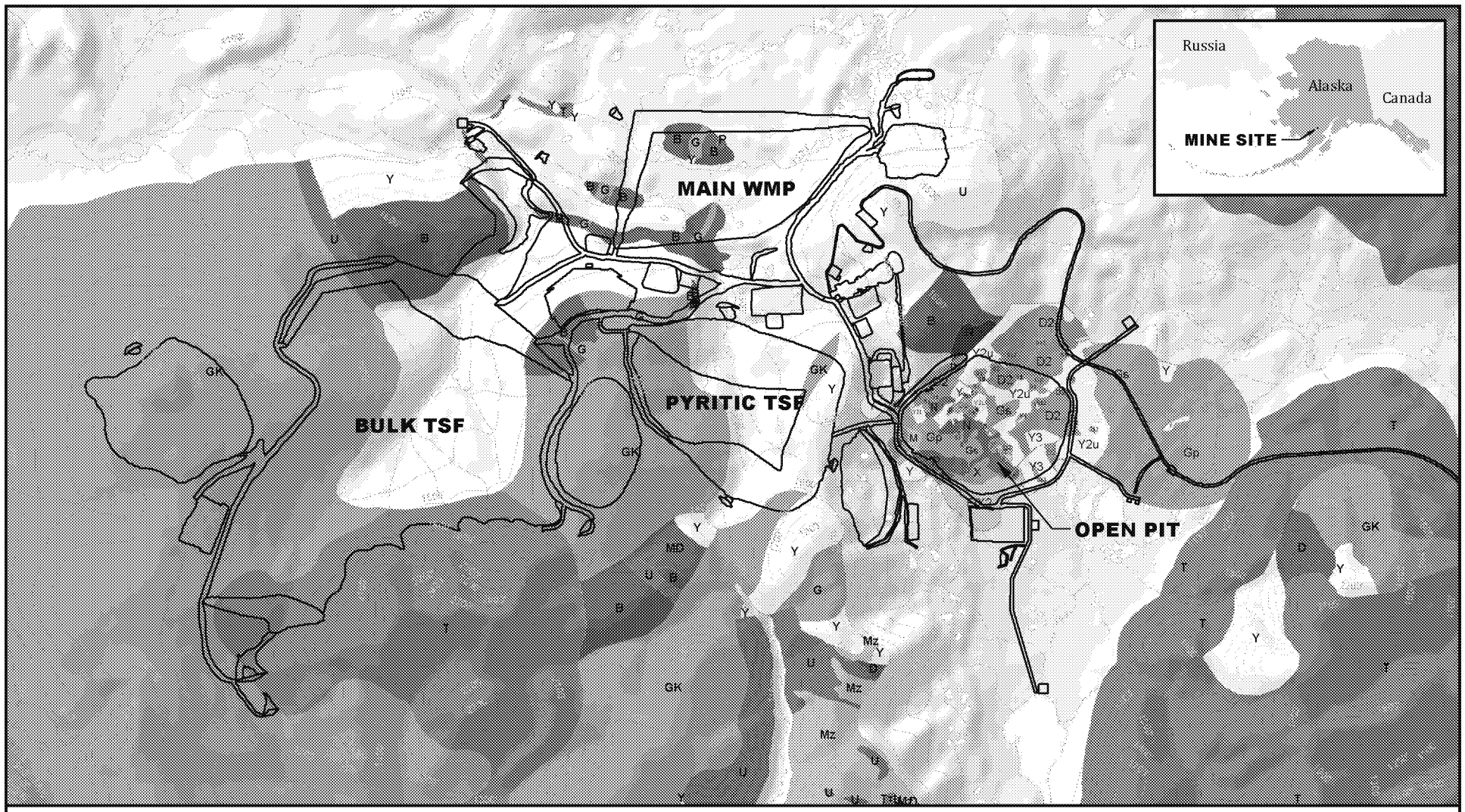
Alluvium: al, al-s
Bedrock, undifferentiated: B
Bedrock, glaciated: Bg
Beach deposits: b, b?
Colluvium: c
Glacial drift: d, d?, d1, d1A, d1B, d2, d2?, do, (d), (d1), (d1A), (d2), (do), (do)?
Deltaic deposits: dt, dt?
Fan deposits: f
Fan-delta deposits: fd, fd?
Glacial-lake deposits: gl/d, gl1, gl1/d, gl2, gl2/B, gl2/d2, gl3, gl3/d?, gl3?
Gravel: gr
Glacial outwash: o1, o1/d1, o1B/gl, o2, oo
Solifluction deposits: s
Silt, ice-rich: si
Talus rubble: tra, tri

MINE SITE SURFICIAL GEOLOGY

PEBBLE PROJECT EIS

FIGURE 3.13-2

AMERICAN OVERSIGHT



Sources: Pebble; USGS; Northern Dynasty Minerals

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Project Features

Bedrock Geology

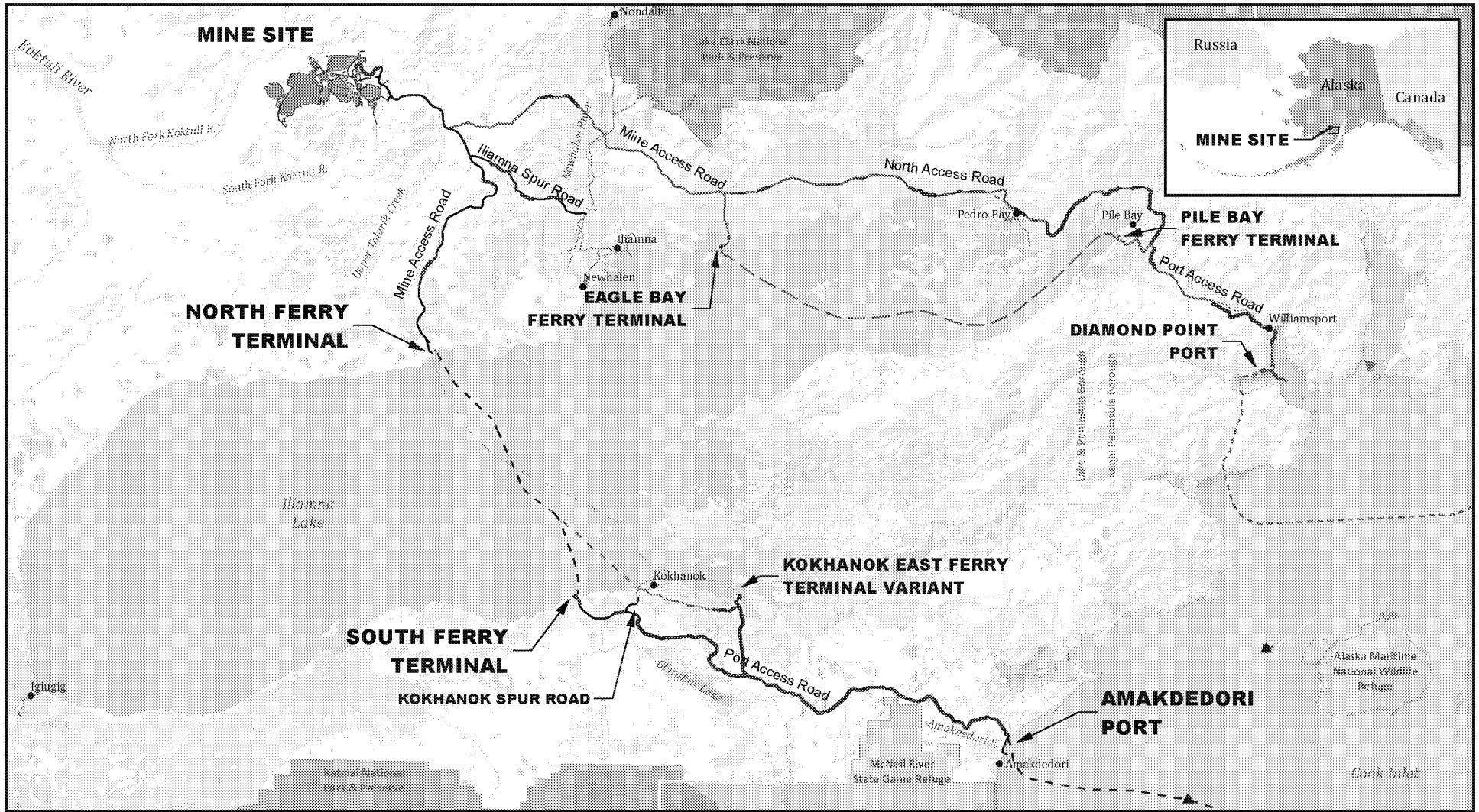
- F/X2; Fault breccia
- X; Intrusion breccia
- Y, Y2L, Y2u, Y3; Mesozoic andesitic sedimentary flysch
- C; Mesozoic conglomerate
- M, Mz; Cretaceous monzonite
- G, Gp, Gs2, Gs3, Gs; Cretaceous quartz monzodiorite, granodiorite sill
- D, D2; Diorite sill
- GK; Cretaceous granodiorite (Kaskanask batholith)
- MD, N, P; Cretaceous monzodiorite
- D; Cretaceous diorite
- B; Mesozoic basalt and gabbro
- R; Gabbro
- U; Cretaceous pyroxenite
- T; Tertiary volcanic and sedimentary rocks

MINE SITE BEDROCK GEOLOGY

PEBBLE PROJECT EIS

FIGURE 3.13-3

AMERICAN OVERSIGHT



Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

Blasting Intervals

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

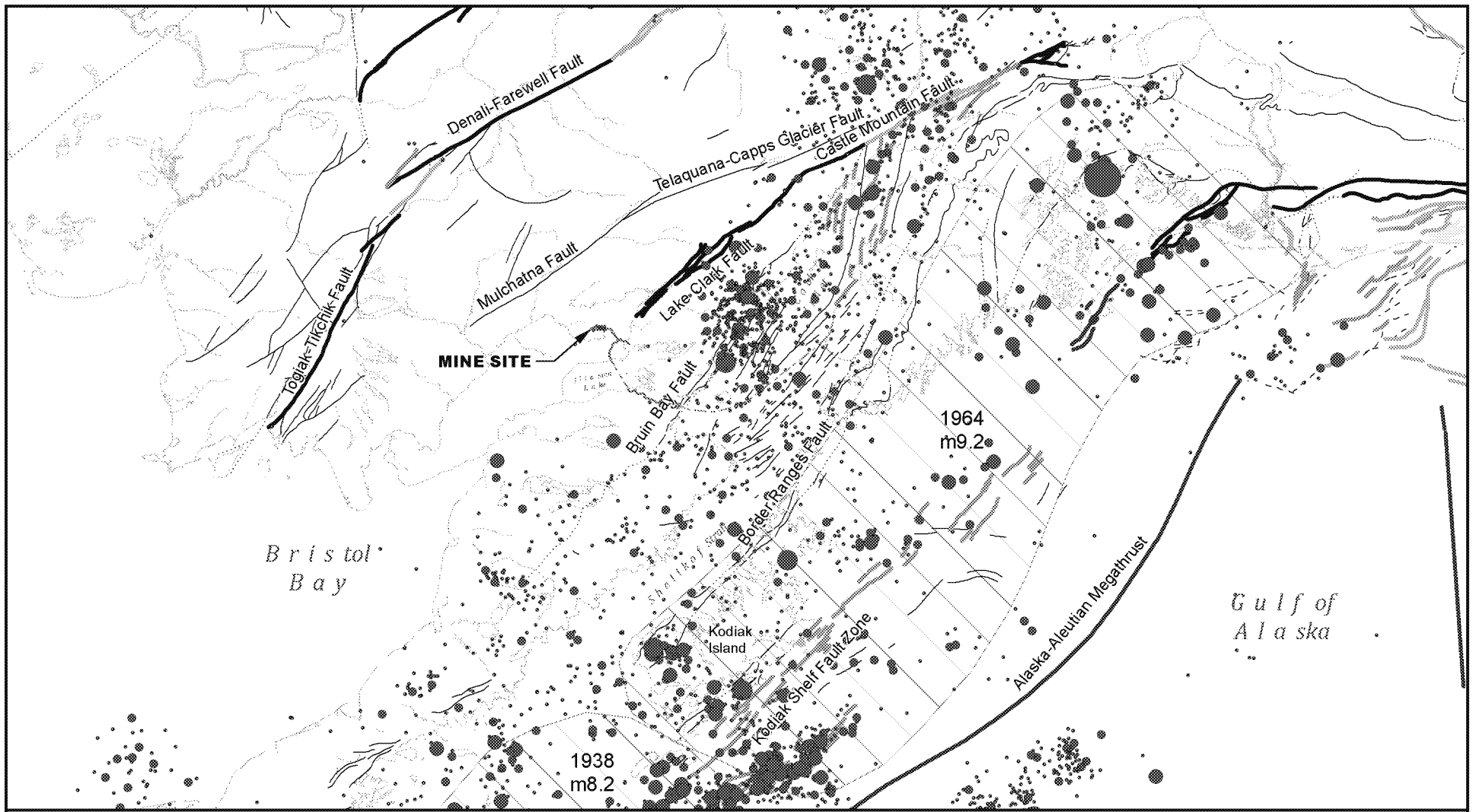
Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- State Game Refuge/Sanctuary

BEDROCK BLASTING INTERVALS

PEBBLE PROJECT EIS **FIGURE 3.13-4**

AMERICAN OVERSIGHT



Sources: USGS 2018; Koehler 2013; Haeussler and Saltus 2004; Plafker et al. 1994

US Army Corps of Engineers

25 0 25 50
Miles

Earthquake Magnitude 1900 - 2018

- 4.0 - 4.9
- 5.0 - 5.9
- 6.0 - 6.9
- 7.0 - 7.9
- 9.2

Fault Activity (Age of Most Recent Surface Deformation)

- Historical, <150 yrs
- Latest Pleistocene and Holocene, <15,000 yrs
- Latest Quaternary, <130,000 yrs
- Mid-Quaternary, <750,000 yrs
- Quaternary, <1,600,000 yrs
- Questionable, Class B
- Pre-Quaternary Fault
- Rupture Zone of Megathrust Earthquake

Project Components

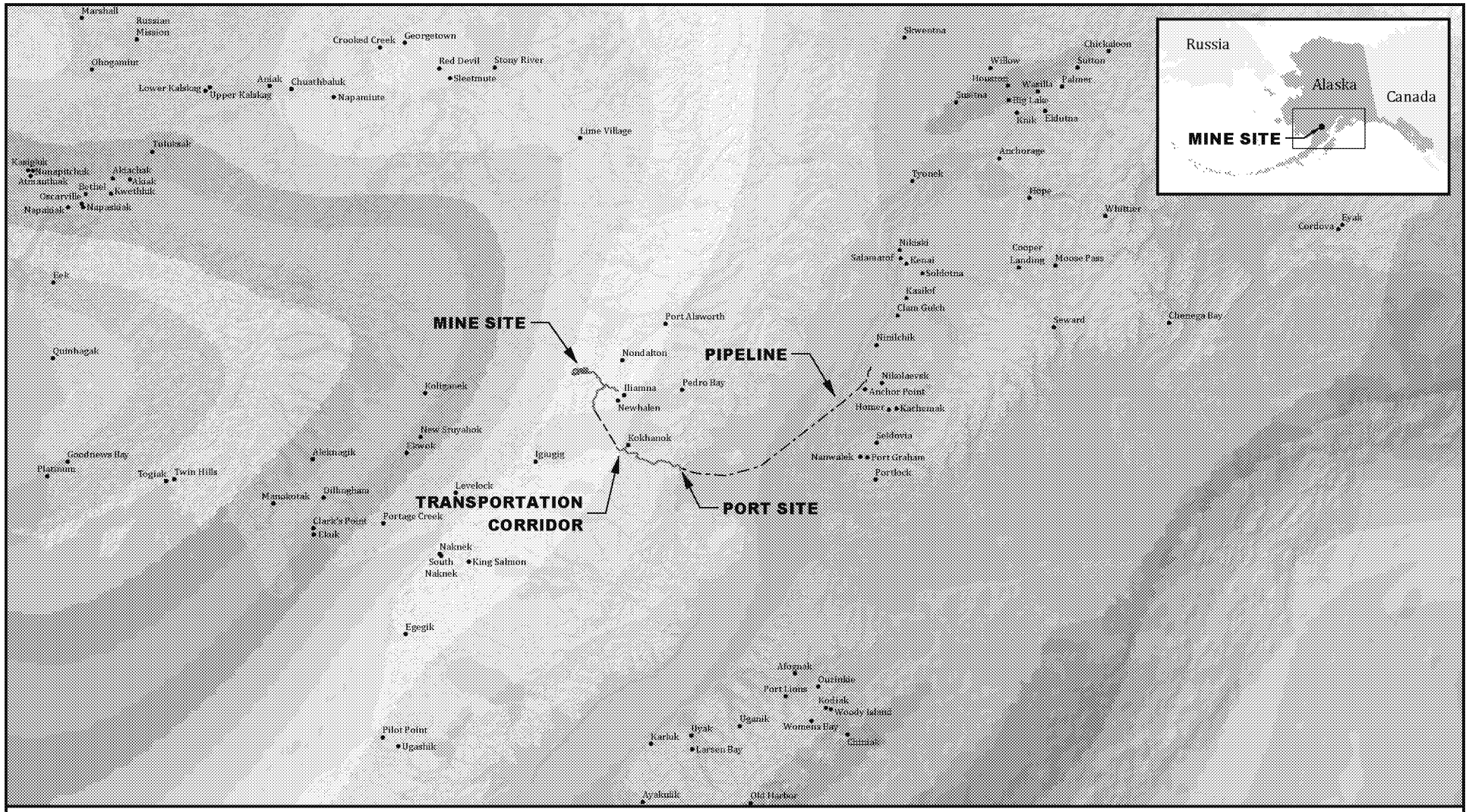
- Project Features
- Natural Gas Pipeline
- Transportation Corridor

EARTHQUAKES AND ACTIVE FAULTS

PEBBLE PROJECT EIS

FIGURE 3.15-1

AMERICAN OVERSIGHT



Sources: Wesson et al. 2007

US Army Corps of Engineers

20 0 20 40

Miles

Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor

Peak Ground Acceleration (% g [1])

5 - 6	9 - 11	17 - 21	32 - 40	61 - 76
6 - 7	11 - 14	21 - 26	40 - 49	76 - 94
7 - 9	14 - 17	26 - 32	49 - 61	94 - 117

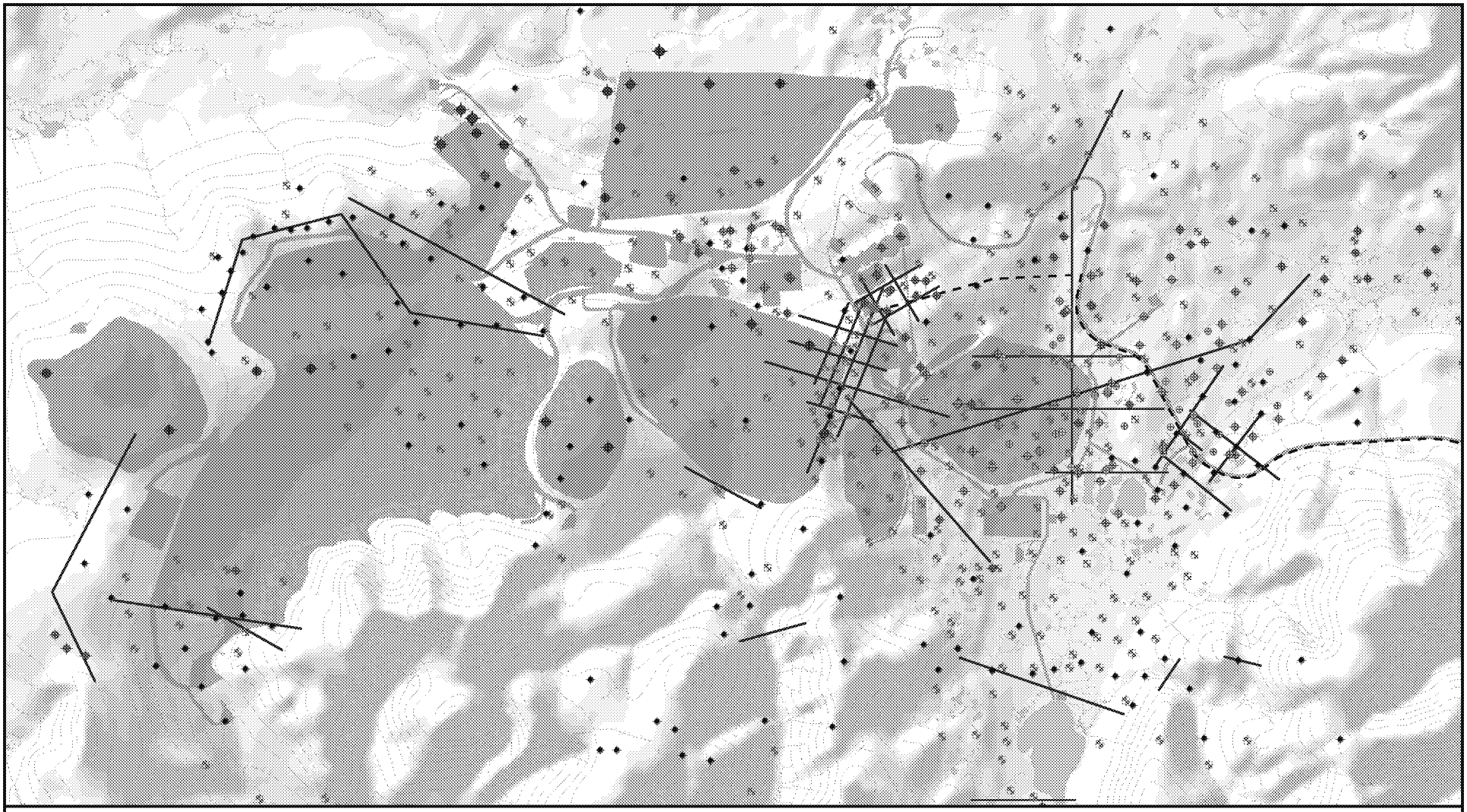
1. Ground shaking expressed as the probability of exceeding a certain amount of peak ground acceleration (PGA), measured in % of gravity (g), over a 2,500-year time period (return period), which is equivalent to a 2% probability of exceedance in 50 years.

SEISMIC HAZARD MAP

PEBBLE PROJECT EIS

FIGURE 3.15-2

AMERICAN OVERSIGHT



Sources: PLP 2018; USGS; ADNR

US Army Corps of Engineers

0.5 0 0.5 1

Miles

Geotechnical Investigations

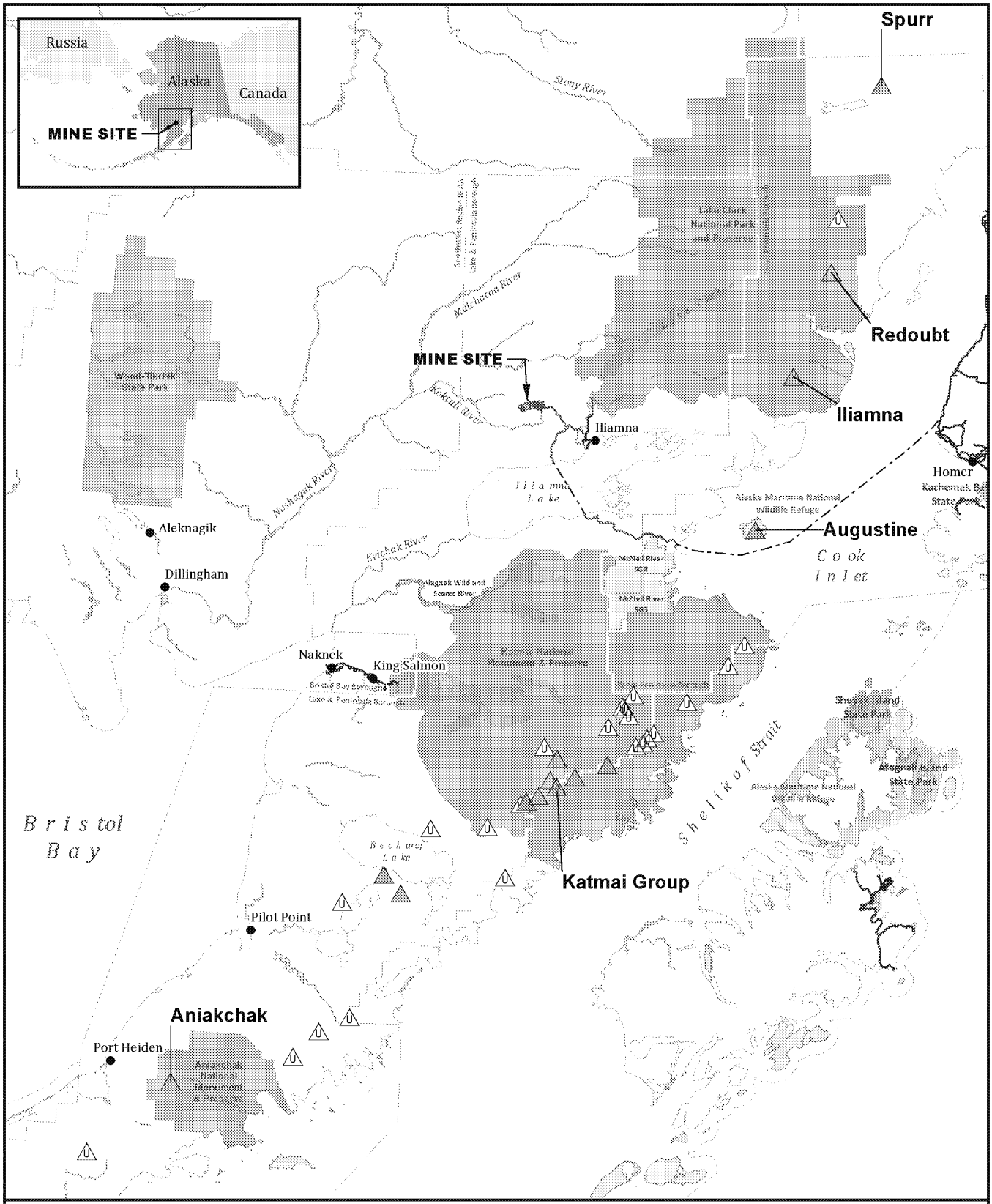
- 2004 to 2008 Geotechnical Drillhole
- 2010 to 2012 Geotechnical Drillhole
- 2011 to 2012 Sonic Drillhole
- 2018 Geotechnical Drillhole
- Oriented Geotechnical Drillhole
- Test Pit
- Seismic Line
- Natural Gas Pipeline
- Mine Site Footprint
- River/Stream
- Lake/Pond
- 100' Contour (Pre-Mine)

GEOTECHNICAL DATA COVERAGE

PEBBLE PROJECT EIS

FIGURE 3.15-3

AMERICAN OVERSIGHT



Sources: AVO 2018

US Army Corps of Engineers

15 0 15 30

Miles

Active Historically, Monitored by AVO

Active Historically or Within Holocene, Not Monitored by AVO

Project Components

Project Features

Natural Gas Pipeline

Transportation Corridor

ACTIVE VOLCANOES

PEBBLE PROJECT EIS

FIGURE 3.15-4

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 10/17/2018 10:49:33 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: request for review of Draft EIS Sections, SUSPENSE 31 OCT 2018, (UNCLASSIFIED)
Attachments: Sec4.5_Recreation__reviewdraft_2018.10.16.docx; AppK3.1_TEK_reviewdraft_2018.10.16.docx; Sec3.1_IntroAE_reviewdraft_2018.10.16.docx; Sec3.5_Recreation_reviewdraft_2018.10.16.docx; Sec4.1_IntroEC_reviewdraft_2018.10.16.docx

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All,
USACE and our third party contractors have been diligently trying to provide as much review time for DEIS sections as possible. For the first round of review of the preliminary draft chapters, USACE asked agencies to provide a high level review of the specific sections that directly addressed your special expertise as identified by USACE; we asked your teams to review for, "did we miss something and did we get it on the correct path for analysis".

In addition to the sections which USACE requested cooperating agencies' assistance, some cooperating agencies requested to review other portions of Chapters 3 and 4 in order to inform their review. Therefore, USACE intends to distribute the current version of all draft sections to all CAs, as they become available. When revising the draft EIS prior to public comment, USACE will consider those comments which are related to the CA's identified area of special expertise. Other comments related to the DEIS will be considered at the same time as the public's comments, after the Notice of Availability for the dEIS.

USACE intends to have all sections distributed to the CAs by 11/09/2018 and intends to request comments back by 11/21/2018. USACE has received general requests to extend the CA comment period. At this time, we do not anticipate extending the comment period.

This email initiates reviews of sections of the DEIS in more detail. We are providing the following sections for your review. We request comments from the agencies listed below, as these sections relate to areas that USACE has identified as within their special expertise.

Sec3.5-Recreation, 4.5-Recreation (CAs listed as EPA, NPS, USFWS, State of Alaska). There are no figures associated with these two sections.

Sec3.1-Intro to AE, K3.1 (tech appendix on TEK for Sec3.1), Sec 4.1-Intro to EC (CAs listed as EPA, USACE, State of Alaska). Section 3.1 has one figure listed in the TOC (watersheds map) that will be included in the DEIS version.

Please provide your comments on agency letterhead, either by mail or email, to poaspecialprojects@usace.amy.mil.

Respectfully,

Shane McCoy
Program Manager
907-753-2715

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K3.1 INTRODUCTION TO AFFECTED ENVIRONMENT - TRADITIONAL ECOLOGICAL KNOWLEDGE

Information about traditional ecological knowledge (TEK) and the approach taken by the US Army Corps of Engineers (USACE) to collect TEK is outlined in Section 3.1. The information collected is below.

K3.1.1 Scoping Comments

Scoping comments were pulled from the Scoping Report (Appendix A). Comments received that pertain to the topics listed in Section 3.1, Introduction to Affected Environment, are listed below.

- Fish
  - The area that makes up the headwaters is full of underwater streams in which small fry/fingerlings swim as they emerge. They sometimes swim into lakes and ponds of the region and often get too big to get out; they are called landlocked salmon.
  - Many species of fish are used for subsistence harvest, not just salmon.
  - The people in Seldovia have a long tradition of subsistence fishing for herring in Kamishak Bay. The herring also support other animals that we subsist on.
  - The placement of the tailings impoundment facility located on the North Fork of the Koktuli River is prime king salmon habitat.
- Wildlife
  - Exploration activities at the site have caused caribou to avoid the area.
  - Helicopter traffic during exploration disrupted subsistence activities. Particularly, helicopter traffic impacts spring waterfowl hunting (geese), displaces caribou, and impacts the Koktuli River.
- Birds
  - Kamishak Bay is home to a large seabird nesting colony.
  - Bald eagles nest and feed along the coast and along all of the major salmon spawning rivers in the Bristol Bay and Cook Inlet regions, with a relatively high number of golden eagles also found here.
- Marine Mammals
  - Incorporate traditional knowledge on freshwater seals in Iliamna Lake, and be aware that there is a Freshwater Seal Commission.
  - The proposed ferry could strike seals in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry.
- Vegetation
  - Over 80 edible and medicinal plants grow and are harvested in the project area including several species of berries, wild peas, wild onions, ferns, cow parsnip, rosehips, and many others.
- Subsistence activity
  - Be sure to include Kodiak Island to your analysis, as it has important subsistence areas that could be impacted by the project.
  - The road corridor would go through winter moose hunting area in the Talarik Creek watershed.

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  - The Nushugak, Mulchatna, and Koktuli watersheds are the hunting and fishing areas for people of New Stuyahok.
  - The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
  - The mountain behind Nondalton is traditional subsistence area.
  - The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.
  - The people in Seldovia have a long tradition of subsistence fishing for herring in Kamishak Bay. The herring also support other animals that we subsist on.
  - The residents along Iliamna Lake rely on access to small islands for the harvest of bird eggs in the spring.
  - A chart on the Bristol Bay seasonal subsistence gathering cycle was submitted.
- Culturally important areas
  - The Amakdedori port area has been used as a site for a cultural camp, subsistence use areas, and school field trips.
  - There are ancestral burial grounds at/near the proposed Amakdedori port, along the road route on the south side of Iliamna Lake, and on the road route to the south ferry dock.
  - This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.
- Navigation
  - While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay experiences challenging winter sea conditions.
  - No depths are recorded on navigation charts for Iliamna Lake. Some rocks on the chart do not exist; others are not where the charts show them to be. Some are not on the charts at all. There are places where the depth goes from 400 feet to 30 feet.
  - The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
  - The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 miles per hour.
  - A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.

Scoping comments that referenced a geographic location via the online comment form web mapping feature are below.

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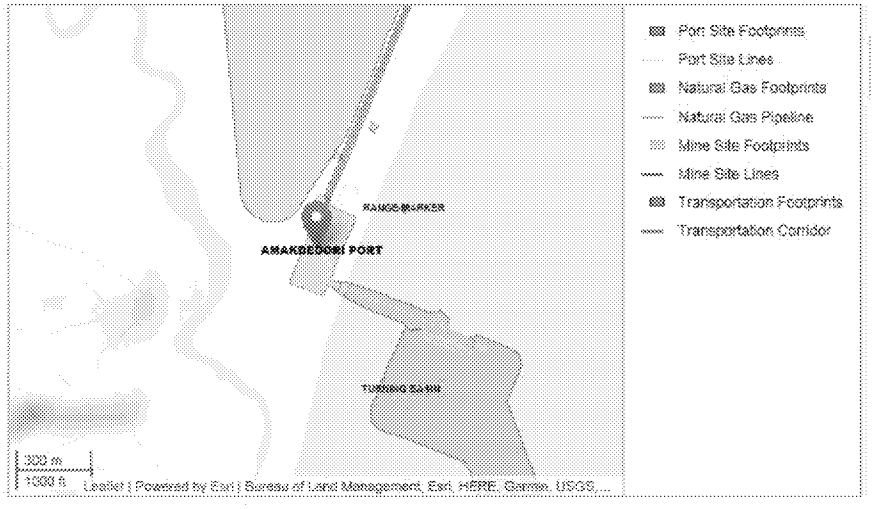
- Culturally important areas

Applicable Comment
The proposed dredge storage and port site on this map is overlaid on the Amakdedori Native Village. This is also the site of cultural learning camps, subsistence use areas, and school field trips. … Survey work needs to include consultation with local tribal governments to apply religious and culturally appropriate research methods. Any alternatives will need to address meaningful mitigation to the loss of access to historical cultural resource sites and to living cultural resource sites. Loss of access and location changes to the traditional learning camps and school field trips to the Amakdedori Native Village will need to be made in consultation with the Kokhanok school and parents. Alternative locations for these teachings would need to include other cultural sites of the Kachemak Tradition. … 

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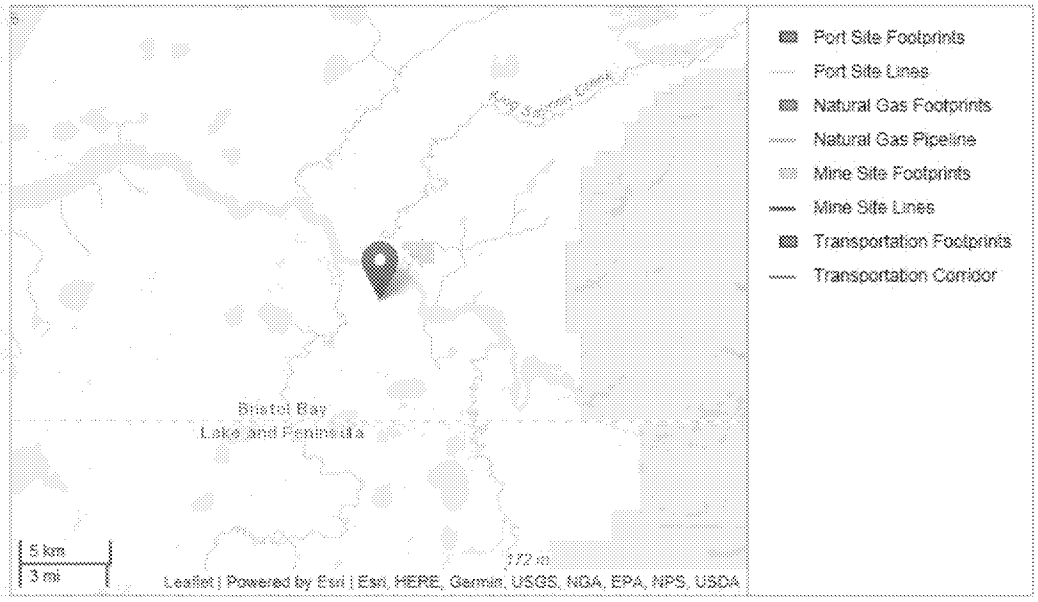
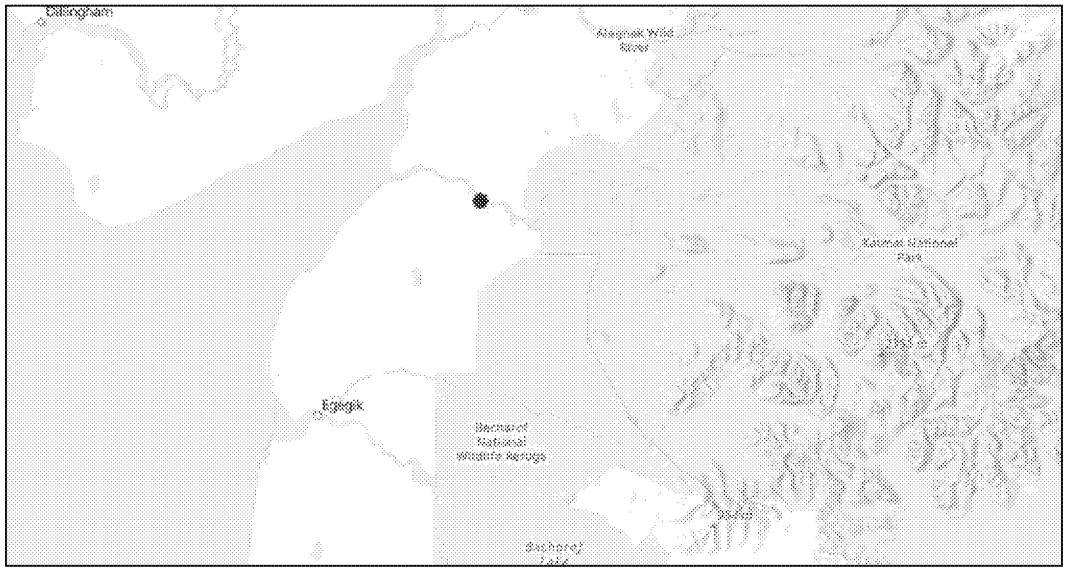
- Subsistence Activity

Applicable Comment
It worries me that the mine could impact animals, fish and berries that my friends and I gather for subsistence. A lot of us depend on the land and water for food. It offsets the high cost of living and shipping food into the area. We rely on moose, caribou, bear, many berries etc. …





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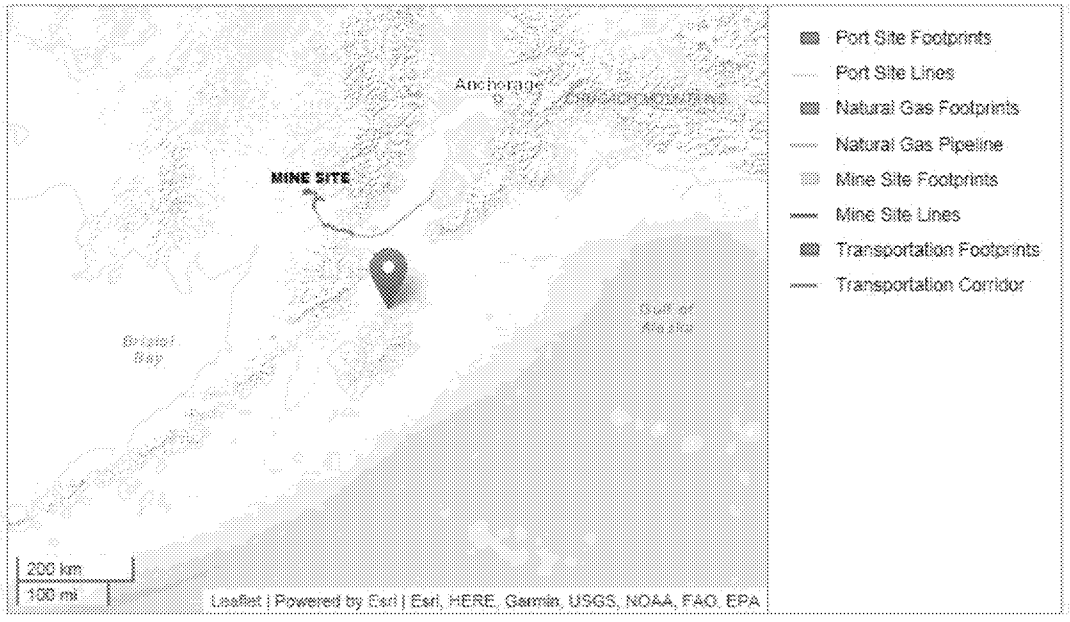
- Subsistence Activity

Applicable Comment
My husband and I have a setnet site on Raspberry Island. We are especially concerned about transport plans across Lake Clark and Cook Inlet. We learned during the Exxon oil spill the spills in one place can impact fisheries and habitats along a wide swath. Although the spill was in Prince William Sound we found oil on our beaches in the Kodiak District and our fisheries was shut down.



K3.1.2Existing Documents

K3.1.2.1 Environmental Baseline Document

The Environmental Baseline Document Chapter 23, Subsistence, contains the detailed results of a study done by Steven R. Braund & Associates in coordination with the Alaska Department of Fish and Game (SRBA 2011b). Two major elements of this study were to survey residents, and then follow up with interviews. The data (tables, charts, and maps) used to determine the environmental baseline for Section 3.9, Subsistence in this EIS reflect the findings of this study. In this way, TEK regarding areas of subsistence use and harvest data are incorporated, and would be reflected in pertinent EIS chapters.

K3.1.2.2 EPA Watershed Study

Appendix D in Volume 2 of the EPA Assessment of Potential mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska is a study of TEK and cultural characterization in the Nushagak and Kvichak watersheds, conducted by Boraas and Knott (Boraas et al. 2013). The study was based on interviews in the region. Information from this study that would be considered TEK and pertains to the topics presented in listed in Section 3.1 is listed below.

- Fish
  - That is spring water [at Kijik]. It does not freeze. That is why you can go over there and get a sockeye salmon in March; it might have a green head, and it is red, but it is still a sockeye salmon. You can go over there on New Year's Day and get a fresh sockeye salmon.

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- But, I think, when they are spawning, that is where they hit the spring waters, where it does not freeze. It is always open, even in the dead of the winter. It is always open; you got to be careful there. Especially up in Lake Clark, around Kijik. It is, man, 30 below zero, and still open water.
- They are sensitive, very sensitive. If you put something bad in the water the fish will sense it. They will probably not go up the river, they will go somewhere else. If they spawn here and they notice something different they will move to another spot. The fish are very sensitive.
- For quite a few years there when we were building up the king salmon run we did not even fish in June. It was just to build up those runs. It is kind of ironic that the kings we built up are on the Koktuli River where that mine is going to go. It is almost a whole decade that we sacrificed to build up that run. We built it up and now it might go away.
- You do not see Bristol Bay having troubles because our ecosystem is whole and not damaged. We are very appreciative of what we have. In relationship to the mine the place I work up here is the Bristol Bay Economic Development Corporation and… one of the companies we bought is Ocean Beauty Seafoods which is one of the largest salmon producers in Alaska. We put up 161 million pounds of commercially caught goods in a year. So I talk to the people and if there is a mine that goes in like pebble and we have copper coming out and affecting our fish, are you interested in buying our fish? These are customers we sell 300-400 thousand pound lots to. No, we are not interested….We don't want ourselves and our kids to eat contaminated foods.
- They [Salmon] would not go there [where water is contaminated] They are also very sensitive to temperature. They have a really keen sensory acuity, not only them, but all the critters, all the birds. …They are so sensitive in every aspect of that word.

- Wildlife
  - You cannot even get meat like you used to; you cannot even go out hunting for moose or caribou. Nothing is here anymore; everything is disappearing. I know, you know [name] could verify too. There used to be so much caribou, we would see them all over the road, all over the lake, everything.
  - Since the Pebble Mine started their exploration, I speak for everyone around here that we have not had the big caribou herds that come through here anymore.
  - The drill wells are making all the noise. We were over there, my wife and I were over there last spring, and when we went over there to check out the Pebble, there [we] saw three other helicopters right in the same area, and that is lots of traffic. We have not had caribou meat around here ever since. Have not had caribou meat caught here in probably the last 6 years.
- Vegetation
  - What they used to say, was the first time, when they first moved down to fish camps, then this wild celery, I do not know if you know what that is, but we eat those. They go up on the mountainside and pick lots of that, and then they peel it, they peel the peelings off and we eat the inside part.
- Subsistence activity areas
  - In Easter they went up to Koliganek the next village up. He said people up there caught white fish and pikes. He said the water is good upriver, it is not like down

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here. I think it is the water that is coming down from up Mulchatna. He thinks it's from them working on that pebble up there [Pebble Mine].

- Culturally important areas
  - There are 10,000 cache pits [at the Kijik archaeological site on Lake Clark] and they are still counting; over 200 houses, which are huge. So it was pretty big.
- Weather and climate
  - There is open water all over. They got drilling rigs that are sitting on open water. You cannot walk up there with knee boots you got to have hip boots there is so much water this year. The ground is saturated.

K3.1.3 Cooperating Agencies

Cooperating agencies review and comment on draft sections of the EIS during development. During that process, some information was presented that would qualify as TEK. Information received pertaining to the topics listed in Section 3.1 is listed below.

- Cultural Resources
  - The village site at Amakdedori, cabins and trails, have significant personal and cultural value to a number of individuals in the borough. The old cabins, trails, and village have personal meaning to many who reside in the borough.

K3.1.4 Tribal Consultation

Information was also collected during government-to-government consultation meetings between the USACE and Tribes. Comments received that pertain to the topics in Section 3.1 are listed below.

- Wildlife
  - Participants stated that the bears move widely across the region from Amakdedori to the mine site and beyond.
  - The road would cross caribou migration paths. Caribou are coming back to the area, the lichen crop is robust.
  - Belugas are changing their diets because their food is not available for them anymore.
- Weather and climate
  - The mine site is in bowl, in right wind conditions, can hear noise from the mine.
- Subsistence Use Areas
  - Razor clams on the east side of Cook Inlet are declining so a lot of people dig razor clams on the west side, at Amakdedori. Aquatic resources like clams, crab, herring and shrimp have declined on the east side of Cook Inlet.

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3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

Chapter 3, Affected Environment, describes the existing environment that would be affected by the proposed project and alternatives under consideration in this Environmental Impact Statement (EIS). This chapter is intended to help the lay reader and agency decision maker find the information they need to evaluate the affected environment and understand the impacts and consequences discussed in Chapter 4, Environmental Consequences.

Each resource section in Chapter 3 (Section 3.2 through Section 3.26) discusses:

- The overall existing condition of the resource, including the natural and physical environment
- The types of potential impacts typically associated with the proposed project for that resource
- The area of analysis (see "project area" definitions below)
- Applicable regulations in the context of the resource.

3.1.1 Project Components

The project is discussed in Chapter 3 and Chapter 4 by its four major components. These include:

Mine Site: Includes the footprint at the mine site (minus milepost 24-29 of the mine access road, which is included in the transportation corridor).

Transportation Corridor: Includes the footprint of access roads (including milepost 25-29, which overlaps with the mine site footprint), spur roads, ferry terminals, ferry route, and all associated infrastructure.

Amakdedori Port: Includes the footprint of the port, dock, all associated infrastructure, and lightering locations.

Natural Gas Pipeline Corridor: Includes the pipeline route and all associated infrastructure from the Kenai Peninsula across Cook Inlet to the mine site.

3.1.2 Project Area

Project area terms are applied in Chapter 3 and Chapter 4 and refer to specific areas. These include:

Project area: Refers to the exact proposed project footprint.

Mapping area: Refers to a specific area in which wetland and vegetation surveys were conducted in the field and subsequently mapped (generally only applied in Section 3.22 or 4.22, Wetlands, and Section 3.26 or 4.26, Vegetation.

EIS analysis area: Refers to the entire area of resource analysis, which is specific to each of the resource sections and may differ by resource.

3.1.3 Resource Interrelationships

Although resources are described in Chapter 3 and analyzed in Chapter 4 in discrete sections, these subjects are dynamic and interrelated. A change in one resource can have cascading or

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synergistic impacts to other resources. The site of the proposed project and the nature of open-pit mining activity would lead to a complex interaction between groundwater, surface water, and a number of water-related resources. The proposed project would also lead to a complex interaction between water-related resources and fish and aquatic resources. Impacts to water, fish, and wildlife resources would in turn have impacts on subsistence resources; for example, water quality may affect fish populations, which in turn may influence subsistence harvests, which can have implications for other human outcomes such as health and socioeconomics. As a result, there is some overlap among the resource sections in Chapter 3, and the impacts described in Chapter 4. Impacts described in one section may depend on the analysis from another section. During the writing process, subject-level authors and cooperators collaborated by sharing data and discussing interrelated aspects of the analyses to better capture the interrelated nature of environmental resources in both Chapter 3 and Chapter 4.

Two interrelated multiple-resource topics were identified for analysis in the EIS that span various resource sections in Chapter 3 and Chapter 4. The framework for description and analysis of these topics is provided below.

3.1.3.1 Traditional Ecological Knowledge

In recent decades, Native Alaskans have effectively advocated for recognition of their complex bodies of knowledge and understanding about climate change, flooding and erosion, surface/groundwater hydrology, landscapes, fish and wildlife life histories and migratory patterns, and seasonal distributions/utilization of subsistence resources. This traditional ecological knowledge (TEK) is just as important as modern means of transportation and hunting technology in supporting safe and efficient subsistence harvest activities.

The U.S. Army Corps of Engineers (USACE) has taken the following approach to incorporating TEK into this EIS:

- Reviewing scoping comments to determine what relevant TEK was provided
- Reviewing pertinent sections of the Environmental Protection Agency (EPA) watershed assessment (EPA 2014), and Environmental Baseline Document Chapter 23, Subsistence (SRBA 2011b) to identify any relevant material that can be considered TEK and attributed to an individual or organization
- Inquiring about relevant TEK during all government-to-government meetings, as appropriate.

Specific topics that the USACE considered for inclusion as TEK include:

- Information on surface/groundwater hydrology and water quality in the project area. This would include areas of high water table, variations in stream flow and underlying causes, when breakup and freeze-up typically occurs, and areas where water quality might be affected by natural and human made causes
- Information on location, frequency, and trends with regard to natural hazards such as flooding, erosion, river and lake ice, avalanches, and rock slides
- Observations of trends, patterns, or changes in weather and climate, including storms, rainfall, and snowpack
- Information on fish, wildlife, birds, and marine mammals in the project area. This would include distribution and seasonal presence, population trends, migration patterns, habitat areas, behavior, and changes over time
- Information on the vegetation in the project area, including species used for subsistence, areas of occurrence, and changes over time

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- Important areas and seasons of subsistence activity, utilization and sharing of subsistence resources, and changes over time
- Culturally important areas from a historic and contemporary perspective
- Areas being used by guides and commercial operators for sport fishing, hunting, and wildlife viewing, and changes over time
- Information important to navigation in the project area
- Information on where residents are collecting surface water for residential use.

TEK has been incorporated into relevant resource sections. TEK information collected is found in Appendix K3.1.

3.1.3.2 Climate Change

Climate change may be addressed in three ways in an EIS. These include:

1. Effects of the project on climate change. This category addresses the effect of the proposed action on climate change as indicated by greenhouse gas (GHG) emissions, per the Council on Environmental Quality (CEQ) 2014 Revised Draft Guidance on Consideration of Greenhouse Gas Emissions and Climate Change in National Environmental Policy Act (NEPA) Reviews (CEQ 2014), per rescission of the 2016 Final Guidance on Greenhouse Gases and Climate Change.
2. Effects of climate change on the project area. This category addresses the implications of climate change for the environmental effects of the proposed action; or in other words, examines the impacts of climate change on a proposed action that could affect sensitive populations or environmental resources (CEQ 2014). Climate change as a cumulative effect is considered under this category, per CEQ 1997 Considering Cumulative Effects under the NEPA (CEQ 1997) and CEQ 2014.
3. Effects of climate change on proposed project infrastructure. This category addresses the effects on the proposed project infrastructure from climate change, and considers accounting for potential climate change effects on a proposed action over the course of its anticipated useful life, especially in areas that may be vulnerable to specific effects of climate change, per CEQ 2014.

This EIS addresses the three categories in the following locations and ways:

1. Project-caused GHG emissions are discussed and analyzed in Section 4.20, Air Quality.
2. Climate change trends are integrated into discussion if appropriate to the resource in Section 3.2 through Section 3.26. Climate change as a cumulative effect is discussed in a subsection if appropriate to the resource in Section 4.2 through Section 4.27.
3. Climate change effects on proposed project infrastructure are addressed if appropriate to the resource in Section 4.2 through Section 4.27.

3.1.4 Project Physical Setting

3.1.4.1 Location

The proposed Pebble Project location is primarily in the Bristol Bay watershed (see Figure 3.1-1) in southwest Alaska, a rolling, permafrost-free terrain, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Project mine site.

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The Bristol Bay watershed encompasses approximately 41,900 square miles and is defined by the Aleutian Range to the east and southeast, the Kuskokwim Mountains to the west, and a range of hills to the north that separate it from the Kuskokwim River watershed. The largest rivers that drain into Bristol Bay are the Nushagak and Kvichak rivers, which together drain 49 percent of the Bristol Bay watershed, or approximately 20,000 square miles. A portion of the project is located in the Cook Inlet watershed, which encompasses the city of Anchorage and various communities on the Kenai Peninsula and around the Cook Inlet coastal shoreline.

3.1.4.2 Climate & Meteorology

The climate in the mine site area is transitional. Winters are characterized by a continental climate as frozen waterbodies and sea ice in Bristol Bay create a land-like mass, while summers have a maritime climate due to the influence of the open water of Iliamna Lake and, to a lesser extent, the Bering Sea, Bristol Bay, and Cook Inlet.

Mean monthly temperatures range from about 55 degrees Fahrenheit (°F) in summer to 2°F in winter. Precipitation in the North Fork Koktuli (NFK) River drainage averages approximately 57 inches per year, and 51 inches per year in the South Fork Koktuli River (SFK). About one-third of this precipitation falls as snow. The wettest months are August through October. White-out conditions and wind storms or periods of poor light/visibility occur in winter.

Winter weather systems, consisting of cool to cold saturated air, typically travel into the region from the Bering Sea (west), along the Aleutian Island chain (southwest) and the Gulf of Alaska (south), resulting in frequent clouds, rain, and snow. Less frequent incursions of frigid, stable arctic air masses produce shorter periods of clear, but very cold conditions. During summer, warm air masses from Interior Alaska can cause atmospheric instability, which results in cumulus clouds and thunderstorm activity. No permafrost has been identified to date in the project area.

3.1.4.3 Topography

The area consists of low, rolling hills separated by wide, shallow valleys. Elevations range from approximately 775 feet in the SFK valley up to 2,760 feet on Kaskanak Mountain. Glacial and fluvial sediment of varying thickness covers most of the area at elevations below approximately 1,400 feet, while ridges and hills above 1,400 feet generally exhibit exposed bedrock or have thin veneers of surficial material. Hills are generally moderately sloped with rounded tops, and valley bottoms are generally flat.

The port site is located just north of the mouth of Amakdedori Creek on the shore of Cook Inlet in the northern part of the Aleutian Range physiographic division. Topography is generally flat with dunes located closer to the gravel beach shoreline of Cook Inlet.

The terrain includes a range of types, from flat to moderately undulating near the mine site, gently sloping and colluvial terrain along the transportation corridor in the vicinity of the north shore of Iliamna Lake, and mountainside slopes to narrow valley bottoms through the Aleutian Range. The transportation corridor spans the Nushagak watershed at the mine site and traverses the Kvichak watershed, both in the greater Bristol Bay watershed. The corridor continues through the Tuxedni-Kamishak Bay's watershed of the greater Cook Inlet watershed.

The first portion of the natural gas pipeline corridor is located on the Kenai Peninsula, and crosses Cook Inlet. The remaining portion overlaps the transportation corridor.

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3.1.4.4 Land Cover

The mine site area is ecologically diverse, with rivers, tundra, marshy lowlands, and ponds. Much of the land is covered by alpine tundra, shrubs, wetland and scrub communities, or areas of mixed broad-leaf and spruce trees, depending on elevation and location.

Around the port area, the western shorelines from Kamishak Bay north to Iniskin Bay are comprised of diverse habitats, including steep rocky cliffs, cobble or pebble beaches, and extensive sand/mud flats. Eelgrass is found at a number of locations and habitats; eelgrass, along with macroalgae, is an important substrate for spawning Pacific herring. Much of the land is well-drained and covered by dwarf shrub communities with inclusions of alder shrub and grass-herb communities. Wetland habitats consisting of wet meadows and shrub communities are limited to the northwestern extent of the port site where groundwater discharge occurs, as well as areas in the floodplain of Amakdedori Creek.

Vegetation communities in the transportation corridor north of Iliamna Lake primarily consist of dwarf shrub, spruce woodland, mixed broad-leaf and spruce forest, and shrubs. Wetland habitats dominated by willow shrub communities are common on floodplains of streams, while wet meadows and mixed shrub wetlands are common at toe slopes where groundwater discharge occurs. The transportation corridor crosses numerous streams in the Bristol Bay and Cook Inlet watersheds. Much of the land at lower elevations south of Iliamna Lake is covered by dwarf shrub and broad-leaf forest communities. At higher elevations where shallow bedrock occurs, dwarf shrub and alder shrub communities are prevalent. Wetland habitats are common in depressional areas, valley bottoms, and on slope benches and include wet meadows and scrub-shrub communities.

In the eastern portion of the natural gas pipeline corridor, the Cook Inlet region is comprised of marine, coastal, and estuarine habitats. Pelagic waters in Cook Inlet are influenced by riverine and marine inputs resulting in salinity gradients and horizontal mixing throughout the inlet. Deeper waters of Cook Inlet are characterized by unconsolidated sediments on a smooth bottom and strong tidal currents. The variety of habitats in the region support lower trophic organisms, fish, shellfish, marine mammals, and birds. Fish and shellfish are important components of the Cook Inlet food web, as they feed on lower trophic organisms such as plankton, and serve as prey for other fish, birds, and marine mammals.

3.1.4.5 Hydrology

The Pebble Deposit straddles the upper reaches of the SFK and Upper Talarik Creek (UTC) drainages. The headwaters of the NFK are immediately north of the Pebble Deposit. The SFK drains south from the Pebble Deposit area, and then west and northwest, where it joins the NFK, which flows west from the Pebble Deposit area. At the confluence, these streams form the Koktuli River, which flows into the Mulchatna River, a tributary to the Nushagak River. The Nushagak River flows into Bristol Bay near the city of Dillingham. UTC flows south from the Pebble Deposit area and then southwest into Iliamna Lake, which is the source of the Kvichak River.

The NFK and SFK are two of 24 tributaries of similar or larger size in the 315-mile long Nushagak River system. The north and south forks of the Koktuli River flow for 36 and 40 miles, respectively, to the main stem Koktuli River. The Koktuli River flows for approximately 39 miles before entering the Mulchatna River, which flows another 44 miles before entering the Nushagak River. The Nushagak River flows about 110 miles before it empties into Bristol Bay southwest of Dillingham. The total distances from the NFK and SFK headwaters to Bristol Bay are 228 miles and 232 miles, respectively.

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The UTC drainage is in the 225-mile long Kvichak River system. The headwaters of the Kvichak River system are approximately 109 miles northeast of the Pebble Deposit at the source of the Tlikakila River at Lake Clark Pass. UTC flows approximately 39 miles to Iliamna Lake. The lake empties into the Kvichak River, which flows approximately 70 miles to Bristol Bay. The total distance from the headwaters of UTC across Iliamna Lake to Bristol Bay is approximately 140 miles.

The Cook Inlet basin is an expansive watershed surrounding the 180-mile long Cook Inlet waterbody. Covering more than 38,000 square miles of southern Alaska, it receives water from six major watersheds and many smaller ones. More than 10 percent of the basin is covered by glaciers where suspended sediment loading in glacier fed rivers without lakes is significant, leading to a high suspended sediment load in portions of Cook Inlet. Lower Cook Inlet is connected to the Pacific Ocean southwest through Shelikof Strait and southeast by the Gulf of Alaska; it demonstrates complex circulation on variable timescales. The region has the fourth largest tidal range in the world; tidal fluctuations in Kamishak Bay average 13 feet. When the tide drops from mean high to mean low water, the inlet loses almost 10 percent of its volume, and exposes approximately eight percent of its surface area. Most of these tidally exposed areas are in the arms at the north end of Cook Inlet and along the west side of the waterbody.

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Figure 3.1-1: Project Area Watersheds

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3.5 RECREATION

For the purposes of this section, the region around the project site is defined as the area from Lake Clark National Park and Preserve south to Katmai National Park and Preserve and from the Nushagak River east to the western Kenai Peninsula. Refer to Figure 3.2-1 for generalized land status. The region around the project area is, for the most part, remote and undeveloped. These lands and waters support a wide variety of dispersed recreation activities including sport and trophy hunting, hiking, camping, and snowmachining. Due to the economic importance of fishing in this region, recreational and commercial fishing are discussed in a separate section. See Section 3.6, Commercial and Recreational Fishing, for more information. See Section 3.9, Subsistence, for information on subsistence hunting and fishing and refer to Figure 3.2-1 for area locations.

3.5.1 Recreation Management

3.5.1.1 Federal Lands

National Park Service

The following section provides information on the management of the three National Park Service (NPS) units in the regional recreation area of the project. Commercial use of all three units is subject to commercial use authorizations (CUAs), which authorize appropriate commercial services to park visitors (NPS 2018a). CUAs may not exceed 2 years per term and provide for incidental use of the park by commercial service operators where services originate and terminate outside of the park boundary (NPS 2018a). Concession contracts are commonly issued for 10 years and are issued on a competitive basis. Commercial services are authorized under the National Parks Omnibus Management Act of 1998, Public Law 105-391 (NPS 2018a).

Lake Clark National Park and Preserve

Lake Clark National Park and Preserve is about 15 miles northeast of the mine site and is not accessible by road. The park covers the eastern two-thirds of the park unit and the preserve is a north-to-south strip of land adjacent to the western side of the national park. Most of the park is designated Wilderness and it is the sixth largest park unit in the nation. In the general park/preserve boundary, there are private inholdings (privately owned or selected by Alaska Native Claims Settlement Act [ANCSA] village or regional corporations) around the southwest third of Lake Clark, including the community of Port Alsworth around Lower Tazimina Lake and near the Cook Inlet coast (Kevin Waring and Associates 2011b).

Lake Clark National Park and Preserve is managed according to the 1984 General Management Plan for the park and a 2014 amendment to this plan. The 1984 General Management Plan contains a management concept for visitor access, recreation, and use within the park unit, including development, access, commercial use, visitor use, visitor information, and interpretive materials (NPS 1984). The 2014 amendment expanded visitor activities and interpretive services. The amendment included designating some existing cabins for public use, designating an informal water route on Lake Clark, providing a few improved visitor facilities, and providing limited new commercial services (NPS 2014).

The most current Superintendent's Compendium includes the designations, closures, permit requirements, and other restrictions that have been adopted under the superintendent's discretionary authority (NPS 2017a).

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There are approximately 90 visitor service providers (CUA holders and concessioners) in this NPS unit for the following activities: air taxi, water taxi, backpacking/overnight camping, boating trips, bear viewing, group camping, hiking/walking tours, big game transport, incidental hunt transport, kayak tours, mountaineering, paddleboarding, photography, sport fishing, sport hunting, skiing, and snowshoeing (NPS 2018a).

Katmai National Park and Preserve

The Katmai National Park and Preserve boundary is located approximately 7 miles south of the transportation corridor at its nearest point. This NPS unit is primarily national park, with the preserve located adjacent to the western part of the northern boundary of the park. Most of the park is designated Wilderness and it is the fifth largest park unit in the nation. There are also over 20,000 acres of privately owned lands in the unit (Kevin Waring and Associates 2011b).

Katmai National Park and Preserve is managed under a variety of management plans. The 1986 General Management Plan discusses management of park access and circulation, visitor use and services, and potential development in the park unit (NPS 1986). The 2009 Long Range Interpretive Plan describes desired visitor experiences, existing interpretive resources, and includes recommendations to achieve the desired future interpretive program as well as implementation priorities (NPS 2009a). The 2014-2018 Strategic Plan includes 5 year goals and strategies for management of three NPS units (NPS 2013). Similar to Lake Clark National Park and Preserve, the most current Superintendent's Compendium lists the designations, restrictions, closures, and permit requirements adopted under the superintendent's discretionary authority. The 2017 Compendium for Katmai National Park and Preserve also covers the Aniakchak National Monument and Preserve and Alagnak Wild River (NPS 2017b).

There are approximately 125 visitor service providers (CUA holders and concessioners) in this NPS unit for the following activities: air taxi, backpacking/overnight camping, boating trips, bear viewing, charter boat service, group camping, hiking/walking tours, big game transport, incidental hunt transport, kayak tours, lodging and food service, photography, sport fishing, and sport hunting (NPS 2018a).

Alagnak Wild River

The Alagnak River is designated a Wild River in the Wild and Scenic Rivers System and consists of 67 miles of river corridor that is mostly (93 percent) federally owned, with some privately owned Native allotments and other private inholdings within the river corridor. The Wild River begins downstream of Kukaklek Lake and flows westward, though the last 12 miles of the Alagnak River are outside the designated corridor. The river was designated a Wild River in 1980, and there is no road access to it (Kevin Waring and Associates 2011b). It would be approximately 50 miles south of the transportation corridor at its nearest point.

There are several management plans that discuss recreation in the Alagnak Wild River. The 1983 Management Plan contains management objectives for visitor use and interpretation including access, accommodating hunting, and encouraging activities compatible with the natural environment (NPS 1983). The 2009 Long Range Interpretive Plan and 2014-2018 Strategic Plan described above under Katmai National Park and Preserve also apply to the Alagnak Wild River (NPS 2009a, NPS 2013).

There are approximately 20 visitor service providers (CUA holders and concessioners) in this NPS unit for the following activities: air taxi, backpacking/overnight camping, boating trips, bear viewing, group camping, hiking/walking tours, photography, and sport fishing (NPS 2018a).

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US Fish and Wildlife Service

Alaska Maritime National Wildlife Refuge

The Alaska Maritime National Wildlife Refuge (NWR) includes 3.4 million acres (USFWS 2013a) from Forrester Island in southeastern Alaska, to the tip of the Aleutian chain, and almost to Utqiaġvik on the Arctic Ocean (USFWS 2011a). In the project area, several islands in Cook Inlet are in this NWR; the nearest point would be approximately 15 miles from Amakdedori Port.

The Alaska Maritime NWR is managed by a comprehensive plan (USFWS 1988). The five purposes of the refuge (i.e., conservation, treaty obligations, subsistence use, scientific research, and water quality/quantity) protect the wildlife resources that attract recreational visitors. As stated in the Land Protection Plan for the NWR, "the Alaska Maritime Refuge is managed to conserve native fish and wildlife populations and their habitats, while providing opportunities for subsistence, compatible types of recreation, and research" (USFWS 2011a). Some uses of the NWR, including commercial guides and outfitters, transporters such as water and air taxis and charters, cabins, and long-term tent camps require a special use permit from the US Fish and Wildlife Service (USFWS). General public use of the NWR for hunting, wildlife viewing, photography, interpretation/environmental education, hiking, and camping do not require a special use permit (USFWS 2014a).

Bureau of Land Management

Bureau of Land Management (BLM) lands in the region are under the management of the Anchorage Field Office and are part of the Iliamna East planning block under the Bay Resource Management Plan (RMP) (BLM 2008a, BLM 2008b). Only one BLM tract in the Iliamna East area is unencumbered; the remainder of the BLM parcels are selected by the state, ANCSA corporations, or both (BLM 2008b). The BLM manages these parcels until they are conveyed and is required to seek and consider comments from the relevant Native corporation for any authorization to use Native-selected lands (Kevin Waring and Associates 2011b). RMP recommendations for management of ANCSA-selected lands would be implemented by BLM only if the land selections were relinquished to the federal government. The small unencumbered tract is located west of Lake Clark, 25 miles northeast of the mine site (Kevin Waring and Associates 2011b).

Pertinent recreation management direction in the RMP includes:

- management of all unencumbered and selected lands (until they are conveyed) as semi-primitive motorized;
- opportunities for commercial recreation would be provided consistent with area objectives for recreation management;
- lands would be managed for dispersed recreational use and no facilities would be developed; and
- camping associated with commercial activities would be prohibited without BLM's written authorization, though short-term camping not associated with commercial activities would be allowed for less than 14 days in one location (BLM 2008a).

3.5.1.2 State Lands

A variety of general uses are allowed on state lands without a permit from the Division of Mining, Land and Water. Such uses include hiking, backpacking, skiing, horseback riding, using a vehicle (below a certain weight depending on the type of vehicle), landing an aircraft, using

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watercraft, hunting, fishing, trapping, harvesting plants, recreational gold panning, hard-rock mineral prospecting or mining, and non-commercial camping (ADNR 2011).

Alaska Department of Fish and Game

McNeil River State Game Refuge and Sanctuary

The McNeil River State Game Sanctuary and Refuge is located immediately north and east of Katmai National Park and Preserve, south of Iliamna Lake, and inland of Kamishak Bay. The refuge portion is located north of McNeil Falls and camp, adjacent to Katmai National Preserve, while the sanctuary portion includes visitor facilities for brown bear viewing at McNeil Falls and camp, adjacent to Katmai National Park and Preserve. The boundary of the refuge portion would be within 1 mile of the transportation corridor.

The 2008 Management Plan for the McNeil River State Game Refuge and Sanctuary includes statutory goals for the sanctuary and refuge, as well as policies regarding recreational topics such as access, information and education, recreation activities, camping, structures, boat storage, and trails (ADFG 2008a). Under Alaska Statute (AS) 16.20.162, access permits are required for entry into the McNeil River State Game Sanctuary. Permits are required for bear viewing, special access to the sanctuary (e.g., for scientific, educational and media purposes), transporters, and activities in the sanctuary other than viewing bears (non-viewing permits) (ADFG 2018e).

Alaska Department of Natural Resources

Bristol Bay Area Plan

The Bristol Bay Area Plan covers state lands just inland of Cook Inlet west to Bristol Bay. The plan includes chapters on the goals and management guidelines for public recreation and tourism as well as public access. The project area is in regions 6, 8, 9 and 10 of the plan area. In Region 6, the project area (specifically the mine site and a portion of the transportation corridor) would be in units 23 and 24. Both of these units are designated Minerals, a designation that is given to areas associated with significant resources that may experience mineral exploration or development. Permanent facilities related to commercial recreation are prohibited in Unit 23 (ADNR 2013a).

In Region 9, the transportation corridor would be in units 7 and 7A. Unit 7 is designated General Use and is to be managed for a variety of uses, including dispersed recreation. General Use areas are not intended for intensive forms of development other than occasional use at specific sites, usually associated with mining, oil and gas exploration, or recreation. Unit 7A is designated as Habitat for protection of moose wintering habitat. The plan notes that development is not appropriate in this unit, other than utility, communication, road/bridge, or other public service-related development (ADNR 2013a).

In Region 10, the transportation corridor would be in units 1 and 2. Unit 1 is designated General Use and is to be managed for a variety of uses including public recreation and tourism. Unit 2 is designated Minerals and Habitat. The plan specifically notes that the "general resource management intent for the Pebble Copper area is to consider mineral exploration and development, while ensuring the protection of important habitat areas." Specifically, Upper Talarik Creek, in both units 1 and 2, is to be protected for its recreation, habitat, and water resource values. Permanent, commercial recreation-related facilities are prohibited in Unit 2. The plan also notes that impacts to dispersed recreation along Talarik Creek should be avoided in Unit 2 (ADNR 2013a).

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The Nushagak River and the Mulchatna River headwaters and lands that provide the waters for these rivers (e.g., Koktuli River) include the mine site lands, and are managed by the Alaska Department of Natural Resources under the Nushagak and Mulchatna Rivers Recreation Management Plan (ADNR 2005). More information is provided in Section 3.2, Land Ownership, Management, and Use.

Lower Talarik Creek Special Use Area

The Lower Talarik Creek Special Use Area was established in 1999 and in this area the state has limited commercial recreation activities to day use only with registration. From August through October, camping for personal non-commercial use in this area is allowed for no more than 5 days, only in a designated area adjacent to the Alaska Department of Fish and Game (ADF&G) cabin (ADNR 2013a).

Kenai Area Plan

The Kenai Area Plan covers state lands on the Kenai Peninsula and the west side of Cook Inlet. The plan documents the land management intent for the applicable lands and includes chapters on the goals and management guidelines for public recreation and tourism as well as trails and access. The project area is in regions 7 and Region 12 of the plan area. In Region 12, the project area is in Unit 592, which is designated Habitat and will remain in state ownership. There is no discussion of recreational use of this area. The project would also pass near Augustine Island. The island itself is under an Interagency Land Management Assignment to the University of Alaska for research and is managed for scientific and education purposes. The plan states that any authorized recreational uses of the island should minimize impacts on research opportunities and natural processes on the island. Immediately south of the island, state lands are in Unit 522A. The plan designates this unit as Public Recreation and Tourism and notes that these areas attract recreationists that range throughout the area and may have a high potential for dispersed recreation because of desirable recreation conditions (ADNR 2001).

On the Kenai Peninsula, there are two state park-managed recreation areas. One is a 60-acre state recreation site (Stariski) located five miles north of Anchor Point, and the other is the larger Anchor River State Recreation Area, at the mouth of the Anchor River. Both sites are accessible via the Sterling Highway.

3.5.1.3 Private Land

Land owned by Native corporations and Native allotments are considered to be private property and therefore are not open for public recreational use. Permission and/or permits for access and seasonal recreational use of these lands must be obtained from the landowner.

3.5.2 Regional Recreation

The region around the project site is generally inaccessible by road, except for the Kenai Peninsula area near the east end of the gas pipeline. There is a limited road system that connects Iliamna with Newhalen and supports sport fishing activities and lodges. The few developed public recreation facilities that are present in the area are generally accessed via air or water.

3.5.2.1 Recreation Opportunities

The following subsections describe the main recreation opportunities and activities that occur in the region surrounding the project.

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Sport Fishing

Sport fishing is the primary major recreational activity that occurs in the EIS analysis area. Rivers like the Nushagak, Mulchatna, Newhalen, Gibraltar, Kvichak, and Upper Talarik Creek, as well as Iliamna Lake support recreational fishing for species of salmon, rainbow trout, and other freshwater fish. Sport fishing use is increasing in the area; much public use is guided, with operators flying their clients to a place for the day from nearby lodges or base use out of camps established nearby. Sport fishing is managed by the ADF&G through a permit system, using numerous tools like effort, catch, harvest information, and abundance. Near Iliamna, sport fishing has decreased in the past decades along the Newhalen River. For more information on sport fishing, as well as recreational lodges and guiding operations in the area, see Section 3.6, Commercial and Recreational Fisheries.

Sport Hunting and Trapping

Hunting, primarily for moose, caribou, and bear, is a major recreation activity in the region (Kevin Waring and Associates 2011b). Much of the region is open to hunting, except Lake Clark National Park, Katmai National Park, and McNeil River State Game Sanctuary. However, hunting and trapping are allowed in the Lake Clark National Preserve, Katmai National Preserve, and McNeil River State Game Refuge (ADFG 2018e, NPS 2017g, NPS 2018a). Hunting and trapping are also allowed in the Alagnak Wild River and on certain islands in the Alaska Maritime NWR (NPS 2016a, USFWS 2014a). BLM lands are open to hunting, as are state-owned lands unless otherwise restricted by the ADF&G, which manages hunting in Alaska. Hunting on private property, including on village corporation lands and Native allotments, requires landowner permission.

The NPS and State of Alaska cooperatively manage wildlife resources in the three regional NPS units (Lake Clark, Katmai, Alagnak Wild River), and hunters in these units must follow current state and federal hunting regulations and must have all required licenses and permits (NPS 2018a, NPS 2017g, NPS 2016a). The Lake Clark National Preserve is divided into three authorized hunting guide areas and there are currently two concessioners authorized to guide sport hunters in these areas (NPS 2017g). There are also two concessioners authorized to guide sport hunters at Katmai National Preserve (NPS 2018a). The McNeil River State Game Refuge is open to hunting and trapping of species except brown bears (ADFG 2018e).

As noted in the BLM Bay Proposed RMP/Final EIS, "the BLM-managed portion of the upper Iliamna Lake region has world class recreational values, primary sport fishing and hunting". Commercial guides under permit with the BLM frequent this area (BLM 2007).

The region is in Game Management Units (GMUs) 9 (most of the region) and 15C (Kenai Peninsula). The project area is specifically in GMUs 9B and 15C. The species hunted in GMU 9 include brown/grizzly bear, caribou, Dall sheep, moose, wolf, and wolverine. Species hunted in GMU 15 include black bear, brown/grizzly bear, caribou, Dall sheep, moose, mountain goat, wolf, and wolverine. In these two GMUs, non-resident sport hunters need a licensed hunting guide or hunt with an Alaska resident who is a close relative for brown bear, mountain goat, and Dall sheep.

Hunting seasons for the species available in these two GMUs vary. Table 3.5-1 lists the hunting seasons for each species by GMU.

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Table 3.5-1: General Hunting Season for Game Management Units 9B and 15C

Species	General Hunting Season*	
	GMU 9B	GMU 15C
Black bear	No closed season	No closed season
Brown/Grizzly bear	May 10 to 25 in even years and October 7 to 21 in odd years	September 1 to May 31
Caribou	August 1 to March 31	No open season
Mountain goat	N/A	August 10 to October 15 and November 1 to14
Moose	Resident: September 1 to September 20 Nonresident: September 5 to September 15	August 25 to September 30
Dall sheep	August 10 to September 20	August 1 to August 5, August 10 to September 20
Wolf	August 10 to June 30	August 10 to April 30
Wolverine	September 1 to March 31	September 1 to March 31

Source: ADF&G 2017
*These are general seasons; specific seasons by sex/age/location are not presented here. The dates listed in the table change periodically based on Board of Game decisions.
N/A = not available

Water-Related Recreation (Boating)

Various forms of boating, including canoeing, kayaking, rafting, and power boating, are popular in most recreation areas in the region. River kayaking and rafting opportunities abound in Lake Clark and Katmai national parks. The three Wild Rivers in Lake Clark National Park and Preserve (Chilikadrotna, Mulchatna, and Tlikakila rivers) are popular for rafting (NPS 2016e). The 80-mile Savonoski Loop out of Brooks Camp is a popular canoeing and kayaking route in Katmai National Park and Preserve (NPS 2018a). This park also has several popular rafting waterways. Both whitewater and non-whitewater river boating opportunities are available in both park units.

On Alagnak Wild River, whitewater and non-whitewater boating opportunities are also available. Trips often begin at Nonvianuk or Kukaklek Lakes with several take-outs available along the lower 30 miles of river (NPS 2015a).

Boating occurs on the Mulchatna River all the way to its confluence with the Nushagak River. The Koktuli River is also floated to its confluence with the Mulchatna River, both by individuals and as guided float trips.

River-based boating opportunities vary based on season, amount of rainfall, and temperatures. Generally, river levels are lowest in early spring and increase throughout spring and early summer as spring rains fall and snow melt occurs, with river levels generally peaking in July and then declining into the fall (NPS 2015a).

Due to lack of road access to the region, and because many visitors travel to the area by small plane, boating equipment that can be brought to the region by visitors is limited. Guided trips are available through approved concessioners and CUA operators in the national parks, and via other companies in and around the region.

Lake boating opportunities occur during the ice free season, and are available on several lakes in both Lake Clark and Katmai national parks and preserves. Motorboating opportunities are

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available at Lake Clark and Crescent Lake in Lake Clark National Park and Preserve, and Naknek Lake in Katmai National Park and Preserve (NPS 2017h, NPS 2018a). All three lakes are popular destinations for visitors. In 2017, there were 10 companies authorized to provide boating trips in Lake Clark National Park and Preserve, three companies authorized for kayak tours, one company authorized for paddleboarding, and one company authorized as a water taxi (NPS 2018a). The Lake Camp area at Naknek Lake in Katmai National Park and Preserve is accessible via the road from King Salmon and contains a boat ramp, parking area, picnic area, and restrooms (NPS 2018a). In Katmai National Park and Preserve in 2017, there were 11 companies authorized to provide boating trips, six companies to provide charter boat services, and three companies authorized to provide kayak tours (NPS 2018a).

McNeil State Game Refuge is open to boating (ADFG 2018e).

Powerboating, canoeing, and kayaking opportunities are available in Cook Inlet, and particularly along the inlet edges such as along the Lake Clark National Park and Preserve boundary where there are also bear viewing opportunities.

Boating opportunities are also available at Iliamna Lake, Alaska's largest body of freshwater (Van Lanen 2012), though most use of the lake is for sport fishing. Access is available from Iliamna and Newhalen.

Kayaking and boating opportunities are also available on the east side of Cook Inlet near the terminus of the gas pipeline at the Anchor River State Recreation Area. Tractor-assisted boat launching is available at this location. Such activities primarily occur during the summer months.

Wildlife and Nature Viewing

The region surrounding the project area offers highly valued opportunities for wildlife and nature viewing. The most popular wildlife viewing activity in the region is brown bear viewing, both inland and along Cook Inlet, with the best opportunities provided at food-rich locations, such as major salmon rivers and the Cook Inlet shoreline. Bear viewing is especially popular at Lake Clark and Katmai national parks, and McNeil State Game Refuge and Sanctuary. Popular locations for bear viewing at Lake Clark National Park and Preserve include Chinitna Bay, Crescent Lake, Silver Salmon Creek, Shelter Creek, and Tuxedni Bay (NPS 2017c). Katmai has many food-rich areas where bears tend to congregate, such as Brooks Camp, in the preserve, and along the Cook Inlet coast. Bears can be found in the Katmai backcountry, and can also be found feeding on sedges, clams, and salmon (NPS 2018a).

McNeil State Game Refuge and Sanctuary was designated a wildlife sanctuary in 1967 to protect the world's largest concentration of wild brown bears. McNeil River Falls are located about a mile from the mouth of McNeil River; the falls slow the movement of salmon heading upstream to spawning grounds, causing salmon to congregate. Large numbers of brown bears can be seen at McNeil State Game Refuge and Sanctuary in early July through mid-August (ADFG 2018b).

Notable bird watching opportunities are also available at most recreation areas in the region. Raptors, waterfowl, seabirds, shorebirds, songbirds, and upland birds can be found throughout the region. For instance, 187 species of birds have been documented at Lake Clark National Park and Preserve (NPS 2017d) and millions of sea birds, endemics, and birds from Asia can be found in the Alaska Maritime NWR (USFWS 2016a).

Though bear viewing opportunities are world-class within the region, opportunities for viewing other wildlife species are also available at all of the recreation areas within the region. For instance at McNeil State Game Refuge and Sanctuary, harbor seals, moose, caribou, wolves, wolverines, red foxes, and arctic ground squirrels can also be seen (ADFG 2018b). There are

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also wildlife viewing opportunities at Iliamna Lake, which contains a population of freshwater seals (Van Lanen 2012, ADNR 2013a).

Other nature- and wildlife-related opportunities available in the region include nature photography, beach combing, clam digging, and berrypicking (LPB 2018). Often these activities are combined with activities such as bear viewing, sightseeing, backpacking, hiking, and camping during the summer and fall.

Flightseeing/Sightseeing

Due to the lack of road access in the region and the heavy use of small planes and floatplanes for transportation, there are many opportunities for flightseeing in the region. Flightseeing (i.e., sightseeing by plane) is an effective way to see the broader landscapes of the region and even see wildlife and bird species, particularly in the two national park units. Flightseeing occurs primarily during the summer months from June through September. There were 32 and 39 authorized air taxi CUA holders in 2017 that offered flightseeing opportunities in Lake Clark and Katmai national parks, respectively, with most operators originating out of Anchorage, Homer, King Salmon, Kodiak, and Soldotna (NPS 2018a). Many air taxis also provide flightseeing tours (NPS 2016c).

Camping/Backpacking/Hiking

Due to the relative lack of developed facilities or trails and large expanses of wilderness, backcountry recreation activities such as camping, backpacking, and wilderness hiking are popular in the two national park units. There are also developed camping opportunities at both national parks. Between the two parks, there are very few developed trail opportunities, with less than 5 miles of trail in Katmai National Park, and 6.8 miles of trail in Lake Clark National Park (NPS 2016b, NPS Undated LC). In 2017, there were 29 authorized CUA holders that provided guided hiking or overnight backpacking services in Katmai National Park, and 22 in Lake Clark National Park (NPS 2018c, NPS 2018d).

Primitive camping opportunities are also provided in the Alagnak Wild River (NPS 2015a). Developed, though low impact, camping and hiking opportunities are available in the McNeil State Game Refuge and Sanctuary (ADFG 2018c).

Camping is allowed on most of the Alaska Maritime NWR, though no developed campgrounds exist in the NWR (USFWS 2014a). Camping related to commercial activities is prohibited on BLM lands without written authorization from the BLM. Short-term camping (i.e., less than 14 days in one location) not associated with commercial use is allowed. On state land, access, travel, improvements and structures, and other miscellaneous uses are generally allowed and managed by the Division of Mining, Land, and Water. Camping is also available on the east side of the Cook Inlet near the terminus of the gas pipeline at the Stariski State Recreational Site and Anchor River State Recreation Area, which also offers hiking opportunities.

Due to harsh winter weather conditions in the region, camping, backpacking, and hiking activities generally occur during the summer months, from June through September.

Other Opportunities

Biking on ice using fat tire bikes is a new winter use in Lake Clark National Park and Preserve. There is currently no restriction on bike use in the park (NPS 2016d). Other winter activities include cross-country skiing, snowshoeing, trekking, and riding snowmachines. There is recreational use of Roadhouse Mountain to the northeast of Iliamna, as well as some all-terrain

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vehicle (ATV) use on trails around the Iliamna area, which are used for transportation, subsistence, and recreation.

3.5.2.2 Recreation Facilities

Commercial Lodges

Commercial lodges are the main form of lodging in the region due to the lack of consistent visitation to support hotels and motels. In 2012, there were 38 lodges in the area with active business licenses (Kevin Waring and Associates 2015d). There are clusters of commercial lodges at Port Alsworth, King Salmon, Naknek, Iliamna/Newhalen, Homer, Pedro Bay, and Kokhanok, as well as along the Kvichak, Mulchatna, and Alagnak rivers (ADNR 2013). There are also commercial lodges scattered around the region on private inholdings in Lake Clark and Katmai national parks (NPS 2017f, NPS 2015a). Commercial lodges often also provide guide services for hunting, fishing, and other recreation activities on private property, Native corporation land, and/or public lands. Therefore, commercial lodges provide a home base for many recreationists, as well as a starting point for trips onto public lands. See Section 3.6, Commercial and Recreational Fisheries, for more details on the commercial lodges present in the region.

Public Recreation Facilities

Public recreation facilities in the region include lodges, campgrounds, cabins, a primitive camping area, trails, and visitor centers. The only public lodge facilities within the region are located at Katmai National Park. There are two lodges in the park, Brooks Lodge and Grosvenor Lodge, both operated by a concessioner. In addition to a lodge, Brooks Camp includes a campground for 60 people, a visitor center, ranger station, and an auditorium with daily ranger-led programs. Facilities at Brooks Camp are available from June 1 to September 18. There is also a six-person public use cabin, Fures Cabin, on the Bay of Islands on Naknek Lake in Katmai National Park that is available from June 1 to September 17. There are 5 miles of trail in the national park and one scenic overlook. The Lake Camp area at Naknek Lake in Katmai National Park and Preserve contains a boat ramp, parking area, picnic area, and restrooms (NPS 2018a).

Developed facilities at Lake Clark National Park include a cabin and primitive camping area. The Priest Rock Public Use Cabin is a historic log cabin for six people on the north shore of Lake Clark and is accessible by float plane or boat (NPS 2017i). The Hope Creek Primitive Camping Area is located at Upper Twin Lake near the Proenneke Historic Site and does not provide any services (NPS 2017f). The maintained trails in the park are the Tanalian Trails that begin in Port Alsworth and continue to Tanalian Falls or Tanalian Mountain (NPS 2017e).

McNeil Camp at McNeil State Game Sanctuary provides 14 camp sites, a public use cook cabin for food storage and cooking, restrooms, a wash house, and staff facilities (ADFG 2018c).

The two state park units on the Kenai Peninsula near the terminus of the gas pipeline both include camping and picnicking facilities. There are 13 camp sites and some picnic sites at Stariski State Recreational Site, and 186 campsites total in five separate campgrounds at Anchor River State Recreation Area, along with 20 picnic sites and a boat launch.

There are no developed facilities in the Alagnak Wild River, but the US Fish and Wildlife Service has a visitor center nearby in King Salmon. The Alaska Maritime NWR does not include any recreation facilities in the region other than a visitor center in Homer (USFWS 2014a). There are no developed facilities on BLM lands (unencumbered or selected).

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3.5.2.3 Recreation Access

Overland Access

Road access to or in the public recreation areas in the region is limited to outside of and in Katmai National Park, in the vicinity of Iliamna/Newhalen, and from the Sterling Highway between Soldotna and Homer on the east side of the region. There are unpaved and paved roads between the town of Naknek (located west of the park) and Lake Camp on Naknek Lake in the park. These roads allow access from nearby towns to the boat ramp facility in the park on Naknek Lake. There is also an unpaved road from Brooks Camp to the Valley of Ten Thousand Smokes viewpoint at the Three Forks Overlook (NPS Undated 1). Daily bus tours are provided by the concessioner from Brooks Camp to the overlook when the camp is open (June 1 to September 18)(NPS 2018a).

On the east side of the region, the Sterling Highway provides road access to the Stariski State Recreational Site and Anchor River State Recreation Area on the Kenai Peninsula.

Locally in the project area, skiffs, ATVs, and trucks are the primary modes of local surface transportation around Iliamna Lake (ADNR 2013).

Water-Based Access

Inland of Cook Inlet, water-based access to public recreation areas occurs on major rivers and lakes. Small boats can travel up the Naknek River to Lake Camp in Katmai National Park and boats can travel the Alagnak Wild River as well (Kevin Waring and Associates 2011b; NPS 2015a). Lake Clark and Naknek Lake provide water-based access to portions of Lake Clark and Katmai national parks, respectively. Water-based access can also be provided at Iliamna and Nondalton. In and along the shoreline of Cook Inlet, water-based access is essential to reaching public recreation destinations such as the eastern portions of Lake Clark and Katmai national parks and the Alaska Maritime NWR. Commercial boat operators need to be authorized to operate in the three NPS units and Alaska Maritime NWR (NPS 2018a, USFWS 2014a).

Air-based Access

Air-based travel via small plane is the main form of access to recreation areas in the region, primarily from Anchorage, Homer, Iliamna, King Salmon, Port Alsworth, Kodiak, Dillingham, and Soldotna. Airport facilities located near the project area include Iliamna, Igiugig, Levelock, Big Mountain, Koggiung, Kvichak-Diamond J, Kokhanok, and Pedro Bay (ADNR 2013a). Only certain air-based operators are allowed to operate in the three NPS units, McNeil State Game Refuge and Sanctuary, and Alaska Maritime NWR (NPS 2018a, USFWS 2014a, ADFG 2018f). Different operators can land on different surfaces depending on the landing gear of the plane (e.g., floats/amphibious gear, wheels, skis/wheeled skis) and therefore have various seasons and conditions in which they can operate.

3.5.2.4 Recreation Settings

Apart from a few developed sites previously described, the regional public recreation areas generally provide a primitive, remote recreation setting where solitude is common and there are no lights or sounds from human development. In popular areas (primarily popular bear viewing locations), the few developed sites such as Lake Camp and Brooks Camp, and areas closer to villages/towns, the recreation setting may include views of limited human development and other visitors, though the setting is still primarily remote and primitive.

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3.5.2.5 Regional Recreational Use and Users

Given the lack of easy access and limited, dispersed development in the region, overall recreational use is estimated to be relatively low for all public recreation areas in the region compared to other parts of the state. The Bristol Bay Area Plan notes that southwest Alaska shows among the lowest level of tourism compared to other areas of the state in general, with only 17 percent of visitors to Alaska traveling to southwest Alaska, and only three percent traveling to southwest Alaska as their sole destination, with the majority of these visits to Katmai National Park and Wood-Tikchik State Park (ADNR 2013a). However, there are areas in the region that receive moderate to high use relative to the region. These areas tend to be the more accessible locations with public recreational use facilities such as the national parks and the McNeil State Game Sanctuary, or areas on the Kenai Peninsula that are accessible by road.

Between 2008 and 2017, Katmai National Park and Preserve averaged 36,825 visitors per year. During the same period, Lake Clark National Park and Preserve averaged 13,402 visitors per year. Visitor use at Lake Clark National Park and Preserve has been increasing over the last 10 years to almost 17,000 visitor use days, with the number of visitor use days increasing dramatically for bear viewing, sport fishing, and photography, while participation in other activities has stayed fairly constant (NPS 2018d) Over the same time period, visitor use at Katmai National Park and Preserve has generally fluctuated between 25,000 and 30,000 visitor use days (NPS 2018c). According to monthly visitation data, peak use of these two areas is from June to September. This is when the majority of annual use occurs, especially at Katmai National Park and Preserve, with 97 to 100 percent of the park's visitation occurring during these months. In the last 6 years, about 80 percent or more of visitation to Lake Clark National Park and Preserve has been during the peak season (June to September). The Long Range Interpretive Plan for Katmai National Park and Preserve notes that most of the park's visitors participate in two primary activities: bear viewing and sport fishing; there are virtually no drop-in visitors due to the effort needed to reach the park (NPS 2009a).

The number of bear-viewing visitors at McNeil River Camp was an average of 178 people per year between 2008 and 2017. The number of bear-viewing visitors at McNeil River Camp is capped at 257 visitors per year. In 2017, there were 1,092 user days (i.e., the participation in a recreational activity at a given resource during a 24-hour period by one person) associated with the bear-viewing program at McNeil River Camp in McNeil State Game Refuge and Sanctuary, and another 513 user days reported by guides or the public using the Kamishak River and Chenik Creek areas of the refuge and sanctuary, primarily for fishing and bear viewing (ADFG 2018a). The annual visitation to the Kamishak River and Chenik Lake areas likely varies due to the number of commercial transporter permits issued and used at each of these areas each year. There are no visitation estimates available for the Alagnak Wild River, Alaska Maritime NWR, BLM lands, or state lands/park sites.

Overall, due to the remoteness and lack of easy access and lodging facilities, it is expensive to visit the recreation areas in the region. As stated in the Alaska Maritime NWR Land Protection Plan, "recreational use is limited by the difficult logistics and expense of visiting remote islands. However, it is possible that the demand for visitor services will increase in the future as adventure travel becomes increasingly popular" (USFWS 2011). This may be true for other areas as well.

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3.5.2.6 Recreational Use at Project Components

Mine Site

Recreational use at the mine site consists of some sport hunting and fishing, as well as occasional snowmachine use. Flights taking recreationists to various destinations in the region and the state may also pass over the mine site. Though there is no existing estimate of recreational use at the mine site, given the remoteness of the mine site and relative closeness of Lake Clark National Park and Preserve and other more well-known and accessible fishing and hunting destinations, recreational use at the mine site is likely low.

Alternative 1 Transportation Corridor

Within the transportation corridor there is recreational use of Roadhouse Mountain to the northeast of Iliamna, as well as use of some ATV trails around the Iliamna area for transportation, subsistence, and recreation. There are no visible ATV trails along the access road corridor nearing the mine site or along the access road nearing Amakdedori Port.

There are also recreational use opportunities (primarily fishing) of extremely high quality in the general transportation corridor area, particularly along the Newhalen River and Upper Talarik Creek by the north access road, and in the Gibraltar River and Gibraltar Lake portions of the south access road corridor, which some local lodges advertise as offering guided fishing, hunting, and sightseeing trip options (Haugen, Bush and Rice 2003). Recreational sport hunting and snowmachine use may occur occasionally within the road corridors.

At Iliamna Lake, both motorized and non-motorized boating take place (AELO 2018), both as an activity in itself and as a means of accessing other recreation opportunities, primarily fishing, which is the main recreation opportunity at Iliamna Lake. Snowmachine use occurs on the lake in the winter; however, most of this use is likely for transportation and subsistence and minimally for recreation.

Due to its current inaccessibility and location of nearby high quality recreation opportunities, recreational use of the north and south mine access road corridors, the Kokhanok Airport spur road, and the Iliamna spur road is likely low though there is no existing recreational use estimate for the transportation corridor.

Amakdedori Port

The Amakdedori Port site is located on state lands designated for habitat use by the Kenai Area Plan (ADNR 2001). The Kenai Area Plan does not discuss recreational use, although there may be recreational boating, overflights, hunting, fishing and incidental wildlife viewing near the port site. There is no existing estimate of recreational use at the port site, though there is some boating use on the Cook Inlet. Due to the large size of the inlet and other nearby locations with known fishing, hunting, and wildlife viewing opportunities, there is likely little to no use of the port site itself for recreation.

Alternative 1 Natural Gas Pipeline Corridor

Existing recreational use along the pipeline alignment in Cook Inlet and on the Kenai Peninsula consists of boating on Cook Inlet and recreational use at the state park sites on the Kenai Peninsula. Boating on Cook Inlet is both an activity in itself and a means of accessing other recreation opportunities such as fishing, wildlife viewing, birdwatching, and beachcombing, as well as access to the recreation areas on the west side of the Cook Inlet like the Lake Clark and Katmai national parks and preserves. The Stariski State Recreational Site, located near the

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proposed compressor station, offers camping, picnicking, and hiking opportunities. The Anchor River State Recreation Area offers boating, camping, picnicking, and hiking opportunities. There is no existing estimate of recreational use for the Cook Inlet or either state park unit site.

Alternatives 2 and 3 Transportation Corridor

As stated above, there are also recreational use opportunities along the Newhalen River and at Iliamna Lake, as well as on Iliamna River. Fishing is the primary recreational opportunity in these areas, including guided sport fishing opportunities from lodges in the northern Iliamna Lake area, particularly around Pedro Bay. One lodge in the northern lake area offers guided kayaking trips on Iliamna Lake (AELO 2018). Recreational sport hunting use may also occur in the transportation corridor. There is no existing estimate of recreational use, including Iliamna Lake, though given the presence of ledges and communities around northern Iliamna Lake, there is likely more recreational use in the Alternative 2 and 3 transportation corridors than the Alternative 1 transportation corridor.

Diamond Point Port

The Diamond Point Port site would be located at the junction of Iliamna Bay and Cottonwood Bay. There is known commercial fishing use of this area (ADNR 2001) and likely recreational fishing opportunities as well. There are also opportunities for wildlife viewing in Iliamna Bay as there are large colonies of seabirds at the mouth of the bay as well as brown bears, moose, and shorebirds in the area (ADNR 2001). Therefore, there may also be opportunities for hunting. There is no existing estimate of recreational use at the port site, though given the known fishing and hunting use of Iliamna Bay and Ursus Cove, there may be more recreational opportunities at the Diamond Point Port site than the Amakdedori Port site.

Though there may be opportunities for recreational boating in the bays, there is one concentrated boat traffic effort in Iliamna Bay every year. In early June, around 60 boats make the trek from Homer to Bristol Bay via Iliamna Lake and the Kvichak River. The boats cross the Cook Inlet and head to Williamsport to be transported on the road from Williamsport to Pile Bay (Dischner 2015b). The boats that make this trek are primarily commercial fishing boats, but may include some recreational fishing boats. The boats also make the return trip from Bristol Bay back to Homer at the end of the summer (Dischner 2015a).

Alternatives 2 and 3 Natural Gas Pipeline Corridor

Under Alternatives 2 and 3, the natural gas pipeline would come into Ursus Cove and then cross land north to reach Cottonwood Bay and the Diamond Point Port site. Ursus Cove is a known bear hunting location (H&H Alaskan Outfitters 2018) and both Ursus Cove and Cottonwood Bay are known commercial fishing locations (ADNR 2001). Both Ursus Cove and Cottonwood Bay may also be used for other hunting activities, recreational fishing, and wildlife viewing given the large seabird colonies at the mouth of Iliamna Bay as well as the presence of moose and shorebirds around Iliamna Bay (ADNR 2001). There is no existing estimate of recreational use in Ursus Cove or Iliamna Bay.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Chapter 4, Environmental Consequences, describes the potential impacts on the environmental resources addressed in Chapter 3, Affected Environment, that would occur under the No Action Alternative, the Applicant's Proposed Alternative, and other action alternatives.

Each of the resource sections in Chapter 4 (Section 4.2 through Section 4.26) discusses:

- Direct and indirect impacts characterized by four factors of analysis (see "Types of Effects Considered" and "Impact Characterization [Four Factors]" sections below) of each alternative, for each resource described in Chapter 3, Section 3.2 to Section 3.26.
- Cumulative effects to each resource for each alternative.

A discussion of other resources or topics that are not specifically addressed in Section 4.2 through Section 4.26 is included below in the "Other Resources or Topics" section. Chapter 4 also includes Section 4.27, Spill Risk, which analyzes diesel, concentrate, reagent, and tailings spill scenarios.

In this document, the terms "effect" and "impact" have the same meaning and are used interchangeably.

4.1.1 Impact Characterization (Four Factors)

Adverse and beneficial effects of the project were evaluated and described for each of the resources. Each resource section provides context for analyzing impacts by considering them generally in relation to four dimensions:

Magnitude: The intensity of the impact.

Duration: How long the impact would be expected to occur or last.

Geographic extent: Where the impact would be expected to occur.

Potential: How likely the impact is to occur.

Not every resource considers every dimension. The level of quantified or qualified information presented is appropriate to the context of the resource. In each of the resource subsections, the methods applied for analysis are described.

Project component values, such as road lengths and pad acreage, are approximations based on best available data. Due to differences in data processing systems (e.g., Geographic Information System [GIS]) and methodologies (e.g., number rounding), the values presented in the Environmental Impact Statement (EIS) may differ slightly from values presented in other project-related documents, such as permit drawings. These differences have been reviewed, and were determined to be unimportant to the analysis, as well as to the overall permitting process.

See Section 3.1, Introduction to Affected Environment, for a description of project components and project area terms.

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4.1.2 Time Periods (Phases)

Impacts on some resources may vary depending on the phase of the proposed project. Accordingly, the impact assessment was divided into three time periods:

Construction phase: The period of construction of mine infrastructure prior to operations.

Operations phase: The 20-year period of mine operations.

Closure or post-closure phase: Any activity occurring after mine operations cease.

Division of analysis into these three time periods works well for some resources, but is less relevant for others, such as socioeconomics or recreation.

4.1.3 Types of Effects Considered

The National Environmental Policy Act (NEPA) requires three types of impacts to be evaluated. These include direct, indirect, and cumulative impacts as defined below.

Direct Effects: Effects caused by the action and occurring at the same time and place (40 Code of Federal Regulations [CFR] 1508.8). Limited to the proposed action and alternatives.

Indirect Effects: Effects that are "caused by an action and are later in time or farther removed, but are still reasonably likely. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8). Indirect effects are caused by the project, but do not occur at the same time or place as the direct effects. Limited to the proposed action and alternatives.

Cumulative Effects: Additive or interactive effects that would result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions (RFFAs) regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). This includes incremental impacts of the proposed action and alternatives when added to other past, present, and RFFAs. Interactive effects may be either greater or less than the sum of the individual effects; therefore, the action's contribution to the cumulative case could increase or decrease the net effects. Assessing the cumulative impacts from multiple projects/activities requires considering the impacts of their combined potential area of effects and associated actions. It also requires a logical nexus with the potential effects of the proposed action.

Past actions include activities that may have been initiated in the past, but could also involve present operations such as infrastructure development and non-mining related actions. They may have lingering effects in degrading the environment or may influence trends in the physical, biological, or social environment.

Present actions include mining projects and related activities that may have just come online or are currently underway and are causing impacts. They may also include other non-mining related projects, such as transportation, oil and gas development, or community development that are currently in progress.

For this analysis, RFFAs are existing plans, permit applications, and fiscal appropriations that are external to the proposed action, and likely (or reasonably certain) to occur. See Table 4.1-1 for a comprehensive list of potential RFFAs that were examined for this project. Actions are considered reasonably foreseeable if they are proximate to the project area and are anticipated to enter the permitting process in the next 5 years, are identified in planning documents as scheduled for development, or if significant resources have been committed to the proposed

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action. Proximity is based on natural geographic boundaries of potentially affected resources and the period of time that the project's impacts would persist.

Direct, indirect, and cumulative impacts are analyzed in each of the resource sections in Chapter 4. Cumulative effects are described in a separate subsection in each resource section for the proposed action and, if applicable, other action alternatives, based on applicable RFFAs listed in Table 4.1-1 that were evaluated as being "reasonably foreseeable."

4.1.3.1 Past and Present Actions

Past and present actions that have either lingering effects or influence trends in the environment with a nexus to the project are relatively limited, and are described below.

Commercial and Subsistence Harvest of Fish and Wildlife. Past and present harvest of fish and wildlife for commercial and subsistence purposes put some degree of pressure on those resources. While commercial fishing in the Bristol Watershed started in the 1880s, the period from the turn of that century through the adoption of Alaska Limited Entry Act by the State of Alaska in 1972, saw incremental changes in both fishing technology and the understanding of the salmon fishery resource. It was likely that there were historic instances of overharvest, with implications for the overall salmon resource. Similarly, local residents have historically harvested fish and wildlife in pursuit of traditional subsistence activities. However, fish and wildlife resources are managed by the Alaska Department of Fish and Game (ADF&G) and federal land managers to maintain sustainable populations, and there are no long-term adverse effects or trends affecting the resource.

Commercial Recreation and Tourism. Southwest Alaska, including the Bristol Bay region and the area around the project, is renowned for sport fishing, hunting, boating, and wildlife viewing opportunities, and there is a long history of these activities in area. Similar to commercial fishing, the sport harvest of fish and game is managed by ADF&G and federal land managers to maintain sustainable populations, and there are no long-term adverse effects or trends affecting the resource. These activities take place primarily from late spring to early fall, and there may be small plane, helicopter, and boat traffic associated with access that can contribute to the disturbance of wildlife, as well as recreation and subsistence activity experience.

Mining Exploration Activities. There are a number of mineral claims and resources in the Bristol Bay watershed that have been subject to mineral exploration activities. Exploration activities have been intermittent, depending on the specific claim or resources, and there has been small plane, helicopter, and boat traffic associated with exploration that can contribute to the disturbance of wildlife, as well as recreation and subsistence activity experience. In the immediate area of the project, there has been no mineral production activity that has had lingering adverse effects on the environment.

Williamsport-Pile Bay Road. Construction of the Williamsport-Pile Bay Road in the 1930s provided access between Cook Inlet and the Bristol Bay via a 15.5 mile road to Iliamna Lake and down the Kvichak River. The road allows transportation of fishing vessels bound for Bristol Bay commercial fisheries, as well as some goods and supplies for lake and river communities, contributing to road and lake traffic during the summer season. The road is owned and maintained by the State of Alaska.

4.1.3.2 Reasonably Foreseeable Future Actions Considered

The following categories of reasonably foreseeable future activities were considered for the cumulative effects analysis:

- Mineral Exploration and Mining

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- Oil and Gas Exploration and Development
- Transportation and Infrastructure
- Energy and Utilities
- Commercial Fishing
- Subsistence
- Tourism, Recreation, Hunting and Fishing
- Scientific Research and Surveys
- Contaminated Sites and Industrial Pollutants

With regard to mineral and oil and gas resources, a distinction was made between exploration and development activities. Many of the mineral projects assessed are on lands open to mineral entry and have been the subject of exploration activities for over 30 years, but have not been developed. Similarly, oil and gas lease sales have been held in waters of Cook Inlet for over 50 years, but not all exploration activities have led to oil and gas development. The decision to take resources from exploration to development depends on many factors.

Activities associated with commercial and subsistence harvest, viewing, and scientific study of fish and wildlife have the potential to contribute to cumulative effects of developing the project. Effects can include mortality and injury on an individual and population level, and disturbance and changes in distribution and migration, which can affect availability to various users.

Events such as large oil spills, chronic pollution, and historic contaminated sites can contribute to cumulative effects in several ways. Effects can include mortality and injury to fish on an individual and population level, avoidance and changes in distribution and migration, and contamination with regard to human consumption by subsistence, commercial, and recreational harvesters.

Finally, climate change and other changes in the natural environment can contribute to cumulative effects through past, present, and RFFAs. The way in which this EIS addresses climate change is discussed in Section 3.1, Introduction to Affected Environment.

The following parameters are used to identify potential reasonably foreseeable future activities for the cumulative effects analysis:

- Geographic timeframe. Typically only projects with dedicated funding, currently in or scheduled to undergo federal, state, or local permitting, and with a medium to high probability of occurring, are included. However, the USACE has determined that expansion of the Pebble Project to develop 55 percent of its reserves over a 78 year period, as outlined in the Wardrop 2011 Preliminary Assessment Technical Report, will be analyzed under the cumulative effects analysis (see Table 4.1-1 for further discussion). Therefore, other reasonably foreseeable future activities that may occur in the 78 year time period will also be considered. However, in order to be considered reasonably foreseeable within this time frame, potential RFFAs need to meet the subsequent criteria.
- Projects located on lands open to mineral entry or development. When lands are classified as open to mineral development, it facilitates obtaining permits and other approvals for exploration and development activities. However, in order to be considered reasonably foreseeable for development within this time frame, potential reasonably foreseeable future actions need to meet the subsequent criteria.
- Projects with dedicated funding, currently in the permitting process, undergoing a state or federal environmental assessment, or listed in a planning document with a specific time frame for development. Projects may be considered reasonably

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foreseeable for development if they have dedicated funding and a schedule for development; have federal, state, or local permit applications under review or approved; are currently being evaluated through a federal NEPA compliance effort of State Best Interest Finding Effort; or are identified in a planning document (such as scheduled lease sales) with a specific project description and time frame for development. However, potential projects on land open to mineral entry or classified to allow mining are not considered reasonably foreseeable without meeting additional criteria described in this section.

- Information to support the feasibility of development has been documented. The project has conducted extensive exploratory drilling and analysis in order to compile information on mineral reserves in terms of measured, indicated, and inferred resources, along with characterization of the grades of ore in the deposit (Wardrop 2011). Estimated costs associated with developing the deposit were also prepared for three development scenarios, although that information was based on a different project configuration and is several years old. The potential feasibility for development of other projects is evaluated based on the published information on result of drilling and delineation of measured, indicated, inferred, and grade of reserves. To the extent they are available, estimated costs associated with development are also assessed.
- Proximity to the project infrastructure and factors affecting co-use by other parties. The question of whether development of the project would facilitate development of other nearby mineral deposits depends in part on proximity to the project and ability to use project infrastructure. Construction of access to project transportation infrastructure is expensive and also depends on land ownership access and sensitivity of environmental resources along the access route. Project infrastructure would be privately funded and co-use of mining and port facilities dependent on permission from Pebble Limited Partnership (PLP). While the access road would be privately funded on State land, the State of Alaska would likely require allowing access to other mineral deposit owners if an agreement could be reached with PLP regarding operation and maintenance costs, based on the precedent set in state permit conditions for granting Pogo Mine Access (S. Buckley, personal communication 2018).
- Geographic nexus with the direct and indirect effects of project development on specific resources evaluated in the EIS. Along with the factors previously described, there would need to be interactive and synergistic effects of an RFFA on resources directly and indirectly affected by development of the project in a specific geographic range that varies by resource.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Pebble Project – develop 55% of delineated resources over a 78-year period	Expansion of the Pebble Project to develop 55% of its reserves over a 78-year period, as outlined in the Wardrop 2011 Preliminary Assessment Technical Report. It would likely use the same transportation facilities, power plant, and natural gas pipeline facilities, but would need additional tailing storage and possibly processing facilities. It is not part of the proposed action and would require additional permits and separate NEPA compliance.	Potential project expansion. Expansion identified as option in Wardrop 2011 report and analyzed in the Environmental Protection Agency (EPA) Watershed Assessment (EPA 2014) on the basis of lands being classified as open for mineral exploration and development and assuming access to Pebble Project infrastructure.	Wardrop 2011	Yes - for continued exploration and development. The Pebble Project has conducted extensive exploratory drilling and analysis in order to compile a feasibility assessment level on information on mineral reserves in terms of measured, indicated, and inferred resources, along with characterization of the grades component ore in the deposit (Wardrop 2011). If permitted, the project processing and transportation infrastructure would be in place, and development of 55% of the Pebble Project resources is considered reasonably foreseeable in the 78-year time frame outlined in Wardrop 2011.
Pebble South	A 142 square kilometer (km^2) porphyry copper deposit/claim ~15 kilometers (km) southwest of Pebble Deposit. Prospect is part of the PLP/Northern Dynasty Minerals (NDM) Limited (Ltd.) claim block and includes the 38 and 308 zone prospects. Primary additional development would include the mine pit, mineral processing, tailings storage and waste rock areas, and a new transportation corridor to existing Pebble Project transportation system, power supply, and natural gas infrastructure.	Potential project expansion. Expansion identified as option in Wardrop 2011 report and analyzed in for cumulative effects in the EPA Watershed Assessment based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable within the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and utilize the Pebble Project transportation system.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Big Chunk South	A 119 km² porphyry copper deposit/claim ~20 km north of the Pebble project area. The claim block is entirely in the Chulitna River drainage, which flows into Lake Clark National Park and Preserve. Potential development includes Tailings Storage Facilities (TSFs), mill, and other facilities for mining. Multiple build-out scenarios.	Undergone some airborne surveys and limited drilling to delineate the resource. Claims transferred to NDM Ltd. in 2014. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and use the Pebble Project transportation system.
Big Chunk North	Porphyry copper deposit ~34 km northwest of the Pebble project area. The claim block straddles the drainage divide between the Nushagak and Kvichak River watersheds. Potential development would include TSFs, mill, and other facilities for mining.	Claims transferred to NDM Ltd. in 2014. Analyzed for cumulative effects in the EPA Watershed Assessment based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and utilize the Pebble Project transportation system.
Fog Lake	Gold, copper in volcanic rocks	As of 2008, exploration	EPA 2014	Yes - for further exploration.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	located southeast of the Pebble Prospect and south of Iliamna Lake.	was occurring but drilling had not been initiated. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.		No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Given the proximity to the proposed Pebble Project transportation corridor, if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and use the Pebble Project transportation system if an arrangement could be reached with PLP.
Groundhog	317 km² porphyry copper claim ~6 km from the Pebble project area.	Exploration drilling underway. Hard rock exploration permit issued by Alaska Department of Natural Resources (ADNR) in 2017. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame.
Humble	Also known as Kemuk, a 280 km² gold and porphyry copper deposit/claim considered geologically similar to Pebble Deposit. Deposit is ~135 km	Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit	EPA 2014 Millrock Resources, Inc. 2018	No - for further exploration. No - for development. This project has been removed from the Millrock Resources

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	southwest of the Pebble Project area. Potential development includes TSFs, mill and other facilities for mining.	and assuming access to Pebble Project infrastructure.		website and no longer appears to be active. It is not considered reasonably foreseeable in the 78-year time frame.
Iliamna	183 km² porphyry copper claim block ~90 km southwest of the Pebble project area in the Kvichak River watershed.	Millrock Resources began exploration in 2012. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014 Bristol Exploration Co., Inc. 2011	No - for further exploration. No - for development. This project has been removed from the Millrock Resources and TNR Gold Corp websites and no longer appears to be active. It is not considered reasonably foreseeable in the 78-year time frame.
Kamishak	Porphyry copper in a breccia pipe roughly 80 km southeast of the Pebble Project area.	There were 18 holes drilled between 1990 and 1991, and an additional 5 holes were drilled in 2006. As of 2008, reserves had not been identified.	AERI 2008	No - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame
Shotgun	Quartz-feldspar porphyry deposit with gold as the primary interest, located roughly 160 km northwest of the Pebble Project, 90% owned by TNR Gold Corporation. If developed, Shotgun could access tide water via barge transport from Dillingham (150 km away) up the Nushagak River to Koliganek, New Stuyahok, or Ekwok (80, 110, and 120 km away, respectively). It would not be practicable to connect to Pebble	There have been extensive drilling programs since the late 1980s through 2012, and as of 2013, inferred mineral resources were estimated at 20.7 million tons, with a grade of 1.06 gram of gold per ton, with a cut-off grade of 0.50 gram per ton of gold.	TNR Gold Corp. 2011, 2012, 2018 ADNR 2012	Yes - for further exploration. Yes - for development. Mineral exploration has delineated inferred mineral resources, but it is unclear to what extent they are measured or indicated. The prospect is not currently subject to development permitting or in a planning document. However, given the extent of delineated resources, for the purposes of this analysis, the

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Project infrastructure.			Shotgun prospect is considered reasonably foreseeable in the 78-year time frame.
Johnson Tract	Gold rich poly-metallic deposit located roughly 80 miles east of the Pebble Project, owned by Cook Inlet Region, Incorporation (CIRI) and subject to an exploration agreement with Constantine Metals Resources Ltd. CIRI has access rights through Lake Clark National Park and Preserve to a port site at Tuxedni Bay on Cook Inlet.	Discovered by Anaconda in 1982, 90 holes have been drilled but no exploration has occurred in more than 20 years. Constantine Metals has agreed to resume exploration and take the project to the point of evaluating feasibility of developing the mine.		Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame.
Copper Joe	Porphyry copper located significantly north of the Pebble Project, in close proximity to the Whistler Deposit.	Kiska Metals / First Quantum Minerals Ltd. conducted exploration work in 2016.		Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. In addition, there is no geographic nexus with the Pebble Project.
Proposed Mining and Mineral Projects in Southwestern and Southcentral Alaska				
Donlin Gold	Open pit hard rock mine in the Kuskokwim River watershed, 277 miles west of Anchorage. The proposed mine would have a total footprint of approximately 16,300 acres. Includes a 312-mile long pipeline to carry natural gas from Cook Inlet to the mine site.	Final EIS issued in April 2018. USACE and Bureau of Land Management (BLM) have issued a Joint Record of Decision (JROD) granting major federal permits.	USACE 2018	Yes – for further exploration. Yes - for development. Final EIS on the project has been completed and the JROD was signed in August 2018. The project is considered reasonably foreseeable in the 78-year time frame.
Diamond Point Rock Quarry	Proposed granite quarry project near the convergence of Cottonwood and	An application for development of a rock	USACE 2010	Yes – for development. Reserves of quarry rock have been

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Iliamna bays on the west side of Cook Inlet. Project involves modification of shoreline to construct a staging area and dock facility. Dredging would be required in Iliamna Bay	quarry at Diamond Point was submitted to the USACE in 2009. The site is currently undeveloped. Proposed coastal infrastructure includes constructing a 20 acre fill for staging equipment, stockpiling aggregate, and barge loading facilities.		estimated and a permit application was filed for development. The project is considered reasonably foreseeable in the 78-year time frame.
Potential Oil and Gas Exploration and Development				
Project/Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Alaska Stand Alone Pipeline Project	Proposed 737-mile natural gas pipeline from Prudhoe Bay to Point McKenzie, Alaska. The project involves the construction of a liquefied matural gas (LNG) extraction plant on the western side of Cook Inlet at Point McKenzie.	A Final EIS was completed in 2018. A ROD is expected soon.	Alaska Stand Alone Pipeline (ASAP) 2018	Yes – for development. The project is considered reasonably foreseeable in the 78-year time frame. However, it would not be built if the Alaska LNG project is funded for development.
Alaska Liquefied Natural Gas Project (Alaska LNG)	Proposed 800-mile natural gas line from Prudhoe Bay to Nikiski, where the gas will be liquefied and shipped to foreign markets. Involves a natural gas pipeline crossing Cook Inlet and will result in increased marine traffic in Cook Inlet.	Federal Regulatory Energy Commission (FERC) application filed. A Draft EIS is under development for release in 2019; a Final EIS would be released in 2020. Construction would begin after 2020. The project does not have funding to proceed.	Alaska LNG 2018	Yes – for development. While funding for development is not currently available, the project is considered reasonably foreseeable in the 78-year time frame.
Drift River Oil Pipeline Transportation Project	Proposes to repurpose an existing natural gas pipeline crossing Cook Inlet to an oil pipeline. Involves the installation of 9 miles of new cross-inlet pipeline between Beluga and	Project is in the permitting phase. Decommissioning of the Drift River Terminal was initiated in 2017.	KDLL, Public Radio for Central Kenai, 2018	Yes – for development. The project is in the permitting phase and scheduled for execution. It is considered reasonably foreseeable in the 78-year time

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Nikiski.			frame.
Cook Inlet Oil and Gas Lease Sales	In 2015, the Alaska Oil and Gas Association estimated there were 600 million barrels of recoverable oil and 19 trillion cubic feet of recoverable natural gas in Cook Inlet. There are a total of 16 platforms with 8 operators as of 2016. Exploration activities continue with future development anticipated. The Bureau of Ocean and Energy Management is responsible for leasing oil and gas in federal waters, and ADNR has the same responsibility for state waters.	In 2017, Federal Lease 244 resulted in bids for 14 tracts in Cook Inlet. Federal Lease Sale 258 for Cook Inlet is scheduled for 2021. ADNR released a preliminary Best Interest Finding on the Cook Inlet Area-wide Oil and Gas Lease Sale in June 2018. Oil and gas exploration and development activities in Cook Inlet are ongoing and likely to continue.	BOEM 2018	Yes – for exploration. Yes – for development.
Hydrocarbon Exploration Licensing and Leasing Program	ADNR, Lake and Peninsula Borough (LPB), Bristol Bay Borough, and Aleutians East Borough have signed a Memorandum of Understanding (MOU) in support of oil and gas lease sales and licensing on state land in the analysis area. Similar MOUs exist between ADNR and the Aleut Regional Native Corporation and Bristol Bay Native Corporation.	Exploration underway.	Bristol Bay Area Plan for State Lands 2015	Yes – for exploration. No – for development. Exploration activities are underway, but given the lack of previous oil and development in the region, development and production are not reasonably foreseeable in the 78-year time frame.
Transportation and Infrastructure				
LPB Transportation Projects	Several road improvement and new transportation corridors currently being studied. Studies include the Williamsport-Pile Bay road upgrade, Nondalton–Iliamna River Road Corridor and Bridge, Kaskanak Road /Cook Inlet to Bristol Bay (Igiugig).	Ongoing.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
LPB Community Development and Capital Improvement Projects	Village infrastructure development projects including power plant upgrades, sewer and water improvement projects, transmission upgrades and energy efficiency initiatives.	Ongoing. List of projects from LPB 2017 capital improvement projects.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.
Rural Alaska Village Grant Program	US Department of Agriculture Rural Development program to improve rural sanitization. Grant money used to improve water and sanitation services.	Ongoing	USDA Rural Development 2018	Yes – for development These projects are considered small-scale community improvements.
Energy and Utilities				
Lake and Peninsula Borough and other regional Renewable Energy Initiatives	LPB and other communities and electrical generation cooperatives are studying renewable energy projects to help combat high fuel costs. Studies include wind, hydroelectric, river, and tidal energy alternatives. Igiugig has a permit for a removable in-river power generation facility in the Kvichak River.	Studies ongoing. Igiugig has been installing its pontoon-mounted power generator annually in the Kvichak River. The Tazimina Run of River Hydro Project upgrade has been completed, 12 miles northeast of the village of Iliamna The village of Kokhanok has received funding to refurbish its existing wind diesel power plant.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.
Nushagak Electric Cooperative Village Intertie Project	The Nuyakuk Run of River Hydro Project would connect the communities of Dillingham, Levelok, New Stuyahok, Koliganek, Aleknagik, and Ekwok with power and fiber optics with operation projected for 2024.	Nushagak Cooperative has submitted a preliminary permit application to FERC for their hydro project on the Nuyakuk River in Wood Tikchik State Park. Pedro Bay is pursuing permitting for the Knutson	US Department of Energy FERC 2018 (83 FR 15826)	Yes - for development. This project is considered reasonably foreseeable in the 78-year time frame.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
		Creek Run of River Hydroelectric Project.		
Commercial Fishing				
Bristol Bay - Nushagak and Naknek/Kvichak State Management Districts - Salmon Lower Cook Inlet Management Area - Salmon and Herring	Continued stock assessment and allocation decisions under existing management plans.	Ongoing. Anticipate a continuation of commercial fishing in the analysis area.	ADF&G Commercial Fishing Management Reports 2018	These actions will occur in response to annual stock assessments and direction from management plans.
Subsistence Activities				
Villages of Iliamna, Newhalen, Pedro Bay, Port Alsworth, Nondalton, Igiugig, Kokhanok, Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, Aleknagik, Clarks Point, Manokotak, Dillingham, Ninilchik, and Seldovia	Past, present, and foreseeable subsistence activities are described in Section 3.9, Subsistence.	Ongoing. Anticipate a continuation of subsistence practices within the analysis area.	See Section 3.9, Subsistence.	Subsistence harvest of fish, wildlife, and plants will continue for the foreseeable future.
Tourism, Recreation, Hunting and Fishing				
National Parks and Preserves Wildlife Refuges State of Alaska Special Management Areas Alaska Native	Hiking, camping, wildlife viewing and photography. Sport fishing is the primary recreational activity that occurs in the EIS analysis area. Hunting, primarily for moose, caribou, and bear, is a major recreation activity in the region.	Activities are expected to continue in the EIS analysis area.		Tourism, recreation, hunting, and fishing will continue for the foreseeable future.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Corporation Lands				
Industrial Pollutants and Contaminated Sites				
Communities in project area	Identified sites with low levels of contamination have been identified in many Alaskan communities. Communities with site entries in the immediate vicinity of the project include Nondalton, Iliamna, Pedro Bay, Newhalen, and New Stuyahok. Many of the sites are associated with fuel storage tanks/power generation	Many of the sites in the Alaska Department of Environmental Conservation database have been cleaned up. The primary potential nexus with activities proposed by the Pebble Project would be in communities where Pebble proposes construction and operations support activities.	ADEC 2018	There is a potential for interaction with contaminated sites in Iliamna.
Scientific Surveys and Research				
Federal, state, institutional, and private surveys and research	Scientific surveys and research conducted by government, institutional, and private parties have the potential to disturb wildlife, as well as interfere with subsistence and recreational activities and experience. Activities conducted by aircraft typically have created the most potential for conflict.	While some agencies and organizations conduct annual surveys, others are difficult to forecast.		There is a potential to disturb wildlife, and for interaction with subsistence and recreational activities and experience.

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4.1.4 Issues Selected for Analysis

The US Army Corps of Engineers (USACE) and cooperating agencies selected substantive impact topics for further analysis, and eliminated others from evaluation. Based on scoping comments, issues were selected for analysis, and are organized by social, physical, or biological environment.

These issues are briefly described in this section and documented as Statements of Concern in the Scoping Report (Appendix A). Comments indicated that the EIS should analyze impacts on:

Social Resources:

- Socioeconomics
- Subsistence
- Traditional way of life
- Archaeological and cultural resources
- Land ownership, management, and use
- Transportation and navigation
- Recreation
- Environmental justice
- Public health and safety
- Visual resources
- Wilderness characteristics
- Food and fiber

Physical Resources:

- Air quality
- Geology and seismic activity
- Surface and groundwater hydrology impacts
- Noise impacts
- Hazardous materials stored and transported to and from the mine site
- Natural gas supply and pipeline safety
- Tailings dam
- Water quality and quantity

Biological Resources:

- Vegetation and ecosystems
- Fish and aquatic resources
- Wetlands and special aquatic sites
- Wildlife, birds, and mammals
- ESA-listed threatened and endangered species

Other Concerns:

- Climate change
- Invasive species
- Fuel spill risks and releases

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4.1.5 Other Resources or Topics

This section provides a summary of analysis of other resources or topics that are not addressed specifically in Section 4.2 through Section 4.27.

4.1.5.1 Conservation (33 CFR 320.4[a], [m], [n])

Conservation is a broadly defined concept that typically includes the wise and efficient use, management, and protection of a natural resource; avoidance of wasteful or unnecessary use of the resource; and sustainability of the resource for future or alternate use. The conservation aspects of a large mineral resource extraction project are multi-faceted and complex. They involve the efficient extraction and use of copper, gold, and molybdenum minerals, temporary and permanent losses or gains in other affected resources, and a variable duration of impacts on those resources.

Overall, the project will result in adverse short-term impacts on natural resource conservation, and in variable (generally adverse to neutral) long-term effects on natural resource conservation; including mineral resources, fish and wildlife, water supply, wetlands, and energy. Supporting discussions regarding impacts on the conservation of each of these resources are provided in other appropriate sections of this EIS. Project-related impacts on the conservation of each of these resources will vary in intensity and duration; many of the effects will be temporary.

4.1.5.2 Energy Needs (33 CFR 320.4[n])

Energy conservation and development are major national objectives. The project is not an energy production facility, but will have effects on energy needs. There is no existing power infrastructure in the project vicinity. Due to the remote location and lack of current infrastructure, the project would be required to provide basic infrastructure in addition to support facilities typically associated with mining operations. The project will create new base load electric demand for ore extraction and processing. The peak electrical load for the project will be approximately 270 megawatts (MW). Project energy requirements represent additional base and peak load electrical demand. Various mine load centers would be serviced by a 69 kilovolt distribution system using a gas-insulated switchgear system located at the power plant. Waste heat from the power plant would be used to heat buildings and supply process heating to the water treatment plant.

Natural gas sourced through the existing natural gas supply infrastructure will be the primary energy source for the project. Natural gas pipeline infrastructure would include a compressor station on the Kenai Peninsula side, and a second compressor station located at a Cook Inlet port site. The port site would include two 2 MW natural gas power generators with an emergency diesel generator. Natural gas would be fed to the port site power station to be used for heating. A lake ferry would include generator engines. The mooring system design would allow engines to be turned off while parked.

4.1.5.3 Mineral Needs

Society has demands and uses for molybdenum, copper, and gold, and for the mining of these resources. PLP's stated purpose for the project is to provide for increased domestic copper, gold, and molybdenum production to meet world demand. PLP presented information demonstrating that these minerals are important precious metal used worldwide for electronics, jewelry, currency/bullion, and medical purposes. Direct mining products include copper concentrates, molybdenum concentrate, and gravity-recovered gold. The project will ultimately result in production of molybdenum, copper, and gold. These metals are highly conductive to

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electricity and are used in electrical wiring in some high-energy applications, circuitry, and other uses; they are more efficient than other metals for these applications.

The project represents a needed exploitation and use of these metals, but also represents an irretrievable and irreversible commitment of the use of copper, gold, and molybdenum ore resources. The project will result in a short-term, beneficial effect on mineral needs.

4.1.5.4 General Environmental Concerns (33 CFR 320.4[a][1] and 33 CFR 320.4[p])

During the formal scoping period, many issue-specific comments were received from the public as well as local, state, and federal agencies. Concerns addressed under "general environmental concerns" include those not addressed elsewhere. The USACE has identified climate change and traditional ecological knowledge (TEK) as matters of general environmental concern not addressed in a specific resource section. Discussion of both of these topics is integrated into the descriptions in Chapter 3, and the analysis in Chapter 4; see Section 3.1, Introduction to Affected Environment, for information on how these topics were discussed and analyzed.

[Provide summary of TEK and climate change analysis, as applicable, after completion of Chapters 3 and 4].

4.1.6 Unavoidable Adverse Effects

The Council on Environmental Quality (CE!Q) guidelines require agencies to evaluate "any adverse environmental effects which cannot be avoided should the proposal be implemented" (40 CFR 1502.16). Unavoidable adverse effects are those remaining after the project has complied with applicable stipulations and mitigation measures. A detailed discussion of beneficial and adverse effects is presented for each resource in Section 4.2 through Section 4.26. Unavoidable adverse impacts to resources in the EIS analysis area are described below.

4.1.7 Irreversible and Irretrievable Commitment of Resources

CEQ guidelines require an evaluation of "any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). A commitment of resources is irreversible when the impacts of the proposed action or alternatives would limit the future options for use of the resource. This applies primarily to non-renewable resources or to processes or resources that are renewable over long periods of time. Irretrievable commitments apply to loss of production or use of renewable resources. These opportunities are foregone for the period of the proposed action, during which the resource cannot be used. These decisions are reversible, but the utilization opportunities foregone are irretrievable. Irreversible and irretrievable commitments of resources for the alternatives analyzed in this EIS include:

- Ground disturbance, particularly due to project construction and operations, would cause irreversible impacts including land to be permanently altered, soils and bedrock to be permanently displaced, vegetation to be permanently removed, and wetlands to be permanently altered or filled. Any inadvertent effects to cultural resources or historic property would also result in an irreversible commitment of resources.
- Incidental or induced mortality of fish and wildlife resulting from project construction and operations, as well as any reduction in habitat value, could result in localized irretrievable commitment of these resources during the life of the project. Subsistence harvesting and recreational activity in areas occupied by facilities would not be possible during the life of the project, resulting in an irretrievable commitment of related resources.

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- Funds and labor would be irretrievably committed for project permitting and development.
- Consumption of renewable and non-renewable resources would be required for infrastructure development, including metals, aggregate, cement, wood, and other materials.
- Non-renewable resources (e.g., gasoline, diesel, natural gas, and electrical power generated from these fuels) would be irreversibly committed for project construction, operations, and closure. Fuels would be required to operate aircraft, motor vehicles, barges, vessels, machinery, and mining equipment.
- Water would be irretrievably committed for milling and processing.

4.1.8 Financial Assurance and Bonding

The State of Alaska will require financial assurance to ensure completion of reclamation and closure activities, including long-term post-closure management requirements, and for management of wastes to prevent water pollution.

PLP would be required to fully bond the project upfront, and would meet financial assurance obligations as the trust is being funded to the amount approved by the Alaska Department of Environmental Conservation and Alaska Department of Natural Resources (ADNR) (e.g., through a letter of credit or surety bond).

Prior to commencing construction, the PLP would develop and submit for approval a Project Reclamation and Closure Plan. PLP would also have associated financial assurance mechanisms in place. The Reclamation and Closure Plan and financial assurance obligations would be updated on a 5-year cycle in accordance with regulatory requirements to address any changes in closure and post-closure requirements and cost obligations.

PLP would develop a detailed reclamation and closure cost model to address all costs required for both the physical closure of the project and the funding of long-term post closure monitoring, water treatment, and site maintenance. The estimate would include the costs of closure planning and design, and mobilization of third-party equipment to site; detailed estimates of equipment and labor requirements for physical closure; capital, sustaining capital, and operating costs for water treatment and other long-term post-closure operations; and appropriate indirect costs and contingencies developed following ADNR guidance.

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4.5 RECREATION

For the purposes of this section, the region around the project site is defined as the area from Lake Clark National Park and Preserve south to Katmai National Park and Preserve, and from the Nushagak River east to the western Kenai Peninsula. See Figure 3.2-1 for generalized land status. Potential impacts include:

- Adverse effects to recreation opportunities and experiences for recreationists participating in hunting, fishing, wildlife viewing, and boating activities
- Displacement of recreationists participating in hunting, fishing, wildlife viewing, boating activities, and snowmachine use
- Adverse effects to recreation experiences for visitors flying over the project area
- Changes to recreational settings.

4.5.1 No Action Alternative

Under the No Action Alternative, the Pebble Project would not be developed. No construction, operation, or closure activities would occur at the mine site or Amakdedori Port, or in the transportation corridor or the natural gas pipeline corridor. Therefore, no future direct or indirect effects on recreation resources would be expected. Exploration activities currently associated with the project may continue; however, helicopter traffic related to these exploration activities may decrease. Although recreational use at the mine site is minimal, such a decrease in helicopter traffic would be noticeable to recreation users of the Newhalen River and the northern shoreline of Iliamna Lake near Iliamna. The decrease in noise could benefit the quality of recreation opportunities in these areas.

4.5.2 Action Alternative 1 – Applicant's Proposed Alternative

The following sections describe anticipated recreational impacts from the project. For economic impacts related to commercial and recreational fishing, see Section 4.6, Commercial and Recreational Fisheries.

4.5.2.1 Mine Site

Recreational use at the mine site is likely minimal, consisting of some sport hunting, sport fishing, and occasional snowmachine use. Flights taking recreationists to various destinations in the region and the state may also pass over the mine site.

Construction, operations, and closure at the mine site may affect sport hunting and fishing on state lands surrounding the project area. Project-related activities, such as blasting and operation of heavy equipment and helicopters, would adversely affect the recreational experience for hunters and anglers by changing the setting from a quiet undisturbed landscape to a developed industrial area in visual and auditory distance of the mine site. The noise generated by these activities would also displace wildlife from the immediate mine site area, and likely from lands immediately surrounding the project area, thus reducing the likelihood of hunting success close to project components. Noise from construction and operations at the Mine Site could cause sleep disruption for hunters and other recreationists up to 3 to 3.5 miles away from the mine site and would be 10 decibels (dBA) higher than the ambient noise level up to 2.3 to 2.4 miles away from the mine site. An increase of 10 dBA would sound, based on human perception, "twice as loud." Therefore, hunters, anglers, or guides who currently use the immediate vicinity would likely stop using these areas and would be displaced to other areas during construction, operations, and closure activities.

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Given the low estimated use of the mine site and immediate surrounding area for sport hunting and fishing, project-related noise and activities at the mine site would result in minimal displacement of sport hunting and fishing use, likely to other state lands in the area with similar habitat. However, project-related noise and aircraft traffic that would be noticeable to recreation users on the Newhalen River, Upper Talarik Creek, and the upper north and south forks of the Koktuli River would detract from the quality of the recreation experience, potentially resulting in some displacement of activities to other areas. For further analysis, see Section 4.11, Aesthetics; Section 4.19, Noise; and Section 4.23, Wildlife Values.

Project construction, operations, and closure at the mine site would also physically remove acreage available for recreation. However, given the likely low use of the site for recreation, the loss of 8,129 acres (i.e., size of the mine site footprint) for recreation would likely result in minimal displacement of recreational use to other nearby state lands where similar recreation opportunities and settings exist.

The mine site would be approximately 15 miles from the border of Lake Clark National Park and Preserve, the nearest regional recreation destination and known recreational use area to the mine site. Project-related noise and activities would not be likely to affect recreational settings or activities in the preserve. As stated in Section 4.11, Aesthetics, the mine site would be visible from a small portion of this park unit (from high elevations in southwestern corner near Roadhouse Mountain); however, visibility from this distance would be weak. As described in Section 4.19, Noise, mine site construction and operations noise would not affect sensitive receptors there.

Activities at the mine site would be visible and potentially audible to visitors flying over the area to reach regional recreation destinations such as Lake Clark National Park and Preserve or nearby lodges, fishing at the Upper Talarik Creek, and accessing the North Fork and South Fork Koktuli rivers for recreational river floating purposes. The presence of the mine, a large industrial use in an otherwise generally primitive area, may adversely affect the recreational experience for visitors flying over the mine site by causing a change in the recreational setting. Because of the mine's location relative to nearby lodges and airstrips/airports, only a few flight paths would cross the mine site itself; thus, few visitors flying into the area would be affected by the presence of the project, but the intensity of the impact would be substantial. The recreational experience for visitors on these flights would be adversely affected during project construction, operations, and closure.

Recreation by construction and operations staff would be expected to occur outside of the mine site, because site rules would prohibit hunting, fishing, or gathering on site to minimize impacts on local subsistence resources. Since the mine would operate on a fly-in, fly-out basis, non-resident staff members would not likely contribute to an increase in recreational use, although some may occasionally stay in the area or visit for recreational trips to nearby destinations. As described in Section 4.3, Needs and Welfare of the People—Socioeconomics, operation of the mine is not expected to generate a large increase in the number of full-time residents.

4.5.2.2 Transportation Corridor

Near the transportation corridor there is recreational use of Roadhouse Mountain to the northeast of Iliamna, as well as use of some ATV trails around the Iliamna area for transportation, subsistence, and recreation. There are also recreational use opportunities of extremely high quality in the general transportation corridor area, particularly along the Newhalen River and Upper Talarik Creek by the north access road, and in the Gibraltar River and Gibraltar Lake portions of the south access road corridor, which some local lodges advertise as offering guided fishing, hunting, and sightseeing trip options (Haugen, Bush, and

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Rice 2003). Recreational sport hunting and snowmachine use may occur occasionally in these road corridors. At Iliamna Lake, some boating takes place (both motorized and non-motorized), both as an activity in itself and as a means of accessing other recreation opportunities, primarily fishing, which is the main recreation activity at Iliamna Lake. Due to its current inaccessibility and location of nearby high quality recreation opportunities, recreational use of the north and south mine access road corridors, the Kokhanok Airport spur road, and the Iliamna spur road is likely low.

Noise and activities along the transportation during project construction, operations, and closure would affect the quality of sport hunting, fishing, and other recreational activities on state lands and along creeks in and surrounding the project area by generating potential noise and visual impacts. Impacts on sport hunting and fishing opportunities and experiences would be similar to those described above for the mine site.

Project-related noise and activities would not affect recreational settings or activities in Lake Clark National Park and Preserve. As stated in Section 4.11, Aesthetics, the transportation corridor would be visible from a small portion of this this park unit (from high elevations in southwestern corner near Roadhouse Mountain); however, visibility from this distance would be weak, and construction and operational noise would not affect sensitive receptors there.

The road and ferry terminals would also physically remove acreage available for recreation during project construction, operations, and closure. However, given the likely low use of these portions of the corridor for recreation, the loss of 916 acres for recreation would likely result in minimal displacement of recreational use to other state lands in the general area with similar habitat.

As stated in Section 4.3, Needs and Welfare of the People—Socioeconomics, limited access to the roadways and ferry terminal would be available to local residents and businesses only. Therefore, the transportation corridor facilities would not induce recreation or expose previously inaccessible areas to public access and use (PLP 2018-RFI 027).

Activities in the transportation corridor may be visible and potentially audible to visitors flying over the corridor to reach regional recreation destinations such as Lake Clark National Park and Preserve, float trip destinations (on the Mulchatna, Gibraltar, and other rivers), or nearby lodges. The presence of roads, ferry terminals, and ferry in an otherwise generally primitive area may adversely affect the recreation experience for visitors flying over the corridor because of the change in the recreation setting from remote and primitive to more developed and seemingly accessible. Because of the narrow road corridor and vegetation along the roadways and the size of the ferry terminals, the corridor would likely be visible to most visitors only briefly. The recreation experience for visitors on these flights could be adversely affected.

The transportation corridor may be intermittently visible from the far northern edges of Katmai National Park and Preserve at high elevations; however, visibility from this distance would be weak. The transportation corridor would be visible in some portions of the McNeil River State Game Refuge, at higher elevations. See Appendix K4.11 for complete viewshed figures. There is minimal use of the northern borders of these two recreation areas; however, the construction, operations, and closure of the corridor could adversely affect the recreation experience for visitors along the northern border of both recreation areas from the change in recreation setting to a more developed and less remote and primitive area. Given the distance of the transportation corridor from these areas, intermittent visibility, and the likely low level of recreational use of the northern borders of both recreation areas, impacts to recreation experiences would be limited.

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The project may also affect incidental wildlife viewing along the transportation corridor; although the primary recreation use in these areas is likely from other activities, such as fishing. Movement and distribution of bears and other terrestrial mammals through the transportation corridor to the McNeil River State Game Refuge and Katmai National Park and Preserve may be disrupted; therefore, construction and operations activities in the south access corridor may have some adverse impacts on wildlife viewing in both of those recreation areas. See Section 4.23, Wildlife Values, for more information on impacts to bear movement and distribution.

Iliamna Lake provides opportunities for wildlife viewing, although there are no known opportunities specific to the proposed ferry terminal locations, ferry route, or pipeline route. Fishing is the primary recreational use of the lake, and extensive opportunities for fishing are available given the lake's size. The project would likely displace wildlife and fish from the locations of the ferry terminals and ferry route during all phases, thus reducing the likelihood of viewing any wildlife or catching fish in and immediately adjacent to the project area. Project noise would also change the recreation setting of the terminal sites from quiet and remote to developed and active. Therefore, all project phases would adversely affect wildlife viewing and fishing experiences and opportunities around the Iliamna Lake portions of the transportation corridor. Other locations around the lake would be available for displaced wildlife viewing and fishing use.

Project-related noise and activities during construction, operations, and closure could adversely affect boating on Iliamna Lake. Construction of the pipeline and ferry terminals and operation of the ferry would likely displace boaters from the area immediately surrounding the equipment, ferries, and facilities. Boaters would likely be displaced to other areas of the lake during construction, operations, and closure to avoid the noise and hazards presented by the equipment and activities. Project-related noise and equipment would particularly affect non-motorized boating use, which is generally a quieter activity that requires more time and effort to circumnavigate in-water obstructions. One ferry trip per day would occur during operations, which would not be expected to contribute considerably to boat traffic on the lake. Although recreational lake boat traffic may slow down and avoid the ferry, alternative open water would be available for boating use during ferry operations. The ferry terminals would be visible from portions of the lake (within about 3 to 5 miles of the terminal) and would change the recreation setting of these areas of the lake to a more developed setting, though there is extensive lake area and shoreline for any boaters that would prefer a less developed setting.

During the winter, there is heavy snowmachine use of the lake. Although most of this use is considered transportation use, there may be some recreational snowmachine use of the lake. Ferry traffic may displace snowmachine use in and adjacent to the ferry route across the lake; however, the remainder of the lake would be available for snowmachine use, although recreationists may need to take longer routes to avoid open water from the ice-breaking ferry. The Kokhanok east ferry terminal variant would result in similar impacts to those described above. The summer-only ferry operations variant would avoid impacts to snowmachine use of the lake. See Section 4.12, Transportation and Navigation, for impacts to non-recreational lake traffic.

4.5.2.3 Amakdedori Port

The Amakdedori Port site is located on state lands designated for habitat use by the Kenai Area Plan (ADNR 2001). The Kenai Area Plan does not discuss recreational use, although there may be recreational boating, overflights, hunting, fishing, and incidental wildlife viewing near the port site. Boat traffic to and from the port would be minimal: up to 27 concentrate vessels and 33 supply barges per year during operations. There would be a larger number of boats during construction; however, Cook Inlet is large and there is a long expanse of shoreline available

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nearby for any boaters displaced from the port site. Therefore, activities at Amakdedori Port would result in minimal adverse impacts on recreational boat traffic, and thus, on boating experiences and opportunities around the port site and in Cook Inlet. The visual impacts of the port would affect the recreational setting for boaters.

The project may affect incidental wildlife viewing, hunting, and fishing opportunities at the port site, to the extent that they occur. Noise and activities would displace wildlife and fish from the immediate area, thus adversely affecting wildlife viewing, hunting, and fishing opportunities and experiences by reducing the likelihood of seeing wildlife or catching fish.

In addition, project-related noise and activities during construction, operations, and closure at Amakdedori Port would adversely affect the recreational experiences of visitors within visual and auditory distance of the port site because of the change from a quiet, undeveloped area to a developed site with visible facilities, generators, and in-water facilities. The adverse effects would displace from this area those visitors who prefer a quiet, undisturbed recreation setting, or who participate in recreation opportunities such as wildlife viewing, hunting, and fishing, which typically require a quiet, undisturbed recreation setting.

Overall, because recreational use of the Amakdedori Port site is likely low, project-related wildlife and fish displacement, noise, and activities would result in minimal displacement of wildlife viewing and fishing uses to other nearby shoreline areas.

The port site, including construction, operations, and closure activities, would be visible from the Cook Inlet shoreline area further north of the port, but visibility would decrease with distance and would be weak at 10 miles. It may be visible from some portions of the McNeil River State Game Refuge, as well as from flights over the site to regional recreation destinations such as Katmai National Park and Preserve, or towns farther west such as King Salmon or Naknek. The port site may be visible from the Chenik Creek area of the McNeil River State Game Refuge (this site is within the viewshed of the port) and would affect views from this recreation area. However, the port would not be visible from McNeil Camp (see Appendix K4.11), the main recreation area in the McNeil River State Game Sanctuary, and would therefore not affect views from this recreation site, though vessel traffic may be evident and may intermittently affect the recreation setting at the camp. The port would not be visible from Augustine Island, but may affect views from Cook Inlet shoreline areas surrounding the port. Although recreational use of McNeil River State Game Refuge is limited by permit numbers, and the use of nearby shoreline areas is low, on-water sightseeing and/or wildlife viewing may occur in these locations. Construction, operations, and closure at Amakdedori Port could adversely affect the recreational experience for visitors participating in sightseeing or wildlife viewing opportunities in these surrounding areas, by causing a change in the recreational setting to a more developed and less remote, primitive area. However, given the distance of the port site from these areas, which would reduce the port's visibility, as well as the likely low level of recreation use at these nearby locations, impacts on recreation experiences would be limited.

The project would not result in changes in access to McNeil River State Game Refuge or Sanctuary. Visitors fly in to the sanctuary, where the main recreational use areas are located. McNeil Camp, the main access point to the sanctuary and refuge, is located 12 miles south of the Amakdedori Port site. The port would remove 25 acres from use for recreation opportunities.

4.5.2.4 Natural Gas Pipeline Corridor

Potential impacts on recreation have been described above for the transportation corridor where it shares a footprint with the natural gas pipeline. Existing recreational use along the pipeline alignment in Cook Inlet and on the Kenai Peninsula consists of boating in the inlet and recreational use on the peninsula. Boating in Cook Inlet is both an activity in itself and a means

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of accessing other recreation opportunities such as fishing, wildlife viewing, birdwatching, and beachcombing.

Equipment present in Cook Inlet during project construction and closure would be visible and audible to recreational boaters within a certain distance, and would likely temporarily displace any boating and fishing use from the area immediately surrounding the equipment and construction activity; however, alternate open water is available for use by displaced boaters or anglers. Recreation experiences for non-motorized boaters would also be temporarily adversely affected by noise and activity by equipment used during construction or closure, which would affect the recreation setting of the state recreation area for these users. Due to the distance of the land-based recreation facilities at the state recreation area from the compressor station and pipeline, impacts to land-based recreational experiences from noise and construction activities would be minimal.

Noise and activities during project construction and closure may also temporarily adversely affect recreation experiences for visitors to the Stariski State Recreation Site, which is located approximately 1.5 miles north of the proposed compressor station. Visitors participating in camping, picnicking, and hiking may also be adversely affected by the change in the recreation setting caused by the noise and project activities, thus adversely affecting their recreation experiences. Some visitors may be temporarily displaced from the site to other state parks or locally managed recreation sites along the Kenai Peninsula because of the change in recreational setting. There would be no impacts to recreation during operations.

The pipeline would be located south of Augustine Island in Cook Inlet. Although no recreation occurs on the island itself, some sightseeing of the island's volcano and wildlife occurs from the water. Therefore, equipment and noise associated with construction and closure may temporarily adversely affect sightseeing opportunities and experiences along the south side of the island. However, displaced boats would be able to view the island from other locations around the island that were not affected by project equipment and noise.

The pipeline would not be visible above ground and would not remove any acreage from use for recreation opportunities. Recreation experiences for on-water or state park unit visitors may be temporarily affected during pipeline operations because of the presence of boat traffic during pipeline maintenance.

4.5.3 Action Alternative 2 – North Road and Ferry

4.5.3.1 Mine Site

Impacts on recreation from the mine site would be the same as discussed under Action Alternative 1.

4.5.3.2 Transportation Corridor

There are likely opportunities for hunting bear and moose in and adjacent to the transportation corridor. Impacts on sport hunting opportunities and experiences from project-related noise and activities would be similar to those described above for the mine site under Alternative 1.

Similar to the mine site, project-related noise and activities along the Alternative 2 transportation corridor would not likely affect recreational settings or activities in Lake Clark National Park and Preserve. As noted in Section 4.11, Aesthetics, the transportation corridor would not be visible from this park unit except at high elevations on the southern border; and as described in Section 4.19, Noise, transportation corridor construction and operations noise would not affect sensitive receptors there.

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Activities in the ferry terminal portions of the transportation corridor would also physically remove 18 acres available for recreation during project construction, operations, and closure. Visitors would likely be displaced to other lands in the general area with similar habitat.

The transportation corridor facilities would not induce recreation or expose previously inaccessible areas to public access and use (PLP 2018-RFI 027) as stated in Section 4.3, Needs and Welfare of the People—Socioeconomics.

Impacts to visitors flying over the corridor would be the same as those described under the transportation corridor for Alternative 1. The north road would be visible from Roadhouse Mountain, where there is some known recreational use. Therefore, the project could alter the setting for recreationists on Roadhouse Mountain by decreasing the naturalness of the area and increasing visible human development of the area.

Northern Iliamna Lake and the surrounding area provide opportunities for wildlife viewing, although there are no known opportunities specific to the proposed ferry terminal locations, ferry route, or road corridor. However, the movement and distribution of bears and other marine and terrestrial mammals throughout the transportation corridor may be disrupted. Thus, construction and operations activities in the transportation corridor may have some adverse impacts on wildlife viewing, including viewing of the Iliamna Lake harbor seals. See Section 4.23, Wildlife Values, for more information on impacts to wildlife movement and distribution.

Impacts to fishing under Alternative 2 would be the same as those described under Alternative 1, but there are more guided fishing operations that could be impacted.

Impacts to boating and snowmachine use on Iliamna Lake would be the same as those discussed under Alternative 1. The summer-only ferry variant would avoid impacts to snowmachine use of the lake. See Section 4.12, Transportation and Navigation, for impacts to non-recreational lake traffic.

The transportation corridor would be located, in part, on the Williamsport-Pile Bay Road and the Pile Bay ferry terminal site would be located near the existing road ending at Pile Bay. Therefore, use of the transportation corridor and Pile Bay ferry terminal site may impact the annual transport of boats from Homer to Bristol Bay. Increased road and boat traffic and noise, as well as project-related activities on the transportation corridor and at the Pile Bay ferry terminal may adversely affect recreational experiences for anglers during their boat transport. However, few of those boats are recreational vessels.

Construction of the natural gas pipeline along the north road would result in similar impacts to those described below for Alternative 3 transportation corridor.

4.5.3.3 Diamond Point Port

Construction, operations, and closure noise and activities may displace wildlife and fish from the Diamond Point Port area, thus adversely affecting wildlife viewing, hunting, and fishing opportunities and experiences by reducing the likelihood of seeing wildlife or catching fish. However, there are already some industrial activities occurring in the area. Project-related noise and activities during construction, operations, and closure at Diamond Point Port would add to the adverse effects to recreational experiences of visitors within visual and auditory distance of the port site and existing activity. The adverse effects would displace from this area those visitors who prefer a quiet, undisturbed recreational setting, or who participate in recreational opportunities such as wildlife viewing, hunting and fishing, which typically require a quiet, undisturbed recreation setting.

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Impacts to boating from the Diamond Point Port would be similar to those described under Alternative 1 for the Amakdedori Port, except during the period of time when many commercial and some recreational fishing boats are transported from Willamsport to Pile Bay. During this transport, boats can get backed up in Iliamna Bay and project-related boat traffic, particularly during construction when more boats may be accessing the port site, would have a more noticeable effect on boat traffic during this time. However, Iliamna Bay is large and would provide enough space for all boat traffic.

Because there is a higher likelihood of recreational use of the Diamond Point Port site given the known hunting use of Ursus Cove nearby, commercial fishing use of Iliamna Bay, and known wildlife resources in the general area (ADNR 2001) compared to the Amakdedori Port site, the Diamond Point Port site would likely affect more recreationists than the Amakdedori Port site.

The Alaska Maritime National Wildlife Refuge is the only designated recreation area where the port site, including construction, operations, and closure activities, would be visible. The recreation setting from the affected areas of the refuge would change from views of natural, undeveloped areas with mostly fishing boat traffic, to a view with visible developed facilities and larger vessel traffic.

4.5.3.4 Natural Gas Pipeline

Impacts on recreation from construction of the natural gas pipeline through Cook Inlet (except near Ursus Cove) would be the same as discussed under Action Alternative 1, except that the pipeline would pass north of Augustine Island.

Under Alternative 2, the natural gas pipeline would come into Ursus Cove and then cross land north to reach Cottonwood Bay and the Diamond Point Port site. Ursus Cove is a known bear hunting location (H&H Alaskan Outfitters 2018) and both Ursus Cove and Cottonwood Bay are known commercial fishing locations (ADNR 2001). Both Ursus Cove and Cottonwood Bay may also be used for other hunting activities, recreational fishing, and wildlife viewing.

Noise and activities related to construction of the natural gas pipeline through Ursus Cove and up through Cottonwood Bay to the Diamond Point Port site would likely temporarily displace wildlife and fish from the Cove and Cottonwood Bay surrounding the construction area, thus reducing the likelihood of viewing or hunting any wildlife or catching fish in and immediately adjacent to the project area. Hunters, anglers, or guides who currently use these areas would likely stop using these areas and would be displaced to other areas during construction activities.

Similar to the pipeline under Alternative 1, the pipeline in Alternative 2 would not be visible above ground and would not remove any acreage from use for recreational opportunities. Impacts to boaters would be similar to those described for Alternative 1.

4.5.4 Action Alternative 3 – North Road only

Impacts on recreation would be the same as discussed under Action Alternative 2 for the mine site, Diamond Port, construction of the natural gas pipeline, and portions of the north road that overlap with the transportation corridor of Alternative 2.

Impacts on sport hunting opportunities and experiences from project-related noise and activities would be similar to those described above for the mine site under Alternative 1. Impacts to visitors flying over the corridor would be the same as those described under the transportation corridor for Alternative 1. Impacts to recreational settings or activities in Lake Clark National Park and Preserve would be the same as those described for Alternative 2.

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Activities in the transportation corridor would also physically remove 1,085 acres available for recreation during project construction, operations, and closure. Visitors would likely be displaced to other lands in the general area with similar habitat.

The transportation corridor facilities would not induce recreation or expose previously inaccessible areas to public access and use (PLP 2018-RFI 027).

The project may also affect incidental wildlife viewing along the transportation corridor; although most recreational use in the corridor is likely from other activities, such as fishing. Movement and distribution of bears and other terrestrial mammals through the corridor may be disrupted, thus construction and operations activities in the corridor may have some adverse impacts on wildlife viewing. See Section 4.23, Wildlife Values, for more information on impacts to bear movement and distribution.

There are fishing opportunities on the rivers and streams that cross the Alternative 3 transportation corridor, particularly along the Newhalen and Iliamna rivers due to the quality of the fishing on these rivers and the presence of lodges in the Pedro Bay area. Construction noise and activities would likely displace fish at river/stream crossings, which would particularly affect fishing at the road crossing on the Newhalen and Iliamna rivers. Project noise would also change the recreation setting of the road corridor from quiet and remote to developed and active. Therefore, all project phases would adversely affect fishing experiences and opportunities along the transportation corridor. Other portions of the streams crossed by the transportation corridor would be available for anglers that prefer a remote experience away from the roadway.

Impacts to the boat portaging on the Williamsport-Pile Bay Road would be similar to those described for Alternative 2, but would only affect the experience of anglers while transporting boats on the sections of the road that would also carry project traffic.

4.5.5 Summary of Key Impacts

See Table 4.5-1 for a summary of key issues.

Table 4.5-1: Summary of Key Issues for Recreation

Category	Alternative 1 (+ variants)	Alternative 2 (+ variants)	Alternative 3 (+ variants)
Recreation experience	Project-related noise and aircraft traffic may adversely affect recreation experiences for hunters and anglers by changing the recreation setting and displacing wildlife throughout the project area. Adverse effects on recreational experiences for visitors within visual and auditory distance and may displace visitors that prefer a quiet, undisturbed recreation setting	Same as Alternative 1	Same as Alternative 1
Recreation setting	Recreationists flying over project components would be adversely impacted, as the project would be visible	Impacts would be similar to Alternative 1, except it would not affect the McNeil River State Game Refuge	Same as Alternative 2 except there would be no ferry terminals.

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Table 4.5-1: Summary of Key Issues for Recreation

Category	Alternative 1 (+ variants)	Alternative 2 (+ variants)	Alternative 3 (+ variants)
	from planes. The recreational setting from Iliamna Lake would be impacted by ferry terminals. Vessel traffic may intermittently affect the recreation setting of McNeil Camp	but may affect views from portions of the Alaska Maritime National Wildlife Refuge and change the recreational setting for visitors to Roadhouse Mountain.	
Recreation activities	There would be adverse effects on wildlife viewing, hunting, and fishing opportunities and experiences by displacing wildlife. Boating and snowmachine use on Iliamna Lake could be displaced or altered.	Same as Alternative 1 except that more guided fishing opportunities would be impacted. There would also be adverse effects to activities in Ursus Cove and Cottonwood Bay during construction.	Same as Alternative 2 except with additional adverse effects on fishing opportunities and experiences at road river/stream crossings, particularly at Newhalen and Iliamna rivers. There would be no adverse effect to recreation on Iliamna Lake.

4.5.6 Cumulative Effects

The reasonably foreseeable future actions identified in Section 4.1 carried forward in this analysis include mining claims; oil and gas development within Cook Inlet; road improvement projects; and continuance of recreation activities in the greater regional area, as summarized below:

- Pebble Project buildout- develop 55% of the resource over 78 year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Johnson Tract*
- Copper Joe*
- Diamond Point Rock Quarry
- Alaska Stand Alone Pipeline Project
- Alaska LNG
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure and Energy Project
- National Parks and Preserves, Wildlife Refuges, State of Alaska Special Management Areas, Alaska Native Corporation Lands

*Indicates exploration activities only.

Reasonably foreseeable mineral development could contribute cumulatively to reducing the undeveloped nature of the region, and thereby reduce opportunities available for recreation activities like hunting, fishing, and wildlife viewing in remote areas. There would be additive effects to recreation experiences for visitors flying over the region, as the landscape as a whole is more visible from a higher elevation, and all development would be more noticeable.

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The Diamond Point Rock Quarry could contribute cumulatively to impacts to recreational opportunities and experiences, boat traffic, and changes to the recreation setting in Iliamna Bay. Oil and gas projects in Cook Inlet could contribute cumulatively to temporary adverse impacts to boating, fishing, and boat traffic in the inlet if construction periods overlapped. Transportation projects could contribute cumulatively to changes in the recreational setting of the region and decrease opportunities for recreation in remote areas.

The project would contribute to cumulative impacts to recreation and there would be a higher contribution to cumulative impacts for Alternatives 2 and 3 from activities in Iliamna Bay.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 2:42:24 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: FW: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)
Attachments: Sec4.16_SurfaceWaterHydro_reviewdraft_2018.11.09.docx; K3.16_SurfaceWaterHydro_reviewdraft_2018.11.09.docx; Sec3.16_SurfaceWaterHydro_reviewdraft_2018.11.09.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.16, K3.16, 4.16 – Surface Water Hydrology. The only technical appendix is K3.16. There are 2 separate figure PDFs for K3.16; 10 separate PDF files for 3.16; and 7 separate PDF files for 4.16 which are being sent separately. CAs are EPA, State of Alaska

VR

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K3.16 SURFACE WATER HYDROLOGY

This appendix contains supplemental technical information on the following topics related to baseline surface water hydrology discussed in Section 3.16:

- Meteorological inputs to water balance models (operations and closure)
- Water balance calibration

K3.16.1 Meteorological Inputs to Water Balance Models

The surface water (watershed) balance model was initially calibrated using continuous streamflow records collected from 2004 to 2008 at 15 streamflow gaging stations (Schlumberger 2011a). The model was also used to validate site meteoric data and precipitation variability across the site. A meteorological data collection program was designed and implemented to provide data representative of the mine site analysis area. Meteorological data have been collected from eight monitoring stations (Figure K3.16-1) (SLR 2013). The stations are labeled Pebble 1, Pebble 3, Pebble 4, Pebble 5, Pebble 5A, Pebble 6, Pebble 8 in the general mine site analysis area, and the Iliamna Air Quality station in Iliamna, Alaska (Iliamna Airport). The closest long-term meteorological records are from Iliamna Airport.

To evaluate surface water and groundwater interaction in the Pebble study area, a month-to-month water balance approach was selected, which included a semi-distributed spreadsheet method (Schlumberger 2011a). The selected method allowed for adjacent sub-catchments (smaller watersheds or basis) to be chained together, including the interaction of surface water and groundwater components.

The development of the mine site water balance model included the following components (Schlumberger 2011a):

- The watersheds of the NFK and SFK rivers and the UTC were divided into sub-catchments; each sub-catchment is numbered and associated with a gaging station (Figure K3.16-2).
- Inputs to each sub-catchment included precipitation and inflow from up-gradient catchments.
- Precipitation distribution was accounted for in runoff, recharge, evapotranspiration, and sublimation.
- Groundwater recharge (combination of precipitation recharge and stream leakage) was accumulated in groundwater storage.
- Groundwater was discharged in and from each sub-catchment in proportion to the amount of groundwater in storage. A portion of this groundwater was transmitted down-gradient to the next sub-catchment according to Darcy's Law. The remainder of the groundwater was discharged in the sub-catchment as surface water.
- Snowmelt was accounted for when temperatures rose enough to melt accumulated snow and generate runoff.

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Figure K3.16-1 Meteorological Monitoring Stations in the Mine Study Area

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Figure K3.16-2 Stream Gaging Stations and Watershed Boundaries

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The input parameters to the water balance model were adjusted until modeled streamflows closely resembled measured streamflows. The following inputs were used to develop the water balance model (Schlumberger 2011a).

K3.16.1.1 Temperature

Monthly mean temperature data from the Iliamna Airport were used for developing a long-term dataset for the mine site water balance model. Temperature data selected for this purpose was from the period of record from 1942 to 2017. Data gaps in the temperature data were addressed using regional regression analysis to estimate missing data from the long-term dataset (Knight Piésold 2018m).

Scaling factors were then applied to transform the temperature record from Iliamna Airport into synthetic (estimated) series at the Pebble 1 station location. Scaling factors represent fundamental physical relationships and processes, which have been quantified by empirical calibration methods (Knight Piésold 2018a). The adiabatic[1] relationship between topographic elevation and air temperature is an example of a scaling factor considered for temperature. The standard adiabatic lapse rate relationship between elevation and temperature is -3.6 °F per 1,000 feet of elevation. The observed temperature difference between Iliamna Airport and Pebble 1 station is -4.7 °F, which equates to a lapse rate of -3.4 °F per 1,000 feet of elevation. Therefore, the observed temperature difference of -4.7 °F was adopted and applied to each month of the Iliamna Airport data to create the synthetic temperature dataset for the mine site at Pebble 1 station.

K3.16.1.2 Precipitation

Monthly precipitation data from Iliamna Airport for the same period of record (1942 to 2017) were used for developing a long-term precipitation dataset for the mine site water balance model. Data gaps in the precipitation data set were addressed using regional regression analysis to estimate missing data from the long-term dataset (Knight Piésold 2018m).

Scaling factors were then applied to transform the precipitation record from Iliamna Airport into synthetic (estimated) series at the Pebble 1 station location. Scaling factors were applied to the Iliamna Airport precipitation dataset to account for location and elevation. The calibrated scaling factors are shown in Table K3.16-1, and were based on the following:

- Group A: Factors that represent differences in measured precipitation between the Iliamna Airport and Pebble 1 meteorology stations; values for these factors were calibrated by comparison of concurrent measured records at the two stations for the period 2005 to 2009.
- Group B: Factors that represent differences between measured and estimated actual precipitation at the Pebble 1 station; values for these factors were calibrated by comparison of measured meteorology parameters at Pebble 1 station and measured streamflow at downstream gaging stations for the period 2005 to 2009.
- A combination of Group A and Group B factors were applied to the Iliamna precipitation data that were used as input to the Pebble watershed module, in order to achieve a good match between the flows measured in the field at numerous locations and the flows predicted by the watershed module for those same locations.

[1] The adiabatic relationship is the process of heat being reduced in the air with change in air pressure that occurs at increased elevations. Air expands and cools as it rises – thus resulting in cooler air at higher elevation.

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The combined scaling factors presented in Table K3.16-1 applied to each applicable monthly total precipitation value in the Iliamna Airport precipitation record to generate the synthetic monthly precipitation series for the Pebble 1 station location (Knight Piésold 2018m).

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Table K3.16-1 Monthly Precipitation Scaling Factors between Iliamna Airport (Measured) and Pebble 1 (Estimated)

Factor[1]	Monthly Scaling Factors											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Orographic Factor (per 328 ft)	1.100	1.100	1.100	1.058	1.058	1.058	1.058	1.058	1.058	1.058	1.100	1.100
Orographic Factor (Iliama Airport to Pebble 1)	1.489	1.489	1.489	1.266	1.266	1.266	1.266	1.266	1.266	1.266	1.489	1.489
Group A: Measured Iliama → Measured Pebble 1												
A1) Specific Orographic Effect (based on station elevations):	1.489	1.489	1.489	1.266	1.266	1.266	1.266	1.266	1.266	1.266	1.489	1.489
A2) Geographic Location Factor:	1.477	1.477	1.477	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.477	1.477
Group B: Measured Pebble 1 → Estimated Actual Pebble 1												
B1) Pebble 1 Undercatch:	1.600	1.600	1.600	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.600	1.600
Group A and B Factors Combined:	3.519	3.519	3.519	1.582	1.582	1.582	1.582	1.582	1.582	1.582	3.519	3.519

Elevations: Iliamna Airport elevation 190 ft amsl

Pebble 1 elevation: 1,560 ft amsl

Source: Knight Piésold 2018m, Table 1. (Response to RFI 028a)

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K3.16.1.3 Snowmelt

Annual maximum snow water-equivalent (SWE) values surveyed at the project snow courses and regional snow courses during the period of 2004 through 2008 are presented in Table K3.16-2 (Knight Piésold 2018g). Snow course locations are depicted on Figure K3.16-2.

K3.16.1.4 Other Meteorological Data

Other meteorological data collected include temperature, radiation, wind speed, relative humidity, evaporation, and sublimation. General site meteorology is discussed in Chapter 3.1, Introduction.

Table K3.16-2: Annual Maximum Snow Water Equivalent – Project and Regional Snow Courses

Snow Course	Elevation (feet)	Annual Maximum Snow Water Equivalent (inches)						
		2004	2005	2006	2007	2008	Average	Long-Term Average
Project Snow Courses								
Pebble Snow Course 1	2,000	10.5	15.5	9.7	5.8	19.4	12.2	12.5
Pebble Snow Course 1A	2,000	8.2	13.8	7.5	5.3	16.7	10.3	10.6
Pebble Snow Course 2	1,200	9.8	12.0	8.1	6.3	15.6	10.4	10.6
Regional Snow Courses								
Brooks Camp	150	1.8	-	1.5	-	0.8	1.4	2.4
Fishtrap Lake	1,800	8.6	11.7	-	4.9	9.5	8.7	9.4
Port Alsworth	270	5.1	2.5	2.2	1.9	-	2.9	3.4
Telaquana Lake	1,550	4.4	6.4	4.5	1.4	5.8	4.5	4.1
Three Forks	900	8.2	-	2.5	-	3.0	4.6	3.0
Upper Twin Lakes	2,000	6.5	6.8	4.0	4.0	7.2	6.1	6.1

Source: Knight Piésold 2018g, Table 5.1.

The annual maximum SWE was similar at both Snow Course 1A and Snow Course 2. The annual maximum SWE averaged around 10 inches at these two snow courses, and ranged from around 6 inches in 2007 (lowest snowpack were Fishtrap Lake, Telaquana Lake, and Upper Twin Lakes. These sites had mean annual maximum SWE values of around 5 to 9 inches during the 2004 to 2008 period, with the lowest values in 2007 and highest values in 2005 and 2008, indicating a general coherence in snowpack patterns throughout the region in this elevation range. The estimated long-term mean for each of the three project snow courses is an average of three estimates generated by the relationships between that project snow course and each of the three regional snow courses (Knight Piésold 2018g).

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K3.16.2 Water Balance Calibration

The watershed model was calibrated using meteorological and streamflow data for the period 2005 to 2009, and then was used to generate long-term synthetic series of monthly streamflow for each gaging station for the 1942 to 2017 period of record (Knight Piésold 2018g). Table K3.16-3 provides data to compare measured discharge and watershed module discharge estimates for the following periods of record:

- Stream Gage Period of Record: 2004 to 2015
- Recent climatic period: 1977 to 2017
- Full period of synthetic series: 1942 to 2017

Table K3.16-3: Mean Annual Discharge – Stream Gage Records and Watershed Module

Drainage	Station	Mean Annual Discharge (cfs)				Ratio of Watershed Module Discharge to Gage Record Discharge		
		Gage Record	Watershed Module					
		2004-2015	2004-2015	1977-2017	1942-2017	2004-2015	1977-2017	1942-2017
South Fork Koktuli River	SK 100A	252.6	262.3	266.3	266.9	104%	105%	106%
	SK 100B	178.9	184.3	187.5	188.0	103%	105%	105%
	SK 100B1	125.4	128.5	131.3	131.8	102%	105%	105%
	SK 100C	45.8	47.6	49.8	50.3	104%	109%	110%
	SK 100F	29.3	29.5	29.9	30.0	101%	102%	102%
	SK 100G	12.9	13.4	13.6	13.6	104%	105%	105%
	SK 119A	33.8	36.1	36.8	36.9	107%	109%	109%
	SK 124A	18.5	19.2	19.6	19.7	104%	106%	107%
	Average Ratios					**104%**	**106%**	**106%**
North Fork Koktuli River	NK 100A	242.8	255.0	258.6	258.9	105%	107%	107%
	NK 100A1	200.8	205.4	208.6	209.0	102%	104%	104%
	NK 100B	82.5	84.6	86.1	86.3	103%	104%	105%
	NK 100C	46.4	49.1	49.9	50.0	106%	108%	108%
	NK 119A	23.6	24.7	25.2	25.2	104%	107%	107%
	NK 119B	4.2	4.7	4.9	4.9	112%	117%	117%
	Average Ratios					**105%**	**108%**	**108%**
Upper Talanik Creek	UT 100-APC3	321.6						
	UT 100-APC2	292.5						
	UT 100-APC1	261.1	261.9	266.2	267.4	100%	102%	102%
	UT 100B	220.5	223.7	227.4	228.5	101%	103%	104%
	UT 100C	156.9	157.3	160.1	160.8	100%	102%	102%
	UT 100C1	120.9	123.4	125.9	126.5	102%	104%	105%
	UT 100C2	104.1	107.1	109.2	109.5	103%	105%	105%
	UT 100D	27.2	28.0	28.5	28.6	103%	105%	105%

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Table K3.16-3: Mean Annual Discharge – Stream Gage Records and Watershed Module

Drainage	Station	Mean Annual Discharge (cfs)				Ratio of Watershed Module Discharge to Gage Record Discharge		
		Gage Record	Watershed Module					
		2004-2015	2004-2015	1977-2017	1942-2017	2004-2015	1977-2017	1942-2017
	UT 100E	8.8	9.2	9.4	9.4	104%	106%	107%
	UT 106-APC1	43.2						
	UT 119A	29.2	27.7	28.0	28.2	95%	96%	97%
	UT 135A	44.7	41.5	42.3	42.5	93%	95%	95%
	Average Ratios					**100%**	**102%**	**102%**

Source: Knight Piésold 2018g, Table 6.5. Note: Shaded cells indicate that no data were collected during these periods.

Watershed module estimated discharges are generally similar to the stream gage values for the period of record 2004 to 2015, with average ratios ranging between 1.00 and 1.05. Watershed module discharge estimates for the longer-term periods are similar as well, with average ratios between the watershed module discharges and the gage records ranging from 1.02 to 1.08 (Knight Piésold 2018g).

The relationship between watershed module estimated discharge and measured streamflow for gaging stations NK100B, SK100G, and UT100D is shown in Figure K3.16-3, Figure K3.16-4, and Figure K3.16-5, respectively. These gaging stations were selected for presentation because of their proximity to the mine site.

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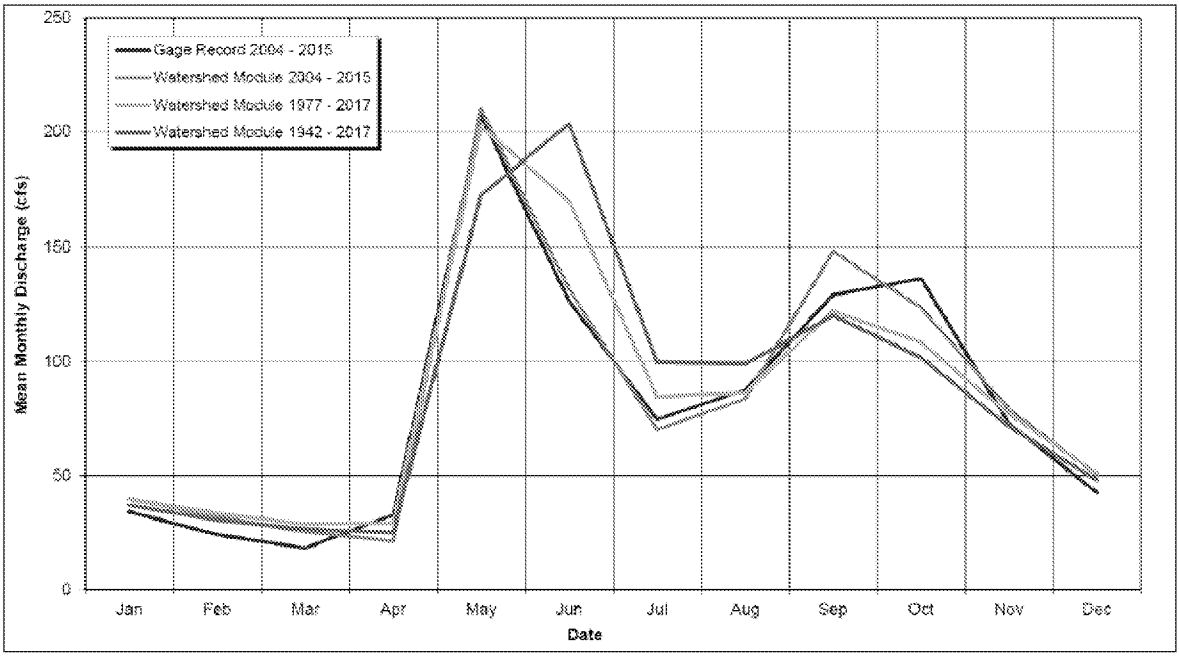
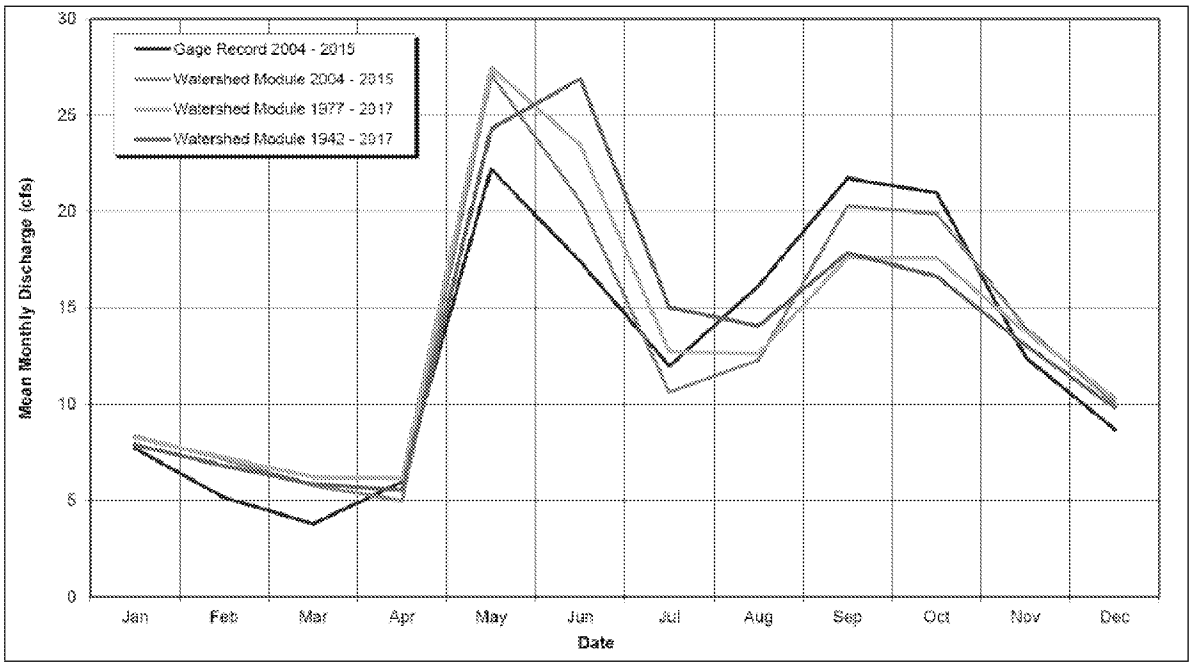
Figure K3.16-3: Watershed Module Calibration – Mean Monthly Discharge, NK-100B



Source: Knight Piésold 2018g, Figure 6.6.

Figure K3.16-4: Watershed Module Calibration – Mean Monthly Discharge, SK-100G



Source: Knight Piésold 2018g, Figure 6.7.

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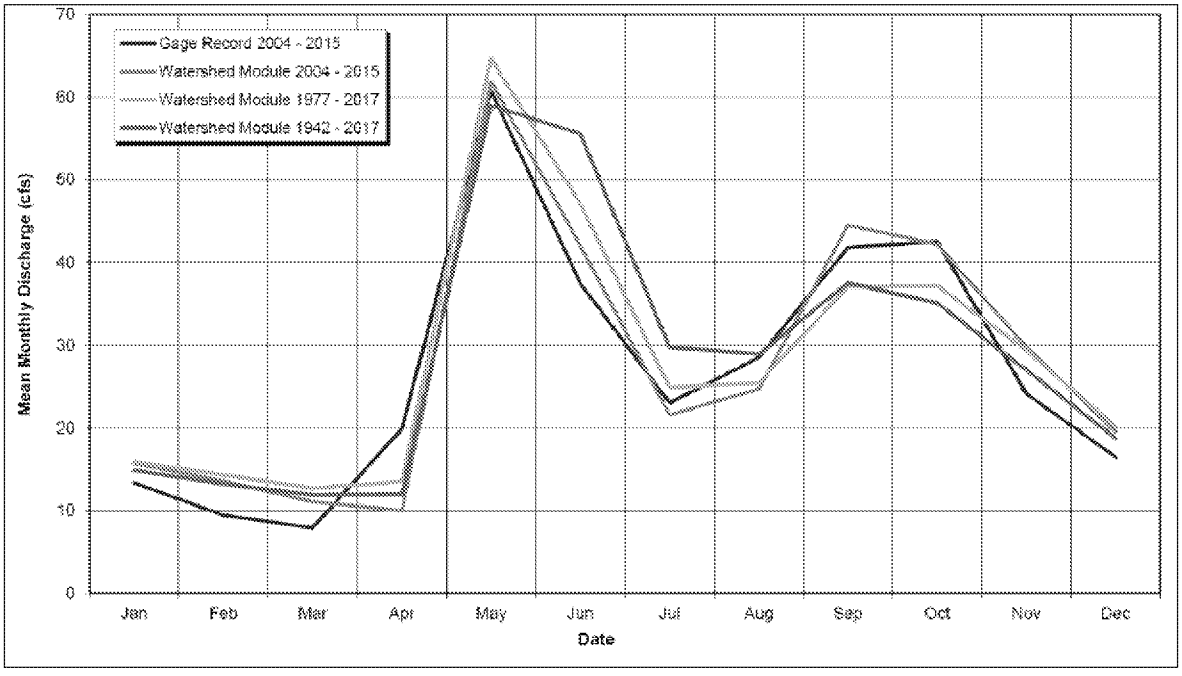
Figure K3.16-5: Watershed Module Calibration – Mean Monthly Discharge, UT-100D



Source: Knight Piésold 2018g, Figure 6.8.

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3.16 SURFACE WATER HYDROLOGY

This section describes existing surface water conditions in the project area including the mine site, transportation corridor, port, and pipeline corridor. The area includes numerous streams, lakes (including Iliamna Lake), marine water (Cook Inlet), and wetlands (see Section 3.22, Wetlands/Special Aquatic Sites). The discussion below addresses potentially affected waterbodies, baseline water balance models, flood hazards, floodplain values, tides, and water use (both surface and groundwater). Drainage basins (synonymous in this document with catchment, watershed, sub-catchments), flow patterns, circulation, discharge/recharge, and interaction with groundwater are described. Section 3.17, Hydrogeology, provides more information regarding groundwater conditions. Section 3.18, Water and Sediment Quality, addresses quality of surface water, groundwater, and sediment/substrate in waterbodies.

Baseline surface water conditions have been characterized by studies conducted from 2004 through 2012 (Knight Piésold et al. 2011, 2015b). These studies also considered previous studies and data collected by the US Geological Survey (USGS) and US Department of Agriculture, Natural Resources Conservation Service. In particular, Knight Piésold et al. 2011 provides an overview of regional hydrology in the Bristol Bay drainages and hydrologic context for the mine study area and transportation and pipeline corridors. The baseline studies are summarized in this section and more details regarding meteorological inputs to water balance models and water balance calibration are provided in Appendix K3.16.

The combined Bristol Bay drainage area is approximately 41,900 square miles – an area bound by the Aleutian Range to the east and southeast, the Kuskokwim Mountains to the west, and the Kuskokwim River watershed boundary to the north (Figure 3.16-1). The largest rivers draining into Bristol Bay are the Nushagak and Kvichak rivers. These two rivers comprise 49 percent of the Bristol Bay drainages. The Koktuli River forms at the confluence of the North Fork Koktuli (NFK) and South Fork Koktuli (SFK) rivers, approximately 17 miles west of the mine site. The Koktuli River flows into the Mulchatna River, a tributary of the Nushagak River. The Pebble deposit straddles two regional watersheds, but nearly all the project mine site footprint is in the Nushagak River watershed (12,700 square miles). Most of the transportation and pipeline corridors from the mine site toward the east are within the Kvichak River watershed to the Cook Inlet watershed boundary defined by the Alaska Range. The remaining onshore transportation and pipeline corridors and port sites are in the Cook Inlet watershed.

Most of the mine site is hydrologically connected to Bristol Bay via the NFK and SFK rivers that join the Mulchatna River west of the mine site. The Mulchatna River flows to the confluence with the Nushagak River about 65 miles from its mouth at Bristol Bay.

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Figure 3.16-1: Bristol Bay Watershed

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3.16.1 Alternative 1 – Applicant's Proposed Alternative

3.16.1.1 Mine Site

The mine site is within the upper portions of the NFK, SFK, and Upper Talarik Creek (UTC) watersheds (Figure 3.16-2 and Figure 3.16-3). Figure 3.16-4 and Figure 3.16-5 depict stream gaging stations in the mine study area and in the vicinity of the mine site, respectively. The majority of the mine site facilities would be in the NFK watershed. The open pit, as well as the overburden stockpile, open pit water management pond (WMP), and water treatment discharge – south, would be in the SFK watershed. Only the water treatment plant (WTP #1) discharge – east and a short portion of the mine access road would be in the UTC watershed under Alternative 1.

Drainage Basins

Drainage basin characteristics of the NFK and SFK rivers and the UTC are described in this section, and general features are listed in Table 3.16-1.

The topography of the drainage basins listed in Table 3.16-1 consists of low rolling hills and wide shallow valleys (Knight Piésold 2011). Section 3.13, Geology, addresses geologic units and geologic history and processes of the region and project area.

General characteristics common to the drainage basins listed in Table 3.16-1 include:

- Main streams occupy valley bottoms 0.5 to 2 miles wide.
- Tributaries to the main streams are incised into the hilly terrain and typically occupy narrow valleys with bottom widths of only 0.1 to 0.2 mile.
- The three main stream channels in the project area are highly sinuous and flow within floodplains containing wetlands and oxbow lakes.
- The upper parts of the three main basins are represented by flat, poorly drained terrain.
- Areas of glacial drift (sediment of glacial origin) deposits occur along lower hillslopes and near the headwaters of the main stream valleys, characterized by undulating terrain and numerous kettle lakes.

Table 3.16-1: Mine Site Area Drainage Basins

Drainage Basin	Drainage Area (mi^2)	Channel Length (mi)	Basin Relief (ft)	Mean Basin Elevation (ft amsl)
NFK River	113	36	580 to 3,074	1,300
SFK River	107	40	580 to 2,760	1,150
UTC	135	39	46 to 3,074	1,000

amsl = above mean sea level

mi2 = square miles

Source: Knight Piésold 2011

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Figure 3.16-2: Watersheds in the Mine Study Area

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EPA-0135-0002544

Figure 3.16-3: Watersheds and Mine Site Footprint

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EPA-0135-0002545

Figure 3.16-4: Stream Gaging Stations in the Mine Study Area

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EPA-0135-0002546

Figure 3.16-5: Stream Gaging Stations in Vicinity of Mine Site

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EPA-0135-0002547

North Fork Koktuli River

The NFK River watershed extends northeast from the confluence with SFK River to Groundhog Mountain, approximately 7 miles northeast of the mine site (Figure 3.16-2). The NFK River drainage area topography is relatively gentle, with elevations ranging from around 600 feet amsl near the confluence with SFK River to roughly 3,000 ft amsl at Groundhog Mountain. Lakes and small ponds are common in the upper portions of the NFK watershed, including Big Wiggly Lake, Lilly Lake, and Black Lake. Fewer lakes and ponds exist in the middle and lower portions of the watershed.

South Fork Koktuli River

SFK River extends east and north from the NFK River confluence (Figure 3.16-2). The watershed topography is relatively gentle, with elevations ranging from approximately 600 feet amsl near the NFK/SFK confluence to 2,760 feet amsl on Kaskanak Mountain, a high point along the NFK/SFK watershed boundary. Lakes and small ponds are common in the upper and lower portions of the watershed, and are less common in the central portion. Frying Pan Lake, approximately 1.5 miles south of the open pit, is a shallow residual waterbody in the upper SFK River valley (Knight Piésold 2011). Frying Pan Lake is the largest lake in the project area, approximately 1 mile long and 0.5 mile wide, with a relatively uniform depth of approximately 3 feet.

Upper Talarik Creek

The UTC watershed extends north from the creek outlet at Iliamna Lake to the southern end of Groundhog Mountain (Figure 3.16-2). UTC flows south from its headwaters to Iliamna Lake, roughly 10 miles west of the Newhalen River outlet. The Iliamna Lake outlet is the Kvichak River, which flows into Bristol Bay. The watershed topography is relatively gentle, with elevations ranging from approximately 46 feet amsl at Iliamna Lake to 3,074 feet amsl on Groundhog Mountain. Lakes and small ponds exist throughout the watershed, in relatively flat, poorly drained terrain.

Streamflow

Streamflow in the Bristol Bay region is generated primarily from spring snowmelt runoff and runoff from autumn rain events. The mine site watersheds are undisturbed; therefore, baseline streamflow presented in this section is representative of existing natural conditions. The annual pattern of streamflow in the mine site watersheds is characterized by high flows in spring due to snowmelt; lower flows occur during early to mid-summer; and a high flow period during late summer and fall due to rain events (Knight Piésold et al. 2011). Baseline surface water quality conditions at the mine site are presented in Section 3.18, Water and Sediment Quality.

Groundwater/surface water interaction in the mine site watersheds is controlled by glacial and fluvial deposits of varying thicknesses that occur over most of the project area below elevations of approximately 1,400 feet amsl (see Section 3.13, Geology). Section 3.17, Hydrogeology, describes interaction, importance, and function of these deposits related to surface water runoff, groundwater storage, and exchange between surface water and groundwater.

Gaging Stations

Since 2004, streamflow monitoring has been conducted at gaging stations on the NFK and SFK rivers and the UTC, as well as tributary streams in each watershed. Figure 3.16-2 depicts all gaging station locations in the three watersheds and Figure 3.16-3 provides a focused view of gaging stations with regard to the mine site. Three gaging stations are operated by the USGS

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(NK100A, SK100B and UT100B), and the remaining 25 are operated by Pebble Limited Partnership (PLP). Table 3.16-2 lists stream gaging stations, organized by watershed, that collect continuous flow data during the open water season and the number of years in which data were collected at each station. Table 3.16-3 presents a summary of the early spring, low-flow discharge measurements collected at both continuous and non-continuous data collection sites in each watershed. The following summaries provide a description of streamflow at gaging stations closest to the mine site. The stations selected for discussion represent streamflow in the upper portion or at the mouth of each watershed near the mine site.

North Fork Koktuli River

NK 100C, Main Stem: There are six gaging stations along the main stem of the NFK River (Figure 3.16-4). Station NK100C is in the upper reaches of the NFK River, approximately 20 miles upstream of the SFK River confluence. NK100C is the gaging station closest to the mine site on the main stem of the NFK River, roughly 3.5 miles west of the NFK/SFK rivers watershed divide. At NK100C, the river drains an area of approximately 24 square miles, including a large complex of lakes and wetlands, and flows through a narrow valley cut through glacial outwash and drift deposits (see Section 3.13, Geology, for explanation of outwash and drift). The channel above NK100C is dominated by riffles and runs, and the streambed is composed primarily of coarse gravel. Flows at NK100C are buffered by upstream lakes and wetland storage (Knight Piésold et al. 2011). Based on 8 years of record, the long-term average annual discharge at NK100C is 48 cubic feet per second (cfs) (Table 3.16-4). The lowest average annual discharge recorded was 37 cfs and the highest average annual discharge recorded was 63 cfs. Streamflow measurements were recorded at NK100C during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge measurements ranged from 8 to 22 cfs during the 8-year period of record. Spring and fall instantaneous peak discharge measurements were obtained over a 5-year period (Table 3.16-5). The lowest instantaneous peak discharge recorded was 117 cubic feet per second during the fall of 2011. The highest annual instantaneous peak discharge recorded was 586 cubic feet per second, during the spring of 2009.

NK119A, Tributary: Station NK119A is in the western tributary of the NFK River (the tributary is designated in baseline studies as NK 1.190). The bulk tailings storage facility (TSF) would be in the NK 1.190 catchment (Figure 3.16-3). This tributary is a relatively steep, upland stream, with headwaters along the NFK/SFK rivers watershed divide. The drainage area above NK119A is approximately 8 square miles. The channel above NK119A is dominated by short rapids with irregular scour pools; the streambed is composed primarily of coarse gravels, some cobbles, and numerous boulders (Knight Piésold et al. 2011). Based on 8 years of record, the long-term average annual discharge at NK119A is 24 cfs (Table 3.16-4). The lowest average annual discharge recorded was 15 cfs and the highest average annual discharge recorded was 36 cfs. Streamflow measurements were recorded at NK119A during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge measurements ranged from 2 to 4 cfs during the 8-year period of record. Spring and fall instantaneous peak discharge measurements were obtained over an 8-year period (Table 3.16-5). The lowest instantaneous peak discharge recorded was 110 cfs, during the spring of 2007. The highest instantaneous peak discharge recorded was 690 cfs, during the fall of 2004.

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Table 3.16-2: Streamflow Gaging Stations (Continuous Flow Data)

Drainage[1]	Gaging Station		Drainage Area (mi^2)	Period of Measurement Record[2]	Record Length[3] (Years)
	Pebble ID	USGS ID			
NFK River	NK100A	15302250	105.86	2004-2012	8
	NK100A1	-	85.34[4]	2007-2010	4
	NK100B	-	37.32	2007-2012	6
	NK100B1[5]	-	37.18	2011-2012	2
	NK100C	-	24.35	2004-2012	8
	NK100C1[5]	-	24.05	2011-2012	2
	NK119A	-	7.76	2004-2012	8
	NK119B	-	3.97	2007-2012	5
SFK River	SK100A	-	106.92	2004-2007	3
	SK100B	1532200	69.33	2004-2012	8
	SK100B1	-	54.41	2006-2007	2
	SK100C	-	37.50	2004-2012	8
	SK100F	-	11.91	2004-2012	5
	SK100G	-	5.49	2004-2007	3
	SK119A	-	10.73	2004-2012	8
	SK124A	-	8.52	2005-2010	6
UTC	UT100-APC3	-	134.16	2007-2012	5
	UT100-APC2	-	110.16	2007-2012	5
	UT100-APC1	-	101.51	2007-2012	5
	UT100B	15300250	86.24	2004-2012	8
	UT100C	-	69.47	2007-2012	6
	UT100C1	-	60.37	2007-2010	4
	UT100C2	-	48.26	2007-2012	6
	UT100D	-	11.96	2004-2012	8
	UT100E	-	3.10	2004-2012	8
	UT106-APC1	-	14.14	2008-2012	2
	UT119A	-	4.05	2004-2012	8
	UT135A	-	20.42	2007-2010	0

Notes:

1 Gaging stations listed include main stem and tributaries.

2 Calendar years that stream stage data were collected.

3 Complete water years of record (measured) – Refers to the number of years that stream stage data were collected for at least 3 months and used to compute discharge.

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4 Station NK100A1 reported drainage area: Drainage area on Knight Piésold (2013) Table 7-2 is 85mi2; on Table 7-4, drainage area is 81.97 mi2

5 Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

mi^2 = square miles

Source: Knight Piésold 2015b, Table 7-2

Note: Shaded rows are stations that represent streamflow in the upper portion or at the mouth of each watershed near the mine site and subject of more detailed discussion in the narrative.

South Fork Koktuli River

SF 100F, Main Stem: There are six gaging stations along the main stem of the SFK River (Figure 3.16-4). Station SK100F is in the upper reaches of SFK River, approximately 29 miles upstream of the NFK River confluence. SK100F is roughly 2.5 miles south of the mine site, just downstream from the outlet of Frying Pan Lake, and drains an area of approximately 12 square miles. The river at SK100F flows in a narrow valley between hillslopes of moraine deposits and weathered bedrock. The channel in this reach is characterized by riffles and runs, and a large pool. The streambed is composed primarily of very coarse angular gravels and some cobbles. Based on 8 years of record, the long-term average annual discharge at SK100F is 30 cfs (Table 3.16-4). The lowest average annual discharge recorded was 24 cfs and the highest average annual discharge recorded was 37 cfs. Streamflow measurements were recorded at SK100F during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge measurements ranged from 1 to 8 cfs during the 7-year period of record. Spring and fall instantaneous peak discharge measurements were obtained over a 3- and 4-year period, respectively (Table 3.16-5). The lowest instantaneous peak discharge recorded was 54 cfs, during the spring of 2007. The highest instantaneous peak discharge recorded was 249 cfs, during the spring of 2006.

SK 119A, Tributary: Station SK119A is in an SFK River tributary (designated in baseline studies as SK 1.190), approximately 3.5 miles south of Kaskanak Mountain, a high point along the NFK/SFK rivers watershed divide. SK 1.190 enters SFK River approximately 21 miles upstream of the NFK River confluence. The tributary at the gaging station drains approximately 11 square miles near the outlet of a relatively steep, narrow tributary valley. At the gaging station, the creek flows within a narrow alluvial plain bounded by low terraces and colluvial hillslopes. The channel in this reach is characterized by riffles and runs, and the streambed is composed primarily of coarse gravels and cobbles. Based on 8 years of record, the long-term average annual discharge at SK119A is 35 cfs (Table 3.16-4). The lowest average annual discharge recorded was 27 cfs and the highest average annual discharge recorded was 51 cfs. Streamflow measurements were recorded at SK119A during March and early April to characterize low flow conditions (Table 3.16-3). Low-flow discharge measurements ranged from 2 to 8 cfs during the 6-year period of record. Spring and fall instantaneous peak discharge measurements were obtained over a 6- and 9-year period, respectively. (Table 3.16-5). The lowest instantaneous peak discharge recorded was 158 cfs, during the spring of 2007. The highest instantaneous peak discharge recorded was 606 cfs, during the fall of 2005.

Upper Talarik Creek

UT 100D, main stem: There are nine gaging stations along the main stem of UTC (Figure 3.16-4). Station UT100D is in the upper reaches of UTC, approximately 26 miles upstream of the mouth at Iliamna Lake, and roughly 2.5 miles east of the mine site. The drainage area above the station is approximately 12 square miles, consisting of mostly low-gradient wetlands and some adjacent upland, including the general deposit location. UTC meanders through floodplains and associated low terraces within a glacio-lacustrine (former glacial lake) basin. The channel in this

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reach is characterized by riffles and pools, and the streambed is composed primarily of medium gravel. Based on 8 years of record, the long-term average annual discharge at UT100D is 28 cfs (Table 3.16-4). The lowest average annual discharge recorded was 24 cfs and the highest average annual discharge recorded was 32 cfs. Streamflow measurements were recorded at UT100D during March and early April to characterize low-flow conditions (Table 3.16-3). Low-flow discharge ranged from 6 to 11 cfs during the 8-year period of record. Spring and fall instantaneous peak discharge measurements were obtained at UT100D over a 1- and 8-year period, respectively (Table 3.16-5). The lowest instantaneous peak discharge recorded was 103 cfs, during the fall of 2009. The maximum instantaneous peak discharge recorded was 272 cfs, during the fall of 2007.

Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005-2012

Stream	Station	Drainage Area (mi^2)	Record Length (yrs)	Lowest Measured Flow (cfs)	Median Measured Flow (cfs)	Highest Measured Flow (cfs)
NFK River	***Main Stem***					
	NK100A	105.86	8	11.9	47.6	84.5
	NK100A1	85.34	3	43.0	44.3	45.3
	NK100LF5	71.91	2	43.7	45.9	48.0
	NK100LF4	67.28	4	38.7	44.7	53.1
	NK100LF3	53.49	4	4.1	14.9	22.0
	NK100LF1	40.17	3	9.1	15.8	15.9
	NK100B	37.32	8	7.7	14.7	65.0
	NK100B1	37.18	1	9.4	9.4	9.4
	NK100C	24.35	8	8.3	12.9	21.5
	NK100C1	24.05	1	3.8	3.8	3.8
	Tributaries					
	NK108LF1	1.33	1	0.1	0.1	0.1
	NK119A	7.76	8	2.3	2.7	3.7
	NK119B	3.97	5	0.0	0.0	4.3
	NK119BLF1	3.37	1	1.4	1.4	1.4
SFK River	***Main Stem***					
	SK100A	106.92	6	63.5	76.6	125.0
	SK100LF11	90.00	1	13.9	13.9	13.9
	SK100LF10	87.17	4	11.6	13.9	24.6
	SK100LF9.6	80.68	1	0.2	0.2	0.2
	SK100B	69.33	8	14.7	28.6	45.7
	SK100LF9	68.56	4	30.7	33.8	36.3
	SK100LF8	54.41	1	26.8	26.8	26.8
	SK100B1	54.41	7	12.1	17.3	34.4
	SK100LF7	51.76	1	9.6	9.6	9.6

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005-2012

Stream	Station	Drainage Area (mi^2)	Record Length (yrs)	Lowest Measured Flow (cfs)	Median Measured Flow (cfs)	Highest Measured Flow (cfs)
	SK100B2	51.57	6	0.0	0.0	0.1
	SK100LF6	49.70	1	0.3	0.3	0.3
	SK100C	37.50	7	0.0	0.0	0.0
	SK100LF5	0.29	2	0.0	0.0	0.0
	SK100LF4.9	28.34	1	0.0	0.0	0.0
	SK100LF4	28.91	1	4.9	4.9	4.9
	SK100D	16.22	4	0.0	0.4	6.1
	SK100LF2	15.14	1	4.1	4.1	4.1
	SK100F	11.91	7	1.2	3.5	8.3
	SK100G	5.49	5	2.1	3.6	6.0
	Tributaries					
	SK116A	0.34	2	0.0	0.1	0.1
	SK117A	0.71	3	0.0	0.0	0.0
	SK119A	10.73	6	1.8	2.7	7.6
	SK124A	8.52	6	0.0	0.0	3.0
	SK131A	2.37	4	0.0	0.8	1.1
	SK133A	0.74	3	0.2	0.2	0.3
	SK134A	1.14	4	0.2	0.7	2.4
	SK136A	1.15	4	0.9	1.0	1.2
	SK136B	0.19	3	0.0	0.3	0.4
UTC	***Main Stem***					
	UT100APC3	134.16	3	85.3	135.3	166.4
	UT100APC2	110.16	4	86.1	95.8	114.0
	UT100APC1	101.51	5	43.1	93.9	127.4
	UT100A	101.45	3	89.3	94.7	175.0
	UT100LF8	89.60	4	84.4	105.9	137.8
	UT100B	86.23	7	87.7	97.5	132.7
	UT100LF7	71.72	4	34.8	69.5	97.5
	UT100C	69.46	6	18.1	50.4	136.5
	UT100LF6	70.72	2	46.1	62.1	78.1
	UT100LF5	65.35	3	47.8	49.1	50.2
	UT100C1	60.37	3	32.4	33.7	43.2
	UT100LF4	59.57	1	28.2	28.2	28.2
	UT100LF3	48.55	1	27.1	27.1	27.1

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Table 3.16-3: Early Spring Low-Flow Measurements Summary 2005-2012

Stream	Station	Drainage Area (mi^2)	Record Length (yrs)	Lowest Measured Flow (cfs)	Median Measured Flow (cfs)	Highest Measured Flow (cfs)
	UT100C2	48.26	5	10.3	24.0	26.0
	UT100D	11.96	8	5.7	8.1	10.5
	UT100LF1	6.36	1	6.8	6.8	6.8
	UT100E	3.10	8	3.3	3.9	4.6
	Tributaries					
	UT119A	4.05	8	21.5	23.8	28.0
	UT119B	1.72	4	0.1	0.4	1.2
	UT119LF1	2.32	1	15.7	15.7	15.7
	UT122LF1	0.06	1	1.1	1.1	1.1
	UT123LF1	1.49	1	1.1	1.1	1.1
	UT132LF1	1.24	1	0.5	0.5	0.5
	UT135A	20.42	3	7.6	13.7	22.3
	UT136LF1	1.57	1	0.6	0.6	0.6
	UT138A	2.75	3	0.6	1.0	1.1
	UT141A	1.66	4	1.0	1.1	1.4
	UT146A	1.86	3	0.0	0.6	2.7

Notes:

1 One low flow measurement was made between March 7 and April 2 in each year in which measurements were made. All sites were not measured every year.

2 The data used to prepare this table are sourced from Table 7-4 in Knight Piésold Ltd (2013). The original table presents the individual flow measurements made in each year.

3 Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

mi^2 = square miles; cfs = cubic feet per second

Note: Shaded rows are stations that represent streamflow in the upper portion or at the mouth of each watershed near the mine site and subject of more detailed discussion in the narrative.

Source: Knight Piésold 2015b, Table 7-4

Table 3.16-4: Mine Site Average Annual Streamflow Summary 2004 – 2012

Drainage	Station	Drainage Area (mi^2)	Record Length (yrs)	Average Annual Discharge (cfs)			
				Lowest Year	Median Year	Average Year	Highest Year
North Fork Koktuli River	NK100A	105.86	8	198.2	239.1	247.2	316.5
	NK100A1	85.34	8	169.0	198.3	205.0	260.9
	NK100B	37.32	8	64.2	81.6	84.3	112.8
	NK100B1[1]	37.18	0	-	-	-	-
	NK100C	24.35	8	36.7	47.2	47.5	63.2

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Table 3.16-4: Mine Site Average Annual Streamflow Summary 2004 – 2012

Drainage	Station	Drainage Area (mi^2)	Record Length (yrs)	Average Annual Discharge (cfs)			
				Lowest Year	Median Year	Average Year	Highest Year
	NK100C1[1]	24.05	0	-	-	-	-
	NK119A	7.76	8	14.8	22.0	23.8	35.5
	NK119B	3.97	8	2.5	4.1	4.3	6.5
South Fork Koktuli River	SK100A	106.92	8	215.1	267.4	259.3	303.9
	SK100B	69.33	8	145.4	188.5	183.7	229.0
	SK100B1	54.41	8	98.8	135.6	130.3	166.3
	SK100C	37.5	8	32.8	50.7	47.7	65.7
	SK100F	11.91	8	24.1	30.3	30.1	37.4
	SK100G	5.49	8	10.3	13.0	13.2	16.3
	SK119A	10.73	8	26.9	34.1	35.2	50.9
	SK124A	8.52	8	14.0	19.3	19.4	26.2
Upper Talarik Creek	UT100-APC3	134.16	8	286.0	326.2	324.1	351.1
	UT100-APC2	110.16	8	253.6	293.3	293.6	333.0
	UT100-APC1	101.51	8	230.0	264.5	261.8	288.5
	UT100B	86.24	8	190.0	223.0	221.4	251.0
	UT100C	69.47	8	134.2	155.0	157.5	185.7
	UT100C1	60.37	8	103.2	121.2	121.3	144.2
	UT100C2	48.26	8	87.6	105.5	104.7	125.1
	UT100D	11.96	8	23.8	28.4	27.8	31.9
	UT100E	3.1	8	7.5	9.1	9.0	10.5
	UT106-APC1	14.14	8	39.5	43.8	43.8	48.5
	UT119A	4.05	8	26.5	29.0	29.2	31.6
	UT135A	20.42	8	32.6	38.7	39.9	47.8

Notes:

Station NK100B1 and NK100C1 were installed in 2011 for the purpose of verifying measured flows at NK100B and NK100C.

Shaded rows are stations that represent streamflow in the upper portion or at the mouth of each watershed near the mine site and subject of more detailed discussion in the narrative.

mi^2 = square miles

cfs = cubic feet per second

Source: Knight Piésold 2015b, Table 7-3. The original table presents discharge and unit runoff values for each year of record.

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Table 3.16-5: Annual and Seasonal Instantaneous Peak Discharge at Select Gaging Stations - Mine Site, 2004-2012

Parameter	Maximum Instantaneous Discharge												
	North Fork Koktuli River				South Fork Koktuli River					Upper Talarik Creek			
	NK100A	NK100B	NK100C	NK119A	SK100A	SK100B	SK100C	SK100F	SK119A	UT100-APC2	UT100B	UT100 C2	UT100D
April - July Maximum Instantaneous Discharge (Spring)													
Record Length (yrs)	8	2	5	8	3	8	1	3	6	--	8	1	1
Lowest Recorded Peak (cfs)	687	230	132	110	489	380	116	54	158	--	404	598	156
Median Recorded Peak (cfs)	1525	443	284	271	1199	1140	116	172	335	--	1011	598	156
Highest Recorded Peak (cfs)	2310	655	586	404	1781	1710	116	249	484	--	1340	598	156
August-November Maximum Instantaneous Discharge (Fall)													
Record Length (yrs)	9	6	6	8	4	9	8	4	9	4	9	6	8
Lowest Recorded Peak (cfs)	793	403	117	241	1100	496	156	151	196	650	475	282	103
Median Recorded Peak (cfs)	1560	470	202	349	1208	1090	289	168	475	1005	926	483	185
Highest Recorded Peak (cfs)	2240	760	404	690	1484	1510	331	233	606	1404	1620	825	272

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Table 3.16-5: Annual and Seasonal Instantaneous Peak Discharge at Select Gaging Stations - Mine Site, 2004-2012

Parameter	Maximum Instantaneous Discharge												
	North Fork Koktuli River				South Fork Koktuli River					Upper Talarik Creek			
	NK100A	NK100B	NK100C	NK119A	SK100A	SK100B	SK100C	SK100F	SK119A	UT100-APC2	UT100B	UT100 C2	UT100D
Calendar Year Maximum Instantaneous Discharge													
Record Length (yrs)	9	2	4	8	4	9	2	3	7	--	9	1	2
Lowest Recorded Peak (cfs)	1430	438	163	306	1197	782	293	161	278	--	796	598	157
Median Recorded Peak (cfs)	1920	547	294	384	1209	1440	304	172	484	--	1230	598	212
Highest Recorded Peak (cfs)	2310	655	376	690	1781	1710	315	249	606	--	1620	598	267

Notes:

The fall 2004 peak flow was assumed to be the peak flow for the 2004 calendar year.

Shaded columns indicate stations that represent streamflow in the upper portion or at the mouth of each watershed near the mine site and subject of more detailed discussion in the narrative.

cfs = cubic feet per second

Source: Knight Piésold 2015b, Table 3, Appendix 7B. The original table presents the values for each year in which measurements were made.

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Meteorological Inputs to Water Balance Modeling

The mine site analysis area is in a transitional climatic zone with strong maritime influence. Summer temperatures are moderated by the open waters of Iliamna Lake, the Bering Sea, and Cook Inlet. Winter temperatures are more continental because of the presence of ice on Iliamna Lake and sea ice in Bristol Bay during the coldest months. Winter weather systems typically travel into the region from the Bering Sea to the west, from along the Aleutian Island chain to the southwest, and from the Gulf of Alaska to the south (Hoefler 2010).

A mine site water management plan is essential to understanding fresh water and mine process water requirements in relation to natural runoff timing and pit dewatering requirements, to design water management and treatment systems, and to minimize the potential for an uncontrolled discharge of untreated contact or tailings water. As part of the water management plan, water balance models were developed for the mine site for operations and closure. The models are used to understand the movement of surface water and groundwater in the mine site analysis area (Schlumberger 2011; Knight Piésold 2018a, 2018d) and to predict conditions under various circumstances (e.g., seasonal precipitation). The groundwater balance model is discussed in Section 3.17, Hydrogeology. Appendix K3.16 provides more detail regarding meteorological input and calibration of the water balance models.

Flood Hazards

The NFK, SFK, and UTC watersheds are essentially undeveloped, therefore there are no pre-mine flood hazards, because the floodplains are in their natural state and serve to naturally moderate floods.

Floodplain Values

The stream channels in the NKF, SFK, and UTC watersheds are highly sinuous and flow within floodplains containing wetlands and oxbow lakes. Existing floodplain values are related to biologic and water resources. Biological resources related to wetlands in the mine study area are described in Section 3.22, Wetlands/Special Aquatic Sites. Water resources include those resources and functions of floodplains related to natural moderation of floods, water quality maintenance, and groundwater recharge.

Flood Magnitude and Frequency

Peak flow estimates for the mine site study area are listed in Table 3.16-6. USGS regional regression equations were used for estimating instantaneous peak flows for the mine site for return periods up to 10 years (Curran et al., 2016). Weighted peak flow estimates for USGS gaging stations were used as the basis for estimating peak flows with return periods greater than 10 years throughout the mine study area drainages. Index flood ratios were generated relating the weighted peak flow estimates for return periods of 25 years to 200 years to the 10-year peak flow value for the corresponding gaging station (Knight Piésold 2018b).

Table 3.16-6 Return Period Peak Flows in Mine Study Area

		Estimated Instantaneous Peak Flows (cfs)						
Watershed	Station	Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}
NFK River	NK100A	1,923	2,511	2,956	3,569	4,082	4,649	5,270
	NK100B	678	901	1,037	1,252	1,432	1,631	1,849

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Table 3.16-6 Return Period Peak Flows in Mine Study Area

		Estimated Instantaneous Peak Flows (cfs)						
Watershed	Station	Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}
	NK100C	343	495	602	663	705	748	791
	NK119A	385	529	648	782	895	1,019	1,155
SFK River	SK100A	1,517	1,870	2,80	2,512	2,873	3,272	3,709
	SK100B	1,291	1,597	1,773	2,141	2,450	2,970	3,162
	SK100C	422	547	628	691	739	780	825
	SK100F	207	264	300	330	351	372	394
	Sk119A	480	617	688	831	950	1,082	1,227
UTC	UT100-APC2	1,647	2,018	2,237	2,462	2,622	2,778	2,940
	UT100B	1,191	1,483	1,646	1,811	1,928	2,044	2,163
	UT100C2	649	776	855	941	1,002	1,061	1,123
	UT100D	200	242	265	292	311	330	349

Notes:

QT refers to peak streamflow with average recurrence interval of "T" years.

Peak flows for return periods of 2 to 10 years were estimated based on the flood frequency analysis of local gaging records.

Peak flows for return periods of greater than 10 years were estimated based on the ratios of QT/Q10 from the regional equations.

cfs = cubic feet per second

Source: Knight Piésold 2018b, Table 6.14

3.16.1.2 Transportation Corridor

This section describes baseline surface water data across the transportation corridor in Alternative 1. The ferry route is addressed under natural gas pipeline corridor.

The road corridor spans multiple watersheds, from its starting point at the southeastern edge of the Nushagak watershed in the mine site, across the greater Kvichak watershed, including Iliamna Lake, to the Aleutian Range watershed divide, and finally entering the greater Cook Inlet watershed east of the divide.

The surface water hydrology in the watersheds surrounding the mine site is well characterized, as described above (e.g., HDR 2011; Knight Piésold 2011 and 2015b; SLR 2011). The northernmost segment of the transportation corridor (the northern half of the mine access road) is in the well-studied UTC watershed, for which abundant data are available. Limited data are available for the southern segment of the mine access road from the south ferry terminal to Amakdedori. No known surface water investigations have been conducted along the south access road.

Climatic factors influencing surface water across the corridor are the same or similar to those described above for the mine site; there are no glaciers in the road corridor watersheds. There is no known permafrost in the transportation corridor; however, permafrost has been observed in the general area (Detterman and Reed 1973) and may be present at depth in isolated zones, such as on north-facing slopes. Section 3.14, Soils, addresses the occurrence of permafrost.

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Drainage Basins

Mine Access Road

The maximum elevation of the transportation corridor is approximately 1,700 feet amsl among gently rounded hills and wide valleys. The northern half of the mine access road would roughly parallel the UTC watershed, using culverts to cross a number of small tributaries and a bridge to cross the main channel of the UTC.

Iliamna Spur Road

The Iliamna spur road corridor heads eastward out of the UTC drainage and enters the Newhalen River watershed. The Newhalen River is one of the larger rivers in the area, with a drainage area of 3,451 square miles at its mouth (Knight Piésold et al. 2011a). It drains glaciated mountainous headwaters, is the main outlet for the large glacial Lake Clark, and has a high suspended sediment load. The Newhalen River flows southward through poorly drained lowland/wetland areas with abundant kettle ponds. Numerous small tributaries feed into the river before it reaches its outlet into Iliamna Lake, 3 miles southwest of the village of Iliamna. A bridge would be constructed across the Newhalen River along the Iliamna spur road.

Just south of the intersection with the Iliamna spur road, the transportation corridor turns southwest, paralleling an unnamed drainage that flows southward and drains into Iliamna Lake just south of the north ferry terminal. The corridor drops in elevation southward as the terrain flattens out over glacial and fluvial deposits, with abundant kettle ponds and wetlands (Wahrhaftig 1965, 1994). The mine access road terminates at the north ferry terminal at an elevation of approximately 50 feet amsl.

South Access Road

The northern two-thirds of the south access road and the Kokhanok spur road are in the Kvichak watershed, west of the Aleutian Range divide. In the Aleutian Range physiographic province, the terrain consists of low, rounded ridges of exposed bedrock, and valley bottoms dominated by wetlands, streams, and abundant kettle ponds (Wahrhaftig 1965, 1994). Bedrock exposures are common, with less-abundant surficial deposits of ground moraine and alluvium (Detterman and Reed 1973; AECOM 2018h). Elevations range from 50 feet amsl at the shores of Iliamna Lake, to about 800 feet amsl near the divide. Streams flow north in sinuous patterns through the varied upland terrain, eventually meandering downgradient into Iliamna Lake.

This segment of the road would require four bridges, including the Gibraltar River bridge near Iliamna Lake, Bridge Lake bridge, and two unnamed creek bridges just west of the divide. The corridor passes within a mile of Gibraltar Lake, a prominent elongate lake approximately 7 miles long by 0.5 mile wide, of unknown depth. Gibraltar Lake is fed by small streams on the southern and western sides, including Dream Creek and Emerald Creek, and likely groundwater as well; the lake drains north into the Gibraltar River and then into Iliamna Lake.

East of the Aleutian Range divide, the final segment of the transportation corridor drops into the Tuxedni-Kamishak Bay watershed of the greater Cook Inlet watershed. The terrain east of the divide is rocky and undulating, with elevations close to 800 feet amsl at the divide, dropping down to more gentle slopes and wetlands nearing the coast at sea level. There are fewer kettle ponds east of the divide. Streams flow in sinuous patterns through the varied terrain, eventually draining south and east into Kamishak Bay. The road corridor here would include two bridges, including Bridge Lake bridge just east of the divide, and an Unnamed Creek bridge close to the port. The terminus of the road corridor is east of Amakdedori Creek at the Amakdedori port site.

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Amakdedori Creek is a meandering stream fed by a number of small lakes and tributaries, which drains east into Kamishak Bay.

Streamflow

Mine Access Road

The mine access road would cross multiple small tributaries in the UTC watershed; using culverts to cross small tributaries and a bridge to cross the main channel of the UTC. The UTC has a drainage area of 135.2 square miles, and a mean annual discharge of 225 cfs (Knight Piésold 2011). Flow in the UTC is generated by snowmelt, rainfall, and groundwater, and is fully described under the mine site discussion above. Smaller drainages and tributaries of the Kvichak watershed that drain into Iliamna Lake are also fed by snowmelt and rainfall, and likely have significant groundwater interaction.

Iliamna Spur Road

The Iliamna spur road would include a substantial bridge over the Newhalen River, which has a drainage area of 3,451 square miles at its mouth and is one of the largest rivers in the area (Knight Piésold et al. 2011a). A USGS gaging station was installed at the Newhalen River (ID 15300000) close to the village of Iliamna in 1951, and was active through 1986. PLP installed two new gaging stations in 2008: one at the same USGS site (NH100-APC3), and the other 8 miles downstream (NH100-APC2). Flow in the Newhalen River increases substantially in spring and early summer as a result of snow and glacial melt. Snowmelt runoff is stored in several large lakes upstream of the gaging station (ID 15300000), resulting in delayed peak flows during July and August, which are the highest annual flows. As with other local drainages, flow declines in late summer and autumn, with the lowest flows occurring in late winter (Knight Piésold et al. 2011). The Newhalen River has a mean annual unit runoff of 2.6 cubic feet per square mile (or approximately 35 inches of annual basin runoff depth) (Knight Piésold et al. 2011a).

South Access Road

Drainages in the project area south of Iliamna Lake have not been the focus of any known hydrologic studies to date. Streams and tributaries along the South Access Road corridor are likely fed by spring snowmelt, rainfall runoff, and groundwater. Groundwater contributes to streamflow east of the divide, in the Tuxedni-Kamishak watershed, particularly in the winter months (Glass 1999). There is no known stream gage data in proximity to the south access road corridor. The closest known stream gage data are from Williams Creek and an unnamed creek in locally named Y valley, about 30 miles northeast. Data from these streams are limited, and the watersheds are more mountainous and likely hydrologically different from the road corridor area.

Flood Magnitude and Frequency

The mine access road would require a bridge across the UTC east of the mine site. At the proposed bridge site, the UTC meanders within a floodplain containing wetlands, oxbow lakes, and associated low terraces. The Iliamna spur road would require construction of the Newhalen River bridge. Upstream of the bridge site, the Newhalen River flows within a wide floodplain containing wetlands, which narrows at the bridge site.

Along the south access road, the Gibraltar River meanders within a floodplain containing wetlands and oxbow lakes at the site of the proposed bridge. Limited information is available on

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floodplains and flood data for other streams that would require bridge and culvert crossings. The southernmost section of the south access road is listed as a mapped area in the Federal Emergency Management Agency (FEMA) Flood Mapping database (FEMA quadrants 0200125250A and 0200124875A), but no flooding data are available for this area (FEMA 2018 https://msc.fema.gov/portal/search).

Surface Water Extraction Sites during Construction

Figure 4.16-7 (in environmental consequences, Section 4.16, Surface Water Hydrology) depicts surface water extraction sites that would be used to support construction and maintenance of the access roads (PLP 2018-RFI 022).

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Stream Crossing Bank Erosion/Scour

Erosion of stream banks is generally caused by an increase in flow during flooding events. There are no known studies of baseline stream bank erosion along the transportation corridor.

Fish habitat field studies conducted in summer 2018 included collection of substrate composition (e.g., sand, silt, gravel) and water turbidity (PLP 2018-RFI 036). This information is discussed in Section 3.18, Water and Sediment Quality.

3.16.1.3 Amakdedori Port

Drainage Basins

Amakdedori port is in the Tuxedni-Kamishak Bay watershed of the greater Cook Inlet watershed. The Aleutian Range west of the port forms the divide between the Kvichak and Cook Inlet watersheds. The terrain is rocky and undulating with elevation of about 800 feet amsl at the divide, and drops down to more gentle slopes and wetlands around the port area. Streams flow generally south and eastward in the port area, draining into Kamishak Bay. No detailed hydrologic data is available for Amakdedori Creek.

Streamflow

No streamflow gaging stations are present in the port area (USGS 2018). The closest known stream gage data are from Williams Creek and an unnamed creek (Y valley) approximately 30 miles northeast of the port. Data from these streams are limited, and the watersheds are more mountainous and likely hydrologically different from the port area, and thus not comparable.

Flood Hazards

The port would be developed above the floodplain above Amakdedori Creek; therefore there are no flood hazards. The creek would remain in its natural state and serve to naturally moderate floods.

Flood Values

The stream channel in the vicinity of the port location, Amakdedori Creek, is sinuous and flows within its floodplain. Floodplain values are related to biologic and water resources. Biological resources related to wetlands within the mine study area are described in Section 3.22, Wetlands/Special Aquatic Sites. Water resources include those resources and functions of floodplains related to natural moderation of floods, water quality maintenance, and groundwater recharge. The area is not populated and there is currently no infrastructure in the area that would be within the floodplain.

Flood Magnitude and Frequency

The port site area is listed as a mapped area in the FEMA Flood Mapping database (FEMA quadrant 0200125250A), but no flooding data are available for this area (FEMA 2018).

Surface Water Use

There is no known or documented surface water use at the proposed port site. The mouth of Amakdedori Creek is just south of the proposed port. The creek has been advertised as a destination for recreational fishing, but its use has not been documented.

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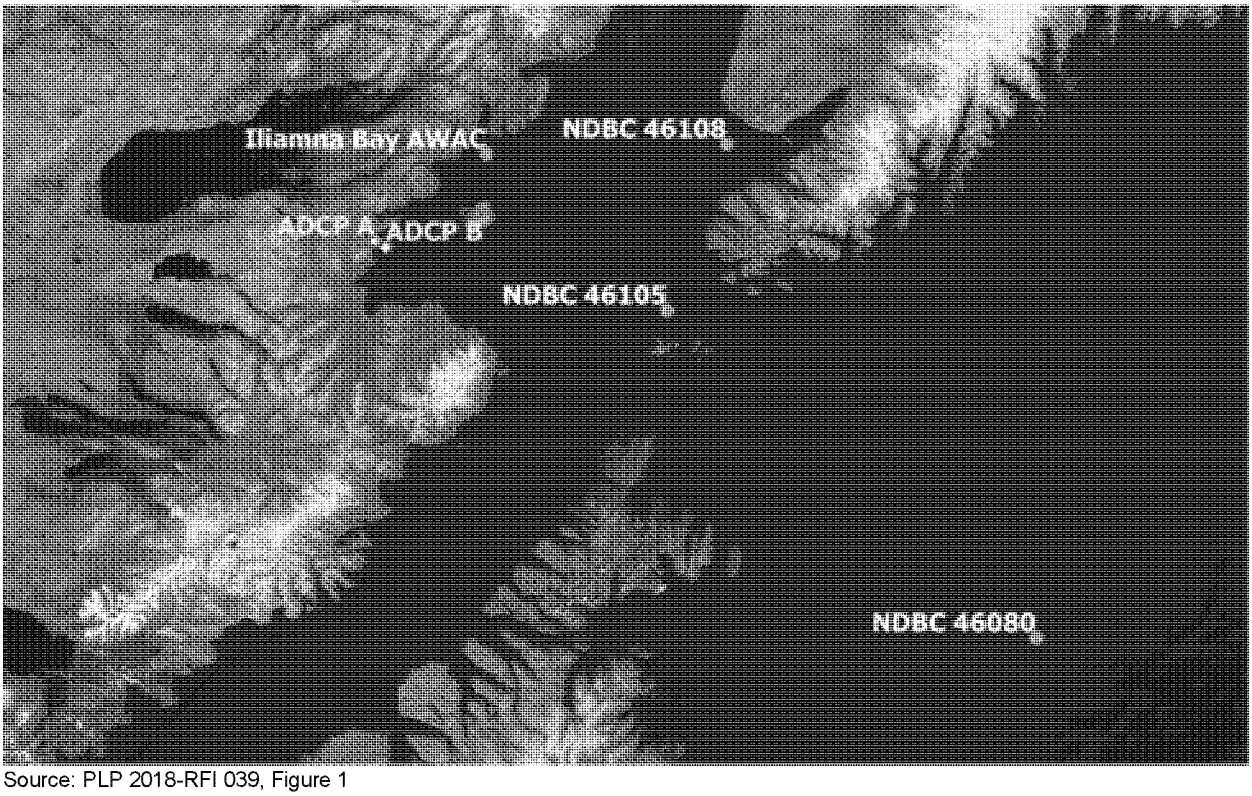
Marine Water – Western Marine Landfall of Natural Gas Pipeline

Available Information

Environmental baseline data for the proposed western landfall of the natural gas pipeline were collected in the Iliamna and Iniskin bays area, 25 to 30 miles north of the proposed Amakdedori port site (Pentec et al. 2011). Amakdedori lies on the western shore of Kamishak Bay, with meteorology and oceanography characteristics more similar to Cook Inlet than the more sheltered locations where the baseline data were collected. Consequently, the baseline data relate to a distinctly different marine environment and could not be used to describe the Amakdedori port site.

Available site-specific data regarding oceanographic conditions at and near the Amakdedori port site are described in PLP 2018-RFI 039. Publicly available information includes regional wave data from three National Oceanographic and Atmospheric Administration (NOAA) buoys, two of which are in Lower Cook Inlet (NDBC 46108 and NDBC 46105), and the third (NDBC 46105) in the Gulf of Alaska, southeast of Kennedy Entrance. An acoustic wave profiler (AWAC) was deployed near entrance to Iliamna Bay between 2010 and 2012. Two acoustic Doppler current profilers have been deployed near Amakdedori port site in a metocean program, which is scheduled for completion in March 2019. Locations of these instruments are shown in Figure 3.16-6

Figure 3.16-6: Locations of Available Wave Data



Source: PLP 2018-RFI 039, Figure 1

Regional Wave Climate

With regard to the suitability of Amakdedori as a port site, the most important meteorological aspects are exposure to wind and the resultant waves (especially from northeast and east), as well as the presence of sea ice. Wave data from the three NOAA buoys were analyzed to

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determine "return periods" of various magnitudes of the "significant wave height." These data were used to evaluate wave conditions at Amakdedori, and also at Lightering Locations A and B (Alternative 1) and Iniskin Bay (Alternatives 2 and 3) (See Chapter 2, Alternatives).

The return period of an event is based on the probability of occurrence of that event in any given year. For example, if an event has an annual probability of occurrence of 0.10, or 10 percent, it is referred to as having a 10-year return period; the 25-year return period refers to an event having an annual probability of occurrence of 0.04, or 4 percent, and so on. The "significant wave height" is defined as the mean height of the highest one-third of the waves.

Table 3.16-7 lists return periods from 2 to 25 years of significant wave heights from all three NOAA buoys and the Iliamna Bay AWAC. Figure 3.16-7 and Figure 3.16-8 are wave "roses" for buoys NDBC 46105 and NDBC 46108 that show the directions from which waves were observed as percentages of total observations for ranges of significant wave heights measured by each buoy. NDBC 46105 is fully exposed to waves from east and southeast, but also receives significant wave activity from the west due to locally generated storms.

Table 3.16-7: Offshore Data Available from NBDC and External Sources

Source	Dates of Data Available	Return Period H_s (ft)				T_p(s) for large events
		2 Year	5 Year	10 Year	25 Year	
NBDC 46080	2002 – 2012	26	32	34	36	11-14
NBDC 46105	2008, 2011 – 2012	23	25	27	-	9-12
NBDC 46108	2011 – 2013, 2015 – 2018	9	10	11	12	8-11
Iliamna Bay AWAC	2010 – 2012	15	17	18	-	8-9

Source: PLP 2018-RFI 039, Table 1

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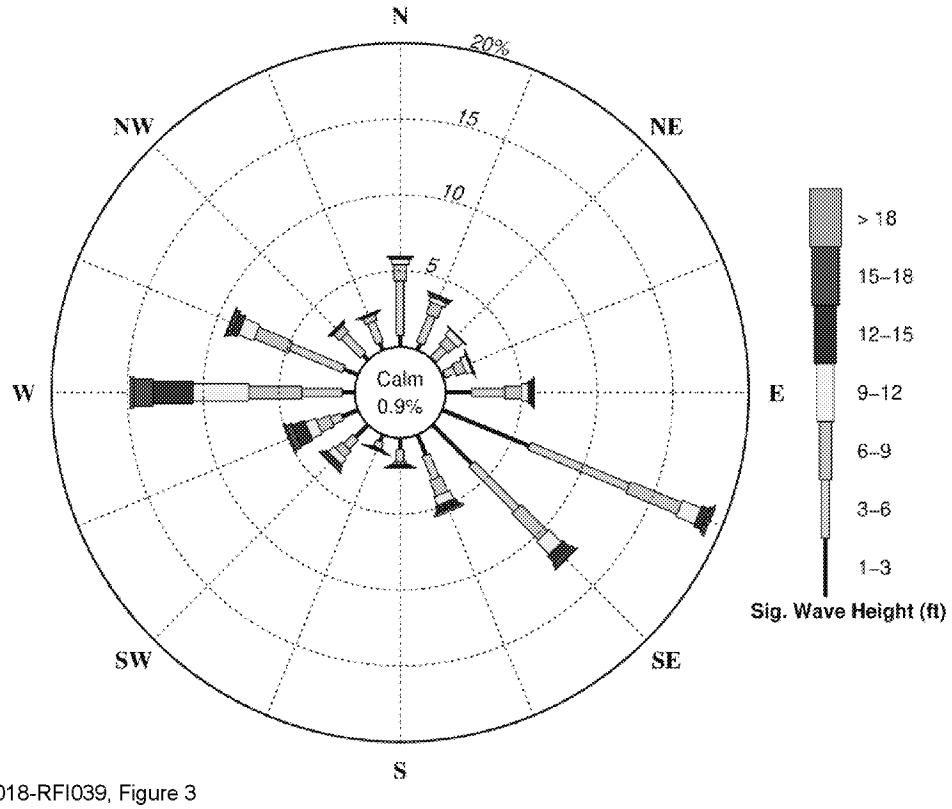
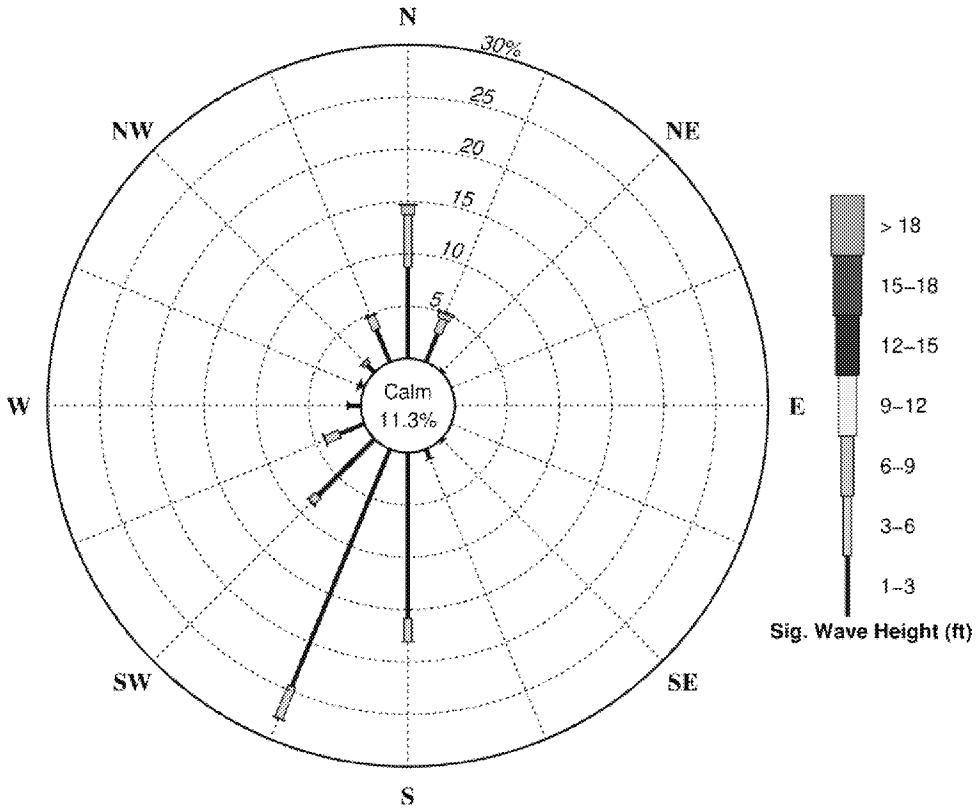
Figure 3.16-7: Wave Rose of Wave Conditions from Buoy NBDC 46105



Source: PLP 2018-RFI039, Figure 3

Figure 3.16-8: Wave Rose of Wave Conditions from Buoy NDBC 46108



Source: PLP 2018-039, Figure 4

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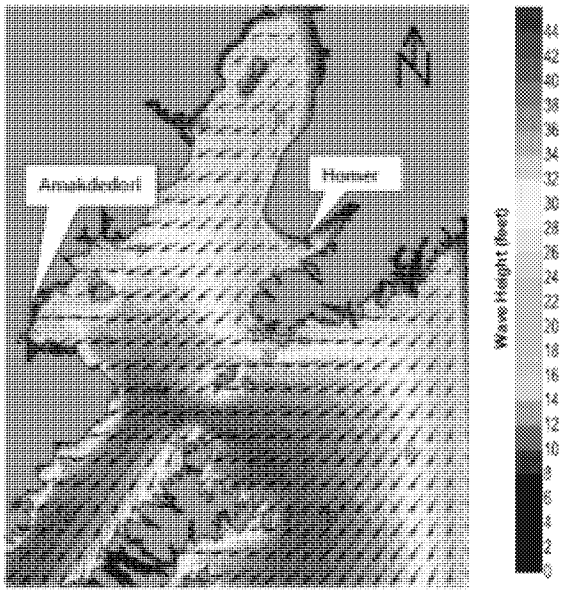
Local Wave Climate

As waves travel into the immediate vicinity of Amakdedori port, they are transformed both in height and direction by processes of "shoaling" and "refraction" due to the decreasing water depth and varying seabed topography. Evaluation of port options included running of numerical wave models (SWAN [simulating waves nearshore] and Delft3D) which are widely used by port designers for this purpose. Figure 3.16-9 and Figure 3.16-10 show SWAN model outputs for waves from east-northeast and east-southeast, respectively. The results of modeling indicates that long-period swell from the Gulf of Alaska is able to penetrate Kamishak Bay and reach the Amakdedori port site. Results also showed that waves from northeast have slightly smaller significant wave height than waves from southeast.

Numerical results from the model runs (Table 3.16-8) enabled determination of wave conditions (significant heights, periods, and direction) for a range of wind speeds from northeast (058^0), east (090^0), and east-southeast (116^0). Also shown is the percent reduction in significant wave height due to shoaling and refraction as waves travel from offshore to nearshore.

Figure 3.16-9: SWAN Model Outputs for Waves from the East-Northeast



Source: PLP 2018-RFI039, Figure 5

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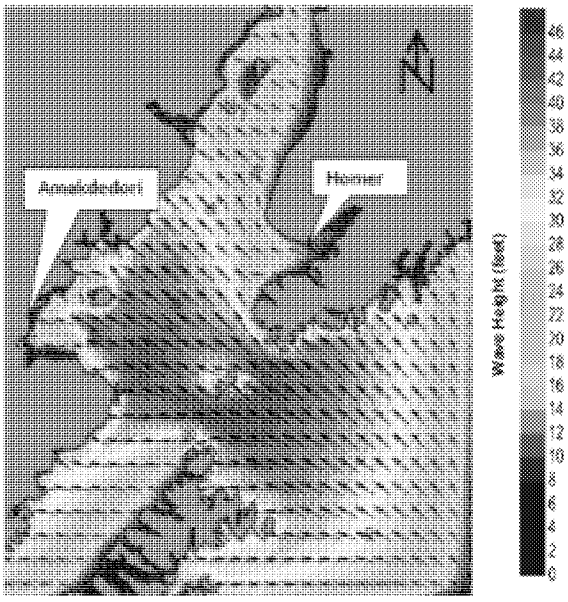
Figure 3.16-610: SWAN Model Outputs for Waves from East-Southeast



Source: PLP 2018-039, Figure 6

Table3.16-8: Results of Numerical Modeling at Amakdedori Port Site

Run #	Input					Output		
	Wind		Wave			Percent Reduction in Hs		
	Wind Speed (m/s)	Direction (deg)	Hs (ft)	Tp (s)	Dir	Nearshore	Approach	Offshore
1	10	58	1.6	3.5	58	81%	81%	100%
2	20	58	5.6	6	58	70%	82%	93%
3	40	58	20	9	58	54%	71%	82%
4	60	58	32.8	12	58	37%	69%	80%
5	10	90	1.6	3.5	90	94%	94%	100%
6	20	90	5.9	6	90	83%	88%	95%
7	40	90	20.1	9	90	57%	77%	85%
8	60	90	36.1	13	90	35%	68%	78%
9	10	116	1.6	3.5	116	94%	94%	100%
10	20	116	5.9	6	116	83%	88%	95%
11	40	116	22.3	11	116	53%	75%	79%
12	60	116	39.4	14	116	32%	64%	73%

Source: PLP 2018-RFI 039, Table 5

During scoping meetings in April 2018, the following remarks were recorded from Mr. Chester Passic, Commander in the US Coast Guard (Peninsula Reporting 2018):

> *I'm a commander in the United States Coast Guard. I'm the captain of a Coast Guard vessel Hickory stationed here in Homer. I do all of the aids to navigation in the Cook Inlet, the buoys and the lights…. We do not keep buoys in Cook Inlet for six months a year because of the weather and ice, and we can't keep buoys in Cook Inlet at that time. Kamishak Bay where the deepwater port is proposed is one of the worst places in the*

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world to operate in terms of combination of tide, current, winds, weather. And I don't know if -- I think the Corps needs to investigate the deepwater port there. My concern would be that we can't keep aids to navigation for the vessels going in and out of there.

Marine Water Dynamics – Tides, Currents, and Storm Surge

At Nordyke Island (about 6 miles south-southeast of Amakdedori), the mean tide range is 13.0 feet, while the maximum diurnal range is 15.3 feet). Prevailing currents are those associated with the tide, and are generally aligned with bottom contours of the seabed.

Storm surge occurs when strong winds cause a change in local mean sea level. An elevation of sea level is called a "positive" surge, while a depression of sea level is a "negative" surge. Strong winds from the northeast or east could produce a positive storm surge in Kamishak Bay. However, the relatively steep slope of the seabed near the proposed port site would minimize the effects of a storm surge at the port site if it occurred.

Sea Ice

Two compilations of sea ice information for Cook Inlet are available: The Marine Ice Atlas for Cook Inlet (Mulherin et al. 2001) and Pebble Project Ice Database 1997 to 2016 (Dickens 2018). Mulherin et al. (2001) included maps depicting various measures of ice conditions for each biweekly interval between December 1 and March 31 for the period January 1986 to April 1999 (14 winters), which were based on ice charts constructed by the National Weather Service using aerial and satellite photography as well as visual reports. The Dickens (2018) study was undertaken to create an updated database that is representative of current climatic conditions and to provide more locally relevant sea ice information for three locations near the proposed project: 1) Amakdedori port site, 2) lightering location A in middle of Kamishak Bay, and 3) the alternative Diamond Point port site, accessed through Iliamna Bay (See Chapter 2, Alternatives).

The database developed by Dickens (2018) is based on the US National Ice Center archive of 359 Cook Inlet ice charts that span the 19-year period from 1997 to 2016. Data are summarized in tables for each of the study sites, showing dates of first and last observed ice of any severity, the number of weeks of "significant" ice, and maximum concentration of any ice thicker than 10 centimeters (cm), excluding new ice, which is easily broken up by wind, waves and vessel operations. The following paragraphs provide the conclusions drawn from the independent review of Dickens (2018) report.

The database shows that ice conditions at the Amakdedori and Diamond Point port sites are very different. Over the 19 ice seasons during the period 1997 to 2016, the Amakdedori port site rarely experienced compact ice for any extended period and averaged only 3 weeks per year of "significant" ice, while Diamond Point saw nearly twice as long with an average of 5 to 6 weeks per year. In general, the Diamond Point port site had thicker ice in higher concentrations for longer periods than Amakdedori port site.

Ice cover at lightering location "A" was sporadic, during each season and from year to year. In five of the 19 winters studied, there was no ice at this location. The maximum duration of "significant" ice at lightering location "A" was five weeks in two seasons. In the other 17 seasons, "significant" ice was present for 2 weeks or less.

A preliminary comparison suggests that ice severity at Amakdedori port site and lightering location "A" might have decreased in last two decades, as compared to the 1984 to 1999 period studied by Mulherin et al. (2001). For example, the two-week period from March 1 to March 15,

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EPA-0135-0002569

studied by Mulherin (2001), showed probabilities of ice concentrations[1] (using concentration criterion of ≥ 5/10) of 75 to 100 percent at Amakdedori port site and 50 to 75 percent at lightering location "A." For the period 1997 to 2016 and using the same ≥5/10 concentration criterion, the Dickens (2018) database showed probabilities of 58 percent and 26 percent at Amakdedori and Diamond Point, respectively. However, Dickens (2018) reported that there is no clear trend for any of the sites over the 19 ice seasons covered in the more recent database.

Iliamna Lake

Available Information

Iliamna Lake is the largest lake in Alaska. Approximately 75 miles long by 22 miles wide, its surface area is about 1,000 square miles. Its greatest depth is more than 980 feet, but its mean depth is only about 144 feet. HDR 2011a provides baseline information regarding water quality, sediment, and biological components for Iliamna Lake (see Section 3.18, Water and Sediment Quality).

Meteorology and Wave Climate

Regarding the ferry terminal locations (and alternative locations described in Chapter 2, Alternatives) on Iliamna Lake and the ferry route(s), the most important meteorological aspects are exposure to wind and the resultant waves (especially from northeast and east), and the presence of lake ice. Meteorological data for Iliamna Lake are available from Iliamna Airport, for which the record extends from the 1940s; however, no statistical summary other than the Iliamna wind rose (for 2000 through 2008) was located (Figure 3.16-11).

[1] Ice concentration is the amount of ice covering an area, written as either a fraction or percentage of ice coverage. In general 3/10 (30%) is navigable by ship; 9/10 (90%) is considered solid ice (http://seaiceatlas.snap.uaf.edu/glossary).

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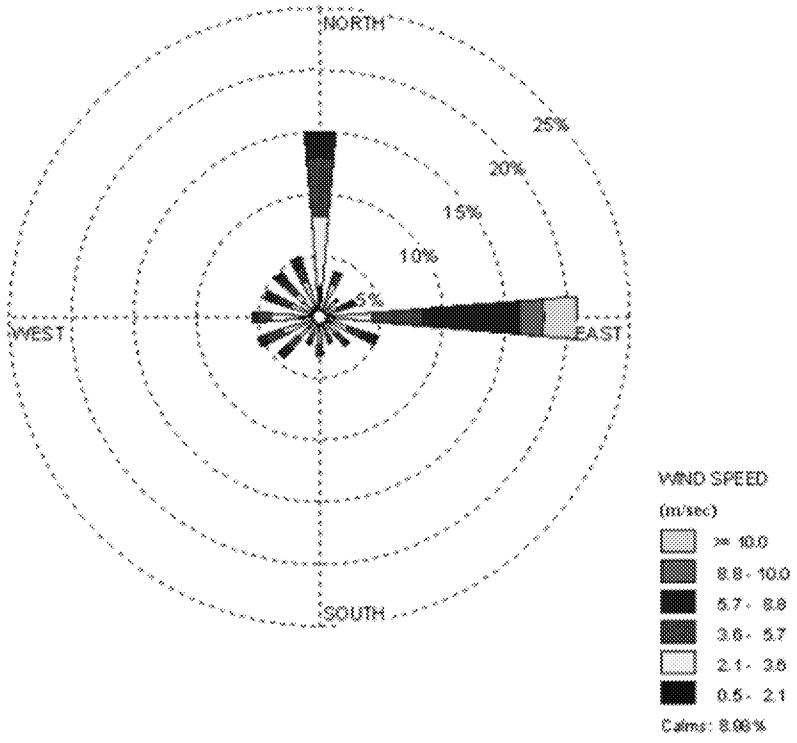
Figure 3.16-741: Iliamna Airport Wind Rose, 2000 through 2008



m/sec = meters per second. 1 m/sec = 2.2 miles per hour

Source: Hoefler 2010a, Figure 2-2

Figure 3.16-12 indicates that winds at Iliamna are essentially bimodal, either from the east or north, with direction likely governed by local terrain. For the 4 years of meteorological studies included in Hoefler (2010a), for the period of measure 2005 to 2008, maximum hourly mean wind speeds ranged from 20 to 22 miles per hour (mph) (summer), to 43 to 47 mph (winter) for 2005 to 2007, but were somewhat less at 16 to 25 mph in the least windiest year of 2008.

A cursory (i.e., non-statistical) review of data from both Iliamna and Igiugig (at the western end of Iliamna Lake), available at National Climatic Data Center (https://www.ncdc.noaa.gov/data), showed that maximum wind speed of 40 mph is common.

Using wave forecasting equations from the US Army Corps of Engineers (USACE) Coastal Engineering Manual (USACE 2002), for a fetch length of 35 miles from the proposed ferry crossing to the northeastern end of Iliamna Lake, a significant wave height of 10 feet meters and dominant wave period of 6.5 seconds were calculated. Anecdotal information, collected at scoping meetings, suggests that 40 miles per hour might be a gross underestimate of maximum wind speeds experienced on Iliamna Lake, as noted below (Midnight Sun Court Reporters 2018):

> *I spent many years in Igiugig in the fall, and it probably blows 100 miles an hour at Lake Iliamna three to five times a year. 100 miles an hour. They want to cross it all the time.*

Lake Ice Hazards

The ice-covered season at Iliamna Lake is highly variable. Complete freeze-over occurs between late October and mid-March, and can last for 2 to 5 months before break-up. The average length of the ice-covered season is expected to be about 115 days, based on 15 years

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of data collected in several southwestern Alaska lakes (Verrier and Kirchner 2016). Limited data are available on ice thickness in Iliamna Lake; anecdotal reports indicate that it can be about 4 feet thick in late spring (Billmeier 2016), but can range from several inches to several feet at the same time over a short distance (ADF&G 2008). The variation in lake ice thickness may be at least partially attributable to stacking of ice floes. Lake ice hazards, such as pressure ridges driven by wind, are known to occur in Iliamna Lake (Billmeier 2015; Andrew 2017).

Ice coverage areas of Iliamna Lake were compiled and georeferenced, using Moderate Resolution Imaging Spectroradiometer (MODIS) imagery for the period December 1 through June 1 for each winter from 1999/2000 through 2017/2018 (ABR 2018a). Daily images of the lake were reviewed to identify areas of ice cover or open water to develop a time series of ice cover for each winter. The plotted time series showed timing and speed of ice cover formation as well as the range of uncertainty due to cloud cover. Ice duration (days with ice) was calculated for each of 340 square grid cells and used to determine median durations for the entire time series.

The analysis spanned 19 winters, with 15 that had prolonged periods of complete or nearly complete ice cover. Four winters had minimal or no periods of complete ice cover. During one winter (2015/2016) only trace ice cover was observed during entire winter. Often, there were weeks of uncertainty regarding ice conditions because of cloud cover.

Figure 3.16-12 (ABR 2018a) is a map of median ice duration that shows pattern of shortest duration (<105 days) in the eastern portion of the lake, as far west as Iliamna. Median ice duration is intermediate across the lake to Kokhanok (96 to 110 days), except along the shore in the bays and islands east of Kokhanok. Farther west, the median ice duration increases gradually, ranging from 106 to 140 days.

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Figure 3.16-~~8~~12: Median Ice Duration on Iliamna Lake – Winters 2000/2001 through 2017/2018

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3.16.1.4 Natural Gas Pipeline Corridor

Available surface water data in the natural gas pipeline corridor are the same as those described for the transportation corridor, with the exception of the Cook Inlet crossing and the eastern Cook Inlet pipeline landfall at Anchor Point. The marine portion of the pipeline corridor is addressed above under Amakdedori Port, Marine Water – Western Cook Inlet Landfall.

Drainage Basins

The drainage basin descriptions for most of the natural gas pipeline corridor are the same as those provided for the transportation corridor.

3.16.2 Action Alternative 2 – North Road and Ferry

A detailed description of Alternative 2 is described in Chapter 2, Alternatives.

Drainage Basins

The principle (named) streams along the transportation corridor between Diamond Point port site and the mine site include Williams Creek, Chinkelyes Creek, Iliamna River, Long Lake Creek, Pile River, Knutson Creek, Canyon Creek, Chekok Creek, Roadhouse Creek, and the Newhalen River. Williams Creek flows into Iliamna Bay in Cook Inlet, and all the other watercourses flow directly or indirectly into Iliamna Lake. East of the Newhalen River crossing, the mine access road and pipeline corridor cross into the UTC watershed, and follow the route described under Alternative 1 to the mine site.

The onshore pipeline segment that would cross between Ursus Cove and Cottonwood Bay would follow a glacial valley bounded by steep terrain. There are no principle (named) streams along this segment of the route.

The Diamond Point port site would be on the eastern side of the Aleutian Mountain Range, a coastal mountainous terrain with a maritime climate. Along these coastal mountains, rapid snowmelt and rainstorm runoff is facilitated by the steep terrain, and thin surficial sediments on mountain slopes. Closer to the mine site, peak flow attenuation and baseflow augmentation are facilitated by gentler terrain, increased thickness of surficial sediments, and increased number of surface waterbodies (Knight Piésold et al. 2011a).

Streamflow

Along the Alternative 2 ferry access route between Diamond Point port and Pile Bay ferry terminal, the USGS operates one crest gaging station on Chinkelyes Creek Tributary (Figure 3.16-17 and Table 3.16-9). Along the Alternative 2 pipeline route between Pile Bay and the mine site, the USGS operates one continuous streamflow gaging station on Roadhouse Creek, and one on the Newhalen River (Figure 3.16-13 and Table 3.16-12). Newhalen River streamflow is described under Alternative 1.

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Figure 3.16-~~9~~13: Stream Gaging Stations – Transportation Corridor, Alternative 2

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Table 3.16-9: USGS Gaging Stations in Transportation and Natural Gas Pipeline Corridors – Alternative 2

Station			Location		Period of Record				Drainage Area (m^2)	Mean Annual Discharge		Mean Annual Peak Flow	
USGS ID	USGS Name	Type	Lat (N)	Long (W)	Start Year	End Year	No. Complete Water Years	No. Annual Peaks		Absolute Discharge (cfs)	Unit Discharge (cfs/mi2)	Absolute Discharge (cfs)	Unit Discharge (cfs/mi2)
15300200	Roadhouse Creek Near Iliamna AK	Crest	59°45'26"	154°50'49"	1973	1983	--	10	20.8	--	--	128	6.2
15300200	Roadhouse Creek Near Iliamna, AK	Continuous	59°45'26"	154°50'49"	2005	2008	3	4	20.8	29.1	1.4	198	9.5
15300300	Iliamna River Near Pedro Bay, AK	Continuous	59°45'31"	154°50'41"	1996	2008	12	13	128	914	7.1	15,900	124.2
15300350	Chinkelyes Creek Tributary Near Pedro Bay. AK	Crest	59°44'02"	154°48'40"	1997	2008	--	12	0.4	--	--	84.4	211.0

Note: Lat (N) = Latitude (North), Long (W) = Longitude (West), cfs = cubic feet per second m^2 = square mile(s). AK = Alaska

Source: Knight Piésold et al. 2011a (Table 7.3-1)

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Annual hydrographs of mean monthly flows at Roadhouse Creek and Iliamna River gaging stations are presented in Figure 3.16-14. The hydrographs show that Roadhouse Creek experiences lowest flows during winter months, and the highest monthly flows of the year during the autumn rainstorm season. Iliamna River has a somewhat similar pattern of annual flows, except that the highest monthly flows of the year occur during the spring snowmelt due to the large snowpack that accumulates in the mountainous basin. The summer low-flow period is also less pronounced in Iliamna River than in Roadhouse Creek due to ongoing flow contributions from high-elevation snowmelt and glacier melt through the summer (Knight Piésold et al. 2011a).

Figure 3.16-~~10~~14: Mean Annual Hydrograph Comparison – Iliamna River and Roadhouse Creek USGS Gaging Stations

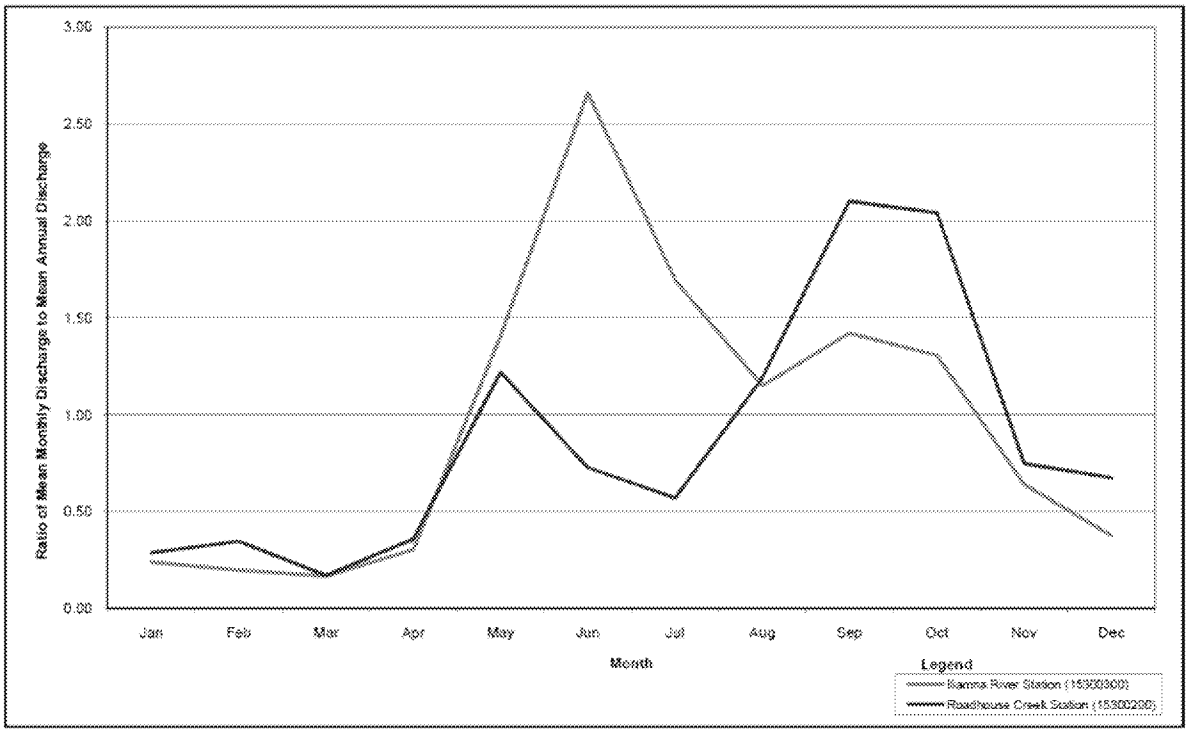

FIGURE 7.3-2
Normalized Mean Annual Hydrographs from USGS Gaging Stations in the Transportation Corridor Study Area

Source: Knight Piésold et al. 2011a (Figure 7.3-2)

In addition to the USGS gaging stations, instantaneous discharge measurements were recorded on select streams along the Alternative 2 transportation and natural gas pipeline corridors. Summer instantaneous discharge measurements were collected in 2004 (Table 3.16-10). Winter instantaneous discharge measurements were recorded in 2005 (Table 3.16-11). Summer instantaneous discharge measurements were recorded in 2005 (Table 3.16-12).

Flood Magnitude and Frequency

Peak streamflows on streams along the Alternative 2 transportation and natural gas pipeline corridors were estimated using USGS regional regression equations (Knight Piésold et al. 2011a). Estimated peak streamflow values for Alternative 2 stream crossings are presented in Table 3.16-13.

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Table 3.16-10: Summer 2004 Instantaneous Discharge Measurements in Transportation and Natural Gas Pipeline Corridors – Alternative 2

2004 Instantaneous Discharge Measurements Sample Location (West to East)		July 2004		August 2004		September 2004		August 2004	
		Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
GS-23	Chinkelyes Creek	--	--	--	--	--	--	--	--
GS-3a	Iliamna River	--	--	19-Aug	338.7	25-Sep	85.7	15-Oct	1,200.0
GS-4a	Pile River	--	--	2-Aug	1,533.1	25-Sep	212.4	20-Oct	764.0
		--	--	19-Aug	1,375.2	--	--	--	--
GS-4b	Unnamed Outlet Creek from Long Lake	--	--	--	--	25-Sep	0.2	15-Oct	20.6
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	21-Jul	4.2	20-Aug	2.2	24-Sep	2.3	15-Oct	6.2
GS-7a	Unnamed Creek near Pedro Bay Townsite	21-Jul	Dry	19-Aug	Dry	--	--	16-Oct	4.7
GS-8a	Knutson Creek	21-Jul	128.6	18-Aug	63.5	24-Sep	69.6	16-Oct	282.4
GS-11a	Canyon Creek	20-Jul	107.9	17-Aug	54.2	23-Sep	92.0	16-Oct	261.1
GS-12a	Chekok Creek	--	--	1-Aug	75.7	22-Sep	111.9	16-Oct	209.0
		--	--	17-Aug	43.1	--	--	--	--
GS-14a	Unnamed Creek East Eagle Bay Creek	19-Jul	19.5	17-Aug	12.3	22-Sep	86.1	17-Oct	66.4
GS-14b	Unnamed Creek West of Chekok Creek	20-Jul	7.6	17-Aug	4.0	22-Sep	20.3	16-Oct	27.9
GS-17a	West Fork Eagle Bay Creek	19-Jul	6.6	17-Aug	5.1	22-Sep	10.8	16-Oct	28.9
GS-18a	Unnamed Creek on South Slope of Roadhouse Mountain	19-Jul	1.5	--	--	21-Sep	0.5	16-Oct	0.5
GS-20	Roadhouse Creek	22-Jul	15.0	3-Aug	9.0	26-Sep	38.3	14-Oct	46.4

Source: Knight Piésold et al. 2011a, Table 7.3-8

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Table 3.16-11: Winter 2005 Instantaneous Discharge Measurements within Transportation and Natural Gas Pipeline Corridor – Alternative 2

2005 Winter Instantaneous Discharge Measurements Sample Location (West to East)		February 2005		March 2005		April 2005	
		Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
GS-23	Chinkelyes Creek	--	--	--	--	--	--
GS-3a	Iliamna River	15-Feb	53.8	--	--	--	--
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	16-Feb	3.6	--	--	3-Apr	3.0
GS-7a	Unnamed Outlet Creek from Long Lake	--	--	--	--	--	--
GS-8a	Knutson Creek	17-Feb	27.3	--	--	3-Apr	16.0
GS-11a	Canyon Creek	17-Feb	8.8	--	--	1-Apr	7.7
GS-12a	Chekok Creek	19-Feb	16.9	--	--	1-Apr	14.0
GS-14a	Unnamed Creek East Eagle Bay Creek	19-Feb	7.5	31-Mar	3.9	--	--
GS-14b	Unnamed Creek West of Chekok Creek	17-Feb	3.1	--	--	--	--
GS-17a	West Fork Eagle Bay Creek	18-Feb	1.1	31-Mar	0.8	--	--
GS-18a	Unnamed Creek on South Slope of Roadhouse Mountain	18-Feb	0.1	31-Mar	0.1	--	--
GS-20	Roadhouse Creek	18-Feb	13.0	--	--	1-Apr	2.8
GS-20a	Upper Roadhouse Creek	18-Feb	0.2	30-Mar	1.8	--	--

Source: Knight Piésold et al. 2011a, Table 7.3-8

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Table 3.16-12: Summer 2005 Instantaneous Discharge Measurements in Transportation and Natural Gas Pipeline Corridors – Alternative 2

Summer 2005 Instantaneous Discharge Measurements Sample Location (West to East)		May 2005		June 2005		July 2005	
		Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
GS-23	Chinkelyes Creek	--	--	--	--	14-Jul	295.3
GS-3a	Iliamna River	--	--	14-Jun	2070.0	15-Jul	1160.0
GS-4a	Pile River	4-May	786.1	14-Jun	1641.1	15-Jul	1522.6
GS-4b	Unnamed Outlet Creek from Long Lake	--	--	--	--	--	--
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	--	--	--	--	--	--
GS-7a	Unnamed Creek near Pedro Bay Townsite	--	--	--	--	--	--
GS-8a	Knutson Creek	4-May	247.7	14-Jun	316.9	15-Jul	167.3
GS-11a	Canyon Creek	3-May	246.7	15-Jun	526.6	16-Jul	196.3
GS-12a	Chekok Creek	--	--	--	--	--	--
GS-14a	Unnamed Creek East of Eagle Bay Creek	--	--	--	--	--	--
GS-14b	Unnamed Creek West of Chekok Creek	3-May	45.3	15-Jun	13.8	15-Jul	3.1
GS-17a	West Fork Eagle Bay Creek	5-May	46.5	15-Jun	14.2	16-Jul	8.4
GS-18a	Upper Creek on South Slope of Roadhouse Mountain	--	--	--	--	--	--
GS-20	Roadhouse Creek	24-May	26.0	18-Jun	45.0	2-Jul	33.0
GS-20a	Upper Roadhouse Creek	--	--	--	--	--	--

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Table 3.16-12: 2005 Instantaneous Discharge Measurements in Transportation and Natural Gas Pipeline Corridors – Alternative 2 – (continued)

Summer 2005 Instantaneous Discharge Measurements Sample Location (West to East)		August 2005		September 2005		October 2005	
		Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
GS-23	Chinkelyes Creek	9-Aug	94.5	10-Sep	468.0	6-Oct	151.5
GS-3a	Iliamna River	10-Aug	500.0	10-Sep	2530.0	6-Oct	565.0
GS-4a	Pile River	10-Aug	1272.5	10-Sep	--	7-Oct	525.4
GS-4b	Unnamed Outlet Creek from Long Lake	--	--	--	--	--	--
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	--	--	--	--	--	--
GS-7a	Unnamed Creek near Pedro Bay Townsite	--	--	--	--	--	--
GS-8a	Knutson Creek	9-Aug	116.8	9-Sep	--	7-Oct	167.5
GS-11a	Canyon Creek	10-Aug	93.2	8-Sep	361.4	7-Oct	183.1
GS-12a	Chekok Creek	--	--	--	--	--	--
GS-14a	Unnamed Creek East of Eagle Bay Creek	--	--	--	--	--	--
GS-14b	Unnamed Creek West of Chekok Creek	10-Aug	7.2	10-Sep	80.4	7-Oct	56.6
GS-17a	West Fork Eagle Bay Creek	10-Aug	6.5	10-Sep	62.2	7-Oct	30.2
GS-18a	Upper Creek on South Slope of Roadhouse Mountain	--	--	--	--	--	--
GS-20	Roadhouse Creek	24-Aug	53.0	10-Sep	282.0	8-Oct	110.0
GS-20a	Upper Roadhouse Creek	--	--	--	--	--	--

Source: Knight Piésold et al 2011a, Table 7.3-8

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Table 3.16-13: Estimated Peak Streamflows in the Transportation and Natural Gas Pipeline Corridors– Alternative 2

Station	Stream	Peak Flows Estimated from Regression Equations for Region 3 (cfs)							
		Q_2[1]	Q_5	Q_{10}	Q_{20}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
GS-23	Chinkelyes Creek	826	1,190	1,452	1,797	2,070	2,345	2,646	3,053
GS-3a	Iliamna River	3,618	5,276	6,472	8,054	9,311	10,580	11,971	13,860
GS-4a	Pile River	4,419	6,447	7,909	9,840	11,373	12,921	14,614	16,914
GS-4b	Unnamed Outlet Creek from Long Lake	--	--	--	--	--	--	--	--
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	63	94	117	148	173	198	226	264
GS-7a	Unnamed Creek near Pedro Bay Townsite	143	221	278	355	416	479	549	645
GS-8a	Knutson Creek	995	1,531	1,925	2,455	2,881	3,319	3,801	4,466
GS-11a	Canyon Creek	707	1,112	1,413	1,825	2,159	2,507	2,893	3,432
Station	**Stream**	**Peak Flows Estimated from Regression Equations for Region 4 (cfs)**							
		Q_2	Q_5	Q_{10}	Q_{20}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
GS-23	Chinkelyes Creek	645	976	1,230	1,571	1,837	2,106	2,388	2,793
GS-3a	Iliamna River	3,038	4,359	5,340	6,621	7,607	8,588	9,609	11,062
GS-4a	Pile River	3,697	5,280	6,453	7,981	9,154	10,321	11,532	13,258
GS-4b	Unnamed Outlet Creek from Long Lake	--	--	--	--	--	--	--	--
GS-6a	Unnamed Outlet Creek from Dumbbell Lake	40	66	87	116	140	165	191	229
GS-7a	Unnamed Creek near Pedro Bay Townsite	66	111	148	199	240	284	330	399
GS-8a	Knutson Creek	583	901	1,144	1,472	1,730	1,993	2,271	2,670
GS-11a	Canyon Creek	421	654	832	1,072	1,261	1,456	1,661	1,955
GS-12a	Chekok Creek	556	850	1,072	1,371	1,605	1,845	2,097	2,459
GS-14a	Unnamed Creek East Eagle Bay Creek	202	323	417	545	647	752	865	1,026
GS-14b	Unnamed Creek West of Chekok Creek	155	246	316	413	490	569	654	775
GS-17a	West Fork Eagle Bay Creek	129	210	274	362	433	506	585	699
GS-18a	Unnamed Creek on South Slope of Roadhouse Mountain	86	141	184	244	292	342	396	473

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Table 3.16-13: Estimated Peak Streamflows in the Transportation and Natural Gas Pipeline Corridors– Alternative 2

Station	Stream	Peak Flows Estimated from Regression Equations for Region 3 (cfs)							
		Q_2[1]	Q_5	Q_{10}	Q_{20}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
GS-20	Roadhouse Creek	176	273	346	445	524	604	689	812
GS-20a	Upper Roadhouse Creek	81	130	169	223	266	311	358	427

Notes: [1]Q_T refers to peak streamflow with average recurrence interval of T years.

cfs= cubic feet per second

Source: Knight Piésold et al. 2011a, Table 7.3-12

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3.16.3 Action Alternative 3 – North Road Only

Stream crossing are the same as those described under Alternative 2.

3.16.4 Surface Water and Groundwater Use

This section addresses both surface and groundwater use in the project area and considers all alternatives and variants described above.

3.16.4.1 Domestic Water Use

Three community water systems in the Iliamna Lake area extract surface water for domestic use: Nondalton, Kokhanok, and Igiugig (Figure 3.16-15). The Nondalton system uses infiltration galleries from Sixmile Lake (at the south end of Lake Clark) which drains into the Newhalen River; Kokhanok draws water directly from Iliamna Lake; and Igiugig has one active intake within the Kvichak River, which drains out of the southwest side of Iliamna Lake (ADEC 2018). In addition to community water systems which supply surface water, local residents may collect surface water for personal use. To date, no additional Traditional Ecological Knowledge regarding collection of surface water for personal use within the project area has been received.

Other communities in the area rely on groundwater wells for their domestic water supply (Figure 3.16-16). The village of Newhalen has both community and private groundwater wells, while Iliamna and the community of Pedro Bay (on Alternative 2 and 3 transportation corridors)) rely on private groundwater wells. Residents of Anchor Point near the compressor station at the eastern terminus of the natural gas pipeline corridor on the Kenai Peninsula use private groundwater wells for their domestic water supply. There are 11 private groundwater wells within 0.5 mile of the pipeline infrastructure (ADNR-WELTS) (Figure 3.16-17).

Section 3.18, Water and Sediment Quality describes current water quality of community water systems relevant to the project area. No water quality data is available for private groundwater wells. No public data is available on drinking water sources for Pile Bay and Williamsport, near the Alternative 2 and 3 transportation corridors (ADEC 2018; ADNR-WELTS).

To meet the requirements of the Safe Drinking Water Act, elements of the EPA 1986 Wellhead Protection (WHP) and 1997 Source Water Assessment and Protection (SWAP) programs have been combined under the ADEC Drinking Water Protection Areas (DWPA) program. The DWPA program's intent is to delineate the boundaries of public (community) drinking water sources, identify potential risks from contamination, and determine vulnerability of water sources. The data may be used by local governments and state agencies when reviewing permits for activities that may affect public drinking water sources. There are currently no regulatory restrictions associated with DWPAs (ADEC 2018).

DWPAs surround the shores of Lake Clark, Iliamna Lake, and the community groundwater wells in the communities described above. Various zones within the DWPAs reflect groundwater travel time, buffers around surface drinking water sources, and watershed boundaries.

3.16.4.2 Mine Site Water Use

Surface water within the mine site may be used by local residents for hunting, fishing and other subsistence activities, but has not been documented. To date, no additional Traditional Ecological Knowledge regarding collection of surface water for personal use within the project area information has been received.

Groundwater wells across the mine site area are used to collect data on aquifer properties, site water balance, and water quality (Schlumberger 2011, 2015). In the mine site, groundwater use

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is currently limited to sampling and hydrogeologic testing. PLP has received multiple Temporary Water Use Authorizations (TWUAs) for exploration activities between 2004 and 2013. The TWUAs allow a limited volume to be withdrawn per day, up to a specified annual limit, from specified sources, mostly groundwater wells.

The applicant has applied for surface water rights for some of the main drainages within the mine site area, including the SFK river, the NFK river (designated in baseline studies as tributary NK 1.190), and UTC (ADNR 2018).

The project would include installation of at potable groundwater wells on the northern side of the mine site (in the Big Wiggly Lakes area) to serve mine site personnel water needs. Results of groundwater quality tests at this site indicate that minimal water treatment (multimedia filtration, chlorination, and pH adjustment) would be required to develop the wells for a potable water source (PLP 2018).

3.16.4.3 Port Water Use

There is no known or documented surface or groundwater use at either Amakdedori or Diamond Point port sites (ADEC 2018). For Alternative 1, a potable groundwater well would be installed at the Amakdedori port site to serve personnel. The well would be located in an upland area far enough from shore to avoid the potential for saltwater intrusion (PLP 2018-RFI 022a).

3.16.4.4 Hydropower

A hydropower project (Tazimina Hydro) was installed nine miles upstream from the confluence of the Newhalen and Tazimina rivers, near the transportation corridor (Alternatives 2 and 3). As of 2012, the run-of-the-river-type hydropower plant supplied over 95 percent of the power for the communities of Iliamna, Newhalen, and Nondalton (INNEC 2012). The hydropower system uses the natural waterfalls at the site to provide the mechanical energy to spin power-generating turbines, and there is no dam required. Streamflow is therefore not significantly affected, and no water is removed from the drainage for power production.

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Figure 3.16-15: Domestic Water Sources used in Iliamna Lake Area

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Figure 3.16-16: Domestic Water Sources in Vicinity of Newhalen and Iliamna Communities

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Figure 3.16-17: Water Supply Wells near Pipeline Terminus on Kenai Peninsula

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4.16 SURFACE WATER HYDROLOGY

This section addresses the following potential impacts on surface water hydrology (movement and distribution of surface water) (e.g., streams, lakes, marine waters):

- Effects of pre-mine ground disturbance and construction
- Effects of fill placement, water management ponds, and associated facilities
- Effects of controlled water treatment plants discharge on streamflow
- Effects of mine operations on streamflow
- Effects of closure and post-closure on streamflow
- Effects on lake water hydrology
- Effects on marine water hydrology
- Effects on water use sources

The impacts analysis for surface water hydrology was based on evaluation of baseline conditions in Section 3.16, Affected Environment, and considers operational and closure water management plans, water balance models, and modeling results for all phases of the project (Knight Piésold 2018a, 2018d, 2018i, and 2018j). Relevant mitigation measures (Chapter 5, Mitigation) are also considered. Related discussion of impacts to water and sediment quality are addressed in Section 4.18, Water and Sediment Quality. Impacts to groundwater and surface water/groundwater interaction are addressed in Section 4.17, Hydrogeology. Impacts to fish and fish habitat are described in Section 4.24, Fish Values. Mitigation measures are described in Chapter 5, Mitigation.

In addition, this section comprehensively addresses impacts to water use—both surface and groundwater.

4.16.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and there would not be any new effects on surface water hydrology.

4.16.2 Alternative 1 – Applicant's Proposed Alternative

This section describes impacts of the project on surface water hydrology for each project component for all phases of the project.

4.16.2.1 Mine Site

This section describes the water balance models, water management plans, and the potential impacts to surface water hydrology by watersheds in the mine site area by project phase.

The water management strategies that support the development of water management plans and the design of water management facilities for operations and closure (Knight Piésold 2018a and 2018d) were based on results of predictive mine site water balance models calibrated to mine area precipitation and streamflow data. The water balance models[1] include meteorological input (e.g., precipitation, temperature), water use requirements, water management pond (WMP) storage volumes, water treatment volume and rates, and surface water flow rates. A description of baseline water balance input parameters and model calibration is presented in Section 3.16, Affected Environment.

[1] In general, a water balance model is a numerical equation used to describe flow and storage of water.

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Water balance models are generally described under operations and closure phases, below. Additional details of the water balance model, input, and approach are discussed in Appendix K4.18, Water and Sediment Quality.

Construction

Water Management

The primary goal of water management during construction is to manage runoff and minimize surface water contact with disturbed surfaces. Critical water management elements during construction would include (Knight Piésold 2018a):

- Water diversion channels, berms, and collection ditches constructed using erosion-control features (e.g., geotextile, riprap), and with design criteria to meet a 100-year, 24-hour rainfall event.
- Stormwater and sediment control best management practices (BMPs), including temporary settling basins and silt fencing.[2]
- Hydraulic energy dissipation structures, such as spill basins or similar control features where necessary to reduce erosion at the outlets of diversion channels and collection ditches.
- A dewatering system to lower the groundwater surface in the pit area in preparation for operations, including a pit WMP to temporarily contain the water.
- Installation of temporary modular water treatment plants to treat runoff (if needed) and recovered pit area groundwater before discharge to the environment (see Section 4.18, Water and Sediment Quality).

All site embankments, except for the Bulk and Pyritic Tailings Storage Facility (TSF) embankments, would be fully constructed prior to the operations phase. Those required to support pre-production mining would be in place prior to pre-production mining (PLP 2018-RFI 019a).

Streamflow Effects

Surface water quantity and distribution in the North Fork Koktuli River (NFK) and South Fork Koktuli River (SFK) watersheds would be affected during construction through diversion of surface water and initial drawdown of groundwater in preparation for mining activities. Activities during the construction phase, including development of retention structures and initial groundwater pumping, would have direct impact on water flow in tributaries of both of these watersheds.

Operations

Water Balance

A water balance model for the operations phase, based on a 20-year mine life, was developed for the project (Knight Piésold 2018a). Details of the water balance model, input, and approach are discussed in Appendix K4.18, Water and Sediment Quality. The water balance model is composed of three modules (components): watershed module, groundwater module, and mine plan module. The operations water balance model was developed to estimate the amount of water that would be managed at the mine site during operations under a full range of historic

[2] These aspects of construction water management would be further developed in a Stormwater Pollution Prevention Plan (SWPPP) required for mine permitting.

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climate conditions. Incorporation of climate variability into the water balance model is described in Appendix K4.18.

The Operations Water Management Plan (Knight Piésold 2018a) provides a table of the mine site water balance results under dry, average, and wet precipitation conditions (realizations) during operations, and the corresponding water balance flow schematic diagram (Knight Piésold 2018a, Table A.1 and Figure A.1). The numbers on the figure correspond with flow path number designations on Table A.1. Used together, the information describes the flow in and out of mine site features during operations for each of the dry, average, and wet realizations. The three realizations all have similar average precipitation values, but differ in how the precipitation occurs from year to year. The selected precipitation values for the realizations are:

- Under relatively dry conditions, the assumed average annual precipitation is 56 inches, with an annual precipitation in the final year of operations of 33 inches.
- Under average conditions, the assumed average annual precipitation is 57 inches, with an annual precipitation for the final year of operations of 58 inches.
- Under relatively wet conditions, the assumed average annual precipitation 57 inches, with an annual precipitation for the final year of operations of 93 inches.

Water Management

The primary goal of water management during operations is to minimize generation of contact water that requires subsequent treatment. The main objectives are to manage fresh water (non-contact water), stormwater (runoff from facilities, non-contact water), mine drainage (contact groundwater or surface water), and process water (contact wastewater generated from operations). Water not diverted before becoming contact water would be collected and used as process water, or treated and discharged to the environment. No additional water sources outside the mine site would be needed for operations.

The main mine site water management structures during operations include those listed below and depicted on Figure 4.16-1.

- Freshwater diversion channels
- Open pit water management pond (open pit WMP)
- Main water management pond (main WMP)
- Bulk tailings storage facility (bulk TSF)
- Bulk TSF main seepage collection pond (SCP)
- Pyritic tailings storage facility (pyritic TSF)
- Seepage collection and recycle ponds
- Treated water discharge structures
- Sediment ponds

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Figure 4.16-1 Mine Site Features at End of Mine

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Design criteria[3] for each mine site water management structure during operations are listed in Table 4.16-1. Water management structures would be designed to account for storm storage allowance based on the following considerations:

- Probable Maximum Precipitation (PMP) – precipitation that results from the most severe meteorological conditions predicted.
- Probably Maximum Flood (PMF) – flow resulting from the most severe combination of PMP and basin hydrological conditions.

Current practice is to determine the PMF as the flood resulting from the PMP plus the coincident melt of a 100-year snowpack.

Table 4.16-1: Design Criteria for Water Management Structures – Operations

Water Management Sructure	Design Criteria
Fresh Water Diversion Channels	Convey undisturbed surface water runoff around the mine site activities to the downstream environment.
OP WMP	Maximum operating pond volume of 40 Mft^3 (920 ac-ft) to manage dewatering from the open pit. Water in excess of this capacity would be pumped to the main WMP for management. Storm storage freeboard allowance for the required IDF[2] and a spillway to safely pass larger events with additional freeboard.[1]
Main WMP	Minimum operating pond volume of 300 Mft^3 (6,900 ac-ft) to ensure that there is sufficient water available for the process during dry climate conditions. Maximum operating pond volume of 2,450 Mft^3 (56,250 ac-ft) to manage surplus water from the project mine site during wet climate conditions. Storm storage freeboard allowance for the required IDF with additional freeboard.[1]
Bulk TSF	Maximum operating pond volume varies by embankment stage and mine development, but is constrained by the need to maintain a minimum 2,000 feet beach length. Storm storage freeboard allowance for the required IDF without release from the facility with additional freeboard.[1]
Bulk TSF Main SCP	Maximum operating pond volume of 130 Mft^3 (3,000 ac-ft) to manage seepage and runoff from the main embankment of the bulk TSF. Storm storage freeboard allowance for the IDF and a spillway to safely pass larger events with additional freeboard.[1]
Pyritic TSF	Minimum operation pond volume varies by embankment state and mine development, but is constrained by the requirement to maintain a water cover to promote geochemical stability of the pyritic tailings and PAG waste rock. Storm storage freeboard allowance for the required IDF and a spillway to safely pass larger events with additional freeboard.[1]
Seepage Collection and Recycle Ponds	Ponds are to be operated with the minimum pond volume required by the pump systems. Storm storage freeboard allowance for the required IDF and a spillway to safely pass larger events with additional freeboard.[1]
Sediment Ponds	Treat sediment for all inflows resulting from the 1 in 10-year, 24-hour rainfall event, with no flow passing over the spillway. Spillway to safely pass the peak outflows resulting from the 1 in 200-year, 24-hour rainfall event, with the starting pond level at the spillway invert. Additional freeboard provided.[1]

Notes:

Mft^3 = millions of cubic feet

[3] Design criteria are essentially goals that are used to guide the design of the structures. Design criteria are developed based on actual and modeled conditions.

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IDF = inflow design flood

ac-ft= acre feet

[1] Each water management pond would include an additional freeboard allowance for wind-generated wave height and potential seismic deformation.

[2] The required IDF for each water management pond would be determined through the Alaska Dam Safety Program (ADSP).

Source: Knight Piésold 2018a, Table 3.1

The mine would be designed for zero-discharge of untreated contact water during construction, operations, and closure. Water management strategies have been developed to achieve this design and maintain sufficient fresh water for ore processing and other mine site uses.

A surplus of process water would be anticipated during operations under average and above-average precipitation scenarios (Knight Piésold 2018a). Water available for discharge to the environment after treatment would be less than the pre-mine flows because of water lost in tailings voids, evaporation, and other minor uses. The average annual process water surplus during maximum operations is estimated to be 29 cubic feet per second (cfs), which would be treated and discharged throughout the year in a manner to optimize downstream fish and aquatic habitat (Knight Piésold 2018i).

Adaptive water management strategies during operations would include the ability to provide additional water storage capacity in the bulk TSF, provide surplus storage capacity in the WMPs, and provide for expansion of the water treatment plant (WTP) rate by building excess capacity (Knight Piésold 2018a).

Additional water storage capacity would be made available under above-average precipitation conditions by directing excess water to the open pit; then pumping, treating, and discharging water to restore the pit water to the design level (Knight Piésold 2018a).

Streamflow

Most of the mine site features would be in the NFK watershed. The open pit, open pit WMP, and WTP#1 and WTP#1 discharge-south would be in the SFK watershed, and only the WTP#1 discharge-north and a segment of the mine access road would be in the Upper Talarik Creek (UTC) watershed. Surface water quantity and distribution in the NFK and SFK watersheds would be affected during operations.

The maximum mine footprint, based on an average groundwater pit inflow of about US 2,700 gallons per minute (gpm), was superimposed on the calibrated water balance model to estimate mine-affected streamflows in the NFK, SFK, and UTC watersheds (Knight Piésold 2018f).

Estimated mean annual streamflow and groundwater flow at gaging station locations in the NFK, SFK, and UTC watersheds, for both the pre-mine and end-of-mine (representative of operations) conditions are presented in Table 4.16-2 for comparison. The far right column of Table 4.16-4 lists the corresponding estimated mean annual reduction in surface water flow (as a percent) (Knight Piésold 2018i). Gaging stations and discharge sites are shown on Figure 3.16-2 in Section 3.16, Affected Environment.

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Table 4.16-2: Preliminary Watershed Module Results
Estimated Streamflow at Pre-mine and End of Mine (EOM) with Treated Water Discharge

Station	Pre-mine – Mean Annual Flow (cfs)			EOM with Treated Water Discharge Mean Annual Flow (cfs)[3]			EOM with Treated Water Discharge Mean Annual Flow (cfs)[3,4]				Mean annual discharge from WTPs (cfs)
	Surface Water[1]	Groundwater[2]	Total	Surface Water[1]	Groundwater[2]	Total	Surface Water[1]	Groundwater[2]	Total	% Change of Surface Water	
SFK											
SK119A	36.9	2.3	39.2	34.3	2.3	36.6	-2.6	0.0	-2.6	-7%	6.6
SK124A	19.7	9.5	29.3	19.0	9.5	28.5	-0.7	0.0	-0.8	-4%	
SK100F	30.0	1.0	31.0	28.8	1.0	29.7	-1.3	0.0	-1.3	-4%	
SK100C	50.3	63.1	113.4	48.3	63.1	111.4	-2.0	0.0	-2.0	-4%	
SK100B	188.0	11.6	199.6	183.4	11.6	195.0	-4.6	0.0	-4.6	-2%	
SK100A	266.9	17.9	284.9	262.3	17.9	280.3	-4.6	0.0	-4.6	-2%	
UT											
UT100D	28.6	0.4	29.1	28.9	0.4	29.4	0.3	0.0	0.3	1%	0.8
UT119A	28.3	1.1	29.3	28.2	1.1	29.3	0.0	0.0	0.0	0%	
UT100B	228.5	2.7	231.2	228.7	2.7	231.4	0.2	0.0	0.2	0%	
NFK											
NK100C	50.0	10.9	60.9	46.4	10.9	57.3	-3.6	0.0	-3.6	-7%	21.6
NK119A	25.2	0.8	26.0	0.0	0.0	0.0	-25.2	-0.8	-26.0	-100%	
NK100A	258.9	2.6	261.5	241.3	2.6	243.9	-17.6	0.0	-17.6	-7%	

Notes:

1. Streamflow (Surface Water) estimated at established streamflow stations that were included in the watershed module calibration.
2. Groundwater leaving the subcatchment.
3. Includes WTP discharges as defined in Table 1.
4. Flow change calculated as post-closure without treated water streamflow minus pre-mine streamflow.

Source: Knight Piésold 2018i, Table 3

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The estimated mean annual streamflow change indicates that streamflows in the respective watersheds would closely resemble pre-mining.

NFK: The greatest estimated mean annual streamflow reductions would be expected to occur in the NFK watershed, where most of the mine features are sited. The mean annual treated water added to the NFK watershed would be approximately 21.6 cfs, and the estimated mean annual streamflow reduction would be approximately 7 percent at both NK100C and NK100A.

SFK: The mean annual treated water added would be 6.6 cfs, lowering the reduction in streamflow at SK100F to within 4 percent of pre-mining conditions. At SK100A, streamflow would be within 2 percent of pre-mining conditions.

UTC: The mean annual treated water added would be 0.8 cfs, lowering the reduction in streamflow at UT100D to within 1 percent of pre-mining conditions. Further downstream, there would be no expected reduction in streamflow at UT100B.

Closure and Post-Closure

Water Balance

A water balance model (and water quality model, see Section 4.18 and Appendix K4.18) for the closure and post-closure periods of the mine site was developed by Knight Piésold (2018d) to access water entering and leaving the mine site, and to aid in developing water management processes. The closure and post-closure water balance model was developed similar to the operations model to estimate the water flow volumes for the various facilities during the closure periods under varying historical climate conditions, and is based on a four-phase closure plan as outlined below:

- Phase 1 – Reclamation of quarries and bulk TSF, placement of pyritic tailings and potentially acid-generating (PAG) waste rock in the open pit to be completed by closure Year 15. Figure 4.16-2 shows the arrangement of features at closure phase at Year 9, and Figure 4.16-3 shows features that would be present at the end of Closure Phase 1.
- Phase 2 – reclamation of bulk TSF and quarries, reclamation of pyritic TSF and main WMP, no water treatment to be completed in closure Year 16 through approximately Year 20. Figure 4.16-4 shows general arrangement of features that would be present during closure at the end of Phase 2.
- Phase 3 – pyritic TSF and main WMP reclaimed, ongoing treatment of surplus water in the open pit to be completed in closure Years 20 through 50. Figure 4.16-5 shows general arrangement of features that would be present at Closure Phase 3.
- Phase 4 – Post-closure long-term conditions. Figure 4.16-6 shows general arrangement of features that would be present at Post-Closure Phase 4.

Primary activities and actions planned for each phase of closure are described in more detail in Knight Piésold 2018d.

The Closure Water Management Plan provides mine site water balance under dry, average, and wet precipitation conditions (realizations) and the corresponding water balance flow schematic diagram (Knight Piésold 2018d, Tables A.1 through A.5 and Figures A.1 through A.4). The numbers on the figure correspond with flow path number designations on the tables. Used together, the information describes the flow in and out of mine site features during closure phases for each of the dry, average, and wet realizations.

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Figure 4.16-2: Closure Phase – Year 9

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Figure 4.16-3:Closure End of Phase 1

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Figure 4.16-4:Closure End of Phase 2

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Figure 4.16-5:Closure Phase 3

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Figure 4.16-6: Post-Closure Phase 3

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Water Management Plan

During closure, the total flows released downstream of the mine site are a combination of fresh water from the diversion channels, surface runoff from reclaimed facilities, and treated water from the WTPs. The WTP flows are expected to vary based on the amount of water captured at the mine site, depending on the seasonal climate variability. Flows from the fresh water diversions and reclaimed facilities are expected to vary according to natural flow patterns, which are also linked to seasonal climate variability.

Streamflow

Estimated mean annual streamflows during post-closure are shown in Table 4.16-3 by gaging station location (Figure 3.16-2).

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Table 4.16-3: Preliminary Watershed Module Results
Estimated Streamflows at Pre-mine and at Post-Closure (Phase 4) with Treated Water

Station	Pre-mine – Mean Annual Flow (cfs)			Post-Closure (Phase 4) with Treated Water Mean Annual Flow (cfs)[4]			Post-Closure (Phase 4) with Treated Water Mean Annual Flow Change (cfs)[4]				Mean Annual Discharge from WTPs (cfs)
	Surface Water[1]	Groundwater[2]	Total	Surface Water[1]	Groundwater[2]	Total	Surface Water[1]	Groundwater[2]	Total	% Change of Surface Water	
SFK											
SK119A	36.9	2.3	39.2	36.3	2.3	38.5	-0.7	0.0	-0.7	-2%	3.3
SK124A	19.7	9.5	29.3	19.2	9.5	28.8	-0.5	0.0	-0.5	-3%	
SK100F	30.0	1.0	31.0	27.3	1.0	28.3	-2.7	0.0	-2.7	-9%	
SK100C	50.3	63.1	113.4	47.7	62.5	110.2	-2.6	-0.6	-3.2	-5%	
SK100B	188.0	11.6	199.6	184.3	11.6	195.9	-3.7	0.0	-3.7	-2%	
SK100A	266.9	17.9	284.9	263.2	17.9	281.2	-3.7	0.0	-3.7	-1%	
UT											
UT100D	28.6	0.4	29.1	28.7	0.4	29.1	0.1	0.0	0.1	0%	0.4
UT119A	28.3	1.1	29.3	28.1	1.1	29.2	-0.1	0.0	-0.1	0%	
UT100B	228.5	2.7	231.2	228.7	2.7	231.4	-0.1	0.0	-0.1	0%	
NFK											
NK100C	50.0	10.9	60.9	50.0	10.9	60.9	0.0	0.0	0.0	0%	9.3
NK119A	25.2	0.8	26.0	0.0	0.0	0.0	-25.2	-0.8	-26.0	-100%	
NK100A	258.9	2.6	261.5	248.6	2.6	251.2	-10.3	0.0	-10.3	-4%	

Notes:

1. Streamflow (Surface Water) estimated at established hydrologic stations that were included in the watershed module calibration.
2. Groundwater leaving the subcatchment.
3. Includes diversions as shown on Figure 4.16-6.
4. Flow change calculated as post-closure without treated water streamflow minus pre-mine streamflow.

Source: Knight Piésold 2018i, Table 3

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The modeled effects on streamflow during post-closure are summarized as follows:

- NFK: During post-closure Phase 4, estimated mean annual streamflow at NK100A would be 4 percent lower than pre-mining conditions
- SFK: During post-closure Phase 4, estimated mean annual streamflow would be lower than pre-mining conditions by approximately 9 percent at SK100F and 1 percent at SK100A lower than pre-mining conditions.
- UTC: During post-closure Phase 4, estimated mean annual streamflow at UT100D and UT100B would be the same as pre-mining conditions.

Discharge from WTPs is an important element of overall modeled streamflow during operations and post-closure. The 1st, 10th, 50th, 90th, and 99th percentile values of total water released from the WTPs are summarized on an annual average basis for closure Phases 1 through 4 in Table 4.16-4. The total amount of water treatment required would be greatest during the early phases of closure, when the mine site footprint is larger than later phases of closure; and would be lowest during Phase 4, once all of the mine facilities are reclaimed and the only water being treated is the surplus pumped from the open pit to maintain water levels.

Total flow releases from the WTPs can vary from a high of 58 cfs during Phase 1 (99th percentile results) to a low of 3 cfs during the final Phase 4 (1st percentile results). There would be no releases from the WTPs planned during Phase 2, which would be after the PAG waste rock and pyritic tailings transfer to the open pit is complete, but before the open pit reaches the not-to-exceed (NTE) water elevation. Phase 2 occurs for an approximately 5-year period, during which the total captured surface runoff, direct pond precipitation, and groundwater inflow rate is approximately 40 cfs, under average climate conditions.

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Table 4.16-4 Climate Variability Closure Water Balance Total Water Treatment Plant Discharge

Closure Phase 1					
Month	Total Release from WTPs (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	16	23	46	53	55
Feb	15	21	45	51	55
Mar	15	21	37	49	55
Apr	15	22	40	51	56
May	33	51	55	57	57
Jun	24	54	57	57	58
Jul	17	51	56	57	57
Aug	32	52	56	57	57
Sep	34	53	56	57	58
Oct	15	49	55	56	57
Nov	15	44	53	56	57
Dec	15	25	47	55	56
Annual Average	21	39	50	55	57

Closure Phase 2					
Month	Total Release from WTPs (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	0	0	0	0	0
Feb	0	0	0	0	0
Mar	0	0	0	0	0
Apr	0	0	0	0	0
May	0	0	0	0	0
Jun	0	0	0	0	0
Jul	0	0	0	0	0
Aug	0	0	0	0	0
Sep	0	0	0	0	0
Oct	0	0	0	0	0
Nov	0	0	0	0	0
Dec	0	0	0	0	0
Annual Average	0	0	0	0	0

Closure Phase 3					
Month	Total Release from WTPs (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	19	19	23	29	48
Feb	20	20	20	29	48
Mar	19	19	19	29	48
Apr	21	22	26	29	48
May	29	29	30	41	48
Jun	26	29	40	48	48
Jul	22	29	34	48	48
Aug	29	29	36	48	48
Sep	27	29	39	48	48
Oct	24	29	34	48	48
Nov	20	27	29	48	48
Dec	19	19	29	45	48
Annual Average	23	25	30	41	48

Closure Phase 4					
Month	Total Release from WTPs (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	3	4	7	10	19
Feb	3	4	7	9	19
Mar	4	4	7	9	18
Apr	5	7	11	16	19
May	13	17	18	19	20
Jun	6	14	18	19	20
Jul	6	14	18	20	20
Aug	11	15	18	20	20
Sep	10	14	18	20	20
Oct	6	10	17	20	20
Nov	5	8	9	20	20
Dec	4	5	8	16	17
Annual Average	6	10	13	16	19

Notes:

1. Total release from WTP is the sum of the flows available for release from WTP#2 and WTP#3 during closure phases.

Source: Knight Piésold 2018d, Table 5.1

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4.16.2.2 Transportation Corridor

The evaluation of impacts on surface water and substrate incorporates an understanding of their probability of occurrence, and of planned mitigation in the form of engineering design and maintenance that can meaningfully reduce impacts.

Road Stream Crossings

Potential impacts of the mine access road on surface water hydrology during mine construction and operations include increased stormwater runoff from road and pad surfaces, and increased erosion and sedimentation if crossings are improperly designed and road ditches and stream crossings are not maintained during flood events. Stream crossings associated with the mine access road would be designed to minimize potential impacts on surface water hydrology, water quality, and fish passage. Road and pad maintenance BMPs, including application of dust suppressants during dry periods, routine grading, and routine maintenance of drainage ditches and stream crossings, would be implemented and maintained during the mine operation period.

Potential for erosion and sedimentation from disturbed areas would be greatly reduced as revegetation is established after construction activities end. The road surface would potentially yield additional runoff compared to native terrain. Because the roads would generally run perpendicular to the drainages to be crossed, the limited disturbance of the road would minimally increase the quantity of runoff to any single receiving tributary; therefore, the intensity of the direct and indirect impacts would result in maintained surface water flow, and changes in water quantity would be within the limits of historic seasonal variation.

Bridge Crossings

A total of nine bridges would be constructed for the proposed project under Alternative 1: a bridge across Upper Talarik Creek on the mine access road, a bridge across the Newhalen River on the Iliamna spur road, and seven bridges along the south access road. Bridge engineering and design would vary with stream size and hydrologic properties. Instream channel work, including installation of bridge footings and embankments, would occur year-round during the first 2 years of construction.

During construction of bridges, the potential exists for increased runoff, erosion, and sedimentation as a result of vegetation removal and excavation of soil, rock, and sediment. Erosion and sediment control BMPs, including routine maintenance of drainage ditches and stream crossings, would be implemented and maintained during the mine operation period.

Culverts

A total of 88 culverts would be installed at drainages along the transportation corridor. Culverts would be used to allow proper discharge at stream crossings, to reduce erosion, and for some crossings, would be used for fish passage (Section 4.24, Fish Values). Culvert design would vary by stream size and whether or not fish passage is required. Culvert sizes and types would be determined to address anticipated flow, and designs would be refined during final engineering and design, and in accordance with permit requirements.

During construction of culverts, the potential exists for increased runoff, erosion, and sedimentation as a result of vegetation removal and excavation of soil, rock, and sediment. Erosion and sediment control BMPs, including routine maintenance of drainage ditches and stream crossings, would be implemented and maintained during the mine operation period.

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Surface Water Extraction

Water to be used during construction and operation would be extracted from 21 designated sites along the transportation corridor (Figure 4.16-7). Water extraction sites may be used at any time of the year; although during the winter months, low-flow conditions may limit water availability.

Alaska Department of Fish & Game (ADF&G) Fish Habitat Permit requirements regulate the minimum streamflow required in anadromous streams, as well as the locations of extraction and the amount permitted for withdrawal. Before the extraction of water from anadromous streams along the road and pipeline corridors, sufficient streamflow would need to be demonstrated to permit summer/winter extraction. Permit compliance would avoid the potential for impacts from water withdrawal at streams.

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Figure 4.16-7: Water Extraction Sites along Transportation Corridor

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The maximum projected surface water use along the transportation corridor during construction would be a total of 50 million gallons: 19 million gallons along the mine access road, seven million gallons along the Iliamna spur road, and 24 million gallons along the south access road. A total of 16 million gallons would be extracted from two sites on Iliamna Lake, and 5 million gallons would be extracted from the large drainage of the Newhalen River. The remaining 39 million gallons would be extracted from smaller ponds and streams. Estimated average extraction rates would range from 500 to 1,000 gallons per minute, depending on the streamflow/volume of the waterbody (PLP 2018-RFI 022). All surface water extraction would require compliance with approved state permits, stipulations, and reporting requirements.

Potential impacts to surface water resources along the transportation corridor from lake and stream water withdrawal would include reduced water levels and streamflow. Water withdrawal for all uses would be controlled by applicable permits, which would establish limits on the amount of water withdrawn from each source, and provide requirements for fish protection. Water withdrawal would be permitted, and would therefore meet the requirements of ADF&G and Alaska Department of Natural Resources for a water withdrawal permit. It is reasonable to assume that the rate and volume of water withdrawals would be monitored at each source to ensure permit requirements are met. Therefore, the intensity of the impacts to surface water resources is generally expected to result in changes in water quantity likely within the limits of historic and seasonal variation.

Erosion and Scour at Stream Crossings

The transportation corridor would include numerous road and/or pipeline crossing of waterbodies with culverts and bridges. If not properly designed, constructed, and maintained, culverts and bridge abutments may cause constricted natural streamflow, causing increased water velocity at the downstream end of the structure. This could lead to localized bank erosion and scour, or erosion around the infrastructure. Erosion and scour could modify stream morphology by deepening and widening the stream channel downstream, modifying aquatic habitat, and causing sedimentation downstream. If the infrastructure would not allow for adequate flow, water could pool up on the upstream side, leading to erosion of the roadbed. In extreme cases, improper bridge or culvert design or improper construction materials could lead to collapse of the infrastructure. Culverts and bridges would be designed to allow for safe fish passage. See Section 3.24, Fish Values, for information on fish and aquatic resource impacts, and required permits that would be obtained prior to construction.

The potential for erosion and scour at stream crossings is dependent on streamflow and streambed substrate, and would be mitigated through engineering design and maintenance. Culvert and bridge design would be further evaluated during final engineering and design.

[Placeholder: Results of the summer 2018 fish survey field studies were recently received and include information regarding substrate (e.g., silt, gravel) and turbidity in fish-bearing streams along the corridor (PLP 2018-RFI 036). This section will be revised for the DEIS to include descriptions as needed.]

4.16.2.3 Amakdedori Port

Runoff, Erosion, and Sedimentation

The port terminal building would be constructed on an engineered fill patio, designed to be at an elevation high enough to avoid tidal surge from major storms. The port terminal would be built at an elevation of 35 feet above mean sea level (amsl), which is estimated to be 15 feet above the

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Amakdedori Creek floodplain. Stormwater drainage infrastructure such as ditches and culverts would be maintained during operations so that they convey flow as designed.

During construction, the potential impacts of the Amakdedori port facility on surface water runoff and erosion would be minimized by implementing BMPs for erosion control and construction at the port (Section 4.14, Soils; Section 4.18, Water and Sediment Quality; and Chapter 5, Mitigation). Surface water flow systems would be maintained and final design parameters would account for changes in water quantity and velocity. Therefore, any direct and indirect impacts on water quantity and velocity would result in maintained surface water flow systems and changes in water quantity that are likely to be within the limits of historic seasonal variation.

Marine Water in the Port Vicinity

Impacts to water quality and substrate from causeway and jetty construction are described in Section 4.18, Water and Sediment Quality. The capability of a causeway to alter oceanographic processes is well-known and understood (e.g., Colonell et al. 1992). However, the capability of a causeway to alter the density structure of the water column is more subtle. Causeway-induced influences on the water column can be important. In some cases, water column density may become stratified, which would appear as vertical or horizontal gradients in temperature and/or salinity (such as when fresher water overlies denser saltier water). In Kamishak Bay, only small sources of fresh water enter salt water; therefore, it is very unlikely that the project causeway would cause notable variations in water density. In addition, it is very unlikely that the causeway would affect overall circulation in Kamishak Bay, given its relatively short length.

The causeway would support servicing of the lightering vessels that would transport ore concentrate to the Handysize ships moored offshore. Although ship wakes and propeller wash can contribute substantially to shoreline erosion in relatively quiescent waters, neither is expected to be an issue in Kamishak Bay. Wave forecasts for wind conditions typical of Kamishak Bay (Section 3.16, Affected Environment) suggest that the bay already has a dynamic wave climate to which the shoreline has achieved a stable equilibrium; the bay is not likely susceptible to incrementally increased wave activity as a result of the lightering vessels' wakes. Whether the seabed at or near the causeway would be susceptible (i.e., erodible) to propeller wash would depend on the composition of the seabed materials (e.g., sand, silt, rock), and on the management of lightering vessel operations. Establishment of suitable BMPs for vessel operations should be sufficient to minimize adverse impacts; namely, BMPs should include specifications for managing ferry speed (minimizing wakes) and engine power settings (minimizing bottom erosive stress) during approach and departure from the causeway berths.

During winter, sea ice could become an operational issue. The causeway may provide shelter from ice on its leeward side, but this is likely to be variable throughout the winter because of shifts in prevailing winds.

Removal of the causeway at the end of the project would cause substantial increases in suspended sediment in Kamishak Bay that would persist for days to weeks after decommissioning is completed (see Section 4.18, Water and Sediment Quality).

4.16.2.4 Iliamna Lake

Ferry Terminals

Ferry terminals would be built on the northern and southern shores of Iliamna Lake. Project description noted that planned construction of causeways consisted of rock and aggregate. Some shoreline and lakebed disturbance would be expected to occur on both sides of the lake, resulting in temporary increases in suspended sediment concentrations during construction and

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decommissioning. Such disturbances would be limited to the immediate vicinities of the ferry terminals. Transport of suspended sediment concentrations by wind-driven currents along shore is not expected to be of long duration or to cover a large geographic area.

Vessel Operations

Vessel wakes and propeller wash could contribute to shoreline erosion in relatively quiescent waters, but neither wake nor propeller wash is expected to affect the shoreline of Iliamna Lake under proper vessel operation BMPs. Wave forecasts for wind conditions typical of Iliamna Lake (Section 3.16, Affected Environment) suggest that the lake already has a dynamic wave climate to which the shoreline has achieved a stable equilibrium; the lake is not likely susceptible to incrementally increased wave activity that could be caused by the ferry's wake. Whether the lake bottom at or near the ferry terminals would be susceptible (i.e., erodible) to propeller wash would depend on the lake bottom materials (e.g., silt, sand, gravel, rock), and on the management of ferry operations. BMPs should include specifications for management of ferry speed (minimizing wakes) and engine power settings (minimizing bottom erosive stress) during approach and departure from the terminals.

4.16.2.5 Natural Gas Pipeline Corridor

Surface Water Extraction

Potential impacts to surface water resources along pipeline corridor from lake and stream water withdrawal would be the same as those described under the transportation corridor. Water withdrawal for all uses would be controlled by applicable permits, which would establish limits on the amount of water withdrawn from each source, and provide requirements for fish protection. It is reasonable to assume that the rate and volume of water withdrawals would be monitored at each source to ensure permit requirements are met. Therefore, the intensity of the impacts to surface water resources is expected to result in changes in water quantity, likely within the limits of historic and seasonal variation.

Erosion and Scour at Stream Crossings

Impacts would be similar to those described for the transportation corridor.

4.16.2.6 East Kokhanok Ferry Terminal Variant

Impacts to surface water hydrology under this variant would be similar to those for the terminal location under Alternative 1.

4.16.3 Action Alternative 2 – North Road and Ferry

4.16.3.1 Mine Site

Impacts to surface water hydrology under Alternative 2 are expected to be the same as those described under Alternative 1.

4.16.3.2 Transportation Corridor

Road: Mine Site to Eagle Bay and Pile Bay to Diamond Point Roads

Surface water hydrology impacts associated with the road segments from the mine site to Eagle Bay and Pile Bay to Diamond Point port would be similar to impacts described for Alternative 3

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(see below), which includes a full road access from the mine site to Diamond Point. The road segments for Alternative 2 would result in fewer stream crossings than Alternative 3.

Ferry: Eagle Bay to Pile Bay Ferry

Ferry operations from Eagle Bay to Pile Bay would have similar impacts to surface water hydrology as ferry operations as Alternative 1.

4.16.3.3 Summer-Only Ferry Variant

Summer-only ferry variant would preclude the need for ice-breaking operations. Ferry operations for the summer-only ferry variant would have similar impacts to surface water hydrology as ferry operations in Alternative 1.

4.16.3.4 Diamond Point Port

Terminal and Lightering Locations

[Placeholder: The proposed layout for the Diamond Point port facility is currently under development by PLP. This section will be revised as necessary once information is received (PLP 2018-RFI 099)].

Dredge Disposal Area

Dredge material would be placed in an onshore bermed facility west and upland of the dock site. The water placed in the bermed containment would seep into underlying soils, and would mix with any shallow groundwater present. Therefore, runoff from the disposal site would remain contained in the bermed area, and would not affect surface water hydrology.

4.16.3.5 Natural Gas Pipeline Corridor

Impacts to surface water hydrology would be the same as described under Alternative 1 for the portion of the pipeline beginning on the Kenai Peninsula and crossing Cook Inlet to Kamishak Bay. Impacts would be the same as described under Alternative 3 for the portion from Diamond Point to the mine site.

Ursus Cove to Diamond Point

The pipeline corridor through Ursus Cove to Diamond Point would result in approximately three additional stream crossings, and the associated impacts to surface water hydrology would be similar to the natural gas pipeline corridor for Alternative 1.

4.16.3.6 Pile-Supported Dock Variant

Construction of a pile-supported dock at Diamond Point would not impact onshore surface water or marine hydrology.

4.16.4 Action Alternative 3 – North Road Only

Under Alternative 3, impacts to the pipeline corridor would be the same as those described under Alternative 2. The following section describes impacts for the mine, transportation corridor, and port that would be different under Alternative 3.

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4.16.4.1 Mine Site

Under Alternative 3, impacts to the project mine site would be the same as under Alternative 1.

4.16.4.2 Transportation Corridor

The road in Alternative 3 would increase the project footprint. The road route would result in a small increase in the number of stream crossings relative to other alternatives (see Chapter 2, Alternatives). Impacts associated with stream crossings would be the same as those described under Alternative 1.

4.16.4.3 Diamond Point Port

Concentrate Storage and Bulk Handling

Concentrate would be dewatered and stored at the port sites, and the dewatered concentrate would be stored in a large storage building until the lightering system would be used to load the concentrate onto bulk carriers for transport. The lightering system would use bulk handling or the concentrate to load the bulk carriers, with controls to reduce dust emissions (e.g., covered conveyors) (PLP 2018-RFI 066). Because the material would be stored inside, impacts to surface water hydrology are not expected.

4.16.4.4 Concentrate Pipeline Variant

Impacts to surface water hydrology under this variant would be the same as for Alternative 2. The concentrate pipeline variant would include a water-return pipeline to move water back to the mine site. This variant would result in no additional project footprint at Diamond Point, and preclude the need for the discharge of treated water into Cook Inlet. The concentrate pipeline variant would eliminate the need for a WTP at the port; and instead, would require a return water pump station of appropriate capacity (PLP 2018-RFI 066). This option would result in negligible change in footprint at the port site as compared to Alternative 1, and there would be no additional impact to surface water hydrology as a result of the pump station footprint.

A concentrate pipeline from the mine site to the port location would require two electric pump stations—one at the mine site, and one booster station at an intermediate location between the mine site and the port—resulting in an increased footprint of approximately 0.7 acre (PLP 2018-RFI 066). This alternative would reduce the amount of WTP water released at discharge locations at the mine site by approximately 1 to 2 percent (PLP 2018-RFI 066). Reduced discharge water from WTPs could result in a greater reduction in streamflows than those described under Alternative 1.

4.16.5 Summary of Key Issues/Impacts Summary

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Table 4.16-5 provides a summary of impacts on surface water hydrology, marine water, and lake water (Iliamna Lake).

Table 4.16-5: Key Issues Summary – Surface Water Hydrology

Impact Causing Project Component or Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Mine Site – Streamflow During Operations, Maximum Footprint	**NFK Watershed (Bulk and Pyritic TSFs, Main WMP, Process Facility):** 100% of NKF tributary NK1.190 flow diverted or stored due to Bulk TSF. NFK River – Mean annual streamflow reduction from pre-mining conditions of 7% at both NK100C and NK100A (with treated water discharge). **SFK Watershed (Mine Pit and Groundwater Dewatering Wells, Overburden Stockpile)**: SFK River – Mean annual streamflow reduction from pre-mining conditions of 4% at SK100F and 2% at SK100A (with treated water discharge). **UTC Watershed (Mine Access Road):** Upper UTC – Mean annual streamflow reduction from pre-mining conditions of 1% at UT100D (with treated water discharge).	**NFK Watershed:** Same and Alternative 1. **SFK Watershed:** Same and Alternative 1. **UTC Watershed:** Same and Alternative 1.	**NFK Watershed:** Same and Alternative 1. **SFK Watershed:** Same and Alternative 1. **UTC Watershed:** Same and Alternative 1.
Mine Site – Streamflow Post-Closure (Phase 4)	**NFK Watershed:** 100% of NKF tributary NK1.190 flow diverted or stored due to Bulk TSF. NFK River – Mean annual streamflow reduction from pre-mining conditions of 4% at NK100A (with treated water discharge). **SFK Watershed:** SFK River – Mean annual streamflow reduction from pre-mining conditions of 9% at SK100F and 1% at SK100A (with treated water discharge). **UTC Watershed:** UTC – No mean annual	**NFK Watershed:** Same and Alternative 1. **SFK Watershed:** Same and Alternative 1. **UTC Watershed:** Same and Alternative 1.	**NFK Watershed:** Same and Alternative 1. **SFK Watershed:** Same and Alternative 1. **UTC Watershed:** Same and Alternative 1.

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Table 4.16-5: Key Issues Summary – Surface Water Hydrology

Impact Causing Project Component or Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	streamflow reduction from pre-mining conditions (with treated water discharge).		
Transportation Corridor			
Road Corridor Construction and Operations	**Surface Water**: Potential for local impacts to surface water hydrology at stream crossings. Impacts are expected to be short term, and would result in maintained surface flow system changes in water quantity that are likely within historical seasonal variation.	**Surface Water**: Impacts similar to Alternative 1.	**Surface Water**: Impacts similar to Alternative 1. Concentrate pipeline variant – increased project footprint as the road corridor would be widened for pipeline inclusion
Ferry Terminal Construction and Operations	**Surface Water**: Potential local impacts to surface water hydrology at the ferry terminal sites are expected to be short term, and would result in maintained surface flow system changes in water quantity that are likely within historical seasonal variation. **Lake Iliamna:** *Ferry terminals:* Potential local and short-term impacts from disturbance of the shoreline and lakebed during construction. *Ferry operations:* Potential for direct, minimal, local impacts could occur in the form of shoreline and lakebed erosion from vessel wakes and propeller wash year-round. Note: Erosion impacts would be less in winter than summer because of frozen shoreline conditions that are more resistant to erosion. **Variants:** Summer-only ferry operation may slightly reduce impact from shoreline erosion. See Note under Ferry operations above.	**Surface Water:** Impacts similar to alternative 1 at Diamond Point port site. **Iliamna Lake (Eagle Bay/Pile Bay ferry terminals):** Potential impacts would be similar to those for Alternative 1. **Variants:** Potential impacts would be similar to those for Alternative 1	**Surface Water:** None **Lake Iliamna:** None **Variants:** None

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Table 4.16-5: Key Issues Summary – Surface Water Hydrology

Impact Causing Project Component or Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	East Kokhanok: Impact would be similar to Alternative 1 ferry terminal location.		
Port Site			
Port Site and Causeway fill/construction	**Surface Water**: Potential for local impacts at the port site. Impacts are expected to be short term, and would result in maintained surface flow system changes in water quantity that are likely within historical seasonal variation. **Marine Water**: Potential impacts from the causeway may be deflection of alongshore currents. Impacts would be minimal, long-term, and local. The causeway is not expected to cause changes in natural gradients in either water temperature or salinity. *Variants:* Pile-supported dock. No impacts are expected on marine water currents from the pile-supported causeway.	**Surface Water**: Impacts similar to alternative 1. **Marine Water:** Diamond Point marine port: Impacts similar to Alternative 1. **Variants:** Pile-supported dock. Impacts similar to Alternative 1.	**Surface Water**: Impacts similar to alternative 1. **Marine Water:** Impacts similar to Alternative 1. **Variants:** Concentrate pipeline, Impacts similar to Alternative 1.
Ship Operations & Mooring	Potential direct, local, short-term impacts may include shoreline and seabed erosion (and elevated suspended sediment in water column; see Section 4.18) caused by ship wakes and propeller wash. **Lightering Locations Primary (A) & Alternate (B):** During construction, direct, local and short-term impacts to surface water quality would occur as anchors and mooring buoys are installed. Impacts would include elevated suspended sediment in water column,	Similar to Alternative 1 **Lightering Locations Iniskin Bay and Alternate (B):** Similar to Alternative 1	Similar To Alterative 1 **Lightering Locations Iniskin Bay and Alternate (B):** Similar to Alternative 1

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Table 4.16-5: Key Issues Summary – Surface Water Hydrology

Impact Causing Project Component or Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	seabed disturbance (see Section 4.18).		
Natural Gas Pipeline			
Construction and Installation of Pipeline	**Surface Water**: Likely the same as for the Transportation Corridor Alternative 1.	**Surface Water**: Impacts similar to transportation corridor Alternative 2. Additional acreage and an additional 3 stream crossings to segment crossing Ursus Cove.	**Surface Water**: Likely the same as for the transportation corridor Alternative 3.

4.16.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to surface water hydrology impacts. Section 4.1 details the past, present, and RFFAs considered for evaluation. The limited number of past and present actions considered is not expected to result in lingering effects that would be anticipated to have a timing nexus with the project, and are therefore not considered further as potential contributors to cumulative impacts.

RFFAs that could contribute cumulatively to surface water hydrology impacts, and are therefore considered in this analysis, are limited to those activities that would occur in the Mine Site area, or in other waterbodies intersected by the transportation corridor. The following specific RFFAs were carried forward in this analysis based on their potential to contribute cumulatively to surface water hydrology in the study area:

- Pebble Project buildout – develop 55 percent of the resource over 78-year period
- Pebble South*
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun
- Diamond Point Rock Quarry

*Indicates exploration activities only.

The most important potential future actions included in this analysis are those that are likely to contribute to surface water hydrology and are regionally common to the project. Because development at remote locations can be financially prohibitive, RFFAs in proximity to the project that could potentially minimize costs through co-use of project infrastructure are also considered important in this analysis.

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The Pebble Project buildout and commercialization of the Shotgun prospect are the only mineral deposit RFFAs considered for exploration and development. All other mineral deposit RFFAs are considered for exploration only. The Pebble Project buildout is the most notable RFFA, and would result in additional development not included under Alternative 1:

- Increased pit footprint
- Increased TSF and waste rock storage capacity
- Additional processing infrastructure
- Construction of a new port site with diesel fuel and concentrate pipeline(s) extending to the mine site.

The estimated area of disturbance would be greater than Alternatives 1 and 2 combined, based on infrastructure build-out at the mine site. The build-out would correspond to an increase in magnitude and local extent of disturbance impacts, with a duration increase of up to 98 years with processing of low-grade PAG waste. Potential for surface water hydrology impacts would increase, and could be comparable to or greater than Alternatives 1 and 2 combined. Additional design features to capture and treat impacted water and subsequent discharge of treated water to the SFK, NFK, and UTC watersheds would be necessary to manage mine site impacts.

Development of the Shotgun prospect, while potentially contributing cumulatively to regional surface water hydrology impacts in the Nushagak watershed, would not physically overlap with the Pebble Project area, and the cumulative impact in the common areas of the lower Nushagak watershed would be expected to be minimal if the design features applied to the Pebble Project achieve the anticipated water discharge controls.

Some limited RFFAs associated with mineral exploration activities (e.g., Pebble South, Big Chunk North, Big Chunk South, Fog Lake, and Groundhog) could have some limited surface water hydrology impacts in common watersheds to the Pebble Project (e.g., drill pads, camps); however, they would be seasonally sporadic, temporary, and localized based on remoteness. Although exploration activities are considered to have minimal cumulative impacts to soil resources, there could be potential for greater surface water hydrology impacts from future development through transportation infrastructure co-use with the Pebble Project.

The footprint of the Diamond Point rock quarry coincides with the Diamond Point port footprint under Alternatives 2 and 3. Cumulative impacts would be limited to a potential increase in localized surface water hydrology impacts from commonly shared project footprints with the quarry site under Alternatives 2 and 3.

Overall, the magnitude of cumulative impacts to surface water hydrology from RFFAs in general would be expected to be minimal, with the exception of RFFA activities in the immediate mine site (e.g., Pebble Project buildout). The cumulative effects in the mine site footprint, expanded to include buildout development, would increase; but it is expected that controls would be in place to manage those impacts to prevent adverse effects on the outside environment.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/17/2018 7:41:54 PM
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Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 multiple emails first email (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_17_01_MineHydrologyStudyArea.pdf; 11_17_2018_Fig3_17_02_HydrogeologicInvestigations.pdf; 11_17_2018_Fig3_17_03_SchematicGroundwaterSystem.pdf; 11_17_2018_Fig3_17_04_GeologicCrossSectionLocationMap.pdf; 11_17_2018_Fig3_17_05_Cross_Section_E10.pdf; 11_17_2018_Fig3_17_06_Cross_Section_L1.pdf

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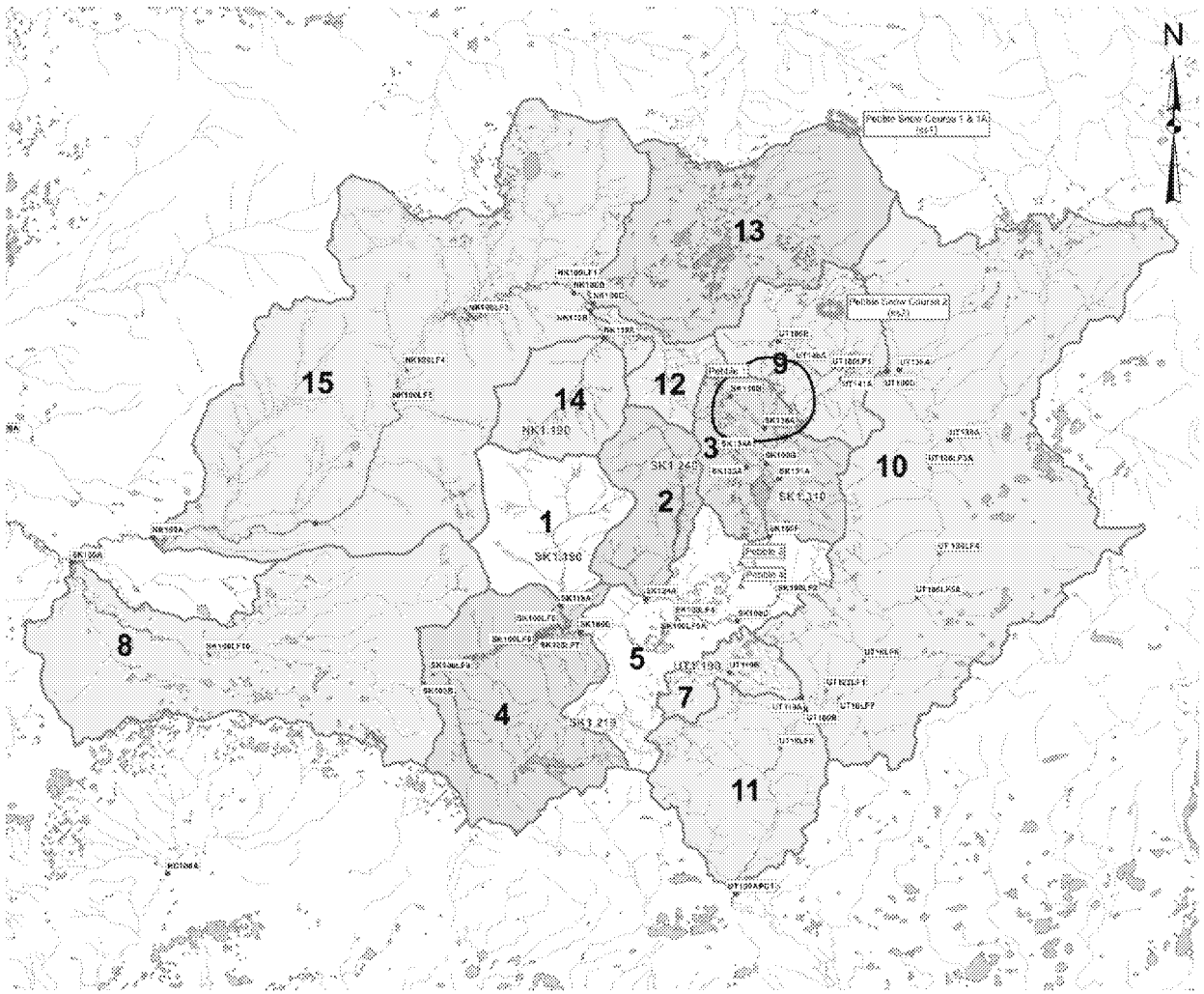

Sources: PLP 2011d

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- Snow Course Station
- Meteorological Station
- Stream Gaging Station
- Low Flow Stream Gaging Station
- General Deposit Location
- Lakes
- Rivers
- Subcatchment

Note - numbers inside subcatchment denote the subcatchment number

HYDROGEOLOGY STUDY AREA

PEBBLE PROJECT EIS

FIGURE 3.17-1

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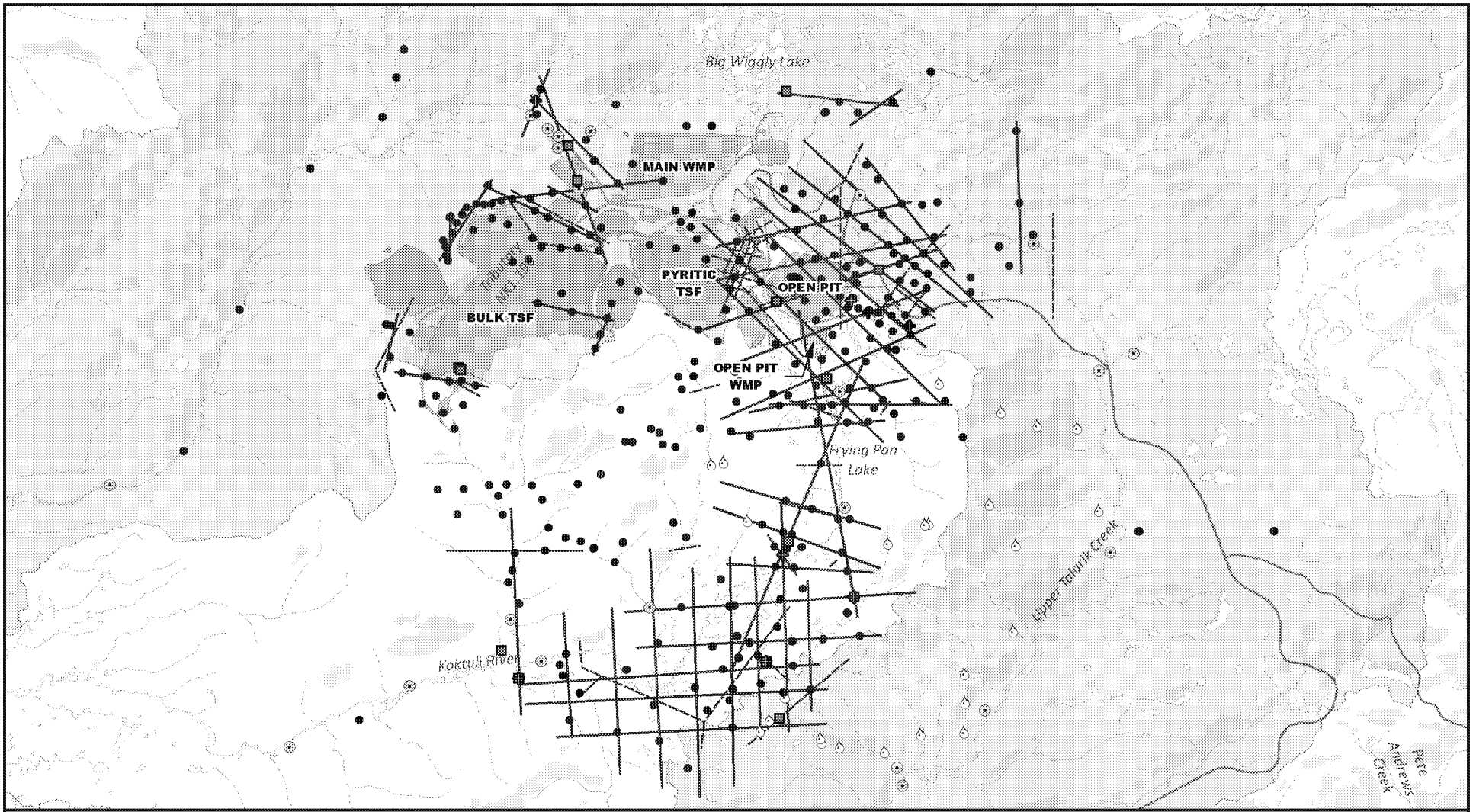

Sources: Schlumberger 2011a, Figure 8.1-4

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Location Type
- Pumping Well
- Monitoring Well
- Piezometer
- Stream Gaging Station
- Seep Sampling Location
- 2004-2010 Seismic Line
- Cross Section Line

Watershed
- North Fork Koktuli River
- South Fork Koktuli River
- Upper Talarik Creek

Alternative 1
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Other Features
- River/Stream
- Lake/Pond

WELL, PIEZOMETER, AND SEEP LOCATIONS

PEBBLE PROJECT EIS

FIGURE 3.17-2

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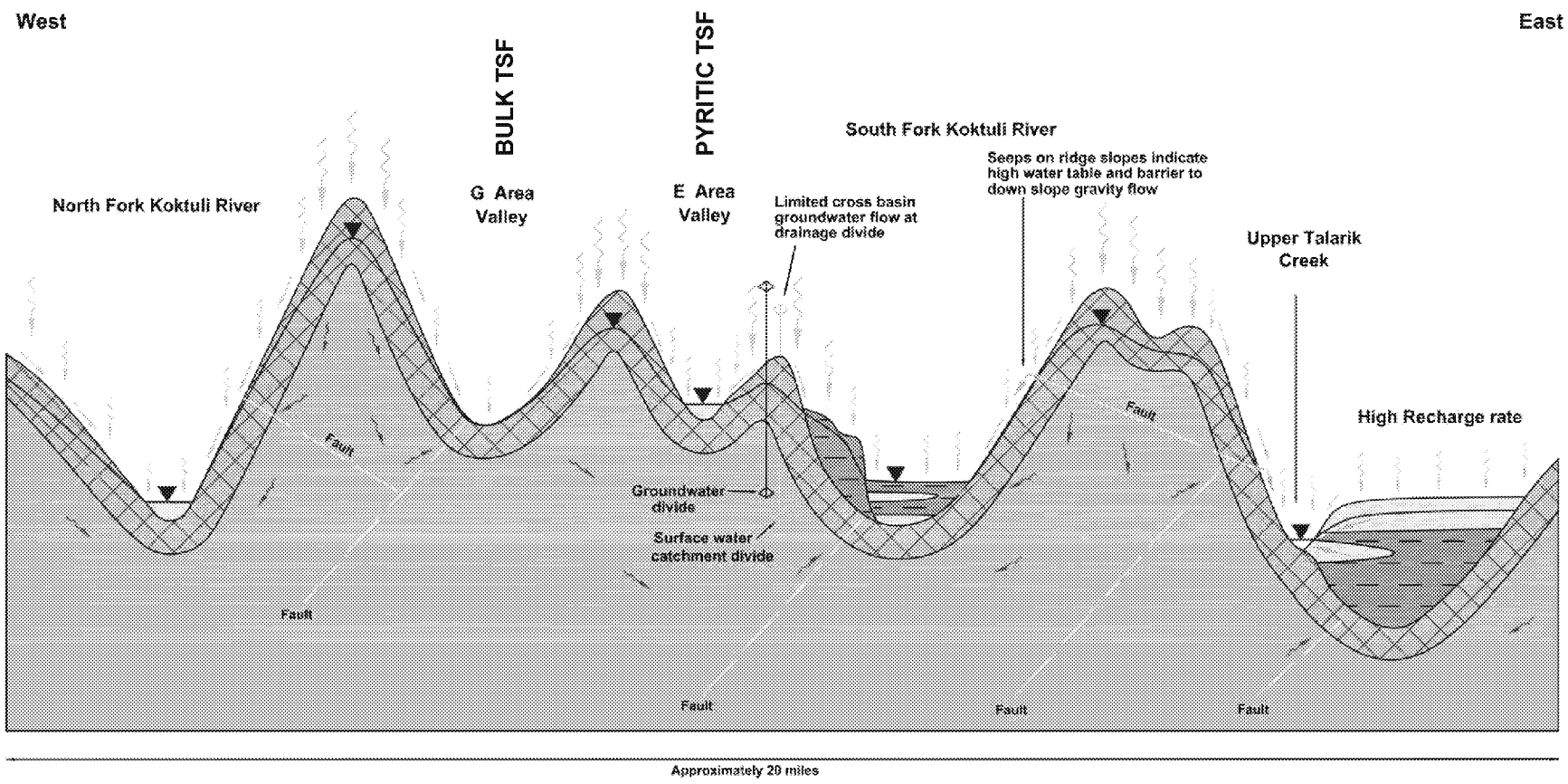

Sources: PLP 2011d

US Army Corps of Engineers®

LEGEND

- Sand and gravel
- Silt and clay
- Fractured bedrock
- Bedrock
- Recharge
- Seasonal surface runoff
- Spring
- Shallow bedrock groundwater flow
- Minor deep bedrock groundwater circulation
- Potentiometric surface - alluvium
- Water Table
- Groundwater divide
- Surface water catchment divide

SCHEMATIC REPRESENTATION OF SITE-WIDE GROUNDWATER SYSTEM

PEBBLE PROJECT EIS

FIGURE 3.17-3

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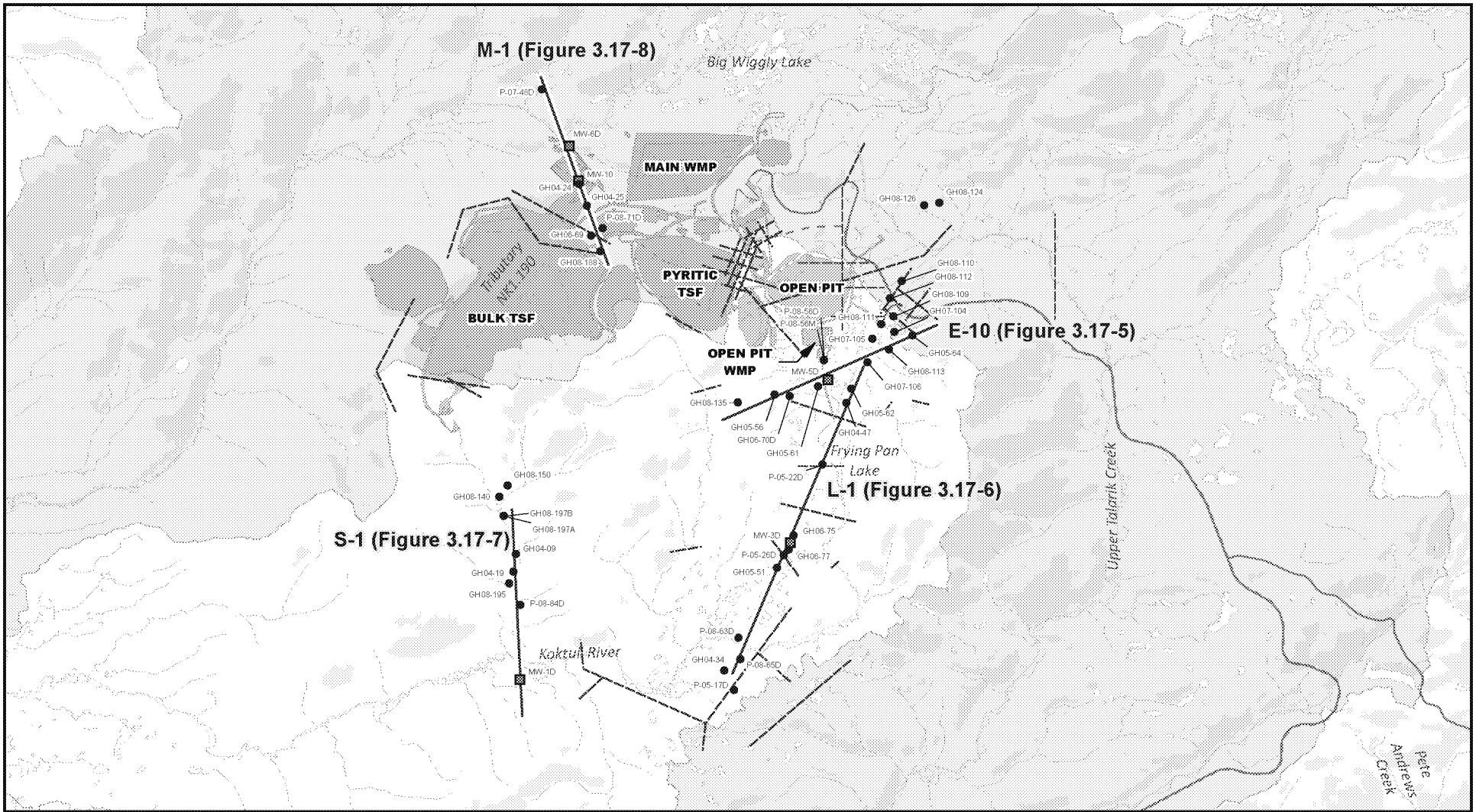

Sources: Schlumberger 2011a, Figure 8.1-4

US Army Corps of Engineers

0.5 0 0.5 1
Miles

AECOM_Missing_Piezometer_Locations

Location Type
- Monitoring Well
- Piezometer
- Cross Section Line
- 2004-2010 Seismic Line

Watershed
- North Fork Koktuli River
- South Fork Koktuli River
- Upper Talarik Creek

Alternative 1
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Other Features
- River/Stream
- Lake/Pond

GEOLOGIC CROSS-SECTION LOCATION MAP

PEBBLE PROJECT EIS

FIGURE 3.17-4

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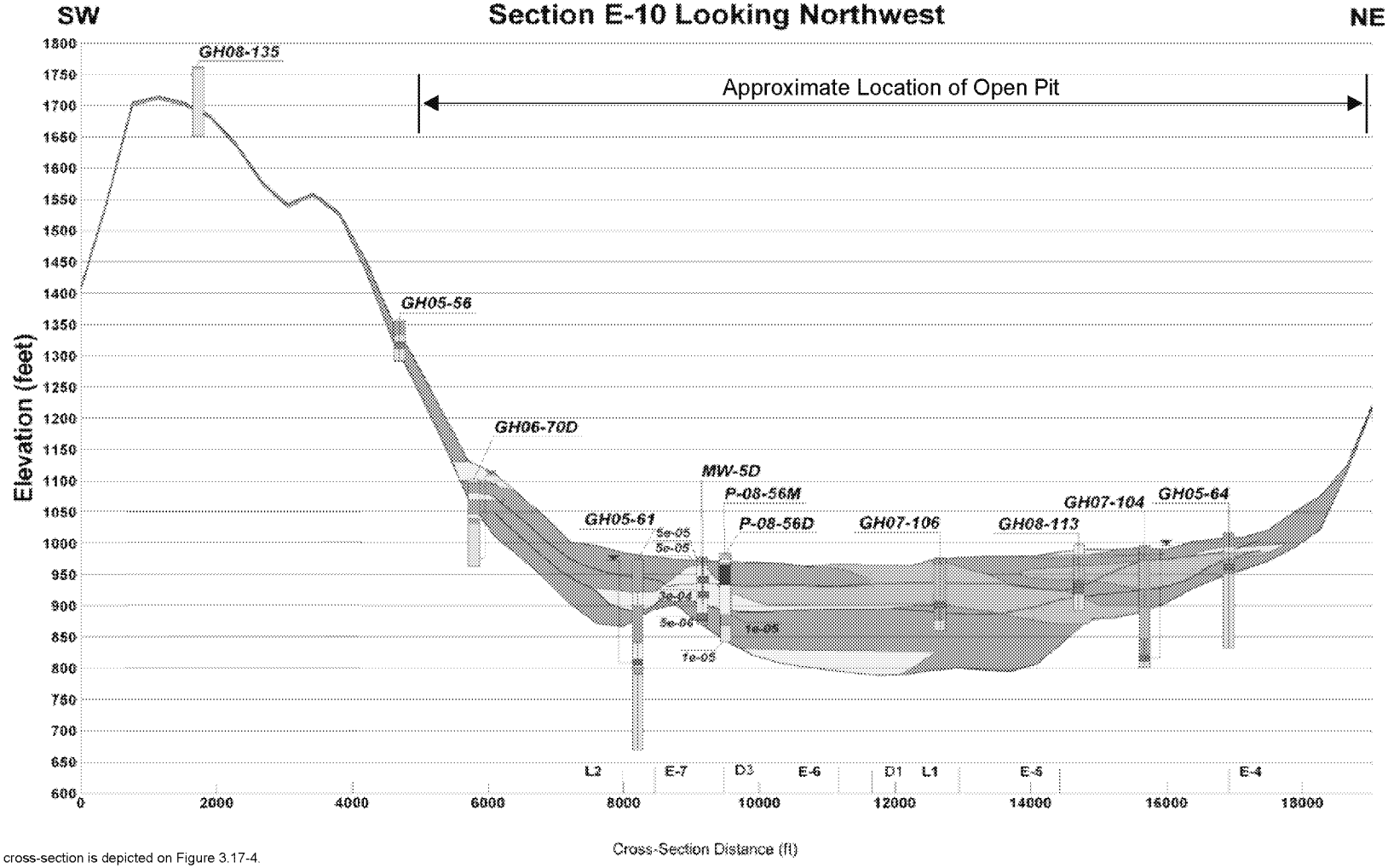

Note: Location of cross-section is depicted on Figure 3.17-4.

Sources: Schlumberger 2015a, Appendix 8.1B

Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- 4e-05 Hydraulic Conductivity (m/s)
- Screened Interval
- GH05-61 Well Name
- E-10 Intersecting Cross-Section

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CROSS-SECTION E-10
PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS

FIGURE 3.17-5

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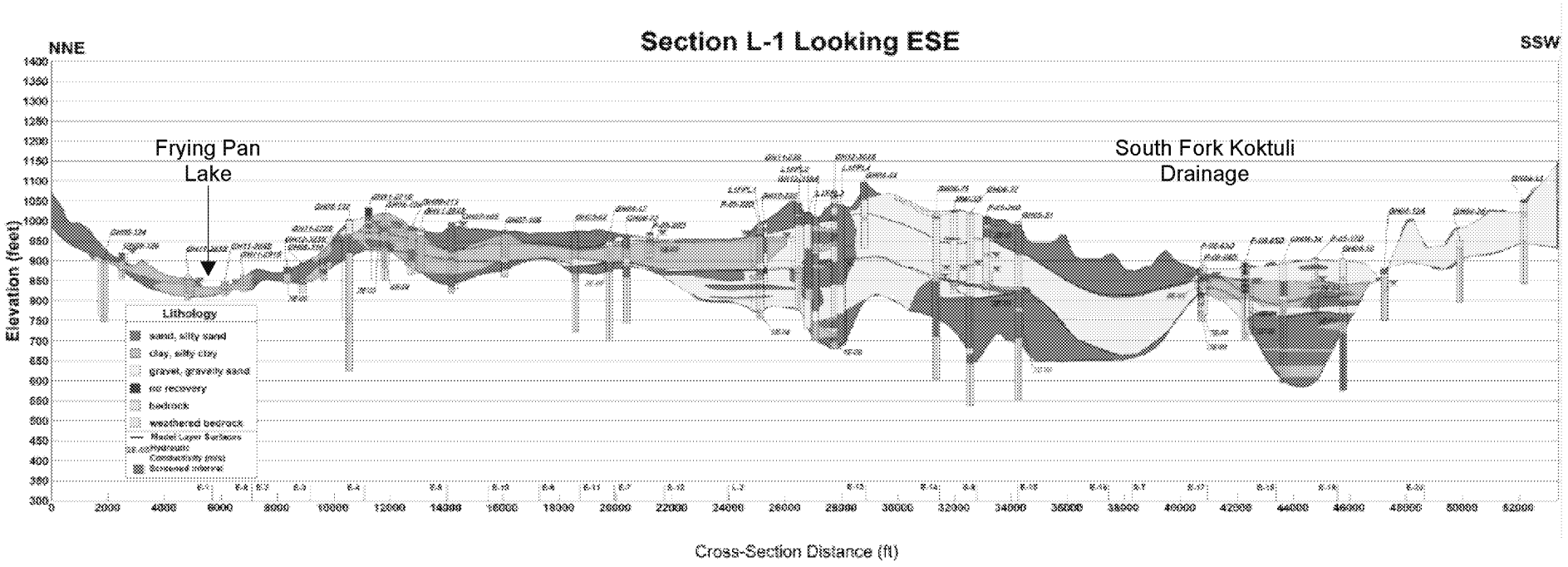

Note: Location of cross-section is depicted on Figure 3.17-4.

Sources: Schlumberger 2015a, Appendix 8.1B

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Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- 4e-05 Hydraulic Conductivity (m/s)
- Screened Interval
- Well Name
- Intersecting Cross-Section

CROSS-SECTION L-1
FRYING PAN LAKE AND SOUTH FORK KOKTULI DRAINAGE

PEBBLE PROJECT EIS

FIGURE 3.17-6

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From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 7:00:47 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: figures 3.9 (UNCLASSIFIED)
Attachments: Figure 3.9-7 Subsistence Use Areas, All Resources - Pedro Bay.pdf; Figure 3.9-9 Subsistence Use Areas, All Resources - Nondalton.pdf; Figure 3.9-5 Subsistence Use Areas, All Resources - Newhalen.pdf; Figure 3.9-11 Subsistence Use Areas, All Resources - Igiugig.pdf; Figure 3.9-13 Subsistence Use Areas, All Resources - Kokhanok.pdf

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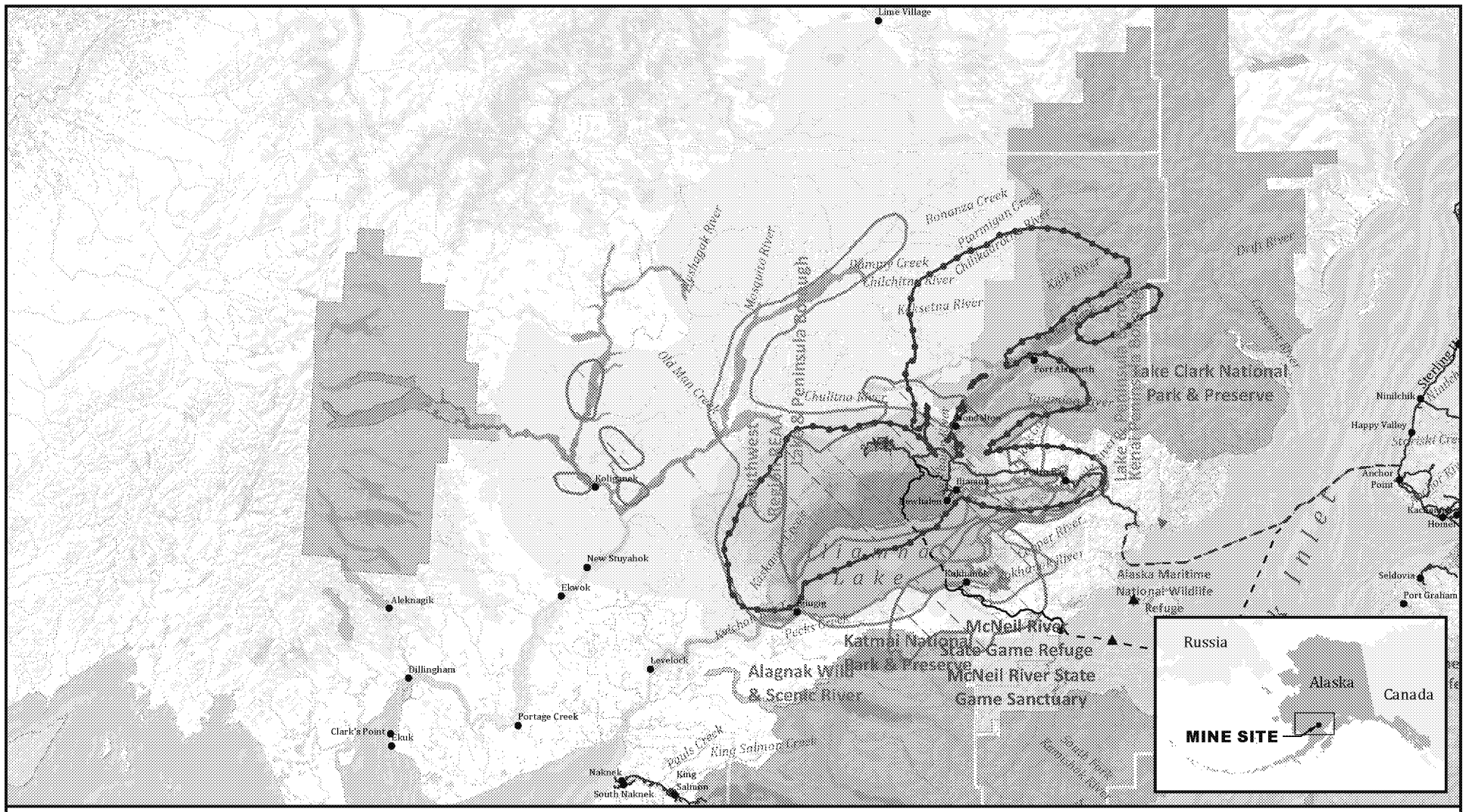
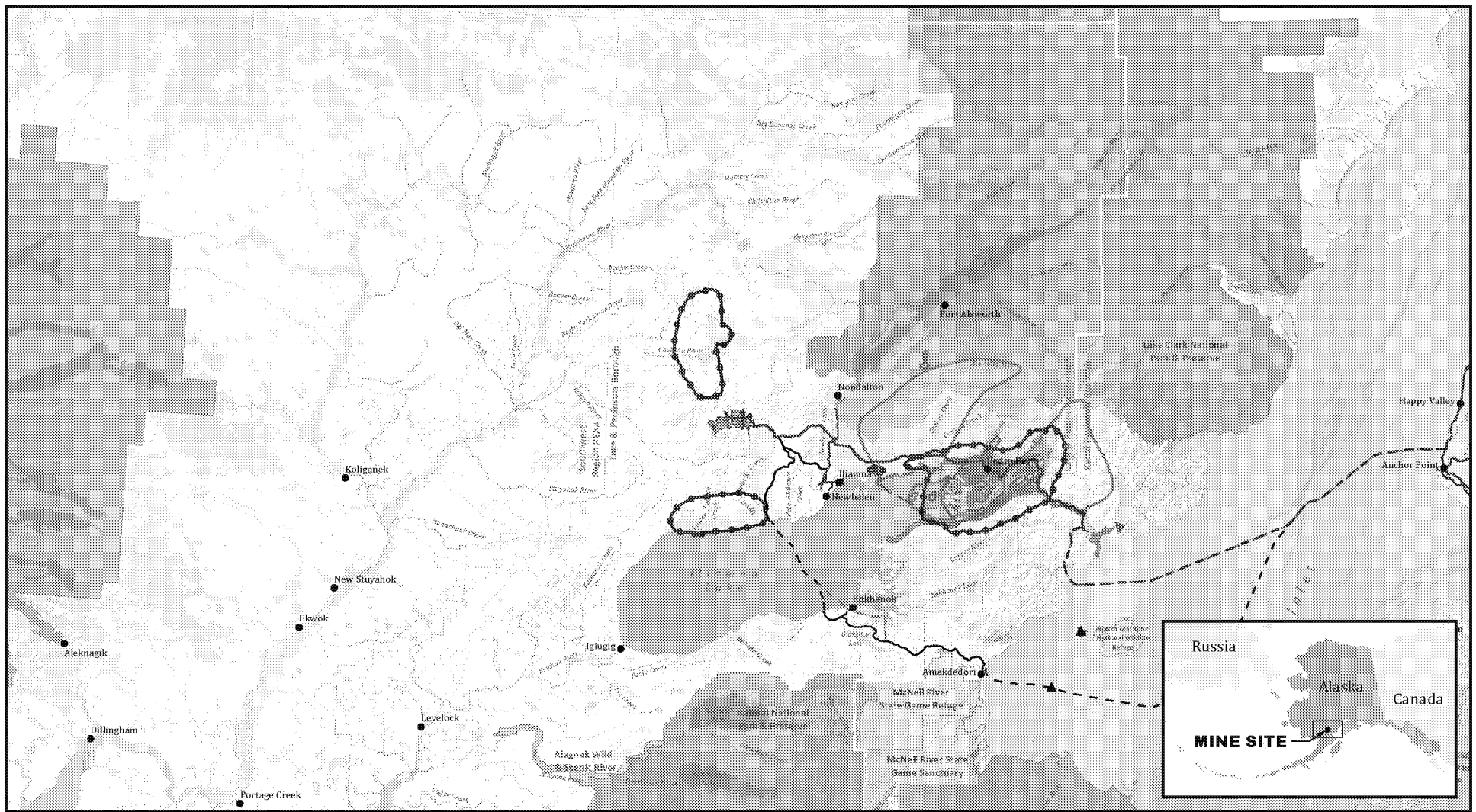

Lime Village
Bonanza Creek
Ptarmigan Creek
Chikaroon River
Mosquito River
Dummy Creek
Chilchitna River
Kaskanak Creek
Kaskanak River
Kvichak River
Kaskanak Peninsula
Old Man Creek
Kvichak Peninsula
Kvichak Range
Kaskanak Range
Kvichak River
Kaskanak Creek
Kaskanak Flats
Kaskanak Flats Airport
Kaskanak Flats Airport
Kaskanak Flats Airport



Sources: Pebble; USGS; ADNR
Subsistence use areas by
Stephen R. Braund & Associates

US Army Corps of Engineers

10 0 10 20
Miles

Other Features

- Borough Boundary
- Wild and Scenic River
- State Game Refuge/Sanctuary
- Alaska State Park
- National Wildlife Refuge
- National Park
- City/Town
- Roads
- River/Stream
- Lake/Pond
- Large Land Mammals, 1980-2002 (Holen et al., 2005)
- All Resources, 2004 (Fall et al., 2006)
- All Resources, 1960-82 (Wright, Morris, and Schroeder, 1985)
- Overlapping Subsistence Use Areas All Resources 1996-2005 (SRB&A 2010d)
- Action Alternative 1
- Alternative 1 Kokhanok East Variant
- Alternative 2
- Alternative 3

SUBSISTENCE USE AREAS, ALL RESOURCES - PEDRO BAY

PEBBLE PROJECT EIS **FIGURE 3.9-7**

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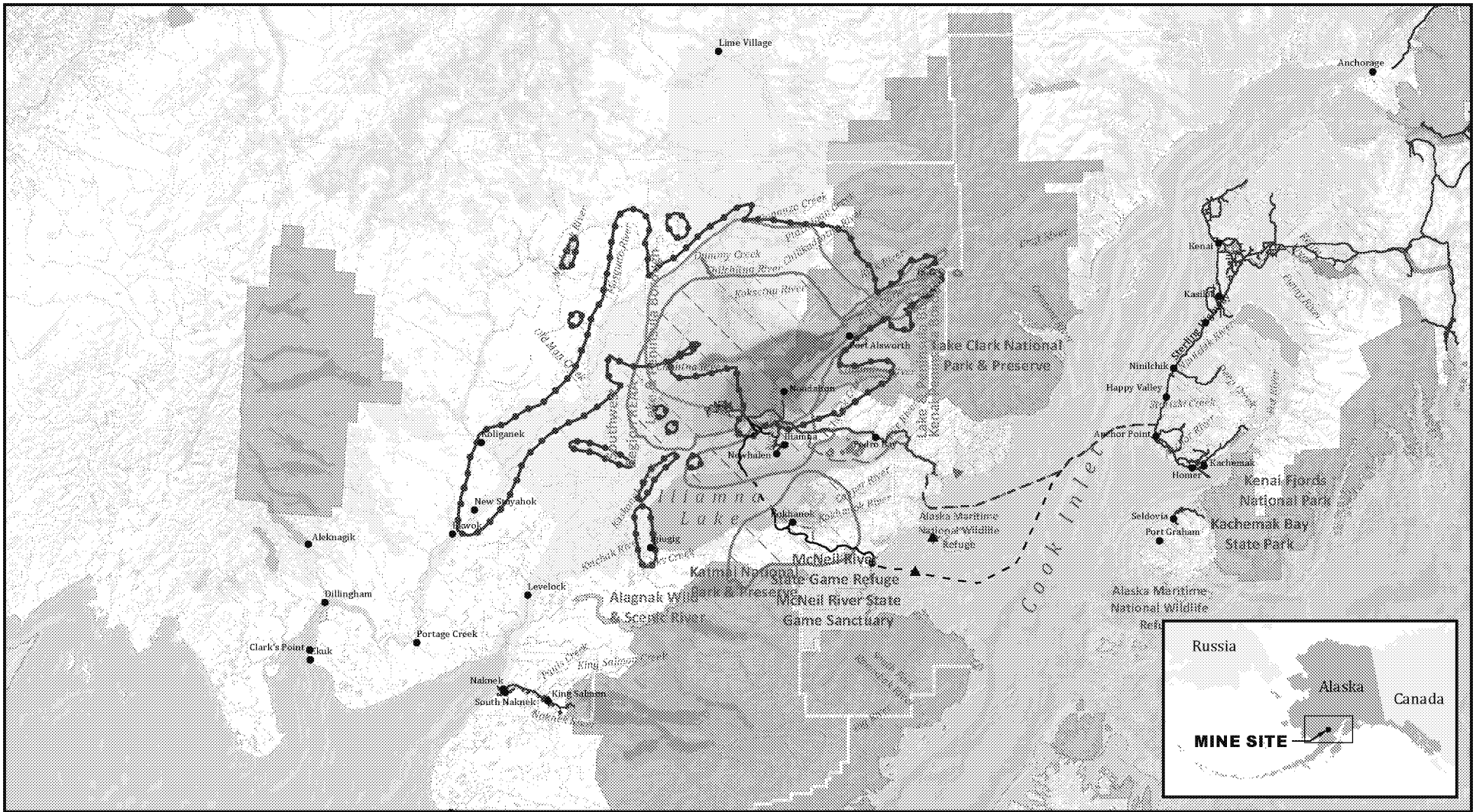

Sources: Pebble; USGS; ADNR
Subsistence use areas by
Stephen R. Braund & Associates

US Army Corps of Engineers

10 0 10 20
Miles

Other Features

- Borough Boundary
- Wild and Scenic River
- State Game Refuge/Sanctuary
- Alaska State Park
- National Wildlife Refuge
- National Park
- City/Town
- Roads
- River/Stream
- Lake/Pond
- Large Land Mammals, 1980-2002 (Holen et al., 2005)
- All Resources, 2004 (Fall et al., 2006)
- All Resources, 1960-82 (Wright, Morris, and Schroeder, 1985)
- Overlapping Subsistence Use Areas All Resources 1996/97 - 2005/06 (SRB&A 2013b)
- Action Alternative 1
- Alternative 1 Kokhanok East Variant
- Alternative 2
- Alternative 3

SUBSISTENCE USE AREAS, ALL RESOURCES - NONDALTON

PEBBLE PROJECT EIS **FIGURE 3.9-9**

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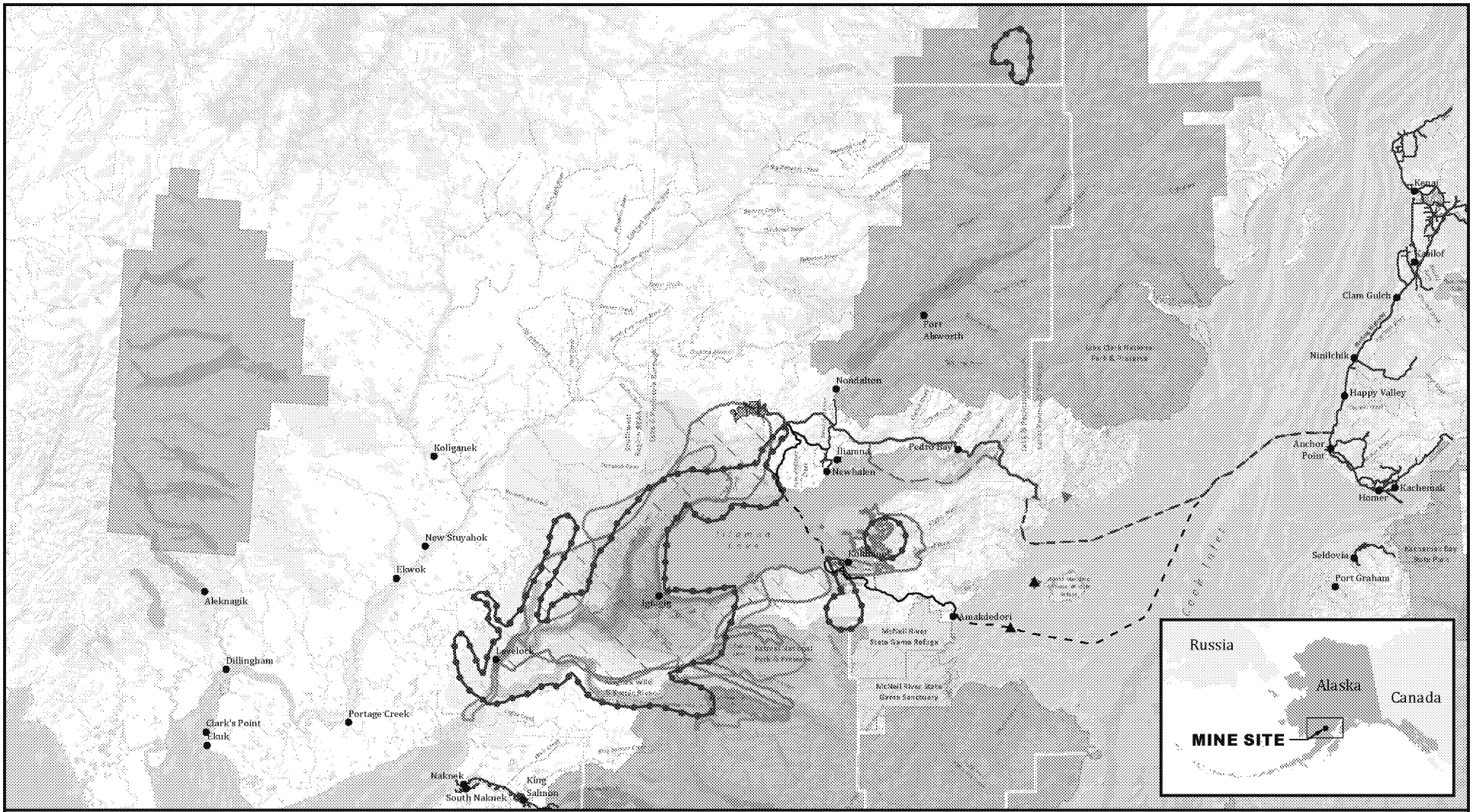

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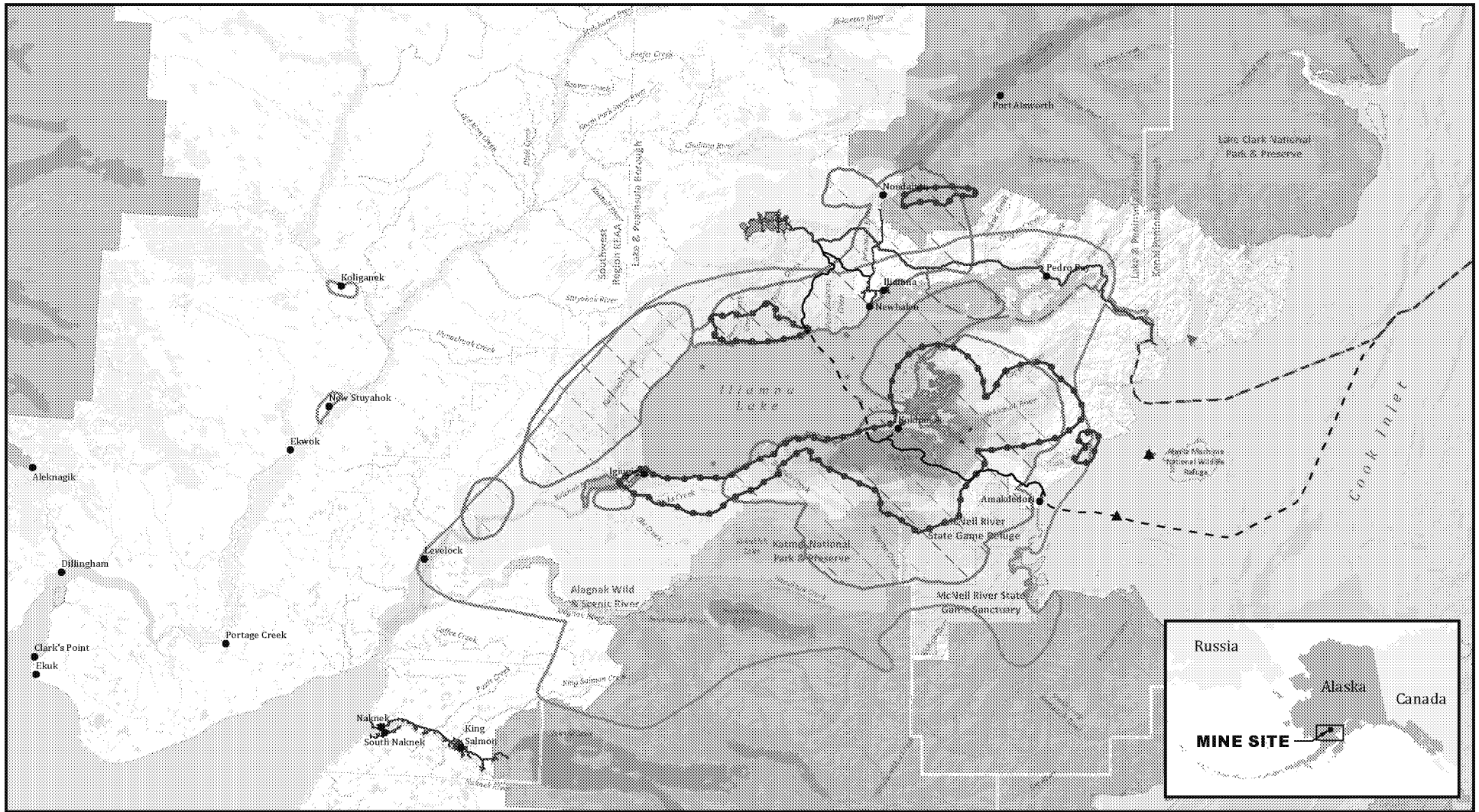

Sources: Pebble; USGS; ADNR
Subsistence use areas by
Stephen R. Braund & Associates

US Army Corps of Engineers

10 0 10 20
Miles

Other Features

- Borough Boundary
- Wild and Scenic River
- State Game Refuge/Sanctuary
- Alaska State Park
- National Wildlife Refuge
- National Park
- City/Town
- Roads
- River/Stream
- Lake/Pond
- Large Land Mammals, 1980-2002 (Holen et al., 2005)
- All Resources, 2005 (Krieg et al., 2009)
- All Resources, 1960-82 (Wright, Morris, and Schroeder, 1985)
- Overlapping Subsistence Use Areas All Resources 1996-2005 (SRB&A 2010c)
- Action Alternative 1
- Alternative 1 Kokhanok East Variant
- Alternative 2
- Alternative 3

SUBSISTENCE USE AREAS, ALL RESOURCES - KOKHANOK

PEBBLE PROJECT EIS **FIGURE 3.9-13**

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 2:39:28 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: please provide comments by 12/7/2018 if your agency is identified below (UNCLASSIFIED)
Attachments: Sec4.13_Geology_reviewdraft_2018.11.09.docx; K3.13_Geology_reviewdraft_2018.11.09.docx; K4.13_Geology_reviewdraft_2018.11.09.docx; Sec3.13_Geology_reviewdraft_2018.11.09.docx; Sec4.15_Geohazards_reviewdraft_2018.11.09.docx; K3.15_Geohazards_reviewdraft_2018.11.09.docx; K4.15_Geohazards_reviewdraft_2018.11.09.docx; Sec3.15_Geohazards_reviewdraft_2018.11.09.docx; Sec4.13_Geology_reviewdraft_2018.11.09.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 9 Word files, the review drafts of:

Chapter 9-references. There are no separate figure PDFs. There are no technical appendices. CAs are not identified.

Sec3.13, K3.13, 4.13, K4.13 - Geology. There are 4 separate figure PDFs for Sec3.13 (attached). CAs are State of Alaska.

Sec3.15, K3.15, 4.15, K4.15 - Geohazards. There are 4 separate figure PDFs for Sec3.15 (attached). K4.15 has 11 figures (I will send separately). CAs are State of Alaska
VR

Shane McCoy
Program Manager
(907) 753-2715

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K3.13 GEOLOGY -

This appendix contains supplemental information on the affected environment for the following topic(s) related to:

- Baseline paleontological resources

K3.13.1 Mine Site

Cretaceous age Kahiltna flysch sedimentary units are largely derived from eroded volcanic rocks, and are not likely to contain fossils. Other volcanic and intrusive igneous rocks in the mine site area are not suitable lithologies for fossil formation and preservation. Quaternary age glacial sediments at the mine site are unlikely to host fossils, and without measurable permafrost, significant findings of frozen Pleistocene age megafauna are not likely (Blodgett and Zhang 2018; Arctos 2018).

K3.13.2 Transportation Corridor

As with the mine site, the intrusive igneous and volcanic bedrock that spans most of the mine access transportation corridor is not an amenable lithology for fossil formation and preservation. Pleistocene age glacial sediments along the transportation corridor are unlikely to host fossils and, without the preserving effects of measurable permafrost, significant findings of Pleistocene age megafauna are not likely (Blodgett and Zhang 2018; Arctos 2018).

There are known paleontological resource sites at the southern terminus of the transportation corridor, where the road meets the port. Quaternary age beach deposits present in the area are locally fossiliferous, originating from erosion of nearby Jurassic age marine sedimentary rock (see Amakdedori Port section below); therefore, fossils are likely present in that area (Detterman and Reed 1973). About 20 acres of the transportation corridor footprint is on Quaternary age beach deposits that could contain significant fossil resources. Additionally, the transportation corridor comes within 800 feet of the Talkeetna and Naknek formations, which have produced significant vertebrate paleontological resources (Wilson et al. 2012).

K3.13.3 Amakdedori Port

Jurassic age marine sedimentary rocks around the port site are host to numerous diverse marine invertebrate fossils. Fossil ammonites, brachiopods, cephalopods, and pelecypods are abundant in the Naknek and Talkeetna Formation members exposed in the bluff directly northeast of the port facility (Blodgett and Zhang 2018; Detterman and Reed 1973, 1980; Wilson et al. 2012). Cephalopod fossils eroded from nearby Jurassic age sedimentary rock have been found in the same beach deposits located within the port facility footprint (Arctos 2018). While these are common fossils, they are considered significant as sources of new data concerning Jurassic period evolutionary trends, species survival beyond Triassic period extinctions, and the global and regional development of Jurassic age marine biological communities (Sandy and Blodgett 2000). The Naknek Formation at other sites in the region contains vertebrate fossils from the Jurassic marine reptile *Megalneusaurus*, which represents the only find of this species in Alaska, and one of only two occurrences of this genus in North America (Blodgett et al. 1995; Weems and Blodgett 1996). Terrestrial vertebrate trackways have also been discovered in the Naknek Formation at other locales in the region (Blodgett et al. 1995). These findings demonstrate a potential for paleontological resources in the Amakdedori port footprint.

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K3.13.4 Natural Gas Pipeline Corridor

The paleontological environment of the natural gas pipeline corridor is the same as that discussed above for the transportation corridor. Quaternary age sediments along both sides of Cook Inlet are unlikely to contain fossils, and without the preserving effect of measurable permafrost, significant findings of Pleistocene age megafauna are not likely (Blodgett and Zhang 2018; Arctos 2018). In the offshore section of corridor, the shallow floor of the Cook Inlet is filled with abundant sand, pebbles, cobbles, and boulders flushed into the inlet from young glacial deposits across the region; no fossil resources would be expected.

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K3.15 GEOHAZARDS

This appendix contains additional technical information on the following topics related to the affected environment for geohazards described in Section 3.15, Geohazards:

- Liquefaction processes and depth
- Baseline geotechnical data coverage at the mine site

K3.15.1 Liquefaction

Liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress, such as earthquake shaking, which causes it to behave like a liquid. When a soil is saturated by water, which often exists below the groundwater table, the water fills gaps between soil grains (i.e., pore spaces). In response to the soil compressing, this water increases in pressure and is forced to flow out of the soil to zones of low pressure, usually up to the ground surface. However, if the loading is rapidly applied and large enough, or is repeated many times (e.g., earthquake shaking), the water cannot flow out in time before the next cycle of load is applied, and the water pressure could build up and exceed the forces (contact stresses) between the grains of soil that keep them in contact with one another. These contacts between grains are the means by which weight from structures and overlying soil layers are transferred from the ground to deeper soil or rock. This loss of soil structure causes the soil to lose its strength, and triggers liquefaction.

The depth to which liquefaction can occur has implications for the behavior of saturated tailings in an earthquake (see Section 4.15, Geohazards). Knowledge on the maximum depth of liquefaction has evolved in recent years because of large global earthquakes and resultant liquefaction (Bray 2013; Stewart and Knox 1995; Tchakalova 2018; WSDOT 2013). The Washington State Department of Transportation Geotechnical Design Manual M 46-03.09 limits the depth for considering liquefaction to 80 feet, but suggests that analyses be performed to determine liquefaction probability if loose materials are below 80 feet. Stewart and Knox (1995) conclude it is possible for excessive porewater pressures to exist considerably below 100 feet, that are sufficient to overcome the stiffness created by overburden pressures and exceed the thickness for liquefaction, and that great earthquakes can generate stresses of sufficient intensity and duration to produce liquefaction conditions in unconsolidated sediments below 1,000 feet. Tchakalova (2018) adds that the maximum depth at which liquefaction can occur is probably the same as the maximum depth at which sands and silts can remain unconsolidated and maintain a sufficient porosity and hydraulic conductivity, and that whatever those depths, earthquakes of M8.0 or greater can produce stresses in the hypocenter and epicenter zones sufficient to overcome overburden pressures below 1,000 feet.

K3.15.2 Baseline Geotechnical Data Coverage

The following table summarizes the number of geotechnical drillholes, test pits, and seismic line collected in and near the footprint of different facilities at the mine site. A summary of overburden deposits and bedrock encountered in each area is provided in Section 3.13, Geology.

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Table K3.15-1: Baseline Geotechnical Data Coverage at Mine Site

Area	Facilities	Number of Drill Holes	Number of Test Pits	Number of Seismic Lines
NFK-West	Bulk TSF main embankment, impoundment, and quarries	39	37	9
NFK-East	Pyritic TSF and associated SCPs	14	38	9
NFK-North	Main WMP, bulk TSF main embankment SCP, emergency dump pond	29	13	0
Pit Area	Open pit and rim	31	30	6
Bulk TSF South	Bulk TSF South embankment, and associated SCP and sediment pond	11	10	2
South of Pit Area	Open pit WMP, pit overburden stockpile, and associated sediment ponds	7	20	3

Notes:

NFK = North Fork Koktuli

SCP = seepage collection pond

TSF = tailings storage facility

WMP = water management pond

Source: Knight Piésold 2011c; PLP (2013a); PLP 2018-RFI 014

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K4.13 GEOLOGY

This appendix contains supplemental information on the following topic(s) related to:

- Historical field and desktop studies
- Impacts to paleontological resources

K4.13.1 Historical Geology-Related Field and Desktop Studies

The geology-related findings presented in Sections 3.13, Geology, and Section 4.13, Geology, were based on the review of field and office studies completed within the Pebble project area, including the following:

- Relevant existing literature and studies completed by the Applicant and others, including published geological reports and maps prepared by the US Geological Survey, Alaska Division of Geological & Geophysical Surveys and others (Knight Piésold. 2011a and 2011d; Detterman and Reed 1973 and 1980; Hamilton and Klieforth 2010; Nokleberg et al. 1994; Plafker et al. 1994; Wilson et al. 2012).
- Evaluation and interpretation of aerial photographs taken from aircraft, which can provide a good understanding of the surficial geological conditions (Knight Piésold. 2011a and 2011d).
- Field reconnaissance studies, including helicopter and on-the-ground geologic mapping to verify the aerial photograph-related findings (Knight Piésold. 2011a and 2011d).
- Offshore drill holes and bathymetry (depth of water) surveys to support the ferry transportation corridors and natural gas pipeline alternative-related studies (Knight Piésold. 2011a, 2011d and 2018).
- Within the mine study area:
    - More than 700 drill holes were completed within the mine study area using helicopter-portable drilling equipment (Figure 3.15-3). About 500 of the drill holes were completed to understand the mineralogy, and the remaining drill holes supported civil engineering-related studies. Rock and soil samples were collected for detailed evaluation during and after the field work (Knight Piésold 2011a, 2011d and 2018).
    - Excavation of more than 300 test pits within the mine study area that ranged in depth between about 1.5 to 3 meters and were completed by a helicopter-portable excavation apparatus (Knight Piésold. 2011a, 2011d).
    - Ground-based (versus from aircraft) geophysical surveys were completed with helicopter- and boat-portable instruments within the mine study and project area to understand the physical characteristics of the mineralized bedrock and near-shore sediments. These studies were non-invasive (did not include drilling or excavations) and relied on electronic sensors to map the geology. The geophysical studies included seismic reflection, infrared imagery, and induced polarization (Knight Piésold. 2011a, 2011d, 2018_[report pending]).

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K4.13.2 Paleontological Resources

Ground- and bedrock-disturbing actions have the potential to directly impact fossil-bearing deposits through physical disturbance, fragmentation, or destruction of fossil material. The following describes potential impacts to paleontological resources by project component.

K4.13.3 Mine Site

Due to the type of geological formations present, the possibility for paleontological resources in the mine site is unlikely.

K4.13.4 Transportation Corridor

Because of the prevalence of igneous rock type on the transportation corridor, paleontological findings along the transportation corridor outside the port area are unlikely (see Amakdedori Port below). However, depending on depth of the paleontological resources beneath the surface Quaternary age beach deposits, 20 acres in the vicinity of the port facility have the potential to impact paleontological resources.

In the vicinity of the Amakdedori port, the transportation corridor has a footprint that covers about 20 acres of the fossil-bearing Quaternary age (2.6 million years) beach deposits. The corridor near the port also comes within about 800 feet of the Talkeetna and Naknek formations (Wilson et al. 2012), which have produced vertebrate paleontological resources, as previously described. Further, there would be potential for indirect impact to paleontological resources present in the nearby Naknek and Talkeetna Formation exposures from increased access to the area resulting from the development of the transportation corridor.

K4.13.5 Amakdedori Port

Indirect impacts may be caused by increased erosion or other landscape changes, or from increased accessibility to paleontological resources, resulting in an increased likelihood of vandalism or unauthorized collection. Increased access to the area from project development could result in unauthorized collection, removal, excavation, or casting of fossils, including dinosaur tracks, which could result in the damage or destruction of paleontological resources.

Potential paleontological resources that could be removed would likely be common, widespread invertebrate fossils found in sedimentary rocks. There is a chance that rare or unique fossils could be removed or destroyed, such as dinosaur fossils or tracks in Jurassic age rock, or Pleistocene age vertebrate/mammal fossils/remains in surficial glacial deposits.

The Amakdedori port construction footprint covers roughly 250 acres, all within Quaternary age beach deposits that have locally produced fossils considered to be significant paleontological resources (Sandy and Blodgett 2000; Wilson et al. 2012). Additionally, the Talkeetna and Naknek Formations are exposed in outcrops in the immediate vicinity of the port facility. These formations are highly fossiliferous, with the Naknek Formation in the vicinity producing a vertebrate specimen of an extremely rare Jurassic age marine reptile, *Magelneusaurus*, which represents the only find of this species in Alaska, and one of only two occurrences of this genus in North America (Blodgett et al. 1995; Weems and Blodgett 1996). Because the subsurface geology of the port site has not been mapped in detail, it is possible that bedrock underlying the port site footprint is the Naknek and/or Talkeetna Formations, with the potential for paleontological resources to be present beneath the port footprint.

Port facility construction, operations, and maintenance have the potential to directly impact paleontological resources (if present) over the entire 250-acre port site footprint. The potential also exists for indirect impacts to paleontological resources present in the nearby Naknek and

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Talkeetna Formation exposures, due to increased access to the area from port site development.

K4.13.6 Natural Gas Pipeline Corridor

Although there is a possibility of the occurrence of paleontological resources in the pipeline corridor outside the port area, potential impacts to paleontological resources along most of the pipeline corridor are unlikely. The pipeline corridor in the vicinity of the Amakdedori port has a footprint that covers roughly 12 to 15 acres of the fossil-bearing Quaternary age beach deposits. The natural gas pipeline corridor would be within 820 feet of the Talkeetna and Naknek formations (Wilson et al. 2012). Accordingly, 12 to 15 acres of the pipeline corridor have the potential to impact paleontological resources. If ground-disturbing activities from pipeline construction, operations, or maintenance activities extend outside these 12 to 15 acres, there is additional potential for impacts.

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K4.15 GEOHAZARDS

This appendix contains additional technical information related to potential geohazards at the mine and port sites, including the following topics:

- Mine site
  - Embankments and impoundments
    - Construction materials
    - Design and construction
    - Seepage analysis
    - Static stability analysis
    - Seismic hazard and deformation analysis
  - Open pit
    - Pit wall stability analysis
- Port sites
  - Seismic hazard analysis.

K4.15.1 Mine Site

The following discussion addresses mine site facilities that would have the potential to be affected by geohazards, which could include internal erosion and slope failure of embankments and impoundments, and rock wall instability within the open pit.

K4.15.1.1 Overview of Mine Embankments and Impoundments

The mine embankments and impoundments would be designed and constructed to store tailings and contact water during mine operation that could pose a risk to the environment if released due to geohazards. The proposed mine site–related embankments and impoundments, shown in Figure 2-3 and summarized in Table K4.15-1, include the bulk tailings storage facility (TSF), the pyritic TSF, water management ponds (WMPs), and seepage collection ponds (SCPs). Table K4.15-1 presents the buildout dimensions of the embankments and impoundments that would contain tailings, waste rock, and/or contact water at the mine site. These facilities are discussed hereafter.

K4.15.1.2 Embankment Construction Materials

The embankments for the tailings and water management facilities would be constructed of drilled and blasted bedrock removed from quarries A through C and the overburden in the open pit (Figures 2-3 and K4.15-1). The three rock quarries would be developed in the western portion of the mine site in bedrock consisting of granodiorite associated with the Kaskanak batholith. The overburden in the open pit would consist of various types of sedimentary and igneous rock. See Section 3.13, Geology, for further discussion of mine site geology.

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Table K4.15-1: Mine Embankment and Impoundment Dimensions

Impoundment / Embankment Name		Embankment: Max. Height (feet)	Crest Elev. (feet)	Footprint Area (acres)	Max. Crest Length (feet)	Crest Width (feet)	Max Width at Base (feet)	Dwnstream Slope (H:V)	Upstream Slope[1] (H:V)	Foundation Strata[2]	Construction Material Volume (M yd^2)	Seepage Control Method	Raise Method	Stored Material	Impoundment: Max. Footprint Area (acres)	Pond Surface Area[3] (acres)	Max. Impoundment Volume (acres-ft)[4]
Action Alternative 1 - Applicant's Proposed Alternative																	
Bulk TSF	Main	545	1,730	305	13,600	200	2,415	2.6:1 Overall (including Buttress)	Vertical Serrated	Bedrock	78	Filter / Transition Zones, Flow-Through Embankment	Centerline	Bulk Tailings	2,870	520 to 940	561,800
	South	300	1,730	90	4,900	200	1,550	2.6:1	3:1	Bedrock	11	U/S Liner, or C/F/T, & Grout Curtain	Downstream	Bulk Tailings			
Bulk TSF Main Seepage Collection Pond		110	1,185	20	3,500	50	490	2.6:1	2:1	Bedrock	2	U/S Liner, or C/F/T, & Grout Curtain	NA	Bulk Tailings Seepage	100	35 to 85	3,000
Bulk TSF South Seepage Collection Pond		75	1,395	4	1,300	50	195	2:1	2:1 to 3:1	Overburden	0.1	U/S Liner, or C/F/T, & Grout Curtain	NA	Bulk Tailings Seepage	TBD, SCP to be operated with minimum pond volume and freeboard allowance for the required IDF.		
Bulk TSF East Seepage Collection Pond		35	1,775	3	1,100	50	170	2:1	2:1 to 3:1	Overburden	0.1	U/S Liner, or C/F/T, & Grout Curtain	NA	Bulk Tailings Seepage	TBD, SCP to be operated with minimum pond volume and freeboard allowance for the required IDF.		
Open Pit Water Management Pond		45	1,030	25	4,500	50	280	2:1	3:1	Overburden	0.1	Fully Lined	NA	Open Pit Water	70	45	920
Main Water Management Pond		190	1,295	225	14,500	100	870	2:1	3:1	Bedrock[10]	30	Fully Lined[10]	NA	Contact Water	860[10]	750 to 825	56,250
Pyritic TSF[5]	North	425	1,710	670	19,300	200	2,370	2.6:1	3:1	Bedrock	157	Fully Lined	Downstream	Pyritic Tailings	1,100	400	132,300
	East	315	1,710														
	South	305	1,710														
Pyritic TSF North Seepage Collection Pond		45	1,325	3	900	50	190	2:1	2:1 to 3:1	Overburden	0.1	U/S Liner, or C/F/T, & Grout Curtain	NA	Pyritic Tailings Seepage	TBD, SCP to be operated with minimum pond volume and freeboard allowance for the required IDF.		
Pyritic TSF South Seepage Collection Pond		30	1,425	2	625	50	190	2:1	2:1 to 3:1	Overburden	0.1	U/S Liner, or C/F/T, & Grout Curtain	NA	Pyritic Tailings Seepage	TBD, SCP to be operated with minimum pond volume and freeboard allowance for the required IDF.		
Pyritic TSF East Seepage Collection Pond		55	1,400	2	570	50	195	2:1	2:1 to 3:1	Overburden	0.1	U/S Liner, or C/F/T, & Grout Curtain	NA	Pyritic Tailings Seepage	TBD, SCP to be operated with minimum pond volume and freeboard allowance for the required IDF.		
Emergency Dump Pond		40	1,335	6	1,765	50	200	2:1	2:1	Overburden	0.2	Fully Lined	NA	Tailings Slurry	TBD, Emergency Dump pond to remain empty outside of upset conditions in the tailings pipelines. Design storage TBC.		
Action Alternative 2 - Downstream Construction[6]																	
Bulk TSF	Bulk TSF Main	570	1,745	460	14,050	200	2,630	2.6:1 Overall (including Buttress)	2:1	Bedrock	124	Filter / Transition Zones	Downstream	Bulk Tailings	2,985	520 to 940	561,800
	Bulk TSF South	320	1,745	5	5,100	200	1,700	2.6:1	03:01	Bedrock	14	U/S Slope Lined & Grout Curtain	Downstream	Bulk Tailings			

Notes:

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1. Upstream slope assumed to be 3H:1V for lined embankments, or 2H:1V for C/F/T seepage control.
2. Removal of overburden may be required based on the geotechnical and hydrogeological information collected during site investigations.
3. Range of pond areas indicates normal and maximum operation pond levels.
4. Max impoundment volume below freeboard and storm storage, TSF storage volume is solids only.
5. The ultimate pyritic TSF embankment is a continuous structure between the north, east and south embankments. The final footprint area, crest length, and fill volume is provided.
6. Alternative 1 from RF1075
7. C/F/T = Core/Filter/Transition
8. U/S – Upstream
9. IDF – Inflow Design Flood
10. PLP changes during EIS-Phase FMEA, Oct. 24-25, 2018.

Source: PLP 2018-RFI 008e

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EPA-0135-0002648

Figure K4.15-1: Quarries A through C – Typical

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The characterization of rock types in the three rock quarries and the open pit area was based on both surface geological mapping and geotechnical drill holes (PLP 2018-RFI 015). Additional information regarding rock quality will be made available after the geotechnical field data collected in the latter part of 2018 have been processed.

Table K4.15-2 presents the estimated rock volumes of the three rock quarries plus the open pit overburden, based on the maximum footprints as presented in Figure 2-3. The table considers the differences between in-place versus post removal and post placement volumes and unit densities of the rockfill materials, as described in the table footnotes below.

Table K4.15-2: Summary of Available Embankment Rockfill Material

Material Source	Banked Volume		Reduction Factor[2]	Bulking Factor	Loose Volume		Compaction Factor	Compacted Materials		
	(Mft^3)	(Mcy)			(Mft^3)	(Mcy)		(Mft^3)	(Mcy)	(Mton)
Quarry A	1,440	53	0.9	1.6	2,074	77	1.3	1,685	62	101
Quarry B	2,693	100	0.9	1.6	3,878	144	1.3	3,151	117	189
Quarry C	1,208	45	0.9	1.6	1,739	64	1.3	1,413	52	86
Open Pit Overburden	1,573	58	0.5	1.2	944	35	0.95	747	28	41
TOTAL	**6,914**	**256**			**8,635**	**320**		**6,996**	**259**	**417**

Source: PLP 2018-RFI 015b

Notes:

Mcy: million cubic yards

Mft^3: million cubic feet

Mton: million tons

lb/ft^3: pounds per cubic foot

1 Material Definitions:

Banked Volume – Volume before excavation.

Banked Density – Density of in-situ material before excavation.

Loose Volume – Volume after excavation.

Loose Density – Density of material after excavation.

Compacted Volume – Volume after compaction.

Compacted Density – Density of materials after compaction.

Bulking Factor – Loose volume/banked volume.

Compaction Factor – Compacted volume / banked volume.

Usable Material Reduction Factor (reduction to account for out-of-specification/unusable materials) = 0.9 (quarries), 0.5 (open pit overburden; reduced because of variability of rock quality).

2 Loose and banked densities based on estimated compacted density and bulking/compaction factors.

3 Neatline material volumes were rounded to the nearest million. Quarry volumes based on project description layout.

4 Material densities assumed as follows:

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Material Densities (lb/ft^3)			
Material	Banked	Loose	Compacted
Rockfill	156	98	120
Overburden	105	87	110

The material banked densities and bulking factors were estimated based on Look (2007) and are considered reasonable. Compaction factors were based on Durham University (1997). The values for compacted density were applied to the material estimates.

Table K4.15-3 presents the estimated amount of rockfill material that would be needed to construct all proposed embankments at the mine site. The data indicate that quarries A–C plus the open pit overburden would generate about 13 percent more rockfill material than needed to construct the embankments.[1]

Table K4.15-3: Embankment Rockfill Material Needs

Rockfill	Total	
	(Mft^3)	(Mton^3)
Pyritic TSF (All Pyritic Tailings/PAG Waste Rock Storage Facilities)	2,830	170
Bulk TSF Main Embankment	2,063	124
Bulk TSF South Embankment	296	18
Main Water Management Pond	796	48
Main Embankment Seepage Collection Pond	50	3
Mine Site Road Coarse Replacement	22	3
Road Sanding	50	1
TOTAL	**6,107**	**367**

Source: PLP 2018-RFI 015b

Notes:

Mton^3: million cubic tons

PAG: potentially acid-generating

lb/ft^3: pounds per cubic foot

1 Volumes of neatline material were rounded to the nearest million.

2 Rockfill compacted density assumed to be 120 lb/ft^3.

3 Mine site road sanding assumes 150,000 tons per year.

4 Mine site road coarse replacement assumes 6 inches of material replaced every 3 years.

Table K4.15-1 shows several smaller impoundments (e.g., sediment ponds) that are not presented in Tables K4.15-2 and K4.15-3. These are generally smaller in height, and were of less concern during scoping with regard to geotechnical stability and contents that could be released in the event of failure (sediment vs. contact water or tailings in the larger facilities). As

[1] If an average usable bulking factor is used, which is 0.81, the calculated compacted material in Table K4.15-2 would be 515 Mtons versus 417 Mtons as shown, which would be 40 percent more material than needed.

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with the larger embankments, detailed design and analysis of the smaller impoundments would be completed as part of project permitting as required under the Alaska Dam Safety Program (ADSP).

K4.15.1.3 Design and Construction of Embankments and Impoundments

The various mine site–related embankments and impoundments would be constructed of rockfill. Inherent in the construction of rockfill embankments and impoundments is the potential for groundwater to seep through the structures. The seepage would have the potential to reduce the stability of the structures by causing internal erosion. Therefore, the embankments and impoundments would be designed and constructed to minimize internal erosion during operation. The facilities would also be designed for stability during static (nonseismic) and seismic (earthquake) conditions.

The following discussion explains the general design and construction features relevant to geohazards, including elements to prevent internal erosion and instability, relevant closure-related aspects, and management and monitoring.

Bulk TSF

General. The proposed bulk TSF would consist of a main embankment (downgradient in terms of groundwater flow) and a south (upgradient) embankment (Figure 2-8). The bulk TSF would be within watersheds that flow north into the North Fork Koktuli River (NFK) and the South Fork Koktuli River, and would be mostly surrounded by bedrock knobs and slopes, which would generally promote stable foundation conditions at embankment abutments.

Under Alternative 1, the upper 280 feet of the 545-foot-high bulk TSF main embankment would be centerline constructed. That is, during raising of the rockfill dam, rockfill would be placed concurrently on top of both the centerline and the downstream slope of the previous raise. This would result in a near-vertical upstream face at the dam crest for the upper portion of the embankment, and some rockfill fill could be placed on the upstream tailings beach (Figure 2-8).

In contrast, the south embankment would be downstream constructed. That is, during raising of the rockfill embankment, rockfill would be placed on top of the downstream slope of the previous raise during the raise process, which would result in a nearly symmetrical embankment (Figure 2-8).

Under Alternatives 2 and 3, the bulk TSF main embankment would be downstream constructed with downstream buttresses to increase the embankment's stability.

The two embankments would be constructed of rockfill sourced primarily from quarry A. The rockfill would be placed and compacted in planned sequences and raise heights (PLP 2018d).

The size of the bulk TSF would assume a split in tailings from the process plant (average of 88 percent bulk tailings and 12 percent pyritic tailings), based on batch flotation tests on drillhole samples from the pit area. If this split were to deviate substantially from that planned, the embankment raise schedules for the bulk and pyritic TSFs would be adjusted to accommodate the changed tailings volumes (PLP 2018-RFI 010).

The bulk tailings volume and the related sizes of the bulk TSF embankments also assume that the tailings would be thickened to 55-percent-solids slurry by weight. If this could not be achieved and greater water volumes were generated, additional pumping capacity would be provided to transfer the tailings slurry from the process plant to the TSFs, and to pump additional supernatant water from the TSFs and their seepage ponds (PLP 2018-RFI 010).

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Embankment lifts and freeboard requirements would be reviewed as part of each dam lift and safety review (required by the ADSP), and would be adjusted as necessary to reflect actual tailings throughput, settled densities, mine water management conditions, and different site conditions encountered.

The south embankment would be constructed higher than the main embankment to ensure that the phreatic surface of water entrained in the tailings would slope to the north and that seepage would be contained within the NFK west catchment facilities.

Seepage-Related Elements. The bulk TSF main embankment (both the centerline- and downstream-constructed options) would use a flow-through design to prevent internal erosion by minimizing water buildup in the TSF and seepage pressure on the embankment, and to provide controlled flow away from the other embankments (PLP 2018-RFI 006a). In contrast, the upstream south embankment would use a liner on the downstream slope face and would not include a flow-through design (Figure 2-8).

The main embankment's core would consist of two to three filter and transition zone materials (a designed gradation of sand- to gravel-sized particles), based on the industry-accepted no-internal-erosion filter criteria developed by Sherard and Dunnigan (1985) (Fell et al. 2015; USACE 2004; USDA 2017).

The core materials would be developed and sourced from locations at the mine site to meet design gradation specifications. Materials with a fines content between 30 and 60 percent passing the #200 sieve are expected to be suitable for use as core zone material. Materials meeting these gradation requirements were identified in the open pit area during geotechnical investigation programs completed between 2004 and 2011 (PLP 2018-RFI 006a).

The quantity of on-site, low-permeability core materials would be confirmed during additional geotechnical investigations as the design progresses. If sufficient quantities of low-permeability materials are determined not to be available on site, alternatives such as a low-permeability face liner or asphalt core would be used.

The bulk TSF main embankment would be constructed in a manner to ensure the design performance of the core (AECOM 2018k). Material zones would be placed sequentially and not concurrently, and it is expected that the height differential would be limited to the thickness of one material lift.

The embankments would include basin and embankment underdrains to help maintain a reduced phreatic surface (or groundwater table) in the facility. Water would be managed to allow the continual development and maintenance of a tailings beach behind the bulk TSF main embankment. This would serve to protect the dam from seepage pressure that could reduce stability (Knight Piésold 2018a; PLP 2018-RFI 006, RFI-008f).

A grout curtain would be installed near the downstream toe of the south embankment to prevent upgradient groundwater from flowing into and beneath the impoundment (Figure 2-8) (PLP 2018-RFI 008f). The grout curtain would be keyed into the bedrock underlying the main embankment before the placement of the embankment materials. The grout curtain zone would be injected through pipe sleeves embedded along a concrete plinth at the bedrock interface beneath the embankment.

The design freeboard would contain the entire volume of the inflow design flood (IDF) above the tailings beach. The freeboard would also account for wave run-up and wind set-up protection and postseismic settlement (Knight Piésold 2018a; PLP 2018-RFI 019a, 028).

A tailings beach would be developed in the east corner of the bulk TSF to promote pond development and subsurface drainage away from the topographic saddles. Water levels and

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freeboard in the bulk TSF pond would be maintained through proactive raise construction to account for the IDF within the elevation of the tailings beach (AECOM 2018k). Excess water would be controlled by pumping to the main TSF SCP or the main WMP (Knight Piésold 2018a).

Concern was expressed during the environmental impact statement (EIS)–phase failure modes effects analysis (FMEA) regarding the possibility of uneven deposition of tailings around the perimeter of the bulk TSF (because of spigot spacing and segregation of thickened tailings), leading to smaller beaches and added seepage pressure on the embankments. Deposition of tailings on ice in the winter (practiced at Red Dog Mine) was discussed as a possible method to mitigate this effect (AECOM 2018k).

Stability-Related Elements. The TSF embankment foundations would be prepared by removing overburden to expose competent bedrock before placement of the rockfill. Should colluvium and/or talus surficial deposits be encountered beneath the structure footprints, which could result in downslope movement (described in Section 3.15, Geohazards), they would be removed to avoid posing a stability issue 6for the embankments and/or liners.

As noted above, the bulk TSF main embankment under Alternatives 1 and 3 would use centerline construction to reduce the footprint. The upstream portion of successive dam raises would partially rest on tailings, and additional buttresses would be provided downstream to enhance overall stability. Alternative 2 would use a downstream construction design, which is typically considered more stable than centerline construction. The results of the preliminary stability analyses for both the centerline and downstream alternatives are described in Appendix K4.15.

The bulk TSF embankments would be regulated as Class I (high) hazard potential dams under ADSP guidelines (Alaska Department of Natural Resources [ADNR] 2017a), with an operating basis earthquake (OBE) and maximum design earthquake (MDE) established in accordance with criteria described in Appendix K4.15.

The main embankment's internal filter zone would be thick enough to fulfill standard filter zone design criteria to prevent internal erosion and also remain intact after the MDE. The thickness of the filter zone must be wider than the maximum horizontal deformation that the embankment would undergo as a result of the MDE.

For example, assume the filter zone thickness is determined to be *X*, and the maximum horizontal deformation is calculated to be *Y.* In this case, the filter zone must be at least *X*+*Y* thick so that it would remain continuous and functional with a thickness of at least *X* throughout the full height of the embankment after it has been sheared by the *Y* movement. The *X* and *Y* details would be conceptually developed after geotechnical programs are completed, the results analyzed, and dimensions finalized as design progresses.

Closure. The bulk TSF would be closed in place after Year 20 and would undergo dry closure and become a permanent landform (PLP 2018-RFI 024). Free water would be pumped out and the tailings would be allowed to consolidate until they become suitable for equipment traffic.

The permeable design of the main embankment would allow the tailings to continue to drain, thereby lowering the phreatic (groundwater) level and improving embankment stability. The tailings surface would be regraded to facilitate surface drainage away from the TSF. The closure cover would consist of a capillary break layer composed of rockfill to promote horizontal drainage and minimize infiltration; an overlying low-permeability layer consisting of glacial till; topsoil and growth media placed over the final tailings surface; and revegetation (PLP 2018d; PLP 2018-RFI 091).

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Management and Monitoring. Monitoring would be included in all phases of the TSF (PLP 2017, 2018d). In accordance with ADNR (2017) guidelines, monitoring would include the following elements:

- Construction quality assurance (CQA) and construction quality control (CQC) plans to assure that the TSF embankments are built in accordance with the approved design, drawings and specifications, as well as design modifications that might arise during construction as a result of differing site conditions.
- An emergency action plan (EAP) that includes a dam break analysis with inundation maps and describes actions to be taken in the event of dam failure, along with information and in-place preparations needed to take those actions immediately and without unnecessary delays.
- An operations and maintenance (O&M) manual describing procedures to be implemented under normal and extreme water levels; an operator training program; monitoring to confirm that embankments are performing in accordance with the design; periodic safety inspections; extraordinary inspections after extreme events (e.g., major earthquakes, large floods, freeboard exceedance, vandalism); and mitigation to conduct repairs or structural modifications if the dam is not performing as designed.
- Monitoring after closure would include inspections for mass stability, seepage flows, and inspections after extreme events.

Pyritic TSF

General. The pyritic TSF would consist of a continuous embankment around the north (downgradient), east, and south (upgradient) sides (Figures 2-3 and 2-9). This facility would be designed to isolate the most contaminated tailings and waste rock in a fully lined, subaqueous storage cell during operations to minimize acid generation (PLP 2018d).The majority of the pyritic TSF would be located in a single tributary valley that drains north toward the NFK, referred to as the "NFK east site." The southern portion of the pyritic TSF south embankment would be situated in a drainage divide between the NFK east watershed and a tributary that drains south toward the South Fork Koktuli River.

As with the bulk TSF, the embankments would be regulated as Class I (high) hazard potential dams under ADNR (2017) guidelines. An OBE and MDE would be established similar to those described above for the bulk TSF.

Seepage-Related Elements. The pyritic TSF would be a lined facility using a high-density polyethylene (HDPE) geosynthetic membrane to retain water. Therefore, the facility would likely not include core/filter/transition zones as described for the bulk TSF main embankment (PLP 2018-RFI 055). SCPs with pumpback and groundwater monitoring wells would be situated downgradient of the north, east, and south embankments, as required by the ADSP (ADNR 2017).

A bedding layer would be placed under the liner. The surface of the liner would be protected with processed materials (sand and gravel) after installation to prevent damage from equipment punctures or damage during placement of PAG waste rock material. Waste rock would be end-dumped in 20-ft lifts. Concern was expressed in the EIS-phase FMEA that this could result in liner damage even with a protective layer. Placing waste rock in smaller lifts was discussed as a possible method to minimize the risk of liner damage (AECOM 2018k).

Liner installation would be completed in accordance with standard industry practices for similar facilities such as heap leach pads, and would be closely monitored during installation to confirm

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proper welding of the seams. The likelihood of liner leakage leading to internal erosion and potential failure of the embankment was the subject of failure modes in the EIS-phase FMEA (AECOM 2018l) as discussed in Section 4.27, Spills.

Referring to Figure 2-9, PAG waste rock would be placed around the facility perimeter to limit commingling of the tailings and waste rock. Pyritic tailings would be discharged into the interior of the facility, with deposition occurring concurrently with waste rock placement (PLP 2018-RFI 055).

Liner failure from chemical causes is considered unlikely because the pyritic tailings and PAG waste rock would be inundated throughout the mine life with a 5-ft water cover, which would limit the potential for the materials to be oxidized, turn acidic, and potentially react with the liner material. HDPE geomembranes are well understood to be extremely durable products with design service lives of up to several hundred years. The service life of an HDPE membrane is typically defined as its half-life, which is the point at which a 50 percent reduction in a specific design property is expected to occur (PLP 2018-RFI 055).

Water levels would be maintained for the life of the facility. Water quality would be monitored during the operation to confirm that acidic conditions are not developing (PLP 2018-RFI 055). As with the bulk TSF, water levels and freeboard in the facility would be maintained to account for the IDF, wave run-up, and wind set-up. Excess water would be controlled by pumping to the main WMP (Knight Piésold 2018a; PLP 2018-RFIs 019a, 028, 028a, 028b).

Stability-Related Elements. The embankment foundations would be prepared by removing overburden to competent bedrock, including solifluction surficial deposits if encountered beneath the embankment footprint. This type of deposit is present on the west side of the watershed and could be subject to downslope movement (described in Section 3.15, Geohazards).

Closure. At closure, the pyritic tailings and PAG waste would be placed into the open pit, the liner removed, and the facility reclaimed (PLP 2018-RFI 024). The pyritic tailings would be removed from the pyritic TSF as a slurry using floating dredge pumps during closure. The tailings slurry would be pumped to the open pit for long-term storage. The PAG waste rock material would be removed using conventional hauling methods (excavators and haul trucks), and trucked into the open pit via the pit haul ramps. It is expected that the start of waste rock removal would lag behind tailings removal by approximately 1 year to allow the tailings and supernatant pond level to be lowered to dewater the waste rock. The tailings would be deposited subaqueously into the open pit and the PAG waste rock would be inundated to limit exposure to a maximum of approximately 1 year. A minimum water cover would be maintained above the PAG waste rock and pyritic tailings throughout long-term closure.

After closure, the embankments would be breached, flattened, and contoured/graded to conform to the surrounding landscape and promote natural runoff and drainage. Thus, potential impacts associated with static and seismic stability of this facility would last no longer than the 20-year mine life.

Management and Monitoring. Monitoring would be included in all phases of the TSF (PLP 2017, 2018d). In accordance with ADNR (2017) guidelines, monitoring would include the same elements as described for the bulk TSF.

Water Management Ponds

General. Two WMPs would be at the mine site (Figure 2-3 and Table K4.15-1): the main WMP north of the pyritic TSF, and the open pit WMP. Each of these facilities would require an embankment or berm with design considerations and potential geohazards effects similar to

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those described for the bulk TSF. The embankments are proposed to be downstream constructed.

Seepage-Related Elements. WMP berms or embankments would be constructed using rock and earthen fill (PLP 2017, 2018d) and the same general approach as described for the bulk TSF. The embankments would be fully lined.

Concern was expressed in the EIS-phase FMEA that the number of seepage pumpback wells currently proposed around the perimeter of the main WMP may be insufficient to identify and capture liner seepage along this 9,000-ft long embankment. As indicated by PLP, the number of wells would be determined during final design based on additional field investigations and may exceed those proposed to date. Deep continuous drains around the perimeter were also discussed as possible mitigation for intercepting potential seepage flow from the main WMP (AECOM 2018k).

Stability-Related Elements. The foundation materials would be prepared and the embankments designed and constructed to be stable under static and seismic conditions. The embankment foundation of the main WMP would be prepared by removing overburden to competent bedrock (proposed as a design change by PLP based on the results of the October 2018 EIS-phase FMEA) (AECOM 2018k, 2018l). The design concept for the open pit WMP embankment requires addressing any potential weak foundation conditions encountered in the overburden materials (e.g., glacial lake deposits found in this area) by excavating that material. Any potential mitigation requirements (including removal of the overburden if required) would be addressed based on the geotechnical and hydrogeological information collected for the area during site investigations.

Closure. The WMPs would be removed and reclaimed in post-closure when no longer required for water management and treatment (PLP 2018-RFI 024). Embankments and berms would be breached, flattened, and contoured/graded to conform to the surrounding landscape and promote natural runoff and drainage.

Therefore, potential impacts of seepage and internal erosion on the static and seismic stability of these facilities would be long-term, lasting until some point in post-closure after reclamation activities are complete and monitoring no longer required; however, the potential impacts would not be permanent.

Management and Monitoring. Monitoring would be included in all phases of the WMPs (PLP 2017, 2018d). In accordance with ADNR (2017) guidelines, monitoring would include the same elements as described for the bulk TSF.

Seepage Collection Ponds

General. SCPs would be located downstream of the TSF embankments and WMPs (Figure 2-3 and Table K4.15-1) and would include the SCPs associated with the bulk TSF main and south embankments, and the pyritic TSF north, east, and south embankments.

These facilities would require an embankment or berm with design considerations and potential seismic and geohazards effects similar to those described for the bulk TSF south embankment. The embankments are proposed to be downstream constructed.

Seepage-Related Elements. These embankments would use similar design features as the bulk TSF south embankment, including low-permeability core zones with filter and transition zones; grout curtains to control seepage and enhance embankment stability; and downstream groundwater pumpback and monitoring wells to pump groundwater back into the TSF and monitor the quality of the downstream groundwater (PLP 2018-RFI 006).

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Stability-Related Elements. The foundation materials would be prepared and the embankments designed and constructed to be stable under static and seismic conditions (see Section K4.15.1.1.5).

Closure. The seepage ponds associated with the pyritic TSF would be removed and reclaimed in post-closure, similar to the description of the WMPs (PLP 2018-RFI 024). Therefore, potential impacts of seepage and internal erosion on the static and seismic stability of these facilities would be long-term, lasting until some point in post-closure after reclamation activities are complete and monitoring no longer required; however, the potential impacts would not be permanent.

The SCPs associated with the bulk TSF would remain in post-closure indefinitely, or until no longer required for water management and treatment. It is expected that seepage flow through the bulk TSF embankment would slow with increasing consolidation and reduced infiltration in closure. A preliminary estimate of maximum consolidation of the bulk tailings is on the order of 50 years (AECOM 2018k). However, there are no current plans to remove the bulk TSF SCPs. Thus, potential impacts associated with seepage and stability of these facilities would range from long-term to permanent.

Management and Monitoring. Monitoring would be included in all phases of the WMPs (PLP 2017). In accordance with ADNR (2017) guidelines, monitoring would include the same elements as described for the bulk TSF.

K4.15.1.4 Seepage Analysis

Seepage analyses were completed to support of the design of the bulk TSF, which as noted above (K4.15.1.3.1) would include a flow-through design with core filter/transition zones to control seepage and internal erosion. The results of the analyses are presented below.

The pyritic TSF and main WMP would be fully lined facilities and the requirements for filter/transition zones for these lined structures would be evaluated during the design process.

Bulk TSF

The potential rate of seepage through the bulk TSF main embankment was estimated using a two-dimensional seepage model that incorporated the key project design assumptions and referenced available seepage rates at existing mine facilities with similar flow-through designs. The seepage analysis estimated a range of seepage rates, from 3 to 14 cubic feet per second (cfs), during operations when the tailings pond would be at a normal operating size. The seepage rate could increase up to 20 cfs if the tailings pond were to extend within 500 feet of the main embankment (PLP 2018-RFI 006).

This range of predicted seepage rates represents the bounds of a sensitivity analysis that accounted for a variety of tailings characteristics, such as permeability and the anticipated width and length of the coarse-grained tailings unit located immediately upstream of the main embankment.

Detailed seepage analyses would be completed for each embankment during the detailed design stage, which would comply with the stringent requirements of the ADSP permitting process as dictated by ADNR (2017a) (PLP 2018-RFI 006).

K4.15.1.5 Stability Analysis

As described above (K4.15.1.1.3), all proposed embankments and impoundments in the mine site area would store water or potentially liquid-behaving contents that could pose a risk to the

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environment if released during a geologic event. The mine site facilities were designed to be stable during both static (nonseismic) and seismic conditions, which are addressed in the following subsections.

Static Stability Analysis

Input Parameters. The analyses of static slope stability considered conceptual-level embankment configurations and homogeneous material parameters. Table K4.15-4 below presents the geotechnical values assumed for these analyses.

Stability analyses were completed for embankment configurations under static loading conditions using the assumptions presented in Table K4.15-4 and using the limit equilibrium computer program SLOPE/W to model potential slip surfaces and resulting factor of safety (FoS) values. Cross sections were generated showing critical circles and calculated FoS for the following embankments:

- Bulk TSF main embankment
- Bulk TSF south embankment
- Pyritic TSF north embankment
- Main WMP
- Bulk TSF main SCP
- Open pit WMP.

The latter two embankments (not presented in Table K4.15-4) used the same input parameters as the other embankments.

Table 4.15-4: Geotechnical Material Parameters Used in Stability Analyses

Embankment	Material	Unit Weight[1] (pcf)	Strength Function[2]	Tau/Sigma Ratio[3]	Cohesion (psf)	Phi[4] (°)
Bulk TSF Main Embankment	Bedrock	160	–	–	0	40
	Tailings	90	–	0.25	–	–
	Rockfill	145	Low-density, poorly graded, weak particles	–	–	–
Bulk TSF South Embankment	Bedrock	160	–	–	0	40
	Tailings	90	–	0.25	–	–
	Rockfill	145	Low-density, poorly graded, weak particles	–	–	–
Pyritic TSF Main Embankment	Bedrock	160	–	–	0	40
	Tailings	100	–	0.25	–	–
	Rockfill	145	Low-density, poorly graded, weak particles	–	–	–

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Table 4.15-4: Geotechnical Material Parameters Used in Stability Analyses

Embankment	Material	Unit Weight[1] (pcf)	Strength Function[2]	Tau/Sigma Ratio[3]	Cohesion (psf)	Phi[4] (°)
Main Water Management Pond	Overburden	120	–	–	0	35
	Rockfill	145	Low-density, poorly graded, weak particles	–	–	–

Source: PLP 2018-RFI 008b

Notes:

pcf: pounds per cubic foot

psf: pounds per square foot

1. The basis for selection of the densities for bulk tailings, pyritic tailings, rockfill, and bedrock was the results of geotechnical laboratory testing performed in conjunction with previous field studies.

2. Shear strength for rockfill was defined based on Leps (1970), using a function that defines the variation of shear strength with normal stress, rather than using a single friction angle or cohesion value.

a. Rockfill shear strength typically reduces at higher stresses because of the crushing of particle contact points within the material and a reduction in material dilatancy. Rockfill shear strength is also related to the density and durability of the material and the particle size distribution.

b. A lower bound strength function (representative of low-density, poorly graded, weak particle rockfill) was considered. The lower bound strength function was based on published information on the shear strength properties of rockfill materials.

3. The basis for selection of the tau/sigma ratio of 0.25 for tailings was the peak undrained strength ratio (Su/p') for hard rock fine-grained tailings materials, which is typically in the range of 0.2 to 0.3. A value of 0.25 was assumed for the preliminary stability analyses.

4. The basis for selection of the phi angles for bedrock was the results of past geotechnical drillhole investigations, which indicate the bedrock underlying the bulk TSF area comprises Cretaceous sedimentary and volcanic rocks including mudstone, siltstone conglomerate, sandstone, and basalt; and Cretaceous intrusive rocks comprised of monzonite, diorite, and gabbro.

a. Bedrock was defined as a homogeneous geological unit for the stability analyses.

b. A friction angle of 40 degrees was used in the stability analyses based on findings of past geotechnical drillhole investigations.

Bulk TSF Main Embankment. The bulk TSF main embankment is proposed to operate as a drained facility to promote long-term drainage and stability of the bulk tailings mass. The main embankment would be approximately 530 feet high with an overall downstream slope of approximately 2.6:1 horizontal:vertical (H:V). Under Alternatives 1 and 3, centerline construction methods with buttressing would be used to limit the footprint, which would result in a serrated near-vertical upstream face at the dam crest for the upper 280 feet of the embankment (Figure 2-8). The preliminary stability analysis for this design calculated a FoS value on the order of 1.9 to 2.0 under static loading conditions. Figure K4.15-2 shows a schematic section of the main embankment at its ultimate height with the predicted potential slip surface.

The stability of the centerline design was reviewed by a panel of geotechnical experts from the US Army Corps of Engineers (USACE) EIS team (AECOM), the State of Alaska, and PLP (including its geotechnical contractor, Knight Piésold) during an EIS-phase FMEA in October 2018. The upstream portion of successive dam raises in the upper half of the embankment would partially rest on tailings, but the results of the stability analysis do not rely on the strength of these materials; rather, they rely on the strength of the rockfill materials directly beneath and downstream of successive raises, materials in the core/filter zone, and rockfill buttressing the downstream side of the core zone.

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In other words, regardless of the strength of the tailings, the overall embankment did not fail in a downstream direction in the stability analysis. The potential for instability on the upstream side of the raises would be buttressed by the tailings mass, such that an unstable condition could occur only in an upstream direction (toward the tailings deposit) along an isolated slip surface restricted to the last raise/lift, which would not overwhelm freeboard (designed to be contained within the elevation of the tailings beach). Thus, the FMEA panel concluded that the likelihood of global instability of the buttressed centerline embankment design would be very low (probability of less than 1 in 10,000) (AECOM 2018k, 2018l).

Under Alternative 2, the main embankment would be downstream constructed, and would also include downstream buttresses to increase the stability. The preliminary stability analysis for the downstream-constructed main embankment calculated a FoS value on the order of 1.9 to 2.0 under static loading conditions, similar to the buttressed centerline design, thus offering minimal additional stability over the proposed design. Figure 2-45 shows a schematic section of the main embankment at its ultimate height with the predicted potential slip surface.

Bulk TSF South Embankment. The bulk TSF south embankment would be downstream constructed with a fully lined downstream dam face. The conceptual south embankment would be approximately 305 ft high with an overall downstream slope of approximately 2.6H:1V (PLP 2018-RFI 008b). Figure K4.15-3 shows a schematic section of the current concept for the south embankment at its ultimate height with the predicted potential slip surface. The preliminary stability analyses for the south embankment calculated a FoS value on the order of 1.9 to 2.0 under static loading conditions.

Pyritic TSF North Embankment. The pyritic TSF is proposed to be a fully lined facility. The north, south, and east embankments would be approximately 425, 315, and 305 ft high, respectively, with overall downstream slopes of approximately 2.6H:1V and upstream slopes of 3H:1V (Figure 2-9). The stability of the upstream slopes would be enhanced by placement of PAG waste rock. Figure K4.15-4 shows a schematic section of the north embankment of the pyritic TSF at its ultimate height with the predicted potential slip surface. The preliminary stability analyses calculated a FoS value on the order of 1.9 to 2.0 under static loading conditions. Based on this conceptual design, the EIS-phase FMEA panel concluded that the likelihood of global instability of the north and south embankments of the pyritic TSF would be very low (probability of less than 1 in 10,000) (AECOM 2018l).

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Figure K4.15-2: Bulk TSF Main Embankment Static Stability Analysis – Buttressed Centerline Construction

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Main WMP. The main WMP would be the primary water management structure at the mine site and a fully lined facility. The embankment would be approximately 200 ft high with an overall downstream slope of approximately 2H:1V. A schematic section of a previous concept for the main WMP embankment that was founded on overburden calculated a FoS value on the order of 1.7 to 1.8 under static loading conditions. The calculation assumed that any potential weak foundation conditions encountered in the overburden materials would be mitigated during design and construction after the collection of additional geotechnical drillhole investigation data.

During the EIS-phase FMEA, geotechnical experts expressed concern regarding the possibility that weak foundation conditions (such as buried glacial clay layer) could be undetected by geotechnical investigations, and concluded that the probability of global instability could range from very low to low (less than 1 in 10,000 to 1 in 1,000). As a result, PLP proposed a design change to remove overburden to competent bedrock. The results of the static stability analysis of the revised design would be revisited after additional geotechnical investigation during final design. With foundation in bedrock, the static stability of the main WMP is expected to be similar to that of other downstream rockfill embankments founded in bedrock at the mine site (i.e., very low likelihood or probability of less than 1 in 10,000).

Bulk TSF SCP. The bulk TSF main SCP is proposed to be constructed using downstream methods. The embankment would be approximately 120 feet high with an overall downstream slope of approximately 2.6H:1V and an upstream slope of 2H:1V (PLP 2018-RFI 008b). The preliminary stability analyses for this embankment used the same input parameters as for the bulk TSF, and calculated a downstream FoS value on the order of 1.9 to 2.0 under static loading conditions. Figure K4.15-5 shows a schematic representation of the stability analysis results for the bulk TSF SCP with the predicted potential slip surface.

Open Pit WMP. The open pit WMP would be founded on overburden, constructed using the downstream method, fully lined, and would have an overall downstream slope of approximately 2H:1V and an upstream slope of 3H:1V (PLP 2018-RFI 008b). At approximately 40 feet high, the embankment of this structure would be much smaller than that of the main WMP. Figure K4.15-6 shows a schematic representation of the stability analysis results for this embankment with the predicted potential slip surface.

The open pit WMP was not evaluated in the EIS-phase FMEA (Section 4.27 provides the rationale for the selection of structures for analysis in the FMEA). Potentially weak layers such as glacial lake deposits are known to be present under most of the open pit WMP area (Figure 3.13-2) and could underlie the embankment foundations. However, the concern that potentially undetected layers could affect global stability would be lower than at the main WMP, because the embankment height would be lower and the known glacial lake deposits would be targeted and analyzed as design progresses. Assuming that any potential weak foundation conditions encountered in the overburden materials would be mitigated during design and construction after the collection of additional geotechnical drillhole investigation data, the preliminary stability analyses calculated a FoS value on the order of 1.9 to 2.0 under static loading conditions.

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Figure K4.15-3: Bulk TSF South Embankment Static Stability Analysis Results

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Figure K4.15-4: Pyritic TSF North Embankment Static Stability Analysis

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Figure K4.15-5: Bulk TSF SCP Static Stability Analysis

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Figure K4.15-6: Open Pit WMP Static Stability Analysis

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Summary of Static Stability Analysis Results. Table K4.15-5 summarizes the results of the static stability analysis.

Table 4.15-5: Summary of Static Stability Analysis Results

Embankment	Construction Method	Max. Height (feet)	Downstream Slope Angle	Factor of Safety
Bulk TSF Main Embankment (Alternatives 1 and 3)	Buttressed Centerline	530	2.6H:1V	1.9 to 2.0
Bulk TSF Main Embankment (Alternative 2)	Downstream	570	2.6H:1V	1.9 to 2.0
Bulk TSF South Embankment	Downstream	305	2.6H:1V	1.9 to 2.0
Pyritic TSF North Embankment	Downstream	405	2.6H:1V	1.9 to 2.0
Main WMP	Downstream	200	2H:1V	1.7 to 1.8[1]
Bulk TSF Main SCP	Downstream	120	2.6H:1V	1.9 to 2.0
Open Pit WMP	Downstream	40	2H:1V	1.9 to 2.0

Sources: PLP 2018-RFI 008, 008b, 069, 075

1. Results based on homogeneous overburden foundation with potential weak layers mitigated in design and construction. The stability analysis would be updated based on revised bedrock foundation as design progresses (AECOM 2018k, 2018l).

Allowances were included in the conceptual embankment cross sections for internal filter and transition zones, which were represented as a homogeneous rockfill material in the model domains. These zones would be defined further and included in future stability modeling. Potential future modifications to the embankments are not expected to affect the embankment footprint.

The static stability analyses would be updated for each embankment structure as the design progresses and additional field data are collected to support the understanding of geotechnical and hydrogeological conditions and the ADSP permitting process under ADNR.

Analyses of Seismic Hazards and Deformation

The mine site is situated in a seismically active area because of the convergence of the Pacific and North American tectonic plates (Figures K4.15-7 and K4.15-8). The most important seismically active geologic structure near the mine site is the Bruin Bay Fault, which lies about 70–80 miles to the east-southeast. Figure K4.15-7 shows a relatively high concentration of lower magnitude earthquake events more than 25 miles in depth near Iliamna and Iniskin bays.

Seismic hazard analyses were completed in support of the proposed Pebble project. ADSP requires seismic analyses of dams to include both OBE and MDE scenarios. Table K4.15-6 shows the OBE and MDE return periods as related to ADSP classification of dam hazards.

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Figure K4.15-7: Seismicity and Earthquake Depth

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Figure K4.15-8: Cross-section through Alaska Subduction Zone

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The OBE represents the ground motions or fault movements from an earthquake considered to have a reasonable probability of occurring during the functional life of a project. All critical elements of a structure need to be designed to remain functional during the OBE, and any resulting damage should be easily repairable in a limited time. The OBE can be defined based on probabilistic evaluations, in which the level of risk (the probability that the magnitude of ground motion would be exceeded during a particular length of time) is determined relative to the hazard potential classification and dam location (ADNR 2017).

The MDE represents the ground motions or fault movements from the most severe earthquake considered at the site, relative to the acceptable consequences of damage in terms of life and property. All critical elements of a dam and appurtenant structures for which the collapse or failure could result in or precipitate an uncontrolled release from the reservoir must be designed to resist the MDE. The MDE may be defined based on either probabilistic or deterministic evaluations, or both (ADNR 2017).

Table K4.15-6: Earthquake Return Periods for Alaska Dam Hazard Classifications

Dam Hazard Classification	Return Period, Years	
	Operating Basis Earthquake	Maximum Design Earthquake
I	150 to >250	2,500 to MCE
II	70 to 200	1,000 to 2,500
III	50 to 150	500 to 1,000

Notes:

1. MCE = Maximum Credible Earthquake.

2. The MCE is defined as 'the largest earthquake magnitude that could occur along a recognized fault or within a particular seismo-tectonic province or source area under the current tectonic framework.

3. TSFs and the main WMP have a Class I dam hazard classification. Other mine site embankments may have a lower dam hazard classification.

Source: ADNR 2017

As shown in Table K4.15-6, the OBE should be selected from a range of return periods from 150 years to more than 250 years for a dam with a Class I hazard classification. A conservative OBE corresponding to a return period of 475 years was adopted for the Pebble TSF designs. The MDE should be selected from a range of return periods from 2,500 years up to the maximum credible earthquake (MCE) for a dam with a Class I hazard classification range. The MCE was selected as the MDE for the Pebble TSFs. As discussed below, both probabilistic and deterministic evaluations were completed for the proposed Pebble project to evaluate potential ground shaking associated with these earthquakes.

Probabilistic Seismic Hazard Analysis. Table K4.15-7 shows the results of a probabilistic seismic hazard analysis completed for the mine site. The estimated maximum acceleration for the 1-in-475-year earthquake (OBE) is 0.14g.

Table K4.15-7: Probabilistic Seismic Hazard Analysis for Mine Site

Return Period (Years)	Probability of Exceedance [1]	Maximum Acceleration [2] (g)
50	63	0.06
100	39	0.07
200	22	0.10
475	10	0.14

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1,000	5	0.19
2,500	2	0.25
5,000	1	0.31
10,000	0.5	0.38

Source: KP 2013; PLP 2018-RFI 008a

Notes:

1. Probability of exceedance calculated for a design life of 50 years; Q = 1 - exp (-L/T), where Q = probability of exceedance, L = design life in years, T = return period in years.

2. Maximum accelerations are for values on firm rock.

3. Information based on the USGS Seismic Hazard Program database.

Based on experience with similar studies at other mines in Alaska, the probabilistic seismic hazard analysis in Knight Piésold (2013) appears reasonable for its stated intentions (AECOM 2018f). The analysis relies on US Geological Survey (USGS) ground motion maps for Alaska (Wesson et al. 2007). As noted in the report and confirmed by AECOM (2018f), USGS plans to update these maps, but has not done so yet. The seismic hazard analysis would be updated as design progresses to support the design and reporting requirements outlined in the ADSP. A seismic report is one of the engineering science reports to be included in the preliminary design package submitted to ADNR. The analysis would incorporate current best practices for analysis and updated USGS ground motion data as available (PLP 2018-RFI 008c).

Deterministic Seismic Hazard Analysis. Table K4.15-8 shows the results of a deterministic analysis for the mine site based on the regional seismic sources.

The maximum acceleration values shown in Tables K4.15-7 and K4.15-8 were completed in 2013. Seismic activity since 2013 included the following large earthquakes, which were within the magnitude and maximum acceleration values shown in Table K4.15-8:

- Magnitude 7.9 earthquake experienced within the Gulf of Alaska (about 600 miles southeast of the mine site) on January 23, 2018
- Magnitude 7.1 earthquake experienced about 7 miles east of Iliamna Bay (about 75 miles east/southeast of the mine site) on January 24, 2016.

Knight Piésold (2013) cites New Generation Attenuation (NGA) equations (Earthquake Spectra 2008) used in the deterministic analysis for shallow crustal earthquakes. Revised NGA West 2 equations were published in 2014 after the Knight Piésold report date (e.g., Boore et al. 2014; Borzorgnia et al. 2014). The portion of the deterministic analysis that relies on these relationships would typically be updated using the NGA West 2 equations in the next phase of engineering. As indicated above, PLP plans to update the seismic hazard analyses as design progresses, incorporating current best practices into the analysis (AECOM 2018f; PLP 2018-RFI 008c).

Table K4.15-8: Deterministic Seismic Hazard Analysis for Mine Site

Earthquake Source Type	Earthquake Source Name	Source/ Fault Mechanism	Maximum Magnitude	Epicentral Distance	Focal Depth	Peak Ground Acceleration [1]	
			(Mw)	(miles)	(miles)	Median (g)	84th Percentile (g)
Interface Subduction [2]	Alaska-Aleutian Megathrust	Thrust	9.2 (8.5)	120	25	0.08	0.14

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Table K4.15-8: Deterministic Seismic Hazard Analysis for Mine Site

Earthquake Source Type	Earthquake Source Name	Source/ Fault Mechanism	Maximum Magnitude	Epicentral Distance	Focal Depth	Peak Ground Acceleration [1]	
			(Mw)	(miles)	(miles)	Median (g)	84th Percentile (g)
Intraslab Subduction	Intraslab Event	In-slab	7.5	110	40	0.05	0.11
			8.0	110	40	0.09	0.16
	Deep Intraslab Event	In-slab	7.5	50	80	--	0.28
			8.0	50	80	0.26	0.48
Shallow Crustal Fault[3]	Lake Clark Fault (Mapped)	Reverse (Thrust)	7.5	15	3	0.17	0.29
	Castle Mountain Fault	Strike-slip	7.3	170	3	0.01	0.02
	Bruin Bay Fault	Reverse (Thrust)	8.0	60	3	0.07	0.12
	Border Ranges Fault	Strike-slip	8.0	130	3	0.02	0.04
	Kodiak Island / Narrow Cape Faults	Strike-slip	7.5	190	3	<0.01	0.01
	Telaquana Fault	Strike-slip	7.0	40	3	0.06	0.09
	Mulchatna Fault	Strike-slip	6.5	55	3	0.03	0.05
	Denali Fault	Strike-slip	8.0	125	3	0.03	0.05
	Maximum Background Earthquake	Reverse (Thrust)	6.5	< 1	~7	0.35	0.61

Notes:

1. PGAs are for values on firm rock.

2. The PGA values for the interface subduction (megathrust) event have been calculated using a representative magnitude 8.5 event.

3. The adopted faulting mechanism for each shallow crustal fault was based on a review of available information defining the fault type. The predominant faulting mechanism assumed for all of the shallow crustal faults is strike-slip, with the exception of the Bruin
4. Bay and Lake Clark faults for which reverse faulting was used. Reverse faulting was also conservatively assumed for the maximum background earthquake.

4. Fault locations are from KP (2011, 2015).

Source: KP 2013, PLP 2018-RFI 008a

Pseudo-Static Deformation Analysis. Embankment stability during hypothetical earthquake loading conditions was assessed previously for an earlier, larger (650-ft high) design of the bulk TSF main embankment by performing a pseudo-static analysis. Estimates of horizontal and vertical displacement for mine site embankments would be analyzed further for current embankment designs during future seismic analysis as part of detailed design work undertaken in fulfillment of the ADSP review process. That work is anticipated to be performed after the EIS process is completed.

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In the previous pseudo-static analysis, preliminary deformation values were estimated to support the conceptual level of study. A horizontal force (seismic coefficient) was applied to the embankment to simulate earthquake loading, and to determine the critical (yield) acceleration required to reduce the FoS to 1.0. Embankment deformation could occur if the yield acceleration would be lower than the predicted maximum ground acceleration along a potential slip surface. Preliminary deformations were previously evaluated for the bulk TSF main embankment for the following seismic sources:

- OBE
- Magnitude 9.2 interface subduction earthquake
- Magnitude 8.0 deep intraslab subduction earthquake
- Magnitude 7.5 shallow crustal earthquake on the Lake Clark fault
- Magnitude 6.5 maximum background earthquake

Previous deformation analyses indicated that some deformation of the embankments may occur during extreme earthquake shaking. Potential displacements under earthquake loading from the OBE and different MCE scenarios were estimated using the methods of Newmark (1965), Makdisi-Seed (1977), and Bray (2007). The yield acceleration values for the bulk TSF main embankment for the upstream and downstream configurations were higher than the ground accelerations associated with the OBE event, indicating that minimal deformations were anticipated as a result of an OBE event. The yield acceleration values were lower than the ground accelerations associated with the various MCE events, indicating that some deformation may occur as a result of an MCE event. Displacements were estimated to be on the order of 4–5 feet along the potential slip surface under MCE loading conditions.

Potential settlement of the embankment crest was also previously estimated for different MCE scenarios using the empirical relationship provided by Swaisgood (2003). This relationship was developed from an extensive review of case histories of embankment dam behaviors resulting from earthquake loading. Settlement of the embankment crest was estimated to be on the order of 4 feet under MCE loading conditions (Knight Piésold 2018c; PLP 2018-RFI 008).

The displacements were apparently not large enough to truncate the filter or transition zones, and would not affect the functionality of the embankment. The estimated crest deformation/settlement values were added to the minimum freeboard requirements for the bulk TSF embankments, so that the minimum required freeboard would be maintained after the MDE event.

Seismic stability analyses and crest deformation would be updated for each embankment structure as design progresses and additional field data are collected to support the understanding of geotechnical and hydrogeological conditions and the ADSP permitting process under ADNR. Future design phases would include cross sections for pseudo-static stability analyses that would show critical circles and calculated FoS, plus target FoS for embankments at the following facilities as required by the ADSP:

- Bulk TSF (main embankment)
- Pyritic TSF
- Bulk TSF main SCP
- Main WMP
- Open pit WMP

Additional detailed modeling, including FLAC analyses, would be completed during detailed design of the facilities to better define embankment displacements.

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Post-liquefaction Analyses. Previous results from a post-liquefaction analysis completed for the bulk TSF main embankment indicate that the FoS exceeded the required value of 1.2 under post-liquefaction conditions, using the post-liquefaction residual strength of the tailings. This finding indicated that the embankment was not dependent on the strength of the tailings for stability. Post-liquefaction analysis for the current design concepts would be completed as the project advances through the ADSP permitting phase (Knight Piésold 2018c; PLP 2018-RFI 008).

K4.15.1.6 Analysis of Open Pit Wall Stability

Referring to Figures 2-3 and K4.15-9, the open pit would be constructed in the easternmost portion of the mine site. The pit would be 6,800 by 5,600 ft in width and 1,970 ft deep (PLP 2018d). As described in Section 3.13, the geology of the open pit area is complex and consists of a variety of rock types. The surface is blanketed with mostly glacial deposits that are underlain by bedrock consisting of a mixture of Mesozoic-age andesitic sedimentary flysch with Cretaceous quartz monzodiorite, granodiorite, and diorite sills.

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Figure K4.15-9: Open Pit Topographic Cross-section

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Pit wall stability analyses were calculated by SRK (2018c) and PLP (2018-RFI 023a) through three sections of the pit as shown in Figure K4.15-10 and summarized in Table K4.15-9.

The modeling evaluated two different water table scenarios: (1) during mining with the groundwater levels immediately below the pit bottom, and (2) during early closure after discontinuation of groundwater drawdown with water levels recovered to about half full. A peak ground acceleration (PGA) of 0.14g was used for the dynamic modeling case.

The white (grey) lines that roughly parallel the pit wall face in Figures K4.15-12 and K4.15-13 are modeled disturbance factor (D) zones that represent zones of bedrock damage caused by relaxation and rebound of the rock mass from pit excavation and blast damage close to the excavation surface (Hoek 2012). Two inactive faults that intersect Section A (Figure K4.15-11) appear to affect wall stability along with heavily jointed rock represented by the white cross hatching in Figures K4.15-12 and K4.15-13.

Most of the modeling was completed simulating 20 years of mining (immediately before closure), which would represent the worst-case scenario. As the pit is deepened, there do not appear to be any large intersections of weaker rock exposed, other than localized areas near the faults. Future designs would investigate improved optimization angles of the interim walls.

Table K4.15-9 presents the initial results of the open pit wall modeling. The minimum acceptable FoS for the open pit walls during operations was set at 1.3 for static conditions and 1.05 for dynamic conditions (Read and Stacey 2009). These values were selected as the upper bound, as there is only a single entry into the pit and any instability involving the ramp would likely result in a loss of production. Acceptance criteria for the pit just after closure would be set at 1.1 because of the lack of access required into the pit during this time, but this would be reviewed during detailed design. The initial results indicate a FoS below 1.1 for the worst-case scenario in Section A under both static and dynamic conditions. The results for Sections B and C indicated FoSs of 1.1 or greater.

Table K4.15-9: Pit Wall Stability Modeling Results

Section	EoM FoS	EoM FoS Early Closure	EoM FoS Pit Lake	EoM FoS	EoM FoS Early Closure	EoM FoS Pit Lake
	Static			Dynamic		
A	1.3	0.8	1.4	1.2	0.7	1.4
B	1.6	1.4	1.9	1.4	1.2	1.7
C	1.4	1.2	2.2	1.2	1.1	2.0

Notes:

EoM = end of mine

FoS = factor of safety

1. Dynamic stability due to earthquake loading.

Source: PLP2018-RFI 023a

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Figure K4.15-10: Geotechnical Domains and Location of Pit Wall Stability Sections

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Figure K4.15-11: Pit Wall Section A - Water Table Scenarios

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Figure K4.15-12: Pit Wall Stability Section A – Scenario with Active Drains in Early Closure

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Figure K4.15-13: Pit Wall Stability Section A – Scenario with Half-Full Pit Lake

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At closure, the pit walls would be stabilized and monitored to meet ADNR (2006) requirements such that they would not be expected to collapse (PLP 2018-RFI 024). However, the results for Section A in early closure suggest that depressurization caused by dewatering and lowering the water table would need to continue until the pit lake rise could buttress/stabilize the area of potential instability, which is below the faults. Two additional scenarios were therefore examined for Section A:

- Continued groundwater depressurization focused on the toe of the slope
- Pit lake at a level above the instability (the two faults in the face).

The results of the additional analyses, shown in Figures K4.15-12 and K4.15-13, indicate FoSs for the two scenarios of 1.1 and 1.4, respectively. These results suggest that with continued depressurization in the localized area of Section A during early closure activities (e.g., backfilling), the wall stability would meet acceptability criteria.

K4.15.2 Port Site

The port sites are located at Amakdedori and Diamond Point for Alternative 1 and Alternatives 2 and 3, respectively (Figure 2-64). As noted in Figure 4.15-10, the port sites are situated in a seismically active area. Therefore, seismic hazard analyses were conducted for the port sites in conjunction with the analysis for the mine site using the same methods, including analyses of probabilistic and deterministic seismic hazards.

K4.15.2.1 Probabilistic Seismic Hazard Analysis

The same OBE corresponding to a return period of 475 years that was adopted for the Pebble TSF designs was used for the port sites. Table K4.15-10 shows the results of the probabilistic seismic hazard analyses completed for the Diamond Point port site.

Table K4.15-10: Probabilistic Seismic Hazard Analysis for Diamond Point Port Site

Return Period (Years)	Probability of Exceedance [1] (%)	Maximum Acceleration [2] (g)
50	63	0.12
100	39	0.17
200	22	0.22
475	10	0.29
1,000	5	0.38
2,500	2	0.51
5,000	1	0.62
10,000	0.5	0.74

Source: Knight Piésold 2013

Notes:

1. Probability of exceedance calculated for a design life of 50 years; Q = 1 - exp (-L/T). Where Q = probability of exceedance, L = design life in years, T = return period in years.

2. Maximum accelerations are for values on firm rock.

3. Information based on the USGS Seismic Hazard Program database.

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The resulting estimated maximum acceleration for the 1-in-475-year earthquake is 0.29g, or nearly double that predicted for the mine site. This reflects the closer proximity of the port to the potential instraslab subduction earthquakes shown in Figures K4.15-7 and K4.15-8.

Based on fault conditions and seismicity in the region (Figures 3.15-2 and K4.15-7), ground shaking effects at the Amakdedori port site are expected to be similar to or less than the effects predicted for the Diamond Point port site.

K4.15.2.2 Deterministic Seismic Hazard Analysis

Table K4.15-11 shows the results of a deterministic analysis for the Diamond Point port site based on the regional seismic sources. As noted for Table K4.15-8, the maximum acceleration values shown in Tables K4.15-10 and K4.15-11 were completed in 2013. Seismic activity since 2013 included two large earthquakes (listed in Section K4.15.1.1.5.2), which were within the magnitude and maximum acceleration values shown in Tables K4.15-8 and K4.15-11.

Table K4.15-11: Deterministic Seismic Hazard Analysis for the Diamond Point Port Site

Earthquake Source Type	Earthquake Source Name	Source/ Fault Mechanism	Maximum Magnitude	Epicentral Distance	Focal Depth	Peak Ground Acceleration[1]	
			(Mw)	(miles)	(miles)	Median (g)	84th Percentile (g)
Interface Subduction[2]	Alaskan-Aleutian Megathrust	Thrust	9.2 (8.5)	70	25	0.13	0.23
Intraslab Subduction	Intraslab Event[3]	In-slab	7.5	35	45	0.20	0.37
			8.0	35	45	0.29	0.55
	Deep Intraslab Event[3]	In-slab	7.5	0	70	0.24	0.45
			8.0	0	70	0.40	0.74
Shallow Crustal Fault[4]	Lake Clark Fault	Reverse (Thrust)	7.5	50	3	0.06	0.10
	Bruin Bay Fault	Reverse (Thrust)	8.0	5	3	0.38	0.64
	Border Ranges Fault	Strike-slip	8.0	65	3	0.06	0.10
	Kodiak Island / Narrow Cape Faults	Strike-slip	7.5	150	3	0.01	0.02

Source: Knight Piésold 2013

Notes:

Mw: Moment magnitude

1. PGAs are for values on firm rock.

2. The PGA values for the interface subduction (megathrust) event have been calculated using a representative magnitude 8.5 event.

3. See Figures K4.15-7 and K4.15-8 for the locations of intraslab subduction earthquakes relative to the Pebble port sites (roughly 40–80 miles beneath and away from the port sites).

4. The adopted faulting mechanism for each shallow crustal fault was based on a review of available information defining the fault type. The predominant faulting mechanism assumed for all shallow crustal faults is strike-slip, with the exception of the Bruin Bay and Lake Clark faults, for which reverse faulting was used.

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The previous analyses of seismic stability based on the PGA values presented in Tables K4.15-10 and K4.15-11 would be the design basis for the ports, with updates as design progresses at the selected port site. The values are similar to those presented in Table K4.15-8 for the mine site, but differences are attributable to the respective proximities to the earthquake sources.

As noted for the probabilistic analysis for the port sites, based on the fault conditions and seismicity in the region (Figure 3.15-2), ground shaking effects are expected to be similar or less at the Amakdedori port site than at Diamond Point.

K4.15.2.3 Analysis of Rockfill Causeway and Sheet Pile Dock

A rockfill causeway and sheet pile dock design is proposed for both the port at Amakdedori under Alternative 1 and the port at Diamond Point under Alternatives 2 and 3. As described in Chapter 2, the Amakdedori port would consist of a causeway constructed of earthfill embankment and a barge berth and wharf constructed of a sheet pile wall wharf structure filled with granular material (Figures 2-27 and 2-28). The Diamond Point port would use the same design concept as the Amakdedori port, but would have a different, larger layout (Figure 2-50).

The stability of port structures is typically determined through stability analyses conducted under both static and seismic conditions. Inputs are based on water depths, tidal fluctuations, winter ice formations, subsurface geotechnical conditions, construction materials, and proposed design features. Material site characterization and stability analyses would be conducted for the respective ports' major structures (such as the terminal patio and sheet pile wharf) during final design (PLP 2018-RFI 005).

Available subsurface foundation information for the Amakdedori port site is limited and includes two vibracores to a depth of 3 ft below mudline, a multibeam bathymetric survey, and extrapolation of onshore geophysical data (Section 3.15, PLP 2018-RFI 039; Zonge 2017). While geotechnical conditions at the port site could be variable, bedrock is likely sufficiently deep that marine structures would not need to be socketed and that sheet piles could be designed for installation to a design embedment depth (PLP 2018-RFI 005).

Subsurface foundation conditions at the Diamond Point site are also generally unknown. Water depth is shallower at this location than at Amakdedori, which would require dredging a 20-foot-deep navigation channel (PLP 2018d). More detailed subsurface foundation information is available for Williamsport, about 3 miles north of Diamond Point. Based on geotechnical borings and a geophysical survey completed by USACE in 1995, the depth to bedrock in the vicinity of the existing dock ranged between approximately 65 and 130 ft. The bedrock was mainly overlain by fine-grained sediments. In contrast, the marine channels through Iliamna Bay and Iniskin Bay (east of Iliamna Bay) were noted as having a mantle of unconsolidated, fine-grained sediment, with particle size typically decreasing with water depth and distance from the shoreline. Coarse-grained sediments with cobbles and boulders were observed along the shorelines of both Iliamna Bay and Iniskin Bay (Knight Piésold et al. 2011d).

Design details available for the Amakdedori site are provided in PLP (2018-RFI 005). Construction of the Amakdedori terminal would require installing approximately 2,200 lineal feet of protected rock slope along an access causeway and 2,000 lineal feet (in plan) of steel sheet piles that may be 110 ft long (the length may be as short as 50 feet), with tie-backs into the fill behind the sheets to provide sufficient lateral capacity. The lineal sheet pile and tie-back design proposed for the wharf is not considered as vulnerable to an "unzipping" type of failure in a large earthquake as the open-cell structure at the Port of Anchorage (CH2MHill 2013). The sheet piles would be installed in 15–20 feet of water. The causeway would be constructed by infilling on top of the seabed with competent fill and rock protection for the slopes. The sheet piles

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would be installed using a vibratory hammer. If it discovered that bedrock or similarly hard soil is within 20–30 feet of the design seabed elevation, driving the sheets for the last 1–2 feet may be required to anchor the sheets in the ground. If bedrock or similarly hard soil is found to be very shallow, pile socketing and a revised concept may be required. If investigations find that the seabed is susceptible to liquefaction under seismic conditions, soil improvement work such as stone column installation may be required (PLP 2018-RFI 005).

The types of impacts that could occur at the ports include structural instability and potential failure of the sheet pile wharf as a result of seismic loading or foundation conditions; erosion at the base of the sheet piles; icing that increases gravity load on the sheets; and corrosion requiring regular monitoring of cathodic protection systems. These impacts would be addressed as design progresses. Experience at other sheet pile docks in Cook Inlet (Port of Anchorage, Port MacKenzie) suggest that these issues could also be of concern at the Amakdedori and Diamond Point port sites, as discussed below.

Subsurface conditions (e.g., buried sensitive clay layers like at the Port of Anchorage) that have the potential to lead to translational failure of a structure in a major earthquake (Simpson Gumpertz & Heger 2013) likely do not exist at the Amakdedori port site where, based on the information available, subsurface deposits consist primarily of silty sand and gravel (Section 3.15). It is also unlikely but possible that these conditions exist at the Diamond Point site.

A stability analysis of the sheet pile wharf at the Amakdedori and Diamond port sites that takes seismic loads into account would be considered to be the state of the practice for this type of structure in this seismic setting. The PGA for a major earthquake at this location could range from an estimated 0.3g to 0.5g for a 500-year to 2,500-year event, respectively (Figure 3.15-2) (Wesson et al. 2007). These PGA values are supported by the probabilistic and deterministic seismic hazard analyses described above that were completed at the Diamond Point site (Knight Piésold 2013). The results indicated a PGA of 0.51g for a 2,475-year event. This is consistent with Figure 3.15-2 in Section 3.15 (Wesson et al. 2007), which suggests that the PGA at the Amakdedori port site would be slightly less, i.e. 0.50g. Additional seismic analyses would be completed before detailed design to support engineering and construction (PLP 2018-RFI 005).

Liquefaction of the seabed during a major earthquake could also cause wharf damage, although the expected sand and gravel conditions at the Amakdedori site may be too coarse and inhomogeneous for liquefaction to occur (Section 3.15, Geohazards) (e.g., Youd and Perkins 1978). However, as noted above, the particle size of the relevant sediment at the Diamond Point site is less certain. Should the seabed conditions be found to be susceptible to liquefaction, soil improvement work such as installation of stone columns or other densification methods would be considered (PLP 2018-RFI 005).

Boulders have been documented on the seafloor near both port sites and may be present in subsurface deposits (Section 3.15, Geohazards). The boulders could prevent the installation of sheet piles and/or possibly damage the piles. Both the Port of Anchorage and Port MacKenzie experienced sheet pile damage caused by subsurface obstructions such as old earthquake fill, riprap, or unexpected hard layers that were not detected by geotechnical investigations (e.g., CH2MHill 2013; Port of Alaska 2018; Alaska Public Media 2016).

If sheet pile defects were to occur during construction, they could allow retained fill to escape, potentially covering the seafloor near the wharf, and may damage the wharf's surface and equipment and interrupt shipping operations.

Another hazard experienced at the Port MacKenzie dock is erosion from seawater and tidal currents undermining the base of the sheet pile at the mudline and causing a loss of fill (e.g.,

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Anchorage Daily News 2017). This hazard is unlikely to occur at the Amakdedori port site, given the design depth of sheet pile anchoring and design contingencies described above, but may be a concern at the Diamond Point site.

If struck by a tsunami, the sheet pile bulkhead design would expose the cross sectional area to the hydrodynamic impact of the wave. A critical loading condition for the bulkhead could be the very low water level during the "retreat phase" of the tsunami, during which the stabilizing effect of water on the outside of the sheetpile is absent or diminished.

Based on the uncertainties and impacts experienced at other sheet pile structures as described above, it is possible that the sheet pile wharf could experience a release of fill material, ranging from partial loss through a damaged or eroded sheet pile to a major loss in an earthquake. The fill material for the Amakdedori port site would be sourced from a local geologic materials site (blasted granitic material) or imported by ship (PLP 2018-RFI 005), and could range from rockfill to material similar to that present on the seafloor (sand and gravel). At the Diamond Point site, the sheet pile wharf is proposed to be backfilled with the material dredged from the adjacent 20-foot-deep navigation channel.

In the event of the loss of fill from the sheet pile, the released material could cause a temporary turbidity plume in the water column. Wharf damage and loss of fill could also disrupt barging and concentrate lightering activities, potentially causing a buildup of concentrate containers at the port and ferry terminals. Chapter 5, Mitigation, provides measures to reduce the likelihood of these impacts, such as geotechnical investigations and stability analyses.

In summary, the proposed rockfill causeway and sheet pile dock design would have the potential to result in adverse impacts on the environment during construction, operation, and closure. Additional field investigations would be performed to support detailed design to confirm that the design is feasible, and if so, to ensure construction, operation, and closure procedures that would be protective of the environment. Alternative design solutions, such as the pile-supported dock variant considered under Alternatives 1 and 2, could also be considered and implemented.

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3.13 GEOLOGY

3.13.1 Introduction

This section describes the baseline geology of the project area. Information provided here is based on field and office studies conducted by the applicant and others in the project area between 1985 and the present as described in Appendix K3.13. Paleontological resources are also addressed in Appendix K3.13. Other sections that directly correspond to the geology discussion Section 3.14, Soils and Section 3.15, Geohazards.

3.13.2 Regional Setting

The project area lies approximately 250 miles northwest of the Alaska-Aleutian megathrust, where the Pacific tectonic plate subducts (i.e., sinks), beneath the North American plate. Section 3.15, Geohazards, describes the tectonic setting, seismicity, faults, and volcanic activity. Tectonic activity at the plate boundary is the cause of the region's seismicity and volcanic activity, and has promoted the growth of the Alaskan landmass through the accretion of crustal blocks called terranes. Tectonic plate boundaries shifted throughout the Mesozoic era (245 to 65 million years ago). These shifts produced igneous intrusives (magma) of Late Cretaceous (about 90 million years old) responsible for the mineralization of the Pebble deposit (PLP 2011a).

Over the last 2.6 million years (Quaternary), glaciers have repeatedly advanced over the landscape causing erosion of glacial valleys, rounding landforms of hills and mountains and depositing reworked materials throughout the region. The unconsolidated sediments occur in the valleys between bedrock hills and mountains. No active glaciers exist in the project area.

3.13.3 Geologic Overview of the Project Area

The geology of the mine site is generally comprised of bedrock hills with thin or no unconsolidated sediment with overburden in the wide valleys. Overburden in this area is comprised of glacial, glaciofluvial, and alluvial sediments. Iliamna Lake lies within a basin generally filled with glacial sediments of Pleistocene (2.6 million to 11,700 years old) that are exposed southwest, west, and north of the lake, with occasional bedrock outcrops. The area between Iliamna Lake and Cook Inlet generally consists of exposed or near-surface bedrock, with limited sediments overlying the bedrock at the lower elevations (Figure 3.13-1).

The geologic structure of the project area is broadly defined by the northeast- to southwest-trending Bruin Bay Fault (Figure 3.13-1) (see Section 3.15, Geohazards).

Extensive surficial glacial deposits similar to those near Iliamna Lake overlie the southwestern portion of the Kenai Peninsula (Detterman and Reed 1973). There is no known permafrost in the project area. See Section 3.14, Soils, for a discussion of permafrost.

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Figure 3.13-1: Pebble Project Area Geology

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3.13.4 Alternative 1 – Applicant's Proposed Alternative

This section describes the geology relevant to Alternative 1.

3.13.4.1 Mine Site

Unconsolidated sediments (overburden) cover a large portion of the mine site. These sediments consist of glacial till, outwash, alluvium, fan and deltaic deposits, and glaciolacustrine (glacial lake) deposits (Figure 3.13-2). Sediment sizes vary from silt, sands, and gravels to boulders. Overburden ranges in thickness from a few feet to about 165 feet (Detterman and Reed 1973; Knight Piésold et al. 2011a).

When glaciers were present, lakes formed where glacial ice blocked the major drainage basins (Hamilton and Klieforth 2010), resulting in deposition of lacustrine deposits. Glacial lake deposits are mapped in the eastern half of the open pit area, extending south of Frying Pan Lake, and in the area of the proposed water treatment plant (WTP) #1 discharge-south (Figure 3.13-2). The lake deposits are composed of stratified to weakly stratified (layered) silts, sands, and fine gravels, and display poorly drained surface morphology (Hamilton and Klieforth 2010). Glacial meltwater channels and a moraine ridges are also present (Figure 3.13-2).

Colluvium and felsenmeer occur along the flanks of Kaskanak Mountain, including within the footprint of the bulk tailings storage facility (TSF) and on slopes surrounding the mine site. Solifluction lobes composed mostly of silt are present on isolated lower slopes within the mine site, including the footprint of the pyritic TSF (Knight Piésold et al. 2011a). Thin, organic soils less than 1 foot thick cover the mine site, and are often intermixed with sands and gravels (Hamilton and Klieforth 2010) (see Section 3.14, Soils).

Bedrock occurs at the higher elevations (above about 1,400 feet amsl) in the mine site area (Figure 3.13-2). The bedrock geologic map (Figure 3.13-3) shows details of the mine site's complex bedrock geology, which are also addressed below.

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Figure 3.13-2: Mine Site Surficial Geology

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Mine Site Bedrock Geology and Mineralization of the Pebble Deposit

The mine site bedrock geology is complex (Figure 3.13-3). Much of the bedrock within and around the open pit is, a type of Mesozoic sedimentary rock derived from eroded andesitic volcanic rock (Kahiltna flysch). Tertiary (Paleogene and Neogene, about 65 to 2.6 million years old) volcanic and sedimentary rocks outcrop at higher elevations on the south end of the bulk TSF and in the southeast corner of the mine site area. A variety of Cretaceous (about 145 to 65 million years old) intrusive rocks outcrop within the mine site, including the granodiorite of the Kaskanak batholith, which outcrops in the western portion of the mine site (Knight Piésold et al. 2011a) (Figure 3.13-3).

Other diverse magmas intruded in the flysch in a north-northeast trending belt throughout the Cretaceous, and were then folded by tectonic forces (Nokleberg et al. 1994). The mineralization that formed the Pebble deposit was likely caused by these diverse magma intrusions that comprise the rock in the open pit area (Knight Piésold et al. 2011a).

Offshoots of the magma injected into joints and fractures in the surrounding sedimentary bedrock, heating the rock and causing hot fluids to circulate in a large magmatic-hydrothermal system. The hot fluids carried dissolved metals from the magma, including copper, gold, and molybdenum. As the fluids cooled, the metals and associated sulfide minerals (such as iron sulfide [pyrite]) precipitated within the surrounding rock, concentrated within metal-rich quartz veins. These rocks make up the Pebble deposit, a copper-gold-molybdenum porphyry system.

Table 3.13-1 presents the estimated deposit resource for copper, molybdenum, and gold, and compares the total deposit to the amount that would be mined over the 20-year lifespan of the project (PLP 2018d). The proposed project would mine approximately 10 percent of the total estimated Pebble deposit resource.

Table 3.13-1: Estimated Pebble Deposit Resource (Measured, Indicated, and Inferred)

	Total Deposit		20-Year Open Pit	
	Weight	Grade	Weight	Grade
Copper	81.5 Blb	0.34%	7.4 Blb	0.29%
Molybdenum	5.64 Blb	234 ppm	398 MMlb	154 ppm
Gold	107.3 MMoz	0.31 g/t	12.1 MMoz	0.27 g/t

Blb: billion pounds

g/t: grams per ton

MMlb: million pounds

MMoz: million ounces

ppm: parts per million

Source: PLP 2018d

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Figure 3.13-3: Mine Site Bedrock Geology

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Construction Materials

Material to construct the embankments would be sourced from quarries A, B, and C with granodiorite rock at these locations. Granodiorite is a competent (e.g., strong and resistant) rock that is suitable for use as rockfill. Construction would also use overburden removed from the from the open pit area that is determined suitable as rockfill (Figure 3.13-3).

3.13.4.2 Transportation Corridor

Roads

Bedrock and surficial geology varies somewhat across the transportation corridor (Chapter 2, Alternatives, Figure 2-12 through Figure 2-14), but is generally comprised of the same rock types and overburden as present at the mine site. Few bedrock exposures exist north of Iliamna Lake and glacial sediments cover most of the terrain (Detterman and Reed 1973, 1980).

Along the mine access road, the buried bedrock is mostly the same Tertiary volcanic rock present within the mine site. South of Iliamna Lake, the south access road traverses Tertiary volcanic rocks similar to north of the lake, and Jurassic intrusive bedrock outcrops at higher elevations (Detterman and Reed 1980; Wilson et al. 2015).

Near the port site, the transportation corridor would cross outcrops of Jurassic metamorphic rock and marine sedimentary rock that is locally abundant in marine invertebrate fossils (Detterman and Reed 1980; Wilson et al. 2009). The entire Iliamna spur road would be underlain by Quaternary glacial deposits, with no apparent exposed bedrock (Detterman and Reed 1973, 1980).

Ferry Terminals

The north ferry terminal would be underlain by Pleistocene glacial deposits consisting mostly of sand. The south ferry terminal would be underlain by Tertiary volcanic rock near the shoreline and by Pleistocene terrace deposits farther upslope (Detterman and Reed 1973, 1980).

Construction Material Sources

Material sites along the transportation corridor would supply earthen materials (e.g., rock, gravel) for construction and maintenance of the transportation corridor. Material sites underlain by bedrock (labeled in red on Figure 3.13-4) would likely require blasting. The remaining material sites would likely be developed in surficial glacial deposits and could be excavated without blasting (Detterman and Reed 1973; Hamilton and Klieforth 2010).

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Figure 3.13-4: Bedrock Blasting Intervals

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3.13.4.3 Amakdedori Port

The footprint of the Amakdedori port would be on marine terrace and beach deposits consisting of sand, pebbles, and cobbles (Detterman and Reed 1973). Alluvial fan-delta deposits from Amakdedori Creek extend about 1,000 feet offshore into Kamishak Bay (PLP 2018-RFI 039). Seafloor sediment at and around the Amakdedori port site comprises primarily subtidal gravel and beach complex, with sub-bottom sediments consisting primarily of fine silty sand, occasional coarse gravel and shell fragments, and a fines content ranging from 14 to 19 percent (GeoEngineers 2018a).

Bedrock is not exposed within the port footprint, but is exposed in the bluffs to the northeast and consists of Jurassic igneous and metamorphic rock, and fossiliferous marine sedimentary rocks (Detterman and Reed 1973, 1980; Wilson et al. 2015).

Rock to be used in construction of the port would be supplied from Material Site MS-A08 (PLP 2018-RFI 035) (Chapter 2, Alternatives, Figure 2-14). MS-A08 is in an area of thin or absent surficial deposits underlain by bedrock (Detterman and Reed 1973).

3.13.4.4 Natural Gas Pipeline Corridor

The surficial and bedrock geology of the natural gas pipeline corridor is the same as that addressed above for the transportation corridor, except for the Cook Inlet crossing and the segment of the corridor on the Kenai Peninsula.

Cook Inlet is a relatively shallow sedimentary basin filled with actively migrating, sand- to boulder-sized material. Cook Inlet seafloor deposits are described in further detail in Section 3.18, Water and Sediment Quality.

Surficial deposits along the Kenai Peninsula segment include Quaternary glacial outwash sediments and minor alluvial deposits (Wilson et al. 2015). Bedrock on the Kenai Peninsula segment is almost entirely buried by deep glacial deposits, but limited outcrops to the east reveal late Tertiary estuarine and non-marine sedimentary bedrock (Wilson et al. 2015).

Construction material sources for the natural gas pipeline corridor would be the same as that identified for the transportation corridor between the mine site and Amakdedori port. No material sites would be required on the Kenai Peninsula portion of the pipeline route (PLP 2018-RFI 035).

3.13.4.5 Action Alternative 1 – Kokhanok East Ferry Terminal Variant

The Kokhanok east ferry terminal is underlain by Quaternary beach deposits near the Iliamna Lake shoreline, and by Tertiary volcanic bedrock farther upslope (Detterman and Reed 1973, 1980).

3.13.4.6 Action Alternative 1 – Pile-Supported Dock Variant

Marine sediments at the Amakdedori port site that are relevant to the dock variant are the same as those addressed above for the port.

3.13.5 Action Alternative 2 – North Road and Ferry

3.13.5.1 Mine Site

The geology and material sites at the mine site would be the same as Alternative 1.

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3.13.5.2 Transportation Corridor

Roads

Geology of the transportation corridor between the mine site and the Eagle Bay ferry terminal is similar to the geology described for the Iliamna spur road in Alternative 1. Bedrock is overlain by glacial moraine, beach deposits, solifluction, stream channels, and terrace deposits (Detterman and Reed 1973).

From the Pile Bay ferry terminal to Williamsport, the transportation corridor would largely follow the existing road underlain by Jurassic (200 to 145 million years old) igneous rock, Quaternary alluvium, talus, and rubble deposits (Detterman and Reed 1980; Wilson et al. 2015).

From Williamsport to the Diamond Point port, the road would cross a slope underlain by Jurassic to Triassic (251 to 200 million years old) igneous volcanic rock and intrusive granodiorite and quartz monzonite, and slightly metamorphosed basaltic flows and sedimentary rocks (Detterman and Reed 1980; Wilson et al. 2015).

Ferry Terminals

The Eagle Bay ferry terminal would be underlain by glacial deposits (Detterman and Reed 1973, 1980). The Pile Bay ferry terminal area is likely Jurassic igneous rocks and possibly isolated glacial beach deposits (Detterman and Reed 1973, 1980).

Construction Material Sources

Material sources for construction of the transportation corridor from the mine site to Iliamna Lake would be supplied by the material sites within mostly glacial deposits (Detterman and Reed 1973). Construction of the transportation corridor between Williamsport and Diamond Point might also use bedrock that would be removed (excavated or drilled/blasted) to support construction of the roadbed (Detterman and Reed 1980; Wilson et al. 2015).

3.13.5.3 Diamond Point Port

The geology of the Diamond Point port is mapped as Jurassic igneous intrusive rocks (Detterman and Reed 1980; Wilson et al. 2015). Construction of a port facility at Diamond Point would likely require drilling and blasting.

3.13.5.4 Natural Gas Pipeline Corridor

The pipeline would cross beneath Cook Inlet and make landfall on the shore of Ursus Cove. The corridor would then follow a possible geological bedding and/or linear structural feature that is largely overlain by glacial deposits. Cretaceous to Jurassic igneous and volcanic rocks are mapped within the feature (Detterman and Reed 1973, 1980).

Between the Cottonwood Bay and Pile Bay road intersection, the geology of the pipeline corridor is the same as the geology of the transportation corridor. From the Pile Bay road intersection to near Pedro Bay, the corridor is underlain by mostly Cretaceous to Jurassic igneous rocks (Detterman and Reed 1973, 1980).

From Pedro Bay to the western portion of Knutson Bay, the geology consists mostly of surficial glacial deposits and bedrock similar to that found near Pedro Bay. From Knutson Bay to the mine site, the geology consists of surficial glacial deposits, similar to the geology of the Alternative 2 transportation corridor to the Eagle Bay ferry terminal (Detterman and Reed 1973, 1980).

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3.13.5.5 Action Alternative 2 – Pile-Supported Dock Variant

Marine sediments at the Amakdedori port site that are relevant to the dock variant are addressed above.

3.13.6 Action Alternative 3 – North Road Only

3.13.6.1 Mine Site

The geology and construction materials would be the same for as for Alternative 2.

3.13.6.2 Transportation Corridor

The geology of the road from the mine site to near the western portion of Knutson Bay consists of surficial glacial deposits, similar to the geology of the Alternative 2 transportation corridor to the Eagle Bay ferry terminal. From Knutson Bay to Pedro Bay, the geology consists mostly of surficial glacial deposits and then bedrock, including Cretaceous and Jurassic igneous rocks.

From Pedro Bay to the intersection with the road to Pile Bay the geology consists of Cretaceous and Jurassic intrusive igneous rocks. From the Pile Bay road intersection to the Diamond Point port site, the transportation corridor would largely follow the existing road, as under Alternative 2 (Detterman and Reed 1973, 1980).

3.13.6.3 Diamond Point Port

The geology and construction material sources for the Diamond Point port site would be the same as for Alternative 2.

3.13.6.4 Natural Gas Pipeline Corridor

The geology and construction material sources would be the same as for Alternative 2.

3.13.6.5 Alternative 3 – Concentrate Pipeline Variant

The concentrate pipeline corridor would follow the same alignment as the transportation and natural gas pipeline corridors for Alternative 2. The geologic environment would therefore be the same.

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3.15 GEOHAZARDS

This section provided information currently available regarding geological hazards (geohazards) in the project area. Geohazards include geophysical processes (e.g., earthquakes, volcanoes), surficial or geomorphological processes (e.g., landslides) and other hazards (e.g., ice effects, erosion, tsunamis). Regional scale descriptions of the geohazards are presented in this section, followed by local descriptions enhanced with information gathered from geotechnical engineering studies where available. The project area is within a region of active tectonic (geophysical) processes and the potential for multiple types of geohazards across the project area depends on location, topography, natural materials present, and proximity to hazard sources.

3.15.1 Earthquakes

3.15.1.1 Active Faults

The Pebble Project is in a tectonically active region of southern Alaska near the subduction zone between the Pacific and North American plates. Both shallow crustal earthquakes and deeper earthquakes associated with the subduction zone megathrust affect this region.

In general, faults that have demonstrated geologic displacement and earthquakes during the Holocene epoch (the last 11,000 years) are considered to be active, and have the potential for future movement. Earthquake hazards generally increase with the magnitude (M) of the event, proximity to the site, and fault length. The likelihood of fault movement is typically described in terms of recurrence interval or return period (i.e., how often the fault is expected to generate a large earthquake based on field evidence and past seismic record). This is described below under "Ground Shaking," and in Section 4.15, Geohazards (Environmental Consequences), as applied to project facilities. Active and potentially active faults in the project area are shown on Figure 3.15-1, and include the following:

- The closest active surface fault to the project area is the northeast-trending Lake Clark-Castle Mountain Fault, about 15 miles northeast of the mine mite at the western end of Lake Clark (Haeussler and Saltus 2004). Studies of surficial geology and geomorphology in the mine area did not find evidence of Holocene fault activity between Lake Clark and the mine site (Hamilton and Klieforth 2010; Koehler 2010; Haeussler and Waythomas 2011; Knight Piésold 2015a). This fault exhibits evidence of Holocene activity in the Susitna Valley area, where it is considered capable of a maximum earthquake of M7.1 (Wesson et al. 2007), but shows no evidence of activity younger than Late Pleistocene along the Lake Clark segment southwest of Tyonek (Koehler and Reger 2011). This conclusion is further supported by a review of LiDAR data collected in 2004 in the vicinity of the mine site. No lineaments were observed that suggest possible fault-related movement in surficial deposits southwest of the previously mapped termination point of the Lake Clark fault (AECOM 2018m).
- The Alaska-Aleutian Megathrust, associated with the subduction zone of the Pacific Plate beneath the North American Plate, is responsible for some of the largest earthquakes globally, including the 1964 M9.2 Great Alaskan (Good Friday) Earthquake and 1938 M8.3 Alaska Peninsula earthquake. The megathrust lies at the seafloor more than 200 miles southeast of the project area, and dips to the northwest beneath the project area. Its 30-mile-thick zone of seismicity ranges from 20 to 50 miles deep beneath the eastern end of the natural gas pipeline corridor, to about

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90 to 120 miles deep near the mine site (Plafker et al. 1994; Knight Piésold 2015). The Kodiak and Prince William Sound areas of the megathrust are considered capable of a maximum M9.2 earthquake every 650 years. Intraslab faults associated with the deeper part of the subduction zone are considered capable of earthquakes in the range of M7+ (Wesson et al. 2007).

- The Denali-Farewell Fault, about 120 miles northwest of the project area, was the source of the 2002 M7.9 Denali earthquake that originated along the central part of the fault in Interior Alaska. The westernmost extension of this fault system, called the Togiak-Tikchik Fault, about 140 miles west of the mine site, exhibits evidence of mid-Quaternary activity. Although evidence of Holocene activity along the western part of the fault is limited compared to that of Interior Alaska, it is considered capable of generating large earthquakes in the range of M7.5 to M8.0 (BGC 2011; Knight Piésold 2015).
- The Telaquana-Capps Glacier and Mulchatna faults are about 40 miles north and northwest of the mine site, respectively (Haeussler and Saltus 2004; Gillis et al. 2009). Evidence of Holocene activity along these faults has not been established. If active, they are considered capable of maximum earthquakes in the range of M6.0 to M7.0 (Knight Piésold 2015).
- The Bruin Bay Fault extends along the western shore of Cook Inlet near the Amakdedori port site. Although there is no evidence for Holocene offset at the surface, this fault is associated with several small to moderate earthquakes up to M7.3 in 1943 (Stevens and Craw 2003).
- Several fault-cored folds in Upper Cook Inlet show evidence of Quaternary-age activity and possible bending of the seafloor. The closest of these lies about 130 miles east of the mine site and 10 miles north of the eastern end of the pipeline corridor. These structures are considered capable of generating earthquakes up to M6.8 (Haeussler et al. 2000). Recent activity has not been documented on similar folds and faults in Lower Cook Inlet near the Amakdedori port and natural gas pipeline corridor submarine crossing (Haeussler and Saltus 2011; Koehler et al. 2012).
- The Kodiak Shelf fault zone, comprised of a series of northeast-trending faults, lies in the upper plate of the subduction zone. These faults, about 120 miles southeast of the closest project components, show geomorphic evidence of Holocene activity, and are considered capable of earthquakes up to M7.5 (Wesson et al. 2007; Carver et al. 2008).
- The Border Ranges Fault, extending northeasterly through Kodiak Island and Kenai Peninsula, has been inactive since the early Tertiary (65 million years ago), but contains a 3- to 6-mile-wide shear zone that is considered by some to be capable of a future earthquake in the range of M7.0 (Suleimani et al 2005; Knight Piésold 2015).

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Figure 3.15-1: Earthquakes and Active Faults

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3.15.1.2 Ground Shaking

Earthquake-induced ground shaking is typically expressed in terms of peak ground acceleration (pga), measured as a fraction of gravity (g), with a probability of exceeding a certain level over a specific period of time in the future. For example, a pga of 0.1g in bedrock is considered the approximate threshold at which damage occurs in buildings that are not specially constructed to withstand earthquakes. An earthquake with a 10 percent probability of exceedance in 50 years (about a 500-year return period) is the most common event used in building codes for seismic design (e.g., Gould 2003). Larger, more infrequent seismic events, such as those with a 2,500-year return period (a 2 percent probability of exceedance in 50 years) are typically used for design of critical structures such as dams (ADNR 2017).

Ground shaking prediction in Alaska has been studied both regionally by the US Geological Survey (USGS) (Wesson et al. 2007) and for the Pebble Project area by Knight Piésold (2011c, 2015a, 2018c). Based on published USGS data for the 2,500-year event, Figure 3.15-2 depicts a general trend from high ground shaking near the subduction zone offshore of Kodiak to less ground shaking further inland. Predicted ground shaking for the 2,500-year event ranges from a pga of about 0.3g near the mine site to 0.6g at the eastern end of the natural gas pipeline corridor. In comparison, predicted ground shaking for a smaller 500-year earthquake ranges from about 0.2g near the mine site to 0.4g at the eastern end of the natural gas pipeline corridor (Wesson et al. 2007). Site-specific seismic hazard analyses conducted for project facilities are discussed in Section 4.15.

3.15.1.3 Liquefaction

Liquefaction is an earthquake-caused phenomenon that reduces the strength and stiffness of a soil by ground shaking. Where the groundwater table is near surface, or the ground is otherwise saturated, the pore space between soil particles containing water can increase (i.e., increase pore pressure), changing the physical character of the landform and weakening the natural material; in essence, the ground temporarily behaves like a liquid. Liquefaction generally affects unconsolidated, fine-grained (sand and silt) deposits in lowland areas. The susceptibility of an area to liquefaction is a consideration in design and construction in earthquake-prone areas because the loss of strength of the foundational material can cause structural damage. The potential for liquefaction from ground shaking at the mine site is less for features built where bedrock is near the surface, than in lowland areas underlain by unconsolidated material. A more detailed explanation of liquefaction is provided in Appendix K3.15. Areas believed to be susceptible to liquefaction in the project area are described below.

Areas susceptible to liquefaction are typically found along rivers, streams, lake shorelines, and in areas with relatively shallow groundwater. Lateral spread of liquefied soil up to a few feet can occur on gentle slopes or in areas near a free face, such as an incised river channel. Section 3.18, Water and Sediment Quality, provides a description of sediment types in areas of the project that could be subject to liquefaction. These include portions of the mine site with shallow groundwater and fine-grained soils, such as the glacial lake deposits in the eastern part of the mine site (Section 3.13, Geology), and in project facilities that contain fine-grained saturated tailings (bulk and pyritic TSFs). Wide stream crossings along the road and pipeline corridors and marine sediment at port sites that contain predominantly sand and silt, such as along the northern portion of the mine access road, protected bays in Iliamna Lake, and Cottonwood and Iliamna bays in Cook Inlet, may be subject to liquefaction. Other sediment with high gravel content, such as at the north ferry terminal, high-energy stream crossings along the south access road and north road route (Alternatives 2 and 3), and nearshore Kamishak Bay are less likely to liquefy (PLP 2018-RFI 036; PLP 2018-RFI 039).

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Figure 3.15-2: Seismic Hazard Map

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3.15.2 Geotechnical Conditions

Subsurface geotechnical conditions form the basis of foundation design and stability analysis of major structures such as dams, buildings, tanks, facilities, bridges, docks, and fills. Geotechnical conditions are summarized below where important to the analysis of potential geohazard effects on the project, including discussion of features (e.g., roads and port sites) described in alternatives (see Chapter 2, Alternatives), and related environmental impacts.

3.15.2.1 Mine Site

Geotechnical data from site-wide geologic reconnaissance and mapping, drill holes, test pits, and geophysical (seismic) surveys were collected at the mine site between 2004 and 2018 (Knight Piésold 2011c; PLP 2013a; PLP 2018-RFI 014). The mine site was divided into several study areas by Knight Piésold (2011a) based on geomorphology and watershed divisions for the purposes of baseline characterization. These areas are shown on Figure 3.15-3, along with geotechnical data locations and the mine site footprint, and are described below. The number of drill holes, test pits, and seismic survey lines beneath locations of major facilities in each area are provided in Appendix K3.15. As discussed in Section 3.14, Soils, permafrost has not been encountered at the mine site.

- **North Fork Koktuli (NFK) West.** Most of the data collected in this north-draining watershed, which contains the bulk TSF main embankment and impoundment footprint, are in the northern part of the watershed, with fewer data points beneath the southern part of the impoundment. Overburden materials range in thickness from 2 to 51 feet, and overlie sedimentary, volcanic, or intrusive bedrock. Overburden deposits consist of frost-shattered angular boulders; glacial drift, and colluvium containing mostly sand and gravel with varying amounts of silt; and peat in the valley bottom. Bedrock quality, measured using a Rock Mass Rating (RMR) system on a scale of 0 to 100, with higher numbers representing stronger rock quality (Bieniawski 1989), ranges from 35 to 66 (poor to good). Weathered bedrock extends up to 80 feet deep, and is deeper in the southern part of this area than the northern part.
- **NFK East.** Field investigations in this north-draining watershed that contains the pyritic TSF and associated ponds indicate that depth to bedrock ranges from 0 to 8 feet on hilltops, and from 6 to 111 feet in the valley and beneath side slopes. In the NFK East, bedrock is generally more fractured and has deeper weathering than beneath the bulk TSF area in NFK West. Overburden consists of sand and gravel with variable amounts of silt.
- **NFK North.** This area contains seepage and sediment ponds downstream of the bulk TSF main embankment and the main water management pond (WMP). Overburden consisting mainly of alluvial and morainal gravel and sand deposits ranges in thickness from 2 feet to more than 9 feet, and overlies basalt bedrock with RMRs in the range of 52 to 65 (fair to good).
- **Pit Area**. Geotechnical data in the area of the open pit and rim indicate the presence of overburden ranging in thickness from 25 to 272 feet, and consisting of varying mixtures of gravel, sand, silt, and clay of glacial origin, with occasional peat. Bedrock types consist primarily of volcanic and sedimentary rock, with average RMRs ranging from 45 to 55 (fair) (Knight Piésold 2011c).
- **Bulk TSF South**. The northern portion of this south-flowing watershed contains the footprints of the bulk TSF southern embankment and associated seepage and sediment ponds. Previous investigations indicate overburden thicknesses ranging from about 1 to 95 feet, with thicker deposits in the valley bottom, consisting of

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primarily sand and gravel with variable amounts of fines. Bedrock is of similar type and quality to the southern part of NFK-West.

- **South of Pit Area.** The northern end of this south-flowing tributary, which drains towards Frying Pan Lake, contains the open pit WMP, pit overburden stockpile, and sediment ponds related to these facilities. Overburden ranges in thickness from about 70 to 150 feet, and consists of mostly silty sand and gravel glacial deposits with peat in the valley bottom.

3.15.2.2 Other Project Components

Surficial deposits, near-surface soils, and stream substrates along the transportation corridor are described in Sections 3.13, Geology; 3.14, Soils; and 3.18, Water and Sediment Quality, respectively. Geotechnical conditions along the northern part of the mine access road would be similar to those described above for the mine site. Surficial deposits along the southern part of the mine access road, Iliamna spur road, and the western part of the North Route (Alternatives 2 and 3) consist primarily of glacial and alluvial deposits. Surficial deposits along the eastern part of the North Route and the south access road are sparse, and bedrock outcrops near ground surface (Detterman and Reed 1973). Surficial deposits between Pedro Bay and Williamsport (Alternatives 2 and 3) consist mainly of alluvium and alluvial fan deposits along lower slopes of steep-sided valleys.

Surficial units mapped beneath the terminal footprint at the Amakdedori port site consist of Holocene marine terrace and modern beach deposits containing mostly pebbles, cobbles, and sand (Detterman and Reed 1973). Zonge (2017) geophysical data suggest that overburden is on the order of 50 to 100 feet thick in the terminal area. Topographic and stratigraphic relationships in Amakdedori Valley indicate that alluvium, alluvial fan, and beach deposits fill a bedrock-sided valley about 2 miles across between Chenik Mountain to the south, and peak "1996" to the north. These deposits may extend to several tens of feet below sea level in the port and wharf areas, where valley fill and nearshore delta fan material have been deposited towards the east and southeast, following trends of deepening bathymetric contours between Augustine Island and Douglas Reef (NOAA 2015; PLP 2018-RFI 039). Based on geophysical survey data and marine vibracores consisting of silty sand and gravel to 3 feet below mudline (PLP 2018-RFI 039; Zonge 2017), sand and gravel likely exist in Kamishak Bay to the depth of sheetpile or pile-supported dock installation. Boulders derived from sloughing of rocky cliffs and ice-raft movement may also be present in subsurface deposits at the port site.

Surficial deposits mapped beneath the footprint of the Diamond Point terminal site consist of thin alluvial fan deposits on top of shallow bedrock (Detterman and Reed 1973). Offshore deposits in the Diamond Point area, and along the road corridor between Diamond Point and Williamsport, consist primarily of silt and fine sand, with extensive mudflats in the upper reaches of Cottonwood and Iliamna bays. Boulders lie on the mudflats, and extensive reefs, shoals, and offshore rocks occur at the entrance to the bays (Pentec et al. 2011a). A combination of marine siltation and tectonic uplift is raising the seafloor near Williamsport at a rate of about 0.3 inch per year (ADNR 2014a).

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Figure 3.15-3: Geotechnical Data Coverage and Depth to Bedrock

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Site-specific geotechnical information is not available for the eastern landfall pipeline section that is planned to be installed by horizontal directional drilling (HDD) beneath Cook Inlet bluff. The coastal bluff is about 230 feet high at this location; has a relatively steep slope angle of about 1.4H:1V; and is composed primarily of Pleistocene glacial deposits (Reger and Petrik 1993; Karlstrom 1964). A stratigraphic section of the bluff, 2 miles south of the pipeline landfall, contains sand and gravel with occasional boulders, overlying a 50-foot-thick glaciolacustrine clay-silt unit (Reger and Petrik 1993). Perched groundwater is known to seep out of the bluff above similar fine-grained units along eastern Cook Inlet. Tertiary sedimentary rocks of the Beluga Formation are exposed in the lower sea cliff several miles further to the south, and may underlie glacial deposits at the pipeline landfall in the depth of the HDD. These rocks consist of weakly indurated, interbedded sandstone, siltstone, and shale with thin layers of coal (Reger and Petrik 1993). The potential for slope stability impacts on the project from these deposits is proved in Section 4.15.

3.15.3 Unstable Slopes

Unstable slopes typically occur under combined conditions of steep terrain, heavy precipitation, and certain types of surficial deposits, weathered bedrock, or weak stratified layers. The terrain and geomorphology of the mine site consists primarily of gently rolling hills with rounded exposed bedrock hilltops, and valleys of glacial deposits with low-angle slopes and mostly low potential for slope instability. Surficial deposits that have the potential to produce unstable slopes occur sporadically around the mine site and include the following (Hamilton and Klieforth 2010):

- Colluvium, consisting of rock rubble and debris with fines deposited at the base of slopes, may be subject to frost creep and gradual mass wasting slope processes related to freeze-thaw activity (solifluction). These deposits have been mapped throughout much of the bulk TSF footprint: on slopes adjacent to the bulk TSF south embankment, beneath the southern sediment pond, on the western side of the pyritic TSF, beneath several overburden and growth media stockpiles, and in the northeastern corner of the pit.
- Solifluction deposits, consisting of moderately sloped sheets of stony and organic silt, are subject to gradual downslope movement related to freeze-thaw action. These have been mapped on the eastern side of the pyritic TSF footprint.
- Active talus rubble deposits have been mapped on the northern slope of Kaskanak Mountain on the southeastern slope of the bulk TSF impoundment.

Small areas of colluvium and solifluction deposits have also been mapped along the mine access road and Iliamna spur road. These occur about 2 miles east of the mine site, about 6 miles east of the mine site on the northern side of Koktuli Mountain, and near the junction between the two roads (Detterman and Reed 1973; Hamilton and Klieforth 2010). Steep alluvial fan and talus deposits occur in incised valleys crossed by the eastern portion of the North Route, and along the lake front south of Knutson Mountain. Landslide and solifluction deposits have been mapped near the North Route corridor at the head of Lonesome Bay, and on the flanks of Roadhouse and Knutson mountains. Steep alluvial fan deposits have also been mapped at the southern end of the South Access Road, about 1 mile north of the port site (Detterman and Reed 1973).

Factors that contribute to unstable coastal bluffs near the pipeline landfall on the eastern side of Cook Inlet are described above in the Other Project Components section. The bluffs in this area have a history of erosion problems caused by wave action, tidal currents, groundwater seepage, and overland flow. The bluffs have experienced gullying, periodic landsliding, and debris flows

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following major storms (Reger and Petrik 1993; USACE 2008). Bluff retreat estimates range from 0.3 to 0.5 foot per year (ft/yr) in lower Cook Inlet near Kachemak Bay, to as much as 3 ft/yr near the town of Kenai (Adams et al. 2007; USACE 2007a).

Large earthquakes can also trigger landslides. The 1964 Great Alaskan Earthquake caused numerous landslides, rockslides, debris flows, soil slumps, and avalanches on the slopes of Kodiak Island and shoreline of Cook Inlet. The earthquake also caused translational landslides, tension cracks, and earth fissures on the top of bluffs; and rotational slides in Tertiary sedimentary rocks such as those that outcrop along the eastern coast of Cook Inlet (Plafker and Kachadoorian 1966; Waller 1966).

3.15.4 Volcanoes

Alaska contains more than 50 volcanoes considered to be historically active, having erupted in the last few hundred years (Alaska Volcano Observatory [AVO] 2018). Several are within about 100 miles of proposed project infrastructure (Figure 3.15-4), including Augustine, 20 miles east of the Amakdedori port site; Iliamna and Redoubt volcanoes, north of the project area; and a cluster of volcanoes on the northern Alaska Peninsula.

Augustine Volcano was last active in 2015. Past eruptions of Augustine caused ashfall accumulations of up to about ¼ inch on the Alaska and Kenai peninsulas, floating rafts of pumice that interfered with boat traffic in Cook Inlet, and ash clouds that disrupted air travel as far away as the Lower 48 (Waythomas and Waitt 1998). Volcanic debris avalanches that flow into Cook Inlet are known to occur with an average recurrence interval of about 150 to 200 years (Beget and Kienle 1992).

Redoubt and Iliamna volcanoes were last active in 2015 and 2016, respectively. Redoubt has had three major eruptions in the last 100 years, the most recent of which created significant ash plumes that disrupted air traffic on and off for months, and trace amounts of ashfall in Southcentral Alaska communities. Iliamna Volcano is mainly known for active steam vents and avalanches related to seismic activity (AVO 2018).

The Katmai group of seven volcanoes on the northern Alaska Peninsula includes three that have experienced historical eruptions (Katmai, Novarupta, and Trident), and four that are primarily known for steaming fumaroles (Snowy, Griggs, Martin, and Mageik) (AVO 2018). The largest historical eruption in this group occurred at Katmai and Novarupta in 1912, resulting in deposition of approximately 1 foot of ash in Kodiak, 100 miles away (Fenner 1920). Trident's last eruption began in 1953, producing ballistic blocks about 2 miles away from the vent, and intermittent ash clouds over a period of 21 years (AVO 2018).

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Figure 3.15-4: Active Volcanoes

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3.15.5 Tsunamis, Seiches, and Coastal Hazards

Tsunamis and seiches are different phenomena. Tsunamis are a series of water waves that are caused by displacement of large bodies of water due to seismic disturbances and underwater landslides. Seiches are large waves triggered by earthquakes that occur in enclosed bodies of water such as lakes and harbors, which can damage shoreline structures, boats, and moored vessels (e.g., Kabiri-Samani 2013).

Lower Cook Inlet has the potential for tsunamis and related coastal geohazards from seismic events. Impacts from tsunamis are dependent on bathymetry, coastline configuration, and tidal interactions. The 1964 Great Alaskan Earthquake generated numerous tsunami waves, including several that destroyed the harbor at Kodiak (Plafker and Kachadoorian 1966). Tsunami wave height predictions for 100- to 500-year return period events (combined with high tide) in lower Cook Inlet are estimated to be 12 to 23 feet above mean sea level (AMSL) in the Amakdedori area of Kamishak Bay, and 13 to 15 feet AMSL in the Happy Valley area of eastern Cook Inlet (Crawford 1987). More recent tsunami modeling predicts a runup elevation of 28.5 feet above mean high water (MHW) for a 2,500-year return period event at high tide at the Amakdedori port site (ASCE 2017). Based on an approximate MHW elevation of 6.3 feet AMSL at the port site (Pentec et al. 2011a, 2015a; NOAA 2018a), the latter event translates to a runup elevation of 34.8 feet MSL.

Volcanic eruptions can also produce tsunamis from catastrophic dome collapses and rapidly moving pyroclastic flows entering the sea (Waythomas et al. 2009; AVO 2018). The 1883 eruption of Augustine Volcano produced a wave that affected areas up to 55 feet above high tide on Augustine Island, and 23 feet above high tide on Kenai Peninsula (Begét et al. 2008). A similar phenomenon was documented in Bristol Bay from a prehistoric Aniakchak caldera flow that generated a 25-foot wave and deposited debris 60 feet above sea level in Nushagak Bay (Allen 1994; Armes 1996; Waythomas and Neal 1998).

Occurrence of seiches has not been monitored in the region, and the occurrence of seiches in Iliamna Lake during past large earthquakes is unknown (PLP 2018-RFI 013). During the 1964 Great Alaskan and 2002 Denali earthquakes, seiches several feet high occurred in the intracoastal waterways of Southeast Alaska, and in a number of lakes and reservoirs in the Lower 48 (McGarr et al. 1968; Barberopoulou et al. 2004; City and Borough of Juneau [CBJ] 2018). Damage to houseboats on Lake Union in Seattle from seiches was documented during both of these events. Modeling of an earthquake-induced landslide into Bradley Lake in Southcentral Alaska predicted that a 10-foot seiche would occur (Stone & Webster 1987); Bradley Lake is in a similar seismic zone, but is much smaller than Iliamna Lake. Coastal planning in Southeast Alaska anticipates that seiches up to 20 feet high could occur from large distant earthquakes originating in Southcentral Alaska (Community and Systems Analysis [CASA] 1982). For context, storm-driven waves on Iliamna Lake have been documented as high as 6 feet in the community of Iliamna, where they have caused shoreline erosion and damage to the dock and boats (USACE 2009a).

The 1964 Great Alaskan Earthquake generated additional coastal hazards in Cook Inlet—such as tectonic uplift and subsidence, ground fissuring, and submarine landslides—that destroyed the Homer Harbor breakwater. Vertical uplift was on the order of 1 to 2 feet along the western shore of lower Cook Inlet, and subsidence in the range of 0.5 to 4 feet along the eastern shore of lower Cook Inlet (Foster and Karlstrom 1967). Ground cracking, liquefaction, and local subsidence up to several feet occurred in saturated beach and alluvial deposits around Kodiak Island, along Cook Inlet shorelines, and around large lakes in the area (Plafker and Kachadoorian 1966). Along the western shore of Cook Inlet, stream mouths were drowned and narrow beaches experienced vigorous erosion at bluff faces (Stanley 1968).

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Other coastal and marine hazards in lower Cook Inlet include large sand waves, current scour features, shallow natural gas accumulations, and boulders on the seafloor (BSEE 2018). The boulders originate from coastal bluff slumping or glacial erratics, and can be ice-rafted along shore during winter, causing potential navigation hazards. Boulders and rocky shallows have been mapped along the coast within 1 to 2 miles north and south of the mouth of Amakdedori Creek (PLP 2018-RFI 039), and extend offshore in an east-trending ridge from 1 to 5 miles due east of the creek. Rocky areas and boulders are common on mudflats in the upper reaches of Cottonwood and Iliamna bays (Pentec et al. 2011a). Reconnaissance geophysical surveys indicate the presence of rocks and boulders on the seabed and buried in shallow sediment in the vicinity of Diamond Point, reaching a maximum density near the mouth of Iliamna Bay (PLP 2018-RFI 063). Boulders are also common along the eastern Cook Inlet shoreline near the pipeline landfall (NOAA 2015).

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4.13 GEOLOGY

This section describes project-related impacts on the geological resources discussed in Section 3.13 for all project alternatives. The impacts include removal and relocation of rock, soil, and sediment. Appendix K4.13 presents an analysis of potential impacts on paleontological resources. The impacts of the project on other aspects of the geological environment are described in the following sections: Section 4.14, Soils; Section 4.15, Geohazards; Section 4.17, Hydrogeology; Section 4.18, Water and Sediment Quality; and Section 4.22, Wetland/Special Aquatic Sites, which also describes the affected footprint of project features and facilities of the components for all phases of the project.

The impact analysis considered the following factors: magnitude, duration, geographic extent, and potential. All three action alternatives would result in a similar magnitude and duration of and potential for impacts related to geology. The primary difference between the alternatives would be the areas and volumes of associated geological resources that would be affected.

Geotechnical investigations and studies have been completed to support engineering design (see Appendix K4.13.1). Additional investigations and studies are ongoing and will continue as needed to support detailed design and ensure project compliance with all relevant regulations that are protective of the environment.

4.13.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed; therefore, no impact on geological resources would occur.

4.13.2 Alternative 1 – Applicant's Proposed Alternative

The analysis of impacts from Alternative 1 on geological resources is presented below.

4.13.2.1 Mine Site

Removal/Relocation of Geologic Materials

Constructing and operating the mine site would affect approximately 8,129 acres and associated geological resources through removal and relocation of rock, sediment, and soil (Figure 2-3 and Figure 2-4) (PLP 2018). Closure of some facilities and regrading of facility footprints during site reclamation would minimize some of this impact (Figures 4.16-2 through 4.16-6).

Open Pit

Removing and relocating overburden and rock at the open pit would result in direct impacts on these geologic resources that would be permanent, unavoidable consequences of the action alternatives.

Excavating the open pit during construction and operation would result in removal and relocation of 1.3 billion tons (2.6 trillion pounds) of mineralized rock. The open pit would be approximately 8 percent of the total mine site surface area (Figure 2-3).

The majority of rock removed from the open pit would remain at the mine site in perpetuity in the form of tailings. Bulk tailings would remain in the bulk tailings storage facility (TSF) in perpetuity. Pyritic tailings would be stored in the pyritic TSF during operations and relocated to the open pit at closure.

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A relatively small fraction of the excavated rock from the open pit would make up the economic minerals that would be processed (concentrated) then exported off site. This economic mineral portion would include 7.4 billion pounds of copper, 398 million pounds of molybdenum, and 12.1 million ounces of gold (PLP 2018).

Approximately 200 million tons of overburden would be removed from the open pit. Suitable rocky overburden materials would be used for embankment fill, regrading purposes, and other rockfill for the project. Appendix K4.15, Geohazards, addresses the volumes and geotechnical characteristics of the rockfill generated from the open pit and the quarries. Some overburden material would be used for regrading purposes, topsoil would be used as a growth medium during reclamation, and the remainder would be placed in the overburden stockpile.

At the end of mining, the pit would be partially backfilled with pyritic tailings and potentially acid-generating (PAG) waste rock. The partial backfilling would reduce the volume of the open pit, but a permanent void in the landscape would remain. Impacts would be limited to the footprint of the excavated pit and the locations where the materials would be relocated within the mine site.

Tailings Storage Facilities

A bulk TSF and pyritic TSF would store tailings and waste rock generated from the mined and processed open pit rock (Figure 2-3). Approximately 88 percent (1,140 million tons) would be bulk tailings and approximately 12 percent (155 million tons) would be pyritic tailings (PLP 2018).

The bulk TSF would have the largest footprint of the mine site facilities, about 30 percent of the mine site area. The pyritic TSF would compose about 5 percent of the mine site area.

Direct impacts on geological resources would result from the removal and relocation of rock and sediment required for construction of the two TSFs. The impacts would be limited to the footprints of the facilities. The pyritic tailings would be would be backfilled into the open pit, and the footprint of the pyritic TSF would be regraded to near preexisting topography at mine closure, such that its impact would be long term. The bulk TSF would be closed, recontoured, and vegetated at closure, and would remain as a new landform. The impact of the bulk TSF on the landscape would be permanent.

Quarries

Surficial sediments and bedrock would be removed from three quarries in the western portion of the mine site to provide rockfill for the construction of embankments, roads, and other mining-related facilities (Figure 2-3). The quarries would be developed in granodiorite bedrock, and blasting would be required to remove the rock. The combined areas of the three rock quarries would be an estimated 16 percent of the total mine site area (Figure 2-3). The estimated volumes of material that would be excavated from the quarries and respective dimensions are as follows (PLP 2018; PLP 2018-RFI 015):

- 1.6 billion cubic feet (ft^3) from Quarry A (approximately 5,000 feet by 2,900 feet)
- 3.2 billion ft^3 from Quarry B (approximately 5,800 feet by 7,000 feet)
- 1.4 billion ft^3 from Quarry C (approximately 5,200 feet by 3,300 feet).

The area of Quarry A would be covered during construction of the bulk TSF; Quarries B and C would be backfilled and reclaimed during mine closure (Figure 4.16-4). Excavation of the quarries would result in direct, long-term to permanent impacts on geological resources.

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Other Mine Site Facilities

Geological resources would be removed from and/or relocated to various other facility footprints within the mine site, including the water management facilities, the milling and processing facilities, the power plant, water treatment plants, camp facilities, storage facilities including laydown areas, and access roads (Figure 2-3).

Removal and relocation of geologic materials at these sites would result in direct long-term impacts on geological resources, limited to the footprints of the respective facilities. Closure and regrading of some of these facilities at mine closure would minimize impacts on geologic materials (Figure 4.16-6).

Power generation facilities, some camp and storage facilities, access roads, and the mine water treatment plant would remain to support post-closure water treatment and site monitoring that would likely continue 50-plus years into the future. Therefore, the impacts of these facilities on geological resources would be permanent.

4.13.2.2 Transportation Corridor

Removal/Relocation of Geologic Materials

Access Roads

The construction of access and spur roads (Figure 2-12) would require removing and relocating surficial glacial deposits and bedrock (PLP 2018-RFI 032a). The 29-mile-long mine access road from the mine site to the north ferry terminal on Iliamna Lake would be constructed within mostly surficial glacial deposits, with the potential for bedrock along approximately 2 miles. The spur road to Iliamna would be approximately 7 miles long and underlain by mostly surficial glacial deposits. Therefore, the road right-of-way (ROW) width and associated disturbed geological resources would be similar to those for the mine access road. The port access road from the south ferry terminal to the Amakdedori port would be approximately 37 miles long and underlain mostly by bedrock.

The width of the ROW would vary based on the terrain and underlying geology. The estimated range of disturbed geological resources to construct the road prism may be roughly 60 to 80 feet (PLP 2018; Figure 2-15). This would include the 30-foot-wide road, embankment slopes, drainage ditches, natural gas pipeline, and cut slopes within surficial glacial deposits and bedrock. Portions of the roadbed underlain by bedrock would likely require blasting (Figure 3.13-4).

Under Alternative 1, roads would include a total of 97 stream crossings. These crossing structures would consist of nine bridges and 88 culverts, 35 of which would be designated as fish passage culverts. All structures would require rock and riprap consisting of blasted bedrock from the geologic material sites (MSs) discussed below (Figures 2-16 through 2-18; PLP 2018).

Impacts on geological resources would be direct, and limited to the access road ROW, stream crossings footprints, and the MSs discussed in the next subsection. The access road would be required for site maintenance and monitoring through post-closure. Therefore, impacts on geological resources would be permanent.

Material Sites

The access roads would require rockfill and aggregate for embankments and road surfacing during mine construction, operation, and closure. The rockfill and aggregate would be provided by 18 MSs adjacent to the transportation corridor (Figures 2-12 through 2-14).

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Footprints of the MSs would vary from 8 to 22 acres, for a total of approximately 241 acres (Table 2-3). The total volume is estimated to be 7.9 million cubic yards (yd^3).

Two of the seven MSs located along the mine access road would be situated within bedrock and therefore would likely require blasting (Table 2-3; Figure 3.13-4). The remaining five MSs would be located within surficial glacial deposits generally consisting of silt- to gravel-sized materials that would not require blasting.

No blasting is anticipated for the three MSs on the spur road to Iliamna that would be situated within surficial glacial deposits (PLP 2018-RFI 035).

All eight MSs located along the port access road would be situated within bedrock and would likely require blasting.

The impacts of removing rock and gravel from the MSs would be direct and long-term in terms of geological resources, but would be limited to the material site footprints. The MSs would eventually be stabilized and progressively reclaimed, but generally would not be backfilled during mine closure and post-closure. Therefore, impacts would be permanent.

Ferry Terminals

Constructing the north and south ferry terminals on Iliamna Lake would require excavation of surficial glacial deposits and possibly bedrock on the combined 27 acres of the terminal footprints (Figures 2-20 through 2-25).

Ferry terminal construction would result in direct impacts on geological resources within the footprints of the facilities, because of the need to remove and relocate geologic materials.

The ferry terminals would be closed and the sites reclaimed during closure. Impacts related to geology would be long term.

4.13.2.3 Amakdedori Port

Removal/Relocation of Geologic Materials

The Amakdedori port would be approximately 14 acres and would require construction of a port terminal, a truck route and causeway, and a barge berth (Figures 2-27 and 2-28).

Surficial glacial deposits and possible alluvium (mostly of sand and gravel) would be affected during construction of the port terminal.

The truck route and causeway would be constructed of an earthfill embankment. The barge berth would be constructed using an enclosed steel sheet pile wall wharf structure filled with earthfill. The combined area of the causeway and barge berth would be an estimated 13 acres (Figure 2-28; PLP 2018-RFI 071). The source of the earthfill would likely be the nearest geologic materials site, MS-A08 (Figure 2-14), and possibly the footprint of the port terminal.

The rockfill access causeway would be constructed within nearshore sediment deposits on the floor of the bay (see Section 4.16, Surface Water Hydrology, for impacts on marine water; see Section 4.18, Water and Sediment Quality, for impacts on marine water quality). Dredging would not be required.

Removing and relocating geologic materials during construction of Amakdedori port would result in direct impacts on geological resources. The impacts would be limited to the construction footprint and the geologic materials site. The port would be closed and undergo reclamation after completion of the off-site transport of concentrate. The impacts would therefore be long term.

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4.13.2.4 Natural Gas Pipeline Corridor

Removal/Relocation of Geologic Materials

Construction of the shoreline component of the pipeline west of the compressor station at Anchor Point would use horizontal directional drilling (HDD) (see Section 4.15, Geohazards, for a more detailed discussion). The eastern nearshore portion of the pipeline would be installed beneath the seafloor to a depth determined to avoid navigational hazards. Then the pipeline would be laid on the seafloor (PLP 2018-RFI 011). The segment of pipeline placed on the Cook Inlet seafloor would not affect geological resources.

From the western landfall near Amakdedori port, pipeline construction in uplands would require removing and relocating both surficial glacial deposits and bedrock (depending on the location along the corridor) to bury the pipeline. Upland pipeline construction would be integrated with access road construction within the ROW where practicable.

Installing the pipeline would likely require drilling and blasting for those segments mapped as underlain by bedrock (Figure 3.13-4).

Impacts of pipeline construction would occur in the areas of the construction ROW and pipeline installation and in established areas used for material laydown, staging of equipment, etc.

Where the pipeline installation is coincident with access road construction, the pipeline-related impact on geological resources would be considered part of the impact of the access road ROW (Figure 2-15).

Where the pipeline installation is not coincident with access road construction, the ROW and the related corridor of affected geological resources resulting from the pipeline installation would be approximately 100 feet (Figure 2-53). However, the disturbed area would be reclaimed after installation of the pipeline. Therefore, the impact on geological resources beyond the installation trench would be short term.

For the crossing of Iliamna Lake, the pipeline would be buried nearshore in sediments to prevent inadvertent damage, but would then be placed on the floor of the lake (PLP 2018). The pipeline segment placed on the lake floor would not affect geological resources.

The natural gas pipeline would be required to support mine site maintenance and monitoring through post-closure. Therefore, the impact on geological resources would be permanent because of the displacement of materials required to accommodate the pipeline.

4.13.2.5 Alternative 1 – Summer-Only Ferry Operations Variant

Mine Site Concentrate Storage

During the winter, concentrate would be stored in a shipping container storage area northeast of the pyritic TSF (Figure 2-37). The storage container laydown area would be constructed of rock and gravel fill, and would therefore have a direct impact on geological resources. The impact would be limited to the footprint of the storage area. The facility would be removed during mine closure and the impacts on geological resources would be long term.

Amakdedori Port

The summer-only ferry operations variant would require Amakdedori port to include an expanded storage yard. Impacts on geological resources would be limited to the construction footprint. The port would be closed and undergo reclamation after completion of the off-site transport of concentrate for the project. Impacts would therefore be long term.

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4.13.2.6 Alternative 1 – Kokhanok East Ferry Terminal Variant

The Kokhanok east ferry terminal would be constructed east of Kokhanok (Figures 2-39 and 2-40). Construction of the ferry terminal under this variant would encounter similar geology as construction of the Kokhanok ferry terminal.

The Kokhanok east ferry terminal would require approximately 64 percent more rockfill material than the south ferry terminal (PLP 2018). Also, because the natural gas pipeline alignment would not coincide with the road corridor in the northern portion of the alignment, installing the pipeline would result in additional disturbance of geological resources within the ROW (Figure 2-53).

Three of the material sites for the Kokhanok East ferry terminal variant would change from MS-A01 through MS-A0 (totaling approximately 39 acres) to MS-K01 through MS-K03 (totaling approximately 163 acres. This would result in an approximately 70 percent increase in the area of MSs needed to construct the Kokhanok east ferry terminal variant.

The Kokhanok east ferry terminal site would therefore result in direct and indirect construction-related impacts on geological resources, from removal and relocation of geological materials within the construction footprints of the ferry terminal site, the natural gas pipeline alignment, and the access road to the ferry terminal.

The closure-related impacts of the Kokhanok East ferry terminal variant would be similar to those for the south ferry terminal site. Both ferry terminal sites would be closed and reclaimed in closure, so that the impacts would be long term.

4.13.2.7 Alternative 1 – Pipe-Supported Dock Variant

The pile-supported dock variant (Figure 2-56) would include approximately 518 piles that would disturb approximately 6,500 square feet of area (less than 2 acres) (PLP 2018-RFI 071). This would compare with an estimated 27 acres for the port without the pile-support design (Figure 2-50). Therefore, the pile-supported dock variant would affect approximately 94 percent less geological resources than the earthfill causeway and sheet pile wall wharf structure.

As described above for the earthfill causeway and sheet pile wall wharf, the pile-supported dock variant would be closed and undergo reclamation after completion of the off-site transport of concentrate, as described under Alternative 1. Therefore, impacts would be long term.

Closure of the pile-supported port facility would be similar to closure of the port without pile support. However, instead of removing the earthfill from the footprint of the causeway and from behind the sheet pile wall berth and wharf structure, closure would involve removing the steel piling and disposing of it off site (PLP 2018). Therefore, closure-related impacts would also be approximately 98 percent less than the closure-related impacts of the earthfill causeway and sheet pile wall wharf design.

4.13.3 Action Alternative 2 – North Road and Ferry

The analysis of impacts from Alternative 2 on geological resources is presented below.

4.13.3.1 Mine Site

Removal/Relocation of Geologic Materials

Impacts of Alternative 2 on geological resources at the mine site would be similar to impacts of Alternative 1. The difference is that the bulk TSF main embankment would be developed by downstream construction with downstream buttresses under Alternative 2, compared to

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centerline construction with downstream buttresses under Alternative 1 (Figures 2-43 through 2-45). This would result in a footprint increase of approximately 119 acres and the embankment fill would increase from 78 million yd^3 to 124 million yd^3 (PLP 2018-RFI 075a).

Therefore, there would be an increase of approximately 5 percent in direct impacts on geological resources under Alternative 2 when compared to Alternative 1 for the bulk TSF main embankment, and an increase of approximately 1 percent for the overall mine site (PLP 2018). The impacts would be permanent because the bulk TSF would be closed and reclaimed in place.

4.13.3.2 Transportation Corridor

Removal/Relocation of Geologic Materials

Access Road

Alternative 2 would involve constructing and operating an access road that would total approximately 54 miles (Figure 2-46; PLP 2018). An estimated 5 miles of the Alternative 2 access road would use an existing road and the remainder would require new road construction or widening of the existing road.

The mine access road to the ferry terminal at Eagle Bay would be approximately 36 miles long and underlain by geology similar to that of the mine access road under Alternative 1, including possible blasting for approximately 2 miles of the corridor (Figure 2-47; Figure 3.13-4). A spur road to Iliamna would not be required under Alternative 2.

The access road from the Pile Bay ferry terminal to Williamsport would generally follow the existing road (Figure 2-48; PLP 2018). However, the road would need to be expanded and possibly bypassed in places to make the road suitable for use by haul trucks. This would have the potential to result in fewer impacts on geological resources than constructing a new road. However, MSs would still be needed for both construction and maintenance of the road surface (see "Material Sites" below).

Portions of the corridor are underlain by surficial glacial deposits where there may be less need for blasting. However, if the existing road were to be bypassed or widened to accommodate the requirements for a haul road, it is possible, and in places likely, that bedrock would be encountered outside the ROW of the existing road. For example, several MSs are likely located within bedrock.

A new, approximately 3-mile-long access road from Williamsport to Diamond Point would be constructed. Constructing this road would require removing and relocating mostly bedrock. Blasting would likely be required because of the type of bedrock (competent igneous intrusive rock) (Figure 3.13-4; Section 3.13).

Impacts on geological resources from constructing the access road would be direct and limited to the access road ROW. The total road distance for Alternative 2 would be approximately 19 percent less than under Alternative 1. If the 5 miles of existing road are considered, the net impact on geological resources under Alternative 2 would be approximately 26 percent less than the impact under Alternative 1.

As described for Alternative 1, the Alternative 2 road would be required for site maintenance and monitoring through post-closure. Therefore, the impact on geological resources would be permanent.

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Material Sites

Road construction and operational maintenance under Alternative 2 would require MSs to provide required aggregate for road surfacing during mine construction, operation, and closure (Figures 2-46 through 2-48 and Table 2-7).

For Alternative 2, 17 MSs (including the existing Diamond Point quarry) would be required versus 15 sites under Alternative 1. The footprints of the Alternative 2 MSs would vary from approximately 8 acres to 54 acres, for a total of approximately 431 acres (PLP 2018). This would be approximately 179 percent more area than needed under Alternative 1.

Blasting would likely be required to remove bedrock from five of the 17 Alternative 2 MSs (Figure 3.13-4). No blasting is anticipated for the 10 MSs associated with the mine access road to the Eagle Bay ferry terminal. Five of the seven MSs between Pile Bay and the port would likely require blasting. This would result in approximately 66 percent less blasting than under Alternative 1.

As under Alternative 1, impacts of removing rock and gravel from MSs under Alternative 2 would be direct and limited to the footprints of the MSs. The MSs would be eventually stabilized and progressively reclaimed but generally would not be backfilled during mine closure and post-closure. Therefore, impacts would be permanent.

Ferry Terminals

The transportation corridor under Alternative 2 would require ferry terminals at Eagle Bay and Pile Bay, which would be approximately the same size as the ferry terminals described for Alternative 1 (Figures 2-47 through 2-49). The geology at the ferry terminals under Alternative 2 would be similar to the geology at the ferry terminals under Alternative 1.

The impacts of the Alternative 2 ferry terminals on geological resources would be similar to the impacts of Alternative 1 during construction and operation, which would include direct impacts on geological resources from removal and relocation. The ferry terminals would be closed and would undergo decommissioning and reclamation after the completion of off-site transport of concentrate, so the impacts would be long term.

4.13.3.3 Diamond Point Port

Removal/Relocation of Geologic Materials

The Diamond Point port facility would use the same design concept as the Amakdedori port under Alternative 1. The total footprint of the Diamond Point port would be larger than that of the Amakdedori port. The Diamond Point port would encompass an estimated 102 acres (PLP 2018-RFI 071). The estimated dredged area would be an additional estimated 60 to 70 acres. The entire port area would total roughly 162 to 172 acres of affected geological resources, compared to the roughly 27 acres at the Amakdedori port under Alternative 1.

Dredging would create approximately 650,000 yd^3 of geologic materials to deepen the channel adjacent to and near the port wharf structure. Most dredged material (615,000 yd^3) would be used as earthfill behind the sheet pile wall. Any remaining material would be placed in a material stockpile area west of the port terminal (Figure 2-5; PLP 2018).

Removing and relocating geologic resources would result in direct impacts that would be more than five times the geographic extent of the Amakdedori port site under Alternative 1. As described for the Alternative 1 Amakdedori port site, the earthen access causeway would affect the nearshore sediment deposits of Iliamna Bay (see Section 4.16, Surface Water Hydrology,

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for impacts on marine water; see Section 4.18, Water and Sediment Quality, for impacts on marine water quality).

The Diamond Point port would be closed and would undergo reclamation after the completion of off-site transport of concentrate, as described for Alternative 1. Therefore, impacts would be long term.

4.13.3.4 Natural Gas Pipeline Corridor

Removal/Relocation of Geologic Materials

Construction of the natural gas pipeline under Alternative 2 would require removing and relocating both surficial glacial surficial and bedrock for all upland portions of the pipeline (Figure 2-52), as described for Alternative 1 (Section 4.13). The corridor route, length, and respective geological resources would differ from those of Alternative 1. See Chapter 2 for the Alternative 2 pipeline corridor route.

Pipeline construction materials and methods for Alternative 2 would be similar to those for Alternative 1. However, the pipeline segment between the Pile Bay road intersection and the mine site would require an installation corridor independent of the transportation system. The pipeline installation equipment would require a corridor or ROW estimated at 100 feet wide; the actual width would vary depending on the terrain and underlying geology (Figure 2-53).

For the pipeline segment from the pipeline segment between the Pile Bay road intersection and about Pedro Bay, the corridor is mapped as underlain by bedrock and relatively steep topography for portions of the alignment. From Pedro Bay to the western portion of Knutson Bay, the geology would consist mostly of surficial glacial deposits and then bedrock similar to that found near Pedro Bay. From Knutson Bay to the mine site, the geology would generally consist of surficial glacial deposits, similar to the geology of the Alternative 2 transportation corridor to the Eagle Bay ferry terminal.

The total length of the upland section of the pipeline from Ursus Cove to the mine site would be approximately 88 miles. Blasting would be required during installation of an estimated 20 to 25 miles of the pipeline, an estimated 20 to 40 percent less blasting than for Alternative 1.

Impacts on geological resources from installation of the natural gas pipeline would be direct and limited to within the ROW for pipeline installation.

As described for Alternative 1, the natural gas pipeline would be required for site maintenance and monitoring through post-closure. Therefore, the impact on geological resources would be permanent.

4.13.3.5 Alternative 2 – Summer-Only Ferry Operations Variant

Impacts would be the same as those described above for Alternative 1.

4.13.3.6 Alternative 2 – Pile-Supported Dock Variant

A pile-supported dock variant (Figure 2-41) with a total of 253 steel piles would replace the earthfill causeway, sheet pile wall, and earthfill wharf structure of Alternative 1. This would result in approximately 3,200 ft^2 of disturbance of geological resources (PLP 2018-RFI 071). Impacts on geological resources would be direct and limited to the footprint of the piling.

As described above for the non-pile-supported dock, the pile-supported dock variant would be closed and would undergo reclamation after the completion of off-site transport of concentrate, as described for Alternative 1. Therefore, impacts would be long term.

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Closure of the pile-supported dock port would be similar to closure of the port without pile support. However, instead of removing the earthfill from the footprint of the causeway and from behind the sheet pile wall berth and wharf structure, the closure would include removing the steel piling and disposing of it off site (PLP 2018). Therefore, the closure-related impacts would also be substantially less than the closure-related impacts of the earthfill causeway and sheet pile wall wharf design.

4.13.4 Action Alternative 3 – North Road Only

The analysis of impacts from Alternative 3 on geological resources is presented below.

4.13.4.1 Mine Site

Impacts of Alternative 3 on geological resources at the mine site would be the same as those described for Alternative 1.

4.13.4.2 Transportation Corridor

Removal/Relocation of Geologic Materials

Access Road

Impacts on geological resources resulting from the construction and operation of the Alternative 3 access road (Figure 2-59) would be generally the same as the impacts of the natural gas pipeline corridor described for Alternative 2. The differences in potential related impacts are summarized below.

From the mine site to near Knutson Bay, the geology would consist of surficial glacial deposits, similar to the geology of the Alternative 2 transportation corridor to the Eagle Bay ferry terminal. From the western portion of Knutson Bay to Pedro Bay, the geology would consist mostly of bedrock and surficial glacial deposits. From Pedro Bay to the Pile Bay road intersection, the corridor is mapped as underlain by bedrock and relatively steep topography for portions of the alignment.

The access road from the Pile Bay road intersection to Williamsport would generally follow the existing road (Figure 2-48; PLP 2018), which is underlain by a combination of bedrock and surficial glacial deposits. The last approximately 3 miles of new road from Williamsport to the Diamond Point port would be underlain by bedrock.

Impacts on geological resources from constructing the access road would be direct and limited to the access road ROW. Alternative 3 would require removing and relocating approximately 25 percent more geologic materials for the access road than under Alternative 1, and 54 percent more than under Alternative 2. As with Alternatives 1 and 2, the road would be required for site maintenance and monitoring through post-closure. Therefore, the impact on geological resources would be permanent.

Material Sites

As with Alternatives 1 and 2, access road construction and operational maintenance under Alternative 3 would require MSs, to provide required aggregate for road surfacing during mine construction, operation, and closure (Figure 2-58, Figure 2-59, and Table 2-9).

Twenty-seven MSs (including the existing Diamond Point quarry) would be required for Alternative 3, versus 15 sites under Alternative 1 and 12 sites under Alternative 2. The footprints of the Alternative 3 MSs would vary from 8 acres to 54 acres, for a total of an estimated 808

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acres (PLP 2018; PLP 2018-RFI 035). This would be 208 percent more than needed under Alternative 1 and 72 percent more than needed under Alternative 2.

Blasting would likely be required to remove bedrock from seven of the Alternative 3 MSs (Figure 3.13-4). All other MSs would be within surficial glacial deposits. Thus, approximately 72 percent less blasting would be required under Alternative 3 than under Alternative 1 and 227 percent more than under Alternative 2.

As under both Alternatives 1 and 2, the impacts of rock and gravel removal from MSs under Alternative 3 would be direct, limited to within the footprints of the MSs, and eventually stabilized and progressively reclaimed but not backfilled during mine closure and post-closure. Therefore, the impacts would be permanent.

Ferry Terminals

No ferry terminals would be needed under Alternative 3. Therefore, no impacts on geological resources would occur.

4.13.4.3 Diamond Point Port

Impacts on geological resources at the Diamond Point port site would be the same as those described above for Alternative 2.

4.13.4.4 Natural Gas Pipeline Corridor

Removal/Relocation of Geologic Materials

As described for Alternatives 1 and 2, construction of the natural gas pipeline under Alternative 3 would require removing and relocating geological resources to bury the pipeline in an excavated trench for all upland portions of the pipeline.

The Alternative 3 pipeline route would be the same as the route under Alternative 2. However, the Alternative 3 corridor may average approximately 10 to 20 percent narrower because the access road would be available for staging materials during pipeline installation, instead of needing an estimated 100-foot-wide ROW for pipeline installation when not adjacent to an access road (Figures 2-15 and 2-53).

As described for both Alternatives 1 and 2, the natural gas pipeline under Alternative 3 would be required for site maintenance and monitoring through post-closure. Therefore, the impact on geological resources would be permanent.

4.13.4.5 Alternative 3 – Concentrate Pipeline Variant

The Alternative 3 concentrate pipeline variant would involve installing and operating a concentrate pipeline from the mine site to the Diamond Point port. The pipeline would be installed in the same trench as the natural gas pipeline, and within a ROW estimated to be 100 feet wide (Figure 2-53). Therefore, impacts would be the same as those for the Alternative 2 natural gas pipeline corridor.

From Williamsport to Diamond Point, the concentrate pipeline would be installed within the transportation corridor, which would still be required for construction and maintenance of the Diamond Point port (Figure 2-63). The port would be modified to accommodate a concentrate pipeline filter plant and bulk storage building. The impact on geological resources, however, would be similar to that of the port terminal without concentrate-related facilities.

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The concentrate pipeline variant would also require a pump house at the mine site with a footprint of about 0.7 acre, resulting in associated impacts on geological resources (Figure 2-60).

The concentrate pipeline would be decommissioned in place at mine closure; however, to avoid further ground disturbance, the pipeline would not be removed. Therefore, the impact on geological resources would be permanent.

4.13.5 Key Issues/Impacts Summary Table

Table 4.13-1 provides a summary of the key issues and impacts from the project on geological resources.

Table 4.13-1: Summary of Key Issues for Geology

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Mine Site Construction and Operation	Construction and operation of the mine site would result in removal and/or replacement of geological resources in conjunction with all facilities. Impacts would occur from blasting of most bedrock in construction areas. All impacts would be direct and limited to footprints of facilities. No change in impacts for variants.	Impacts similar to those of Alternative 1, except the bulk TSF main embankment would be downstream constructed with downstream buttresses, which would result in ~5% increase in the total mine site footprint and resulting direct impacts on geological resources. No change in impacts for variants.	Impacts similar to those of Alternative 1. Concentrate Pipeline Variant: Increased project footprint by less than 1 acre and associated impacts.
Mine Site Closure	All embankments other than those at the bulk TSF would be removed and the areas reclaimed at closure, resulting in direct, long-term impacts. Pyritic TSF: Material would be placed in open pit, resulting in long-term direct impacts. Open Pit: Would be partially backfilled, resulting in permanent direct impacts. Bulk TSF: Would be closed and reclaimed in place, resulting in permanent direct impacts. No change in impacts for variants.	Impacts same as those of Alternative 1, except larger bulk TSF footprint. No change in impacts for variants.	Impacts same as those of Alternative 1. No change in impacts for variants.

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Table 4.13-1: Summary of Key Issues for Geology

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Transportation Corridor			
Transportation Corridor Construction and Operation	**Access Road:** Total 75 miles. Mine Access Road: 27 miles to north ferry terminal, mostly surficial glacial deposits. Bedrock ~2 miles, likely blasting impacts. Iliamna Spur Road: 7 miles, mostly surficial glacial deposits. Port Access Road: 32 miles, mostly bedrock, likely blasting. **Geologic MSs:** 18 MSs, 241 acres. Mine Access Road MSs: 7 total and 2 blasting. Iliamna Spur Road MSs: 3 total and no blasting. Port Access Road MSs: 8 total and all blasting. **Ferry Terminals**: 27 acres of direct impacts. **Kokhanok East Ferry Terminal Variant:** Direct impact ~70% more geological resources to construct than the Alternative 1 terminal, and indirect impact of wider gas pipeline ROW where not adjacent to road.	**Access Road:** Total 54 miles (~5 miles using existing road) Mine Access Road: 36 miles to Eagle Bay mostly surficial glacial deposits. Bedrock ~2 miles, likely blasting. Iliamna Spur Road: N/A Port Access Road: 32 miles mostly shallow bedrock blasting. **Geologic MSs:** 17 MSs, 431 acres Mine Access Road MSs: 10 total & 0 blasting Iliamna Spur Road MSs: N/A. Port Access Road MSs: 7 total & 5 blasting. **Ferry Terminals:** 27 acres direct impacts. **Variants** N/A	**Access Road:** Total 82 miles. Mine Access to Port Road: Mostly surficial glacial deposits from mine site to Knutson Bay, then a combination of glacial deposits and bedrock to port. Blasting likely for northwest Knutson Bay, Pedro Bay to Pile Bay road intersection, and Williamsport to port. **Geologic MSs:** 27 MSs, 808 acres. Mine Access Road to Port MSs: 27 total and 7 blasting. Iliamna Spur Road MSs: N/A. Port Access Road MSs: N/A. **Ferry Terminals:** N/A. **Concentrate Pipeline Variant:** Same impacts as those of Alternative 1 for the gas pipeline.
Transportation Corridor Closure	**Geologic MSs:** Progressively reclaimed but not backfilled, so there would be permanent impacts. **Ferry Terminals**: Decommissioning and reclamation at mine closure, so long-term impacts. **Kokhanok East Ferry Terminal Variant:** Same as for Alternative 1.	**Geologic MSs:** Same as for Alternative 1. **Ferry Terminals**: Same as for Alternative 1. **Variants** N/A.	**Geologic MSs:** Same as for Alternative 1. **Ferry Terminals**: Same as for Alternative 1. **Concentrate Pipeline Variant:** Same impacts as those of Alternative 2 gas pipeline.

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Table 4.13-1: Summary of Key Issues for Geology

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Ports			
Port Construction and Operation	Amakdedori Port: Earthfill embankment causeway and steel sheet pile wall wharf with earthfill design. Port Terminal +Causeway/ Barge Wharf: 27 acres. No dredging. **Pile-Supported Dock Variant:** Reduce causeway/barge wharf to ~0.1 acre **Summer-Only Ferry Variant:** Expanded port terminal by 28 acres.	Diamond Point Port: Earthfill embankment causeway and steel sheet pile wall wharf with earthfill design. Port Terminal Causeway/ Barge Wharf: 101 acres Dredging: ~60 to 70 acres (most dredged material used as earthfill). **Pile-Supported Dock Variant**: Reduce causeway/barge wharf to ~2 acres	Same as for Alternative 2. **Concentrate Pipeline Variant:** Modify port terminal, but footprint nearly same as for Alternative 2.
Port Closure	Amakdedori Port: Structures and earthfill removed after mine closure, so impacts would be long-term. **Pile-Supported Dock Variant**: Same as above, but impact less because of smaller piling footprint and no causeway and wharf earthfill. Long-term impacts. **Summer-Only Ferry Variant:** Same as for Alternative 1, but larger area and long-term impacts.	Diamond Point Port: Same as for Alternative 1 but about 4 to 5 times larger area. **Pile-Supported Dock Variant**: Larger area of impact on seafloor. Long-term impacts.	Impacts same as those of Alternative 2. **Concentrate Pipeline Variant**: Minimal impact difference. Long-term impacts.
Natural Gas Pipeline Corridor			
Gas Pipeline Construction and Operation	Total Upland Length: 66 miles Kenai Peninsula: HDD at Anchor Point to safe depth in Cook Inlet, then on seafloor. Amakdedori Port to Mine Site: Generally installed within access road alignment, so same geological resources affected. 66 miles upland (plus lake crossing, pipeline on lake floor). Impacts same as for Alternative 1 access road.	Total Upland Length: 88 miles Kenai Peninsula: Same as for Alternative 1. Ursus Cove to Mine Site: Independent alignment from Ursus Cove to Diamond Point port. Installed within access road to Pile Bay road intersection. Then independent ROW to mine site. Impacts for ROW independent of access road about 10 to 20% more because of design width. Would directly affect	Same as for Alternative 2 except installed within access road ROW. **Variants** N/A

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Table 4.13-1: Summary of Key Issues for Geology

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Variants N/A	geological resources consisting of surficial glacial deposits for about 63 to68 miles and bedrock for the remainder, which would likely require blasting. **Variants** N/A	
Gas Pipeline Closure	Required through post closure, resulting in permanent impacts. **Variants** N/A	Same as for Alternative 1. **Variants** N/A	Same as for Alternative 1. **Variant** N/A

MS = material site

4.13.6 Cumulative Effects

Past, present, and reasonably foreseeable future activities (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to removal and relocation of geological resources.

Section 4.1 details the past, present, and RFFAs that may affect geological resources by an increase in removal and relocation of rock, sediment, and soil. Cumulative effects associated with other aspects of the geological environment are described elsewhere in this document: erosion of soil in Section 4.14, geologic hazards in Section 4.15, hydrogeology or groundwater impacts in Section 4.17, water and sediment quality in Section 4.18, and wetlands in Section 4.22.

The following RFFAs identified in Section 4.1 were carried forward in this analysis based on their potential to affect geologic resources in the analysis area:

- Pebble Project buildout—develop 55 percent of the resource over a 78-year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold

**Indicates exploration activities only.*

- Diamond Point Rock Quarry
- Alaska Stand Alone Pipeline Project
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure, and Energy Projects.

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All RFFAs would involve earthworks resulting in removal and relocation of geological resources. The following RFFAs are located within or immediately adjacent to the project area and would therefore have the potential to add to the direct impacts identified for the proposed project:

- Pebble Project buildout—develop 55 percent of the resource over a 78-year period
- Diamond Point Rock Quarry
- Lake and Peninsula Transportation, Infrastructure, and Energy Projects.

The Pebble Project buildout would require additional earthworks, such as underground mining, additional TSFs, and additional water management facilities. However, because the project would likely use much of the existing infrastructure under the proposed project, the net affected area may be less than developing mines at new greenfield sites. The magnitude of impact would thus likely be smaller.

The Diamond Point Rock Quarry is in the same location proposed for the Diamond Point port under Alternatives 2 and 3, described above. If either Alternative 2 or 3 were to be selected, a relatively minor net increase in impact on geological resources would likely occur. If Alternative 1 were to be selected, the total geographic extent of impacts would increase.

The Lake and Peninsula Transportation, Infrastructure, and Energy Projects include possible upgrades to the Williamsport–Pile Bay Road, which is roughly the same alignment that would be used under Alternatives 2 and 3. If either of these alternatives were to be selected, the net magnitude and geographic extent may be relatively low because the new MSs would already be developed for maintaining the road surface. If the road were to be widened as part of the Lake and Peninsula Transportation project, additional impacts would likely occur.

The Nondalton–Iliamna River Road Corridor and Bridge and the Kaskanak Road/Cook Inlet to Bristol Bay (Igiugig) road would result in additional impacts on geological resources under the possible Lake and Peninsula Transportation Projects.

The remaining RFFAs would have indirect cumulative effects on geological resources.

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4.15 GEOHAZARDS

This section describes potential impacts of geohazards on project components that could affect the environment. The EIS analysis area for geohazards ranges from the immediate vicinity of the project footprint (e.g., slope instability) to regional areas with geohazards that could affect project facilities from long distances (e.g., earthquakes, volcanoes).

The evaluation of geohazards impacts on the project and the environment incorporates an understanding of their probability of occurrence, and of planned mitigation in the form of planning, design, construction, operations, maintenance, and surveillance that can meaningfully reduce impacts through to closure and post-closure. Based on PLP plan documents and engineering reports, planned mitigation methods (e.g., design and monitoring to withstand or detect geohazards) are considered part of the project description, and the impacts analysis includes this understanding. In some cases, planned mitigation may not be specified, but is considered typical or standard engineering practice. In cases where planned mitigation is unknown or unclear and the situation is not commonly addressed, the impact analysis takes the lack of planned mitigation into account, and provides recommendations for mitigation that could reduce impacts.

This section describes the following potential impacts related to geohazards:

- The stability of major mine structures during operations and closure
- The effects of earthquakes on project facilities
- The effects of unstable slopes on project facilities
- The effects of geotechnical conditions and coastal hazards on port structures and pipeline landfalls
- The effects of tsunamis and seiches on port and ferry terminals
- The effects of volcanoes on project facilities.

Potential impacts to the environment resulting from geohazards-caused upset conditions, such as an embankment failure, are addressed in Section 4.27, Spill Risk. As described in Section 3.14, Soils, permafrost has not been encountered in any mine site or other project area field investigations; therefore, potential effects from permafrost hazards are not addressed in this section.

4.15.1 No Action Alternative

Under the No Action Alternative, no new construction of facilities would occur in the project area. Therefore, effects on project components from geohazards, seismic events, and other geotechnical conditions would not occur as a result of this alternative, and no impacts on the environment would result from such effects. Natural geohazards such as those described in Section 3.15, Geohazards, would continue to affect existing communities and infrastructure in the region.

4.15.2 Action Alternative 1 – Applicant's Proposed Alternative

4.15.2.1 Mine Site

This section describes potential effects of seismic events and other geohazards on major structures at the mine site; the ability of the structures to withstand these hazards; and the likelihood that such hazards could produce related environmental impacts. Figure 2-3 and Figure 2-4 in Chapter 2, Alternatives, display the mine site layout; and Table K4.15-1 in

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Appendix K4.15 provides the buildout dimensions of embankments and impoundments that would contain tailings, waste rock, and/or contact water at the mine site. This section also addresses potential geohazards effects on the open pit.

Embankment Construction Material

The embankments for the tailings and water management facilities would be constructed of drilled and blasted bedrock removed from quarries A through C[1], and the overburden in the open pit (Chapter 2, Alternatives, Figure 2-3). Analyses were completed to determine the quantities of on-site embankment construction materials and the project-related needs. Appendix K4.15 (Table K4.15-2 and Table K4.15-3) provide embankment material quantities that would be generated by Quarries A through C and the open pit overburden, and the embankment material needs for the relevant mine site-related facilities, respectively.

The results of the analyses indicate that the combination of the three quarries and the open pit overburden would generate sufficient materials (between 13 and 40 percent more rockfill material than needed) to construct the embankments. The likelihood that additional material needs would be identified as the project progresses (with related project footprint increases) is low.

Embankment and Impoundment Design and Construction

The embankments and impoundments could be impacted by geohazards, including instability associated with seepage, internal erosion[2], and seismic (earthquake) events. The embankments would therefore be designed and constructed to be stable under both static (non-seismic) and seismic conditions, which is also required by relevant draft dam safety guidance documents (ADNR 2017a). The following summarizes the geohazard considerations for the proposed design and construction of the major embankments and impoundments, including the bulk tailings storage facility (TSF), pyritic TSF, water management ponds (WMPs), and seepage collection ponds (SCPs). More detailed information is provided in Appendix K4.15.

Bulk TSF. The bulk TSF would be designed to impound the bulk tailings, and includes a main (north) and south embankment with the following design and construction elements to prevent geohazards-related impacts:

- Siting in a single tributary watershed surrounded by bedrock knobs to focus potential impacts in one watershed and incorporate natural containment elements.
- Main (north) embankment centerline constructed[3] to reduce the footprint, with a buttressed downstream slope to enhance stability, which would result in 2.6 horizontal: 1 vertical (H:V) downstream embankment slope and a serrated near-vertical upstream face at the dam crest for the upper 280 feet of the embankment (Chapter 2, Alternatives, Figure 2-8).
- Permeable flow-through design with core/filter/transition zones materials to minimize water buildup in the TSF, prevent internal erosion, and remain functional after a seismic event.

[1] Quarry A is shown as situated within the footprint of the bulk TSF; this quarry would be developed before the construction of the bulk TSF.
[2] Internal erosion, also referred to as piping, is the formation of voids in a soil caused by the removal of material by seepage, and occurs when the hydraulic forces exerted by water seeping through the pores and cracks of the material in the embankment are sufficient to detach particles and transport them out of the embankment structure.
[3] Centerline construction method uses the placement of rockfill on top of both the centerline and the downstream slope of the previous raise during the raise process, which results in a near-vertical upstream face at the dam crest for the portion of embankment.

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- South embankment constructed using downstream methods[4], to include a downstream liner combined with a grout curtain to prevent upgradient groundwater flow into and beneath the impoundment.
- Bottom of south embankment core/filter/transition zones would tie into the top of the grout curtain zone, which would be keyed into bedrock to prevent leakage beneath the embankment.
- Underdrains beneath the entire TSF to further manage seepage flow.
- Water management to protect the dam from seepage pressure-related instability.
- Freeboard to contain the entire inflow design flood (IDF) above the tailings beach.
- Excess pond water to be pumped to the main TSF SCP or main WMP.
- Higher south embankment elevation to direct overflow to water catchment facilities.
- Wide tailings beach to reduce seepage pressure on embankments, and promote subsurface drainage to the north with pond development against bedrock high to the southeast.
- Reduced tailings volume by using thickening methods or additional pumping capacity.
- Foundations to be placed on competent bedrock for increased stability.
- Each dam lift to undergo a thorough safety review, and adjusted as necessary.
- Dry closure methods to improve the stability for permanent in-place closure, with a closure cover design that would minimize infiltration.
- Monitoring performed during construction, operations, closure, and post-closure.

Pyritic TSF. The pyritic TSF would be designed to impound the pyritic tailings and potentially acid-generating (PAG) waste rock, and would include a continuous embankment around the northern, southern, and eastern sides with the following design and construction elements to prevent geohazards-related impacts:

- Fully lined, subaqueous storage cell during operations to minimize acid generation.
- Majority of the pyritic TSF in a single tributary valley.
- Liner protected with processed materials (sand and gravel) after installation to prevent damage from punctures or damage during waste rock placement.
- Liner installation completed in accordance with standard industry practices, and closely monitored.
- Water levels maintained for the life of the facility.
- Water levels and freeboard maintained to account for the IDF, wave run-up, and wind set-up.
- Excess pond water controlled by pumping to the main WMP.
- Embankments prepared by removing overburden to competent bedrock.
- Tailings and waste rock moved into the open pit at closure.
- After closure, the liner removed and embankments graded/recontoured to conform to surrounding landscape and promote natural runoff and drainage.
- Monitoring included in all phases.

[4] Downstream construction method uses the placement of rockfill on top of the downstream slope of the previous raise during the raise process.

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WMPs and SCPs. Two primary WMPs would be at the mine site (the main WMP north of the pyritic TSF, and the open pit WMP) to impound contact and open pit water, respectively. The SCPs would be downstream of the TSF embankments, and include those associated with the bulk TSF main and south embankments, and the pyritic TSF north, east, and south embankments. The facilities would include the following design and construction elements to prevent geohazards-related impacts:

- Fully lined to minimize seepage and risk of internal erosion.
- Rockfill embankments to promote stability.
- Main WMP embankment prepared by removing overburden to competent bedrock.
- Open pit WMP embankment design concept requiring potential weak foundation conditions encountered in the overburden materials (e.g., glacial lake deposits) to be excavated.
- Pond water volumes managed through reuse in the process plant, and treatment and discharge.
- Monitoring/seepage pumpback wells downgradient to detect and capture potential liner leakage.
- At closure, the WMPs to be removed and embankments graded/recontoured to conform to the surrounding landscape and promote natural runoff and drainage.
- Monitoring included during all phases.

Static Stability Analyses

Analyses were completed to evaluate the stability of the proposed embankments under static and non-seismic conditions. The following summarizes the static stability analysis. A more detailed discussion is presented in Appendix K4.15. The following major embankments and impoundments were analyzed:

- Bulk TSF main and south embankments
- Pyritic TSF north embankment
- Main WMP
- Bulk TSF main SCP
- Open pit WMP

The static stability analyses were completed using the computer program SLOPE/W. Input parameters were based on the results of field and office studies, and included the embankment configurations and assumed rockfill material, foundation materials, and stored materials.

The results predicted the analyzed embankments would have a static factor of safety (FoS) between 1.7 and 2.0 (a static FoS of 1.1 or greater is considered stable). Additional static stability analyses would be completed in support of the final design.

As noted above, the Alternative 1 bulk TSF main embankment design would result in a serrated near-vertical upstream face at the dam crest for the upper 280 feet of the embankment that would partially rest on tailings. There is some concern that this configuration has the potential to liquefy during seismic events. As discussed in Appendix K4.15, the stability of the centerline design was reviewed by a panel of geotechnical experts during the EIS-Phase Failure Modes and Effects Analysis (FMEA) (AECOM 2018l). The stability analysis results do not rely on the strength of these materials; but rather, on the strength of rockfill materials directly beneath and downstream of successive raises in the core zone and buttresses (Figure 2-8 and Figure K4.15-2). In other words, regardless of the low strength assigned to the tailings, the overall embankment did not fail in a downstream direction in the stability analysis. Therefore, the FMEA

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panel concluded that the likelihood of global instability of the buttressed centerline embankment design would be very low.

Seismic Stability Analysis

Active Surface Faults. The mine site is situated in a seismically active area due to the convergence of the Pacific and North American tectonic plates. The most significant seismically active geologic structure near the mine site is the Bruin Bay fault, which is situated about 70 to 80 miles to the east-southeast.

No mine facilities would be constructed on top of known active surface faults. As presented in Section 3.15, Geohazards, the closest potentially active fault to the mine site, the Lake Clark fault, is about 15 miles to the northeast. Recent mapping at the mine site and vicinity has not shown evidence of offset of surficial deposits along faults or lineaments in the area (Hamilton and Klieforth 2010; Haeussler and Waythomas 2011; Koehler 2010). This conclusion is further supported by Light Detection and Ranging (LiDAR) data that were collected in 2004 in the mine site area. The LiDAR-derived image was reviewed for possible indications of fault-related movement in surficial deposits. No lineaments were observed that suggest possible Quaternary fault-related movement southwest of the mapped termination (AECOM 2018m).

More detailed discussion regarding seismic sources and hazards in the greater project area is presented in Section 3.15, Geohazards, Appendix K3.15, and Appendix K4.15.

Seismic Hazard Analyses. The TSF embankments at the mine site would be regulated as Class I (high) hazard potential dams under the Alaska Dam Safety Program (ADSP) draft dam safety guidelines (ADNR 2017a; PLP 2017). Based on these draft guidelines, two levels of design earthquake must be established for Class I dams:

- *Operating Basis Earthquake* (OBE) that has a reasonable probability of occurring during the project life (return period of 150 to more than 250 years), for which structures must be designed to remain functional, with minor damage that could be easily repairable in a limited time. In other words, minor damage within allowable design criteria may be sustained at the TSF embankments following an OBE earthquake.
- *Maximum Design Earthquake* (MDE) that represents the most severe ground shaking expected at the site (return period from 2,500 years up to that of the Maximum Credible Earthquake [MCE]), for which structures must be designed to resist collapse and uncontrolled release.

The OBE can be defined based on probabilistic evaluations, with the level of risk (probability that the magnitude of ground motion will be exceeded during a particular length of time) being determined relative to the hazard potential classification and location of the dam (ADNR 2017a). The MDE may be defined based on either probabilistic or deterministic evaluations, or both (ADNR 2017a). A conservative OBE corresponding to a return period of 475 years was adopted for the Pebble TSF designs. Based on this return period, the estimated maximum acceleration (which is a measure of the intensity of an earthquake as it is applied to a structure, such as the embankments) has been determined to be 0.14 g (or 14 percent of gravity acceleration). The MCE was selected as the MDE for the Pebble TSFs (KP 2013). Appendix K4.15 provides further discussion of the seismic sources and probabilistic and deterministic evaluations completed for the Pebble Project to evaluate potential ground shaking associated with these earthquakes.

Seismic Deformation Analysis. A pseudo-static deformation analysis was completed to predict the response of the largest embankment (the bulk TSF) to a seismic event, based on the OBE, as well as MCEs from four potential seismic sources (faults) with magnitudes ranging from 6.5 to 9.2 (Appendix K4.15). Predicted displacements in the embankment were estimated to be

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negligible for the OBE, and on the order of 4 to 5 feet of horizontal displacement and crest settlement under MCE loading conditions. The displacements were not large enough to truncate the filter or transition zones, and would not affect the functionality of embankment. The results were used to design the minimum freeboard requirements for the bulk TSF embankments.

The deformation and settlement analyses would be updated as part of the ongoing design of the TSFs and other embankments. Additional detailed modeling, including analyses using Fast Lagrangian Analysis of Continua (FLAC) numerical modeling software, would be completed during detailed design of the facilities to better define embankment displacements.

Summary of Stability Effects. Direct effects on mine embankments from earthquakes, floods, static loading, slope failure, and foundation conditions could range considerably. Effects would be unnoticeable to negligible where designs are adequate for expected geohazards, such as moderate earthquakes, large precipitation events, or known unstable foundation conditions that are removed in construction. Effects could include damage that is repairable in the short term (e.g., months) in the event of an OBE; or in the event of an MDE, effects could range up to damage that is not be easily repairable, but is not expected to lead to structural collapse or uncontrolled release of contaminated materials. Assuming that facilities are planned, designed constructed, operated, maintained, and surveilled as proposed and in accordance with Alaska Department of Natural Resources (ADNR 2017a) guidelines, potential damage to facilities and indirect effects on the environment are expected to remain within the footprint of the mine site.

The duration of effects would vary depending on the facility and likelihood of geohazard occurrence. In the case of earthquake damage that is easily repairable, impacts would be infrequent, but not longer than the life of the mine for facilities that would be removed at closure (e.g., embankments at the pyritic TSF). Impacts could occur in perpetuity for structures that would remain in place (e.g., bulk TSF embankments). Based on the conceptual designs, and assuming current standard of engineering practice is followed, the likelihood of global instability of the major embankments was considered very low (less than 1 in 10,000 probability) by geotechnical experts in the Environmental Impact Statement (EIS)-Phase FMEA (AECOM 2018l). Indirect effects on other downstream resources in the unlikely event of an embankment spill or release are discussed in Section 4.27, Spill Risk.

Open Pit Slopes

Numerical modeling was completed to predict the stability for three sections of the open pit walls with known weak rock conditions (Figure K4.15-10). As described in Appendix K4.15, the analyses evaluated both static and seismic conditions, and included modeling of disturbance factor zones that represent the predicted bedrock damage caused by rock mass relaxation[5] and crustal rebound[6] due to the excavation of the open pit, as well as blast damage close to the excavation surface (Hoek 2012). The modeling targeted a minimum acceptable FoS for the open pit walls of 1.3 for static conditions, and 1.05 for dynamic (earthquake) conditions. These values recognize that there would only be a single entry into the pit, and any instability involving the ramp could impact the operations. After closure, the static FoS would be reduced to an FoS of 1.1 due to the lack of access required into the pit, but this would be further reviewed during detailed design.

The modeling results showed an FoS of 1.1 or greater for two of the three pit sections, indicating they would be stable under both static and earthquake loadings, and an FoS below 1.1 (indicating potentially unstable conditions) for the section through the northwestern side of the pit under both static and dynamic loadings in early closure after dewatering ceases.

[5] Unloading of rock stresses due to the removal of bedrock (i.e., underground mines and/or open pits)
[6] The rise of a land mass due to removing an overlying weight or mass, such as excavating bedrock during open pit mining, which could be significant enough to be measurable, and therefore included in the computer modeling.

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Two additional closure scenarios were examined for the northwest section: 1) early closure with continued groundwater depressurization focused on the toe of the slope; and 2) with pit lake levels recovered to about half full (above the area of instability). The results indicate an FoS of 1.1 and 1.4, respectively, for the two scenarios (Figures K4.15-12 and K4.15-13), and suggest that with continued depressurization in the localized area of the northwestern section during early closure activities (backfilling, etc.), the pit wall would be stable.

Other Geohazard Considerations

Quality Assurance/Quality Control (QA/QC). A Construction QA/QC Plan would be developed to assure all quarries, embankments, impoundments, and liners are constructed and operated in accordance with the approved designs and specifications. The plan would specify actions for approving embankment materials, construction methodology, field testing, surveying, monitoring, and documentation. ADNR (2017a) guidelines provide details on plan requirements, personnel responsible for QA/QC, key inspection items, and required post-construction document submittals.

Mining-Induced Seismicity. Induced seismicity refers to earthquakes and tremors that are thought to be caused by human activity through altering the stresses and strains in the Earth's crust. Mining-related activities such as rock mass relaxation, crustal rebound, and blasting associated with the excavation of an open pit, have the potential to generate induced seismicity.

The US Geological Survey (USGS) compiled a list of mining-related induced seismicity in the US over the 27-year period between 1973 and 2000, during which there were a total of 47 seismic events attributable to mining-related induced seismicity. The recorded tremors were generally small, ranging in magnitude between 2.0 and 4.8 (USGS 2018). One of the events occurred at the Usibelli Coal Mine in Alaska, with a magnitude 3.3 attributed to blasting, and possibly concurrent rock mass relaxation. The Usibelli Coal Mine is an open pit operation situated in a seismically active area similar to the proposed Pebble mine site[7] (WSM 2018). There does not appear to be an observed direct correlation between the weight of TSFs and/or stockpiles and induced seismicity at mining sites.

The open pit slope analysis above assumed seismic conditions that are likely more significant than the highest-magnitude mining-related induced seismic event recorded by the USGS (2018). In addition, the seismic stability analysis performed in support of the mine site design (Appendix K4.15) took into consideration unknown shallow crustal earthquakes (KP 2013), which is how a large mining-related induced seismic event would likely behave.

Seismic Impacts on Hydrogeology. The potential exists for impacts on hydrogeology resulting from a seismic event. For example, at the mine site, there are near-surface groundwater occurrences such as seasonal seeps and deeper groundwater that could be impacted (see Section 4.17, Groundwater Hydrology). Potential groundwater impacts could include changes in groundwater levels, volumes, and chemistry, including the locations of seeps. However, these types of changes commonly occur in the absence of seismic events due to other factors such as weather conditions (i.e., precipitation, temperatures) and changes in water chemistry (i.e., precipitation of naturally occurring constituents and/or bacteria in the water).

Groundwater conditions would be monitored throughout all stages of the mine project for both flow and chemistry purposes (Sections 4.17, Groundwater Hydrology, and 4.18, Water and Sediment Quality). If a major earthquake were to occur during project operations, an "extraordinary inspection" for any impacts would be required in accordance with the ADSP draft dam safety guidelines (ADNR 2017a), and in compliance with specific requirements of an

[7] Both are situated in strike-slip regimes with similar associated seismic mechanisms, but the magnitude of stress is higher at the Usibelli Coal Mine due to the tectonic forces that created Denali.

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operations and maintenance (O&M) manual. The inspection would also identify adherence to design criteria for all major structures to ensure they continue to perform as designed. Changes to the groundwater monitoring program, facility design, and/or operation would be implemented as necessary to ensure protection of the environment.

Summer-Only Ferry Variant

Under the summer-only ferry operations variant, copper concentrate would be stored in shipping containers at the mine site during the winter at a storage area northeast of the pyritic TSF (Figure 2-37). Based on the surficial geology map (Figure 3.13-2); the proposed copper concentrate storage area is primarily underlain by surficial glacial outwash deposits, which generally consists of a mixture of sand- to gravel-sized material. The glacial outwash appears to thin to the northeast, with possible bedrock exposed near the northeastern boundary of the storage area.

During a large earthquake, the potential would exist for the stacked shipping containers to be impacted by differential settlement of the underlying glacial outwash due to being thicker to the southwest than the northeast, potentially resulting in toppling of the containers. The likelihood would depend on the magnitude and duration of the seismic event, height of container stacking, the in-place density of the foundation materials, and other factors. The impact would likely be mitigated through further investigation and foundation preparation such as compaction of near-surface materials.

4.15.2.2 Transportation Corridor

Earthquakes and Seiches

The transportation corridor would not cross any known active surface faults (Figure 3.15-1). A trace of the Bruin Bay fault zone crosses the south access road within several miles of the Amakdedori port site; however, there is no evidence of Holocene offset at the surface for this segment of the fault (Plafker et al. 1994; Koehler 2013). Therefore, effects on transportation corridor facilities related to surface fault displacement are not expected to occur.

Ground shaking in the event of a major earthquake could have direct effects on transportation facilities, such as cracking, spreading, and settlement of terminal platforms, or damage to the ferry during construction. However, because the ferry terminals would not include fuel tank storage facilities, indirect effects on environmental resources from such damage are expected to be minimal.

Earthquake- or landslide-induced seiches can damage shoreline structures, boats, and moored vessels in enclosed waterbodies, particularly if the natural period of a moored ship matches that of a seiche (Kabiri-Samani 2013). The historical occurrence of seiches in Iliamna Lake is unknown (see Section 3.15, Geohazards)(PLP 2018-RFI 013). Seiches several feet high that have been documented in Southeast Alaska and the Lower 48 during past major Alaska earthquakes (McGarr et al. 1968; Barberopoulou et al. 2004; CBJ 2018) are likely within the size of maximum storm-driven waves on Iliamna Lake (USACE 2009). Larger predicted seiche heights of 10 to 20 feet have been suggested for Bradley Lake on Kenai Peninsula and Lynn Canal at Skagway, respectively (CASA 1982; Stone & Webster 1987), although seiches are more likely to occur in narrow bodies of water such as these than in Iliamna Lake.

A preliminary estimate of seiche potential in Iliamna Lake was conducted based on a 60- by 15-mile area representing the wide part of the lake where the Alternative 1 ferry would operate (AECOM 2018d). The results indicate the natural oscillation period of an earthquake-induced seiche would fall well outside the period range where earthquake ground motions carry the most energy, suggesting that such an event is unlikely.

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Unstable Slopes

As discussed in Section 3.15, Geohazards, the north ferry terminal location is underlain by surficial deposits consisting of beach and lake terrace sand and gravel, and the south ferry terminal location by both volcanic bedrock and similar surficial deposits, neither of which is prone to unstable slope conditions (Figures 2-20 and 2-21).

Several small areas of unstable slope deposits occur along the mine access road, near the junction between the mine access and Iliamna spur roads, and near the southern end of the south access road (Section 3.15, Geohazards) (Detterman and Reed 1973; Hamilton and Klieforth 2010). Oversteepened, potentially unstable slopes could also be created during the development of the geologic material sites. Typical engineering and construction practices such as engineered cuts, benching, and drainage controls (Figure 2-15) would be used at these locations to minimize the potential for landslide impacts on the roads, material sites, and disruption of truck haulage. Therefore, the likelihood of such effects occurring is expected to be minimal, and impacts on the project and related effects on environmental resources are also expected to be minimal, temporary (easily repairable in the short term), and of limited extent (in the immediate vicinity of the road footprint).

Based on the topography along the road corridor, the potential for avalanches occurring during the operation of the mine is considered minimal for the transportation system.

Summer-Only Ferry Variant

There would be no difference in geohazards-related impacts under the summer-only ferry variant. Lake ice hazards (for year-round ferry operations under Alternative 1) are discussed under Section 4.16, Surface Water Hydrology.

Kokhanok East Ferry Terminal

Referring to Section 3.15, Geohazards, the Kokhanok east ferry terminal is underlain by beach deposits near the shoreline, and volcanic bedrock further upslope. The potential seismically related and unstable slope impacts are expected to be similar to the south ferry terminal location west of Kokhanok.

4.15.2.3 Amakdedori Port

The Amakdedori port site is underlain by raised beach terrace deposits consisting of sand and gravel (Section 3.15, Geohazards), which are not prone to unstable slope conditions.

Stability of Sheet Pile Dock

An assessment of the stability of the proposed sheet pile dock is presented in Appendix K4.15 and summarized below. As described in Section 3.15, Geohazards, the foundation materials for the offshore components are limited to shallow borings about 3 feet deep, a near-surface geophysical survey, and extrapolation from a deeper onshore geophysical survey, which suggest that subsurface deposits consist primarily of sand and gravel. Additional geotechnical investigation would be conducted as the project design progresses.

In the absence of the additional foundation information and related engineering analyses, the proposed rockfill causeway and sheet-pile dock would have the potential to result in adverse impacts to the environment during construction and operations. The potential impacts could include:

- Structural instability and potential failure of the sheet-pile wharf as a result of seismic loading, foundation conditions, erosion at the base of the sheet pile, icing increasing

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gravity load on the sheets, and corrosion requiring regular monitoring of cathodic protection systems;

- Damage to the structures due to liquefaction of the seabed during a seismic event; and
- Damage to the sheet pile wall during installation due the presence of boulders within the nearshore sediment, which could result in the release of the earthfill during operation.

The additional field investigation-related information would support more detailed design analyses to confirm whether the design is feasible; and if so, to ensure construction, operation, and closure would be protective of the environment.

The port would be closed and undergo reclamation after the offsite transport of concentrate has been completed at Year 20. All structures and related earthfill would be removed, and the site reclaimed (PLP 2018-RFI 024). The potential geohazards-related impacts would therefore be long-term, and generally limited to the close vicinity of the dock footprint. With additional geotechnical investigation and stability analyses, the likelihood of potential impacts occurring would be low.

Stability of Pile-Supported Dock Variant

The pile-supported dock would be constructed on trestle and dock piles (Figure 2-41), and the footprint area would be about 0.5 percent of that required for the rockfill causeway and sheet-pile dock.

As with the sheet-pile dock, detailed engineering analysis has not been completed in support of initial design. The stability of a pile-supported dock is typically a function of structural design details and pile-soil interaction. The current state-of-practice is to use bending in the pile to resist lateral loads (wind, seismic, vessel impacts, mooring loads, etc.) that may control pile embedment depths. Static stability analysis is typically conducted to determine the ability of the dock to accommodate and control maximum displacements from these loads, as well as global stability issues such as liquefaction. The survivability of a pile-supported structure in a large earthquake is generally considered better than bulkhead type structures, which do not perform well in major earthquakes, and are difficult to repair. For example, sections of the existing Port of Anchorage pile-supported dock survived the 1964 earthquake.

The piles would likely experience similar metal corrosion as the sheet-pile dock; similar issues with construction in the event of boulders in the subsurface; and ice-related impacts that could be worse due to exposure of the piles to the elements (PLP 2018-RFI 071). As with the sheet-pile, additional geotechnical investigation and stability analysis would be performed during final design, and the results would provide a better understanding of dock behavior in response to geohazards, and whether boulders are present that would hinder pile installation.

Based on the conceptual level of design and experience with similar structures, the likelihood of stability issues is generally considered lower with the pile-supported dock, and survivability in a major earthquake generally greater, than the sheet-pile dock. Unlike the sheet-pile dock, the pile-supported dock would not have the potential to release fill into the marine environment as a result of geohazards-related event. In the event of potential geohazards-related impacts to the pile-supported dock, the duration of effects would range from temporary (e.g., ice loads that are repairable) to long-term, and would likely be limited to the footprint of the structure.

Tsunamis

Published tsunami modeling for lower Cook Inlet (Crawford 1987; ASCE 2017) predicts runup elevations in the Amakdedori area (in combination with high tide) of 15 to 23 feet above mean sea level (amsl) for medium to large earthquakes (100- to 500-year events), and up to 34.8 feet amsl for a very large earthquake with a 2,500-year return period (Section 3.15, Geohazards).

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The proposed elevation of the terminal patio is 35 feet above mean lower low water (MLLW) (PLP 2017), or about 28 feet amsl (based on an approximate MLLW at the port site of -7.3 feet mean sea level [Hart Crowser 2011, 2015; NOAA 2018a]).

Therefore, for tsunamis with a probability of occurrence in the range of 1 in 100 to 500 years, the predicted runup elevation is below that of the port facilities, and impacts on facilities at the terminal (e.g., fuel tanks, storage of concentrate containers) and related effects on the environment are expected to be minimal. Assuming the causeway and wharf elevations are the same as the terminal elevation, impacts on equipment and activities on top of these structures would also be minimal. For a very low-probability tsunami with a 2,500-year return period, the predicted runup elevation could exceed the design elevation of the terminal, causeway, and wharf by about 7 feet. Effects could include risks to worker safety, equipment, and structures, such as the fuel storage tanks, concentrate containers, trucks, and cranes. The effects of potential spill releases from project facilities are discussed in Section 4.21, Spill Risk.

Damage during a tsunami could result from initial wave crushing or buoyancy failures, which can cause tipping or sliding (Brooker 2011). The sheet-pile bulkhead design would expose the cross-sectional area to the hydrodynamic impact of the wave. A critical loading condition for the bulkhead could be the very low water level during the "retreat phase" of the tsunami, during which the stabilizing effect of water on the outside of the sheet-pile is absent or diminished. Wave impacts and flooding of the upper part of the causeway are expected to cause little damage and erosion because the same type of riprap would be used to protect both the upper and lower parts (PLP 2017), and because the riprap would be designed to resist tide buoyancy and storm impacts. Some boat damage could result from barge/wharf or barge/ship collisions if loading and lightering activities at the wharf or offshore mooring locations were to coincide with the arrival of a tsunami wave; however, tsunami warning infrastructure, which typically sends warnings within several minutes (NOAA 2018b), may provide enough time to move vessels to avoid these impacts.

The probability of tsunamis occurring at the port ranges from unlikely (for 100- to 500-year events) to very unlikely (for 2,500-year events). If a tsunami were to occur, the intensity of impacts could range from minimal disruption of activities or boat damage to terminal flooding and damage to infrastructure, with possible related effects on environmental resources in the event of a diesel or concentrate spill (see Section 4.27, Spill Risk). Infrastructure damage would be localized in the near vicinity of the port and mooring sites. The duration of impacts could range from hours to months (in the event repairs are required). Typical mitigation might include a vulnerability analysis of equipment and facilities, incorporation of flooding into tank design (e.g., tie-downs), emergency action planning with tsunami escape routes, or consideration of design changes to facility armoring and elevation (Chapter 5, Mitigation).

Volcanoes

A number of active volcanoes have erupted in the last few decades within about 100 miles of the project area (Figure 3.15-3). Of particular potential concern is Augustine volcano, which is located approximately 20 miles east-northeast of the Amakdedori port site. Impacts from any of the active volcanoes could include ash clouds transported by wind, and fallout that disrupts construction and operations of project components, depending on prevailing wind direction and plume height. Volcanic ash particles are particularly abrasive, corrosive, and pervasive.

The likelihood of effects occurring at the more distant project components is low (e.g., once or twice over the life of the mine), but impacts from an Augustine plume on Amakdedori port facilities and moored ships are considered more likely. If ash fallout were to occur, it could affect most types of activities within the port footprint. Direct effects could include damage to equipment, engines, and compressor stations; and disruption of staffing, shipping, and fuel

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supplies. Effects would be temporary, potentially lasting several days per incident. Ashfall effects on the project are unlikely to result in indirect effects on other environmental resources. Typical mitigation might include a vulnerability analysis of facilities and equipment and hazard planning (Chapter 5, Mitigation).

As noted in Section 3.15, Geohazards, volcanic debris avalanches that flow into Cook Inlet are known to occur once every 150 to 200 years on average (Beget and Kienle 1992). Therefore, the likelihood of this scenario occurring during the project's life is low, as is the potential for these flows to reach the pipeline or port facilities. The primary lightering location is about 10 miles southwest of Augustine Island, but a secondary lightering location is 2 miles west of the island (PLP 2018d).

4.15.2.4 Natural Gas Pipeline Corridor

Earthquakes and Surface Faults

As described above for the transportation corridor, the natural gas pipeline corridor would not cross any known active surface faults (Figure 3.15-1). Therefore, effects on the pipeline from surface fault displacements are not expected to occur.

A major earthquake could cause liquefaction in unfrozen lowlands, stream crossings, and marine areas with fine sandy soils. This condition has the potential to cause buried pipelines to become buoyant; which, if not properly accounted for in design, could lead to pipe flotation and possible damage. The loss of soil shear strength during liquefaction could also lead to permanent ground movements through lateral spreading, flow failure, and settlement. Control measures for liquefaction and buoyancy (e.g., estimation of lateral spreading, use of select compacted backfill, increased cover depth, swamp weights, and post-earthquake inspection) are considered typical state-of-practice for high-liquefaction areas so that design deflection and stress on the pipe are not exceeded. The proposed use of thicker walled pipe in marine areas would also help minimize the effects of liquefaction in Cook Inlet and Iliamna Lake. Therefore, pipe rupture and potential related environmental effects in the event of liquefaction would be unlikely. If pipe damage were to occur, it would likely be localized and easily repairable within a temporary timeframe (e.g., days to months).

Unstable Slopes

A relatively unstable bluff roughly 200 feet high exists between the Anchor Point compressor station on Kenai Peninsula and Cook Inlet. To avoid the bluff, the pipeline would be horizontal directionally drilled (HDD) from the compressor station to the pipeline's emergence point on the Cook Inlet seafloor to the west.

The HDD would begin at an elevation of about 207 feet on the eastern side of Sterling Highway, and drop down to an elevation of -12 feet MLLW or deeper[8] in accordance with Pipeline and Hazardous Materials Safety Administration requirements (PLP 2018-RFI 011). The exact water depth at which the pipeline would emerge at the seafloor has not been determined, but is proposed to be deep enough to avoid navigational hazards (PLP 2018d).

During the life of the project, the bluff at Cook Inlet would likely continue to erode and retreat landward as a result of natural causes. With the use of HDD methods, the pipeline would pass well below and landward of the steep bluff at Cook Inlet, and avoid the unstable slope hazards (PLP 2018-RFI 011). Therefore, potential impacts on the project and related effects on the environment from this geohazard would be minimal.

[8] An 1,800-foot-long HDD pipeline would exit in approximately 12 feet of water MLLW, while a 2,000-foot-long HDD would exit in approximately 18 to 24 feet of water at MLLW. Current technology can accommodate a 2,000-foot-long HDD for in the 12-inch-diameter range as proposed (PLP 2018-RFI 011).

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Coastal Hazards

The depth of pipeline cover west of the HDD installation location, and below the 12-foot water depth on the western side of Cook Inlet and in Iliamna Lake, would be sufficient to ensure the top of the pipe is below the mudline. The minimum depth of cover above the 12-foot water depth would be 3 feet, which would minimize potential effects from coastal hazards such as shoreline drift, ice-rafting of surface boulders, or shifting sand waves. Section 4.16, Surface Water Hydrology, provides additional discussion of potential effects on the submerged pipeline.

4.15.3 Action Alternative 2 – North Road and Ferry

4.15.3.1 Mine Site – Downstream Embankment

The bulk TSF main embankment under Alternative 2 would be constructed using downstream raises (Chapter 2, Alternative, Figure 2-43 through Figure 2-45), as compared to the buttressed centerline design under Alternative 1 (PLP 2018d; PLP 2018-RFI 075). Under Alternative 2, the overall downstream slope would be 2.6H:1V, which would be the same as the buttressed centerline-constructed embankment under Alternative 2 (Figure 2-15). The upstream slope of the main embankment under this alternative would be 2H:1V, versus the upstream slope under Alternative 1 that would be a serrated near-vertical upstream face at the dam crest for the upper 280 feet, and partially rest on tailings (Figure 2-8).

As described in Appendix K4.15, the preliminary stability analysis for the downstream constructed main embankment calculated an FoS value on the order of 1.9 to 2.0 under static loading conditions, similar to that of the buttressed centerline design (Table 4.15-5), thereby offering minimal additional stability over the Alternative 1 design. A schematic section of the main embankment at its ultimate height with the predicted potential slip surface is shown on Figure 2-45.

The bulk TSF main embankment under Alternative 2 would be raised approximately 25 feet higher than the Alternative 1 design (embankment height approximately 570 feet) to provide equivalent bulk TSF storage capacity. The embankment fill would increase from 78 million cubic yards (yd^3) to 124 million yd^3, and the impoundment footprint area would increase by 119 acres (PLP 2018-RFI 075a). This would result in increased impacts on other resources such as material sites, substrate, and wetlands (Section 4.13, Geology; Section 4.18, water and Sediment Quality, and Section 4.22, Wetlands/Special Aquatic Sites), but would not change the global stability of the embankment.

4.15.3.2 Transportation Corridor

Mine Site to Eagle Bay, and Pile Bay to Diamond Point Roads

Earthquakes. Referring to Figures 2-47 and 3.15-1, the access road under Alternative 2 would not cross any known active faults. Potential impacts related to ground shaking for the roads would be similar to those described above under Alternative 1. Even though the access road from Williamsport to Diamond Point would be adjacent to the shoreline of Iliamna Bay, as described below for the Diamond Point port site, potential tsunami-related impacts in Iliamna Bay would be less intense than at the Amakdedori port site because Iliamna Bay is more protected and shallower than Amakdedori.

Unstable Slopes. Several areas of unstable solifluction, colluvium, and landslide deposits have been mapped in the area northwest of Eagle Bay on the flanks of Roadhouse Mountain and along the mine access road west of Newhalen River (Section 3.15, Geohazards) (Detterman and Reed 1973; Hamilton and Klieforth 2010). Steep alluvial fan and talus deposits occur in

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incised valleys crossed by the eastern portion of the route east of Pile Bay (Detterman and Reed 1973). Rockfall hazards could also occur in this area of exposed bedrock where rock cuts are likely. Steep unstable slopes and rockfall hazards are also likely along the Diamond Point-Williamsburg waterfront section of the road.

Typical engineering and construction practices such as engineered cuts, benching, and drainage controls, as well as road maintenance, would be used to manage unstable slopes, to minimize the potential for landslide impacts on the roads during construction and disruption of truck haulage. Several locations along the existing road between Pile Bay and Williamsport would be rerouted under this alternative to avoid steep slopes, including approximately the eastern third of this area, and a shorter road segment close to Pile Bay. Unstable slopes could also lead to an increase in the likelihood of spills (Section 4.27, Spill Risk provides an analysis of spill impacts from a truck spill scenario). Although the likelihood of such effects occurring is expected to be greater than under Alternative 1, with appropriate controls during construction and operations, impacts on the project and related effects on environmental resources are expected to be minimal, temporary (easily repairable in the short term), and of limited extent (within the immediate vicinity of the road footprint).

The potential exists for avalanches to occur for portions of the road alignment between Williamsport and Pile Bay. However, the avalanches would be preventable using relevant BMPs such as hazard mapping, forecasting, and blasting if necessary. If they were to occur, they would temporarily impact a local portion of the road until the snow could be removed.

Eagle Bay to Pile Bay Ferry

Potential impacts on the ferry terminals related to ground shaking would be similar to those described above under Alternative 1. Although the eastern end of the lake is narrower and deeper compared to the Alternative 1 ferry route—factors which can increase earthquake-generated seiche potential—the potential for occurrence is still considered unlikely (AECOM 2018j). This analysis assumes that the risk of major landslide-generated seiches at the eastern end of the lake is low, and that there is little evidence of past major landslides in the lake bottom, assumptions that would be further investigated through collection of more detailed bathymetric survey data as design progresses.

Summer-Only Ferry Variant

Under the summer-only variant, road traffic would be concentrated during the 6-month transportation season, which would include rainy months. Because heavy rain is often a trigger for slope failure, the potential for these impacts on road traffic and spill potential could be slightly greater under this variant, but would be balanced by fewer avalanche impacts due to lack of winter season traffic. Lake ice hazards are discussed under Section 4.16, Surface Water Hydrology.

4.15.3.3 Diamond Point Port

Referring to Figures 2-50 and 2-51, the Diamond Point port facility would use the same design concept as the Amakdedori port under Alternative 1[9], although with a footprint about four times bigger than at Amakdedori (PLP 2018-RFI 071).

As discussed in Appendix K4.15, ground shaking potential in the Diamond Point area is slightly greater than at Amakdedori. The Bruin Bay Fault extends along the western shore of Cook Inlet near the Diamond Point port site. Although there is no evidence for Holocene offset at the

[9] A causeway constructed of earthfill embankment, and barge berth and wharf constructed of a sheet-pile wall wharf structure filled with earthfill.

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surface, this fault is associated with several small to moderate earthquakes up to M7.3 in 1943 (Stevens and Craw 2003).

Stability of Dock Structure

Sheet Pile Dock. The proposed sheet pile dock would have the same types of potential impacts to the environment during construction and operation as discussed for the Amakdedori site (Section 4.15.2.3 and Appendix K4.15). As with the Amakdedori dock, additional geotechnical investigation would support more detailed design analyses to confirm the design is feasible; and if so, to ensure construction, operations, and closure would be protective of the environment.

The potential for tsunami impacts at the Diamond Point port site would be similar or less than those to the Amakdedori port site under Alternative 1. Although tsunami predictions at the mouth of Iliamna Bay are similar to those of Kamishak Bay (Crawford 1987), impacts would likely be less at Diamond Point due to Iliamna Bay being more protected and shallower than at Amakdedori.

The magnitude of potential impacts for Alternative 2 could be more than Alternative 1 due to the larger footprint and fill volume required for the Alternative 2 dock, and possible higher likelihood of boulders in the subsurface with related risk of short embedment or sheet-pile damage. As described in Section 4.18, Water and Sediment Quality, substrate conditions are generally finer-grained in Iliamna Bay than in Kamishak Bay. Because dock fill would partly consist of dredged material, in the event that potential geohazards-related impacts cause a release of fill to the marine environment, the extent of redeposition could be greater than under Alternative 1, and could range widely depending on season, tides, and wave conditions (e.g., from the close vicinity of the dock structure to the mouth of Iliamna Bay). As with Alternative 1, the port would undergo reclamation after the end of mine operations, and therefore, the potential for geohazards-related impacts could range from temporary (in the event of repairable damage) to long-term.

Pile-Supported Dock Variant. The pile-supported dock variant for the Diamond Point port would have potential geohazards-related impacts similar to the pile-supported dock variant at the Amakdedori port under Alternative 1. The offshore foundation conditions would likely be different than the Amakdedori site, which would affect the overall performance of the pile-supported system. The field conditions would be further investigated in support of final design.

Volcanoes

The Diamond Point port is approximately the same distance from volcanoes in the area, including Augustine, as the Amakdedori port under Alternative 1. The types of potential impacts would be similar to Alternative 1, with the magnitude, duration, and extent of impacts dependent on the severity of an ash cloud and the wind direction at the time of an eruption. In winter, however, the likelihood of potential impacts from Augustine on the Alternative 2 port site could be greater than Alternative 1 due to dominant northwesterly winds in this area (KP 2018g).

4.15.3.4 Natural Gas Pipeline Corridor

Referring to Figure 2-52, natural gas pipeline construction under Alternative 2 would follow a different corridor route west of Cook Inlet, and would therefore encounter different geology and related potential geohazards than Alternative 1 (Section 3.13, Geology, and Section 3.15, Geohazards).

Earthquakes and Surface Faults

In western Cook Inlet, the Alternative 2 pipeline would be routed to Ursus Cove to avoid known boulders and reefs at the mouth of Iliamna Bay (PLP 2018-RFI 063). At about 3 miles before

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making landfall, the pipeline would cross a mapped fault trace of the potentially active Bruin Bay fault (Figure 3.13-1 and Figure 3.15-1). Additional field investigation prior to final design (e.g., an offshore geophysical survey or onshore fault study at Ursus Head where the fault is mapped as having an upland component), would identify whether the fault is active and whether potential displacement mitigation in design would be necessary. The probability that a significant seismic event would occur on this fault during operations that would cause pipeline displacement and rupture is considered unlikely.

Unstable Slopes

Steep unstable slopes are a known hazard to pipeline integrity, and have been known to cause operation interruptions and ruptures in other mountainous areas of the world (e.g., the Andes, Eastern Europe, and Sakhalin Island) (Lee et al. 2016). Unstable slopes mapped between Ursus Cove and Pile Bay, and for the Alternative 2 route west of Eagle Bay, are discussed above under the Alternative 2 transportation corridor. The pipeline segment between Pile Bay and Eagle Bay crosses areas of exposed steep bedrock with the potential for rock instability, and alluvial fan and talus deposits, which could be unstable on steeper slopes. The corridor would avoid mapped landslide deposits on the flanks of Knutson and Roadhouse mountains.

Typical engineering and construction practices such as engineered cuts, rock stabilization, benching, and drainage controls would likely be used at these locations to minimize the potential for rockslide and landslide impacts to the pipeline. Additional mitigation, such as long-term slope monitoring, may be necessary in select areas. With these controls, the likelihood of slope failures occurring during the construction and operation that would affect pipeline integrity is expected to be minimal. Related effects on environmental resources are also expected to be minimal, temporary (repairable in the short term), and of limited extent (in the immediate vicinity of the pipeline right-of-way [ROW]).

Coastal Hazards

The depth of the pipeline as it approaches Ursus Cove from Cook Inlet, as well as the underwater crossing of the bay to Diamond Point, would be sufficient to ensure that the top of the pipe is below the mudline. The minimum depth of cover above the 12-foot water depth would be 3 feet, which is expected to minimize potential effects from coastal hazards such as shoreline drift or ice-rafting of surface boulders.

4.15.4 Action Alternative 3 – North Road Only

Under Alternative 3, geohazards impacts to the mine site (including concentrate pumphouse) and pipeline corridor would be the same as those described under Alternative 2. The following section describes impacts for the transportation corridor and port that would be different under Alternative 3.

4.15.4.1 Transportation Corridor

All Road Routes, Mine Site to Port

Geohazards-related impacts resulting from construction and operation of the Alternative 3 access road from Diamond Point to the mine site would be generally the same as the combination of road and natural gas pipeline corridors described under Alternative 2. However, the likelihood of slope stability issues occurring along the all-road route would be higher between Eagle and Pile Bays than under Alternative 2, due to the wider road ROW (compared to the Alternative 2 pipeline-only in this area) and greater need for engineering controls (such as wider cut and fills) to mitigate potential slope impacts. There would also be a slightly higher likelihood of spills due to the longer road route through steep terrain (Section 4.27, Spill Risk

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provides an analysis of spill impacts from a truck spill scenario), and greater potential for avalanches to occur that would be preventable using relevant BMPs described above for Alternative 2.

With appropriate engineering controls and BMPs, the overall likelihood of slope failures occurring along the all-road route is expected to be low. Related effects on environmental resources are also expected to be minimal, temporary (repairable in the short term), and of limited extent (in the immediate vicinity of the access road ROW footprint).

Concentrate Pipeline Variant

Because the concentrate pipeline would be installed in the same trench as the natural gas pipeline, impacts from geohazards such as unstable slope would be similar to the Alternative 2 natural gas pipeline corridor and Alternative 3 all-road route. There would also be a slightly higher likelihood of minor spills due to the additional potential contaminant source along steep terrain, which would be partially mitigated through leak detection systems (Section 4.27, Spill Risk, provides analysis of spill impacts from a concentrate spill scenario).

4.15.4.2 Diamond Point Port

Geohazards-related impacts would the same as Alternative 2, except for the concentrate storage and bulk handling described below.

Stability of Concentrate Storage and Bulk Handling Variant

Due to the mapped presence of alluvial fan deposits within the proposed footprint of the concentrate storage facility and steep slopes above the facility, the potential for unstable slopes would exist during the construction and operation (Detterman and Reed 1973). The final design would include a geotechnical investigation to confirm foundation and slope conditions to ensure the facility construction and operation would avoid or mitigate unstable slopes.

As noted under Alternative 2, the likelihood of a tsunami impacting the Diamond Point port site would be similar or less intense than the Amakdedori port under Alternative 1. However, if a tsunami were to occur, it would have a higher potential to result in a contaminant release to the marine environment under this variant. Section 4.27, Spill Risk, provides analysis of spill impacts from a concentrate spill scenario. Effects would be unlikely to occur, and the duration of impacts could range from hours to months (in the event repairs are required). Typical mitigation might include a vulnerability analysis of equipment and facilities, incorporation of flooding into design (e.g., tie-downs), emergency action planning with tsunami escape routes, or consideration of design changes to facility armoring and elevation (Chapter 5, Mitigation).

4.15.5 Alternatives Summary

Table 4.15-1 provides a summary of the key impact-related issues for geohazards.

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Table 4.15-1: Summary of Key Issues for Geohazards

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
TSF and WMP Embankment Stability	Low probability of embankment instability with static stability analysis (FoS 1.7-2.0), foundation preparation, seepage design, and flood controls incorporated into design. Temporary repairable damage in OBE, and 4 to 5-foot displacement/ settlement in MCE, would not result in effects on the environment outside of the footprint. Duration long-term with removal of pyritic TSF and WMPs at closure and dry closure of bulk TSF.	Design provides marginal additional stability over Alternative 1 design (FoS 1.9-2.0 for both).	Same as Alternative 1.
Open Pit Slope Stability	Low to medium likelihood of localized unstable slopes in lower pit in early closure, to be mitigated through targeted groundwater depressurization while lake rises.	Impacts same as Alternative 1.	Impacts same as Alternative 1.
Container Storage and Pumphouse	*Summer Only Ferry Variant:* Low likelihood of earthquake toppling effects at container storage area with foundation preparation.	Same as Alternative 1.	*Concentrate Pipeline Variant*: Impacts at pumphouse similar to Alternative 1.
Transportation Corridor			
Road Construction and Operations	Low likelihood of unstable slope impacts on roads. *Summer-Only Ferry Variant and Kokhanok East Variant:* Similar impacts to Alternative 1.	Low to medium likelihood of unstable slope impacts along road corridor; effects temporary and localized with engineering controls and maintenance. *Summer-Only Ferry Variant:* Impacts to Alternative 2.	Slightly higher likelihood of unstable slope effects than Alternative 2 due to longer route in steep terrain; effects similar to Alternative 2 with engineering controls and maintenance. *Concentrate Pipeline Variant*: Low likelihood of minor spills due to unstable slopes.
Ferry Terminals and Operations	Earthquakes: Low likelihood of temporary ground-shaking effects such as cracking, spreading, and settlement of terminals. Low likelihood of seiches and unstable slope effects. *Summer-Only Ferry Variant and Kokhanok East Variant:* Similar impacts to Alternative 1.	Impacts similar to Alternative 1.	Impacts similar to Alternative 1.

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Table 4.15-1: Summary of Key Issues for Geohazards

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Ports			
Dock Construction and Operations	*Proposed Sheet-Pile Dock:* Low to medium likelihood of stability effects on dock, and potential for fill escaping sheet-pile into marine environment. Tsunamis: low likelihood of temporary (repairable) effects such as dock or fuel tank damage. Volcanic ash from Augustine: low likelihood of port operations interruption. *Pile-Supported Dock Variant*: Lower likelihood of stability effects than sheet pile dock.	*Proposed Sheet-Pile Dock:* Slightly higher likelihood and extent of stability effects than Alternative 1, due to 4x larger structure and finer fill material. Tsunamis: lower likelihood than Alternative 1 due to protected shallower bay. Volcanic ash from Augustine: slightly higher likelihood of effects during winter due to prevailing winds. *Pile-Supported Dock Variant*: Lower likelihood of stability effects than Alternative 2 proposed sheet-pile dock.	*Proposed Sheet-Pile Dock:* Impacts same as Alternative 2. *Concentrate Pipeline Variant*: Low likelihood of unstable slope effects on storage facility. Tsunamis: Same likelihood as Alternative 2, but with slightly higher risk of contaminant release.
Natural Gas Pipeline Corridor			
Construction and Operations – Cook Inlet	Low likelihood of pipe damage form liquefaction. No active fault crossing effects.	Liquefaction impacts similar to Alternative 1. Low likelihood of active fault crossing (Bruin Bay fault) and displacement effects.	Liquefaction impacts similar to Alternative 1. Surface faults: same as Alternative 2.
Construction & Operations – Upland Areas	Low likelihood of unstable slope effects on pipeline.	Low-medium likelihood of unstable slope effects (such as operations interruption or rupture) between Diamond Point and Roadhouse Mountain; expected to be mitigated through typical engineering controls and monitoring.	Same as Alternative 2.

4.15.6 Cumulative Effects

Past, present, and reasonably foreseeable future activities (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to geologic hazards-related impacts. Section 4.1, Impact Assessment Framework, and Appendix K detail the RFFAs that may affect various environmental resources. All of the RFFAs would involve earthworks resulting in possible geologic hazards-related impacts. The following RFFAs are in or immediately adjacent to the project area, and would therefore have the potential to add to the geohazards impacts identified for the proposed project:

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- Pebble Project buildout – development of 55 percent of the resource over a 78-year period
- Pebble South/PEB
- Diamond Point rock quarry
- Lake and Peninsula transportation, infrastructure and energy projects.

Both the Pebble Project buildout and Pebble South/PEB prospect would require additional earthworks and mine-related facilities. The magnitude of potential geohazards-related impacts would be similar to the proposed project, with added stability risk and potential cumulative effects on the Upper Talarik Creek drainage due to the large waste rock pile that would be required in the buildout scenario. However, because the projects would likely use some of the infrastructure already developed under the proposed project, the net impacted geographic area would likely be less than developing mines at new greenfield sites in terms of geohazards. This could include the transportation corridor, port, and natural gas pipeline corridor.

The Diamond Point rock quarry is the same location proposed for the Diamond Point port site under Alternatives 2 and 3, described above. If either Alternative 2 or Alternative 3 were to be selected, there would likely be a relatively minor net increase in geohazards-related impacts, such as dock stability effects on the marine environment. If Alternative 1 were to be selected, the total impacted geographic extent would be increased, but would likely not be significantly different in terms of geohazards.

The Lake and Peninsula Borough's transportation, infrastructure, and energy projects include possible upgrades to the Williamsport-Pile Bay Road, which is the same alignment that would be used under Alternatives 2 and 3. If either of these alternatives is selected, the net magnitude and geographic extent of unstable slope effects may be relatively low, because the Pebble road would already be rerouted or upgraded for maintaining slopes. If the road were to be further widened as part of the Lake and Peninsula Borough's transportation project, there would likely be additional impacts.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 2:36:10 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: FW: Pebble Review Drafts Transmission (Sec3.14, K3.14, 4.14) please provide comments by 12/7 if your agency has been identified below (UNCLASSIFIED)
Attachments: Sec4.14_Soils_reviewdraft_2018.11.09.docx; K3.14_Soils_reviewdraft_2018.11.09.docx; Sec3.14_Soils_reviewdraft_2018.11.09.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.14, K3.14, 4.14– Soils. There is only one technical appendix (K3.14). There are no separate figure PDFs. CAs are State of Alaska

VR

Shane McCoy
Program Manager
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CLASSIFICATION: UNCLASSIFIED

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K3.14 SOILS

This appendix contains additional technical information on the following topics related to baseline soil conditions provided in Section 3.14:

- Technical classification of soils in the project footprint
- Permafrost occurrence in the project footprint
- Baseline soil chemistry

K3.14.1 Project Footprint Soil Classification

Some soils information provided in the Exploratory Soil Survey of Alaska (ESS) does not translate directly to current 2006 classification system standards, *Keys to Soil Taxonomy, 10th edition* (USDA 2006) but comparative equivalent soil type estimates can be made. Two additional soil orders that occur in the project area (i.e., Andisols and Gelisols) have been added to the ESS since 1979. Where applicable, soil descriptions from the ESS have been translated to current 2006 classification system equivalents (3PPl et al. 2011). Corresponding equivalents are based on available ESS descriptions and extrapolations from other nearby studies for the village of Nondalton and Chisik Island (Table K3.14-1).

Table K3.14-1: Corresponding ESS and 2006 Classifications for Applicable Soils

ESS Map Units	1979 Classification	2006 Classification
HY4, SO11, IA7	Pergelic cryofibrists	Typic fibristels
SO11	Humic cryothods	Typic humicryods
IA7, IA9	Typic crandepts	Typic haplocryands Typic vitricryands

Notes:
ESS = Exploratory Soil Survey of Alaska
Source: 3PPL, Table 5-2.

All the soil types in the project footprint are not likely addressed in the ESS because the ESS is limited to a general soils map and does not provide site-specific interpretations. Although not a direct comparison to NRCS soil descriptions, available project soil classification information acquired from shallow sampling activities (18 inches depth) have been incorporated (where available) into a surficial geologic map (Figure 3.13-2). A more detailed surficial geologic map of the mine site is provided in Section 3.13, Geology.

K3.14.1.1 Mine Site Soil Types

Soil types (i.e., principal component) and acreages associated with the mine site based on information provided in the ESS are listed below.

- IA9 Typic Cryandepts – 5,798 acres (approximately 71 percent): Very gravelly, hilly to steep association. Soils are well-drained, strongly acidic, and formed in volcanic material with a thin surface cover of decomposed plant matter mixed with volcanic ash. Common vegetation includes alder, grasses, or low shrubs.

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- IA7 Typic Cryandepts – 2,331 acres (approximately 29 percent): Very gravelly, nearly level to rolling Peregelic Cryofibrists, nearly level association. Soils are also associated with rolling plains bordering Iliamna Lake and rolling ground moraines, terminal moraines, outwash plains, and paleo-beach ridges, small lakes, and muskegs. Typic Cryandepts are well-drained, acidic, and formed in shallow volcanic material over gravelly glacial material dominated by low-tundra vegetative species. Shallow permafrost can reportedly be associated with a Pergelic Cryofibrists component (where present) consisting of sedge peat muskegs and coarse acid moss.

K3.14.1.2 Transportation Corridor Soil Types

The ESS recognizes four soil map units in the transportation corridor study area that are described below with corresponding acreages.

- IA7 Typic Cryandepts – 344 acres (approximately 39 percent)
- IA9 Typic Cryandepts – 203 acres (approximately 23 percent)
- IA17 Dystric Lithic Cryandepts – 328 acres (approximately 37 percent): Hilly to steep association. Soils are associated with low hill and ridges bordering mountainous areas. Well-drained loamy soils are formed in volcanic ash over shallow (20 inches) metamorphic bedrock or gravelly till, and overlain with a thin layer of organic material.
- HY4 Pergelic Cryofibrists – 13.5 acres (approximately 1 percent): Nearly level association. Soils are associated with nearly level, broad, wet lowlands near lakes and coastal margins. Organic-rich sedge and moss (e.g., muskeg) soils underlain by silt and sand mixtures are poorly drained and can reportedly be associated with the presence of shallow permafrost. Vegetation includes water-tolerant sedges, low shrubs, and black spruce.

K3.14.1.3 Pipeline Corridor Soil Types

Soil types along the shared route for the transportation corridor are the same as those described above. Two detailed soil map units are associated with the approximate 6 acres of pipeline infrastructure ground disturbance on the east side of Cook Inlet:

- 640 – Qutal silt loam, 0 to 4 percent slopes, 5.5 acres: Medial over loamy, amorphic over mixed, superactive Aquandic Haplocryods. Soils are associated with moraines on till plains and depressions on till plains dominated by a spruce-birch forest spruce-willow community. Soils consist of very gravelly sand overlain with silt loam and a thin interval of decomposed plant material. Soils are somewhat poorly drained with no flooding or ponding, with a slight hazard of erosion for water, but severe by wind.
- 568 – Island silt loam, 0 to 4 percent slopes, 0.25 acres: Medial over loamy, amorphic over mixed, superactive Pachic Fulvicryands. Soils are associated with till plains dominated by shallow kettles. Soils consist of gravelly sandy loam overlain with silt loam and a thin interval of decomposed plant material. Soils are well-drained with no flooding or ponding with a slight hazard of erosion by water, but severe hazard of erosion by wind.

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K3.14.1.4 Soil Types Unique to Alternatives

ESS soil types (i.e., principal component) that coincide with footprints associated with Alternatives are described below.

- RM1 Rough Mountainous Land: Steep rocky slopes.
- SO1 Typic Cryorthods: Nearly level association. Soils are associated with low rolling glacial moraines, broad terraces and lake and muskeg filled depressions. Well- to very poorly drained soils formed in silty loess (20 to 40 inches) over gravelly glacial till to fibrous organic soils in depressions between moraines.
- SO11 Humic Cryorthods: Hilly to steep association. Soils are associated with foot slopes and moraines. Well drained soils formed in silty volcanic ash (10 to 24 inches) over very gravelly glacial till, and overlain by partially decomposed organic matter.

K3.14.2 Permafrost Occurrence

Recent permafrost distribution estimates that coincide with project components on the western side of Cook Inlet are considered to be isolated occurrences (Jorgenson et al. 2008). Isolated permafrost varies from 0 to 10 percent of the landscape subsurface. No permafrost occurrence is anticipated to coincide with project infrastructure on the eastern side of Cook Inlet. Thermokarst landform features which are the result of permafrost freeze and thaw processes can be indicative of permafrost or residual expressions of where permafrost no longer exists. Existing thermokarst landscape features and future areas susceptible to thermokarst processes in the project footprint are generally not present (Olefeldt et al. 2016). Frozen ground conditions have been observed in near-surface soils in a few test pits and soil borings, but conditions were indiscernible from active layer processes that annually freeze and thaw at depths of up to 10 feet. Ground temperature measurements at depth within the mine site study area reported a mean temperature of 39.1 degrees Fahrenheit (°F). Groundwater temperature measurements from the deposit area were also above freezing throughout the year. Although such conditions do not preclude the occasional occurrences of permafrost, current conditions do not support increased permafrost development, and any remaining permafrost is considered to be a relic. Where present, relict permafrost is likely limited to shaded areas and north-facing slopes; poorly drained shallow surface soils overlain with insulative organics; and deep, coarse-grained soils (3PPI et al. 2011). Based on information provided in the ESS, principal components associated with Pergelic Cryofibrists (HY4) and Typic Cryandepts (IA7) soil types in the project footprint may coincide with relict permafrost occurrence in areas of very poorly drained organic soils (e.g., fibrous sedge and muskeg) of nearly level association that include depressions and valley bottoms.

K3.14.3 Baseline Soil Chemistry

Baseline shallow surface soil samples (less than 0.5 feet deep) were collected to determine the variability in naturally occurring constituents at the mine site. A total of 237 surface soil samples was collected from 117 locations in the mine site study area. Theses samples were analyzed for trace elements, cyanide, and sodium at 237 surface soil locations; anions and cations at 235 surface sample locations; petroleum hydrocarbons as diesel-range and residual range organics (diesel range organics [DRO] and residual range organics [RRO], respectively) at 23 surface soil locations; and total organic carbon (TOC) at 53 surface sample locations. The sample locations were considered representative of undisturbed baseline conditions. A list of naturally occurring compounds (NOCs) (i.e., analytes) evaluated as part of the surface soil studies is presented in Table K3.14-2 and Table K3.14-3.

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Table K3.14-2: Mine Site Study Area Surface Soil Trace Elements and Cations

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c] (mg/kg)
Trace Elements										
Aluminum	237/237	100%	932-109000	.67 – 100	2.14 – 500	17644	16400	12175	0.69	N/A
Antimony	211/237	89%	0.040 – 2.14	0.033 – 2.13	0.11 – 6.86	0.24	0.20	0.22	0.93	33
Arsenic	227/237	96%	1.03 – 73.8	0.30 – 21.3	0.50 – 68.6	10.2	8.07	10.1	0.99	7.2 (inorganic)
Barium	237/237	100%	14.8 - 576	0.050 – 10.0	0.30 – 50.0	84.9	65.5	67.1	0.79	17,000
Beryllium	224/237	95%	0.051 – 5.89	0.033 – 2.13	0.11 – 6.86	0.41	0.34	0.45	1.09	170
Bismuth	105/237	44%	0.073 – 1.05	0.066 – 20.0	0.21 – 100	1.30	0.13	4.26	3.27	N/A
Boron	65/237	27%	0.54 – 9.34	0.36 – 50.0	1.16 – 117	4.82	3.45	4.62	0.96	N/A
Cadmium	146/237	62%	0.072 – 3.06	0.050 – 4.26	0.21 – 13.7	0.24	0.16	0.32	1.33	76 (Diet)
Calcium	237/237	100%	222 – 31100	10.0 – 645	31.9 – 2060	2577	1700	2993	1.16	N/A
Chromium	233/237	98%	1.15 – 113	0.050 – 8.24	0.30 – 27.5	17.7	14.7	14.5	0.82	1.0×10^5 (Cr^3) 3.9 (Cr^6)
Cobalt	232/237	98%	0.45 – 24.2	0.030 – 10.3	0.10 – 34.3	6.55	5.63	4.60	0.70	N/A
Copper	236/237	100%	2.65 – 197	0.19 – 12.4	0.64 – 41.2	27.4	16.3	35.2	1.28	3,300
Iron	237/237	100%	588 – 103000	2.00 – 452	4.00 – 1460	20694	19300	13532	0.65	N/A
Lead	236/237	100%	0.66 – 78.4	0.050 – 4.26	0.21 – 13.7	8.74	7.54	8.85	1.01	400
Magnesium	237/237	100%	74.1 – 9930	10.0 – 795	31.9 – 2540	3076	2930	2022	0.66	N/A
Manganese	237/237	100%	5.43 – 6560	0.066 – 50.0	0.21 – 300	388	279	559	1.44	N/A
Mercury	224/237	95%	0.014 – 0.72	0.013 – 0.30	0.042 – 2.00	0.12	0.072	0.12	0.98	3.1 (elemental)
Molybdenum	179/237	76%	0.40 – 68.1	0.30 – 21.3	1.00 – 68.6	1.82	0.92	4.71	2.59	N/A
Nickel	235/237	99%	0.59 – 53.8	0.066 – 4.26	0.21 – 13.7	9.16	7.42	7.10	0.77	1,700 (soluble salts)

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Table K3.14-2: Mine Site Study Area Surface Soil Trace Elements and Cations

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c] (mg/kg)
Potassium	224/237	95%	100 – 5510	30.0 – 2130	106 – 6860	621	511	523	0.84	N/A
Selenium	219/237	92%	0.18 – 79.3	0.050 – 10.3	0.30 – 34.3	2.76	1.10	7.34	2.66	410
Silver	117/237	49%	0.030 – 1.45	0.030 – 2.13	0.10 – 6.86	0.11	0.059	0.20	1.80	410
Thallium	179/237	76%	0.0099 – 5.00	0.0066 – 5.00	0.021 – 30.0	0.24	0.088	0.61	2.53	0.83 (soluble salts)
Tin	27/237	11%	1.06 – 2.90	0.33 – 21.3	1.06 – 100	1.94	0.96	2.99	1.54	N/A
Vanadium	210/237	89%	4.67 – 227	0.10 – 64.5	0.50 – 206	46.4	47.0	31.1	0.67	420
Zinc	235/237	99%	2.77 – 228	0.33 – 21.3	1.06 – 68.6	43.9	40.0	33.2	0.76	25,000
Anions and Cations[d]										
Ammonia (as nitrogen)	214/235	91%	0.50 – 2200	0.50 – 120	3.00 – 382	363	179	440	1.21	N/A
Chloride	158/237	67%	0.40 – 28.3	0.30 – 30.0	0.98 – 100	2.74	1.50	3.73	1.36	N/A
Cyanide	199/237	84%	0.028 – 0.75	0.024 – 4.00	0.049 – 20.0	0.19	0.15	0.18	0.92	26 (CN^-)
Fluoride	54/235	23%	0.33 – 39.3	0.30 – 18.4	0.98 – 59.5	0.88	0.36	2.67	3.04	N/A
Sodium	215/237	91%	56.2 – 1860	30.0 – 2130	106-6860	208	153	181	0.87	N/A
Sulfate	211/237	90%	0.41 – 1820	0.30 – 30.0	0.98 – 100	19.8	4.26	122	6.19	N/A

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the reporting limit.

c. Where provided, comparative action level is based on ADEC 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, September 29, 2018, Table B1. Method Two – Soil Cleanup Levels, Human Health, Over 40 Inch Zone (ADEC 2018b).

d. All data presented on a dry-weight basis.

mg/kg = milligram per kilogram

Min = minimum

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Max = maximum

N/A = none available

Table K3.14-3: Mine Site Study Area Surface Soil Diesel Range Organics and Residual Range Organics, and Total Organic Carbon

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c]
DRO[d]	13/23	57%	11.7 – 1300	2.01 – 127	20.1 – 1270	209	72.5	299	1.43	8,250
RRO[d]	23/23	100%	32.7 – 12,300	2.01 – 127	20.1 – 1270	2,028	1150	2,895	1.43	8,300
TOC[d,e]	53/53	100%	0.3% – 65.1%	0.00026% – 2.08%	0.0061% – 4.16%	6.51%	2.20%	12.6%	1.93	N/A

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Where provided, comparative action level is based on ADEC 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, September 29, 2018, Table B2. Method Two – Petroleum Hydrocarbon Soil Cleanup Levels, Ingestion, Over 40 Inch Zone (ADEC 2018b).

d. All data presented on a dry-weight basis.

e. For TOC, unit of measure is percentage rather than milligrams per kilogram (mg/kg).

DRO = diesel range organics

mg/kg = milligram per kilogram

Min = minimum

Max = maximum

N/A = none available

RRO = residual range organics

TOC = total organic carbon

Source excerpt: SLR et al. 2011a, Table 10.1-5.

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Anions and cations evaluated in surface soil samples included chloride, cyanide, fluoride, sulfate, ammonia (as nitrogen), and sodium. The highest mean concentration among evaluated ions was ammonia, followed by sodium. The lowest mean concentration among evaluated ions was cyanide. Depth-based variations in ion concentrations were apparent based on comparison to co-located shallow subsurface soil sample results. Mean concentrations of cyanide and ammonia were greater in surface samples, while mean sulfate concentrations were greater in shallow subsurface samples (SLR Alaska et al. 2011a).

RRO hydrocarbons were detected at all 23 surface sample locations, and DRO was detected at 13 surface sample locations. Mean concentrations of 209 milligrams per kilogram (mg/kg) and 2,028 mg/kg were reported for DRO and RRO, respectively (Table 3.14-3). The elevated presence and wide range of reported hydrocarbon concentrations are attributed to naturally occurring biogenic sources, based on absence of prior disturbances, analytical fingerprint methods, and presence of total organic carbon (TOC) (SLR Alaska et al. 2011b).

Similar to hydrocarbons, reported TOC concentrations varied significantly. TOC concentrations varied from 0.36 percent to 65.1 percent among surface soil locations. The wide range is attributed to variable quantities of organic material retained in sampled matrices during collection.

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3.14 SOILS

This section describes the soil types in the project area evaluates project disturbance/removal; susceptibility to erosion; and soil chemical quality. In addition, soil conditions such as permafrost and soil impairment from contaminated sites are briefly addressed in this section. Descriptions of unconsolidated overburden at the mine site and other project components are provided in Section 3.13, Geology, and Section 3.15, Geohazards.

3.14.1 De Minimis / Insignificant Soil Conditions

Some soil conditions that may be important in other areas of Alaska have minimal presence in the project area, as described below.

3.14.1.1 Permafrost

Permafrost is soil that is permanently frozen. This condition can cause problems during development, because changes to the overlying vegetation can cause a thermal disturbance to this condition, resulting in melting and erosion.

To date, investigations in the project area (including all project components) have not reported widespread permafrost. Small patches of permafrost may occur in the project area; however, occurrence is presumed to be relict permafrost from prior glacial periods (Knight Piésold 2011). Recorded variations in ground temperature at depth in the mine site study area do not support the presence of permafrost, based on measured mean annual ground temperatures above freezing (39.1 degrees Fahrenheit [°F]). Recorded groundwater temperatures from the deposit area were also above freezing throughout the year. Although such conditions do not preclude the occurrence of small localized areas of permafrost, current conditions do not support permafrost development or wide-spread occurrence. Additional technical discussion regarding potential permafrost occurrence in the study area is provided in Appendix K3.14.

3.14.1.2 Soil Impairments

A review was conducted of the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program database. The database lists known contaminated sites and leaking underground storage tanks throughout Alaska. The database provides information regarding the type of contaminant released to the environment, the type(s) of media (air, water, soil, and rock) affected by the contaminant, the potential responsible party for the documented release, and the location where the release occurred (ADEC 2018a). No contaminated site records coincided with or were in proximity to the project footprint.

3.14.2 Alternative 1 – Applicant's Proposed Alternative

3.14.2.1 Mine Site

Soil Types

Available literature directly associated with the mine site and transportation corridor components is limited to the Exploratory Soil Survey of Alaska (ESS), which was completed by the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS; formerly known as the Soil Conservation Service) (Rieger et al. 1979). Literature provided by the NRCS generally covers a variety of baseline soil data intended to assist in land resource planning and

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management, including classifications based on soil taxonomy, drainage, slopes, vegetative growth potential, and suitability for various land uses and development.

The ESS is not sufficient for site-specific interpretations, but is useful as a general soils map. Although some soils information provided in the ESS does not translate directly to current classification system standards, comparative equivalent soil type estimates can be made. Technical information regarding soil types within the project footprint is provided in Appendix K3.14.

Soils at the mine site are generally well drained, acidic, gravelly, and formed from volcanic source rocks. Most of the mine site area (approximately 71 percent) is associated with hilly to steep terrain that supports vegetation such as alder, grasses, or low shrubs in a thin surface cover of decomposed plant material. The remaining area (29 percent) is relatively level with surface features consisting of rolling topography, small lakes, and sedge peat muskegs. More detailed descriptions of soil types and distribution present at the mine site are provided in Appendix K3.14.

Erosion

Erosion resulting from surface and subsurface soil disturbances would be attributed to both wind and hydraulic processes. Numerous conditions can influence a soil's susceptibility to wind and hydraulic erosion. Such conditions include weather (e.g., wind, precipitation), season (e.g., ground freeze), soil type (e.g., texture and cohesion), slope angle and length, vegetative cover, and severity of disturbance. In most circumstances, soil disturbances and subsequent exposure would accelerate erosion by wind and water. Finer-grained soil types such as silt and sand are generally more susceptible to erosion than gravels and coarser material. Flowing water over ground surfaces results in hydraulic erosion that also removes and transports soils. Possible consequences of erosion include sediment loading in surface water runoff, and alteration of soil profile characteristics and ecological communities. Downslope movement of surface materials from other slope instability processes (e.g., landslides, solifluction) are addressed in Section 3.15, Geohazards.

Soil Chemistry

A baseline soil chemistry description is provided for the mine site to compare anticipated effects resulting from the deposition of fugitive dust from sources of concern. Fugitive dust sources of concern at the mine site include mining operations; material (e.g., rock) storage, processing, and handling (including concentrate); tailings storage; and repurposing materials derived from the mine site (e.g., aggregates).

The baseline soil chemistry evaluation is exclusive to the mine site. Further evaluation of limited upland soil chemistry baseline data for the transportation corridor and natural gas pipeline corridor was not conducted because neither of these components is considered to have mechanisms or chemical sources that could result in adverse impacts to soil. Dust that would be created by traffic along the road bed would not be expected to introduce adverse chemical impairments to soil in the vicinity because the transportation corridor and natural gas pipeline corridor and associated material sites would be well outside the Pebble deposit. Transportation of ore concentrate along the road corridor would not be anticipated to result in adverse fugitive dust conditions based on shipment in sealed containers with locking lids. All concentrate transfers would be conducted at offshore facilities. Furthermore, the limited upland soil chemistry data for the transportation corridor and natural gas pipeline corridor are chemically consistent with those described for the Mine Site study area (SLR et al. 2011a).

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In order to establish baseline soil chemistry conditions at the mine site, more than 200 shallow surface soil samples (i.e., less than 0.5 feet below surface) were collected from a total of 117 locations (SLR et al. 2011a). The samples were analyzed to determine the variability in naturally occurring constituents (NOCs), which included trace elements, hydrocarbons, total carbon, cyanide, sodium, and ions. Sample results and more detailed discussion are provided in Appendix K3.14.

All trace elements (mostly metals) evaluated were detected in some of the surface samples. Although reported concentrations of most NOCs were generally low and consistent with undeveloped areas of Bristol Bay drainages, analytical results of some sample locations reported elevated NOCs at levels considered elevated in literature. Variations across up to 16 different landform types and seven different habitat types reportedly influence the ranges of elemental concentrations throughout the study area (SLR et al. 2011b).

Iron and aluminum are the most abundant elements reported throughout the mine site study area surface soils, followed by calcium and magnesium. Concentrations of other trace elements are substantially lower. Trace elements with the lowest average concentrations include mercury and silver. The relative distribution of trace elements in the mine site study area surface soils is generally consistent with those reported across the United States, based on published US Geological Survey evaluations. Comparison of co-located shallow subsurface soil sample results (18 inches in depth) reported similar relative and mean concentrations of trace elements; however, less variability among sample locations was observed (where present). Notable deviations include those associated with bismuth and mercury. The mean concentration of bismuth and mercury in surface soil is 13 and two times greater, respectively, than shallow subsurface soil (SLR et al. 2011a).

Because arsenic, copper, and lead are considered key trace elements associated with the deposit, additional depth-based and temporal (i.e., yearly) statistical tests were performed to identify differences. The statistical tests identified no significant[1] differences in depth-based or temporal variables (SLR et al. 2011a).

3.14.2.2 Transportation Corridor and Amakdedori Port

Soil Types

Because land-based portions of the natural gas pipeline corridor on the western side of Cook Inlet would be buried in the road bed of the transportation corridor, soil types for both the transportation and natural gas pipeline corridors are collectively described in this section, in addition to those present at the Amakdedori port site.

Based on soil type descriptions provided in the ESS, approximately 60 percent of the soil types (547 acres) associated with the transportation corridor footprint are the same as those described for the mine site. Most of the remaining acreage (328 acres) consists of varying sand, silt and clay mixtures (i.e., loam) over shallow bedrock or gravel till materials. The soils are generally well-drained and occur in steep to hilly terrain. A limited occurrence (13.5 acres) of poorly drained organic rich muskeg soils also coincides with the transportation corridor. Soil type distribution and additional details are provided in Appendix K3.14.

The Amakdedori port site is generally level; and includes upland (shore-based) soil types that transition seaward to intertidal dunes and a gravel-lined shoreline. ESS soil types associated with the Amakdedori port site and immediate area are limited to loamy upland soils with hilly to steep associations.

[1] The term “significant” appears to be used correctly as it applies to statistical testing, p-value.

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Erosion

The ESS does not provide wind and water erosion descriptors (i.e., suitability ratings) for all soil types, and where present, are limited to unique physical conditions or soil types. None were listed for map units corresponding to the transportation corridor; however, generalized inferences regarding susceptibility to erosion can be made assuming surface cover would be removed or disturbed. Finer grained loamy soils over shallow bedrock in hilly or steep terrain are considered to be conditions that would be most susceptible to erosional processes in the transportation corridor (including Amakdedori port site). This is attributed to the erosional susceptibility of finer-grained materials that overlie bedrock conditions that are generally resistant to erosional processes and potentially facilitate overland flow. Comparatively increased surface water flow velocities associated with hilly to steep terrain would likely increase the susceptibility of soils to erosion. Soils associated with nearly level terrain are likely the least susceptible to hydraulic erosion in the transportation corridor. However, information provided in the ESS is broadly based, and is not intended to be used for site-specific applications.

3.14.2.3 Natural Gas Pipeline Corridor

Soil Types

Because the natural gas pipeline on the eastern side of Cook Inlet would predominantly incorporate existing infrastructure, potential soil disturbances directly associated with the project would be limited to the horizontal directional drilling (HDD) work area and compressor station area. The most detailed resource for soil data in this area is the USDA NRCS Soil Survey of Western Kenai Peninsula Area, Alaska. Available NRCS data for the area include a land capability classification. This classification provides a general suitability index for agriculture or farming (USDA 2005). Soils in the footprint are considered to have severe limitations for these purposes.

Two detailed soil map units coincide with approximately 6 acres of proposed pipeline footprint ground disturbance on the eastern side of Cook Inlet. The soils consist of silt and sand mixtures (i.e., silt loam). Additional details for soils associated with the pipeline infrastructure on the eastern side of Cook Inlet are provided in Appendix K3.14.

Erosion

Soils in the pipeline infrastructure footprint on the eastern side of Cook Inlet predominantly consist of silt and sand mixtures (i.e., silt loam) along slope angles ranging from 0 to 4 percent. The soil is somewhat poorly to well-drained, with no flooding or ponding. The soils have a severe susceptibility to wind erosion, assuming disturbance and removal of surface cover, and a "slight" water erosion hazard.

3.14.2.4 Action Alternative 1 – Summer-Only Ferry Operations Variant

The summer-only ferry operations would necessitate additional project footprint to store and manage concentrate (see Chapter 2, Alternatives, for more detail). The soils descriptions provided in this section address the proposed locations where surface soils may be affected by increased project footprint.

3.14.2.5 Action Alternative 1 – Kokhanok East Ferry Terminal Variant

This area is east of the proposed south ferry terminal site. Soil conditions at the south ferry terminal include soils common to the transportation corridor, but are exclusive to (13.5 acres) varying sand, silt, and clay mixtures (i.e., loam) over shallow bedrock or gravel till materials.

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3.14.3 Action Alternative 2 – North Road and Ferry

3.14.3.1 Mine Site

Soils in the mine site area are described above under Alternative 1.

3.14.3.2 Transportation Corridor and Diamond Point Port

This section addresses the road and pipeline corridor from the mine site to Diamond Point port site.

Soil Types

Approximately one-half of the transportation corridor footprint and Eagle Bay ferry terminal under Alternative 2 consists of the same soil types as those described for the mine site. Approximately one-third of the transportation corridor footprint and Pile Bay ferry terminal footprint consists of well drained soils on foot slopes associated with hilly to steep terrain. The shallow soils are formed in silty volcanic ash (10 to 24 inches thick) overlying very gravelly glacial till. Based on generalized ESS descriptions, the remaining area in the transportation corridor consists of rough mountainous land along steep rocky slopes overlying shallow bedrock and boulder-sized rock fragments. Less than one percent of the total footprint consists of silty loess (20 to 40 inches) over gravelly glacial till to fibrous organic soils in depressions. These soils are associated with level or nearly level terrain and range from well- to very poorly drained soils. Additional soil type details are provided in Appendix K3.14.

Erosion

Soils associated with nearly level terrain are likely the least susceptible to hydraulic erosion in the transportation corridor. Soils considered most susceptible to erosion include those with finer grained textures (e.g., volcanic ash) that are associated with hilly to steep terrain. This is attributed to the erosional susceptibility of finer-grained materials and comparatively increased surface water flow velocities associated with hilly to steep terrain.

Coarse grained soil textures or shallow bedrock in rough mountainous terrain should not preclude the potential for erosion susceptibility or location-specific conditions where erosion may be comparatively greater. Enhanced design or stabilization measures may be required on a case-by-case basis to mitigate steep side slopes, cross slope toe-cuts, or slope failure. Erosion associated with potential high energy environments in mountainous terrain includes, but is not limited to, increased surface water runoff flow velocities, up or down slope failure (e.g., slumping, washout), or impacts to infrastructure from natural process (e.g., landslides). Because the ESS is broadly based and is not intended to be used for site-specific information, general terrain conditions (e.g., topography) are considered in Section 4.14, Soils.

3.14.3.3 Natural Gas Pipeline Corridor

This section addresses the overland portion of the natural gas pipeline corridor (Diamond Point to Ursus Cove). The pipeline would be constructed below grade along a valley floor and eventually resurface at the Diamond Point port site after a short marine crossing of Cottonwood Bay. The 5.5 miles of uplands pipeline along this segment coincides with shallow bedrock and coarse soil textures (e.g., boulder and cobble) in rough mountainous terrain; however, it is likely that appreciable gravel/sand-bearing colluvium is present along the valley floor. The pipeline from the port would follow a shared road corridor towards the Pile Bay ferry terminal.

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3.14.3.4 Action Alternative 2 – Summer-Only Ferry Operations Variant

Baseline soil characteristics are the same as described under this variant in Alternative 1.

3.14.4 Action Alternative 3 – North Road Only

The occurrence and distribution of soil types and terrain under Alternative 3 is generally the same as Alternative 2. The primary difference between Alternative 2 and Alternative 3 is a shared overland transportation and pipeline infrastructure under Alternative 3 and absence of ferry terminal infrastructure. Soil resource impacts specific to each action alternative are provided in Section 4.14.

3.14.4.1 Alternative 3 – Concentrate Pipeline Variant

The concentrate pipeline under this variant would follow the same corridor as the north road and natural gas pipeline corridor. The soil characteristics are the same as described for the north road corridor.

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4.14 SOILS

This section describes potential impacts on soils resulting from each project component. Mitigation and control measures would incorporate structural and non-structural best management practices (BMPs) to address erosion and stormwater runoff. The evaluation also assumes that activities would be performed in accordance with prepared water management and sediment control plans, and necessary Alaska Department of Environmental Conservation (ADEC) permits and stormwater pollution prevention plans (SWPPPs). This includes typical or standard practice activities and BMPs when none are specified in project documents.

4.14.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and there would be no new impacts to soils.

4.14.2 Action Alternative 1 – Applicant's Proposed Alternative

Impacts to soil resources from Alternative 1 would include those related to soil disturbance and erosion. Soil quality is also evaluated for the mine site due to potential fugitive dust impacts from sources of concern. Factors used to evaluate soil impacts include soil type and area of disturbance; erosion based on BMPs and foreseeable control measures using common industry practices; planned reclamation and objectives; and anticipated effects on soil quality based on planned project activities.

Evaluation of soil impacts assumes that sediment control measures, BMPs, and adaptive control strategies would be established in a water management and sediment control plan prepared prior to construction and operations; and that proposed earthwork would sufficiently meet necessary conditions required under the Alaska Pollutant Discharge Elimination System program (APDES) for approval of an ADEC Clean Water Act Section 402 Stormwater Construction and Operation Permit and a Stormwater Discharge Pollution Prevention Plan prior to construction. Discharge of pollutants from construction would be addressed under an APDES Construction General Permit (CGP) for disturbances of at least 1 acre of land. The CGP requires establishing authorized stormwater and non-stormwater discharges, including those that are not authorized. A permittee is required to contain runoff from exposed soils to minimize erosion and sediment transport. The CGP also requires established conditions that meet water quality standards through operator control measures. The CGP would be required prior to project start and would include filing of a signed Notice of Intent and SWPPP to ADEC. The SWPPP would be prepared by an ADEC-qualified person and would establish sources of pollutants and how control measures would be implemented to meet permit standards. The SWPPP also requires establishing inspection-related criteria, how corrective actions are addressed, and permit eligibility related to endangered species. Additional information and reference to applicable requirements are provided in the ADEC APDES CGP-Final, Permit No. AKR100000 (ADEC 2016); Alaska Storm Water Guide (ADEC 2011); and Alaska Department of Transportation and Public Facilities (ADOT&PF) Best Management Practices for Erosion and Sediment Control (ADOT&PF 2016).

Other agencies that may require additional considerations related to upland soils include the Alaska Department of Natural Resources (ADNR) for an Approved Pipeline Right-of-Way (ROW) Permit; the ADOT&PF for a Utility Permit on ROW; Kenai Peninsula Borough; and US Army Corps of Engineers (USACE) Section 404/10 Permit.

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4.14.2.1 Mine Site

This section describes potential effects on soils at the mine site from construction through reclamation and post-closure management.

Soil Disturbance

The total acreage of soil disturbance that would potentially occur at the mine site is approximately 8,129 acres. Most of the disturbances would occur in soils associated with soil map unit IA9 (5,798 acres), with the remaining disturbance associated with soil map unit IA7. The total acreage of soil disturbances includes major earthworks over the 4-year construction period, and mine site operations up to closure. The total acreage estimate does not include reclamation of various mine site infrastructure that would be partially restored or reduced soil disturbances during the closure period.

Mine site facilities not required for post-closure activities would be reclaimed in accordance with an ADNR-approved reclamation plan per Alaska Reclamation Act requirements and mining reclamation regulations per Alaska Statute 27.19 and 11 Alaska Administrative Code 97. The reclamation performance standard is the adequate reclamation of disturbed areas from mining operations and to leave the site in a stable condition or reestablishment of renewable resources on the site within a reasonable period of time by natural processes.

Facilities that would be reclaimed include the pyritic tailings storage facility (TSF), bulk TSF, overburden stockpiles, milling and processing facilities, and non-essential roads. Progressive reclamation of the seepage recovery systems, main water management pond, and water treatment plants would be performed in post-closure. With the exception of overburden stockpiles, all reclamation would occur after operations have ceased. Mine site infrastructure that would not undergo reclamation includes the open pit (approximately 608 acres); mine water treatment plants (approximately 28 acres); power generation facilities (approximately 22 acres); inert monofill (approximately 9 acres) in the disturbed footprint; quarry sites (approximately 873 acres); and limited camp, storage facilities, and access roads. These components would result in permanent disturbances to existing soil conditions.

Although soil conditions underlying the TSF footprints would result in permanent soil disturbances, each would be reclaimed to conform to designated post-mining land use, as administered by the ADNR. The liner below the pyritic TSF would be removed, and bermed structures would be recontoured. This would be followed by application of salvaged growth media and surface restoration. The bulk TSF would remain in place after controlled dewatering and dry closure, resulting in a permanent landform. The bulk TSF surface would be graded and contoured as needed for drainage control. Growth media would be added for seeding and revegetation, including the embankments.

Summary of Soil Disturbance Impacts

Indirect soil disturbance impacts are most likely to be associated with erosion and stormwater sediment transport processes, and are evaluated under erosion.

Soil Quality

Potential soil quality effects could result from wet and dry deposition of fugitive dust derived from mine site sources including mining operations in the pit (e.g., drilling and blasting); material transport, storage, processing, and handling (including ore, waste rock, concentrate, and aggregate); and wind erosion of exposed bulk tailings. The cumulative deposition (i.e., loading) of dust throughout construction and operation were evaluated for the potential to impart an

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adverse change to surface soil chemistry. Dust deposition effects on water quality are discussed in Section 4.18, Water and Sediment Quality.

Fugitive Dust Constituents of Concern

Total potential criteria pollutant and hazardous air pollutants (HAPs) emissions were calculated for the mine site and other project components assuming that each emission unit was operated continuously unless otherwise noted (PLP 2018-RFI 007). Annual fugitive particulate matter (PM) emissions were calculated based on conservative scenarios that assumed worst-case conditions for each activity or source component such as peak ore crushing capacity, maximum ore hauling distance from final pit, and maximum waste rock hauling.

Of the 189 HAPs listed in the 1990 Clean Air Act Amendment and 40 Code of Federal Regulations (CFR) Part 63, applicable metals from fugitive sources were further evaluated for incremental increase over the 20-year operations period (Table 4.14-1). Hydrocarbons, anions, and cations are not considered compounds of concern from fugitive dust emissions.

Dust Deposition on Soils

Potential increase in metal concentration in the top 1-inch of soil at the mine site was estimated utilizing AERMOD modeling data for airborne metals concentrations and dust deposition (PLP 2018-RFI 009). The EPA defines ambient air as the portion of the atmosphere, external to buildings, to which the general public has access (40 CFR 50.1 (e)). Airborne metal concentration was modeled along the mine site ambient air boundary to determine the maximum cumulative concentration of metals bordering the ambient environment. Extrapolating from the upper bound airborne concentration, dust deposition was modeled by calculating deposition values for metals (PLP 2018-RFI 009). The incremental increase in metals concentration in mine site soil over the 20-year mine life was calculated using the following formula (EPA 2005):

$$Cs = 100 t_D * \left(\frac{D}{Z_S * B_D}\right)$$

Where: C_s is the average soil concentration over the exposure duration (milligrams [mg] constituents of potential concern [COPC] per kilograms [kg] soil); D is the yearly dry deposition rate (in grams COPC per square meter per year [g COPC/m^2-yr]); t_D is the time period over which deposition occurs (in years); Z_S is the soil mixing zone depth (in centimeters [cm]), B_D is the soil bulk density (grams per cubic meter [g/cm^3]), and 100 is a unit conversion factor. The expected constituent soil concentration after the 20-year mile life due to operational dust deposition was calculated by adding the incremental increase to baseline soil concentrations provided in Appendix K3.14. Calculated results are summarized in Table 4.14-1.

Table 4.14-1: Calculated Mine Site Post-Dust Deposition Metal Concentrations in Soil

Analyte	Baseline Mean[1] (mg/kg)	Post-Dust Deposition			Comparative Action Levels	
		Incremental Increase over 20 Years (mg/kg)[2,3]	Baseline + 20 Years of Dust Deposition	Percent Increase after 20 Years	Human Health[4] (mg/kg)	Migration to Groundwater[4] (mg/kg)
Antimony	0.24	0.0075	0.25	3.04%	33	4.6
Arsenic	**10.2**	0.0589	**10.3**	0.57%	7.2 (inorganic)	0.2

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Table 4.14-1: Calculated Mine Site Post-Dust Deposition Metal Concentrations in Soil

Analyte	Baseline Mean[1] (mg/kg)	Post-Dust Deposition			Comparative Action Levels	
		Incremental Increase over 20 Years (mg/kg)[2,3]	Baseline + 20 Years of Dust Deposition	Percent Increase after 20 Years	Human Health[4] (mg/kg)	Migration to Groundwater[4] (mg/kg)
Beryllium	0.41	0.00213	0.412	0.52%	170	260
Cadmium	0.24	0.00173	0.242	0.72%	76 (diet)	9.1
Chromium (total)	17.7	0.0733	17.77	0.41%	1.0×10^5 (Cr^3)	1.0×10^5 (Cr^3)
Cobalt	6.55	0.0195	6.57	0.30%	23[5]	N/A
Lead	8.74	0.0205	8.76	0.23%	400	N/A
Manganese	388.0	0.693	388.69	0.18%	1,800[5]	N/A
Mercury	0.120	0.00013	0.120	0.11%	3.1 (elemental)	0.36
Nickel	9.16	0.0176	9.18	0.19%	1,700 (soluble salts)	340
Selenium	2.76	0.00753	2.77	0.27%	410	6.9

Notes:

[1] Three Parameters Plus 2011a

[2] Based on PLP 2018-RFI 009 total HAPs concentration in dust and EPA 2005.

[3] Assumptions include life of mine (20 years) deposition period, soil mixing zone of 2 centimeters, and bulk soil density of 1.5 grams per cubic centimeter based on USGS estimate for silty soils (NRCS 2018 and EPA 2005).

[4] ADEC 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, September 29, 2018, Table B1. Method Two – Soil Cleanup levels, Human Health, Over 40 Inch Zone, and Migration to Groundwater (ADEC 2018b).

[5] USEPA Residential Regional Screening Level, May 2018.

mg/kg = milligrams per kilogram

The calculated percent increase in HAP metals from 20 years of dust deposition at the mine site is not considered to have an adverse impact on surface soils relative to baseline conditions and ADEC action levels used for purposes of comparative evaluation. The greatest percent increase in baseline metals concentration (3.04 percent) is associated with antimony, although the concentrations with dust are still below ADEC levels. All calculated percent increase of other HAP metals were all below one percent. With the exception of arsenic, all evaluated metals were well below ADEC levels. The presence of naturally occurring arsenic above the ADEC level is readily apparent with a reported mean of 10.2 mg/kg. For these reasons, the incremental arsenic increase of 0.57 percent from fugitive dust in surface soils is considered negligible relative to baseline conditions and documented presence of elevated concentrations in soils throughout the state. The natural occurrence of elevated chromium and arsenic concentrations in soil is acknowledged in ADEC Technical Memorandum, Arsenic in Soil, dated March 2009, and Notes 11 and 12 of Table B1 (ADEC 2018b).

Similar to arsenic, elevated baseline concentrations of total chromium are present at the mine site, but well below the ADEC action level for trivalent chromium. Because there are no anthropogenic sources of hexavalent chromium (Cr^{6+}), nor are mineral assemblages considered favorable for Cr^{6+} genesis (e.g., chromite), no further evaluation was conducted.

Dust Control

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The project design incorporates a number of measures to minimize fugitive dust. Coarse ore would be stockpiled in a covered steel-frame building to minimize dust emissions. Baghouse type dust collectors would be present at each conveyor-fed ore transfer point between the coarse ore stockpile and semi-autogenous grinding (SAG) ("ball") mills. Water would be added during operations at the SAG mill to suppress dust. Specialized bulk cargo containers equipped with removable locking lids would contain thickened concentrates for transport to Amakdedori port.

The pyritic tailings and potentially acid generating (PAG) waste would be stored subaqueously during operations, removing the potential for wind erosion and dust dispersion from sources with elevated metals concentrations. The bulk TSF would have tailings beaches, which would be susceptible to wind erosion and fugitive dust emissions throughout operations. The bulk TSF would eventually be reclaimed through contouring of surfaces and application of growth media for revegetation and surface stabilization, eliminating the beaches as a dust source following closure activities.

Erosion

The greatest potential for hydraulic erosion under planned conditions at the mine site would likely occur during the year-round construction phase, coinciding with the longest period of soil disturbances. Removal of vegetative matting would expose fine-grained silty loam, volcanic ash mixtures in shallow surface soils (less than 30 inches deep) that are susceptible to water and wind erosion. Deeper soils consisting of coarser-grained glacial till and colluvium mixtures would be comparatively less susceptible to erosion. Much of the finer-grained (i.e., shallow) soil mixtures exposed during construction would be removed due to undesirable engineering properties (e.g., loading and compaction) required for infrastructure construction, and placed in salvaged growth media stockpiles.

Insignificant wind and hydraulic erosion is anticipated when soils are frozen during winter. Frozen soil conditions generally occur between 4 and 5 months per year (HCG 2011). The greatest potential for hydraulic erosion would be during rainfall events that typically occur during the fall. Soil susceptibility to wind erosion is influenced by moisture and particle size. Wind-induced erosion would be comparatively less than hydraulically driven processes in the construction phase, due to seasonal meteorological conditions and cohesive forces associated with soil moisture. A soil matrix composed of larger grains is less capable of retaining moisture, but less susceptible to wind transport. Although finer-grained soils are generally less tolerant to wind erosion, they are more capable of retaining cohesive moisture. Moisture is anticipated to minimize wind erosion of finer-grained surface soils for most of the year; however, the potential for erosion would be greatest during drier periods lasting 1 to 2 months during the summer.

All runoff water that comes in contact with mine site facilities, or is derived from the open pit, would be captured including any entrained sediment in runoff from erosion. A Water Management Plan has been developed and includes water treatment options and strategic discharges of treated water (PLP 2018-RFI 019). A sediment control plan would address construction runoff and associated sediment control measures, BMPs, and adaptive control strategies

Water management structures (e.g., berms, channels, collection ditches) would be designed to accommodate a 100-year, 24-hour rainfall event. Sediment control ponds would be designed to treat a 10-year, 24-hour rain event, and safely accommodate a 200-year, 24-hour rainfall event. Mine site water management infrastructure would include fresh water diversion channels, an open pit water management pond (WMP), the main WMP, the bulk and pyritic TSFs, the bulk TSF main embankment seepage collection pond (SCP), seepage collection and recycle ponds,

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sediment ponds, and two water treatment plants. Water management design criteria and structure configurations are further discussed in Chapter 4.16, Surface Water Hydrology, and in the Operations Water Management Plan (Knight Piésold 2018a).

During construction, runoff upgradient of the TSFs would be intercepted by a cofferdam and released at a discharge point downgradient of all construction activities in the same watershed. Runoff from the TSF embankments during construction would also be captured. Similarly, runoff from larger excavations associated with the construction of long-term infrastructure (e.g., process plant, camps, power plant, storage areas) would be routed to settling ponds prior to discharge. During operations, comparatively less soil erosion from water would occur because of diminished need for soil removal. Non-contact runoff would be captured in engineered diversion channels and discharged downgradient. In addition, completed construction of most long-term infrastructure would coincide with established water management and sediment control plan measures. Stormwater runoff from mine facilities that only requires sediment removal would be captured in sediment ponds, treated and discharged under general APDES stormwater permits. Mine site drainage surface water that comes in contact with infrastructure would be diverted to water treatment plants for processing prior to discharge. Although water and sediment control during the operations phase would emphasize contact water minimization and management, runoff and sediment control measures would continue to be managed through BMPs and adaptive control strategies per the SWPPP(s). Reduction in water management during operations would be limited to concurrent reclamation of overburden stockpiles.

Planned management of slurried tailings delivered to the bulk TSF could result in the transport of dried, fine grained tailings materials through wind erosion during operations. Bulk tailings would be pumped and discharged through spigots along the interior of the perimeter cell, with the slurry preferentially discharged to maintain an exposed tailings beach between the TSF embankment and supernatant pond. Although this approach minimizes potential risks associated with seepage effects on embankment stability, the fine tailings (e.g., beaches) would be susceptible to wind erosion when dried. Additional information regarding fugitive dust derived from the bulk TSF is presented in the Soil Quality discussion for the mine site.

The mine site would be reclaimed per an ADNR-approved reclamation plan that establishes requirements for designated post-mining land use. The reclamation plan would supplement or describe measures to control and mitigate erosion at the mine site through the post-closure period. Erosion during closure would be less than during construction, primarily because of comparatively less surface disturbances. Erosion would be greater during closure than operations because of reclamation earthwork required during closure. Reclamation would likely destabilize large soil surface areas from decommissioning activities. Earthwork associated with the preparation and application of growth media would likely result in erosion until surface stabilization is achieved. At a minimum, similar measures established for construction in the sediment control plan would address runoff through sediment controls and BMPs. Additional measures may include future developments in available technologies or practices, and refined adaptive control strategies acquired throughout operations. Removal and reclamation of long-term water management infrastructure would progressively coincide with surface stabilization objectives established in the ADNR approved reclamation plan.

The potential for erosion during reclamation from destabilized surfaces would likely continue for several years beyond closure. Prescribed design standards for reclaimed infrastructure and monitoring requirements would be established in the reclamation plan. Continued monitoring would be required to implement any erosional control maintenance or adaptive control measures. Prescribed monitoring would likely occur annually until surface conditions are stabilized and meet land use objectives. Although reclaimed infrastructure would be designed to

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withstand anomalous storm events (e.g., 100-year, 24-hour rain event), monitoring would be necessary immediately after any occurrence.

4.14.2.2 Amakdedori Port

This section describes potential effects on shore-based, upland soils at the Amakdedori port site during construction through closure. Offshore sediment impacts resulting from intertidal and open-water construction, operations, and closure of marine facilities are discussed in Section 4.18, Water and Sediment Quality.

Soil Disturbance

No current development exists at the Amakdedori port site. Shore-based soil disturbances would mostly be attributed to construction of the terminal. The total acreage of soil disturbances at Amakdedori port site would be approximately 15 acres. The magnitude of soil disturbances at the port would include the complete removal of soil cover at the terminal during construction and placement of engineered fill at the terminal. Because no construction would be required during operations, subsequent disturbances to soil would likely be limited. With the exception of necessary infrastructure to support shallow-draft tug and barge access to the dock, onshore port facilities would be removed during closure. No additional soil disturbances are anticipated during closure, and restoration of post-disturbance soil conditions would occur through reclamation activities (e.g., scarification, growth media, contouring, seeding).

Soil Quality

Materials sites for engineered fill are well outside the Pebble Deposit, and field review has not identified PAG rock at any of the road material sites. If PAG material were to be identified at a site evaluation prior to use, the material site would be moved (PLP 2018-RFI 035). Furthermore, coarse-grained, engineered fill textures would be less susceptible to erosion or fugitive dust generation, which would be suppressed through watering (PLP 2018-RFI 007). Therefore engineered fill or locally sourced materials at the port site are not expected to introduce chemical impairments to soils.

The most probable source/activity of soil quality impairment would be concentrate handling. Sealed bulk containers would be emptied offshore in the hold of bulk carriers (i.e., ship), at a depth of no less than 20 feet below the hatch (PLP 2018-RFI 007). The calculated total fugitive particulate matter generated on a yearly basis during offshore transfers is 0.002 tons per year (4 pounds). For these reasons, the magnitude and potential of soil quality impact from project activities at the port is considered negligible and unlikely to impact soil quality in upland conditions. The geographic extent of soil quality impacts (if any) would be confined to the immediate port footprint, of which the duration would be predominantly limited to the construction and operations phases.

Erosion

Water- and wind-induced erosion would occur at the port site throughout construction, and to a limited extent during operation and closure. The potential for soil erosion would be greatest during the initial construction phase.

Earthwork during construction would incorporate erosion control measures specified in an approved SWPPP. Typical measures may include silt fences, hay bales, temporary sedimentation basins; and repurposed brush for berms and watering for dust suppression. BMPs may include crowning or in-sloping of running surfaces; and temporary drainage channels, berms, and catchment basins.

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Hydraulic erosion during operations would be comparatively less than during construction due to little additional soil removal and effects of established SWPPP design features (e.g., culverts, swales). Erosion during closure would be less than during construction, but likely greater than during operations. Exposed ground surfaces at sites of removed infrastructure not required for post-closure would be susceptible to wind and water erosion for an interim period until reclamation and restoration activities are completed. The potential for erosion would be mitigated using measures similar to those described for construction.

4.14.2.3 Transportation Corridor

This section describes potential effects on soils along the transportation corridor. Impacts associated with the natural gas pipeline are also included in this section, because the pipeline would be buried in the road prism.

Soil Disturbance

Soil disturbance acreages associated with the proposed transportation corridor include the following:

- South Access Road – 408 acres
- Mine Access Road – 343 acres
- Kokhanok Airport Spur Road – 15 acres
- Iliamna Spur Road – 119 acres
- North Ferry Terminal – 4 acres
- South Ferry Terminal – 21.5 acres
- Material Sites – 241 acres total

Material Sites

Disturbances would include the complete removal and segregation of surface soils and overburden materials considered unsuitable for construction purposes. These materials would be salvaged for future reclamation as a growth medium. Portions of sites no longer used for material extraction would be progressively reclaimed. This would mainly occur after the construction phase, once the bulk demand for materials has been met with infrastructure completion (e.g., roads). Material sites and access roads would continue to be used throughout operations for maintenance of project infrastructure, as needed. Less soil disturbance would occur during operations than during construction, but soil disturbance during operations would be caused by excavation or blasting on an as-needed basis. A need for materials would also persist throughout the post-closure period for continued road maintenance and other limited post-closure needs. Incremental reclamation of disturbance at materials sites would be required. Typical reclamation at gravel material sites would likely include grading and contouring of sidewall slopes; scarification or ripping to promote surface water infiltration and vegetation growth; application of salvaged growth media; and seeding with proposed mixtures as needed. No sidewall reclamation would be conducted at shot-rock material sites with 20-foot bench heights on exposed rock walls.

Soil Quality

Dust from truck traffic and wind erosion of road bed aggregate is considered to have a low potential for changing chemical concentrations in soils along the access roads. Material sites along the roads are well outside the Pebble deposit, and surface soil conditions associated with the transportation corridor are chemically consistent with those described for the mine site study

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area (SLR et al. 2011a). Field review has not identified PAG rock at any of the road material sites. If PAG material were to be identified at a site evaluation prior to use, the material site would be moved (RFI 035). Therefore, the material sources are not expected to introduce chemical impairments to soil. Transportation of concentrates from the mine site would be in sealed containers with locking lids, and therefore are not expected to be a source of fugitive dust along the roads.

Erosion

Similar to all other project components, stormwater and erosion mitigation and control measures would incorporate structural and non-structural BMPs (PLP 2018). Wind-induced erosion would be comparatively less than hydraulically driven processes throughout all phases of the project along the transportation corridor due to seasonal meteorological conditions, physical attributes associated with soil types, infrastructure configuration and construction methods, and planned mitigation. Soils capable of retaining moisture in the project area are generally considered to have a low susceptibility to wind erosion, due inherent moisture content from periodic precipitation or snowmelt throughout the year. For this reason, the potential for wind erosion would be greatest during drier periods lasting one to two months during the summer. If necessary, wind erosion can be mitigated through dust-control watering as needed during the summer.

The potential for hydraulic erosion exists throughout the entire project lifecycle along the transportation corridor; this is evident based on erosion assessments conducted on the existing Williamsport-Pile Bay Road, approximately 30 miles northeast of the south access road. Precipitation events resulting in the greatest erosional losses from surface runoff and flooding generally occur from late September through November. Gently sloping or level transportation infrastructure would be less susceptible to erosional processes. These would include the ferry terminal sites and access roads constructed over glacial fluvial and moraine soil types (Table 4.14-2). Physical conditions more susceptible to hydraulic erosion along the transportation corridor include poorly drained, fine-grained loess or colluvium on sloped topography, waterbody crossings, road prism drainages (e.g., swales), higher-gradient slopes, and sidehill cuts. Approximate access road lengths traversing moderate and rough terrain requiring rock cuts are detailed in Table 4.14-2.

Table 4.14-2: Alternative 1 Road Lengths, Terrain, and Soil Types

Road Segment	Gentle Terrain	Moderate Terrain	Rough Terrain	Approximate Percent Soil Map Unit
South Access Road	3.9 miles (10%)	9.8 miles (26%)	23.6 miles (63%)	20% (IA72), 80% (IA173)
Mine Access Road	26.7 miles (92%)	2.3 miles (8%)	None (0%)	59% (IA7), 37% (IA94), 4% (HY4)
Iliamna Spur Road	2.9 miles (41%)	4.1 miles (59%)	None (0%)	47% (IA7), 53% (IA9)
Percent Total Access Roads Terrain Type1	46%	22%	32%	

Notes:

1. Kokhanok Airport Spur Road is not included in the evaluation due to the comparatively short road length and similar conditions to other project access roads.

2. IA7: Typic Cryandepts – Very gravelly, nearly level to rolling association.

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3. IA17: Dystric Lithic Crandepts – Loamy, hilly to steep association.
4. IA9: Typic Cryandepts – Very gravelly, hilly to steep association.
5. HY4: Pergelic Cryofibrists – Nearly level association.

Source: Rieger et al. (1979); PLP (2018)

Construction phase activities that would potentially cause or contribute to erosion include:

- Removal and clearing of vegetation for access roads, material sites, and terminal facilities.
- Overburden clearing and vegetative mat removal for cut and/or fill placement of engineered materials (e.g., aggregate, substrates).
- Overburden management that would include stockpiles or windrows of organic-rich materials and vegetation, or excavated substrates considered unsuitable for infrastructure construction.
- Development of material sites and material site access roads.
- Blasting of bedrock to support roadbed construction.

The intensity of erosion during construction would vary along project road segments depending on soil types and physical conditions present, seasonal conditions, and construction requirements. Potential erosion may be localized at susceptible locations, such as waterbody drainages and crossings (e.g., culverts, bridges, and swales), wetlands, or intermittent sloped topography. Broader areas considered more susceptible to runoff and erosion would include continuous segments of road through rough terrain, and to a lesser extent moderate terrain. These conditions would require steeper roadbed grades and side-hill cuts that could result in greater erosion potential from runoff (i.e., greater energy) and slope failure.

Terrain and substrates along the south access road correspond with conditions that are considered most susceptible to erosion along the corridor. About 63 percent of the south access road would be predominantly constructed over rough, variable terrain (Table 4.14-1), where fine-grained soil types reportedly overlie shallow bedrock. Although conditions along the south access road appear most vulnerable to hydraulic erosion processes, the evaluation is based on generalized soil descriptions provided in the Exploratory Soil Survey of Alaska (Rieger et al., 1979) (ESS), and does not account for local variations in soil conditions or bedrock outcrops where no soil horizon may exist. With the exception of the northernmost 4 to 6-mile portion of the south access road route, blasting will be required for most roadbed construction, supporting the prevalence of shallow bedrock and moderate to rough terrain conditions (PLP 2018-RFI 084).

No rough terrain requiring rock cuts is present along the Iliamna spur road or the mine access road; however, each traverses approximately 59 percent and 8 percent of moderate terrain, respectively. The mine access road would be least susceptible to hydraulic erosion, based on terrain types traversed and soil conditions. Construction methods along the mine access road would require less backslope cuts (i.e., layback), foreslope contouring, and variation in roadbed grade, compared to other access roads. In addition, surficial glacial deposits and gravel fractions in existing soils along the mine access road and Iliamna spur road would be less susceptible to hydraulic erosion, compared to the south access road.

Similar to access roads, the potential for hydraulic erosion at material sites would also vary based on source material competency (e.g., shot bedrock or aggregate) and conditions unique to each borrow site location. Construction of material sites and transportation corridor infrastructure would use structural and non-structural BMPs, and employ erosion control measures adequate to satisfy appropriate ADEC discharge permit requirements and coverage under an SWPPP (PLP 2018).

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Ground disturbances would be progressively restored throughout construction until stabilization and restoration are achieved. Most disturbances would likely be stabilized during construction or several years thereafter, at locations considered less susceptible.

The least erosion would likely occur during operations, when stabilization of disturbed surfaces would be achieved through natural recovery, applied restoration measures, and long-term or permanent stabilization measures. Material sites and access roads would be progressively reclaimed. Typical reclamation BMPs at material sites include benching or sloping of sidewalls to suitable grades, based on material types (e.g., aggregate or bedrock); distribution of salvaged overburden growth media on pit floors and slopes; and tracking and seeding.

Continuous feedback from truck traffic during operations and/or prescribed follow-up inspections would identify areas of acute or persistent erosion. Areas of concern would be identified, and additional or more robust measures applied to meet local site-specific conditions. This would most likely be required along rough terrain associated with the south access road, and/or areas requiring permanent drainage controls (e.g., culverts, bridges, swales).

Erosion during closure and post-closure would likely be greater than during operations. Some erosion may be cause by the removal and reclamation of long-term facilities (e.g., ferry terminals) before complete restoration and surface stabilization objectives are met. However, most erosion would likely be associated with permanent roads to the mine site. Monitoring frequencies in post-closure would typically be less than during operations, and there would be reduced access to equipment and resources. Required permanent transportation corridor access would result in an indefinite potential for erosion monitoring and maintenance.

4.14.2.4 Natural Gas Pipeline Corridor

This section describes potential effects on shore-based upland soils from pipeline infrastructure on the eastern side of Cook Inlet. Pipeline impacts for segments of the pipeline coincident with the transportation corridor are addressed above. Pipeline activities resulting in disturbances to wetlands and submerged ocean and lake sediment are detailed in Section 4.22, Wetlands, and Section 4.18, Water and Sediment Quality, respectively.

Soil Disturbance

The cumulative total acreage of shore-based soil disturbances from pipeline infrastructure on the eastern side of Cook Inlet is approximately 6 acres. This would include the compressor station, laydown area, access road, metering pad, and horizontal directional drilling (HDD) work area.

Erosion

Similar to other project components, mitigation and control measures would incorporate structural and non-structural BMPs to address erosion and stormwater runoff (PLP 2018). The topography associated with the pipeline infrastructure on the eastern side of Cook Inlet is gently sloping or nearly level. Silty loam soils associated with these conditions are considered to have a low hazard of erosion by water, and severe hazard of erosion by wind, assuming the top cover is removed. Use of HDD would provide a sufficiently wide setback distance between the project footprint and Cook Inlet bluff (about 200 feet); project activities are not expected to contribute to ongoing natural erosion in this area (Section 3.15, Geohazards).

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4.14.2.5 Action Alternative 1 – Summer-Only Ferry Operations Variant

This variant would require a proportionally small increase in soil disturbances associated with the construction of designated concentrate container storage areas at the mine site and Amakdedori port. Approximately 37.5 acres of additional storage area would be required at the mine site, and approximately 27.5 acres at Amakdedori port. The additional disturbances would remain throughout the period of mine operations, and be reclaimed during closure.

This variant would also temporally compress road traffic during ice-free months, which could result in a greater potential for hydraulic and wind erosion along the transportation corridor.

4.14.2.6 Action Alternative 1 – Kokhanok East Ferry Terminal Variant

Despite a shorter transportation route and reduced ferry terminal footprint, the total acreage of soil disturbance under this variant would be greater than Alternative 1. This is attributed to greater material quantities required for road construction, resulting in 125 additional acres of disturbances from material sites. The total acreage of soil disturbance associated with the Kokhanok east ferry terminal variant is approximately 60 acres greater than Alternative 1.

Although soil disturbance acreage is greater under this variant, the potential for erosion is likely to be less. A greater potential for erosion is associated with roads relative to material sites. Roads traverse a broader expanse of terrain and soil types (e.g., waterbodies, cross slopes, inclines) that have a greater point source potential for erosion. Roads typically require a greater diversity of erosion control measures. Engineered fill material sites inherently consist of coarser grained materials (or bedrock) that are less susceptible to hydraulic and wind erosion. Furthermore, sediment runoff is often retained in the footprint of disturbance (e.g., depressions).

4.14.2.7 Action Alternative 1 – Pile-Supported Dock Variant

A pile-supported dock constructed at Amakdedori port would reduce the volume of fill material needed for dock access/construction; therefore, less surface disturbance is anticipated at material sites. The magnitude of surface disturbance impacts would be less under this Alternative 1 variant; the duration, extent, and potential would be comparable to Alternative 1.

4.14.3 Action Alternative 2 – North Road and Ferry

The following section describes impacts to soil resources under Alternative 2. Infrastructure descriptions, usage, physical reclamation and closure would be the same as Alternative 1, but would occur at the locations described under this alternative.

4.14.3.1 Mine Site

The bulk TSF dam at the mine site would be constructed using different methods under this alternative (i.e., downstream method with buttress). The construction method would result in an increased impoundment footprint of 119 acres compared to Alternative 1. Overall, the duration and extent of impacts to soil from ground disturbances would be comparable to Alternative 1; however, there would be greater impact magnitude based on the increased acreage of disturbance. Erosion impacts would be the same as Alternative 1; however, there would be an increased potential for erosion based on infrastructure build out.

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4.14.3.2 Transportation Corridor

Soil Disturbance

Transportation corridor components under Alternative 2 would also incorporate two ferry terminals on Iliamna Lake and road access to either from the mine or port (i.e., Diamond Point port). The road would bypass all but 5 miles of the existing Williamsport-Pile Bay Road; however, these sections would require upgrades to accommodate larger vehicles. Soil disturbance acreages associated with Alternative 2 transportation infrastructure (including the co-located portion of roadbed pipeline) include the following:

- Mine site access road: mine site to Eagle Bay ferry terminal site – XXX acres / 36 miles
- Port access road: Pile Bay ferry terminal to Diamond Point port site – XXX acres / 18 miles
- [Placeholder: Access acreages to be provided by PLP. This section will be revised once information is received. However, total planned lengths are available for comparison and provided here.]
- Eagle Bay ferry terminal site – 6.7 acres
- Pile Bay ferry terminal site – 17.6 acres
- Material sites and access roads –XX acres

[Placeholder: Information is to be provided to differentiate transportation corridor and pipeline alignment material site needs. List will be completed when information is received.]

Although disturbance mechanisms, nature of impacts, and erosion mitigation and control measures during construction, operations, and closure of transportation corridor infrastructure would be comparable to those described under Alternative 1, the overall magnitude of soil disturbance would be less. This is based on a comparatively smaller transportation corridor soil disturbance acreage required under this alternative. The total road length under this alternative would require approximately 37 less miles of road compared to Alternative 1. The total footprint of ferry both terminals would also be approximately 1 acre less.

Soil Quality

Impacts to soil quality along the transportation corridor under Alternative 2 would be the same as described for the corridor under Alternative 1.

Erosion

Soil types and general terrain descriptors present along the Alternative 2 transportation corridor are summarized in Table 4.14-3. Terrain descriptors are based on the presence of shallow bedrock or terrain requiring blasting to accommodate road construction.

Table 4.14-3: Alternative 2 Approximate Road Terrain and Soil Types

ESS Soil Type	Gentle to Moderate Terrain	Moderate to Rough Terrain
IA7[1]	51% (~27 miles)	6% (~3 miles)
IA9[2]	9% (~4.8 miles)	< 1% (0.36 miles)
RM1[3]	15% (~8 miles)	9% (~4.5 miles)
SO11[4]	8% (~4.3 miles)	2% (~1 mile)

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Table 4.14-3: Alternative 2 Approximate Road Terrain and Soil Types

ESS Soil Type	Gentle to Moderate Terrain	Moderate to Rough Terrain
Percent Total Terrain Type[5]	83% (~44.1 miles)	17% (~9 miles)

Notes:

ESS - Exploratory Soil Survey of Alaska (Rieger et al., 1979)

< - less than

1. IA7: Typic Cryandepts – Very gravelly, nearly level to rolling association.
2. IA9: Typic Cryandepts – Very gravelly, hilly to steep association.
3. RM1: Rough Mountainous Land – Steep rocky slopes.
4. SO11: Humic Cryorthods – Silty volcanic ash over gravelly till, hilly to steep association.
5. Terrain type classification associated with planned blasting requirements (segments) for road construction.

Source: Rieger et al. (1979); PLP (2018)

A greater proportion of coarse-grained materials are present along the transportation corridor route based on generalized soil descriptions provided in the ESS, whereas the occurrence of finer grained silt/sand loam mixtures are reportedly less prevalent than Alternative 1 (Table 4.14-3). A lower potential for wind erosion is anticipated under this alternative based on the prevalence of coarser grained substrates along the transportation corridor; a comparatively smaller acreage of soil disturbance that would reduce the potential for wind shear on disturbed surfaces; and a reduced vehicle travel distance for dust dispersion. Since the proposed route under this alternative is also lower in elevation than Alternative 1, overall wind driven forces (e.g., velocity) are also likely to be less. However, this would not preclude occurrence of episodic high wind processes that are commonly associated with valley features present along the port access road.

Most hydraulic erosion mechanisms; nature of impacts; and mitigation and control measures during construction, operations, and closure of transportation corridor infrastructure would be comparable to those described under Alternative 1. Similar to Alternative 1, hydraulic erosion susceptibility under this alternative would be greatest along the southernmost port access road segment.

Heavy precipitation and flooding during fall months has previously resulted in significant hydraulic erosion losses along the Williamsport-Pile Bay Road (USACE 2007a; KPB 2014). Specific conditions that resulted in impassable erosion washout at multiple points along the Williamsport-Pile Bay Road in the fall of 2003 included culvert and bridge crossings, and surface water erosion in drainages aligned adjacent (e.g., swale or ditch) to the road (USACE 2007).

Although the proposed route is commonly aligned with five miles of the existing Williamsport-Pile Bay Road, the remaining roadway would be newly constructed roadway to minimize conditions historically susceptible to erosional processes along the current Williamsport-Pile Bay Road alignment. The southernmost uplands road segment has comparatively less cross cuts along toe-slopes in areas of greater vertical relief, and traversed terrain is considered to be more gentle and moderate in character (Table 4.14-3). Rock cuts along the southernmost uplands segment and other discrete segments would require blasting; however, it would be comparatively less than the south access road under Alternative 1. Furthermore, roadway commonly shared with the existing Williamsport-Pile Bay Road would be improved to accommodate large trucks. These improvements would foreseeably account for historical erosion occurrence through road design and condition specific mitigation and control measures.

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Approximately 2.5 to 3 miles of road extending from the Diamond Point port site would follow the coastline of Iliamna Bay. This coastline road segment is considered most susceptible to erosion under all action alternatives. The coastal road is situated along the toe slopes of mountainous terrain, and would likely be subjected to marine driven processes. The topographic relief located immediately adjacent to the road from the port is characteristic of a high energy environment where natural hydraulic erosion and slope failure processes are likely to be more prevalent. Portions of roadway along this coastline segment could also be more susceptible to tidal action; ice scour/rafting, storm surge, and wave action. Additional discussion regarding slope failure processes and occurrence are presented in Section 4.15, Geohazards.

The greatest potential for transportation corridor erosion under Alternatives 1 and 2 are located along the port access routes. Erosion along the port access route under Alternative 2 would likely be less based on a smaller acreage of soil disturbance and presence of terrain types that are associated with a reduced erosion potential. However, the initial 2 miles of road extending from the port under Alternative 2 could be the most erosion susceptible segment of road. This nearshore segment of road is unique to Alternatives 2 and 3, and would require enhanced design and mitigation measures to account for the high energy environment.

4.14.3.3 Diamond Point Port

Soil Disturbance

Soils in the port footprint are reportedly associated with rough mountainous land (RM1) consisting of sparsely vegetated soil over shallow bedrock or stones/boulders. The port terminal facility and dredge material stockpile would result in the greatest soil disturbances. The total acreage of soil disturbances at Diamond Point port is 39.7 acres. The estimated acreage of disturbance includes the footprints of the port terminal facility and uplands disposal of dredged materials (e.g., stockpile).

[Placeholder: A revised layout for the Diamond Point port is being considered to avoid in-stream construction per PLP 2018-RFI 099. Section will be revised once information is received.]

Most soil disturbance mechanisms and impacts during construction, operations, and closure at the port would be similar to those described under Alternative 1; however, disturbances unique to this alternative include the following:

- Blasting of shallow bedrock at discrete locations to accommodate port infrastructure
- Uplands disposal of dredge material
- Stream channel diversion, or other method of stream channel flow mitigation through the port footprint [see placeholder above]

Soil disturbances during construction would involve grading and contouring of ground surfaces, and extensive blasting of shallow bedrock to accommodate port construction. Removal of soil considered unsuitable for construction purposes would be limited due to prevalent shallow bedrock and coarse alluvium outwash. The bermed dredge material stockpile would be built immediately adjacent to the port terminal to receive spoils from dredge channel clearance.

Since no additional construction would be required during operations, soil disturbances during port operations would primarily be limited to dredge material stockpile expansion from maintenance dredging. At a minimum, half of the material dredged for channel construction and maintenance (approximately 325,000 cubic yards) would be disposed of on-shore in a bermed facility. Soil disturbance impacts associated with the dredge material stockpile could range from the direct burial of existing soils, to potential acute or obvious changes associated with any stockpiled marine sediment in an upland environment.

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Soil Quality

Impacts to soil quality along the transportation corridor under Alternative 3 would be the same as described for the corridor under Alternative 1.

Erosion

Most hydraulic erosion mechanisms, nature of impacts, and mitigation and control measures during construction, operations, and closure of port facilities would be comparable to those described under Alternative 1. Since coarse alluvium outwash and shallow bedrock conditions at the port site are less susceptible to erosion, the period of greatest ground disturbance during port facility construction would generally result in less erosion than Alternative 1. However, unique conditions specific to this alternative that could potentially increase erosional susceptibility or require additional design and mitigation measures throughout construction, operations, and post-closure include the following:

- Uplands disposal of dredge material
- Topographic relief and slope stability
- Stream channel diversion, or other method of stream channel flow mitigation through the port footprint [see placeholder above.]

Hydraulic erosion of stockpiled dredge materials would be mitigated through proper impoundment and drainage design. Stockpiled materials could be susceptible to wind erosion depending on the physical attributes of dredge materials (particle size distribution and cohesion); interim surface stabilization measures; constructed dimensions; and frequency and magnitude of coastal and seasonal winds. Physical conditions that are considered less susceptible to wind erosion include high moisture contents or frozen conditions; larger particle sizes; presence of surface cover, and lower slope angles to reduce wind shear. Mitigation measures that may reduce the potential for wind erosion include wind breaks, snow fencing, reduced slope angles, or watering during increased periods of susceptibility. Final closure of the stockpile would include drainage and surface stabilization. Typical measures that could facilitate stockpile surface stabilization include slope and top cover engineering, tracking (rolling), seeding, and repurposing of material as growth media.

The topographic relief located immediately inland of the eastern port footprint (to the jetty/causeway) is characteristic of an environment where natural hydraulic erosion and slope failure processes are likely to be more prevalent. Sloped ground conditions bordering the port footprint has a greater potential for increased surface water runoff, which could result in greater rates of scouring or aggradation. This could potentially include slope failure processes that indirectly impact port infrastructure. Recent slope failure occurrence (e.g., landslide) is present along the access road extending from the port to the jetty. These conditions would require additional design and mitigation measures; however, the potential for slope failure to compromise discrete portions of port infrastructure would likely persist. This would also include infrastructure located at the base of headwall cuts in bedrock. Additional discussion regarding slope failure processes and occurrence are presented in Section 4.15, Geohazards.

4.14.3.4 Natural Gas Pipeline Corridor

The pipeline under Alternative 2 would come ashore at Ursus Cove. The pipeline would be constructed below grade along a valley floor and eventually resurface at the Diamond Point port site after a short marine crossing of Cottonwood Bay. The 5.5 miles of uplands pipeline along this segment coincides with shallow bedrock and coarse soil textures (e.g., boulder and cobble) in rough mountainous terrain; however, it is likely that an appreciable gravelly sand colluvium is

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present along the valley floor. The pipeline from the port would follow a shared road corridor towards the Pile Bay ferry terminal. The stand-alone pipeline (no road) between the Pile Bay and Eagle Bay road off-takes, would be 36 miles in length.

Soil Disturbance

Acreages of upland ground disturbance associated with stand-alone pipeline components under Alternative 2 include the following:

- Standalone pipeline construction ROW – 503 acres / 41.5 miles
- Material sites and access roads – XX acres
- Operation infrastructure – XX acres
- Temporary construction access – XX acres
- [Placeholder: pipeline ROW acreage estimated based on a 100-foot construction ROW, and subject to change with further information. Additional pipeline infrastructure acreage estimates forthcoming for Alternative 2 and 3 soil disturbance comparison.]

Although the pipeline construction corridor would be 100-feet wide during construction to accommodate trench spoils and heavy equipment traffic, complete removal of the overlying vegetative mat would be limited to an 8 foot span directly above the trench. The total acreage of vegetative mat that would be completely removed during construction is approximately 40 acres. Shallow soil on the spoils and working sides of the trench would mostly be limited to disturbances from working equipment resulting in ground compaction, rutting or tearing of ground surfaces.

Construction would occur year round along simultaneous or overlapping construction efforts on segments; construction would include preliminary ROW clearing and preparation followed by pipeline installation, and rehabilitation/commissioning. Temporary pipeline camps and material sites would be required.

Soils that are more susceptible to surface disturbances (e.g., wetlands) would incorporate additional mitigation measures and best management practices. Working pads constructed of swamp mats along the working ROW would be used to minimize surface disturbances during summer months and frost packing of the entire construction ROW during winter months. Frost packing would involve clearing the snow from the ROW to achieve a frost depth of 2 feet below ground surface. Although no other mitigation and restoration activities have been specified, common practices that can be used during construction include salvaging of timber for corduroy matting or ice pad construction. To the extent practicable, backfilling would occur as soon as possible to minimize additional equipment efforts or soil disturbances. Temporary impoundment of saturated spoils and/or drainage control measures for water accumulation in the trench may be required for construction in wetlands.

Most mitigation and restoration measures would be conducted during and immediately after construction; however, follow up measures may be required on a case-by-case basis particularly after winter construction activities. Surface disturbances are expected to recover within the first few years following construction. Soil disturbances during operations would be significantly less than the construction period. The permanent pipeline ROW may require periodic brush clearing to accommodate routine and non-routine pipeline monitoring and maintenance over the operational period. Disturbances may result from intermittent corrective maintenance activities or additional surface stabilization measures on a case-by-case basis.

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Erosion

Similar to other project components, mitigation and control measures would incorporate structural and non-structural BMPs to address erosion and stormwater runoff. ESS soils corresponding to standalone segments of pipeline are summarized in Table 4.14-4:

Table 4.14-4: Alternative 2 Standalone Pipeline Soil Types

ESS Soil Type	Percent Total Alignment	Miles
IA7[1]	41%	(~36.4 miles)
IA9[2]	6%	(~5.2 miles)
RM1[3]	21%	(~18.7 miles)
SO1[4]	<1%	(~0.5 miles)
SO11[5]	32%	(~28 miles)

Notes:

ESS - Exploratory Soil Survey of Alaska, Rieger et al., 1979)

< - less than

1. IA7: Typic Cryandepts – Very gravelly, nearly level to rolling association.
2. IA9: Typic Cryandepts – Very gravelly, hilly to steep association.
3. RM1: Rough Mountainous Land – Steep rocky slopes.
4. SO1: Typic Cryorthods – Silty loess to fibrous organic soils over gravelly till, nearly level to hilly.
5. SO11: Humic Cryorthods – Silty volcanic ash over gravelly till, hilly to steep association.

Source: Rieger et al. (1979); PLP (2018)

[Placeholder: Final access acreages to be provided with forthcoming information. However, planned lengths are provided for partial comparison]

The potential for hydraulic and wind erosion impacts would be most significant along pipeline segments in moderate to rough terrain where finer grained silty loess or volcanic ash materials are present at shallow depth. The segment of stand-alone pipeline from the port road to Canyon Creek west of Pedro Bay generally coincides with finer grained silty volcanic ash soils (shallow) overlying glacial till (SO11, Table 4.14-4). Slopes range from hilly to steep, and slightly less than half of this segment (12.3 miles) may require some blasting. Based on the presence of rougher terrain (e.g., blasting), steeper slopes, and finer grained shallow soils, this segment is considered more susceptible to erosion relative to other sections of the pipeline route to the Mine site.

Effective erosional management during and immediately after construction is anticipated through applied erosional control measures and BMPs; however, post-construction or operations phase, inspections may identify localized conditions requiring installation of long-term surface stabilization controls. Areas considered more susceptible to erosion where longer term surface stabilization controls may be required to promote recovery include sloped topography, wetlands, and waterbody crossings.

The least amount of anticipated erosion would occur during closure and post-closure. The pipeline would be abandoned in-place and areas requiring more intensive surface stabilization measures would likely be addressed over the period of operation. Surface facilities associated with the pipeline would be removed and reclaimed.

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4.14.3.5 Action Alternative 2 – Summer-Only Ferry Operations Variant

The Alternative 2 summer-only ferry operations variant would have the same impact at the mine site as Alternative 1. The Alternative 2 variant would require approximately 28.8 additional acres at the port as compared to the Alternative 1 summer only ferry operations variant. The additional disturbances would remain throughout the period of mine operations, and be reclaimed during closure. No other pipeline, transportation corridor, or mine site infrastructure would change under this variant.

4.14.3.6 Action Alternative 2 – Pile Supported Dock Variant

Impacts to soil resources under this variant would be the same as those described for Alternative 1.

4.14.4 Action Alternative 3 – North Road Only

A continuous overland access road would connect the Diamond Point port to the mine site. Impacts to soil resources at the mine site would be the same as Alternative 1, and those at the port would be the same as those described under Alternative 2.

Since the natural gas pipeline would be commonly aligned with the transportation corridor under this alternative, both all are collectively evaluated together for soil disturbance and erosion impacts. The following section describes impacts for the transportation corridor that would be appreciably different under Alternative 3.

4.14.4.1 Transportation Corridor

Soil Disturbance

The gas pipeline trench would be located adjacent to the road (road bed prism) to facilitate construction, maintenance, and inspection. The pipeline(s) would use vehicle bridges to span major stream crossing, and HDD drilling or trenching across smaller drainages as appropriate. No Iliamna Lake ferry infrastructure would be required under this alternative based on the continuous overland route to the mine site. Estimated acreages of transportation corridor (and pipeline) ground disturbances under this alternative include the following:

- Road corridor/pipeline(s) – 1,029 acres
- Material sites and access roads – 755 acres

[Placeholder: Acreage estimates subject to change with further information.]

The total acreage of ground disturbance from material sites and shared road and pipeline under this alternative is approximately 58 percent greater than Alternative 1, and approximately XX% greater than Alternative 2. The permanent need for transportation corridor access throughout post-closure would create a permanent ground disturbance in the footprint unlike the 500 acres of stand-alone pipeline corridor ground disturbance under Alternative 2 that would be expected to recover to pre-disturbance conditions during the operations phase.

[Placeholder: Additional pipeline infrastructure acreage estimates forthcoming for Alternative 2 and 3 soil disturbance comparisons. Section will be revised accordingly.]

Erosion

ESS soil types corresponding to transportation corridor terrain under Alternative 3 are summarized in Table 4.14-5.

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Table 4.14-5: Alternative 3 Approximate Road/Pipeline(s) Terrain and Soil Types

ESS Soil Type	Gentle to Moderate Terrain	Moderate to Rough Terrain
IA7[1]	42% (~34.7 miles)	4% (~3.5 miles)
IA9[2]	6% (~5 miles)	< 1% (0.36 miles)
RM1[3]	11% (~8.7 miles)	6% (~4.5 miles)
SO11[4]	15% (~12.3 miles)	16% (~13.5 miles)
Percent Total Terrain Type[5]	74% (~60.7 miles)	26% (~22 miles)

Notes:

ESS - Exploratory Soil Survey of Alaska, Rieger et al., 1979)

< - less than

1. IA7: Typic Cryandepts – Very gravelly, nearly level to rolling association.
2. IA9: Typic Cryandepts – Very gravelly, hilly to steep association.
3. RM1: Rough Mountainous Land – Steep rocky slopes.
4. SO11: Humic Cryorthods – Silty volcanic ash over gravelly till, hilly to steep association.
5. Terrain type classification associated with planned blasting requirements (segments) for road construction.

Source: Rieger et al. (1979); PLP (2018)

Mitigation and control measures for erosion and stormwater runoff would incorporate structural and non-structural BMPs common to transportation and pipeline construction practices described under Alternatives 1 and 2. The greatest potential for hydraulic and wind erosion impacts would correspond with invasive ground disturbance during construction. Disturbed surfaces would remain susceptible to erosion until concurrent or follow up stabilization is achieved. Permit required mitigation measures and BMPs are anticipated to alleviate most conditions throughout or immediately after construction.

More robust mitigation and follow-up stabilization measures during and after construction are likely to be required in areas of moderate to rough terrain where fine grained soil conditions exist. This coincides with the segment of stand-alone pipeline from the port road to Canyon Creek west of Pedro Bay under Alternative 2 (SO11 soils). The least amount of erosion would likely occur during operations, when stabilization of disturbed surfaces would be achieved through natural or applied restoration and stabilization measures, and continued (i.e., real time) monitoring along the corridor. Erosion throughout post-closure would likely be greater than the operations phase based on an indefinite need for transportation corridor access; a reduced erosion monitoring frequency; and reduced access to equipment and resources.

Summary of Erosion Impacts

Enhanced design and mitigation measures would be required along discrete segments, in particular the segment of coastline road through rugged terrain from Diamond Point port (2.5 miles) under Alternatives 2 and 3. More robust mitigation and restoration measures may be needed in moderate to rough terrain with finer grained soil conditions (iSO11 soils). The duration of erosion would vary from completion of the activity (e.g., construction or reclamation), to an indefinite period in post-closure. The extent of erosion effects would be mostly limited to the immediate vicinity of disturbance or footprint.

The overall magnitude, extent and potential for erosion under this alternative is considered to be greater than the transportation corridor for Alternative 2 based on total footprint acreage,

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presence of fine grained soils in moderate to rough terrain, and increased frequency of waterbody crossings. The duration would be comparable to Alternative 2 since both alternatives indefinitely retain transportation corridor infrastructure.

4.14.4.2 Alternative 3 – Concentrate Pipeline Variant

This variant includes an HDPE[1]-lined steel pipeline that would convey slurried copper and gold concentrates from the mine site to the port facility (PLP 2018-RFI 066). The pipeline would be predominantly buried sub-grade in the same trench as the gas pipeline, with approximately 36-inches of top cover. Impacts to soil resources at the mine site and port would be the same as those described under Alternative 2; however, a small soil disturbance increase would be anticipated due to a concentrate pipeline pump house (e.g., 1 acre), and pipeline booster station (0.7 acres).

The shared transportation and concentrate pipeline corridor would increase the road corridor width by less than 10 percent; resulting in a proportional soil disturbance increase. The duration and geographic extent of soil disturbance and erosion would be the same as Alternative 3; however, there would be an appreciable increase in erosion magnitude and potential based on the additional acreage of disturbance associated with transportation corridor widening.

4.14.5 Key Issues/Impacts Summary

Table 4.14-6 provides summary statements of key issues and impacts from the project on soil resources.

Table 4.14-6: Summary of Key Issues for Soil Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Soil disturbance	~8,129 acres (total) *Summer-Only Variant* ~8,167 acres (total)	*Alternative 2* ~119 additional acres (downstream TSF construction) *Summer-Only Variant* No change	*Alternative 3* No change from Alternative 1 *Concentrate Pipeline Variant* ~1.7 additional acres
Soil quality	Magnitude and potential: Negligible or no adverse change to surface soil chemistry from fugitive dust deposition relative to existing baseline conditions. Extent: mine site (ambient air) boundary. Duration: Throughout post-closure. *Summer-Only Variant* No change	*Alternative 2* No change *Summer-Only Variant* No change	*Alternative 3* No change *Concentrate Pipeline Variant* No change
Erosion	Magnitude: Within project design and permit	*Alternative 2* Potential erosion increase	*Alternative 3* No change from

[1] HDPE =high-density polyethylene

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Table 4.14-6: Summary of Key Issues for Soil Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	requirements. Duration: Pre-activity levels within 100 years. Extent: Project boundaries. Potential: Inherent *Summer-Only Variant* No change	from TSF build out. *Summer-Only Variant* No change	Alternative 1 *Concentrate Pipeline Variant* No change from Alternative 1
Transportation Corridor			
Soil disturbance	~1,150 acres (includes shared pipeline) *Summer-Only Variant* No change *East Ferry Variant* ~60 acre total increase due to material site acreage, but less wetland disturbance	*Alternative 2* Reduced total footprint of ~XXX acres, and 37 less miles of roadway. *Summer-Only Variant* No change	*Alternative 3* ~1,784 acres (total) 58% greater than Alternative 1 *Concentrate Pipeline Variant* Increased Transportation Corridor [Placeholder: road footprint would be larger, amount not yet determined, but likely less than 10%]
Soil quality	Magnitude and Potential: Negligible or no adverse change to surface soil chemistry from fugitive dust deposition. No PAG material from locally sourced material sites, seasonal emission mitigation/suppression through watering, and concentrate transport in sealed containers. Duration: Indefinite based on continued post-closure transportation corridor access. Potential: Inherent; but low due to mitigation measures and fill source (material site) geo-chemistry assessment. *Summer-Only Variant* No change	*Alternative 2* No change *Summer-Only Variant* No change	*Alternative 3* No change *Concentrate Pipeline Variant* No change
Erosion	Magnitude: Approximately 30 miles of port road corridor in moderate to rough terrain (~33.4 miles total) that is associated with the presence of	*Alternative 2* Magnitude and extent: Reduced based on smaller acreage of ground disturbance and increased presence of coarser soil	*Alternative 3* Magnitude, extent, potential: Greater than Alternatives 1 and 2 based on greatest footprint acreage and waterbody

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Table 4.14-6: Summary of Key Issues for Soil Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	shallow fine grained soils. May require some enhanced design and mitigation measures. Duration: Temporary to indefinite Extent: Project footprint Potential: Inherent, but greatest potential along south access road, with a low potential for other transportation components. *Summer-Only Variant* Potential erosion increase due to greater road usage during ice free months. *East Ferry Variant* Comparable but potentially less erosion based on shorter road length.	types and gentler terrain. Duration: No change (temporary to indefinite) Potential: Increased along 2.5 mile coastline segment of port access road where unique road design and mitigation measures will be required to minimize erosion potential; however, erosion potential will likely persist (e.g., topography and maritime conditions). *Summer-Only Variant* Potential erosion increase due to greater road usage during ice free months, but less than Alternative 1 variant based on shorter road length.	crossing frequency. However, magnitude and potential may be comparable to Alternative 1 (at a minimum) based on less moderate to rough terrain that coincides with shallow fine grained soil types. Duration: No change (temporary to indefinite) *Concentrate Pipeline Variant* Magnitude and potential: Greatest amongst all action alternatives and variants due to less than 10% increase in transportation corridor width (i.e., Alternative 3). Duration: No change (temporary to indefinite) Extent: Comparable to Alternative 3.
Port Site			
Soil disturbance	~15 acres (total) *Summer-Only Variant* ~42.5 acres (total) *Pile-Supported Dock Variant* Reduced fill material demand and acreage.	*Alternative 2* ~39.7 acres (total) (~24.7 additional acres) *Summer-Only Variant* ~68.5 acres (total)	*Alternative 3* Same as Alternative 2 *Concentrate Pipeline Variant* Same as Alternative 2
Soil quality	Magnitude: Negligible or no adverse change to surface soil chemistry from fugitive dust deposition. No PAG material from locally sourced material sites, seasonal emission mitigation/suppression through watering. Concentrate transfer from sealed bins to bulk carriers conducted off-shore below deck. Calculated concentrate total emissions is approximately 4 pounds per year. Duration: Indefinite based on continued post-closure	*Alternative 2* No change *Summer-Only Variant* No change	*Alternative 3* No change *Concentrate Pipeline Variant* No change

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Table 4.14-6: Summary of Key Issues for Soil Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	port needs Potential: Low; however, greatest during the operational period during concentrate storage and handling. *Summer-Only Variant* No change		
Erosion	Magnitude: Low and within project design and permit requirements. Duration: Indefinite and up to several years into post-closure Extent: Project footprint Potential: Inherent – low *Summer-Only Variant* Increased erosion potential *Pile-Supported Dock Variant* Reduced erosion potential	*Alternative 2* Magnitude and Extent: Increased based on larger acreage of ground disturbance/infrastructure, terrain, and dredge material stockpile. Duration: No change Potential: Increased based on larger acreage of ground disturbance, terrain, and dredge material stockpile. *Summer-Only Variant* Increased erosion magnitude and potential *Pile-Supported Dock Variant* Same as Alternative 1 variant.	*Alternative 3* Same as Alternative 2 *Concentrate Pipeline Variant* Same as Alternative 2
Natural Gas Pipeline (Stand-alone)			
Soil disturbance	~6 acres (total) *East Ferry Variant* Shorter 3 mile pipeline length but negligible change based on shared Transportation Corridor.	*Alternative 2* ~503 additional acres	*Alternative 3* The pipeline under this alternative is considered part of the commonly aligned/shared Transportation Corridor. See Alternative 3, Transportation Corridor key issues for soil disturbance. *Concentrate Pipeline Variant* Same as above
Erosion	Magnitude: Negligible based on limited ground disturbance and shared transportation corridor; within project design and permit requirements Duration: Indefinite	*Alternative 2* Magnitude, extent, and potential: Increased during construction and operations based on larger acreage of ground disturbance, length, and reduced accessibility.	*Alternative 3* Although the pipeline under this alternative is considered part of the commonly aligned transportation corridor for evaluation, the following key issue is considered:

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Table 4.14-6: Summary of Key Issues for Soil Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Extent: Project footprint Potential: Inherent but low *East Ferry Variant* Decreased erosion potential	Magnitude and extent are considered comparable to Alternative 1 during post-closure based on stabilization, ground surface restoration and in place abandonment. Potential: Increased during post-closure. Duration: Comparable based on shared transportation corridor segments.	The potential for increased erosion susceptibility of shallow fine grained soils in moderate to rough terrain from the port road to Canyon Creek west of Pedro Bay under Alternative 2 (stand-alone pipeline) would be reduced under Alternative 3 immediately after construction and throughout operation. This is due to continuous road access for monitoring and maintenance of surface stabilization and restoration measures. *Concentrate Pipeline Variant* Same as above

4.14.6 Cumulative Effects (Soil)

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to soil disturbance and erosion impacts. Section 4.1 details the past, present, RFFAs considered for evaluation. Several of the RFFAs detailed in Section 4.1 are considered to have no negligible cumulative impact on soil resources. These would include off-shore based developments such as oil and gas lease sales, in-river hydroelectric projects, or non-industrialized point source activities that are unlikely to result in any appreciable soil impact beyond a temporary basis (e.g., subsistence, tourism, recreation, hunting, and fishing). Other RFFAs removed from further consideration include those considered to be sufficiently distant to eliminate infrastructure co-use by other parties, and distant geographic variability of soil conditions not considered representative of soil resources affected by the project (e.g., Donlin, Copper Joe). The following RFFAs identified in Section 4.1 were carried forward in this analysis based on their potential to impact soil resources in the analysis area:

- Pebble project buildout- develop 55 percent of the resource over 78-year period
- Pebble South/PEB*
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Diamond Point Rock Quarry
- Lake and Peninsula Transportation and Infrastructure

**Indicates exploration activities only.*

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The most important potential future actions included in this analysis are those that are likely to contribute to ground disturbances or soil erosion and are regionally common to the project. Since development at remote locations can be financially prohibitive, RFFAs in proximity to the project that could potentially minimize costs through co-use of project infrastructure are also considered important in this analysis.

The project buildout is the only mineral deposit RFFA considered for exploration and development. All other mineral deposit RFFAs are considered for exploration only. Project buildout would result in additional soil disturbance acreages not included under Alternative 1:

- Increased pit footprint
- Increased TSF and waste rock storage capacity
- Additional processing infrastructure
- Construction of a new port site with diesel fuel and concentrate pipeline(s) extending to the mine site

The additional acreage of disturbance to wetlands at the mine site would in the combined Koktuli and Upper Talarik Creek watersheds. The buildout would correspond to an increase in magnitude and local extent of disturbance impacts.

RFFAs associated with exploration activities would have some appreciable soil disturbance impacts (e.g., drill pads, camps); however, they would be seasonally sporadic, temporary, and localized based on remoteness. Erosion would vary on a case-by-case basis, and would likely be mitigated through permit required conditions. Although exploration activities are considered to have minimal cumulative impacts to soil resources, it should not preclude the potential for greater soil impacts from future development that could be incentivized through reduced infrastructure costs (e.g., transportation infrastructure co-use).

The footprint of the Diamond Point rock quarry coincides with the Diamond Point port footprint under Alternatives 2 and 3. Upland soil disturbances and erosion impacts would be limited to coarse soils occurring in rocky mountainous terrain. The increase in soil disturbance and erosion impacts e.g., magnitude and geographic extent) would be comparable to those identified under to Alternatives 2 and 3. Cumulative impacts would likely be negligible under Alternatives 2 and 3 due to commonly shared project footprints with the quarry site.

Transportation development in the Lake and Peninsula Borough would have a cumulative impact on soils in the impact study area. Development may include new transportation corridors and road improvements. Other infrastructure improvements (e.g., power) would incorporate existing footprints or alignments. Improvements to the Williamsport-Pile Bay Road may result in an appreciable soil disturbance increase; but would likely result in a net decrease of erosion through improved design. Other new road corridor developments (e.g., Iliamna River road, Kaskanak road) would appreciably increase the magnitude and local extent of soil disturbance impacts and erosion potential. Soil disturbance impacts would be permanent in road bed footprints; however, erosion is expected to be minimal based on permit required mitigation and proven industry construction practices

The magnitude of cumulative impacts to soil from RFFAs would vary from temporary soil disturbance to permanent soil removal. Similarly, erosion would vary from minimal surface stabilization efforts to indefinite erosion maintenance (e.g., roads, mine site infrastructure). All RFFA impacts to soil would likely be limited to the footprint occurrence. Furthermore, soil types and conditions affected by RFFAs in the geographic study area are most likely to be usual or ordinary and prevalent throughout the region.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 1:45:01 AM
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Subject: FW: Pebble Review Drafts Transmission (3.7, 4.7, 3.8, K3.8, 4.8) please provide comments if your agency has been requested to do so by 12/7/2018 (UNCLASSIFIED)
Attachments: Sec3.7_CulturalRes_reviewdraft_2018.11.09.docx; Sec3.8_HistoricProp_reviewdraft_2018.11.09.docx; Sec4.7_CulturalRes_reviewdraft_2018.11.09.docx; Sec4.8_HistProp_reviewdraft_2018.11.09.docx; K3.8_HistoricProp_reviewdraft_2018.11.09.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 5 Word files, the review drafts of:

Sec3.7, 4.7 – Cultural Resources. There are no separate figure PDFs. There are no technical appendices. CAs include ACHP, Curyung, Nondalton, USACE, State of Alaska.

Sec3.8, 4.8-Historic Properties. There are no separate figure PDFs. There is only one technical appendix (K3.8). CAs include ACHP, BSEE, USACE, State of Alaska.

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K3.8 HISTORIC PROPERTIES

K3.8.1 Mine Site

SRB&A (2013a) reports on the identification of 43 cultural resource sites in Pebble Limited Partnership's (PLP) mine study area that are entered into the Alaska Heritage Resource Survey (AHRS) database. The mine study area is geographically larger than the mine operations footprint. Of these sites, two are currently within the mine operations footprint (ILI-00218 and ILI-00251, in **bold**).

Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00013	Newhalen Upper Rapids	Townsend observed this site, from a plane, in a grassy area with apparently no secondary growth. It seems to be situated on several terraces and is about 100 yards long.	Prehistoric
ILI-00031	Newhalen Middle Rapids	This site was observed by Townsend, form a plan, at the top of a single terrace. Four or five house pits were noted.	Prehistoric
ILI-00106	NPS Using	No Description in AHRS database	Unknown
ILI-00193	ILI-00193*	119 surface artifacts were collected and a 50cm x 50cm test unit on the margin of the blowout was excavated. This test unit contained 13 flakes, one used flake fragment and one possible blade in the top 10cm. Collected surface artifacts include bifaces, blade fragments, and debitage. There is cultural material in a soil context and there may be charcoal or other datable material in stratified context in the area.	Prehistoric
ILI-00194*	South Fork Koktuli River Site 4	The site consists of lithic artifacts from the surface and subsurface context. Lithic artifacts include three biface fragments and debitage.	Prehistoric
ILI-00196	ILI-00196	Site consists of an isolated artifact. Testing of the surrounding area failed to locate further cultural material.	Prehistoric
ILI-00209	Isolated Find	A possible bifacially reduced cobble was discovered on the surface. The biface was not collected and no other tools were located in the vicinity.	Prehistoric
ILI-00212	Rock Stand and Circle Site	A one meter diameter circle of cobbles with a very large cobble in the center. The rocks appear to be larger and rounder than the rocks in the surrounding area, which are fractured and heavily covered with black lichen. Nearby (50m) is a collapsed stack of similar stones.	Prehistoric / Protohistoric
ILI-00214	Wiggly Lake Camp 2	This site consists of two rock features, a deposit of rifle cartridges of two different calibers, and some antler and bone pieces. The fire ring is a circle nearly a meter in diameter with a line of rocks bisecting the circle down the center. Some burned material was visible beneath the rocks. Nearby to the southeast was an area with numerous cartridges including .223, .338 and 7mm magnum rounds and a tent ring about 12 feet in diameter consisting of 5-8 cobbles resting on the surface of the tundra. Possible stakes made from antler and bone fragments are also nearby. In 2012, SRB&A conducted subsurface testing at the site and did not locate any subsurface cultural material.	Historic

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Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00215	Wiggly Lake Camp 3	SRB&A recorded this site in 2008 as a ring of cobbles that measured approximately 12 feet in diameter. When SRB&A revisited the site in 2012, the field crew mapped in the identified faunal remains, a hearth, and rifle cartridges and mapped these features using a Trimble GPS, and conducted multiple subsurface tests in the area. The field crew did not relocate the ring of cobbles. None of the subsurface tests in 2012 produced any cultural material.	Unknown
ILI-00217	Wiggly Lake Camp 5	This site is a relatively large camp that includes a tent ring approximately 20 feet in diameter consisting of large cobbles. A plastic water container with bear bite marks, a kerosene can, a firewood stockpile and a stacked pile of caribou antlers were found below the esker on a flat area of tussock tundra. Nearby on the tussock flats a horseshoe pitch with horseshoes and rebar pins were::found. A few fire pits were on the flats toward the lake in tussock tundra. SRB&A relocated the site in 2012 and mapped it with a Trimble GPS. Multiple subsurface tests were conducted, all of which were negative for cultural materials. However, personal communication with the makers of the horseshoes, Regent Sports Corporation, allowed SRB&A to determine that the set of horseshoes identified were made during the 1960's.	Historic / Modern
ILI-00218	**Isolated Lithic Find**	**This site consisted of one used flake. The used flake was found on the surface of the tundra. No other artifacts were found on the surface or in test pits excavated nearby.**	**Prehistoric / Protohistoric**
ILI-00221	ILI-00221	Site consists of three cultural surface depressions and intact subsurface cultural strata. The cultural surface depressions are in the SW part of the site and consist of two rectangular features measuring 3.5-4m x 2.5-3m x 0.3-0.4m and one circular feature measuring 4.5m in diameter and 50cm deep. One rectangular feature has a narrow depression off the NW corner, possible an entry tunnel. Thirty-six positive shovel tests yielded 607 flakes, five shatter, six biface fragments, one grooved stone, two used flakes, one small unidentified faunal fragment, and charcoal. Cultural material was from between 0-25cm below surface.	Prehistoric
ILI-00222	ILI-00222	Surface lithic scatter on a lag deposit. Pedestrian walkover identified less than 20 flakes, a bluish green chert scraper with some polish, and at least one incomplete biface. There is potential for buried cultural material in vegetated areas adjacent to the lag deposit. Artifacts were not collected. No tests were excavated at the site.	Prehistoric
ILI-00223	ILI-00223	Site consists of an isolated straight stemmed biface with rounded shoulders found on the surface of an exposed lag deposit. The biface is made of an opaque black cryptocrystalline material with white vein inclusions and broken transversely through the midsection. A circle of large stones, about 2m in diameter (ILI-00232), was found approx. 20m S of the biface. The broken point was collected, no tests were excavated at the site.	Prehistoric
ILI-00224	ILI-00224	Site is a lithic reduction site measuring approx. 6.5m x 5m and consisting of at least 85 lithic artifacts. Artifacts consist of a large cobble core and flake core, one microblade fragment, one retouched flake, one used pebble, one hammerstone, and 79 pieces of debitage. Debitage consisted of 26 complete flakes, 25 broken flakes, and 28 shatter. Both cores and the debitage are of basalt. Two tests were excavated and both were negative. No artifacts were collected.	Prehistoric

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Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00225	ILI-00225	The site consists of lithic debitage and a tool from both on and below the surface. One positive shovel test was excavated and yielded 10 flakes from 0-5cm below surface. SRB&A also identified a large biface preform and one piece of chalcedony shatter on the surface, about 20m S of the positive test. When field crews revisited the site in 2012, they mapped it with the Trimble GPS and conducted several subsurface tests, none of which located additional cultural materials	Prehistoric
ILI-00226	ILI-00226	Site consists of lithic debitage recovered from a subsurface context. Two shovel tests yielded 13 flakes, cultural material was 0-20cm below surface. SRB&A has begun processing a bulk hearth sample collected from the 2009 testing. Processing of the bulk sample has yielded small bone fragments, one flake, and burned botanical remains.	Prehistoric
ILI-00227	ILI-00227	Site consists of lithic debitage recovered from a subsurface context. One positive shovel test yielded one flake. Cultural material was 5-10cm below surface. This site is considered an isolated find. SRB&A collected a charcoal sample from a negative test near the positive test.	Prehistoric
ILI-00228	ILI-00228	Site consists of an isolated used flake (broken into two fragments that refit) found on the surface. The used flake was identified on an exposed surface on a tussock tundra floodplain. One negative shovel test was excavated near the surface-find. The used flake was collected.	Prehistoric
ILI-00230	Tent Ring	ILI-00230 is a campsite which included numerous pieces of cut wood and discarded sawn antlers, possibly indicating hunting for food rather than sport. The site characterized by a large glacial erratic boulder with at least three tent rings, a fire ring, several antler piles and a caribou skull pointed towards Newhalen. A local elder, mentioned having used this particular camp site with other local Native hunters as recently as last winter, mentioning the boulder as a wind block and cover that allowed hunters to shoot caribou grazing on exposed moss on the opposite side of the lake.	Historic / Modern
ILI-00231	ILI-00231	The site consists of about eight cobbles in a vegetated, relatively flat area next to the lakeshore. ILI-00231 appears to be a deconstructed tent ring or linear array of rounded cobbles well-seated in the tundra vegetation. The linear formation may reflect the use of a tarp, rather than a tent proper, or could also represent a single event of tents being weighted against a direction of wind with the lee sides allowed to flap.	Historic
ILI-00232	ILI-00232	Site includes two separated tent rings. One tent ring consists of 3.8-3pprox. 8 lichen-covered rocks embedded into the tundra it also included a metal tent peg and polypropylene twine as well as a circle of rounded cobbles. SRB&A returned to the site during 2012 cultural resource fieldwork to map it in using the Trimble GPS. The field crew was not able to relocate the tent ring that was embedded into the tundra. Due to the lack of sediment, no subsurface tests were conducted in the area, although additional ground survey was conducted in an attempt to identify previously unidentified cultural materials. No new cultural materials were identified.	Historic / Modern
ILI-00234	ILI-00234	There are at least two tent rings, several pieces of cut wood and an adjacent patch of cut willow and alder stumps, and one fire ring. The fire ring, which contains carbon staining and dead vegetation, also served as a midden for cans, plastic wrappers and bottles.	Historic / Modern

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Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00235	ILI-00235	Cobbles arranged in two circles and are well-incorporated into the surface vegetation. SRB&A tentatively interpreted the cobble circle as two tent rings and a camp stove use area, where cobbles were like used to shield and support a camp stove. SRB&A revisited the site at the end of the 2012 field season to map the site boundary with the Trimble GPS. The field crew was not able to relocate the second tent ring. No subsurface tests were conducted at this site due to the density of cobbles directly underneath the vegetated surface. Additional ground survey of the area was conducted to ensure that all cultural materials had been identified and recorded during the 2009 field season.	Historic
ILI-00236	ILI-00236	Midden of cut antler, bone, and wood was discovered in a swale. All the wood and bone showed evidence of having been cut with a saw and was well incorporated into the surface vegetation. A tent ring on the raised ground is likely connected to the midden in the swale below, although it is difficult to determine if it represents one long episode of camp supported hunting and processing of caribou or a series of events over time with the site reused for more than one harvest episode. The presence of the antlers indicates that the purpose of the hunt was meat, rather than trophies.	Historic
ILI-00237	ILI-00237	Site includes up to two tent rings located in low-lying tussock tundra. This area was likely well-sheltered from winds, but would have been a damp and uneven place to camp. No fire rings, middens, or wood caches were located near the site.	Historic
ILI-00238	ILI-00238	Site consists of about six cobbles in a circle, measuring 6m in diameter. The cobbles are small, around 10cm diameter, with one larger boulder.	Historic
ILI-00239	ILI-00239	This site consists of two large flat boulders, near a caribou skull, with smaller rocks lying on top of the vegetation. This configuration of rocks suggests that the rocks were purposefully stacked by humans.	Historic
ILI-00240	ILI-00240	Site consists of a knoll with exposed bedrock with fracture zones filled with clear quartz crystal to opaque or milky white material, and chalcedony geodes. SRB&A found no manufactured tools or debitage on the surface or in three subsurface tests, the site has good potential as a raw material source and as such the distribution of unused materials on the surface may reflect the selective use of the materials made by prehistoric users. One fragment resembled a possible tool in form but was left in situ.	Unknown
ILI-00241	ILI-00241	Site is a prominent knoll with bedrock outcroppings with veins of quartz and chalcedony. This site is smaller than the similar site ILI-00240, with two outcrop mounds surrounded by an area of bare bedrock. The knoll is surrounded by a litter of quartz fragments including clear, milky, and fractured pieces. This distribution of material may indicate that the site had been used by prehistoric toolmakers, with the fragments examined and the unusable ones discarded.	Unknown
ILI-00242	ILI-00242	Pile of intentionally stacked rocks of unknown purpose. The stack consists of boulder-sized rocks measuring 3.8-4pprox. 1m in diameter and 0.5m high. The stack was not likely a “pretend person” but could have been a rock cache or claim mark. No indications of the reason for its construction were found.	Unknown
ILI-00249	ILI-00249	Site is a lithic scatter. The surface is un-vegetated rounded pebbles to cobbles with patches of tundra vegetation. Twenty large flakes and one unifacially worked piece were located on the deflated surface of the terrace and slumping down the stream bank.	Prehistoric

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Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00250	ILI-00250	ILI-00250 is a lithic scatter. The site consists of three artifacts found on the un-vegetated cobble to pebble surface in the interstices between hummocks and patches of vegetation. The artifacts consist of two flakes and one core.	Prehistoric
ILI-00251	**ILI-00251**	**Site consists of two flakes of green silicified mudstone on an eroded blowout surface. One flake is blade-like. The location is an excellent hunting area with game trails below the site.**	**Prehistoric**
ILI-00252	ILI-00252	Site includes artifacts consisting of numerous small fragments of charcoal and debitage likely resulting from pressure flaking of larger pieces. The area of the cultural deposit is relatively small and consists of a distinctly colored soil deposit beneath the root mat. There was no surface indication of cultural resources deposits.	Prehistoric
ILI-00253	ILI-00253	The site consists of a single dark gray igneous flake recovered from a subsurface test, but there is potential for the recovery of further subsurface artifacts. Viewshed is excellent to the south and west. Most of the northeast tributary valley is visible from the site area. A portion of the Upper Talarik Creek valley is visible to the southwest as well.	Historic
ILI-00254	ILI-00254	ILI-00254 is a modern to historic winter fur trapping camp located in a cottonwood patch on the south side of Groundhog Mountain along a tributary of Upper Talarik Creek. The creek drains a lake higher up on the mountain which is located in a steep walled canyon. The site consists of two square flat areas that were leveled out to approximately the size of a 10x10 foot wall tent, with the downhill area cut into the root bed of a large cottonwood tree. The uphill area was leveled with less cutting into the soil. Near these tent footprints, cottonwood tree limbs were removed with an axe in the past while one tree in the patch had an axe cut blaze on it to indicate where the camp was. On the surface was a well rusted steel round gasoline can with a Chevron logo still visible where it lay. Local person indicated that the site probably belonged to either "Butchy" Hobson or one of the Koktelash family from Nondalton and was a winter fur hunting camp at least 30 years in age.	Historic/ Modern
ILI-00260	ILI-00260	SRB&A originally identified this site in 2011 based one test that yielded over 50 lithic debitage and charcoal from between 0 and 5cm. Three other subsurface tests on the landform did not reveal additional cultural materials. The position of the site suggests the site was used as a hunting lookout. In 2012, SRB&A identified two possible stone tent rings within the AHRS site boundary. Vegetation obscures more than 90 percent of both possible tent rings. The field crew mapped in the two potential features but did not conduct any testing in or near either of the possible tent rings because they are located within the site boundary.	Prehistoric
ILI-00261	ILI-00261	The ground surface is up to 50 percent exposed till and gravel. The cultural materials at the site consist of one piece of lithic debitage observed on the surface among the gravel. Pedestrian survey and two subsurface tests yielded no other artifacts.	Prehistoric
ILI-00268	ILI-00268	The site consists of SRB&A identified the site based on artifacts from two test that yielded 11 lithic flakes, one piece of lithic shatter, one lithic core and charcoal. The area is sparsely vegetated on the terrace with increasing vegetation near the river. The subsurface lithic materials and the charcoal were collected.	Prehistoric

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Table K3.8-1: Known AHRS Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00269	ILI-00269	This site consists of one stone feature. This feature consists of a collection of cobbles. These cobbles are stacked in a semi-circular pattern with the opening facing down-slope to the N. The view shed is comprised of the valley with one of the Talarik's tributaries. The stones appear to have been settling into the ground for at least 20 years.	Unknown

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

m = meter(s)

cm = centimeter(s)

GPS = global positioning system

Source: SBR&A 2011 and 2015, AHRS 2018

K3.8.2 Transportation Corridor

There are no reported AHRS resources in the transportation corridor. The data gap assessment report prepared by ASRC (2017) reports on the following AHRS sites near the corridor. It is expected that this list will grow through ongoing consultation and incorporation of data from additional investigations regarding cultural resources and historic properties in the transportation corridor.

Table K3.8-2: Known AHRS Sites near the Alternative 1 Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00008	Old Kakhonak, Kakonak, Kokhanok	Eskimo village, with a population of 28, listed in the 1890 census. The site was apparently abandoned as residents moved to the present village during the 1940-1950s. Yarborough, in two surveys, noted two or three graves, upright poles from an apparent cache, the remains of a 4m x 5m log cabin, a 2m x 1.1m x .6m deep depression, and a shallow 2m x 5m rectangular feature. Site is near south ferry terminal.	Historic
ILI-00009	Napaimute, Napai, Naapaimiut	Former Eskimo village or camp reported in the 1890 Census as "Napaimiut," with a population of 11. Sue Woods, who owns an allotment on the S side of Lake Illiamna, reported graves at this locality. Graves would tend to confirm this as the location of a village. Site is near south ferry terminal.	Historic
ILI-00025	Saints Peter and Paul Chapel, Kakhonak	Russian Orthodox church built about 1940. Consists of a 25'-6" x 15' nave and sanctuary and an attached 8'-1" x 9'-2" vestibule. The exterior is shingle and corrugated metal. A 2011 survey by THRC stated that the condition of the church was "dilapidated" and a new church has been built (1984) to the SE. [NATREG] Russian Orthodox Church built about 1940. Consists of a 25'6"x 15' nave and sanctuary and an attached 8'1"x 9'2" vestibule. The exterior is shingle and corrugated metal. Site is in Kakhonak Village near south ferry terminal.	Historic

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Table K3.8-2: Known AHRS Sites near the Alternative 1 Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00056	Gibraltar Lake Village	BIA investigators noted some 12-15 house pits within a 70m x 120m site area on the north bank of the outlet of Gibraltar Lake. The pits, which are poorly defined, appear to cluster on two adjacent mounds, separated by about 45m. A shovel test in the westernmost loci revealed cultural material (beneath the sod and a thin layer of Katmai Ash) consisting of burnt bone, charcoal, and fire cracked rock in a sandy silt matrix, to a depth of about 75cm. A single basalt flake was noted and a C14 date of BP 860+/-60 was obtained. On the north end of Gibraltar Lake, near the south access road.	Prehistoric
ILI-00126	Henry Olympic Allotment Cemetery on Kakhonak Bay	Site consists of a small cemetery containing 3 graves, all marked with Russian Orthodox crosses. One of the coffins was eroding out of the ground. No other archaeological remains were located on the property.	Historic
ILI-00127	Pottery and Stone Beads	No Description	Prehistoric
ILI-00128	Stone Tools, Possible AsST	No Description	N/A
ILI-00262	Kokhanok BIA School	The building is currently a single-story frame building measuring 68ft x 18ft in plan, a ridgeline at 11ft and a very low-slope roof, with a satellite dish abutting the W facade. Built ca. 1957 the Kokhanok BIA building served as a school from the late 1950s into at least the 1980s. The building contains basic attributes found in some period BIA schools in Alaska, but has undergone substantial alterations since 1973. Comparison of the 1973 building with the current makes evident an addition built on to the original N end as well as the removal of some of the original fenestration and removal of the original siding. The building currently houses administrative offices.	Historic

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

BIA = Bureau of Indian Affairs

ca = circa

cm = centimeter

ft = feet

m = meter(s)

THRC = Territory Heritage Resource Consulting

Source: AHRS 2018

K3.8.3 Amakdedori Port

Recent work completed by HDR (2018) archaeologists on behalf of PLP resulted in the identification of one new archaeological site in the Amakdedori port facility boundaries (HDR-AMK-01). The GPS locational data for the Amakdedori Village (ILI-00044) was also corrected, and that site is now within the southern boundary of the facility footprint. The desktop analysis completed by ASRC (2017) listed another five sites in the vicinity, but outside the port boundaries. One other site, ILI-00291, is the AGRAM shipwreck, and is also within the boundaries of the offshore development. Sites in the facility boundary are in **bold**.

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Table K3.8-3: Known AHRS Sites near Amakdedori Port

AHRS No.	Site Name	Summarized Description	Period
HDR-AMK-01	N/A	Surface Lithic Scatter	Prehistoric
ILI-00007	Chenik	Site of Eskimo village; Eskimo name reported by USGS (Brooks, A.H., et al. 1925). In 1997 Janet Klein and Donna Redding, noted several collapsed structures at this site.	Prehistoric
ILI-00044	**Amakdedori Village**	**Village site consisting of five house pits of two rooms each, with connecting passages and five smaller square pits. All are located on the second and third vegetated beach ridges, which are being eroded by the creek. Testing of two house features by Reger (1980) identified historic artifacts and floor deposits dating to AD 1883-1912.**	**Prehistoric**
ILI-00104	Chenik Midden	The prehistoric midden on Chenik Head contains shells which indicate the presence, use, and variety of invertebrates. (An invertebrate checklist has not been compiled.)	Prehistoric
ILI-00136			
ILI-00218	Isolated Lithic Find	This site consisted of one possible microblade or blade core. The core was found on the surface of the tundra. No other lithics were found on the surface or in test pits excavated nearby. Near mine access road.	Prehistoric/ Protohistoric
ILI-00291	**AGRAM Shipwreck**	**On October 12, 1923 at 8:45 am the wooden gas screw cannery tender AGRAM was washed ashore and became a total wreck on a beach between Chinik Bay and Amakdedori Native Village. […] According to Doug Reger, who surveyed this stretch of the coast in 1980, no shipwreck remains were visible beyond the large amount of debris on Amakdedori beach, which is known for drift debris. The ship's remains may still be present below the waterline, although the high energy environment has likely compromised the wreck's structural integrity.** **References: U S Customs Wreck Report; The H W McCurdy Marine History of the Pacific Northwest (1966) , p. 344; "Wrecked tars live on weird edibles" The Helena Daily Independent, November 24, 1923, p.2.**	**Historic**

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

Source: AHRS 2018

K3.8.4 North Route Alternatives

The discussion of the northern route applies to Alternatives 2 and 3. A preliminary review of the AHRS data indicate that there are several AHRS sites in or near the road corridor between Diamond Point and the mine site. There are no recorded AHRS resources in the overland portion of the pipeline route from Ursus Cove to Cottonwood Bay. No fieldwork specific to survey of this project's components has occurred in the transportation corridor, with the exception of limited investigations cited above by SRB&A near Iliamna, and along the Newhalen River.

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Table K3.8-4: Known AHRS Sites near the Alternative 2 Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00027	White Rock Site	Three large, single room, slightly semi-subterranean house on a ridge above a dry marsh. One house was partially excavated by Townsend in 1969. The site apparently equates in time with ILI-003. Yarborough noted that the site consists of two house pits and six cache pits on a south sloping ridge between two small streams. Both of the house pits have only a single room and only the smaller has an obvious entry way. The larger depression, the southern third of which Townsend excavated, measures 7.4m x 6.5m x .6-.7m deep (two possible entryways were later noted in its west wall). The other, smaller and shallower, depression measures 4.3m x 3.5m, with a 1.1m wide entry. Five of the six cache pits are rectangular to almost square, while the sixth is nearly round. They range in size from 1.35m x .9m to 3.2m x 3m and are .45-1m deep. The largest may be the feature that Townsend counted as a house pit.	Historic
ILI-00049		Yarborough located four large multi-room house pits and five cache pits surrounded by a fairly thick growth of black spruce and alders. House 1 has a 7m x 5m main room, a 3.5m x 3m room off its east wall, and an entry way in its west wall. House 2 has a 9m x 7m mian room, a 3m x 2m room to the east, and a 4m x 3m room at its northwest corner. House 3 has a 7m x 6m main room, a 3m x 4m room off its southwest wall, and an entry way in its northwest wall. House 4 has a 7m x 6m main room, a 3.5m x 3m room off its west wall, and an entry way in the east wall. Two small round cache pits are adjacent to House 2; three larger rectangular cache pits were noted adjacent to House 3, adjacent to House 2, and between House 1 and House 2. A test in the center of House 1 revealed an approx. 20cm thick layer of charcoal and fire cracked rock, with some animal bone, under 9cm of humus and 4cm of ash. [DOE] Site ILI-049 consists of four large, multi-roomed house pits and several smaller cache pits.	Prehistoric
ILI-00132	Williamsport to Pile Bay Road	The Williamsport to Pile Bay Road is a 1 lane, 15.5mi. seasonal road that provided the shortest surface route for six communities around Iliamna Lake. The road follows a traditional Den'aina Athabascan trail portage over the Chigmit Mountains and was originally built in the 1930s by the Alaska Road Commission. By 1932, the road supported small truck traffic. With the installment of the Iliamna River Bridge in 1946, the portage terminus changed from the Iliamna River at Foss's Landing to Pile Bay at Lake Iliamna. Lyle and Carl Williams subsequently began a truck freighting business, with Lyle at Pile Bay and Carl at Williamsport. The road expansion combined with the Williams' freighting operations provided an opportunity that allowed boats direct overland access to Lake Illiamna and Bristol Bay. Carl took the first Bristol Bay fishing boat over the Portage around 1938. Near the summit the dirt road is less than 11' wide with a 750' drop. Improvements began in 1917 to the trail. In 1937 the W terminus of the road was rerouted to Pile Bay.	Historic
ILI-00197	O'Hara House	This rectangular, front-gabled home is 1-, or perhaps 1 1/2 stories (photos show an upper story, or loft, within the roof), built in the early 1950s. It was built from lumber milled locally by Carl Williams, as well as from lumber collected from a house that had been demolished in the late 1940s or early 1950s. The earlier residence was built in the early 1940s by Lyle Williams, just N of where the O'Hara house is now. A depression and some scattered debris (bottles, cans) are the only remnants on the property.	Historic
ILI-00198	Pile Bay Townsite Historic District	N/A	Historic

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Table K3.8-4: Known AHRS Sites near the Alternative 2 Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00199	Antenna	The site consists of a 4" diameter iron pipe erected by Carl Williams and used as the base of his HF radio antenna. The antenna wire originally strung between pipes is no longer present. In 2007 the pipe was erect and well supported by tight guy wires.	Historic
ILI-00200	Powerplant	Power plant built by Jack Vantrease in the early 1950s. In 2007 it was located adjacent to the Vantrease warehouse/store but was originally erected across the portage road from Seversen's warehouse. It was skidded to the present location circa 1957 and used to provide electricity to the Vantrease buildings. The structure is a frame building covered with corrugated metal sheets. It measures 8' x 16.5' and rests on large wood beams laid on grade. The rear wall is hinged, it opens and swings down to form a ramp.	Historic
ILI-00211		Referencing USS 7804, the BIA crew located a 6.71m x 4.57m depression on an E-W axis. The maximum depth of the depression is approx 1.8m. The berms are well defined and overgrown with grasses, moss and shrubs. Four well developed trees are present within the depression. On the E side of the depression, two 55-gal drums are 3/4 buried and upon inspection, hints of a possible entrance way to the cabin. Debris is scattered around the premises. Tin can, plastic shelving, and fuel cans were identified. Remnants of a prefabricated aluminum storage building/shed measuring 2.44m x 3.05m were adjacent to the depression on the N side. The underlying organic mat of sod was removed before the shed was place on the surface. Two wall are intact but failing. The interior contained failed roof panels and cut wood.	Historic
ILI-00244	ARC Camp	ARC CAMP ADJACENT TO WILLIAMSPORT-PILE BAY ROAD	Historic
ILI-00247	Williamsport Historical Occupation/Land Use Area	Cultural remains located at Williamsport on the Williams family property include the former cement foundation of Carl Williams' home. A modern cabin has been built on the 1940s cement foundation, although three sides of the foundation are sill visible. The original foundation is estimated to have been about 20 ft X 20 ft. Also present are the remains of the log cabin lived in by Ed McCammet and later by the Williams family. It is possible that this log cabin was once the ARC cabin at Williamsport, given that Ed McCammet was reported to have lived in the ARC cabin. The cabin has collapsed and the remaining timbers are largely embedded in river sediments and gravels and in poor condition. A gravesite is also present. The property currently contains gravel roadpads, numerous storage and staging areas, and a standing building.	Historic

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

BIA = Bureau of Indian Affairs

cm = centimeters

DOE = Department of Energy

ft = feet

gal = gallon(s)

HF = hi-fi (high fidelity)

m = meter(s)

mi = miles

Source: AHRS 2018

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3.7 CULTURAL RESOURCES

Section 3.7 provides definitions of cultural resources considered under the National Environmental Policy Act (NEPA) regulations (40 Code of Federal Regulations [CFR] 1500-1508), and describes the current status of information known about these resources to characterize the affected environment. Section 3.8 defines and discusses "historic properties" as defined by Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800).

NEPA does not specifically define the term "cultural resources." The law requires that agencies consider the effects of their actions on all aspects of the "human environment," which NEPA interprets to include the natural and physical environment and the *relationship of people with that environment* (emphasis added) (40 CFR 1508.14). Humans relate to their environment through culture, requiring the consideration of effects on cultural aspects of the environment in NEPA analyses. NEPA defines effects as changes "on the quality of the human environment," which includes alterations to the "aesthetic, historic, cultural, economic, [and] social" aspects of the environment. Analyses need to assess a project's impacts on an area's "historic and cultural resources" and on "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP)" and on "significant scientific, cultural, or historical resources." Importantly, though, cultural resources do not need to be eligible or listed on the NRHP for consideration under NEPA.

Cultural resources under NEPA can be generally defined as archaeological, historical, or architectural resources and locations of traditional cultural or religious importance to specific social and/or cultural groups. This may include, and is not limited to, Traditional Cultural Properties (TCPs); cultural landscapes (both historic and prehistoric); locations with indigenous place names; locations important in conveying oral histories; sacred and/or ceremonial sites; resource gathering and subsistence areas; or other sites of cultural importance to the continued identity and spirituality of living communities in or near the project area.

3.7.1 Data Gap Summary

Information presented herein is currently based on a review of data on file at the Alaska Heritage Resources Survey (AHRS), and the series of cultural resources survey reports prepared for the Pebble Limited Partnership (PLP) between 2004 and 2013 by Stephen R. Braund and Associates (SRB&A). Other reports have informed this section, including Boraas and Knott (2013) and data sets from subsistence harvest areas (SRB&A 2011b). Data and analytical gaps will be addressed through the ongoing Section 106 process and will allow for additional characterization of the affected environment for cultural resources in the Final EIS. For example:

- SRB&A's field work scope was limited to investigating areas where ground disturbance would occur during mineral exploration; there has not yet been a comprehensive analysis of cultural landscapes, TCPs, or other cultural resources in or near the proposed project components.
- SRB&A collected and consolidated place name data, and developed a place name database which will be integrated into this analysis. [Note to reader: Data is pending receipt of RFI 097.] The place name data cover the mine study area and the Extended Cook Inlet Basin Study Area (ECIBSA). Additional data will be collected through the NHPA Section 106 consultation process.
- SRB&A researched routes and trails, but was limited to investigating if any of the reported routes and trails intersected the project area as then defined. No

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comprehensive assessment of routes and trails has occurred for this undertaking, but may be informed by the NHPA Section 106 process.

- SRB&A completed interviews and noted the location of approximately 1,600 cultural resource sites based on informant knowledge but only limited field work has been completed to determine if there are physical manifestations of these interview-identified sites.
- Consultation with agencies and consulting parties, including Alaska Native villages and corporations, was initiated via letter on August 22, 2018. While an initial consultation meeting under Section 106 has occurred, direct input from Alaska Native groups and other consulting parties concerning cultural resource locations in or near the project area has not been completed. This will be incorporated into the Final Programmatic Agreement (PA).
- Assessment for off-shore cultural resources (and historic properties) has not yet been completed for project components and alternatives. This will occur during the 2019 field season and be incorporated into the Final EIS.
- The transportation corridor, pipeline, and Diamond Point components have not been surveyed or otherwise investigated for cultural resources. It is not uncommon for linear features to be investigated for cultural resources during final project design. The PA will address the process for avoidance, minimization, and mitigation of potential impacts.
- See Section 3.8, Historic Properties, for a discussion on the limitations and information gaps related to the status of archaeological site surveys, site evaluations under Section 106, predictive modeling outputs, and incorporation of results of recent (SRB&A 2018b) cultural resource reports completed by PLP.

It is expected that the USACE will be addressing data gaps throughout the Section 106 consultation process. The procedures detailing further work beyond the issuance of the Final EIS (e.g., the process for additional identification research and surveys, evaluation, and mitigation measures) will be established through the development of a PA.

3.7.2 Area of Analysis

The area of analysis for cultural resources under NEPA is the claim block of the project at the mine site and the viewshed of the project footprint when data are available. The permit area as defined by Appendix C (of 33 CFR 325) has not yet been formally delineated. It is expected that ongoing consultation with agencies and other consulting parties through the NHPA Section 106 process (see Section 3.8, Historic Properties) and NEPA-driven public involvement may likely result in gathering needed input regarding the identification of cultural resources in the area of analysis. The affected environment described below is broad in order to provide regional context. The area of analysis includes the primary project components and all the alternatives (mine site, transportation corridors, natural gas pipeline corridors, and port locations). The Final EIS will include a summation of the consultation and resultant delineation of the final area of analysis for cultural resources, as appropriate.

3.7.3 Cultural Context

The area of analysis for cultural context covers a broad and complex range of prehistoric traditions, ethnographic regions, land uses, and historic-era themes. The cultural context for prehistoric archaeological traditions, ethnographic, and historic themes is presented in the archaeology survey summary reports prepared by SRB&A (SRB&A 2011a; 2015a; 2015b), and the reader is referred to those reports. Boraas and Knott (2013) also offer a detailed prehistoric

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cultural chronology based on known archaeological site data. Archaeological artifacts clearly demonstrate that the area has been continuously occupied as early as 10,000 years ago, with evidence of salmon fishing by Yup'ik or proto-Yup'ik people for at least 4,000 years. A well-developed salmon-based culture emerged in the Norton tradition, dating from approximately 300 B.C. to A.D. 1000, as evidenced by the presence of sedentary villages and net fishing artifacts. The contexts in these reports cover prehistoric archaeology traditions, ethnographic studies of the Dena'ina, Yup'ik, and Alutiiq peoples that occupy the region, and offer a chronology of the regional history from contact through the Russian, and then American, periods. Tribal consultation under Section 106 of the NHPA has been initiated, and information obtained from this process, as well as data gleaned from other sources, will be incorporated into an updated context presented in the Final EIS.

3.7.3.1 Previous Cultural Resource Research

Prior to SRB&A's archaeological field surveys, only two archaeological field surveys occurred within the PLP claim boundary; and no archaeological or historic-era sites were identified. SRB&A's report details the results of the nearest cultural resources surveys in each direction from the claim boundary; and the Environmental Baseline Documents (EBDs) and annual reports each provide a bibliography of these earlier surveys that generally date between 1968 and 2011.

SRB&A's annual survey work commenced in 2004, and involved yearly surveys until 2012. Initial work focused on the mine analysis area, and was limited to locations within PLP's claim boundary, with a few exceptions, including several surveys in adjoining claim boundaries and a brief survey along a section of the Newhalen River. SRB&A's first surveys in the ECIBSA occurred in 2005, and focused on proposed port site locations. SRB&A returned in 2007 to survey a revised port site location, and has conducted surveys in the ECIBSA every year through 2013. However, aside from the small surveys near Amakdedori port (see below), the complete Amakdedori port site and the transportation corridor have not been surveyed. Details of previous research are provided in SRB&A 2011a and 2015a, and include references and a narrative of previous studies throughout the region. The SRB&A reports primarily discuss archaeological compliance surveys, but also offer a discussion of historic and ethnographic sources, including historic documents, ethnographic and linguistic studies, and oral interviews that help better characterize the affected environment. SRB&A reports also contain information on interview-identified cultural resources throughout the region, including both Bristol Bay and Cook Inlet drainages (SRB&A 2011a, 2015a, and 2018b). The reports include tables and figures summarizing the results of these interview-identified cultural features.

Ethnographic works about the Dena'ina, Yup'ik, and Alutiiq contribute models of normative behavior, subsistence food storage practices, land use traditions, place names, and many other points of data with bearing on defining cultural resources and the affected environment. Analyses of oral history interviews, when available, are informative, because they are told from the perspective of those who lived according to the practices being studied. These reports, in conjunction with consultation, contribute more detail to the characterization of the affected environment beyond archaeological and historic-era sites.

In July 2018, HDR completed an archaeological survey of the Amakdedori port site on behalf of PLP. One new archaeological site was identified (temporary site number. HDR-AMK-01), and an NRHP-evaluation report is pending.

PLP retained ASRC Energy Services to complete a desktop study of the proposed transportation corridor (ASRC 2017). This desktop study was limited to a review of the AHRS

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database and did not investigate other types of cultural resources beyond sites and historic-era buildings already identified in the database. The results of the ASRC study are discussed below.

3.7.4 Action Alternative 1

3.7.4.1 Mine Site

The mine site has been the primary focus of the cultural resource investigations completed by SRB&A on behalf of PLP to date; and details regarding research, survey, and archaeological site recordation methodology are available in summary reports (e.g., SBR&A 2011a and 2015a). The geographic areas investigated for the reports include lands within the "claim block boundary," which was defined as mining claims owned or leased by PLP and Kaskanak, Inc., and represents a larger area than the current mine site location. The claim block analysis area covered lands from Iliamna Lake in the south to the Nikabuna Lakes in the north and west from the Newhalen River towards the Mulchatna River. Background and place names research covered the entirety of this area, whereas field work was targeted to where PLP had proposed ground-disturbing areas.

Known AHRS Resources

Prior to SRB&A's archaeological surveys for PLP, the AHRS database included three sites in the mine analysis area: ILI-00013, ILI-00031, and ILI-00106. The first two are prehistoric sites near the Newhalen River, and ILI-00106 is a number reserved for use by the National Park Service, and may not be associated with an actual site. The AHRS database is a data repository with information on reported cultural resources, and site significance is not a consideration when assigning AHRS numbers. It is intended to be an inclusive data set, and not all sites have been field verified, nor are all sites in Alaska listed.

SRB&A archaeologists documented an additional 52 sites in the claim block area and added them to the AHRS database. In 2011, SRB&A revisited six AHRS sites (ILI-00201, ILI-00202, ILI-00205, ILI-00219, ILI-00220, and ILI-00252) that SRB&A originally identified in 2007, 2008, and 2010. Subsequently, SRB&A recommended ILI-00201, ILI-00202, ILI-00205, ILI-00219, and ILI-00220 should not retain their AHRS designation because four of the sites were based on naturally modified stones, and one site was modern in age. After site revisits in 2012, SRB&A recommended that an additional seven AHRS sites (ILI-00203, ILI-00204, ILI-00207, ILI-00208, ILI-00213, ILI-00229, and ILI-00233) that SRB&A identified in 2006, 2007, and 2009 should be removed from the AHRS because the sites are likely modern, or are based on naturally modified stones. In total, 12 AHRS sites were removed from the AHRS database.

In summary, there are currently 43 reported cultural resources sites with an AHRS designation in PLP's larger mine study area, as reported in SBR&A 2011a, 2015a, and 2015b. None of the 43 AHRS sites in the claim block area have been evaluated for NHRP eligibility. As of 2012, SRB&A has surveyed 14,912 acres in the larger mine study area, and excavated 1,103 subsurface tests. Additional analysis of the geographic extent of these surveys and site tables is presented in Section 3.8, Historic Properties, and Appendix K3.8.

Place Names

SRB&A also reviewed place name data sources, and compiled a place name database and corresponding map of known place names for the Bristol Bay and Cook Inlet areas based on these sources and SRB&A interviews (Evanoff 2010; Krieg et al. 2003, Kari, Kari, and Balluta 1986; Kari and Kari 1982). Table 22-3 and Figures 22-20 through 22-22 of the SRB&A 2011a report show the location of documented place names in the Bristol Bay drainages, mine study

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area, and the Cook Inlet drainages, which are also all listed in Appendix 22A of that report. Table 22-8 in the supplemental EBD (SRB&A 2015a) conveys related information about Dena'ina and Yup'ik place names in the PLP mine study area; and Figure 22-7 in that report shows Native place names in the vicinity of the claim block boundaries. The figure does not depict place names directly in the general deposit location indicated on the map, but place names are noted near the deposit on the South Fork Koktuli River, Upper Talarik Creek, and points north, west, and south of the claim block area, particularly along the Newhalen River to the east and near Nikabuna Lakes to the north. Further analysis is in progress to investigate the location of these place names relative to the current project component footprints. It is expected that additional information on place names will be learned during consultation and further analysis may be incorporated into the Final EIS.

Cultural Resources

Boraas and Knott (2013) note that the "Yup'ik and Dena'ina consider the land and waters to be their scared homeland," and census data presented in their reports also note Alutiiq populations in Igiugig and Kokhanok, the latter village being near the proposed south ferry terminal and terminus of the access road from Amakdedori port. Salmon, and the waters that support them, are crucial elements of this homeland, and therefore may be considered as part of the cultural resource landscape. Interrelated to salmon are the wild foods and harvest areas (e.g., upland subsistence areas, fishing and hunting camps). Further research and analysis is ongoing regarding these types of cultural resources, and identifying specific locations in or near the current project through further consultation. The 1,154 cultural resource features identified by SRB&A based on interviews are presented in Table 22-9 (SRB&A 2011a), displayed on Figures 22-23 through 22-25d, and listed in Appendix 22B of that report. Recent data provided by PLP in October 2018 (SRB&A 2018b) provide tables and maps for an additional 537 cultural features identified during the 2013 interviews.

Although additional research will occur during the NHPA Section 106 consultation process, the development of the PLP Cultural Resource Management Plan, and state and federal permit application review. Current data support the likelihood of a wide variety of cultural resources being present across the mine site (and other project components) that may be affected by the project, and must be taken into consideration during the NEPA analyses. A sample of cultural resource types identified by interviewees from Nondalton includes cabins, camps, graves, harvest locations, villages, spiritually important places, battlegrounds, material sources, routes, trails, and traplines. Subsistence maps demonstrate overlap with the mine site area, and harvest areas for resources such as, but not limited to berries, upland game birds, waterfowl, caribou, and moose supporting communities such as Newhalen, Nondalton, Iliamna, and Kokhanok. Additional information on subsistence harvests is presented in Section 3.9, Subsistence, and Appendix K3.9.

Boraas and Knott (2013) also detail Yup'ik and Dena'ina spirituality. Cultural relationships with the wild animals and fish are of primary importance, and some places have taken on special importance as sacred sites and landscapes, including known travel routes and traditional use areas. The Boraas and Knott report tells of one travel route, the Dena'ina trail connecting Old Iliamna and Kamishak Bay on Cook Inlet (and locations along the route), as being culturally and spiritually significant. No TCPs or cultural landscapes have been formally identified in the mine site area (or in other project components). However, there is clear potential throughout the project area for the presence of sacred sites, spiritual places, indigenous routes and trails, cultural landscapes, and TCPs. SRB&A also reports on oral interviews they conducted for cultural resources in Kokhanok, Newhalen, Nondalton, and Port Alsworth; and subsistence interviews in 19 Bristol Bay drainages study communities (SRB&A 2011a); and the results

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(e.g., notes, transcripts, and maps) of that work may contain information regarding the identification and location of additional cultural resources. It is expected that ongoing consultation will result in the identification of additional cultural resource locations.

Specific to routes and trails, Figures 22-17 and 22-20 (SRB&A 2014) show interview-identified routes and trails investigated in 2011 and 2012, respectively. The maps show five routes and trails in the claim block area for the 2011 investigations, and 19 routes and trails identified and investigated in 2012 that intersect the claim block area. GIS analysis and supplemental research identifying routes in the cultural resource analysis area is in progress to verify where identified trails intersect project component areas. SRB&A did not find any physical evidence of these trails, but only investigated areas where trails intersected areas where ground-disturbing actions were proposed. Evanoff (2010) also documents access routes and seasonal travel locations for subsistence use that will inform a closer examination of routes and trails and their cultural significance.

3.7.4.2 Transportation Corridor

The transportation corridor includes the overland route from Amakdedori port to the south ferry terminal near Kokhanok; ferries across Iliamna Lake to a north ferry terminal; with an access road leading north of the lake to the mine site and spur road to Iliamna. Figure 22-1 (SRB&A 2015a) depicts the study area boundaries used by SRB&A for cultural resource investigations in support of the EBD. The mine study area boundary encompasses the portion of the transportation corridor north of Iliamna Lake, and the discussion of cultural resources above for the mine site is applicable to this section of the transportation corridor. Additional work may be necessary to identify other undiscovered cultural resources in the transportation corridor north of Iliamna Lake, because the field efforts by SRB&A focused primarily on the mine site. However, the background research, including the ethnographic and traditional knowledge reports (Evanoff 2010; Boraas and Knott 2013), place name data, and interview-identified cultural features (SRB&A 2011a, 2015a, and 2015b) cover the region through which the northern portion of the transportation corridor crosses. For example, Figures 22-24a, and 22-25d (SRB&A 2011a) show trails/routes, camps, traplines, cabins, reindeer stations, battle sites, burial areas, locations with indigenous place names, villages, caches, and other cultural features throughout the mine site area and this northern portion of the transportation corridor. Appendix 22B (SRB&A 2011a) lists and describes each of the features identified on these maps. Further GIS analysis is in progress to determine if there are specific AHRS sites and cultural resource locations in this portion of the transportation corridor.

Known AHRS Resources

A cultural resources desktop analysis completed by ASRC (2017) indicated that the transportation corridor from Amakdedori port to the mine site has not been subject to archaeology survey or broader cultural resources investigations. That report summarizes 13 known AHRS sites composed of archaeological sites, village sites, cemetery, and historic buildings. None of the listed AHRS sites are in the footprint of the transportation corridor, although the proposed spur road to Kokhanok leads to AHRS sites, such as ILI-00008, Old Kakhonak, and historic buildings in Kokhanok (ILI-00025 Saints Peter and Paul Chapel). Five of these sites are discussed below under sites near Amakdedori port (ILI-00007, ILI-00044, ILI-00104, ILI-00136, and ILI-00291). The remaining eight sites are detailed in Section 3.8, Historic Properties, and Appendix K3.8. These sites include a cluster of sites in and around Kokhanok Village near the southern ferry terminal, and along the southern shore of Iliamna Lake. The other sites are more isolated. Further work is required to identify potential cultural resources sites within the transportation corridor, including predictive modeling, more detailed literature

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review, field survey, and consultation, which may result in the identification of additional archaeology sites, historic buildings, and cultural resources. This work may be addressed in the Section 106 PA, the PLP Cultural Resources Management Plan, and conditions of approval of state and federal permits associated with the project.

Place Names

The transportation corridor has not been subject to specific place names research or more detailed ethnographic or traditional ecological knowledge investigations. This area largely falls outside the study areas used to guide previous PLP surveys. Data from other sources cited above in the mine site section would contribute to understanding the location of native place names in this component. The SRB&A place name map shown as Figure 22-20 (SRB&A 2011a) does not reveal many place names in this area in comparison to the research completed for the mine site, transportation corridor, and ECIBSA (note that the transportation study area used by SRB&A is east of the mine site, and not applicable to this corridor).

Cultural Resources

This area remains in the homeland of the Dena'ina and Yup'ik, and the discussion above in the mine site section regarding the status of knowledge about cultural resources is applicable here. A data gap for other cultural resources in the transportation corridor remains, and additional research and analysis, would facilitate more detailed characterization of the affected environment of this project component. For example, cultural features, particularly from informants in Kokhanok, are shown throughout the transportation corridor (SRB&A 2018b). These features include villages, graves/burials, cabins, material sources, harvest location areas, camps, spiritually important places, battlegrounds, trails/routes, traplines, and materials sources across the landscape. GIS analysis will facilitate which of these features occur in the project footprint. Traditional land use is further evidenced in this area by current subsistence use throughout the area. Community subsistence data show harvest areas for plants, moose, caribou, brown bear, and other resources supporting the nearby villages, such as Iliamna, Kokhanok, Igiugig, and Newhalen. This land use, coupled with the location of known AHRS sites in the vicinity, such as the Gibraltar Lake Village and Amakdedori Village (see below), and the interview-identified data, demonstrate a high likelihood of cultural resources located throughout the transportation corridor, including the possibility of places of traditional religious and cultural significance, cultural landscapes, and TCPs.

3.7.4.3 Amakdedori Port

Amakdedori port falls within the ECIBSA used by SRB&A to frame the background research and characterize cultural resources in broader areas of interest in the lower Cook Inlet region (SRB&A 2015b). Much of the specific field work and research initially focused on the "original" Cook Inlet drainages study, which included the coast north of Ursus Cove to south of Tuxedni Bay, with an emphasis on the Knoll Head Offshore Area and Diamond Point Area. Field work was completed at Y Valley and along Sunday Creek in this region, and place name research also focused on this area, particularly along the existing overland route (Williamsport-Pile Bay Road) from the Diamond Point port site to Pile Bay. The result is that a more limited set of data is available for characterizing the affected environment at Amakdedori, and many of the data gaps discussed earlier apply to this area as well.

Known AHRS Resources

SRB&A's review of the AHRS database identified 58 previously documented AHRS sites within the entirety of the ECIBSA, two of which (ILI-00185 and ILI-00186) were documented by

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SRB&A during the 2005 field season. The 58 AHRS sites identified prior to SRB&A's 2012 surveys in the ECIBSA, as well as the three sites identified by SRB&A in 2012, total 61 documented sites across the ECIBSA. SRB&A crews surveyed a proposed weather station and separate repeater tower location near Amakdedori port, but did not identify any new archaeological sites (SRB&A 2014). Specifically related to offshore cultural resources, SRB&A reviewed two online databases of shipwrecks, including the National Oceanographic and Atmospheric Administration, Automated Wreck and Obstruction Information System database, and the Bureau of Ocean Energy Management, Alaskan Shipwreck Database.

There are only two known sites reported in the vicinity of the Amakdedori port (see Section 3.8, Historic Properties, and Appendix K3.8). Archaeologist Douglas Reger (1980) reported Amakdedori Village (ILI-00044) as dating to the turn of the twentieth century, and composed of several house and cache pits at the mouth of Amakdedori Creek. The other site, (ILI-00291) is the reported location of the AGRAM shipwreck dating to 1923. In addition to these known sites, PLP retained HDR to complete a cultural resource survey of the proposed port location. The full report is still in progress, but the interim memorandum describes an additional prehistoric site (HDR-AMK-01), a lithic surface scatter near the northern end of the port facilities where the transportation corridor enters the port. The report also corrected GPS data for ILI-00044, moving the village further north and within the southern boundary of the port facility. Further work on site delineation would likely occur as part of the NRHP eligibility evaluation process, which is discussed further in Section 3.8, Historic Properties.

Place Names

As noted above, data pertaining to native place names along the transportation corridor and at Amakdedori port have not yet been provided, collected, or assessed. The place names research is incomplete, because it focused on the northern portion of the ECIBSA, and does not extend to the port facility or the beginning of the transportation corridor.

Cultural Resources

In addition to the known AHRS sites discussed above, feedback received during the EIS scoping period suggests that there are known grave locations at Amakdedori, although specific locational information has not yet been attained. Residents of the Lake and Peninsula Borough also refer to "old cabins, trails, and [the] village" as having personal meaning to many who reside in the borough." This feedback suggests that there are more cultural resources near Amakdedori port, and indicates that further consultation and field studies could result in the identification of more cultural resources in this area. Interview-identified sites also mention a village with graves/burials and house pits at Amakdedori, and one trail from the head of Sid Larson Bay to the Cook Inlet coast that crosses near Amakdedori (SRB&A 2018b). In progress GIS analysis of the interview-identified data could help better demonstrate the proximity of these cultural features to the port site.

The presence of graves, trails, cabins, and known prehistoric and historic resources indicates the potential for a broad range of resources to be located at Amakdedori port. The GIS analysis demarks the coastline near Amakdedori as favorable beach lands for the harvest of coastal subsistence resources, which suggests a higher potential for identifying cultural in the general area (Figures 50-5 and 50-7; SRB&A 2015b). Additional research could result in the identification of more cultural resources, including routes and trails, and other land use areas significant to the local villages and others. Additional research may include identification and analyses of TCPs, cultural landscapes, and other types of cultural resources.

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3.7.4.4 Natural Gas Pipeline Corridor

No work has been done regarding marine archaeology or historic maritime archaeology for the Iliamna Lake crossing or Cook Inlet crossing, so there is currently no information regarding the affected environment for this portion of the natural gas pipeline route. Similarly, additional research and interdisciplinary research would characterize the affected cultural environment as it relates to coastal (Iliamna Lake and Cook Inlet) resource gathering and any associated traditional use areas or other cultural resources. The natural gas pipeline corridor is adjacent to the transportation corridor from the Amakdedori port site to mine site, and is described above.

There are no sites currently listed in the AHRS in the area where the compressor station would be constructed on the Kenai Peninsula.

3.7.5 Action Alternatives 2 and 3

Cultural resources at the mine site would be the same as described for Alternative 1.

3.7.5.1 Transportation Corridor

These alternatives fall in the northern portion of the ECIBSA, and as a result, represent an area that was subject to comparatively more background research for cultural resources by SRB&A than the southern portion of the transportation corridor near Amakdedori port. SRB&A conducted limited field work in this area's transportation corridor study area, which involved examinations of land along the western side of the Newhalen River between Nondalton and Iliamna, as well as a drilling-core storage area in Iliamna, both visited in October 2006 (SRB&A 2011a). SRB&A also completed field work along Sunday Creek and in Y Valley, near Knoll Head (SRB&A 2015b); however, this field work is not near any portions of the currently proposed project footprint, and is not directly applicable to the present analysis.

Alternatives 2 and 3 would cross an area that is also closer to Lake Clark National Park and Preserve than Alternative 1; there have been ethnographic/place name studies and cultural landscape analyses completed for the park that are generally applicable to Alternatives 2 and 3. Analysis is ongoing, and the discussion below is preliminary. Initial research indicates that the existing Williamsport-Pile Bay Road and the new road and/or pipeline from Diamond Point to Pile Bay, and then from Eagle Bay to the mine site, have not been surveyed for archaeological sites, nor been subject to specific research for other cultural resources along the footprint of the currently proposed corridor. The area does fall within the original transportation study area (SRB&A 2011a), so there are data gathered for place names and interview-identified cultural features.

Known AHRS Resources

More detailed analysis of AHRS sites and document references are in progress. [Note to reader: Data is pending receipt of RFI 097.] A review of AHRS data indicates six AHRS sites in the project footprint between Diamond Point and Pile Bay along the Williamsport-Pile Bay Road. No further known AHRS sites are in the road corridor from the Eagle Bay ferry terminal to the mine site. AHRS sites include the Pile Bay Townsite Historic District (ILI-000198) and associated historic-era resources at Pile Bay, such as the O'Hara House (ILI-00197), The Vantrease Power Plant (ILI-00200), and the base of a radio antennae used by Carl Williams (ILI-00199). The Williamsport-Pile Bay Road itself is a historic linear feature (ILI-132), and there is an Alaska Road Commission camp adjacent to the road (ILI-00244). Near the Cook Inlet shore is the Williamsport Historical Occupation/Land Use Area (ILI-00247).

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Five miles of the proposed road from Diamond Point to Pile Bay would overlap with the existing Williamsport-Pile Bay Road, resulting in essentially new construction (including features such as material sites and staging areas). There is no ferry terminal at Eagle Bay, and the road from that location to the mine site would also be new construction. Further information collection is in progress through a GIS analysis and the NHPA Section 106 consultation process.

Place Names

Figure 50-11 in SRB&A (2015b) depicts over 60 place names around Iliamna Bay on Cook Inlet and along the current road to Williamsport-Pile Bay Road. A GIS analysis is in progress to compare place name data for the proposed project. There may be more place names present along the road from Eagle Bay to the mine site, particularly because this road crosses the Newhalen River and a number of other tributary creeks along the northern shore of Iliamna Lake. Many place names in Figure 50-11 (SRB&A 2015b) are located on the existing road or in the viewshed of the current road, and would be intersected by the project. If ongoing studies result in the identification of additional place name data, this information will be integrated into further analyses.

Cultural Resources

In addition to place names, the presence of archaeology sites coupled with subsistence data, suggest the potential for cultural resources throughout Alternatives 2 and 3. Iliamna Lake and the coastal areas are used for marine resource harvests (e.g., freshwater seals, salmon), and the upland areas are used for hunting upland game birds, waterfowl, caribou, moose, and other small mammals; and harvesting berries, wood, and other plant resources (see Section 3.9, Subsistence).

The discussion for the transportation corridor for Alternative 1 also applies here with respect to the review of coastal-oriented cultural resources along Cook Inlet and Iliamna Lake. The SRB&A GIS Coastal Subsistence Resource Analysis (Figure 50-5, SRB&A 2015b) defines favorable beach types for harvest in Iliamna Bay, and the model identifies Iliamna Bay as having concentrated resources (i.e., greater than or equal to 10 resources).The land use based on subsistence activities, coupled with known archaeological sites evidencing prehistoric, proto-historic, and historic occupations, collectively suggest that a number of other cultural resources exist throughout the Alternatives 2 and 3 areas. SRB&A reports on interview-identified sites in the original transportation corridor (Figure 22-25s, SRB&A 2011a) that included battle sites, reindeer stations, villages, other sites, caches, trails/routes, traplines, camps, burials, and locations with indigenous place names. More recent (SRB&A 2018b) interview-identified sites, particularly from informants in Pedro Bay, identify over 50 cultural resource features, including places of spiritual importance. Boraas and Knott (2013) tell of a significant site, the Giant's Rock (Dzelggezh) along the Williamsport-Pile Bay Road, that held spiritual significance and was later dynamited in 1955 as part of road construction (Boraas and Knott 2013). The report also indicates the Williamsport-Pile Bay Road follows an old Dena'ina trail. Additional analysis is required to better characterize these resources, and to identify TCPs, cultural landscapes, and other cultural resource site types in the affected environment for each alternative. [Note to reader: Data is pending receipt of RFI 097.]

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3.8 HISTORIC PROPERTIES

The US Army Corps of Engineers (USACE) applies the Procedures for the Protection of Historic Properties (33 Code of Federal Regulations [CFR] 325, Appendix C) to guide its process of complying with Section 106 (54 US Code [USC] 306108) of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.). Appendix C offers specific definitions of historic properties, such as "a property which has historical importance to any person or group. This term includes the types of districts, sites, buildings, structures, or objects eligible for inclusion, but not necessarily listed, on the National Register" (33 CFR 325 (1)(b). Appendix C also defines "Designated Historic Properties" as "historic propert[ies] listed in the National Register of Historic Places (National Register) or which have been determined eligible for listing in the National Register. A historic property that, in both the opinion of the [State Historic Preservation Officer] and the [US Army Corps of Engineers] district engineer, appears to meet the criteria for inclusion in the National Register will be treated as a designated historic property" (33 CFR 325 (1)(a)). Federal agencies must consider impacts to all types of cultural resources, including those that do not meet the definition of historic properties as set forth in the NHPA, and Appendix C and its implementing regulations. Please refer to Section 3.7, Cultural Resources for National Environmental Policy Act (NEPA) based definitions and analyses. Permitting the construction, operations, and closure of the Pebble Project would require the USACE's compliance with Appendix C.

Under 36 CFR 800, there are different definitions in Appendix C for historic properties and the geographic area where identification, evaluation, and effects assessments are needed. Also under 36 CFR 800, the federal agencies must carry out all the steps of the Section 106 review in consultation with the SHPO and other consulting parties, including Alaska Native tribes, which—for purposes of Section 106—includes Alaska Native Regional or Village Corporations. The scope of the identification effort, determinations of eligibility and effect, and steps to resolve adverse effects must be informed by the traditional knowledge of Tribes who ascribe value to such properties.

Appendix C does not involve the same consultation process as 36 CFR 800 outlines. 33 CFR 325(8) states that, "at any time, the district engineer may consult with the involved parties to discuss and consider possible alternatives or measures to avoid or minimize the adverse effects of the proposed activity." Consultation with involved parties was initiated by the USACE on August 17, 2018.

3.8.1 Data Gap Summary

Information in this section is currently based on data derived from the Alaska Heritage Resources Survey (AHRS) and the series of cultural resource reports prepared for the Pebble Limited Partnership (PLP) by Stephen R. Braund and Associates (SRB&A) between 2004 and 2013, particularly the summary reports included in the Environmental (and Supplemental) Baseline Documents (EBDs) for cultural resources covering the Bristol Bay and Cook Inlet Regions (SRB&A 2011a, 2015a and 2015b). A detailed review of other resources referenced in the AHRS document repository is currently underway and results from that review will be incorporated into this analysis. [Note to reader: Data is pending receipt of RFI 097.] In addition to the information gaps and resultant status of research and analysis, there are particular data gaps pertinent to the identification and evaluation of historic properties. These include:

- Preliminary review of the AHRS sites within the project footprint suggests that none of the sites have been evaluated for inclusion in the National Register. The sites are

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presumably important to any person or group, but it remains unclear if these sites meet the National Register Criteria.

- The proposed transportation and pipeline corridors for each alternative and Diamond Point have not been systematically surveyed for historic properties. These studies will be conducted in accordance with the NHPA Section 106 process, and the results incorporated into the ongoing analysis. Results reported herein are based on currently available information and will be revised as appropriate to incorporate additional findings. The need for and scope of additional survey will be defined in a Programmatic Agreement (PA).
- Analysis of survey coverage for areas that have been surveyed remains in progress at this time. For example, the mine site has been largely surveyed, but geographic information system (GIS) data are being calculated to determine acreage of surveyed versus unsurveyed lands in that project component.
- GIS modeling used to delineate areas of low potential (as developed and implemented by SRB&A) is in the process of being analyzed to determine how many acres of high-potential lands exist versus low-potential lands in the project components.
- Consultation with involved parties was initiated by the USACE via letters distributed to potentially involved entities on August 17, 2018. While underway, the Draft EIS and Section 106 processes have not yet produced additional information regarding the identification and evaluation of historic properties in the permit area. Guidance for ongoing identification and evaluation of historic properties will be incorporated into the PA.
- The permit area has not yet been geographically defined. The analysis in this section focuses on the footprint of the proposed facilities for each alternative. The permit area will be determined during the NHPA Section 106 consultation process.

It is expected that the USACE will be addressing these data gaps throughout its Section 106 consultation process. The procedures detailing further work beyond the issuance of the Final EIS (e.g., the process for additional identification research and surveys, evaluation, and mitigation measures) will be established through the development of a PA.

3.8.2 Permit Area

Appendix C defines the term "permit area" as the geographic extent of the USACE's responsibility for considering effects on historic properties, which varies from the Area of Potential Effect as defined by 36 CFR 800.16(d). Permit area defines "those areas comprising the waters of the United States that will be directly affected by the proposed work or structures and uplands directly affected as a result of authorizing the work or structures" (33 CFR 325 (1)(g). Three tests must be satisfied for inclusion in the permit area:

1. Such activity would not occur but for the authorization of the work or structures in the waters of the US;
2. Such activity must be integrally related to the work or structures to be authorized in waters of the US. Or, conversely, the work or structures to be authorized must be essential to the completeness of the overall project or program; and
3. Such activity must be directly associated (first order impact) with the work or structures to be authorized.

The permit area for the project has not yet been formally adopted and will be finalized during the NHPA Section 106 consultation process and development of the PA. The site tables and

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information presented in Appendix K3.8 are based primarily on AHRS sites identified within the project component footprints. This Draft EIS and initial reliance on AHRS data for defining potential historic properties will be addressed through ongoing consultation as part of the Section 106 process. Methods and approaches to completing determinations of eligibility will be provided in the PA.

GIS data are in the process of being analyzed for interview-identified routes and trails, areas with indigenous place names, and a multitude of other cultural resource features to allow for a comparison of those locations to the project footprint (as presented in SRB&A 2011a, 2015a, and 2015b). As noted in Section 3.7, Cultural Resources, the mine site, transportation corridor, and Expanded Cook Inlet Baseline Study Area areas do contain interview-identified routes and trails, subsistence use areas, place names, and other cultural resources features that may qualify as historic properties under Appendix C. It is expected that the GIS data and additional information gleaned through the Section 106 consultation process will further refine the extent and nature of other historic properties and the consideration of effects on historic properties.

As noted by SRB&A (2014) and until further National Register evaluations take place, it may be recommended that any cultural resources (including archaeological sites, trails and routes, traditional cultural properties, cultural landscapes, locations with indigenous place names, burial areas, resource-gathering areas, or other sites of religious or cultural significance) be considered as potentially eligible properties for the consideration of additional identification, evaluation, and effect assessments. Currently, there are no National Register eligible sites in the project footprint; however, research on AHRS resources in the study areas for the action alternatives is ongoing, and there may be eligible sites in those components. There are numerous cultural resource features spread across the landscape (See Section 3.7, Cultural Resources) that represent a wide range of site types. Many of these may warrant additional analysis as potential historic properties. Further identification efforts under Section 106 may also involve the analysis of cultural landscapes, traditional cultural properties, and/or archaeological or historic districts in the permit area.

3.8.3 Action Alternative 1 – Applicant's Proposed Alternative

3.8.3.1 Mine Site

As presented in Section 3.7, SRB&A (2015a) reports on the identification of 43 cultural resource sites in PLPs mine study area, which are now entered into the AHRS database. The mine study area is geographically larger than the mine operations footprint. Refer to SRB&A 2015a for detailed information on the 43 sites identified. Of these sites, two are currently in the mine operations footprint (ILI-00218 and ILI-00251). Sites are listed in Appendix K3.8.

3.8.3.2 Transportation Corridor

There are no reported AHRS resources in the transportation corridor. The data gap assessment report prepared by ASRC (2017) reports on AHRS sites near the corridor (see Section 3.7, Cultural Resources). As with the mine site, it is expected that this list will grow through ongoing consultation and incorporation of data from additional investigations regarding cultural resources and historic properties in the transportation corridor. Sites are listed in Appendix K3.8.

3.8.3.3 Amakdedori Port

Recent work completed by HDR (2018) archaeologists on behalf of PLP resulted in the identification of one new archaeology site in the Amakdedori port facility boundaries (HDR-AMK-01) (see Section 3.7, Cultural Resources). The GPS data for Amakdedori Village (ILI-00044)

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was also corrected, and that site is now within the southern boundary of the facility footprint. The desktop analysis completed by ASCR (2017) listed another five sites in the vicinity, but outside the port boundaries. One other site, ILI-00291, is the AGRAM shipwreck, and is within the boundaries of the offshore development. Sites are listed in Appendix K3.8.

As noted in Section 3.7, Cultural Resources, public feedback from involved parties indicates the presence of graves, cabins, trails, and the village, suggesting that additional investigations may lead to the identification of other cultural resources in the port area that may qualify as historic properties under Appendix C, and also will be assessed under NEPA.

3.8.3.4 Natural Gas Corridor

There are currently no AHRS sites identified in the natural gas pipeline corridor; and for Alternative 1, this gas pipeline is co-located with the transportation corridor, and the discussion above applies here. As noted in Section 3.7, Cultural Resources, no work has been completed to research and investigate the potential for marine archaeology or historic-era maritime archaeology sites along the corridor, with the exception of the previously identified AGRAM shipwreck (ILI-00291). This aspect of needed identification efforts will be addressed through the ongoing Section 106 process.

3.8.4 Action Alternatives 2 and 3 – North Road and Ferry or North Road Only

The discussion of the northern route applies to Alternatives 2 and 3 (see Section 3.7, Cultural Resources). A preliminary review of the AHRS data indicate that there are several AHRS sites in or near the proposed road corridor between Diamond Point and the mine site, including the Williamsport-Pile Bay Road itself, and the historic-era sites and buildings on each end of the existing road (listed in Appendix K3.8). There are no recorded AHRS resources in the overland portion of the pipeline route from Ursus Cove to Cottonwood Bay. No fieldwork specific to survey of this project's components has occurred in the transportation corridor, with the exception of limited investigations by SRB&A near Iliamna and along the Newhalen River, which involved examinations of land along the western side of the Newhalen River between Nondalton and Iliamna, as well as a drilling-core storage area in Iliamna, both visited in October 2006 (SRB&A 2011a).

As noted previously, the incorporation of additional data (e.g., interview-identified cultural resources in SRB&A 2015a), review of AHRS site references, further identification efforts through consultation, research, and fieldwork will add to the list of known cultural resources that may be potentially eligible for the National Register in Alternative 2 and Alternative 3.

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4.7 CULTURAL RESOURCES

This section discusses the environmental consequences that construction, operation, and closure of the project would have on cultural resources. Section 4.8, Historic Properties, focuses specifically on the consideration of effects on Historic Properties as defined by Appendix C (of 33 Code of Federal Regulations 325) and the National Historic Preservation Act (NHPA). For the purposes of this section, the broad definition of cultural resource types is maintained as described in the affected environment (Section 3.7, Cultural Resources). Cultural resources may range from prehistoric archaeology sites, traditional cultural properties, place names, traditional resource collecting areas (subsistence), sacred or religious sites, and historic-era sites such as cabins or shipwrecks. Currently, the project footprints for the mine site, the transportation corridor, Amakdedori port, and the natural gas pipeline guide the analyses of environmental consequences on cultural resources. When cultural resources are identified within a part of the project footprint, direct, indirect, and cumulative effects that may result are considered. The potential for indirect effects is also considered, particularly visual impacts on cultural resources outside of the project footprint.

4.7.1 Analytical Limitations

Not all of the current locations of project components have been inventoried for cultural resources during the previous baseline studies completed by the Pebble Limited Partnership (PLP) between 2004 and 2013, and summarized in the Environmental Baseline Reports (SRB&A 2011a, 2015a and 2015b). Only the current configuration of the mine site has been subjected to more systematic cultural resource field investigations. The previous PLP investigations completed background literature and file reviews for a broader regional area, and conducted interviews to identify cultural resources, place names, and land use areas in and near the project as it was proposed at the time. These data are supplemented by other sources of ethnographic, traditional knowledge, and subsistence investigations that cover all or portions of the study area (see Section 3.7, Cultural Resources, for a preliminary list of these additional sources). The information contained in them is integrated into the Draft Environmental Impact Statement (EIS) analysis to the extent feasible. Further investigation is occurring through the National Historic Preservation Act (NHPA) Section 106 process (see Section 3.7, Cultural Resources), which may result in the identification and analysis of additional resources.

The current data and analytical gaps allow for a limited discussion of the environmental consequences, and the ability to compare the relative impacts of one alternative over another is currently constrained, because the number and types of resources that may be impacted are not fully known. Where site-specific surveys have not been completed, site-specific impacts are undeterminable at this time, as is the ability to quantify the number of resources affected or impacted by the proposed project and alternatives. Based on interview-identified cultural resource features and initial review of other ethnographic and place names data, it is assumed that a wide range of cultural resources exist across the landscape, and are within the project footprint. Additional gaps in data and analysis are reviewed in Section 3.7, Cultural Resources, and Section 3.8, Historic Properties. As is usual where systematic cultural resources field studies have not been completed at the time of submittal of permit applications, the qualitative and quantitative impacts discussion will be refined through consultation and additional studies. In addition, it is not atypical during the National Environmental Policy Act (NEPA) process that field surveys by the applicant focus solely on the proposed action and have not been conducted for alternatives. Specifically, the US Army Corps of Engineers (USACE) will be addressing these data gaps throughout its Section 106 process. The procedures detailing further work beyond the issuance of the Final EIS (e.g., the process for additional identification research and surveys,

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evaluation, and mitigation measures) will be established through the development of a Programmatic Agreement (PA).

4.7.2 Impacts to Cultural Resources

All of the action alternatives have the potential for direct impacts to cultural resources from the construction, operation, reclamation, and closure of the project. Necessary ground-disturbing actions involved with constructing and operating the mine and its facilities (i.e., transportation corridor, natural gas pipeline, and port facilities) can destroy, remove, or otherwise damage cultural resources. These types of direct effects are irreversible and permanent. For example, an archaeological site or spiritual object cannot be reconstructed once gone, and the significance (both cultural and scientific) is lost.

Indirect impacts are those that occur later in time or that are further removed in distance from the initial and primary action. For example, the presence of new visual elements, noise, and pollution can impact aspects of a cultural resource from which they derive their significance. There is potential for permanent visual effects that alter the viewshed to or from a cultural resource, particularly where setting and feeling are important aspects of the site's importance. Access restrictions, noise, pollution, lack of privacy, and visual intrusions can all negatively impact cultural landscapes, traditional cultural properties, and sites of religious or ceremonial significance, including burial grounds. Increased access to archaeology sites resultant from constructing the mine access road could lead to inadvertent or purposeful negative effects on cultural resources, such as looting, vandalism, or trespass in culturally sensitive areas.

Subsistence, as a way of life, would apply to the context of cultural resources throughout the analysis area, so they are broad in geographic scope and applicable at a regional level. The construction of the project and related infrastructure could impact the availability and access to subsistence resources, which would alter the manner in which people interact with their natural surroundings, although the highest intensity of impacts would occur nearest to the project and would diminish in intensity with distance (see Section 4.9, Subsistence). These impacts would last through the project operations, and would cease when subsistence resources are re-established after closure. Although there is a time horizon for the mine and subsequent closure and reclamation actions that might restore the visual and natural environments, the damage to other types of cultural resources that may have occurred may not be able to be restored to their status prior to project implementation.

Avoidance, minimization, and mitigation for potential impacts to cultural resources are a focus of the PA that would result from the NHPA Section 106 consultation process. PLP would also develop a Cultural Resources Management Plan to address the process for managing effects to cultural resources, and ensure that agreed upon protocols and procedures are established and followed. In general, NEPA and NHPA mitigation measures involve strategies such as modifying the project to avoid impacts to sites potentially in the project footprint and addressing sites in the area of potential effects. It is expected that the NEPA public process and the NHPA Section 106 consultation process will result in gathering information and perspectives on potential mitigation measures. These will be incorporated into the Final EIS and the PA.

In an area where the manner of how people interact with the natural environment is at the core of cultural beliefs, impacts of the project would be heightened, typically adverse, and may be permanent. Impacts on lifeway patterns, cultural and spiritual interactions with the environment, physical or indirect changes to archaeology sites, and other cultural resource types represent disruptions to the relationship between the people, and natural and cultural resources, and could impact the current and long-term health and vitality of their cultures.

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4.7.3 No Action Alternative

Under the No Action Alternative, the project would not be constructed; however, PLP would still be permitted to perform exploratory activities and research at the mine site and would be expected to do so. There would likely be no new impacts to known Alaska Heritage Resources Survey (AHRS) sites, and existing activities that impact place names or other types of cultural resources would continue at the current intensity.

4.7.4 Action Alternative 1 — Applicant's Proposed Action

4.7.4.1 Mine Site

As noted in Section 3.7, Cultural Resources, there are a number of cultural resources in or near the mine site area that may include AHRS-listed resources, routes/trails, resource gathering areas, place names, battle sites, reindeer stations, and camps. A complete survey of the project footprints, however, has not yet been conducted. Consequently, additional resources may be identified during additional surveys conducted in compliance with the Section 106 process.

Cultural resources in or near the mine site may be directly or indirectly impacted by construction and operation activities. Two known AHRS sites are in the mine site footprint. ILI-00251 is a small lithic scatter composed of two flakes, and falls within the proposed seepage collection system. This site would be destroyed by construction activities at that location. ILI-00218, a single microblade core, is within the footprint of the road along the eastern side of the water management pond, and would also be permanently destroyed as a result of construction activity.

Other cultural resources have been identified in the mine footprint, and Geographic Information System (GIS) analysis is ongoing to determine which of these resources intersect the footprint. There are no locations with native place names currently identified in the mine footprint, but interview-identified sites are present and consist primarily of trails/routes and traplines that cross through the area; and traditional use areas for fishing, trapping, caribou and moose hunting near Sharp Mountain, the headwaters of the Koktuli River, Frying Pan Lake, and Groundhog Mountain. Maps do not show any other types of interview-identified cultural resources (e.g. battlegrounds, camps and cabins, burial grounds, other culturally important areas). Stephen R Braund & Associates (SRB&A) did not find physical evidence of trails/routes during field inventory, and there may be no physical manifestation of this resource type in the mine area. Construction and placement of mine facilities would directly impact use of these trails/routes by interrupting and creating obstacles to the continuity of these linear features. To the extent these areas are used for hunting and trapping, mine construction and operation would disrupt the subsistence use patterns of the area, but physical disruption of cultural features on the ground (e.g., camps) is unlikely, because none are identified in the footprint. The impacts on traditional use areas would last for the duration of the mining operation, but would not be permanent.

Indirect impacts may include visual, atmospheric, and audible intrusions as a result of construction and operation activities, or disruptions to the subsistence lifestyle and increased presences of people in culturally sensitive areas. Analysis of sites that fall within the viewshed area is ongoing. Traditional use areas for fishing and hunting fall within the geographic extent of the mine site, and there are camps, cabins, and trials/routes surrounding the mine site. Archaeological and cultural sites identified in the claim block area, but outside of the mine footprint, include hunting camps composed of modern and historic rock features (e.g., tent rings), refuse (e.g., shell casings, plastic, food wrappers), and caribou antlers or bones. Other sites include isolated artifacts and lithic scatters. Indirect effects related to visual, audible, or atmospheric changes on archaeological sites are unlikely. Indirect effects on archaeological

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sites may occur due to increased population and use of the area that may result in site looting or trampling of site features—both purposefully, or inadvertently. Noise, the introduction of new visual elements in the landscape, and dust from construction and operation of the mine may impact use of traditional harvest areas identified near the mine, and this impact would decrease with distance from the mine site, but would last through the life of the mine and into closure. The camps, cabins, and sites would not be subject to indirect impacts as much as the use of the area due to resource displacement.

[Note to reviewer: A GIS analysis is being conducted to determine the extent that the mine site would directly impact cultural resources. Data will be part of RFI 097.]

4.7.4.2 Transportation Corridor

The southern transportation corridor is the component with the least amount of information from previous surveys. The transportation corridor (including the overland pipeline route and ferry terminals) would potentially subject cultural resources to the direct and indirect effects as characterized above. Direct impacts from road, pipeline, and ferry terminal construction are one aspect of the potential consequences for cultural resources. For example, any archaeological sites and cultural resources identified within the road, ferry terminal, and pipeline footprints would be permanently destroyed by construction activity. No AHRS sites have been identified in the footprint to date.

Part of the southern transportation route includes a spur road to Kokhanok, a village site that contains historic-era buildings identified in the AHRS (e.g., ILI-00025 Saints Peter and Paul Chapel and ILI-00262 Kokhanok BIA School). Direct or indirect impacts on these buildings or Old Kokhanok (ILI-0008) are not likely from the construction of a new access road to the village. The other previously identified sites in the vicinity of Kokhanok, such as the sites along the coast that include stone tools (ILI-00128) and the Napaimute village site (ILI-00009), are outside the project corridor and would not be subject to direct effects.

Indirect effects are primarily associated with the visual changes of introducing a new road and the potential for increased people, noise, and dust that would result from constructing a new road in a currently roadless area. Archaeological sites in the vicinity of the road could be subject to increased visitation and damage from use, vandalism, and trampling. Noise and visual impacts are less likely on archaeological sites.

There are a number of interview-identified cultural features north of Iliamna Lake to the mine site and south of Iliamna Lake and Amakdedori port, particularly those identified by informants in Kokhanok. For the portion between the port and Kokhanok, including spur roads and variants, these include points and lines/trails (e.g., the trail connecting Kokhanok to Gibraltar Lake and the walking/dog team trail from Sid Larson Bay to the Cook Inlet Coast). There are no points directly in the footprint (SRBA 2018); however, points in the vicinity include sites such as burials near Kokhanok and Gibraltar Lake village. The significance of these sites would be determined through the Section 106 process. The sites are subject to indirect effects, because noise and visual intrusions may affect qualities of these sites that contribute to their cultural significance and use. Burial sites and other spiritual sites may be impacted by traffic noise and visual intrusions of a new road in the vicinity. The discussion of impacts from disruption of traditional use areas in the mine site also applies here, although no specific traditional use areas are currently delineated on maps showing the interview-identified cultural resources. Indirect effects would last through operation of the transportation corridor.

North of Lake Iliamna and including the spur road to Iliamna, the transportation corridor also intersects interview-identified cultural resource locations, and there are cultural resources surrounding the corridor. These include harvest locations, spiritually important places (burials),

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camps, portages, cabins, and trails/routes. Traditional hunting grounds may be disrupted by traffic noise adjacent to the corridor, and this impact would diminish with distance from the road. Sites of spiritual significance may have the viewshed altered, and noise and dust may affect the setting and experience of these places. These impacts would last through construction and operation of the transportation corridor.

[Note to reviewer: A GIS analysis is being conducted to determine the extent that the transportation corridor would directly impact cultural resources. Data will be part of RFI 097.]

4.7.4.3 Amakdedori Port

The port facility area would also be subject to the direct and indirect effects, as characterized above. In addition to the three known sites (one village, one lithic scatter, one historic shipwreck), interview-identified data and public input suggest more cultural resources exist in this area; including, but not limited to, burials, cabins, and trails/routes. Additional consideration of the impacts on maritime archaeology would also need to be assessed for the port location in the PA.

Two archaeological sites are subject to direct impacts, because they all fall within the footprint, and would be permanently damaged or destroyed as a result of constructing the port facility. The revised location of Amakdedori Village (ILI-00044) places it in the southwestern portion of the main port facility near the water extraction site. The lithic scatter (HDR-AMK-01) is along the road north of the main port facility.

A limited number of additional cultural resources have been identified in the port facility. As noted in Section 3.7, Cultural Resources, locals report cabins, graves, and trails in this area; and one route, the trail to Sid Larsen Bay, is also identified in this location. The specific location and analysis of the extent of impacts on these sites is ongoing. These cultural resources are subject to indirect effects, including the introduction of new visual and audible elements in the vicinity that may disrupt setting and contemporary use of these cultural resources. These effects would last through the life of the project, based on the operation of the facility and use of the access road.

[Note to reviewer: A GIS analysis is being conducted to determine the extent that the port would directly impact cultural resources. Data will be part of RFI 097.]

4.7.4.4 Natural Gas Pipeline Corridor

The discussion about the environmental consequences of other project components also applies to the natural gas pipeline, particularly the direct and indirect impacts associated with the transportation corridor, because the pipeline is co-located with this corridor from Amakdedori port to the mine site. Regarding the Cook Inlet Crossing, no underwater archaeology or historic maritime investigations have occurred for the submerged portion of the pipeline. Any archaeological sites or shipwrecks in the alignment would be directly affected by construction. Cultural resources adjacent to the pipeline route under Cook Inlet may be subject to indirect effects from subsurface wave action and sediment disturbance.

4.7.5 Action Alternatives 2 and 3 – North Road and Ferry or North Road Only

Alternatives 2 and 3 would have the same potential for direct and indirect impacts on cultural resources at the mine site as discussed above for Alternative 1. The transportation corridor, Diamond Point port, and the natural gas pipeline would have the same types of potential effects as Alternative 1, but in different locations. They each involve construction of new roads, ferry terminals (Alternative 2 only), and overland pipeline routes between Diamond Point and the

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mine site. A review of AHRS data indicates six AHRS sites in the project footprint between Diamond Point and Pile Bay along the Williamsport-Pile Bay Road that would be permanently impacted by construction. The Williamsport-Pile Bay Road itself is a historic linear feature that would be permanently impacted in terms of potential modification and setting. These components cross through areas where there are known locations with indigenous place names, and interview-identified cultural features are present across the landscape.

[Note to reviewer: A GIS analysis is being conducted to determine the extent that the alternatives would directly impact cultural resources. Data will be part of RFI 097.]

4.7.6 Summary of Key Issues

Table 4.7-1 provides a summary of key issues.

Table 4.7-1: Summary of Key Issues for Cultural Resources

Project component	Alt 1 (+variants)	Alt 2 (+variants)	Alt 3 (+variants)
Mine Site			
AHRS sites (identified to date)	2 known sites in the footprint would be permanently impacted.		
Place names	No locations with place names in the footprint, but interviews identified trails/routes and traplines through the area. Construction and placement of mine facilities would directly impact trails/routes by interrupting the continuity of these linear features.		
Cultural resources	Traditional use areas for fishing, trapping, and hunting near Sharp Mountain, the headwaters of the Koktuli River, Frying Pan Lake, and Groundhog Mountain. Use of those areas for traditional purposes would cease through the life of the mine and into post-closure, although the mine site is not identified as a high frequency overlapping area for subsistence users.		
Transportation Corridor			
AHRS sites (identified to date)	None identified to date in footprint.	6 known sites in the footprint would be permanently impacted. The Williamsport-Pile Bay Road itself is a historic linear feature that would be permanently impacted.	
Place names	None identified to date in the area.	Over 60 known place names in the area from Iliamna Bay to the mine site.	
Cultural resources	Interview-identified cultural features in the area include trails from Kokhanok to Gibraltar Lake and Sid Larson Bay, and burial sites.	The same types of potential effects as Alternative 1, but in a different location. Traditional use areas include Iliamna Lake, and upland areas along the mine access roads and/or pipeline ROW.	
Amakdedori Port and Diamond Point Port			
AHRS sites (identified to date)	1 known site in the footprint would be permanently impacted, and 1 in the vicinity would be indirectly impacted.	None identified to date in footprint.	
Place names	None identified to date in the area.	Place names identified around Iliamna Bay.	
Cultural resources	Interviews suggest cultural resources in this area, including—but not limited	The same types of potential effects as Alternative 1, but in a different location. Iliamna Bay is a traditional use area.	

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Table 4.7-1: Summary of Key Issues for Cultural Resources

Project component	Alt 1 (+variants)	Alt 2 (+variants)	Alt 3 (+variants)
	to—burials, cabins, and trails/routes.		
Natural Gas Pipeline			
AHRS sites (identified to date)	Same as transportation corridor, except for the pipeline crossing Cook Inlet. No investigations have occurred for this portion of the pipeline. Any archaeological sites or shipwrecks in the alignment would be directly affected by construction.		
Place names			
Cultural resources			

4.7.7 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) have the potential to contribute cumulatively to effects on cultural resources, detailed in Section 4.1. These potential future actions are similar to the proposed actions in that each may result in direct and indirect effects on cultural resources, as discussed above. The following RFFAs identified in Section 4.1 apply to the consideration of cumulative effects on cultural resources.

- Pebble Project Expansion—develop 55 percent of delineated resources over a 78-year period
- Pebble South/PEB
- Big Chunk South
- Big Chunk North
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold
- Diamond Point Rock Quarry
- ASAP
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Hydrocarbon Exploration
- LPB Transportation Projects
- LPD Capital Improvement Projects
- USDA Rural Development Projects
- LBP Renewable Energy Projects
- Nushagak Intertie Project
- Subsistence Activity
- Tourism, Recreation, Hunting, Fishing
- Scientific Surveys and Research

**Indicates exploration activities only.*

Each of these RFFAs would contribute to the increased potential for impacts on a wide range of cultural resources, because each involves some aspect of ground-disturbing activity that can lead to the irreversible destruction of cultural resources or affect the cultural context at those locations. Many of the mining exploration activities would have minimal ground disturbance, but would include helicopter overflights that can disturb cultural activities and the context of a cultural resource site.

The Pebble Project expansion would affect an area encompassed by and impacts similar to both Alternatives 1 and 3 across a greater footprint and over an extended period (from 78 to 98 years, depending on duration of additional milling after mining has ceased). Once a cultural resource feature, archaeological site, or historic site is destroyed, its value is gone and cannot be restored. Actions that expand mineral development near the Pebble deposit and around

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Iliamna Lake contribute to landscape-level effects, where there is continuous introduction of intrusive visual elements, increased noise and atmospheric pollution, and an increased volume of people. These lead to inadvertent and purposeful destruction of cultural resource features, invasion of privacy and solace at spiritual and ceremonial sites, adverse impacts on natural resources that are central to cultural belief systems, and subsequent degradation of these cultural belief systems that have far-reaching social and physical health impacts. Effects such as habitat fragmentation, noise, and increased access for recreational hunting and fishing also disrupt subsistence activity, and may result in impacts to resource gathering areas and other cultural features.

These types of effects are also applicable to an increase in resource development and marine traffic along the Cook Inlet coastline, which may impact marine mammals and the associated cultural resources, such as ceremonial and harvest sites and religious and spiritual practices centered on the health and relationship of people to the land they inhabit.

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4.8 HISTORIC PROPERTIES

Section 4.8 discusses the effects that construction, operation, and closure of the mine would have on historic properties. However, at this time, there are no historic properties identified in the analysis area (see below). Therefore, Section 4.7, Cultural Resources, offers a discussion of the effects on cultural resources that includes known AHRS sites, archaeological sites, place names, and interview-identified cultural resources. There are four sites discussed in Section 4.7, Cultural Resources, for which eligibility is not determined. This section considers the process for assessing effects on historic properties as defined by 33 Code of Federal Regulations (CFR) 325 Appendix C and National Historical Preservation Act (NHPA) Section 106 requirements for considering the project's potential to cause effects on historic properties in the permit area. For the purposes of this section, the definition of historic properties is as described in Section 3.8, Historic Properties. At this time, the project footprint is guiding the analyses of environmental consequences on historic properties, and the direct and indirect effects that may result. Some nearby communities may have historic properties, but impacts would likely be indirect and associated with setting.

4.8.1 Analytical Limitations

Adjustments to the number of historic properties affected would be anticipated, because additional properties are identified during the course of additional research and studies conducted under consultation currently under way as part of the NHPA Section 106 compliance process and development of the Programmatic Agreement (PA). The permit area (defined under Appendix C) in which the US Army Corps of Engineers (USACE) will analyze direct and indirect effects has not yet been established for NHPA compliance purposes. Because identified cultural resources features are considered as potential historic properties, the quantity of historic properties may increase, and expand the content and scope of analysis. The consultation process is ongoing between the USACE, the Alaska State Historic Preservation Office (SHPO), and other consulting parties regarding the definition and delineation of the permit area for the project. The USACE initiated Section 106 consultation with agencies and involved parties via letter on August 17, 2018, and held an introductory meeting on October 30, 2018.

Eligibility for inclusion in the National Register of Historic Places (NRHP) defines a historic property, and the process of evaluation can occur concurrent with the National Environmental Policy Act (NEPA) process. Not all of the project components were inventoried for historic properties during the baseline studies completed by PLP between 2004 and 2013 (SRB&A 2011, 2015a, and 2015b), and none of the sites identified in those studies were evaluated for eligibility for inclusion in the NRHP. The evaluation step has not yet been taken for any archaeological sites, historic buildings, or cultural resource features identified in the project components, which may lead to eligibility. The AHRS research for Alternatives 2 and 3 is ongoing, and Alaska Heritage Resources Survey (AHRS)-listed resources with National Register eligibility determinations may exist in the footprint of those alternatives.

[Note to reviewer: A GIS analysis is being conducted to determine the extent that the mine site would directly impact historic properties. Data will be received as part of RFI 097.]

Only the mine site has been subjected to systematic cultural resource field investigations. However, previous PLP investigations did complete background literature and file reviews for a broader regional area, and conducted interviews to identify cultural resources, place names, and land use areas in and near the project footprint. These data are supplemented by other sources of ethnographic, traditional knowledge, and subsistence investigations that cover portions of the study area (see Section 3.7, Cultural Resources, for a preliminary list of these

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additional sources). It is likely that many of the identified cultural resource features (approximately 1,600) may also be considered as historic properties, and be evaluated for inclusion to the NRHP. Archaeological and historic districts, and specific types of significance ascribed to certain areas, such as traditional cultural landscapes or traditional cultural properties, have also not been considered for eligibility.

4.8.2 Effects on Historic Properties

Per Section 106 of the NHPA, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion on the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5 (a)(1)). All of the action alternatives have the potential to cause adverse effects resultant from the construction, operation, reclamation, and closure of the mine. The discussion of types of effects and environmental consequences provided in Section 4.7, Cultural Resources, applies to the types of effects that would be anticipated on historic properties, and is not repeated here. The number of known AHRS resources in each project component is also covered in Section 3.7, Historical Properties, and listed in Appendix K3.8.

Additional identification and evaluation of each project component would occur through the NHPA Section 106 process to quantify the number and types of historic properties present prior to assessing types of effects that may occur. This process can occur concurrent with the NEPA process and is currently underway. The USACE will address effects on historic properties through application of Appendix C through a PA, and tie the completion of this process to the action of issuing a final permit for mine operation.

The steps and processes that the USACE will employ to complete the identification, evaluation, and mitigation of effects on historic properties will be captured in the PA. Per 36 CFR 800.14(b), the agency official (USACE) may negotiate a PA to govern the implementation of a particular program or the resolution of adverse effects from certain complex undertakings. The following applicable criteria for the use of a PA are met by the PLP project (36 CFR 800 14 (b)(1)(i, ii, and v):

- When effects on historic properties are similar and repetitive or are multi-state or regional in scope
- When effects on historic properties cannot be fully determined prior to approval of the undertaking
- When other circumstances warrant a departure from the normal Section 106 process.

The USACE intends to confer with consulting parties through the NHPA Section 106 process to develop the PA. The PA will record the terms and conditions agreed on to resolve the potential adverse effects, and to include consideration of mitigation measures and the ongoing strategies to identify and evaluate historic properties pre- and post-permitting. The PA will be part of the Record of Decision, and permits will be conditioned with reference to completing the project in accordance with the PA. Compliance with the procedures established by the approved PA would satisfy the USACE's NHPA Section 106 responsibilities for the project.

4.8.3 Mitigation

Site-specific mitigation measures will be developed through the Section 106 and PA process to avoid or minimize effects on historic properties, to the extent practicable. The following are typical mitigation measures:

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- Avoidance, which could be accomplished by shifting the footprint away from the resource, limiting activities in the vicinity of the resource, monitoring construction activities near the resource to inform whether additional actions are warranted, or through any combination of these techniques.
- Minimization, which would reduce the effects on the resource through avoidance measures as described above, but would not completely eliminate the effects.
- Mitigation, which may involve data recovery, protections of similar resources in nearby areas, contributions to local heritage programs in affected communities, interpretive exhibits, education curricula, or a host of other measures that would be decided on through consultation with the agencies and involved parties.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/16/2018 7:53:15 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: second email with 4.16 figures (UNCLASSIFIED)
Attachments: 11_09_2018_04_16_04_GeneralArrangementEndPhase2.pdf

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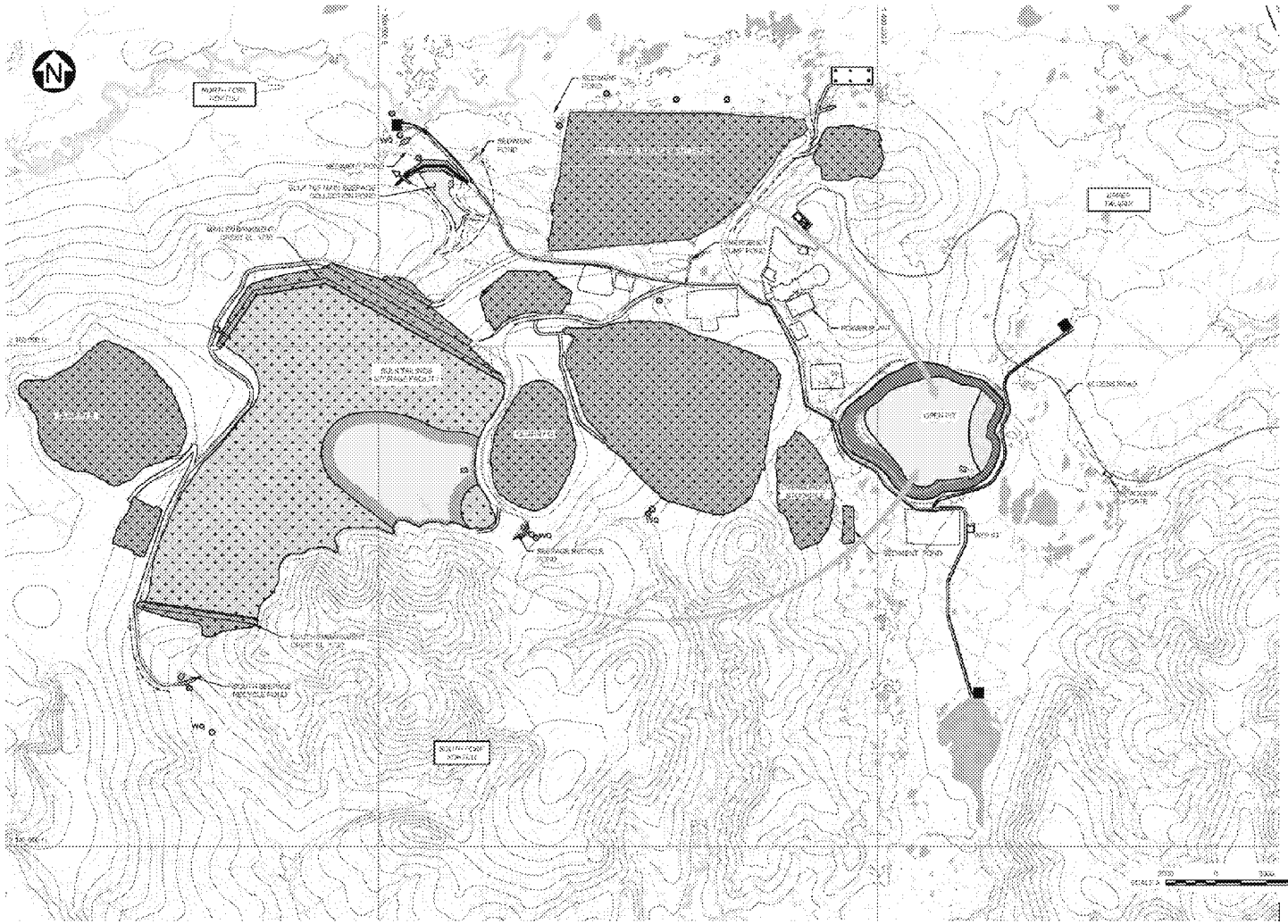

NOTES

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANE, ZONE 5.
2. CONTOUR INTERVAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP, JUNE 14 2018.
5. ACCESS ROAD PROVIDED BY RECON LLC. ROAD CONNECTION TO MINE SITE COMPLETED BY AUSENCO LTD.

Source: Knight Piesold 2018d

LEGEND:

- OPEN PIT
- REVEGETATED - EMBANKMENT FACE
- REVEGETATED - BEACH
- SEASONAL WETLAND
- REVEGETATED - OTHER
- POND
- PAG WASTEROCK
- MINERAL CLOSING ORDER
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- WTP DISCHARGE PIPELINE
- WTP DISCHARGE POINT
- WQ WATER QUALITY MONITORING POINT
- GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- CLEAN (NON-CONTACT) WATER DIVERSION
- CONTACT WATER DIVERSION
- EMERGENCY SPILLWAY
- PYRITIC TAILINGS PIPELINE
- CONTACT WATER

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GENERAL ARRANGEMENT CLOSURE END OF PHASE 2

PEBBLE PROJECT EIS

FIGURE 4.16-4

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Sent: 11/9/2018 6:59:26 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: figures for Section 3.9 (UNCLASSIFIED)
Attachments: Figure 3.9-3 Subsistence Use Areas, All Resources - Iliamna.pdf; Figure 3.9-1 Subsistence Use Areas.pdf

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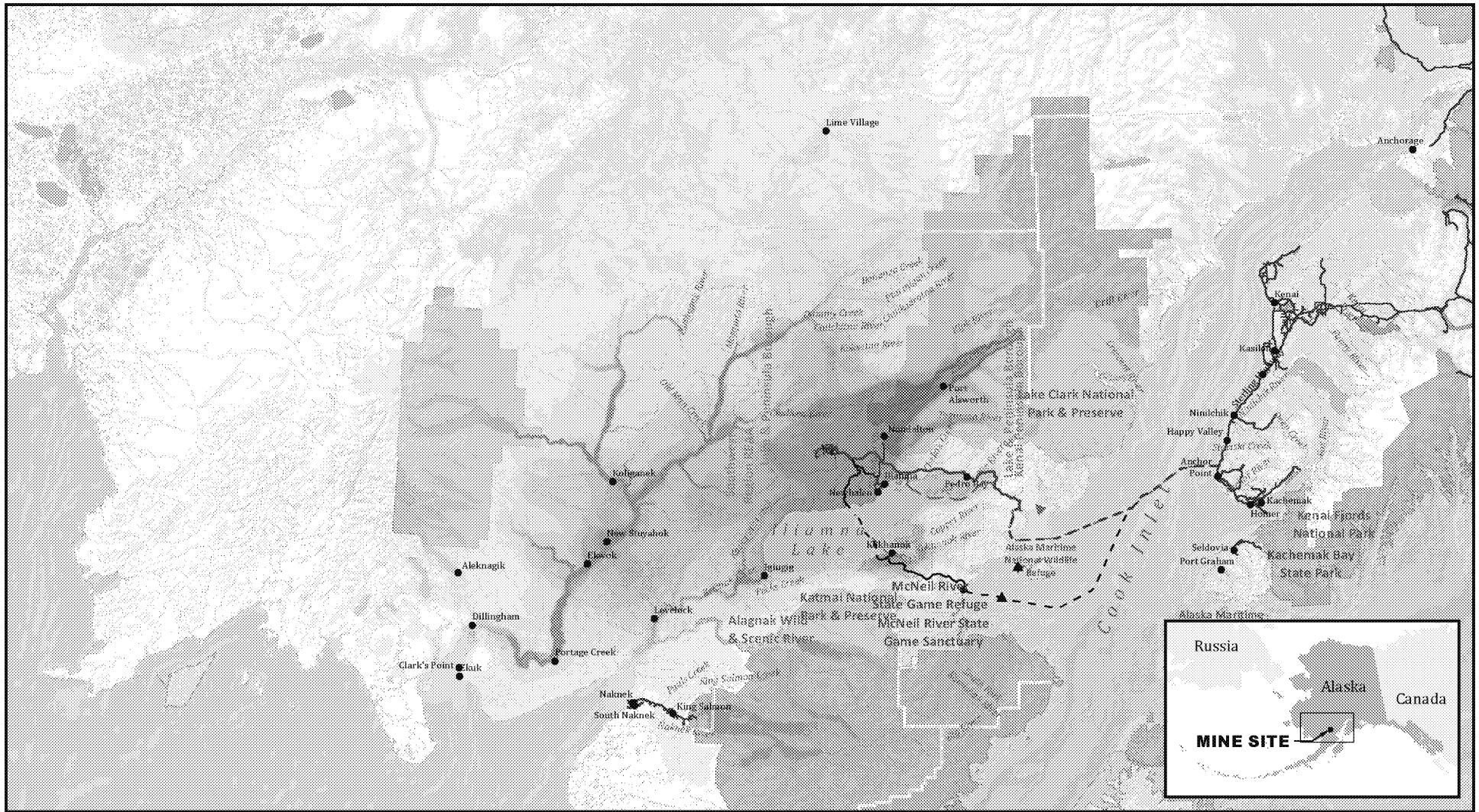

Sources: Pebble; USGS; ADNR
Subsistence use areas by
Stephen R. Braund & Associates

US Army Corps of Engineers

10 0 10 20
Miles

Other Features

- Borough Boundary
- Wild and Scenic River
- State Game Refuge/Sanctuary
- Alaska State Park
- National Wildlife Refuge
- National Park
- City/Town
- Roads
- River/Stream
- Lake/Pond

Overlapping Subsistence Use Areas
All Resources
12 Communities
1996/97 - 2005/06
(Pebble Limited Partnership, 2012)

- Action Alternative 1
- Alternative 1 Kokhanok East Variant
- Alternative 2
- Alternative 3

SUBSISTENCE USE AREAS

PEBBLE PROJECT EIS

FIGURE 3.9-1

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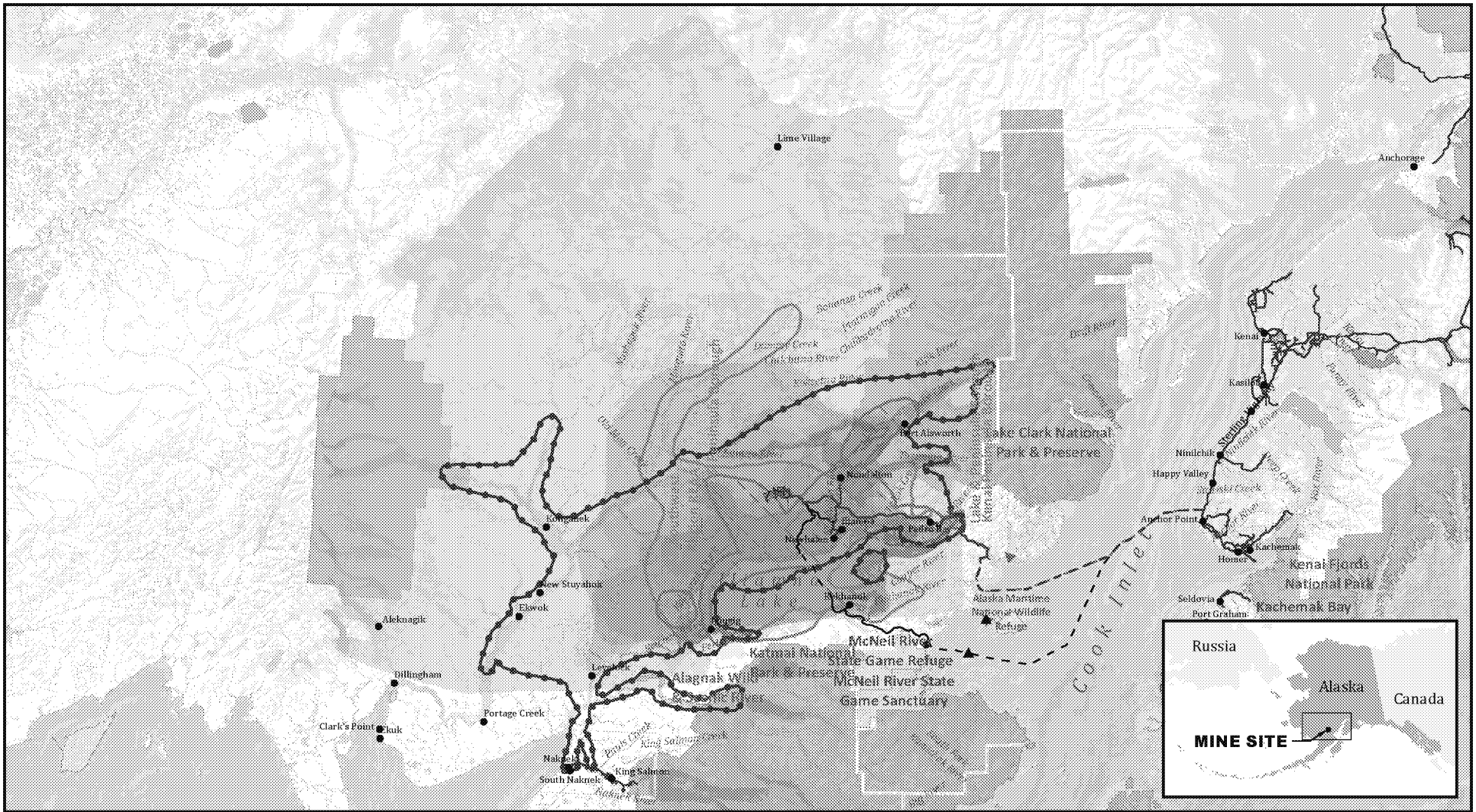

Sources: Pebble; USGS; ADNR
Subsistence use areas by
Stephen R. Braund & Associates

US Army Corps of Engineers

10 0 10 20
Miles

Other Features

- Borough Boundary
- Wild and Scenic River
- State Game Refuge/Sanctuary
- Alaska State Park
- National Wildlife Refuge
- National Park
- City/Town
- Roads
- River/Stream
- Lake/Pond
- Large Land Mammals, 1980-2002 (Holen et al., 2005)
- All Resources, 2004 (Fall et al., 2006)
- All Resources, 1960-82 (Wright, Morris, and Schroeder, 1985)
- Overlapping Subsistence Use Areas All Resources 1996/97 - 2005/06 (SRB&A 2009b)
- Action Alternative 1
- Alternative 1 Kokhanok East Variant
- Alternative 2
- Alternative 3

SUBSISTENCE USE AREAS, ALL RESOURCES - ILIAMNA

PEBBLE PROJECT EIS

FIGURE 3.9-3

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/17/2018 7:44:55 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 fifth email (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_18_02_USGSWaterYearSummary.pdf; 11_17_2018_Fig3_18_03_SedimentSamplingLocations.pdf

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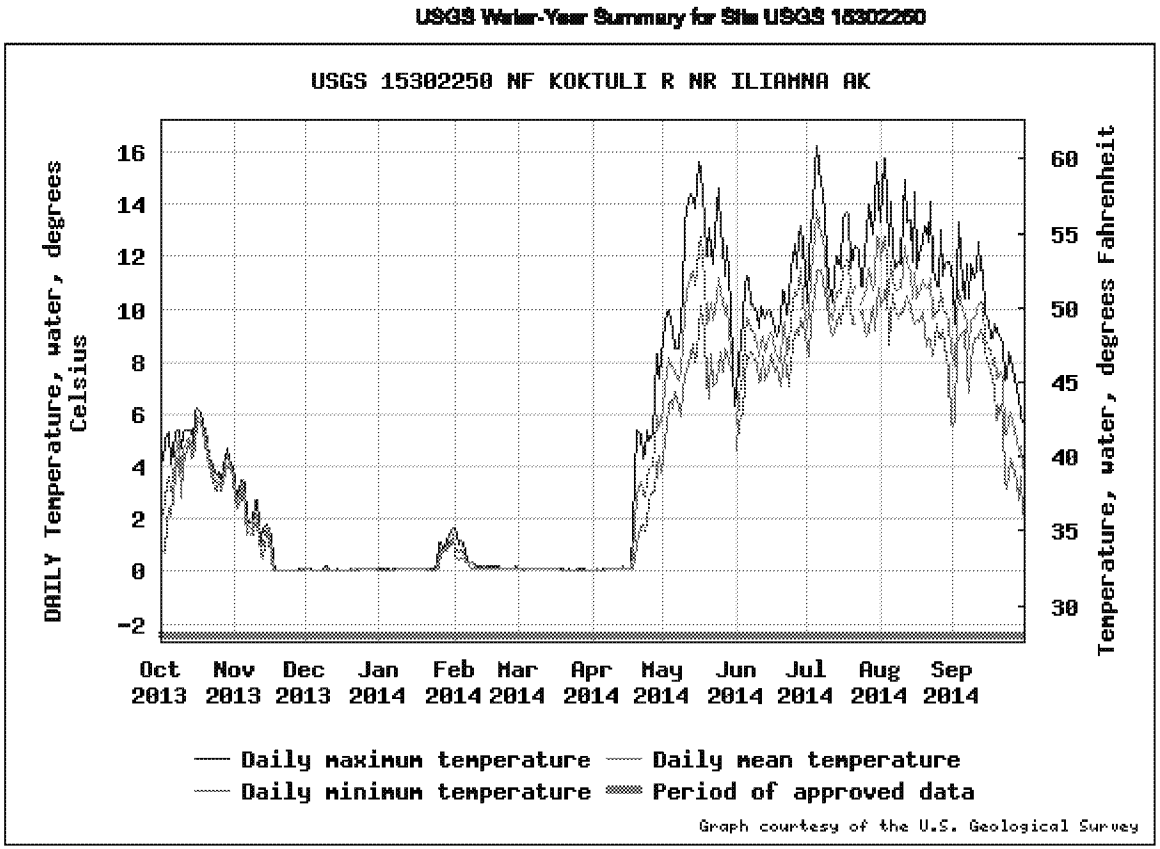

Source: USGS 2018

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DAILY WATER TEMPERATURES IN NFK RIVER

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FIGURE 3.18-2

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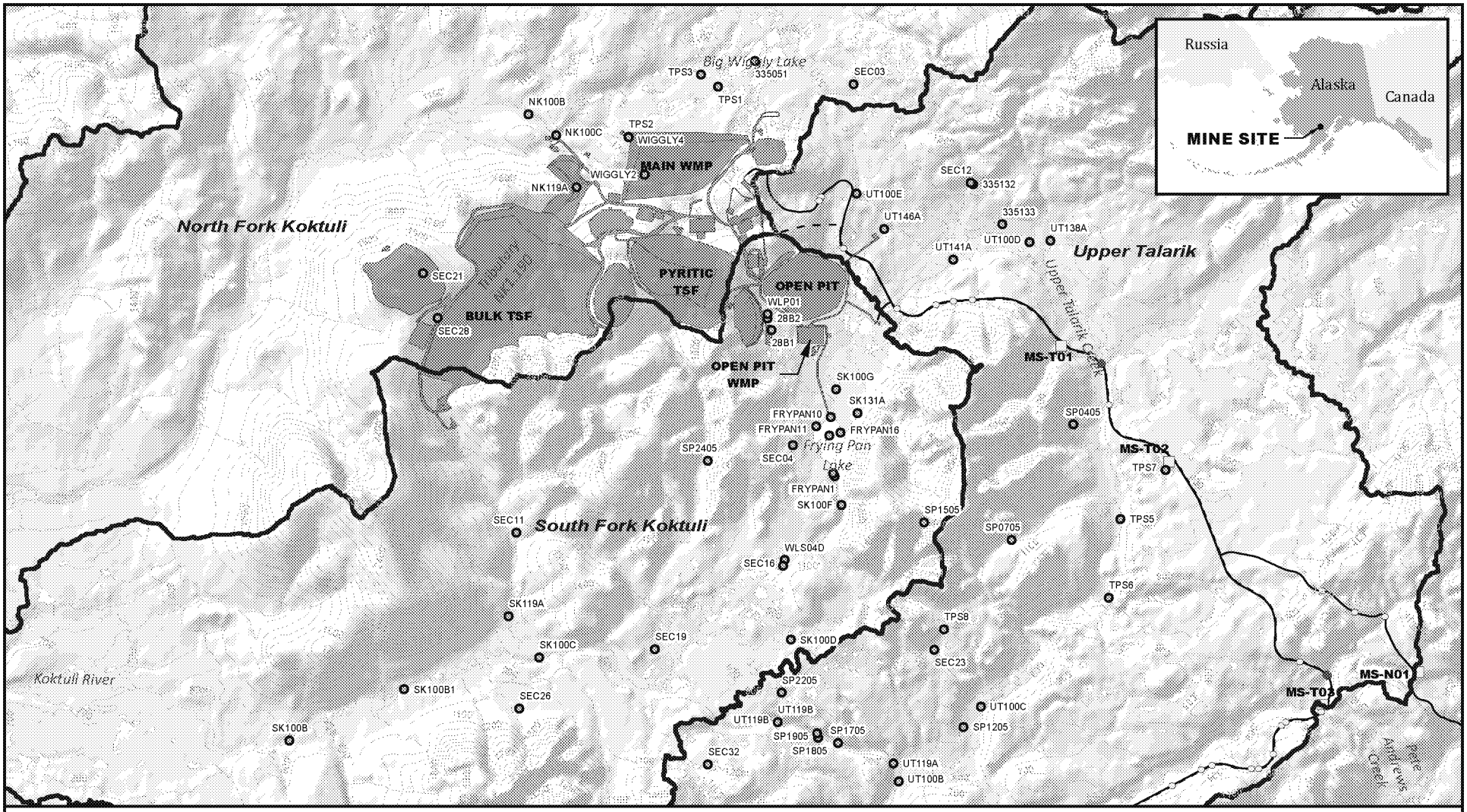

Sources: EBD Chapter 10. Figure 10.1-1

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0.5 0 0.5 1
Miles

Sediment Quality Sample
Major Drainage Boundary

Alternative 1
Bridge
Culvert

Material Site
Mine Site
Transportation Corridor
Natural Gas Pipeline

Other Features
River/Stream
Lake/Pond
100' Contour (Existing)

SEDIMENT QUALITY SAMPLE LOCATIONS, MINE SITE AREA

PEBBLE PROJECT EIS

FIGURE 3.18-3

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/1/2018 2:55:46 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Laws Permits Approvals and Consultations Response requested by 11/29/2018 (UNCLASSIFIED)
Attachments: 10_31_2018_Appendix_E_Laws_Permits_Apps_Cons_reviewdraft.docx

CLASSIFICATION: UNCLASSIFIED

Attached is Append E: Laws Permits Approvals and Consultations. If your agency has jurisdiction by law, please review the attached and, if needed, provide input by 11/29. If your agency does not provide input, it will be presumed that the list is inclusive and accurate. Thanks.

VR

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APPENDIX E – LAWS, PERMITS, APPROVALS, AND CONSULTATIONS REQUIRED

The Pebble Project would be required to follow numerous federal laws and executive orders, and obtain permits and approvals from federal, state, and local governments. The key federal laws and Executive Orders pertaining to this Environmental Impact Statement (EIS) are described below. Table E-1 lists the permits, approvals and consultations typically required for development and operation of a hardrock mine in Alaska.

E1.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

The National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 et seq.) applies to all federal agencies and their decisions that have the potential to affect the environment. It establishes the procedures that federal agencies follow to make major decisions in a public forum, while disclosing the environmental implications of the potential decision.

The president's Council on Environmental Quality (CEQ) has issued NEPA regulations and guidance for all agencies. NEPA requires implementation of the appropriate level of NEPA process (public involvement and document preparation) to be conducted with respect to a major federal action that has the potential to significantly affect the human environment.

This EIS was prepared according to the US Army Corps of Engineers (USACE) regulations implementing NEPA (33 Code of Federal Regulations [CFR] Part 230), which state that an EIS must provide detailed information regarding the proposed action and alternatives, the environmental impacts of the alternatives, potential mitigation measures, and any adverse environmental impacts that cannot be avoided if the proposal is implemented. This EIS includes analysis of measures to avoid and minimize impacts to fish, wildlife, habitats, and other resources and also addresses compensatory mitigation for impacts which cannot be avoided or minimized. It must be demonstrated that these factors have been considered by decision makers prior to undertaking actions such as issuing permits.

E1.2 CLEAN WATER ACT (1972)

Section 404 of the Clean Water Act (CWA) requires that a USACE permit be obtained for the placement or discharge of dredged and/or fill material into Waters of the US (WOUS), including jurisdictional wetlands (33 USC 1344). The USACE defines wetlands as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The USACE evaluates proposed actions for compliance with the Section 404(b)(1) Guidelines, which were developed by the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army. The EPA reviews and comments on permit applications for compliance with Section 404(b)(1) Guidelines and other statutes and authorities under their jurisdiction.

Under Section 402 of the CWA, discharges to surface waters from construction, operations, and reclamation of the Pebble Project would require compliance with the National Pollutant Discharge Elimination System, administered by the Alaska Department of Environmental Conservation (ADEC) as the Alaska Pollutant Discharge Elimination System (APDES). The EPA provides oversight of the state-issued wastewater permits subject to the requirements of the APDES. During construction, the Alaska Construction General Permit would require a Storm Water Pollution Prevention Plan (SWPPP). During operations, the discharges from advanced pit dewatering would also be subject to the APDES program and depending on the method of disposal domestic wastewater could require APDES coverage.

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E1.3 RIVERS AND HARBORS ACT (1899)

Section 10 of the Rivers and Harbors Act (RHA) of 1899 requires that a USACE permit be obtained for construction of structures, or work in and/or affecting navigable waters of the US (NWUS) (33 USC 403), which includes excavation or deposition of material in navigable waters, or other actions that could affect the course, location, condition, or capacity of these waters.

E1.4 ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT (1980)

The Alaska National Interest Lands Conservation Act (ANILCA), Public Law 96-487 (16 USC 3101–3233) added 106 million acres to federal conservation system units in Alaska. ANILCA includes a number of provisions intended to allow for infrastructure and economic growth in general, travel and access in conservation system units, and pursuit of a subsistence lifestyle while protecting resource values. ANILCA helps provide context for evaluation of potential effects to the landscape, but ANILCA provisions do not apply beyond designated federally managed land boundaries and do not apply to the lands for the proposed Pebble Project.

ANILCA is a multifaceted law; two titles of particular note to this EIS include:

- Title VIII of ANILCA defines subsistence as customary and traditional uses of wild renewable resources by rural Alaska residents (Section 803), establishes a subsistence priority on federal public lands and waters (Section 804), and provides for a system of regional advisory councils to ensure the participation of rural residents in subsistence management (Section 805). Section 810 of ANILCA requires analysis of impacts to subsistence from federal land use decisions. Section 811 ensures reasonable access to subsistence resources on federal public lands, including the use of snowmachines, motorboats, and other means of surface transportation traditionally employed for subsistence purposes, subject to reasonable regulation.
- Title IX of ANILCA clarifies the implementation of ANCSA and the Alaska Statehood Act Section 906(k) requires state concurrence on selected lands prior to granting a right-of-way (ROW).

E1.5 ALASKA NATIVE CLAIMS SETTLEMENT ACT (1971)

Alaska Native regional and village corporations own lands and minerals in the project area under the provisions of Alaska Native Claims Settlement Act (ANCSA) (43 USC 1601, et seq.).

The Pebble Project transportation corridor connecting the Amakdedori port to the mine site crosses both state land and land patented under ANCSA. ANCSA corporations were invited to participate in the National Historic Preservation Act (NHPA) Section 106 process for cultural resource identification and mitigation.

E1.6 PIPELINE SAFETY, REGULATORY CERTAINTY, AND JOB CREATION ACT OF 2011

The Pipeline Safety, Regulatory Certainty, and Job Creation Act (49 USC 60101) was enacted to improve and examine the state of pipeline safety regulations. Enforcement falls under the jurisdiction of the Pipeline and Hazardous Materials Safety Administration (PHMSA), the agency that regulates and enforces the operations of pipeline transportation systems in the US and oversees pipeline infrastructure. The PHMSA has the primary responsibility for the issuance of Department of Transportation special permits and approvals for hazardous materials and for natural gas and hazardous liquid pipelines. Special permits authorize a person to perform a function outside of PHMSA regulations or to not perform a function currently required under the

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PHMSA regulations. Approvals authorize the transportation of designated hazardous materials (i.e. explosives) or the performance of a designated hazardous materials function (i.e. cylinder retester) under the PHMSA regulations.

E1.7 CLEAN AIR ACT (1970)

The Clean Air Act (CAA) of 1970, with amendments in 1990, addresses standards for many categories of air pollutants and defines how the EPA implements its regulatory authority for air quality (42 USC 85). The requirements of this law encompass many pollution sources, provide health-based standards, and identify control methods to reduce the emission of common air pollutants. The potential construction and operations of a mine and power plant would introduce activities that are associated with particle pollution and ground-level ozone pollution. Both of these forms of air pollution, and others, have known health effects and would be subject to further evaluation under federal- and state-implemented air quality management programs. Implementation of the CAA has been delegated to the State of Alaska; therefore, the ADEC would issue any air permits associated with this project. EPA provides oversight of the state-issued air permits.

E1.8 ENDANGERED SPECIES ACT (1973)

The Endangered Species Act (ESA) of 1973 was enacted to conserve species that have been found to be at risk of extinction in all or a substantial portion of their ranges, and to conserve the ecosystems and habitats upon which they rely. The US Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA)-Fisheries/National Marine Fisheries Service (NMFS) have regulatory authority for implementing the ESA. In general, USFWS is responsible for managing the terrestrial animal and plant species listed as endangered and threatened, and generally coordinates related issues for terrestrial and freshwater species, while NOAA-Fisheries/NMFS is responsible for most marine mammals and anadromous fish species. Some marine mammals, including the northern sea otter, are managed by USFWS. Pebble Project vessel traffic would traverse areas where threatened or endangered species occur.

E1.9 HISTORIC PRESERVATION LAWS

The National Historic Preservation Act (NHPA) of 1966 (as amended), the Archaeological Resources Protection Act of 1979, the Antiquities Act of 1906, and the Alaska Historic Preservation Act (1971) guide the management of cultural resources and historic properties. Under Section 106 of the NHPA (36 CFR Part 800), federal agencies are required to consider the effect of their actions on historic properties listed on, or eligible for, the National Register of Historic Places (National Register). The NHPA allows sites of traditional religious and cultural significance to Native Americans or Alaska Natives to be considered eligible for the National Register. Section 106 requires a process of consultation with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Office (SHPO), Indian (or Alaska Native) tribes, local governments, and other interested parties to identify historic properties and determine the effects of the action on those resources. If historic properties would be adversely affected by a project, the agency must, again in consultation, resolve the effects through appropriate mitigation. The Pebble Project has the potential to affect cultural resources and historic properties. 36 CFR 800.14 allows for the resolution of adverse effects from complex projects through negotiation of a programmatic agreement between federal agencies and the ACHP. Inventory, documentation, and preservation of cultural resources and traditional cultural properties and mitigation of adverse impacts from the Pebble Project would be based on a programmatic agreement that is currently under development with consultation among PLP, the USACE, ACHP, Alaska SHPO, and tribal representatives.

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E1.10 NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT

Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001) requires that discovery or disturbance of any human remains on federal or tribal lands in the project area must be accounted for and protected and/or properly returned to the tribe of origin. The potential for impacts from the Pebble Project to resources protected under NAGPRA must be evaluated in the EIS.

E1.11 AMERICAN INDIAN RELIGIOUS FREEDOM ACT OF 1978

The American Indian Religious Freedom Act of 1978 (42 USC 1996) requires federal agencies to consider Native American religious concerns when a federal management decision has the potential to impact an Indian religious practice or a spiritually significant site (on both federal and non-federal lands affected by the federal action). The potential for impacts from the Pebble Project to activities protected under this act is evaluated in the EIS.

E1.12 MARINE MAMMAL PROTECTION ACT (1972)

The USFWS and NOAA-Fisheries/NMFS have regulatory authority for implementing the Marine Mammal Protection Act (MMPA) (16 USC 1361-1407), which prohibits the harassment, hunting, capture, or killing of marine mammals, or the attempt to harass, hunt, capture, or kill marine mammals. The law provides exceptions for authorized scientific research and subsistence uses by Alaska Natives. Actions that have potential to take marine mammals must be reviewed and approved by the regulating agencies. Pebble Project vessel traffic would traverse areas where marine mammals occur.

E1.13 MIGRATORY BIRD TREATY ACT (1918)

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-712) implements several international conventions to protect migratory birds. Following treaty amendments in 1997, regulations for subsistence bird harvests were established under the purview of the Alaska Migratory Bird Co-Management Council, operating under authority of the MBTA, as amended. Under the MBTA, takings are prohibited unless expressly authorized or exempted. This EIS addresses potential impacts of the project and associated infrastructure on all birds protected under the MBTA.

E1.14 BALD AND GOLDEN EAGLE PROTECTION ACT (1940, 1962)

The Bald and Golden Eagle Protection Act (16 USC 668, et seq.) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. Eagle take permits may be necessary for activities that result in removal of nests, loss of habitat, and disturbance of birds during construction, operations, and maintenance of the project. This EIS identifies the presence of eagles or their nests in the project area (along with associated infrastructure routes), and analyzes potential impacts of the project on both bald and golden eagles as protected under the Bald and Golden Eagle Protection Act. Alaska-specific information can be found at: http://alaska.fws.gov/eaglepermit/index.htm.

E1.15 FISH AND WILDLIFE COORDINATION ACT (1980)

The Fish and Wildlife Coordination Act (FWCA), as amended, (16 USC 661, et seq.), requires the agency that is authorized to permit or license changes in a water body to first consult with USFWS and the appropriate state fish and game agency. The FWCA provides that wildlife conservation receive equal consideration, and be coordinated with other features of the development project.

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The FWCA authorizes the USFWS to conduct surveys and investigations to determine the possible damage of proposed developments on wildlife resources, in order to make recommendations for preventing their loss or damage. The USFWS incorporates the concerns and findings of state and other federal agencies, including NOAA-Fisheries/NMFS, into a report that addresses wildlife factors and provides recommendations for mitigating or enhancing impacts to wildlife affected by a federally constructed, permitted, or licensed water development project. The term wildlife resources is explicitly defined to include "birds, fishes, mammals, and all other classes of wild animals and types of aquatic and land vegetation upon which wildlife is dependent" (16 USC 666 (b)). Additionally, the FWCA states that reports determining the possible damage to wildlife resources and an estimation of wildlife loss be made an integral part of any report prepared or submitted the agency with permitting authority (16 USC 662 (b),(f)).

E1.16 NATIONAL WILDLIFE REFUGE SYSTEM ADMINISTRATION ACT OF 1966, AS AMENDED

The National Wildlife Refuge System Administration Act (16 USC 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), established a unified mission for the National Wildlife Refuge System and a compatibility standard for assessing proposed uses within a refuge. The refuge system is dedicated to the conservation of fish, wildlife, and plant resources and their habitats in the refuge. Although the proposed project would not install infrastructure on a refuge, the activities of the Pebble Project have the potential to affect refuge land and resources.

E1.17 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

To provide for the conservation and management of sustainable fisheries, the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) sets forth a mandate for NOAA-Fisheries/NMFS, regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitats (16 USC 1801-1883). Federal agencies must consult with NOAA-Fisheries/NMFS on actions or proposed actions authorized by the federal agency that may adversely affect Essential Fish Habitat (EFH). EFH includes habitats necessary to a species for spawning, breeding, feeding, or growth to maturity. The Pebble Project has potential to affect EFH.

E1.18 RESOURCE CONSERVATION AND RECOVERY ACT OF 1976

Under this act, the EPA develops and implements regulatory programs to manage hazardous waste from generation until ultimate disposal, including issuing an identification number for any entity that generates hazardous wastes. Construction, operations, and reclamation of the proposed Pebble Project would generate wastes subject to Resource Conservation and Recovery Act (RCRA) rules (40 CFR 239 through 282).

E1.19 TOXIC SUBSTANCES CONTROL ACT OF 1976

Under the Toxic Substances Control Act (TSCA) of 1976 (15 USC 2601), the EPA develops and implements regulatory requirements for the testing of new and existing chemical substances and regulates the treatment, storage, and disposal of certain toxic substances. Construction, operations, and reclamation of the Pebble Project would involve chemical substances subject to TSCA rules.

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E1.20 THE FEDERAL MINE SAFETY AND HEALTH ACT OF 1977

The Mine Safety and Health Administration (MSHA) administers the provisions of the Mine Act (30 USC. 22) to enforce compliance with mandatory safety and health standards as a means to eliminate fatal accidents, to reduce the frequency and severity of non-fatal accidents, to minimize health hazards, and to promote improved safety and health conditions in the nation's mines. Operations of the Pebble Project would require compliance with MSHA standards.

E1.21 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (43 USC 103), sometimes referred to as Superfund, provides federal funding to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, EPA has authority to assure cooperation in the cleanup from responsible parties.

EPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other small party settlements. EPA also recovers costs from financially viable individuals and companies once a response action has been completed.

E1.22 EMERGENCY PLANNING AND COMMUNITY-RIGHT-TO-KNOW ACT OF 1986

Authorized by Title III of the Superfund Amendments and Reauthorization Act (SARA), the Emergency Planning & Community Right-to-Know Act (EPCRA) (42 USC 116) was enacted by Congress as the national legislation on community safety. This law is designed to help local communities protect public health, safety, and the environment from chemical hazards.

To implement EPCRA, Congress requires each state to appoint a State Emergency Response Commission (SERC). The SERCs are required to divide their states into emergency planning districts and to name a Local Emergency Planning Committee (LEPC) for each district.

Broad representation by firefighters, health officials, government and media representatives, community groups, industrial facilities, and emergency managers ensures that all necessary elements of the planning process are represented.

E1.23 SAFE WATER DRINKING ACT OF 1974

The Safe Drinking Water Act (42 USC. 300 (f) et seq.) was established to protect drinking water in the US. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources. This act authorizes the EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. State governments, which can be approved to implement these rules for the EPA, also encourage attainment of secondary standards (nuisance-related). Under the act, the EPA also establishes minimum standards for state programs to protect underground sources of drinking water from endangerment by underground injection of fluids.

E1.24 OIL POLLUTION ACT OF 1990

The Oil Pollution Act (OPA) of 1990 (33 USC 40) streamlined and strengthened the EPA's ability to prevent and respond to catastrophic oil spills. The OPA requires oil storage facilities and vessels to submit plans detailing how they will respond to large discharges to the federal

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government. The OPA also requires the development of area contingency plans to prepare and plan for oil spill response on a regional scale.

E1.25 PORTS AND WATERWAYS SAFETY ACT OF 1972

The Ports and Waterways Safety Act (PWSA) of 1972 (33 USC 25) authorizes the US Coast Guard to establish vessel traffic services and separation schemes (VTSS) for ports, harbors, and other waters subject to congested vessel traffic. The VTSS apply to commercial ships, other than fishing vessels, weighing 300 gross tons (270 gross metric tons) or more. The OPA amended the PWSA to mandate that appropriate vessels must comply with the VTSS.

E1.26 OUTER CONTINENTAL SHELF LANDS ACT OF 1953

The Outer Continental Shelf Lands Act (OCSLA) of 1953 (43 USC 1331) requires the Department of Interior (DOI) to manage the orderly leasing, exploration, development, production, and decommissioning of oil and gas resources on the federal Outer Continental Shelf (OCS), while simultaneously ensuring protection of the human, marine, and coastal environments and assuring receipt of fair market value for the lands leased and the rights conveyed by the federal government. OCSLA also requires coordination with state and local governments affected by OCS development activities.

Under the OCSLA, the Bureau of Environmental Safety and Environmental (BSEE) is responsible for regulating and monitoring oil and gas operations on the federal OCS, promoting safety, and protecting the environment. BSEE approves ROW authorization for pipelines in federal OCS waters, and is responsible for approving ROW authorization for the subsea natural gas pipeline proposed in the Pebble Project EIS.

E1.27 EXECUTIVE MEMORANDUM OF APRIL 29, 1994, ON GOVERNMENT-TO-GOVERNMENT RELATIONS WITH NATIVE AMERICAN TRIBAL GOVERNMENTS, AND EXECUTIVE ORDER 13175 – CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENT

Federal agencies are instructed to operate within a government-to-government relationship with federally recognized tribes; tasked with consulting with potentially affected tribal governments prior to taking actions that affect federally recognized tribal governments; and must also evaluate the impact of federal government plans, projects, programs, and activities on tribal trust resources; and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities. The USACE, as the lead federal agency for this EIS, is required to consult with federally recognized tribes potentially affected by the Pebble Project.

E1.28 EXECUTIVE ORDER 11514 – PROTECTION AND ENHANCEMENT OF ENVIRONMENTAL QUALITY

This order requires the EPA to review and evaluate the Draft and Final EIS for compliance with CEQ Guidelines.

E1.29 EXECUTIVE ORDER 11988 – FLOODPLAIN MANAGEMENT

This order requires federal agencies to establish procedures ensuring that the potential effects of flood hazards and floodplain management are considered for actions undertaken in a floodplain.

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Impacts to floodplains are to be avoided to the extent practicable. The Pebble Project has the potential to impact floodplains.

E1.30 EXECUTIVE ORDER 11990 – PROTECTION OF WETLANDS

This order requires federal agencies to avoid short- and long-term adverse impacts to wetlands whenever a practicable alternative exists. This EIS analyzes impacts to wetlands.

E1.31 EXECUTIVE ORDER 12898 – FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

This order instructs federal agencies to develop environmental justice (strategies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations (including Native American and Alaska Native tribes).

E1.32 EXECUTIVE ORDER 12962 – RECREATIONAL FISHERIES

This order instructs federal agencies to evaluate proposed federal actions for potential effects to aquatic systems and recreational fisheries. The quantity, function, sustainable productivity, and distribution of aquatic resources are to be improved to the practicable extent permitted by law. This EIS analyzes potential impacts to aquatic systems and recreational fishing opportunities.

E1.33 EXECUTIVE ORDER 13007 – INDIAN SACRED SITES

This order requires federal agencies to accommodate access to and ceremonial uses of Indian sacred sites located on federal property by Indian religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. This EIS analyzes the potential for impacts to Indian sacred sites.

E1.34 EXECUTIVE ORDER 13045 – PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS

The order applies to economically significant rules under Executive Order 12866 (Regulatory Planning and Review) that concern an environmental health or safety risk that the EPA has reason to believe may disproportionately affect children. This EIS analyzes potential impacts to human health, including children.

E1.35 EXECUTIVE ORDER 13112 – INVASIVE SPECIES

This order instructs federal agencies to prevent the introduction of invasive species, control those that are introduced, and provide for the restoration of native species.

E1.36 EXECUTIVE ORDER 13186 – RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS

This order requires federal agencies to avoid or minimize the impacts of their actions on migratory birds and take active steps to protect birds and their habitats.

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Federal		
Federal Laws and Executive Orders Common To Multiple Federal Agencies		
National Environmental Policy Act (NEPA) (42 USC 4321)	NEPA (1969) requires all federal agencies to prepare a detailed statement of the environmental effects of proposed major federal actions that may significantly affect the quality of the human environment.	• Environmental Impact Statement
National Historic Preservation Act (NHPA) of 1966 (54 USC 300101 et seq.).	Prior to the issuance of a federal permit, federal agencies are responsible for taking into account the effect of the undertaking on historical, cultural, and archaeological sites and resources.	• NHPA Consultation, Section 106 Programmatic Agreement
US Army Corps of Engineers		
Clean Water Act (CWA) of 1972 (33 USC 1344)	Discharge of dredged or fill material into WOUS, including wetlands.	• Department of the Army (DA) Permit
Rivers and Harbors Act (RHA) of 1899 (33 USC 403)	Work and/or construction of structures in, over, or under navigable WOUS, or which affects the course, location, condition, or capacity of such waters.	• DA Permit
BSEE		
Title 30 Mineral Lands and Mining (30 CFR Part 250.1000-1019, Subpart J – Pipelines and Pipeline Rights of Way) Title 33 Navigation and Navigable Waters, Section 1321 – Oil and Hazardous Substance Liability (30 CFR Part 254.20-.30)	The Bureau of Safety and Environmental Enforcement (BSEE) is responsible for regulating and monitoring oil and gas operations on the federal OCS, promoting safety, and protecting the environment. BSEE approves ROW authorization for pipelines in federal OCS waters.	• ROW Authorization for subsea natural gas pipeline in OCS waters.

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
US Coast Guard		
Ports and Waterways Safety Act (PWSA) of 1972 Title 33 Navigation and Navigable Waters, Subchapter P, Ports and Waterways Safety (33 CFR 160 through 169) Title 33 Navigation and Navigable Waters, Subchapter J, Bridges (33 CFR 114 through Parts 118)	US Coast Guard (USCG) and Department of Homeland Security approve safety features in ports and waterways. USCG has authority over locations and clearances of bridges and causeways in or over navigable waters of the US (NWOUS).	• Application for Cargo Transfer Operations • Port Operations Manual Approval • Facility Response Plans (FRPs) • Private Aids to Navigation Authorization • Vessel Inspections • Notice to Mariners • Bridge permits
Environmental Protection Agency		
Clean Air Act (CAA) of 1967, Amended 1977 (42 USC 7401 et seq.)	The EPA conducts a review and evaluation on the environmental impact and adequacy of the Draft and Final EIS as authorized by Section 309 of the CAA. The EPA has oversight responsibilities of state-issued air permits.	• Section 309 evaluation
Clean Water Act of 1972, Amended 1977 (33 USC 1251 et seq.) (40 CFR Parts 110 and 112)	Section 311 – The EPA requires owners/operators to prepare and implement spill prevention, control, and counter-measure (SPCC) plans for facilities that store more than 1,320 gallons in aggregate in above-ground tanks with capacity of 55 gallons or more. Section 402 - The EPA oversees draft APDES permits and can object to proposed permit decisions. Section 404 – The EPA reviews and comments on permit applications for compliance with Section 404(b)(1) Guidelines and other statutes and authorities within their jurisdiction.	• Oversight of SPCC Rule Requirements • Review of APDES permit applications • Review of DA permit applications pursuant to Section 404
Comprehensive Environmental Response, Compensation, and Liability Act.	Provides federal funding to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.	• Authority to assure cooperation in the cleanup from responsible parties.
Oil Pollution Act (OPA) of 1990 (40 CFR Part 112.20)	Section 4202 of the OPA amended CWA Section 311(j) by requiring owners or operators of tank vessels, offshore facilities, and certain onshore facilities to prepare and submit Facility Response Plans (FRPs).	• Review of FRPs

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Resource Conservation and Recovery Act (RCRA)	Establishes criteria governing the management of hazardous waste. Any hazardous waste generated at a facility associated with the proposed project is subject to the hazardous waste regulations administered by the EPA.	• Permits for the transportation and storage of hazardous waste material
Safe Drinking Water Act of 1974 (42 USC 300 (f) et seq.)	Requires EPA to set limits for maximum allowable levels of contaminants in public drinking water systems.	• Sets standard for public drinking water quality
Toxic Substances Control Act (TSCA) of 1976 (15 USC 2601),	Develops and implements regulatory requirements for the testing of new and existing chemical substances and regulates the treatment, storage, and disposal of certain toxic substances.	• Reporting requirements
Pipeline and Hazardous Materials Safety Administration		
Pipeline Safety Regulations (49 CFR Parts 190-199) Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 Public Law 109-468 The Pipeline Safety Statute (49 USC 60101-60301)	Pipeline transportation and pipeline facilities must meet the minimum safety standards as regulated and enforced by the PHMSA.	• Meet minimum safety standards
Hazardous Materials Transportation Act (49 USC 1801-1819)	Hazardous materials must be transported according to US Department of Transportation regulations.	• Hazardous materials registration
US Federal Aviation Act (14 CFR 61, 91, 119)	Federal Aviation Administration regulates air navigation facilities and air traffic control.	• Notice of Landing Area Proposal (existing airstrip) • Notice of Controlled Firing Area for Blasting • Notice of construction, activation, and deactivation of airports
US Fish and Wildlife Service		
Bald and Golden Eagle Protection Act (16 USC 668)	USFWS permits relocation of bald and golden eagle nests that interfere with resource development or recovery operations.	• Permits to take, haze, relocate or destroy birds or their nests, for public safety purposes

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Marine Mammal Protection Act (MMPA) (16 USC 1361 et seq.)	USFWS has regulatory authority for implementing the Marine Mammal Protection Act (MMPA) which prohibits the harassment, hunting, capture, or killing of marine mammals, or the attempt to harass, hunt, capture, or kill marine mammals. Requires Incidental Take Authorizations (ITAs) under Section 101(a)(5)(A) or (D) of the MMPA. Incidental Take Authorizations (ITAs) may be issued as either: 1) regulations and associated Letters of Authorizations, or 2) Incidental Harassment Authorizations (NOAA-Fisheries/NMFS also administers the MMPA).	• ITAs (as necessary); Letters of Authorization or Incidental Harassment Authorizations.
Migratory Bird Treaty Act (MBTA) (16 USC 703)	USFWS implements provisions of the MBTA.	• MBTA consultation
Endangered Species Act of 1973 (ESA) (16 USC 1531)	USFWS provides consultation on effects to threatened or endangered species, and to designated critical habitat, and issues incidental take authorizations. Species include terrestrial mammals, plants, birds, and several marine mammals (NOAA also administers the ESA).	• ESA consultation, USACE Issuance of Biological Assessment, USFWS issuance of concurrence or Biological Opinion.
National Oceanic and Atmospheric Administration-Fisheries/National Marine Fisheries Service		
Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801-1883)	NOAA-Fisheries/NMFS provides consultation on the effects on EFH. EFH includes habitats necessary to a species for spawning, breeding, feeding, or growth to maturity.	• EFH consultation
Marine Mammal Protection Act (MMPA) (16 USC 1361 et seq.)	NOAA-Fisheries/NMFS has regulatory authority for implementing the MMPA, which prohibits the harassment, hunting, capture, or killing of marine mammals, or the attempt to harass, hunt, capture, or kill marine mammals. Requires ITA under Section 101(a)(5)(A) or (D) of the MMPA. ITAs may be issued as either: 1) regulations and associated Letters of Authorizations, or 2) Incidental Harassment Authorizations (USFWS also administers the MMPA).	• Incidental Take Authorization; Letters of Authorization or Incidental Harassment Authorizations.
Endangered Species Act of 1973 (ESA) (16 USC 1531)	NOAA-Fisheries/NMFS provides consultation on effects to threatened or endangered species, and to designated critical habitat, and issues incidental take authorizations. Species include most marine mammals (see USFWS species exceptions), and anadromous fish species (USFWS also administers the ESA).	• ESA Consultation, USACE Issuance of Biological Assessment, NOAA-Fisheries/NMFS issuance of concurrence or Biological Opinion

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
US Department of the Treasury		
Treasury Department Order No. 120-1	US Department of the Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives requires that applicants obtain a Permit to Purchase Explosives for blasting prior to the purchase, storage, and use of explosives for conducting blasting activities.	• License to transport explosives • Permit and license for use of explosives
Federal Communications Commission		
Communications Act of 1934 (47 USC 151 et seq.)	Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite and cable, including radio licensing.	• Radio license
US Department of Homeland Security		
Aviation and Transportation Security Act	Transportation Security Administration (TSA) oversees security for airports.	• TSA Inspection Program at Airport • Chemical Facility Anti-Terrorism Standards
State		
Alaska Department of Environmental Conservation		
Clean Air Act of 1967, Amended 1977 (42 USC 7401 et seq.) Air Quality Control (18 Alaska Administrative Code (AAC) 50 et seq.)	ADEC issues Air Quality Control permits to construct and to operate. ADEC issues Title V Operating permits and prevention of significant deterioration (PSD) permits for air pollutant emissions under the CAA Amendments (Title V).	• Air Quality PSD Permit • Title V Operating Permit • Air quality construction permit
Clean Water Act of 1972, Amended 1977 (33 USC 1251 et seq.)	Section 401 requires (for the USACE permit pursuant to Section 404) that ADEC certify that discharges into WOUS will comply with the CWA, the Alaska Water Quality Standards (18 AAC 70), and other applicable state laws.	• Section 401 Water Quality Certification

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Clean Water Act of 1972, Amended 1977 (33 USC 1251 et seq.) Wastewater Disposal (18 AAC 72) Alaska Pollutant Discharge Elimination System (18 AAC 83) Water Quality Standards (18 AAC 70) Drinking Water Standards (18 AAC 80)	ADEC provides approval for domestic wastewater collection, treatment, and disposal plans for domestic wastewaters. ADEC requires a permit for disposal of domestic and non-domestic wastewater. ADEC is fully authorized to administer the EPA's NPDES program through the APDES overseen by EPA. Existing regulations at 18 AAC 15 (Administrative Procedures) and 18 AAC 72 were amended to comply with the CWA. New regulations, 18 AAC 83, were also promulgated in addition to amending the existing regulations. ADEC provides approval for treatment and disposal plans for industrial wastewaters.	• APDES permits • Review Storm Water Discharge Pollution Prevention Plans • Plans review of treatment systems • Plan Review for Non-Domestic Wastewater Treatment System • Plan Review and Construction Approval for Domestic Sewage System • Domestic wastewater disposal permit • Non-domestic wastewater disposal permit
Solid Waste Management (18 AAC Chapter 60) (AS 46.03.100)	ADEC reviews and approves solid waste processing and temporary storage facilities plans for handling and temporary storage of solid waste and landfills.	• Integrated Waste Management Permit/Plan Approval
Food Permit and Registration Requirements (18 AAC 31.020)	ADEC may issue permits for persons seeking to operate a food establishment.	• Food Establishment Permit
Drinking Water System Classification and Plan Approval (18 AAC 80.200)	ADEC may issue approval of public drinking water plans.	• Potable water well logs • Approval to Construct and Operate a Public Water Supply System • Public Water System Identification Number
Open Burning (18 AAC 50.065)	ADEC enforces air quality requirements for open burning, and requires a permit for controlled open burning of forest land, vegetative cover, fisheries, or wildlife habitat in excess of 40 acres annually.	• Air Quality Permit to Open Burn

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Oil and Hazardous Substances Pollution Control Regulations (18 AAC 75) (AS 46.04.040, 050)	ADEC requires production and terminal facilities having an effective above-ground or below-ground storage capacity of greater than 10,000 barrels (420,000 gallons) of refined petroleum products to prepare an Oil Discharge Prevention and Contingency Plan and provide Proof of Financial Responsibility.	• Oil Discharge Prevention and Contingency Plan • Operation of vessels and petroleum product barges on state waters • Oil terminal/storage facility capable of storing 10,000 barrels or more • Above-ground Storage Tank Program (>420,000 gallons)
Alaska Department of Fish and Game		
The Fish and Wildlife Conservation Act (FWCA) of 1980 (16 USC 2901) The Fish and Wildlife Conservation Act of 1980 (16 USC 661 et seq.)	The Alaska Department of Fish and Game (ADF&G) consults with USFWS about fish and wildlife resources to conserve or improve wildlife resources. ADF&G provides comments and recommendations to federal agencies pursuant to the FWCA.	• Wildlife consultation • Fish habitat permits
Anadromous Fish Act (Alaska Statute [AS] 16.05.871)	An individual or governmental agency notifies and obtains authorization from ADF&G for activities that could use, divert, obstruct, pollute, or change natural flow of specified anadromous fish streams.	• Fish passage permits
Fishway Act (AS 16.05.841)	The Fishway Act requires that an individual or government agency notify and obtain authorization from the ADF&G for activities in or across a stream used by fish if it is determined that such uses or activities could represent an impediment to the efficient passage of resident or anadromous fish.	• Fish passage sufficiency determination
Activities Requiring a Special Area Permit (5 AAC 95.420)	A special area permit must be obtained from the ADF&G for activities (except for lawful hunting, trapping, fishing, viewing, and photography) occurring in state game refuges, state recreation areas, across designated wild and scenic rivers, or through state parks.	• Special area permits for designated areas
License, Permit, and Tag Fees; Surcharge; Miscellaneous Permits to Take Fish and Game (AS 16.05.340)	The ADF&G may issue a permit to collect fish and game, subject to limitations and provisions that are appropriate, for a scientific, propagative, or educational purpose.	• Permit to collect fish and game
Permit for Scientific, Educational, Propagative, or Public Safety Purposes (5 AAC 92.033)	The ADF&G may issue a permit for the taking, possessing, importing, or exporting of game for scientific, educational, propagative, or public safety purposes.	• Fish collection permits for field studies

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Alaska Department of Natural Resources		
Alaska Historic Preservation Act (AS 41.35.010-.240) NHPA of 1966 (16 USC 470 et seq.) (36 CFR 800.106-.110) Archaeological Resources Protection Act of 1979 (16 USC 470)	Section 106 of the NHPA requires consultation with the SHPO and, when there are effects on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP), with the ACHP. SHPO issues a Field Archaeology Permit for archaeological fieldwork on state lands. The SHPO would also be consulted by the USACE. ADNR Office of History and Archaeology (OHA) issues a Cultural Resources Concurrence for developments that may affect historic or archaeological sites.	• Section 106 Programmatic Agreement • Archaeology collection permit • Field archaeology permit
Material Sales (AS 38.05.550-565) Permits (AS 38.05.850) Mining Sites Reclamation Plan Approvals (AS 27.19) Plan of Operations Approval (11 AAC 86.800)	ADNR issues a Material Sales Contract for mining and purchase of gravel from state lands. ADNR issues ROW and land use permits for use of state land, ice road construction on state land, and state waters. ADNR approves mining reclamation plans on state, federal, municipal, and private land and water. ADNR approves the plan of operations for non-coal mines, and is required for all mining projects on state land. ADNR's Division of Mining, Land and Water, Mining Section issues this approval. ADNR requires a Millsite Lease for mine project facilities on state land. This lease gives the applicant a surface property right for the associated facilities. ADNR's Division of Mining, Land and Water, Mining Section issues this lease. ADNR requires a tideland lease for use of state-owned tidelands for marine facilities such as docks. For use of state-owned uplands, a lease is required for facilities such as transportation and staging facilities. The Pebble Project includes port structures below high tide lines. ADNR requires a permit from Division of Mining, Land and Water, Lands Section before constructing snow or ice roads on state land, or conducting overland travel. Crossings of fish-bearing water bodies by snow or ice roads also require authorization by The Alaska Department of Fish and Game, Division of Habitat prior to construction.	• Material sales contract • Mining license • Reclamation plan approval • Land use permits and leases • Bonding and financial assurance approval • Plan of Operations approval • Millsite Lease approval • Upland or Tideland Lease approval • Snow or ice road approval.
Right-of-Way Leasing Act (AS 38.35.020)	The ADNR State Pipeline Coordinator's Office issues pipeline ROW leases for new pipeline and pipeline related construction and operation across state lands. The ADNR Commissioner signs the leases and the State Pipeline Coordinator manages the leases.	• ROWs

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Water Use (AS 46.15)	ADNR issues a temporary water use permit for water use necessary for construction and operations. ADNR issues a water rights permit for appropriation of a significant amount of water on other than a temporary basis.	• Temporary Water Use permits • Appropriation of Water Permit/ Certificate to Appropriate Water
Duties and Powers of Department of Natural Resources, Limitations (AS 41.21.020) Section 6(f) of the Land and Water Conservation Fund (LWCF) (16 USC 4601 et seq.)	ADNR has the responsibility for outdoor recreation planning and administering the LWCF program within Alaska.	• Administer LWCF program
Water Management, Article 3 (Dam Safety) (11 AAC 93.150 - 201)	ADNR Dam Safety and Construction Unit issues certificates to construct and operate dams in Alaska	• Certificate of Approval to Construct, Modify, Remove, or Abandon a Dam • Certificate of Approval to Operate a Dam
Alaska Department of Public Safety (ADPS), Division of Fire and Life Safety		
General function of the Department of Public Safety with respect to fire protection (AS 18.70.010) Alaska Fire and Life Safety Regulations (13 AAC 50-55)	The Division of Fire and Life Safety has statewide jurisdiction for fire code enforcement and plan review authority, except in communities that have received deferrals—including the municipality of Anchorage, Fairbanks, University of Alaska Fairbanks, and Wasilla/Lakes.	• Approval to transport hazardous materials • Life and Fire Safety Plan checks • Plan Review Certificate of Approval for each building • Fire Marshal permits
2009 International Fire Code (IFC)	All fuel systems being developed to support port and airport operations during pipeline construction and operations must be reviewed and found to conform to the 2009 IFC requirements. Although explosive blasting is not anticipated to be used in the project, if used, the storage magazine type, location, and any barricade requirements must meet IFC requirements.	• 2009 IFC requirements
Alaska Department of Transportation and Public Facilities		
Chapter 25 Operations, Wheeled Vehicles: Oversize and Overweight Vehicles (17 AAC 25.300)	Alaska Department of Transportation and Public Facilities (ADOT&PF) issues permits for oversize or overweight vehicles.	• Oversize or overweight vehicle permits

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Chapter 25 Operations, Wheeled Vehicles: Transportation of Hazardous Materials, Hazardous Substances, or Hazardous Waste (17 AAC 25.200)	ADOT&PF regulates the transportation of hazardous materials, hazardous substances, or hazardous waste by vehicles.	• Compliance with the transportation of hazardous materials, hazardous substances, or hazardous waste regulations.
Utility Permits (17 AAC 15.011)	ADOT&PF issues permits authorizing applicants to construct or install utility facilities in a department ROW.	• Utility permits
Alaska Department of Labor, Standards and Safety		
Health Safety and Housing (AS 18.60.180), (8 AAC)	The Alaska Division of Labor Standards and Safety enforces Occupational Safety and Health Administration regulations, and ensures that project related activities meet standards and regulations for occupational health and safety.	• Certificates of Inspection for Fired and Unfired Pressure Vessels • Occupational Safety and Health (inspections and certificates) • Employer Identification Number
Alaska Department of Health and Social Services		
Alaska Best Management Practices, Alaska Health Impact Assessment (HIA) Program	The HIA program evaluates the potential human health effects of new policies, programs, or development projects in Alaska through the use of existing public health surveillance data, medical literature reviews, and field studies.	• HIA
Alaska Department of Military Affairs		
Emergency Planning Districts and Committees, Plan Review (AS 26.23.073, .077)	Planning and reporting requirements for facilities that handle, store, and/or manufacture hazardous materials.	• Hazardous chemical inventories
Alaska Division of Homeland Security & Emergency Management		
Hazardous Chemicals, Materials, and Wastes (AS 29.35.500)	The State Emergency Response Commission enforces reporting and planning requirements for facilities that handle, store, and/or manufacture hazardous materials.	• Hazardous chemical inventories

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Table E-1 : Permits, Approvals, and Consultations Required

Legal Authority	Agency	Role
Local		
Lake and Peninsula Borough		
Lake and Peninsula Borough Title 9 Development Permit (09.07.10-90) Large Project Permit (09.08.010-110) Flood Hazard Management and Flood Insurance (09.09.010-050)	The Lake and Peninsula Borough requires a development permit and large project permit for the mine and road area in the borough.	• Zoning • Plan review and construction permits • Solid waste
Kenai Peninsula Borough		
Kenai Peninsula Borough Title 17 (17.10.185, 17.08-50)	The Kenai Peninsula Borough Land Management Division requires compliance with its code for utility or pipeline easements.	• Easements for utilities, pipelines, and travel ways

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 6:30:57 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: please provide input by 12/07/2018 as requested (UNCLASSIFIED)
Attachments: 11_09_2018_Sec4.20_AirQuality_reviewdraft.docx; 11_09_2018_AppK3.6_Com&RecFish_reviewdraft.docx; 11_09_2018_AppK3.9_Subsistence_reviewdraft.docx; 11_09_2018_AppK4.20_AirQuality_reviewdraft.docx; 11_09_2018_Sec3.2_Lands__reviewdraft.docx; 11_09_2018_Sec3.6_Com&RecFish_reviewdraft.docx; 11_09_2018_Sec3.9_Subsistence_reviewdraft.docx; 11_09_2018_Sec3.20_AirQuality_reviewdraft.docx; 11_09_2018_Sec4.2_Lands_reviewdraft.docx; 11_09_2018_Sec4.6_Com&RecFish_reviewdraft.docx; 11_09_2018_Sec4.9_Subsistence_reviewdraft.docx

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All,
This is the first a chain of emails where USACE will be sending the following:
11 Word files, the review drafts of:

Sec3.2, 4.2 - Lands. This is one figure set for Sec3.2 (two PDFs, figures 1A and figures 1B-E, attached). There are no technical appendices. CAs include Curyung Tribal Council, Nondalton Tribal Council, Lake and Peninsula Borough, State of Alaska.

Sec3.6, K3.6, 4.6-Commercial and Recreational Fisheries. There are no separate figure PDFs. There is only one technical appendix (K3.6). CAs include USFWS, State of Alaska.

Sec 3.9, 4.9, K4.9-Subsistence. There are 7 separate PDF files for 3.9 figures and 12pdfs- to be sent later. There is only one technical appendix (K4.9). CAs include Curyung Tribal Council, Nondalton Tribal Council, Lake and Peninsula Borough, NPS, USFWS, State of Alaska.

Sec3.20, 4.20, K4.20-Air Quality. There are no separate figure PDFs. There is only one technical appendix (K4.20). CAs include State of Alaska .

VR

Shane McCoy
Program Manager
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CLASSIFICATION: UNCLASSIFIED

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K3.6 COMMERCIAL AND RECREATIONAL FISHERIES

K3.6.1 Area N, P, S, and T Freshwater Guide Logbook Data

The table below summarizes 2011-2014 data from the Alaska Department of Fish and Game's (ADF&G) Freshwater Guide Logbook program, which requires fishing guides in the state of Alaska to record the location, number of clients, and catch/harvest for every guided trip. Included in Table K3.6-1 is the average number of businesses reporting for a waterbody, the average annual number of trips taken, and the average number of days fished. In addition, the table shows the number of times in the 4-year span that the ADF&G reported program data. For example, Upper Talarik Creek appears in the data 3 out of 4 years between 2011 and 2014. On average, five businesses reported a total of 16 trips and 48 fishing days there a year. The table highlights waterbodies that could be affected by an aspect of the project or unanticipated releases.

Table K3.6-1: Comparative Estimates of Sport Fishing Effort, Days

Waterbody	Average of 2011-2014 Data			
	Appear-ances in Data (Max=4)	Business Operating	Trips	Days
Area N				
Big River Lakes	4	26	757	2,932
Wolverine Creek mouth (by Big River Lakes)	4	17	500	1,959
Kustatan River	4	28	242	1,027
Crescent Lake	4	17	176	606
Kamishak River	4	8	133	356
Big River	4	8	89	328
Other sites (South of North Forelands)	1	12	61	231
Other lakes and streams	2	7	57	190
Crescent River (Grecian River)	3	9	38	155
Sites south of North Forelands	2	13	47	150
Chuitna River	4	8	26	111
Bachatna Creek	4	8	19	80
Coal Creek (into Beluga Lake)	3	4	18	58
Other sites between North Forelands and Susitna drainage	1	5	11	31
Area P				
Kenai River - Cook Inlet to Soldotna Bridge	4	146	4,449	15,389
Kenai River - Skilak Inlet to Kenai Lake	4	46	2,490	7,673
Kasilof River - below Highway	4	79	1,825	5,996
Kenai River - Moose River to Skilak outlet	4	94	1,724	5,562

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Table K3.6-1: Comparative Estimates of Sport Fishing Effort, Days

Waterbody	Average of 2011-2014 Data			
	Appear-ances in Data (Max=4)	Business Operating	Trips	Days
Kenai River - Soldotna Bridge to Moose River	1	67	886	2,823
Kenai River - Soldotna Bridge to Moose R	3	52	690	2,227
Kasilof River - above Highway	4	21	146	478
Russian River	4	11	151	342
Other streams	4	7	64	271
Deep Creek	4	5	44	164
Kenai River - guided, reach not specified	4	11	43	127
Other lakes	4	10	39	117
Anchor River	4	7	52	115
Ninilchik River	1	4	30	111
Quartz Creek	4	9	36	79
Kasilof River - guided, reach not specified	2	6	12	33
Bench Lake (Johnson Trail)	1	5	11	28
Hidden Lake	1	4	7	24
Afonasi Lake	1	4	4	14
Area S				
Alagnak (Branch) River	4	18	1,292	2,776
Copper River (Lake Iliamna area)	4	11	613	1,466
Kvichak River	4	19	548	1,288
Moraine Creek	4	18	463	1,047
Kulik River	4	12	382	972
Iliamna River	4	7	185	430
Battle River	4	15	94	293
Gibraltar River	4	9	123	289
Kukaklek River (Big Ku) (into Alagnak)	4	9	105	220
Tazimina River	4	6	95	214
Lake Iliamna	4	8	76	223
Nanuktuk Creek	4	13	92	195
Newhalen River	3	9	58	174
Lake Clark	4	12	59	161
Lower Talarik Creek	4	8	55	148

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Table K3.6-1: Comparative Estimates of Sport Fishing Effort, Days

Waterbody	Average of 2011-2014 Data			
	Appear-ances in Data (Max=4)	Business Operating	Trips	Days
Nonvianuk River (into Alagnak)	4	7	49	108
Funnel Creek	4	9	32	73
Kijik River	4	5	18	60
Little Kulik (into Nanuktuk Creek)	2	6	28	56
Other lakes and streams	3	6	19	52
Upper Talarik Creek	3	5	16	48
Chekok Creek	2	7	19	46
Nonvianuk Lake	1	9	18	38
Kontrashibuna Lake	2	4	12	38
Kijik Lake	3	5	8	27
Area T				
Nushagak River - sonar site to outlet of Mulchatna	4	28	1,153	3,577
Nushagak River - Black Point upstream to Sonar Site	4	21	847	2,513
Togiak River System	3	6	732	1,571
Togiak River and Lake drainage	1	7	707	1,509
Agulowak River	4	6	715	1,355
Other lakes and streams	2	10	478	992
Other streams	2	7	339	675
Nushagak River - upstream from mouth of Mulchatna River	4	13	352	670
Wood River Lakes system	4	8	293	628
Agulukpak River	4	10	306	586
Mulchatna River	4	6	135	342
Nuyakuk River (Tikchik-Nuyakuk Lake system)	1	12	151	329
Aleknagik Lake	4	6	93	194
Other lakes	2	4	86	168
Nushagak River system (excluding Mulchatna drainage)	2	10	53	143
Wood River	1	7	56	129
Nushagak R System (incl. Harris Cr and King Salmon R)	1	6	38	119

Source: Sigurdsson and Powers 2012; Sigurdsson and Powers 2013; Sigurdsson and Powers 2014; Powers and Sigurdsson 2016.

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K3.9 SUBSISTENCE

This section briefly summarizes the most recent available comprehensive subsistence harvest surveys for the 13 communities that would not be located near the mine site, transportation corridor, or port site locations. A summary of the subsistence harvest surveys for the six communities closest to the project area are discussed in Section 3.9, Subsistence. The results include those communities around Iliamna Lake area communities, more distant communities down the Kvichak River drainage and Nushagak River drainage, as well as a pair of Cook Inlet communities. Communities for which there were older data or no data were not included.

Figure K3.9-1 through Figure K3.9-12 show the search and harvest areas that communities use for large land mammals, fish, vegetation, marine mammals, marine invertebrates, birds, and small mammals. Large land mammals include caribou, moose, brown bear, black bear, and sheep or goats. Fish figures are divided by salmon and non-salmon, and vegetation combines plants, wood, berries, and fungi. Marine mammals refers to seals, sea lions, sea otters, and whales and marine invertebrates include clams, mussels, scallops, crabs, octopus, and shrimp. Upland game birds include grouse and ptarmigan, and waterfowl refers to ducks and geese. Eggs primarily come from ducks, geese, and seabirds. The figures for small land mammals include beaver, muskrat, river otter, foxes, hares, weasels, wolf, wolverine, squirrels, porcupine, and lynx.

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Figure K3.9-1 Large Land Mammal Harvest Areas: Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K3.9-2 Large Land Mammal Harvest Areas: Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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Figure K3.9-3 Salmon and Non-Salmon Harvest Areas: Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K-3.9-4 Salmon and Non-Salmon Harvest Areas: Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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Figure K3.9-5 Vegetation Harvest Areas (plants, wood, berries, fungi): Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K3.9-6 Vegetation Harvest Areas (plants, wood, berries, fungi): Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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Figure K3.9-7 Marine Mammal and Marine Invertebrate Harvest Areas: Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K3.9-8 Marine Mammal and Marine Invertebrate Harvest Areas: Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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Figure K3.9-9 Avian Harvest Areas: Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K3.9-10 Avian Harvest Areas: Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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Figure K3.9-11 Small Land Mammal Harvest Areas: Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, and South Naknek

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Figure K3.9-12 Small Land Mammal Harvest Areas: Aleknagik, Clark's Point, Manokotak, Dillingham, and Seldovia

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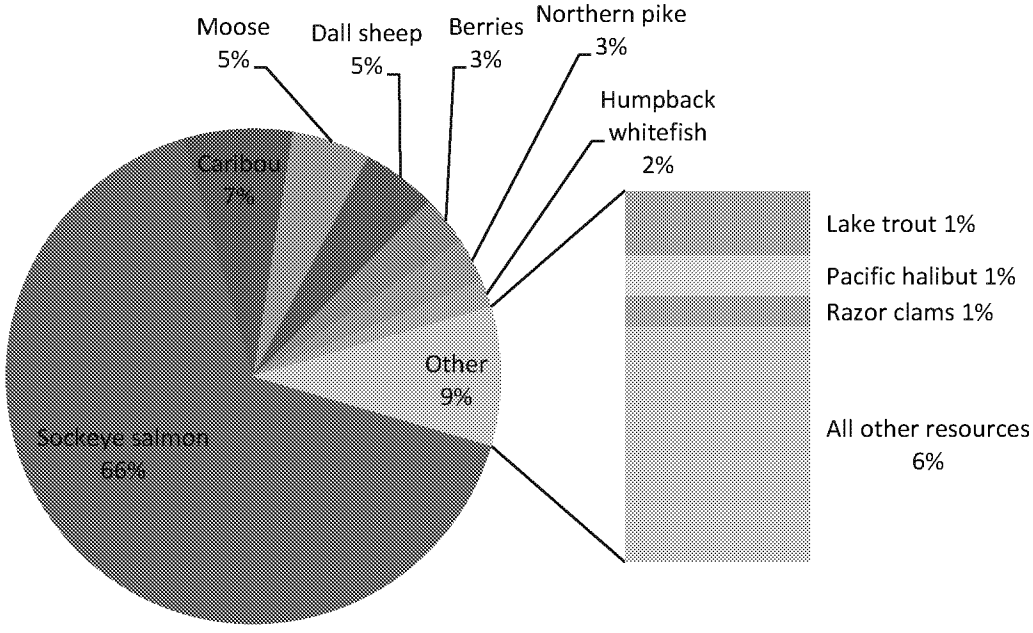
K3.9.1 Port Alsworth

Port Alsworth is a majority Euro-American community on Lake Clark. It is the location of the Lake Clark National Park and Preserve headquarters and is also home to many hunting and fishing guide services and lodges. In 2004, Port Alsworth had an estimated year-round population of 109 people in 30 households. Port Alsworth residents harvested an estimated 14,489 pounds of wild food (133 pounds per capita) in 2004 a lower total compared to the Iliamna Lake area communities. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Port Alsworth residents in 2004 in terms of edible weight are shown in Figure K3.9-13. Port Alsworth households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (100 percent of households) followed by large land mammals (91 percent), plants and fungi (86 percent), non-salmon fish (73 percent), marine invertebrates (50 percent), birds and eggs (46 percent), and small land mammals (41 percent). Sharing and distribution of subsistence foods was widespread. In 2004, 91 percent of Port Alsworth households received wild resources and 73 percent of households gave resources away. Some of the resources received by Port Alsworth residents came from non-local hunters who dropped off meat for people in the community (Fall et al. 2006).

Figure K3.9-13: Composition of Port Alsworth Subsistence Harvest by Estimated Edible Weight, 2004



Source: Fall et al. 2006

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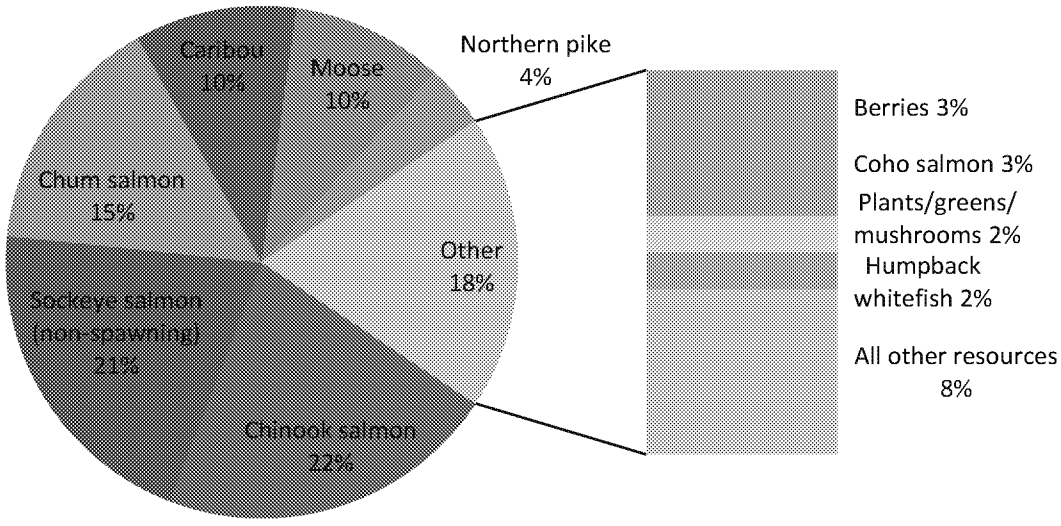
K3.9.2Koliganek

Koliganek is a primarily Yup'ik community on the Nushagak River 65 miles northeast of Dillingham. In 2005, Koliganek had an estimated year-round population of 150 people in 42 households. Koliganek residents harvested an estimated total of 134,779 pounds of wild food (899 pounds per capita) in 2005, a notably high level of food production among communities in the project area. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Koliganek residents in 2005 in terms of edible weight are shown in Figure K3.9-14. Koliganek households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (100 percent of households) followed by plants and fungi (96 percent), non-salmon fish (96 percent), large land mammals (96 percent), birds and eggs (93 percent), small land mammals (64 percent), and marine mammal (64 percent). Sharing and distribution of subsistence foods was widespread. In 2005, 89 percent of Koliganek households received at least one subsistence resource and 93 percent gave away at least one resource (Krieg et al. 2009).

Figure K3.9-14: Composition of Koliganek Subsistence Harvest by Estimated Edible Weight, 2005



Source: Krieg et al. 2009

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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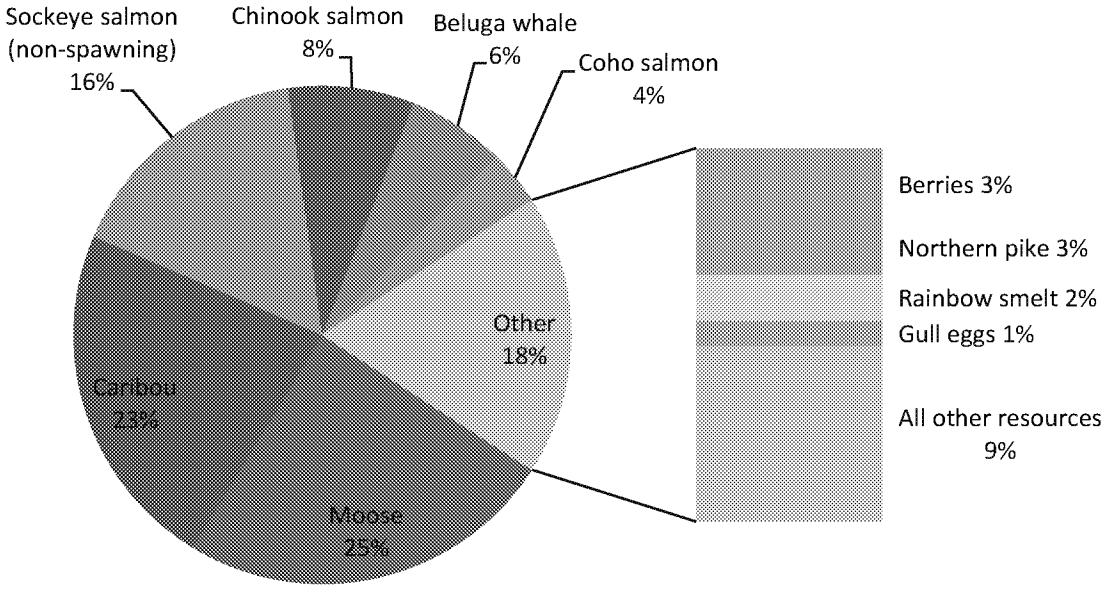
K3.9.3 Levelock

Levelock is a mixed Alutiiq and Yup'ik community on the Kvichak River. In 2005, Levelock had an estimated year-round population of 34 people in 19 households. Levelock residents harvested an estimated total of 17,871 pounds of wild foods (527 pounds per capita) in 2005. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Levelock residents in 2005 in terms of edible weight are shown in Figure K3.9-15, with a distinctively high level of reliance on large land mammals. Levelock households reported high levels of participation in subsistence activities. Large land mammals were the most widely used resource category (100 percent of households) followed by plants and fungi (93 percent), salmon (93 percent), birds and eggs (88 percent), non-salmon fish (86 percent), small land mammals (57 percent), and marine mammals (50 percent) Sharing and distribution of subsistence foods was widespread. In 2005, 93 percent of Levelock households received at least one subsistence resource and 86 percent of households gave away at least one resource (Krieg et al. 2009).

Figure K3.9-15: Composition of Levelock Subsistence Harvest by Estimated Edible Weight, 2005



Source: Krieg et al. 2009

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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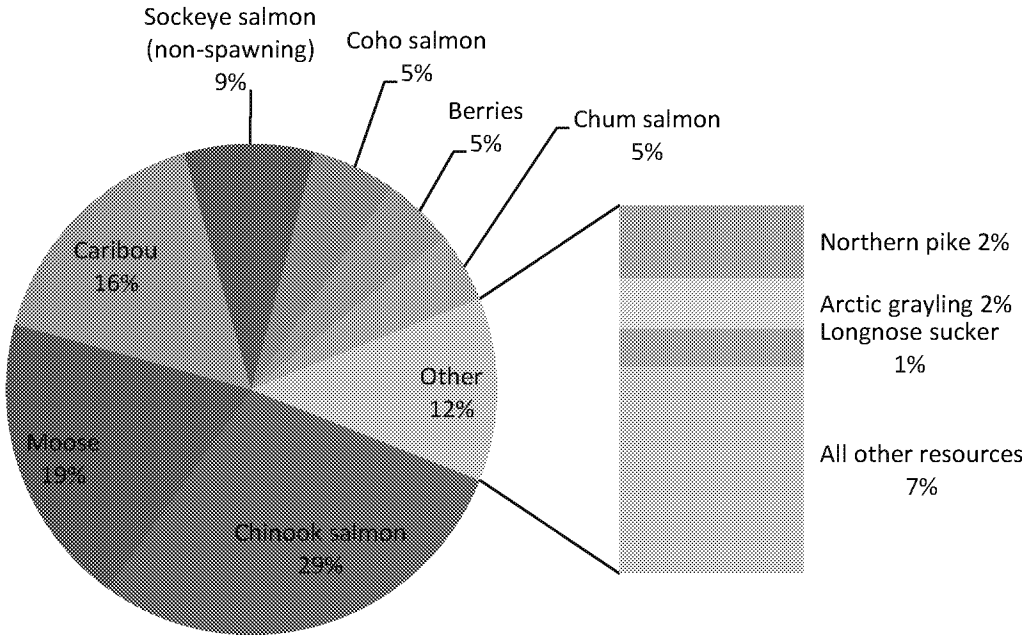
K3.9.4 New Stuyahok

New Stuyahok is a Yup'ik community on the Nushagak River 52 miles northeast of Dillingham. In 2005, New Stuyahok had an estimated year-round population of 421 people in 96 households. New Stuyahok residents harvested an estimated total of 163,927 pounds of wild foods (389 pounds per capita) in 2005. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by New Stuyahok residents in 2005 in terms of edible weight are shown in Figure K3.9-16, with characteristically high level of reliance on salmon, but also on large land mammals. New Stuyahok households reported high levels of participation in subsistence activities. In 2005, all New Stuyahok households used plants and fungi, as well as large land mammals. Other widely used resource categories included salmon (90 percent of households), birds and eggs (90 percent), non-salmon fish (88 percent), small land mammals (59 percent), and marine mammals (51 percent). Sharing and distribution of subsistence foods was widespread. In 2005, 98 percent of households received at least one subsistence resource and 74 percent gave away at least one resource (Krieg et al. 2009).

Figure K3.9-16: Composition of New Stuyahok Subsistence Harvest by Estimated Edible Weight, 2005



Source: Krieg et al. 2009

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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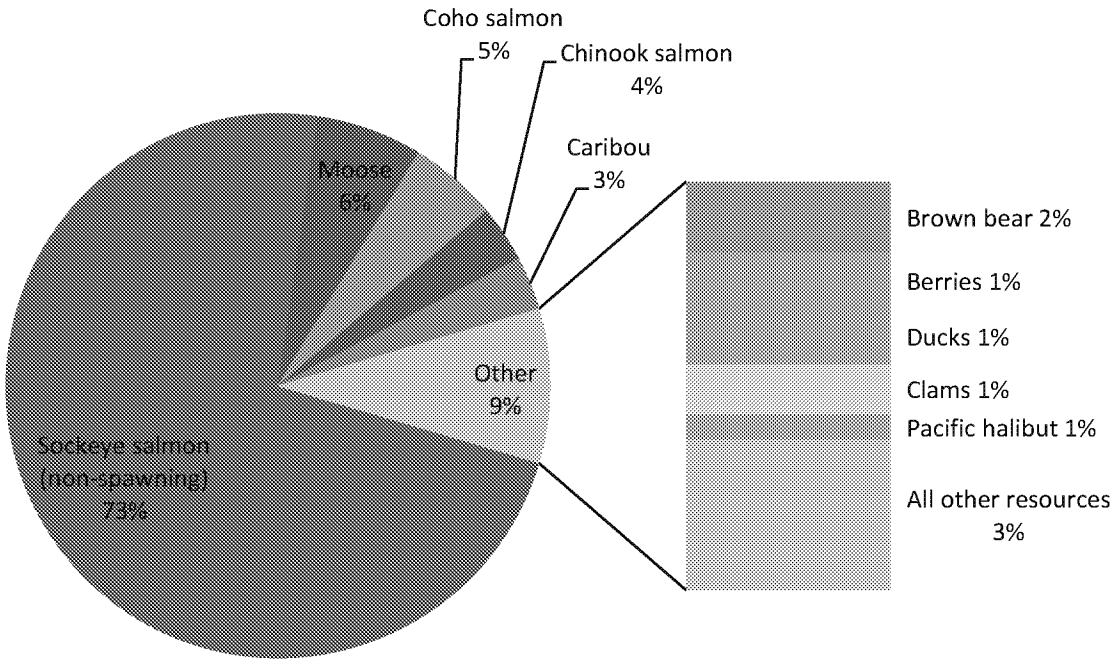
K3.9.5 King Salmon

King Salmon is a predominantly Euro-American community on the Naknek River. King Salmon's Alaska Native population is a mix of Alutiiq, Yup'ik, and Dena'ina people. In 2007, King Salmon had an estimated year-round population of 246 people in 88 households. Holen et al. (2011) surveyed residents about their 2007 subsistence activities and found that King Salmon residents harvested an estimated total of 77,020 pounds of wild foods (313 pounds per capita), with very high reliance on salmon. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by King Salmon residents in 2007 in terms of edible weight are shown in Figure K3.9-17. King Salmon households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (86 percent of households) followed by plants and fungi (78 percent), non-salmon fish (57 percent), and large land mammals (47 percent). Sharing and distribution of subsistence foods was less widespread than in most communities within the project area. In 2007, 59 percent of households received at least one subsistence resource and 53 percent gave away at least one resource (Holen et al. 2011).

Figure K3.9-17: Composition of King Salmon Subsistence Harvest by Estimated Edible Weight, 2007



Source: Holen et al. 2011

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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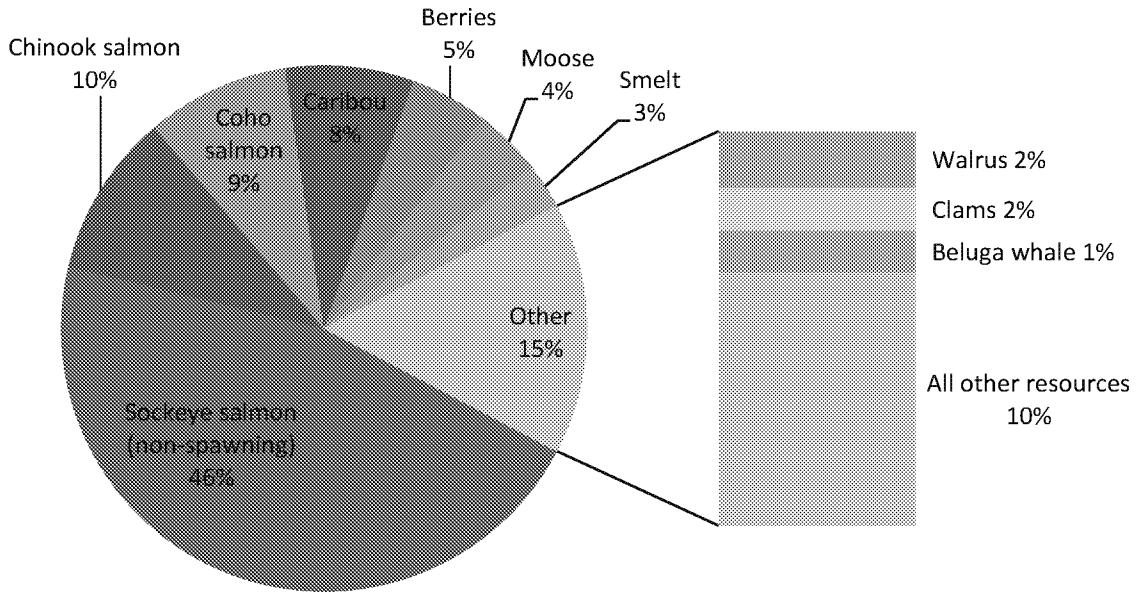
K3.9.6 Naknek

Naknek is located on the northern bank of the Naknek River and is a mix of Yup'ik, Alutiiq, Dena'ina, and non-Native people. Naknek's economy is largely driven by the salmon industry (Deur 2008). In 2007, Naknek had an estimated year-round population of 533 people in 206 households. Just over half of the population was Alaska Native. Naknek residents harvested an estimated total of 140,757 pounds of wild foods (264 pounds per capita) in 2007. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Naknek residents in 2007 in terms of edible weight are shown in Figure K3.9-18. Naknek households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (93 percent of households) followed by plants and fungi (92 percent), non-salmon fish (76 percent), large land mammals (60 percent), birds and eggs (57 percent), and marine invertebrates (51 percent). Sharing and distribution of subsistence foods was widespread. In 2007, 91 percent of households received at least one subsistence resource and 73 percent gave away at least one resource (Holen et al. 2011).

Figure K3.9-18: Composition of Naknek Subsistence Harvest by Estimated Edible Weight, 2007



Source: Holen et al. 2011

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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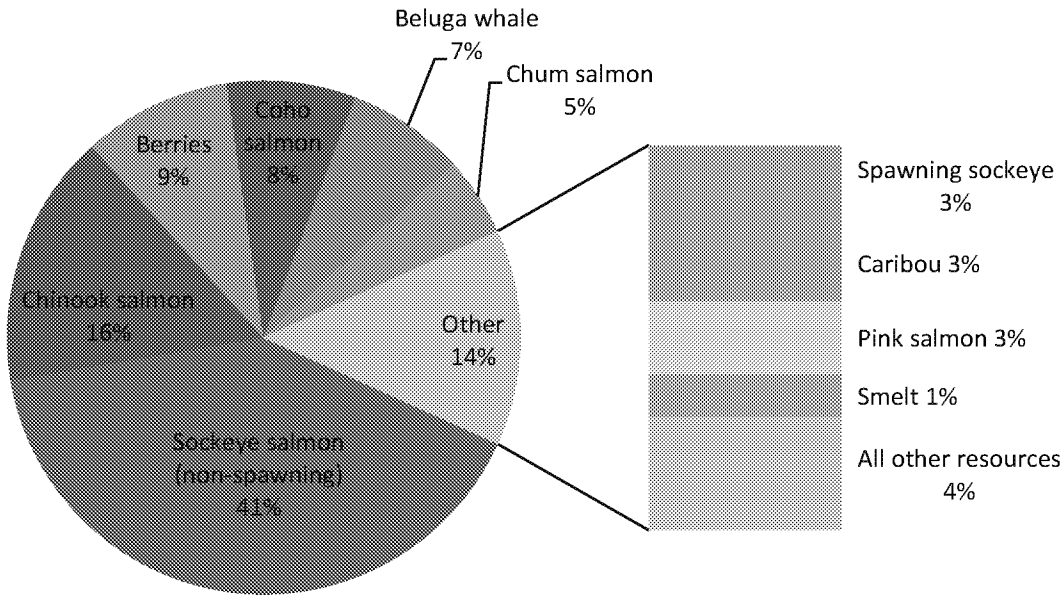
K3.9.7 South Naknek

South Naknek is located on the southern bank of the Naknek River across from the community of Naknek. South Naknek is predominantly a mixture of Alutiiq and Yup'ik people. Today, many of the Alutiiq people who reside in South Naknek are descendants of people displaced by the Mount Katmai and Novarupta volcanic eruptions of 1912. In 2007, South Naknek had an estimated year-round population of 52 people in 26 households. South Naknek residents harvested an estimated total of 13,909 pounds of wild foods (278 pounds per capita) in 2007, with characteristically high reliance on salmon, but a distinctive level of reliance on beluga whales. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by South Naknek residents in 2007 in terms of edible weight are shown in Figure K3.9-19. South Naknek households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (95 percent of households) followed by plants and fungi (91 percent), non-salmon fish (86 percent), large land mammals (67 percent), and marine mammals (48 percent). Sharing and distribution of subsistence foods was widespread. In 2007, 91 percent of households received at least one subsistence resource and 76 percent of households gave away at least one resource (Holen et al. 2011).

Figure K3.9-19: Composition of South Naknek Subsistence Harvest by Estimated Edible Weight, 2007



Source: Holen et al. 2011

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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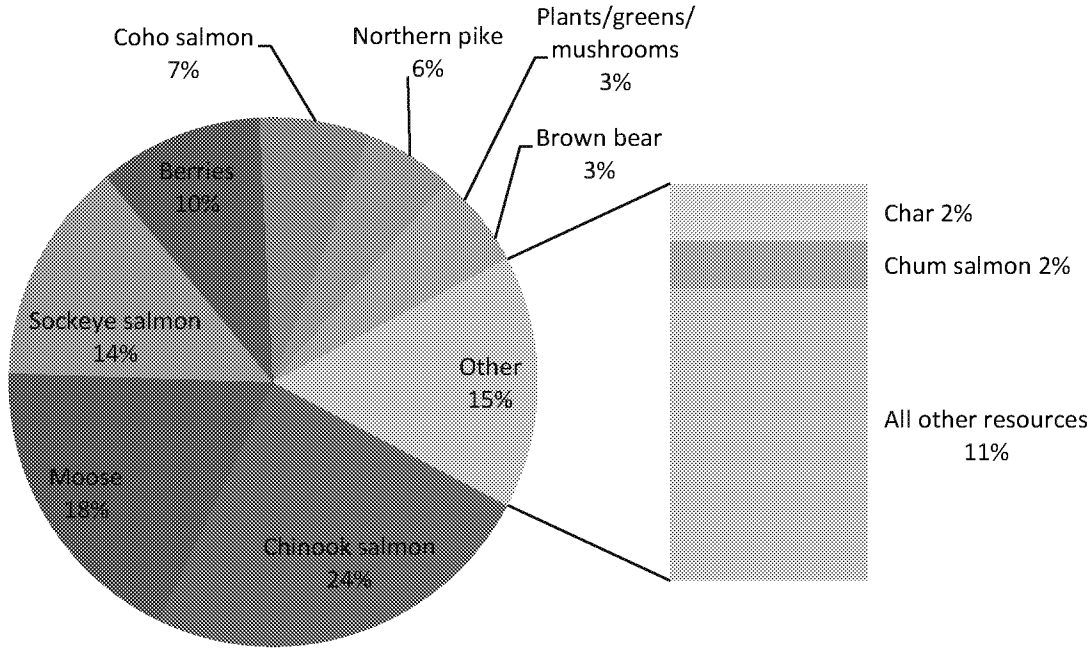
K3.9.8 Aleknagik

Aleknagik is a predominantly Yup'ik community at the head of the Wood River on the southeast end of Aleknagik Lake. In 2008, Aleknagik had an estimated year-round population of 175 people in 47 households. Holen et al. (2012) surveyed residents about their 2008 subsistence activities and found that Aleknagik residents harvested an estimated total of 51,738 pounds of wild foods (296 pounds per capita). See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Aleknagik residents in 2008 in terms of edible weight are shown in Figure K3.9-20. Aleknagik households reported high levels of participation in subsistence activities. Plants and fungi, as well as salmon, were used by every household in Aleknagik. Other widely used resource categories included large land mammals (94 percent of households), birds and eggs (88 percent), non-salmon fish (78 percent), and marine mammals (56 percent). Sharing and distribution of subsistence foods was widespread. In 2007, 97 percent of households received at least one subsistence resource and 84 percent gave away at least one resource (Holen et al. 2012).

Figure K3.9-20: Composition of Aleknagik Subsistence Harvest by Estimated Edible Weight, 2008



Source: Holen et al. 2012

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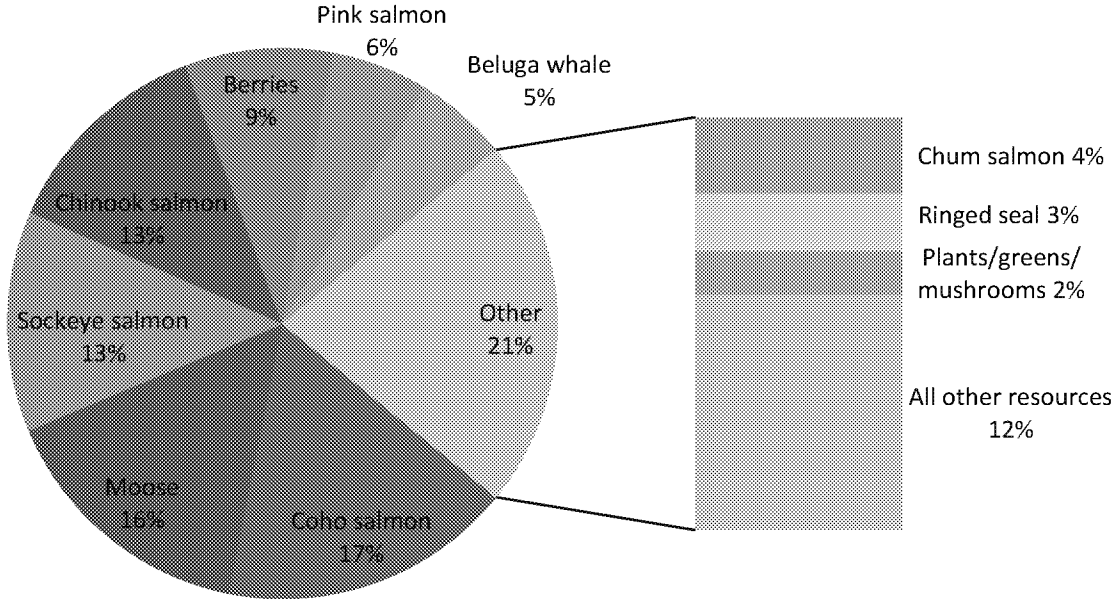
K3.9.9Clark's Point

Clark's Point is a predominantly Yup'ik community on Nushagak Bay, 15 miles from Dillingham. In 2008, Clark's Point had an estimated year-round population of 38 people in 18 households. Clark's Point residents harvested an estimated total of 45,543 pounds of wild foods (1,210 pounds per capita) in 2008, a notably high level of subsistence food production among communities in the project area. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Clark's Point residents in 2008 in terms of edible weight are shown in Figure K3.9-21. Clark's Point households reported high levels of participation in subsistence activities. All households in Clark's point used salmon, non-salmon fish, birds and eggs, and large land mammals. Other widely used resource categories included plants and fungi (91 percent of households), small land mammals (82 percent), marine mammals (73 percent), and marine invertebrates (46 percent). Sharing and distribution of subsistence foods was widespread. Every household received and gave away at least one subsistence resource (Holen et al. 2012).

Figure K3.9-21: Composition of Clark's Point Subsistence Harvest by Estimated Edible Weight, 2008



Source: Holen et al. 2012

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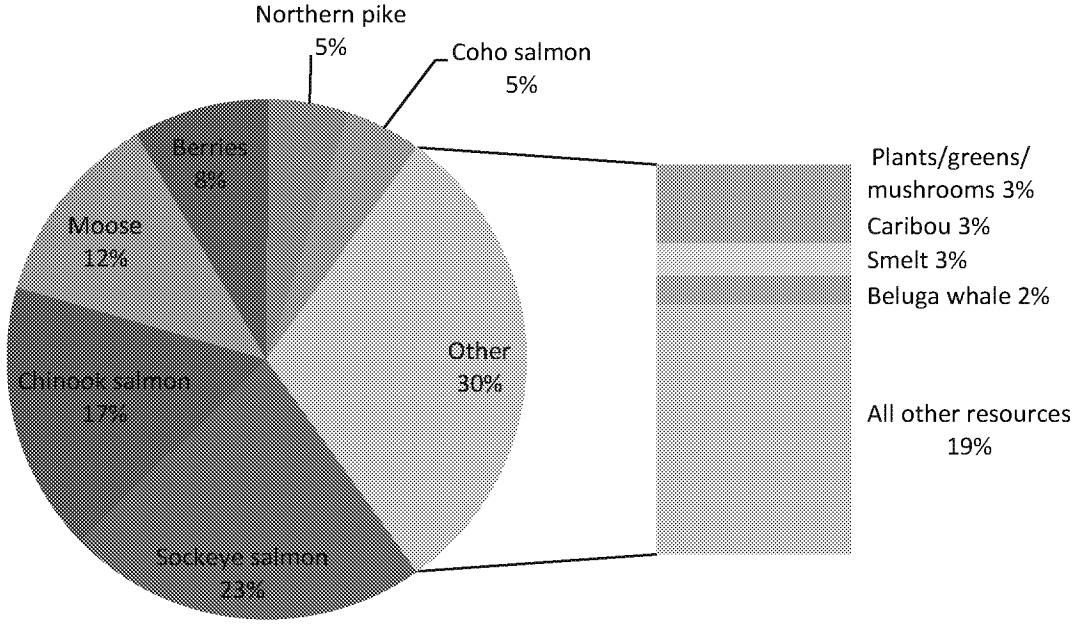
K3.9.10 Manokotak

Manokotak is a Yup'ik community on the Igushik River. In 2008, Manokotak had an estimated year-round population of 379 people in 96 households. Manokotak residents harvested an estimated total of 113,196 pounds of wild foods (298 pounds per capita) in 2008. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Manokotak residents in 2008 in terms of edible weight are shown in Figure K3.9-22. Manokotak households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (97 percent of households), followed by plants and fungi (95 percent), birds and eggs (95 percent), non-salmon fish (93 percent), large land mammals (87 percent), marine invertebrates (82 percent), marine mammals (75 percent), and small land mammals (54 percent). Sharing and distribution of subsistence foods was widespread. In 2008, 93 percent of Manokotak households received at least one subsistence resource and 90 percent of households gave away at least one resource (Holen et al. 2012).

Figure K3.9-22: Composition of Manokotak Subsistence Harvest by Estimated Edible Weight, 2008



Source: Holen et al. 2012

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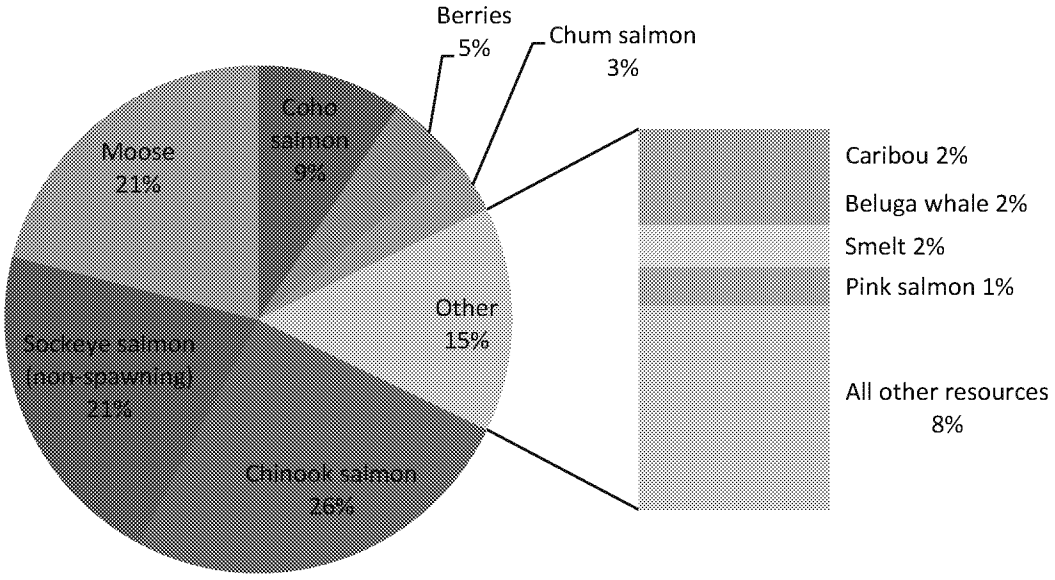
K3.9.11 Dillingham

Dillingham is located at the northern end of Nushagak Bay at the confluence of the Wood and Nushagak rivers. Historically a Yup'ik area with Russian influences, Dillingham is now a diverse community with a mix of non-Native and Native people. In 2010, Dillingham had an estimated year-round population of 2,294 people in 726 households. Evans et al. (2013) surveyed residents about their 2010 subsistence activities and found that Dillingham households harvested an estimated total of 486,533 pounds of wild foods (212 pounds per capita). See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Dillingham residents in 2010 in terms of edible weight are shown in Figure K3.9-23. Dillingham households reported high levels of participation in subsistence activities. Salmon was the most widely used resource category (91 percent of households) followed by plants and fungi (89 percent), large land mammals (77 percent), birds and eggs (73 percent), and non-salmon fish (69 percent). Sharing and distribution of subsistence foods was widespread. In 2010, 91 percent of Dillingham households received at least one subsistence resource and 79 percent of households gave away at least one resource (Evans et al. 2013).

Figure K3.9-23: Composition of Dillingham Subsistence Harvest by Estimated Edible Weight, 2010



Source: Evans et al. 2013

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

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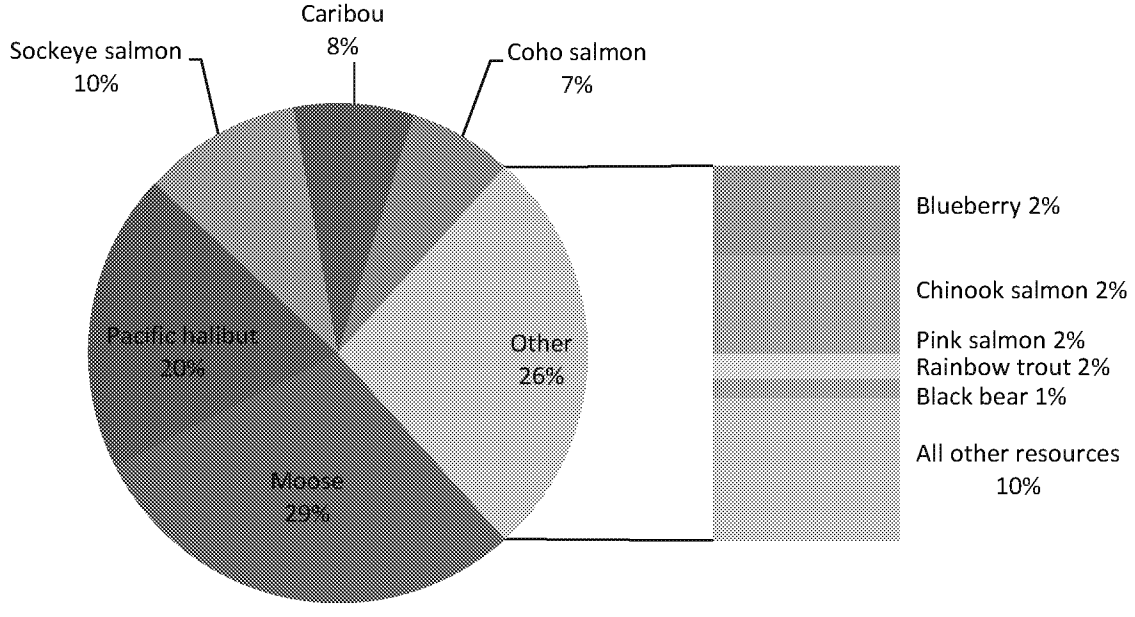
K3.9.12 Ninilchik

Ninilchik is a predominately Euro-American community that lies on the eastern shore of Cook Inlet on the Sterling Highway. The Alaska Native population of Ninilchik is a mix of Alutiiq, Aleut, and Dena'ina people. Recent data is limited for this community (a comprehensive harvest survey has not been conducted since 1998) (Fall et al. 2000). In 1998, Ninilchik had an estimated population of 1,075 people in 400 households. Ninilchik residents harvested an estimated total of 175,817 pounds of wild foods (164 pounds per capita) in 1998. See Section 3.9, Subsistence, for per capita harvest by resource category. The top ten resources harvested by Ninilchik residents in 1998 in terms of edible weight are shown in Figure K3.9-24. Non-salmon fish was the most widely used resource category (92 percent of households), followed by salmon (90 percent), plants and fungi (83 percent), marine invertebrates (78 percent), and large land mammals (63 percent). Sharing and distribution of subsistence foods was widespread. In 1998, 92 percent of households received at least one subsistence resource and 73 percent of households gave away at least one resource (Fall et al. 2000).

Figure K3.9-24: Composition of Ninilchik Subsistence Harvest by Estimated Edible Weight, 1998



Source: ADFG 2018l

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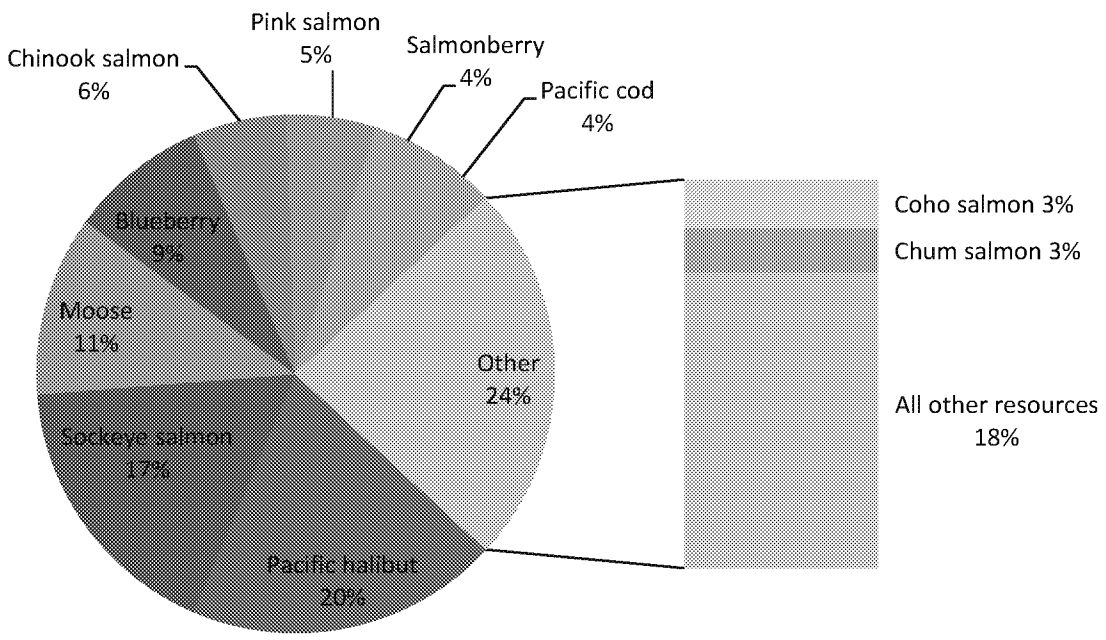
K3.9.13 Seldovia

Seldovia is a majority Euro-American community located on the Kenai Peninsula on the south shore of Kachemak Bay. The Alaska Native population of Seldovia is a mix of Alutiiq, Dena'ina, and Aleut people. In 2014, Seldovia (including Seldovia city and Seldovia Village) had an estimated year-round population of 278 people in 126 households. Seldovia residents harvested an estimated total of 38,455 pounds of wild foods (138 pounds per capita) in 2014, a comparatively low level among communities in the project area. See Section 3.9, Subsistence, for per capita harvests by resource category. The top ten resources harvested by Seldovia residents in 2014 in terms of edible weight are shown in Figure K3.9-25. Seldovia households reported high levels of participation in subsistence activities. Plants and fungi were the most widely harvested resource category (95 percent of households) followed by salmon (94 percent), non-salmon fish (90 percent), marine invertebrates (68 percent), and large land mammals (61 percent). Sharing and distribution of subsistence foods was widespread. In 2014, 97 percent of Seldovia households received at least one subsistence resource and 76 percent of households gave away at least one resource (Jones and Kostick 2016). Although located on the Kenai Peninsula, harvest areas of the Seldovia Village Tribe greater traditional use area include Kachemak Bay, Chinitna Bay, Tuxedni Bay and the western side of Cook Inlet including Kamishak Bay.

Figure K3.9-25: Composition of Seldovia Subsistence Harvest by Estimated Edible Weight, 2014



Source: Jones and Kostick 2016

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K4.20 AIR QUALITY

This Technical Appendix supports discussion and explanation of analysis of impact to air quality during the project, as described in Section 4.20, Air Quality, of the Environmental Impact Statement (EIS). Direct and indirect air quality impacts from all phases of the project are evaluated using project emissions, and where applicable, air modeling results.

K4.20.1 Methodology for the Analysis of Air Quality Impacts

Table K4.20-1 lists the Prevention of Significant Deterioration (PSD) Class II increments and Alaska Ambient Air Quality Standards (AAAQS) criteria used to evaluate project impacts, based on the results of dispersion modeling. The comparison of impacts using PSD Class II increments has been provided for informational purposes only, and does not represent a regulatory PSD increment consumption analysis. PSD increment consumption would be assessed as part of a formal increment consumption analysis during the permitting process, if required. The closest PSD Class I increments are not included as it is anticipated that the closest Federal Class I areas are far enough from the project components to not be impacted by the project. Also, for the purpose of this assessment, not all ambient standards and increments are addressed. The modeled cumulative and project-only impacts are compared to the ambient standards and increments based on likely air quality permits requirements once the project is operational.

Table K4.20-1: Prevention of Significant Deterioration Increments and Alaska Ambient Air Quality Standards

Pollutant	Averaging Period	PSD Class II Increment		AAAQS	
		Value ($\mu g/m^3$)	Form	Value ($\mu g/m^3$)	Form
CO	8 hours	N/A	N/A	10,000	Not to be exceeded more than once per year
	1 hour	N/A	N/A	40,000	Not to be exceeded more than once per year
NO_2	Annual	25	Annual mean	100	Annual mean
	1 hour	N/A	N/A	188	98th percentile of annual distribution of the maximum daily 1-hour concentrations averaged over 3 years
$PM_{2.5}$	Annual	4	Annual mean	15	Annual mean, averaged over 3 years
	24 hours	9	Not to be exceeded more than once per year	35	98th percentile, averaged over 3 years
PM_{10}	Annual	17	Annual mean	N/A	Annual mean
	24 hours	30	Not to be exceeded more than once per year	150	Not to be exceeded more than once per year on average over 3 years
SO_2	Annual	20	Annual mean	80	Never to be exceeded

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Table K4.20-1: Prevention of Significant Deterioration Increments and Alaska Ambient Air Quality Standards

Pollutant	Averaging Period	PSD Class II Increment		AAAQS	
		Value ($\mu g/m^3$)	Form	Value ($\mu g/m^3$)	Form
	24 hours	91	Not to be exceeded more than once per year	365	Not to be exceeded more than once per year
	3 hours	512	Not to be exceeded more than once per year	1,300	Not to be exceeded more than once per year
	1-hour	N/A	N/A	196	98th percentile of the annual distribution of the maximum daily 1-hour concentrations averaged over 3 years

Notes:

$\mu g/m^3$ = micrograms per cubic meter

AAAQS = Alaska Ambient Air Quality Standards

CO = carbon monoxide

N/A = not applicable

NO_2 = nitrogen dioxide

$PM_{2.5}$ and PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 2.5 and 10 micrometers, respectively

PSD = prevention of significant deterioration

SO_2 = sulfur dioxide

Source: Alaska Administrative Code Title 18, Section 50.010

K4.20.2 Alternative 1 – Applicant's Proposed Alternative

The approach and results of the assessment of emissions and impacts of Alternative 1 are addressed for each project component by project phase (construction, operations, and decommissioning) in the following sections.

The modeling impacts are presented for the project-only concentrations and cumulative concentrations, which are the background concentrations plus the project-only concentrations. All modeling was conducted without offsite emissions sources. So, the project-only impacts can be inferred from the modeling results tables presented in the following sections by eliminating the background concentrations. The background concentrations presented in the modeling results tables are representative background conditions that are part of the ambient environment include the concentrations from nearby sources that are part of the ambient environment. Therefore, the background concentrations vary depending on the project component because the ambient environment of each component is different.

K4.20.2.1

Mine Site

The potential mine site impacts for mine construction activities and mine operations activities were developed by completing a cumulative near-field and far-field impacts assessment. The emissions from the mine site construction, operations, and decommissioning are provided in Section 4.20, Air Quality.

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Mine Site Construction

The representative air quality impacts related to the construction of the mine site were assessed using a near-field model. The concentration of particulate matter attributed to the increase in emissions from construction activities of a new source lasting less than 24-months are excluded from PSD increment consumption analysis under 18 Alaska Administrative Code (AAC) 50.306(b)(2). Therefore, particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}) and particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$) PSD increments were not part of the dispersion modeling assessment. However, in accordance with potential future permit requirements, dispersion modeling was conducted to demonstrate compliance with the nitrogen dioxide (NO_2), PM_{10} and $PM_{2.5}$ AAAQS and the NO_2 increment. Table K4.20-2 and Table K4.20-3 present the modeling results relative to AAAQS and PSD Class II increments, respectively. The maximum modeled impacts are presented for modeled AAAQS in Figure K4.20-1, and the modeled PSD Class II increments are presented in Figure K4.20-2. Additional details regarding the near-field modeling configuration, emissions, and assessments are provided in PLP 2018-RFI 009. Compliance with modeled concentrations compared to the air quality standards and PSD Class II increment is demonstrated. Minimal, localized, and short-term impacts would occur during the construction of the mine site. Impacts would dissipate once the construction was complete (PLP 2018-RFI 009).

Table K4.20-2: Mine Site Construction Maximum Modeled Cumulative Impacts Compared to the AAAQS

Pollutant	Averaging Period	Maximum Project-only Predicted Concentration (µg/m³)	Background Concentration (µg/m³)	Maximum Cumulative Concentration (µg/m³)	AAAQS (µg/m³)	Percent of the AAAQS
NO_2	1-Hour	77.9	2.3	80.2	188	43%
	Annual	0.3	0	0.3	100	0.30%
PM_{10}	24-Hour	23.2	12.4	35.6	150	24%
$PM_{2.5}$	24-Hour	2.2	4.1	6.3	35	18%
	Annual	0.3	0.9	1.2	12	10%

µg/m³ = micrograms per cubic meter
AAAQS = Alaska Ambient Air Quality Standards
NO_2 = nitrogen dioxide
$PM_{2.5}$ and PM_{10} = Particulate matter with an aerodynamic diameter less than or equal to 2.5 and 10 micrometers, respectively
Source: PLP 2018-RFI 009

Table K4.20-3: Mine Site Construction Maximum Modeled Project-only Impacts Compared to Class II PSD Increment Limit

Pollutant	Averaging Period	Maximum Project-only Predicted Concentration (µg/m³)	Maximum Concentration (µg/m³)	Class II PSD Increment (µg/m³)	Percent of the Class II PSD Increment
NO_2	Annual	0.3	0.3	25	1.20%

µg/m³ = micrograms per cubic meter
NO_2 = nitrogen dioxide
PSD = prevention of significant deterioration
Source: PLP 2018-RFI 009

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Figure K4.20-1: Mine Site Construction Maximum Modeled Cumulative Impacts – AAAQS

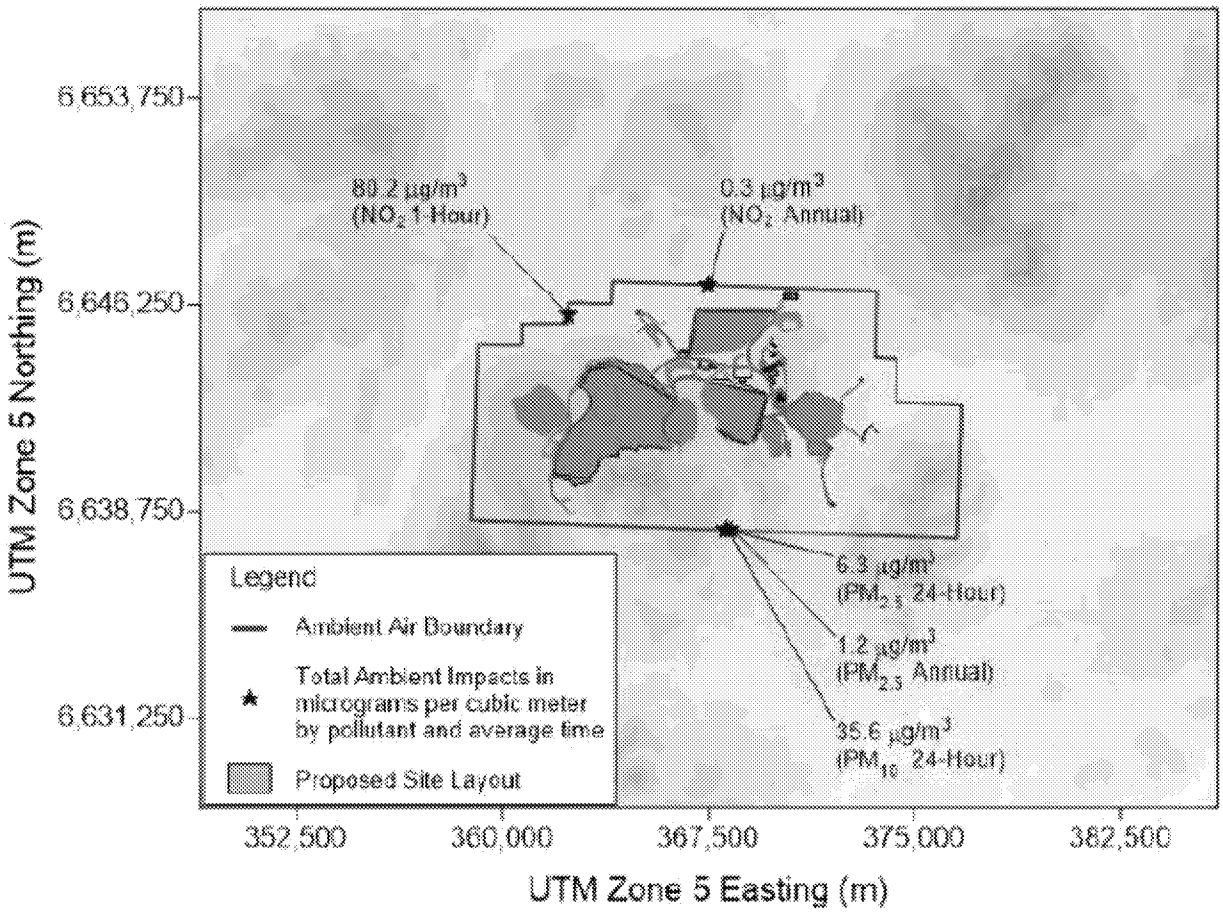

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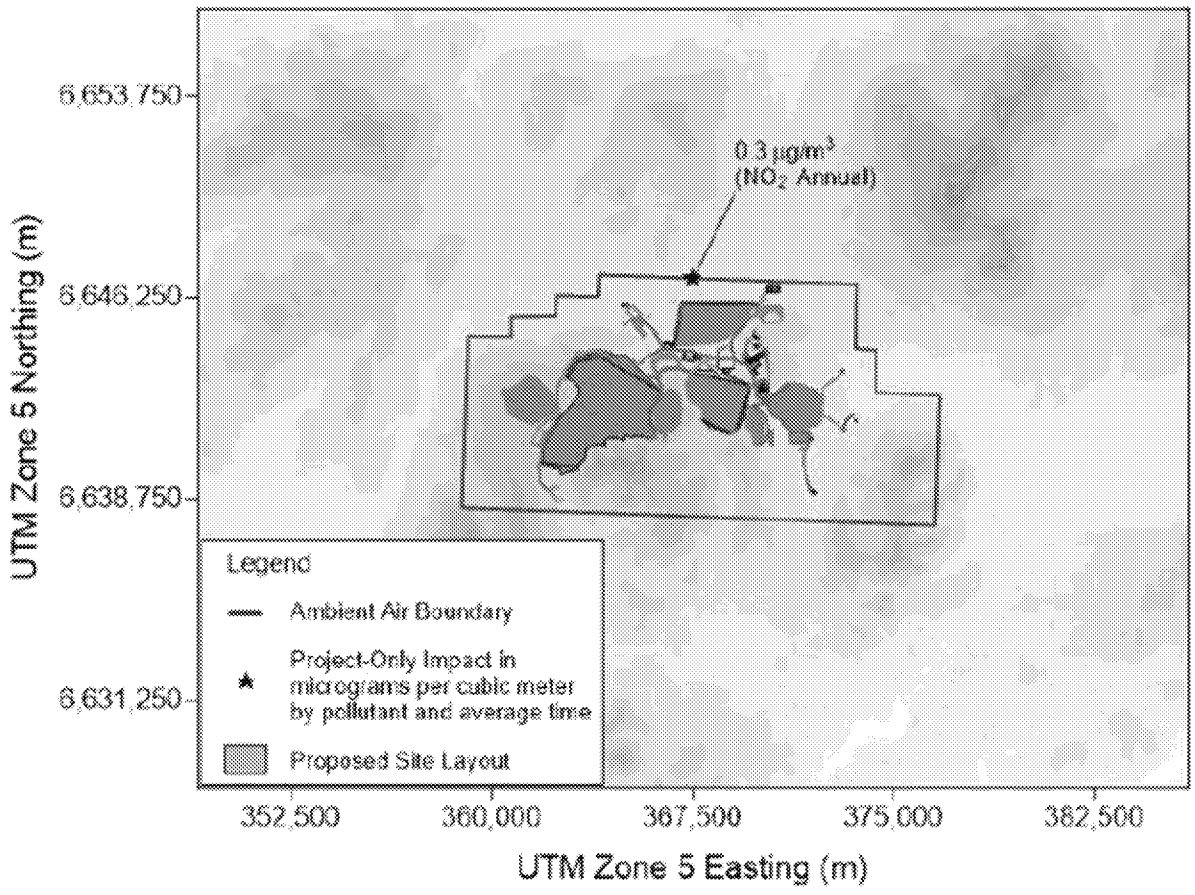
Figure K4.20-2: Mine Site Construction Maximum Modeled Project-Only Impacts – PSD Class II Increments



Mine Site Operations

A near-field assessment was conducted based on the emissions presented in Section 4.20, Air Quality, and an analysis of modeling needs based on likely air quality permits required once the mine is operational. The full permit applicability analysis is provided in PLP 2018-RFI 007. In the future, the mine site would undergo a complete permitting analysis.

Near-field Impact Assessment

A near-field modeling assessment was completed, consistent with Alaska Department of Environmental Conservation (ADEC) air quality permitting requirements. It was prepared to address the potential air quality impacts related to the operation of the mine site. Table K4.20-4 and Table K4.20-5 present the modeling results relative to the AAAQS and PSD Class II increments, respectively, likely required for the air quality permits. The maximum modeled impacts are presented for modeled AAAQS in Figure K4.20-3, and the modeled PSD Class II increments are presented in Figure K4.20-4. Additional details regarding the near-field modeling configuration, emissions, and assessments is provided in PLP 2018-RFI 009. Compliance with modeled air quality standards and PSD Class II increments is demonstrated. No substantial short-term impacts are predicted to occur under the mine site operations, and air quality long-term impacts would be negligible.

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Table K4.20-4: Mine Site Operations Maximum Modeled Cumulative Impacts Compared to the AAAQS

Pollut-ant	Averaging Period	Maximum Project-Only Predicted Concentration (µg/m³)	Back-ground Concen-tration (µg/m³)	Maximum Cumula-tive Concen-tration (µg/m³)	AAAQS (µg/m³)	Percent of the AAAQS
NO_2	1-Hour	99.1	2.3	101.4	188	54%
	Annual	0.1	0	0.1	100	0.1%
PM_{10}	24-Hour	26.3	12.4	38.7	150	25%
$PM_{2.5}$	24-Hour	3.2	4.1	7.3	35	21%
	Annual	0.5	0.9	1.4	12	12%

µg/m³ = micrograms per cubic meter

AAAQS = Alaska Ambient Air Quality Standards

NO_2 = nitrogen dioxide

$PM_{2.5}$ and PM_{10} = Particulate matter with an aerodynamic diameter less than or equal to 2.5 and 10 micrometers, respectively

Source: PLP 2018-RFI 009

Table K4.20-5: Mine Site Construction Maximum Modeled Project-only Impacts Compared to Class II PSD Increment Limit

Pollut-ant	Averaging Period	Maximum Project-only Predicted Concentration (µg/m³)	Class II PSD Increment (µg/m³)	Percent of the Class II PSD Increment
NO_2	Annual	0.1	25	0.4%
PM_{10}	24-Hour	26.3	30	88%
	Annual	1.6	17	9%
$PM_{2.5}$	24-Hour	8	9	89%
	Annual	1.4	4	13%

µg/m³ = micrograms per cubic meter

NO_2 = nitrogen dioxide

PSD = prevention of significant deterioration

$PM_{2.5}$ and PM_{10} = Particulate matter with an aerodynamic diameter less than or equal to 2.5 and 10 micrometers, respectively

Source: PLP 2018-RFI 009

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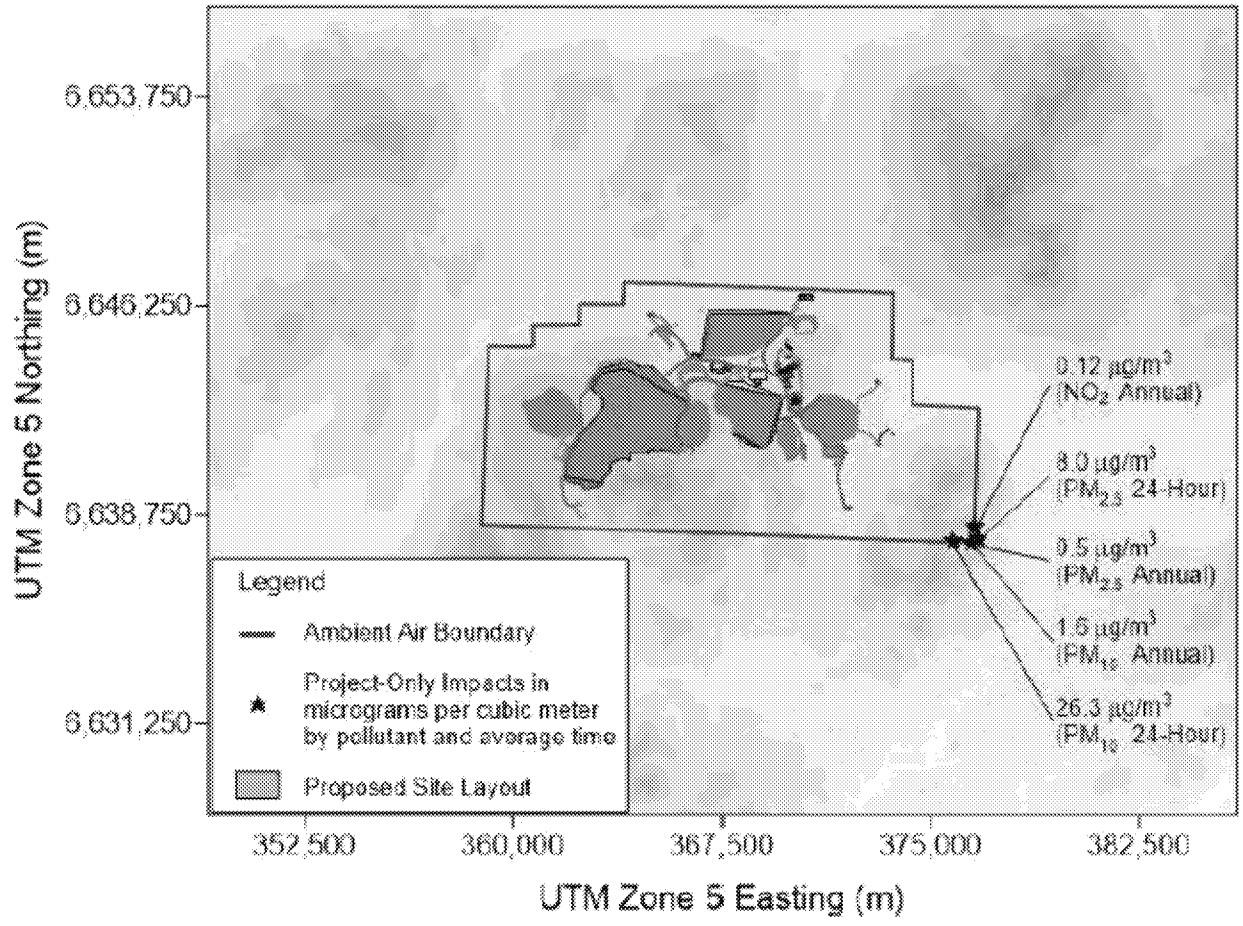
Figure K4.20-3: Mine Site Operations Maximum Modeled Cumulative Impacts –AAAQS



Source: PLP 2018-RFI 009

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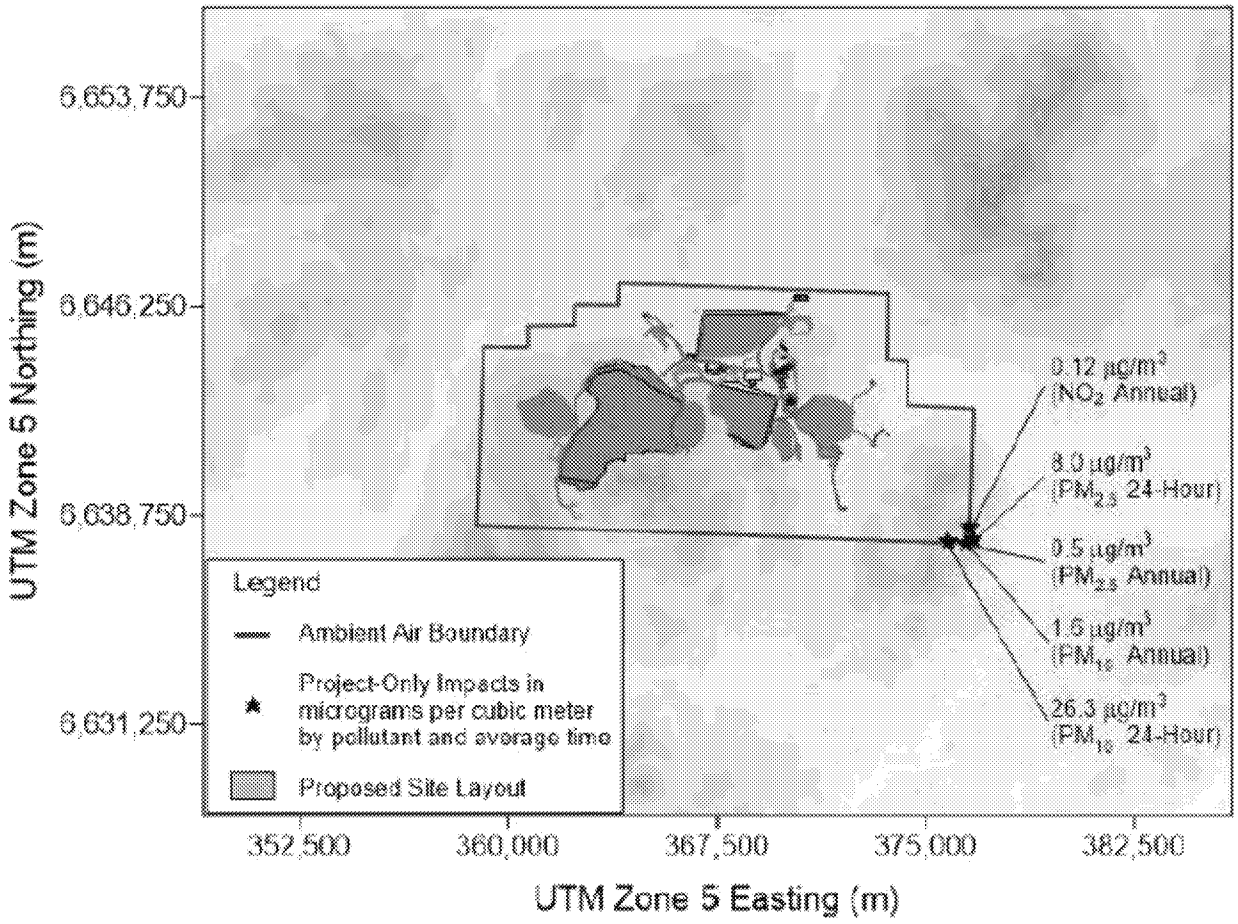
Figure K4.20-4: Mine Site Operations Maximum Modeled Project-Only Impacts – PSD Class II Increments



Source: PLP 2018-RFI 009

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Far-field Impact Assessment

A far-field impact assessment included an analysis of impacts to air quality–related values (AQRVs). The US Forest Service, National Park Service, and US Fish and Wildlife Service, collectively the Federal Land Managers (FLM), define an AQRV as "a resource, as identified by the FLM for one or more federal areas that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological or recreational resource identified by the FLM for a particular area" (FLAG 2010). The FLAG 2010 document provides guidance on methods used to assess the potential AQRV impacts from the project. Because the mine site operations would have the potential to trigger PSD permitting, an assessment of the visibility, ambient ozone, and deposition impacts was completed. Far-field AQRV impacts from the mine site are anticipated to be minimal at any nearby Federal Class I areas.

The Plume Visual Impact Screening Model (VISCREEN) was used to determine whether air pollutant emissions from the mine site would cause visibility impacts at Federal Class I areas in the general vicinity of the mine site. Based on the combination of inputs, distances modeled, and conservative model assumptions, the model-predicted impacts show that the visibility screening criteria established for Federal Class I areas would not be exceeded at any Federal Class I area obviating the need for a cumulative impact analysis to demonstrate this project will not contribute to visibility impairment. Further details of this assessment are provided in PLP 2018-RFI 012.

The mine site is not in an ozone nonattainment area. Additionally, there are minimal nearby anthropogenic sources of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs), which are ozone precursors. The mine site would have very few sources of anthropogenic ozone. The area surrounding the mine site has naturally occurring VOCs. As demonstrated in Section 3.20, the ambient NO_x concentrations are low surrounding the mine site. This results in a NOx-limited ozone environment, meaning ozone formation is capped the reactions that result in ozone are limited by the amount of available NO_x. Because the mine site potential to emit NOx would be low mine site air pollutant emissions would result in minimal ozone formation, if any formation would occur. This would result in no adverse ozone impacts at mine site or nearby National Park or National Wildlife Refuge Federal Class I areas.

Although near-field deposition impacts from the mine site were not directly evaluated, potential deposition impacts can be infer using the predicted NO_x and SO_2 impacts. NO_x and SO_2 contribute to deposition when these compounds are converted into other compounds that are readily removed from the atmosphere and deposited to soils, vegetation, and waterbodies. SO_2 impacts were not modeled for the mine site since the emissions are below the modeling requirement based on the likely permitting needs. Therefore, it is unlikely that the SO_2 emissions from the mine site would be large enough to contribute to sulfur deposition impacts. The annual NO_2 modeling impacts from the mine are less than one percent of the PSD increment and AAAQS. The nitrogen deposition impacts are calculated from the annual modeled ambient NO_2 impacts using a Level I Analysis of Long Range Transport and Depositional Impacts (EPA 1993). This calculation assumes the total conversion of all NOx emissions to depositional nitrogen, which results in a conservatively high nitrogen deposition impact of 0.5 kilograms per hectare per year (kg/ha/yr).

The National Park Service has developed nitrogen deposition critical load values for Federal Class I areas based on the amount of deposition that could lead to harmful changes within an ecosystem. As presented in Section 3.20, the nitrogen deposition critical loads for Denali National Park and other nearby Federal Class I areas are between 1.2 and 17 kg/ha/yr. The critical loads are for total (wet plus dry) deposition, while the project nitrogen deposition impact

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is representative dry deposition for the project-only. Measured wet and dry deposition values at Denali National Park can be added to the project-only nitrogen deposition impact to provide an estimated cumulative dry deposition. As presented in Table 3.20, for 2015, the nitrogen dry deposition value was 0.3 kg/ha/yr while the wet deposition was 0.4 kg/ha/yr (1.5 micro-equivalent per liter)., When added to the project-only deposition, the total cumulative deposition is 1.2 kg/ha/yr. This estimated cumulative deposition is equal to the lowest critical load for Denali National Park and other nearby Federal Class I areas. Although, the calculated cumulative nitrogen deposition value is a conservatively high estimate, the deposition value indicates that nitrogen deposition impacts could occur in the Federal Class I areas.

Transportation Corridor

For analysis of impacts to air quality, the transportation corridor includes all-season gravel roads, ferry terminals on Iliamna Lake, port, and spur roads, and the onshore pipeline segment at the port because the pipeline and road would be constructed jointly. The transportation corridor would be operational through the life of the project.

K4.20.2.2

The emissions are presented in Section 4.20, Air Quality. It is anticipated that the construction and operations of the transportation corridor would have similar or lower near-field impacts, as presented for the mine site, as well as far-field impacts.

Amakdedori Port

K4.20.2.3

The potential near-field impacts are presented for Amakdedori port operations. It is anticipated that the construction of the Amakdedori port would have similar near-field impacts as presented for the mine site in Section 4.20, Air Quality; therefore, they are not further evaluated. The emissions from the construction and operations phases of the Amakdedori port and offshore pipeline portions in the Cook Inlet and Iliamna Lake are presented in Section 4.20, Air Quality.

Port Operations

A near-field assessment was conducted based on the emissions presented in Section 4.20, Air Quality, and an analysis of modeling needs based on likely air quality permits required once the mine is operational. The permit applicability analysis is provided in PLP 2018-RFI 007. In the future, the port would undergo a complete permitting analysis.

Near-field Impacts Assessment

Based on the air quality permitting assessment, a minor source permit could be required for NO_x emissions. A near-field modeling assessment was completed, consistent with Alaska Department of Environmental Conservation (ADEC) minor air quality permitting requirements, which uses dispersion modeling to determine the annual NO_2 impact of the NO_x that would occur from the Amakdedori port. Table K4.20-6 presents the modeling results relative to the modeled AAAQS. Figure K4.20-5 presents the maximum modeled impacts for modeled AAAQS. Additional details regarding the near-field modeling configuration, emissions, and assessments are provided in PLP 2018-RFI 009. Compliance with potentially modeled air quality standards is demonstrated. The modeled AAAQS would not be exceeded under the port operations, and would result in minimal adverse impacts, which would be localized and remain while the operation is occurring..

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Table K4.20-6: Amakdedori Port Operations – Maximum Modeled Cumulative Impacts Compared to the AAAQS

Pollutant	Averaging Period	Maximum Project-Only Predicted Concentration ($\mu g/m^3$)[2]	Background Concentration ($\mu g/m^3$)	Maximum Cumulative Concentration ($\mu g/m^3$)	AAAQS ($\mu g/m^3$)	Percent of AAAQS
NO_2	Annual	89.98	0	90	100	90%

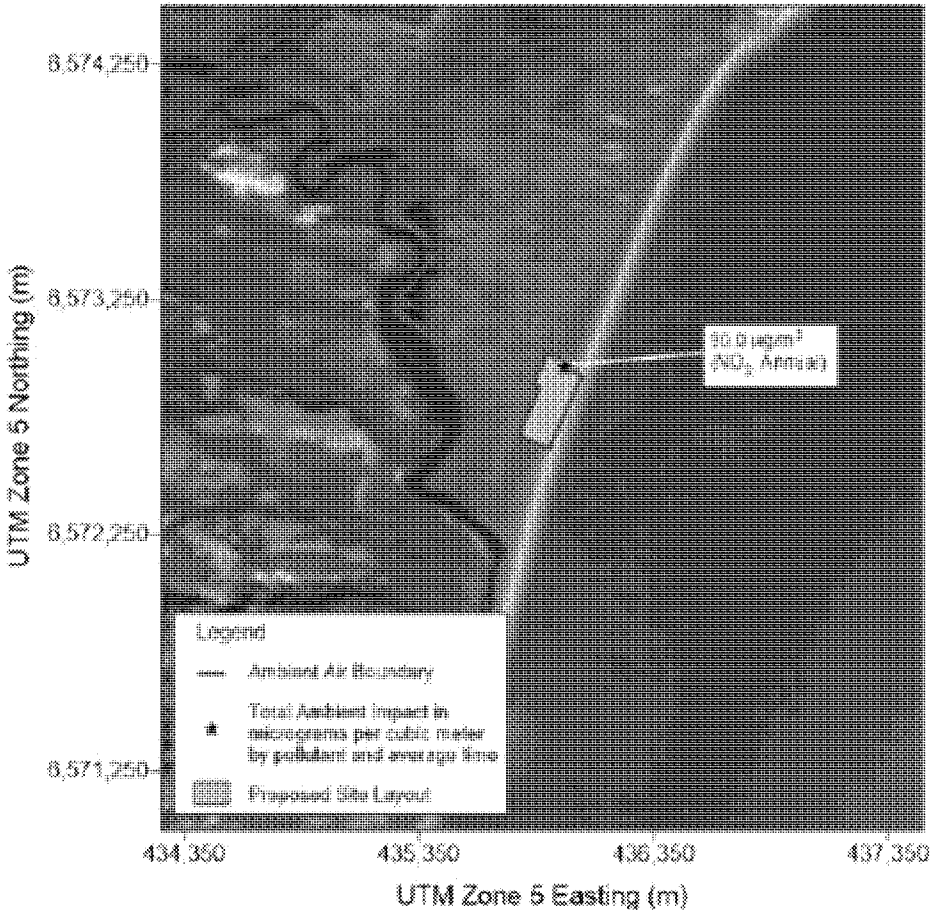
$\mu g/m^3$=micrograms per cubic meter

AAAQS = Alaska Ambient Air Quality Standards

NO_2 = nitrogen dioxide

Source: PLP 2018-RFI 009

Figure K4.20 5: Amakdedori Port Operations Maximum Modeled Cumulative Impacts – AAAQS



Source: PLP 2018-RFI 009

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Far-Field Impacts Assessment

Per the FLAG 2010 guidance, a screening assessment was conducted to determine if the emissions from the port would affect the AQRVs in the nearby Federal Class I area. Q/D[1] value is calculated by dividing the port's total stationary potential NO_X, total suspended particulate matter (PM), and sulfur dioxide (SO_2) emissions by the distance to closest boundary of a Federal Class I area. A Q/D value of greater than or equal to 10 would indicate possible AQRV impacts to the Federal Class I from the port. The Q/D values for the port are all less than 2. As a result, AQRVs would not likely be affected at any of the Federal Class I areas.

Natural Gas Pipeline Corridor

The potential for near-field impacts are presented for compressor station operations. It is anticipated that the construction of the compressor station would have similar near-field impacts K4.20-24 as presented for the mine site. Section 4.20, Air Quality, addresses emissions from the construction air impacts of the Kenai compressor station on the eastern landfall of the natural gas pipeline corridor, as well as the air impacts from operations and decommissioning of the entire pipeline corridor.

Pipeline Corridor Operations

During the operations of the pipeline corridor, the emissions and associated impacts from the onshore and offshore pipelines would be negligible. The Kenai compressor station would have emissions and possible air impacts. For the operations phase, only the compressor station is assessed.

A near-field assessment was conducted based on the emissions presented in Section 4.20 and an analysis of modeling needs based on likely air quality permits required once the mine is operational. The full permit applicability analysis is provided in PLP 2018-RFI 007. In the future, the compressor station would undergo a complete permitting analysis.

Near-field Impact Assessment

A near-field modeling assessment for the operation of the compressor station was completed to address possible air quality impacts. Because a requirement to obtain a minor air quality permit might be triggered, a dispersion modeling assessment consistent with ADEC minor air quality permitting requirements was prepared. Per those requirements, dispersion modeling was used to determine the annual NO_2 impact of the NO_X emissions that would occur from the Kenai compressor station, based on the estimated emissions. Table K4.20-8 presents the modeling results relative to the AAAQS. Figure K4.20-7 presents the maximum modeled impacts presented for the modeled AAAQS. Additional details regarding the near-field modeling configuration, emissions, and assessments are provided in PLP 2018-RFI 009. Compliance with modeled air quality standards is demonstrated. If near-field impacts occur from the compressor station, those impacts would be minimal and localized.

[1] Q/D = sum of certain pollutant emissions (tons per year) divided by distance (km) from Class I area

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Table K4.20-7: Kenai Compressor Station Operations – Maximum Modeled Cumulative Impacts Compared to the AAAQS

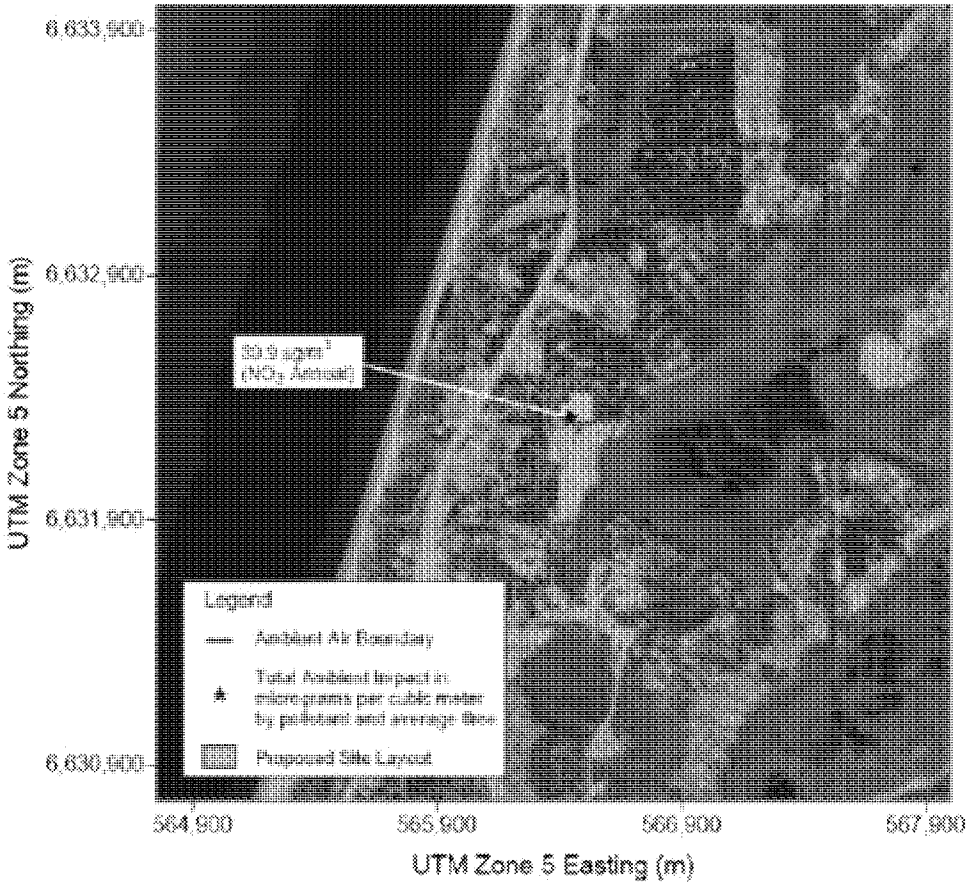
Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)[1]	Background Concentration ($\mu g/m^3$)	Maximum Cumulative Concentration ($\mu g/m^3$)	AAAQS ($\mu g/m^3$)	Percent of AAAQS
NO_2	Annual	17.7	13.2	30.9	100	30%

AAAQS = Alaska Ambient Air Quality Standards

$\mu g/m^3$ = micrograms per cubic meter

NO_2 = nitrogen dioxide

Figure K4.20-6: Compressor Station Operations Maximum Modeled Cumulative Impacts – AAAQS



Far-Field Impacts Assessment

Per the FLAG 2010 guidance, a screening assessment was conducted to determine if the emissions from the compressor station would affect the AQRVs in the nearby Federal Class I area. A Q/D value is calculated by dividing the compressor station's total stationary potential NOx, PM, and SO_2 emissions by the distance to the closest boundary of Federal Class I area. A Q/D value of greater than or equal to 10 would indicate possible AQRV impacts to the Federal Class I from the compressor station. The Q/D values for the compressor station are all less than 2. As a result, AQRVs would not likely to be impacted at any of the Federal Class I areas.

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3.2 LAND OWNERSHIP, MANAGEMENT, AND USE

This section describes the regulatory setting, along with the baseline conditions of land ownership, land management, and existing land use patterns in the Environmental Impact Statement (EIS) analysis area. Relevant land use plans are discussed and land status maps display land ownership for the EIS analysis area, which is the project footprint for land ownership and management, and the broader area around it for land use (Figure 3.2-1A through Figure 3.2-1E). Indirect effects to lands adjacent to the project are discussed under specific resources. Additional details on recreational, subsistence, and cultural uses of lands in the EIS analysis area are found in the related analyses in Section 3.5, Recreation, Section 3.7, Cultural Resources, and Section 3.9, Subsistence.

3.2.1 Land Ownership

Land ownership was determined using general land status data, which are accurate to the scale of 1 square mile (one section), and data of the project footprint.

The entire project area would be on lands owned by the State of Alaska, or privately owned by an Alaska Native Claims Settlement Act (ANCSA) Native regional or village corporation. Land ownership is shown in Table 3.2-1. The transportation corridor includes spur roads to communities under Alternative 1.

Alternative 1 would not bisect any Native Allotments. The Alternative 2 natural gas pipeline would bisect one Native Allotment (AKA 063274A). The Diamond Point port and facilities would be located on two Native Allotments (AKAA 4592a and AKAA 4225b) (Alternatives 2 and 3).

Table 3.2-1: Land Ownership

Owner	Alternative 1	Alternative 2	Alternative 3
Mine Site (acres)			
State of Alaska	8,130	8,245	8,130
Summer-Only Ferry Variant			
State of Alaska	46	46	46
Transportation Corridor (acres or miles[1])			
State of Alaska	592.0	21.5	388.8
Cook Inlet Region, Inc.	--	0.5	38.0
Alaska Peninsula Corporation	258.8	--	--
Iliamna Natives Limited	38.1	14.1	412.6
Pedro Bay Corporation	--	11.0	382.0
Tyonek Native Corporation	--	5.0	70.0
Seldovia Native Association, Inc.	--	2.0	23.7
Salamatof Native Association, Inc.	--	0.2	1.8
Kokhanok East Ferry Terminal Variant			
State of Alaska	23.7	NA	NA
Alaska Peninsula Corporation	8.7	NA	NA
Amakdedori Port (acres)			

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Table 3.2-1: Land Ownership

Owner	Alternative 1	Alternative 2	Alternative 3
State of Alaska	14	NA	NA
Summer-Only Ferry Variant			
State of Alaska	41	NA	NA
Pile Supported Dock Variant			
Cook Inlet Region, Inc.	14	NA	NA
Natural Gas Pipeline (miles)			
State of Alaska	47.5	24.2	23.7
Cook Inlet Region, Inc.	--	5.0	5.0
Alaska Peninsula Corporation	23.2	--	--
Iliamna Natives Limited	--	13.9	14.4
Pedro Bay Corporation	--	33.6	34.8
Tyonek Native Corporation	--	5.3	5.1
Seldovia Native Association, Inc.	--	2.1	2.0
Salamatof Native Association, Inc.	--	1.6	1.6
Kokhanok East Ferry Terminal Variant (miles)			
State of Alaska	2.5	NA	NA
Alaska Peninsula Corporation	9.5	NA	NA
Concentrate Pipeline Variant (acres)			
State of Alaska	NA	NA	1.0
Pedro Bay Corporation	NA	NA	0.7
Kenai Compressor Station (acres)			
State of Alaska	6	6	6
Diamond Point Port (acres)			
Native Allotment AKAA 4225B	NA	24.9	24.9
Native Allotment AKAA 4592A	NA	15.1	15.1
Summer-Only Ferry Variant			
Tyonek Native Corporation	--	20.3	NA
Seldovia Native Association, Inc.	--	0.1	NA
Native Allotment AKAA 051014	NA	14.8	NA
Pile Supported Dock Variant			
Cook Inlet Region, Inc.	--	34.3	34.3
Tyonek Native Corporation	--	7.3	7.3
Ferry Terminals (Acres)			
Cook Inlet Region, Inc.	--	34.3	NA
Alaska Peninsula Corporation	25.5	--	NA

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Table 3.2-1: Land Ownership

Owner	Alternative 1	Alternative 2	Alternative 3
Iliamna Natives Limited	--	6.7	NA
Pedro Bay Corporation	--	17.6	NA
Tyonek Native Corporation	--	7.3	NA
Kokhanok East Ferry Terminal Variant			
Alaska Peninsula Corporation	13.5	NA	NA
Material Sites (Acres)			
State of Alaska	150.6	ND	223.5
Alaska Peninsula Corporation	80.8	ND	--
Iliamna Natives Limited	9.4	ND	198.8
Tyonek Native Corporation	--	ND	29.3
Seldovia Native Association, Inc.	--	ND	14.6
Kokhanok East Ferry Terminal Variant			
State of Alaska	80.5	NA	NA
Alaska Peninsula Corporation	83.7	NA	NA

Notes:

ND = No data.

NA = Not applicable

1. Transportation corridor is shown in acres for Alternatives 1 and 3, and miles for Alternative 2.

Source: BLM 2017 (GIS)

3.2.1.1 Legal Access

In the EIS analysis area, there are mechanisms to ensure consistent surface access to public lands, and in some instances, private parcels or traditional use areas. These mechanisms for access include Revised Statute (R.S.) 2477 Rights-of-Way (ROWs), ANCSA Section 17(b) Easements, Alaska National Interest Lands Conservation Act Sections 811 and 1110, State Section Line Easements, and State Public Access Easements.

Revised Statute 2477 Rights-of-Way

Section 8 of the 1866 Mining Act that states, "the right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." In 1873, the provision was separated from the Mining Act and re-enacted as Revised Statute (R.S.) 2477. In 1938, it was re-codified as 43 United States Code (U.S.C.) Section 932. In 1976, the Federal Land Policy and Management Act repealed both the 1866 Mining Act and R.S. 2477, but all ROWs that existed on the date of the repeal (October 21, 1976) were preserved under 43 USC Section 1769 through a savings provision for prior established rights.

Through statute or administrative action, the State of Alaska recognizes approximately 6,750 R.S. 2477 routes throughout the state (Alaska Statute 19.30.400). However, the validity of the grant is not dependent on those state recognitions.

There are no state-recognized R.S. 2477 easements in the footprint of Alternative 1. Alternatives 2 and 3 would cross the Iliamna-Pile Bay R.S. 2477 ROW, as listed in Table 3.2-2.

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Table 3.2-2: Revised Statute 2477 Rights-of-Way in the Project Area

ID	Name	Alternative	Project Component(s)
RST 396	Iliamna-Pile Bay	2	Mine Access Road
RST 396	Iliamna-Pile Bay	2	Natural Gas Pipeline (crosses in two locations)
RST 396	Iliamna-Pile Bay	2	Transportation Corridor (Pipeline Construction Access)
RST 396	Iliamna-Pile Bay	3	Transportation Corridor / Natural Gas Pipeline (crosses in four locations)

Source: ADNR 2018 (GIS)

Note: Project components cross the ROW in one location, unless otherwise noted.

Section Line Easements

Section line easements are state-recognized easements for highway purposes that run along a surveyed section line of the rectangular survey system (11 Alaska Admin Code [AAC] 51.025). Lands acquired by the state after March 26, 1951, including some lands in the project area, are subject to a section line easement that remains in existence unless vacated by proper authority. Easements are public ROWs, 33-, 50-, 66-, 83-, or 100-feet wide. The state asserts that all 33- and 66-foot wide section line easements were acquired under R.S. 2477, regardless of whether trails have ever been developed along them. Section line easements are authorized in law and may be established when the rectangular survey of a section line occurs. Prior to survey, the state asserts the easements exist centered on the protracted section line; however, the easement must be surveyed before it can be used. Section line easements are used primarily for transportation. The project area would encompass several section line easements.

Alaska Native Claims Settlement Act Section 17(b) Easements

Under Section 17(b) of ANCSA, the United States reserves linear access easements to public land and water on lands that have been or will be conveyed to Alaska Native Village and Regional corporations (ADNR 2013b). Easements can take the form of 60-foot wide roads, 25- and 50-foot trails, or 1-acre site easements for vehicle parking, temporary camping, or loading/unloading. These easements are reserved to allow for public access through ANCSA lands to reach public lands and waterways. They do not authorize public access to the private land that the easement crosses (BLM 2009). The BLM has management authority for the United States for these easements unless that authority has been otherwise delegated.

Section 17(b) easements have specific allowable uses that are stated in the conveyance document. They cannot be reserved or retained for recreational purposes, but can provide access to recreational opportunities on publicly owned land or for change in mode of transportation. Uses beyond those expressly granted should be approved by the property owner to avoid trespass issues between the user and the property owner.

Alternative 1 would intersect 1 Section 17(b) easement, on the southern shore of Lake Iliamna. Alternative 2 and Alternative 3 would intersect 2 Section 17(b) easements; both begin at the northern shore of Iliamna Lake and continue north (Table 3.2-3).

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Table 3.2-3: ANCSA Section 17(b) Easements in the Project Area

ID	Description	Alternative(s)	Project Component
EIN 17b C5	Access trail east of the mouth of Gibraltar Creek on the southern shore of Lake Iliamna, southerly to public land (25 foot trail).	1	Transportation Corridor, Natural Gas Pipeline
EIN 15f C5	Proposed access trail from EIN 15c on Eagle Bay on Iliamna Lake northerly to public lands (25 foot trail).	2, 3	Transportation Corridor, Natural Gas Pipeline
EIN 30a C5 D1	Proposed access trail from EIN 30 on the west shore of an unnamed lagoon of Iliamna Lake (25 foot trail).	2	Natural Gas Pipeline
EIN 30a C5 D1	Proposed access trail from EIN 30 on the west shore of an unnamed lagoon of Iliamna Lake (25 foot trail).	3	Transportation Corridor, Natural Gas Pipeline

Note: Project components cross the easement in one location, unless otherwise noted.

Source: ADNR 1990, BLM 2018 (GIS reference)

State Public Access Easements

Five 100- to 400-foot wide State Public Access Easements exist on state land along the proposed pipeline route. Under these easements, the State of Alaska reserved public access for present and future needs along the corridors as well as authorization for trail improvements, trail maintenance and safety cabins. The State Public Access Easements in the project area are listed in Table 3.2-4.

Table 3.2-4: State Public Access Easements in the Project Area

ID	Description	Alternative	Project Component(s)
ADL 230875	United Utilities, Inc. exclusive ROW for hybrid fiber optic cable and microwave broadband communications network. In the project area, it would bisect in Iliamna Lake and Cook Inlet.	1, 2, 3	Transportation Corridor (ferry route, Alternatives1 and 2 only)[2], Transportation Corridor, Natural Gas Pipeline
ADL 218329	Pedro Bay Improvement Corporation, Inc. (obsolete).	2, 3	Transportation Corridor (Alternative 3 only), Natural Gas Pipeline
ADL 232949	Alaska Department of Transportation and Public Facilities design and construction ROW, central region (obsolete).	2, 3	Transportation Corridor, Natural Gas Pipeline

Notes:

Project components cross the easement in one location, unless otherwise noted.

1. Crosses in two locations under the proposed action. Under the Kokhanok east ferry terminal variant, the pipeline would cross in two locations, and the ferry route would cross in three locations.

2. Crosses in nine locations.

Source: LM 2010, ADNR 2018 (GIS reference)

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3.2.2 Land Management

3.2.2.1 Federal Management

The project footprint for any of the alternatives would not intersect with federal land. Under Alternative 1, the mine access road and natural gas pipeline corridor would be within 9 miles of Lake Clark National Park and Preserve (NPP), within 8 miles from Katmai NPP, and more than 20 miles from Alagnak Wild River. The natural gas pipeline corridor would pass near a portion of the Alaska Maritime National Wildlife Refuge and the Kachemak Bay National Estuarine Research Reserve (NERR). The mine access road would be within 1 mile of lands that are selected by the State and managed by the Bureau of Land Management (BLM).

Under Alternatives 2 and 3, the transportation corridor and natural gas pipeline would be within 5 miles of Lake Clark NPP, and within approximately 1 mile of lands that are selected by the State or Native corporations and managed by the BLM. The natural gas pipeline corridor would pass near a portion of the Alaska Maritime National Wildlife Refuge and the Kachemak Bay NERR.

National Park Service

The National Park Service (NPS) manages Lake Clark NPP, Katmai NPP, and the Alagnak Wild River. The transportation corridor and the mine site components would occur in the vicinity of, but not on, these lands. These project components would therefore not be subject to the NPS's land management jurisdiction. Section 3.5, Recreation, includes more information about management in each NPS unit.

US Fish and Wildlife Service

The US Fish and Wildlife Service (USFWS) manages the Alaska Maritime National Wildlife Refuge, a portion of which would be within 10 miles of the natural gas pipeline corridor, and some refuge islands would be within 20 miles of the Amakdedori port site. These project components would not be subject to USFWS's land management jurisdiction, as the project components would be near, but not on, USFWS land. Section 3.5, Recreation, includes more information about management in the refuge.

Bureau of Land Management

The mine access road would occur within 1 mile of, but not on, BLM-managed lands under Alternative 1. This project component would therefore not be subject to BLM's land management jurisdiction. The project alternatives would cross one or more ANCSA Section 17(b) easements, discussed below.

National Oceanic and Atmospheric Administration

The Kachemak Bay NERR is a state/federal partnership with the Alaska Department of Fish and Game (ADF&G) and the National Oceanic and Atmospheric Administration (NOAA); it was designated to promote informed management of the nation's estuaries and coastal habitats (KBNERR 2011). The pipeline compressor station would be located approximately 4 miles from the reserve and would therefore not be subject to the NOAA or ADF&G land management jurisdiction.

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3.2.2.2 State Management

The Alaska Department of Natural Resources (ADNR), under AS 38.04.065 Land Use Planning and Classification and 11 AAC 55.010-.030, "shall, with local governmental and public involvement under AS 38.05.945, adopt, maintain, and, when appropriate, revise regional land use plans that provide for the use and management of State of Alaska-owned lands." Plans applicable to the EIS analysis area include the Bristol Bay Area Plan (ADNR 2013a), the Nushagak and Mulchatna Rivers Recreation Management Plan (2005), and the Kenai Area Plan (ADNR 2001).

All resource and land uses, including mining and recreation, are considered and evaluated under state management. Unless closed by the legislature, or a less-than-640-acre tract closed by administrative order, all state land is open for multiple uses. The State of Alaska's Generally Allowed Uses on State Land provides a general explanation of the state's use management framework.

The proposed natural gas pipeline and Amakdedori port would be within 2 miles of the boundary of (but would not occupy) the McNeil River State Game Refuge and Sanctuary, which is managed by the ADF&G in accordance with the McNeil River State Game Refuge and Sanctuary Management Plan (ADF&G 2008). Section 3.5, Recreation, includes more information about management in the refuge and sanctuary.

Bristol Bay Area Plan

The Bristol Bay Area Plan was the outgrowth of a cooperative federal-state land use planning process mandated by the Alaska National Interest Lands Conservation Act. It was developed during the early 1980s, and was revised in 2005 to address the outstanding municipal entitlements of the three boroughs in the planning area (i.e., Bristol Bay, Lake and Peninsula, and Aleutians East), revise the tideland designations, address regional economic changes and changing land use patterns, and to allow ADNR to lease portions of the area for oil and gas development.

The plan was substantially revised again in 2013 after litigation, which focused on the concern of loss of protection to important habitat and recreation areas when much of the plan area was re-designated for general use. The 2005 plan was revised in response to an agreement with the plaintiffs in Nondalton Tribal Council et al. v. State of Alaska, which dismissed the litigation in exchange for ADNR's agreement to address the issues raised in the lawsuit through the existing administrative process for amending area land use plans and reclassifying land.

The Bristol Bay Area Plan divides the Bristol Bay area into 20 regions with management units. The mine site would be located in Region 6, and the transportation corridor would be in regions 6, 9, and 10 under Alternative 1 and 6, 8, and 9 under Alternatives 2 and 3. Region 6 is designated for mineral development, and managed to ensure that impacts to the anadromous and high value resident fish streams are avoided or reduced as appropriate in the permitting processes. Additionally, impacts to moose wintering habitat are to be taken into consideration during mine permit review, and the upper Koktuli River is managed for recreation. Regions 8, 9, and 10 are managed for a variety of uses including mineral exploration and development, public recreation and tourism, and protection of anadromous fish and wildlife resources and habitat. Region 8 is also managed for settlement. State-owned lands within these regions are identified to be retained in public ownership and managed for multiple use. The state selected much of the land in the planning area because of its mineral potential. Most of the area of mine itself is designated with the primary use of mineral development. An additional goal for this region is for the state to provide support for mining by aiding in the development of infrastructure, such as ports and roads (ADNR 2013a).

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Iliamna Lake is managed under Region 9, co-designated under Public Recreation and Tourism-Dispersed and Habitat land designations. The navigable waters of this lake are to be managed so that its public recreation and habitat values are maintained. Development authorizations in these waters may be appropriate insofar as essential habitat and public recreation values are maintained. Authorizations in these waterbodies should not interfere with navigability, important habitat values, or recreational uses (ADNR 2013a).

Nushagak and Mulchatna Rivers Recreation Management Plan

The Nushagak and Mulchatna Rivers Recreation Management Plan is a component of the Bristol Bay Area Plan. This plan is superseded by the management intent of the Bristol Bay Area Plan 2013 revision. In response to previous plans and to public concern about subsistence use and increased recreational use in the region, ADNR, ADF&G, and the Bristol Bay Coastal Resource Service Area entered into a cooperative agreement to manage these rivers. No project components would be covered by the plan, but the mine site is approximately 20 miles upriver of units 16, 17, 18, and 19 of the plan.

The Bristol Bay Area Plan includes goals that identify the need to manage land; protect fish, wildlife, and water; and provide a diversity of commercial and non-commercial public use opportunities. To meet goals in the Bristol Bay Area Plan, state land in the Nushagak and Mulchatna planning area is to be managed to provide a mix of commercial and non-commercial public use opportunities, ensure availability of public use sites to meet the needs of all users, protect habitat and other natural resources, and maintain options for future recreation management. Units 16, 17, 18, and 19, are managed as primitive or semi-primitive and some permanent and temporary facilities may be prohibited (ADNR 2005).

Kenai Area Plan

The Kenai Area Plan divides the Cook Inlet area into 12 regions with management units. Amakdedori port would be located in Region 12, and the natural gas pipeline component would be in Region 7 and Region 12. State-owned lands in these regions are identified to be retained in public ownership and managed for multiple uses. The area around Amakdedori port is managed as habitat for bear spring feeding, moose, Dolly Varden, Arctic char, ducks, and geese. Cook Inlet waters at Amakdedori are managed for recreation. The plan has management guidelines for the development of transportation and utilities, which include cultural surveys, and protection of hydrologic systems and roads near wetlands. The plan also provides guidelines for waterfront development for soil erosion and fuel storage (ADNR 2001).

3.2.2.3 Borough Management

Lake and Peninsula Borough

The mine site, the natural gas pipeline, and the transportation corridor would be within the boundaries of the Lake and Peninsula Borough (LPB). The LPB, as a non-unified home rule borough, is required to provide for planning, platting, and land use regulations on an area-wide basis (both inside and outside of cities) in the borough but not necessarily in accordance with AS 29.40.

The LPB's planning commission was established to perform the area-wide functions of planning, platting, and zoning. The commission's recommendations are then transmitted to the LPB assembly, a body of elected district representatives that sets policy and exercises legislative power in the borough (LPB n.d.). The commission prepares and revises the LPB

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Comprehensive Plan (LPB 2012). The LPB Comprehensive Plan provides general goals and policy recommendations to address pressing issues in the region.

The plan includes the following strategies for planning for wise land use and environmental protection: periodically review (and if appropriate improve) enforceable development standards (e.g., stream setbacks), and periodically review (and if appropriate, improve) the LPB's large project review process. Unlike some comprehensive plans, it does not make land use regulations, but is linked to community action plans for each of the LPB's communities, including those in the EIS analysis area. In addition to the LPB Comprehensive Plan, the LPB has prepared Village Strategic Plans for the following communities: Port Alsworth, Nondalton, Newhalen, Pedro Bay, Kokhanok, and Levelock. These brief plans outline core values, an envisioned future, and strategic direction for the period of 2017 to 2022.

LPB permits include Chapters 9.07 Development Permit and 9.08 Large Project Permits of the LPB code, and have requirements that apply to local approval of the Pebble Project. The Large Project Permit requires that the project comply with socioeconomic and with fiscal impact criteria that are outlined in the ordinance. These include activities within 100 feet of an anadromous stream, reclamation plans, and socioeconomic and fiscal impact reports.

Kenai Peninsula Borough

A portion of the proposed natural gas pipeline would be within the Kenai Peninsula Borough (KPB). The Amakdedori and Diamond Point ports and southern portions of the transportation corridor mine access roads would be within the KPB boundaries. As a second-class borough, the KPB is required to provide for planning, platting, and land use regulations on an area-wide basis (both inside and outside of cities) in the borough in accordance with AS 29.40. Land use in the KPB is guided by the KPB Comprehensive Plan (KPB 2005, 2017). The Code of Ordinances dictates the KPB's powers and operations.

Zoning in the KPB is unrestricted outside of the KPB's cities and Local Option Zone Districts, none of which are located in the EIS analysis area. However, the KPB does regulate floodplain development, and development near certain anadromous fish streams throughout the borough, including Amakdedori Creek, near the proposed port site.

The KPB Comprehensive Plan recognizes the borough's vicinity to the project area and acknowledges that proposed infrastructure would be located in the borough, although the plan does not contain goals, objectives, or implementation actions specific to development for the project on lands in the KPB.

3.2.2.4 Alaska Native Regional and Village Corporations

In 1971, President Richard Nixon signed ANCSA into law. Under ANCSA, aboriginal land claims were settled in exchange for $962.5 million in compensation, as well as approximately 40 million acres of land (Norris 2002). ANCSA established 12 for-profit Alaska Native regional corporations and 225 Alaska Native village corporations to administer the settlement lands and compensation funds. A 13th regional corporation was later added for Alaska Natives living outside the state. Alaska Natives enrolled as shareholders in the village and regional corporations where they lived at the time of enactment. The regional and village corporations land entitlement was generally proportionate to the population of these corporations at the time of enrollment. In most cases, the surface estate is owned by the village corporations, with the subsurface estate owned by the associated regional corporations.

Alaska Native corporation land is often held in large tracts and used for subsistence purposes or developed/sold to generate revenue. Alaska Native corporation-owned lands in the proposed

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transportation corridors and natural gas pipeline corridors consist of parcels with surface and subsurface rights owned by Bristol Bay Native Corporation (BBNC) and Cook Inlet Region Inc. (CIRI), and surface rights owned by Iliamna Natives Ltd. and Alaska Peninsula Corporation and other village corporations. Complete ownership for all alternatives is listed above in Table 3.2-1.

As private land, uses on land owned by Alaska Native corporations are subject to approvals of the surface and subsurface landowners. The BBNC manages their lands to uphold three primary values: fiscal, environmental, and social, in order to protect the fish that have sustained the culture of the people through history (BBNC 2018). Some of the project components would be located on CIRI property. CIRI manages their lands to strike a balance between sustainably developing resources to improve opportunities for shareholders, and protecting the land for future generations (CIRI 2018). The Alaska Peninsula Corporation mission is "to preserve and enhance the quality of life of Alaska Peninsula Corporation shareholders and to protect our culture while managing our assets in a manner which enhances their value" (APC 2018). Parts of the mine access road would be located on Alaska Peninsula Corporation property. Village corporation missions often include protection for the natural and cultural environment, and allowance of some development.

3.2.2.5 Native Allotments

Native allotments are parcels of land up to 160 acres that are owned by an individual issued under the 1906 Native Allotment Act. The lands are held in trust by the federal government and generally require the Bureau of Indian Affairs oversight for sales, gift deeds, leases permits, partitions, ROWs, and sand and gravel leases.

3.2.2.6 Local Management

Some communities in the project area have developed community plans including comprehensive, capital improvement, land use, strategic, transportation, vision, and other planning documents. Such planning exercises determine community goals, objectives, and management strategies for enacting public policy on transportation, utilities, land use, recreation, housing, and other topics of importance to the community. No physical, project-related infrastructure would be developed on lands that are in local jurisdiction, but indirect effects could occur from management on adjacent lands.

3.2.3 Land Use

The prevalent land uses around the EIS analysis area are fish and wildlife habitat, low-intensity recreational activities, and subsistence, which do not require developed facilities. Land development in the Bristol Bay area is generally limited to the areas in and around geographically isolated communities, fish processing facilities, and small fishing and hunting lodges. Developments include roads, airstrips, and docks.

Residential and commercial land use in the vicinity of the mine site is limited and includes the communities of Newhalen (population 230), Nondalton (population 144), and Iliamna (population 100), each located approximately 17 miles from the mine site. Use around the transportation corridor is also limited and includes the community of Kokhanok (population 173) located approximately 2 miles from the Alternative 1 mine access road, or the community of Pedro Bay (population 32) located within 1 mile of the Alternative 3 transportation corridor. Many residents practice a lifestyle reliant on subsistence activities, and recreational hunting, fishing, and boating also occurs in the area (DCCED 2018) (see Section 3.5, Recreation, Section 3.6, Recreation and Commercial Fishing, and Section 3.9, Subsistence for details). There are additional mining

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claims near the project area filed by Northern Dynasty Minerals and other mining exploration firms. Some claims have been relinquished, while others remain active.

The Amakdedori port site is used for some subsistence activity, and cultural education for nearby communities. The Diamond Point port site is used for resource extraction. The transportation corridor under Alternatives 2 and 3 includes the Williamsport-Pile Bay road, which is used for the portage of fishing boats from Cook Inlet to the Bristol Bay fishery.

On the Kenai Peninsula, there is a higher use of the land for recreation, and scattered residential and commercial development along the Sterling Highway where the natural gas pipeline component would cross it. The highway is traveled in all seasons, but sees particularly high use in the summer when recreation and tourism activities increase. Where the natural gas pipeline corridor would cross Cook Inlet, the water is used for transportation, barging, boating, commercial fishing recreational and subsistence fishing, sightseeing, and provides habitat for wildlife.

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Figure 3.2-1A: Generalized Land Status: Overview Map

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Figure 3.2-1B: Generalized Land Status: Mine Site to North Ferry Terminal

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Figure 3.2-1C: Generalized Land Status: South Ferry Terminal to Amakdedori Port

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Figure 3.2-1D: Generalized Land Status: Mine Site to Diamond Point

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Figure 3.2-1E: Generalized Land Status: Anchor Point to Happy Valley

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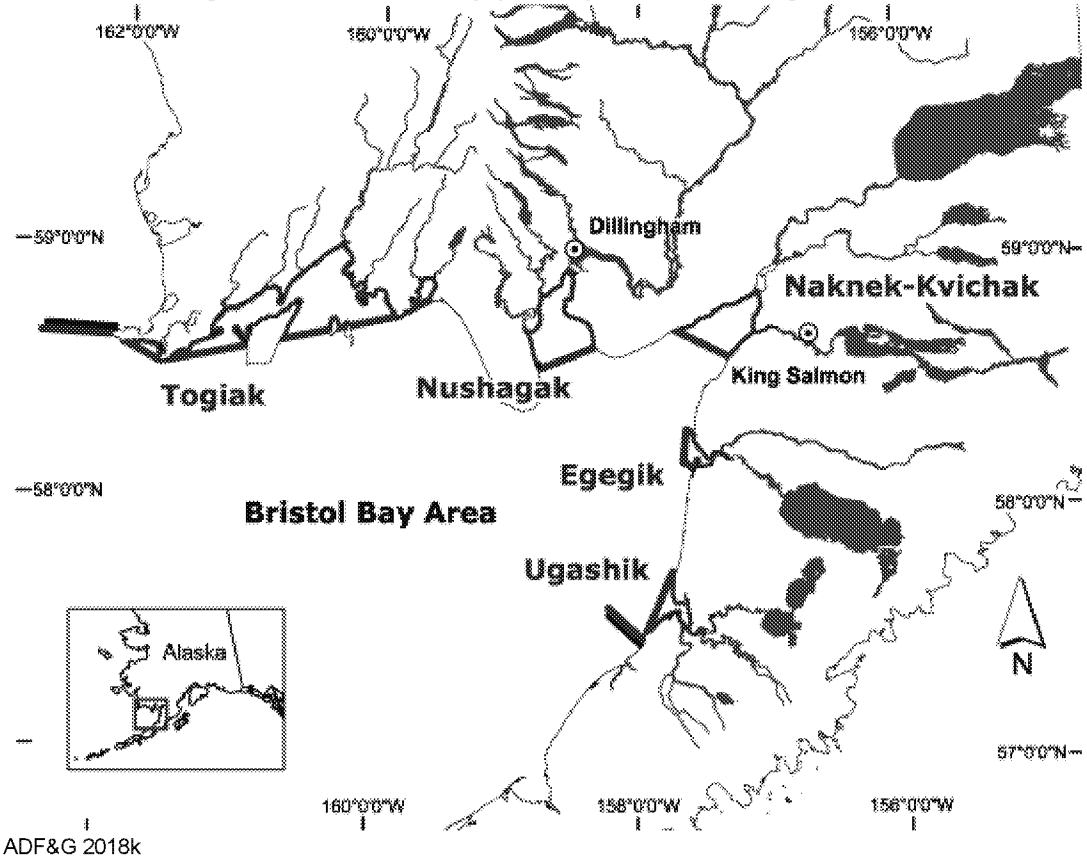
3.6 COMMERCIAL AND RECREATIONAL FISHERIES

3.6.1 Commercial Fishing

The inshore waters of Bristol Bay are home to the world's largest sockeye fishery and some of the world's largest natural salmon runs. Between 2000 and 2010, Bristol Bay provided 45 percent of the world's sockeye harvest, 7 percent of the world's wild salmon harvests and 2 percent of world salmon supply (EPA 2014a). Each year, roughly 2,840 holders of State of Alaska Area T salmon permits (shown in Figure 3.6-1) have the opportunity to harvest salmon from five major fishing districts managed by the Alaska Department of Fish and Game (ADF&G)[1]. The economic ecosystem driven by the salmon resource provides the Bristol Bay region with its largest private source of earned income and employment.

Figure 3.6-1: Bristol Bay (Area T) Salmon Fishing Districts



Source: ADF&G 2018k

In comparison to the inshore state waters salmon fishery, fisheries outside of the 3-mile limit of state waters are limited by the federally managed Nearshore Bristol Bay Trawl Closure Area. The closure area bans trawl fishing in federal Bristol Bay waters, with the exception of the seasonal opening of a very small area west of Cape Constantine and Nushagak Point.

With localized federal conservation measures in place to protect juvenile red king crab, the state Area T Bristol Bay salmon fishery is the only commercial fishery in the EIS analysis area.

[1] In Alaska, commercial fishing salmon permits are issued by the State and can be used in one specific fishery as defined by state regulations. The State assigns each fishery a letter designation. The designation for Bristol Bay is "Area T."

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3.6.1.1 The Bristol Bay Salmon Fishery

The Area T Bristol Bay salmon fishery (the fishery) is divided into five districts (Naknek/Kvichak, Egegik, Ugashik, Nushagak, and Togiak) encompassing nine major river systems. Only some waterbodies in the Naknek/Kvichak district and the Nushagak district are hydrologically connected to the proposed project. Across all five districts, sockeye salmon are the most commonly harvested species, representing 97 percent or more of the harvest in the Naknek/Kvichak district, the Egegik district, and the Ugashik district (see Table 3.6-1). In the Nushagak district, sockeye have represented 86 percent of the 20-year harvest with chum salmon and pink salmon representing 7 percent and 6 percent of the harvest, respectively. While Chinook salmon account for just 1 percent of annual Nushagak harvest, the number of fish harvested averages 40,000 annually, making the Nushagak district the most important Chinook salmon fishery, by volume, outside of Southeast Alaska (ADF&G 2018k). The Togiak district also harvests sizeable portions of chum salmon and pink salmon, with those species accounting for 19 percent and 8 percent of the 20-year harvest, respectively.

Over the last 20 years, the fishery's average annual harvests have equalled 23 million sockeye salmon, 950,000 chum salmon, 500,000 pink salmon, 80,000 coho salmon, and 50,000 Chinook salmon (ADF&G 2018m).

Table 3.6-1: 20-Year Average Harvest Distribution by Species (Percent)

Species	Naknek/ Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
Sockeye	97	99	97	86	71	94
Chinook	0	0	0	1	1	0
Coho	0	0	0	1	1	0
Chum	2	1	2	7	19	4
Pink	0	0	0	6	8	2

Note: Percentages may not equal 100 due to rounding

Source: ADF&G 2018m

Harvest varies significantly across the five fishing districts and in each district from year to year. On average, the most productive fishing districts are the Naknek/Kvichak district (8.2 million fish annually), followed by the Nushagak (7.3 million), the Egegik (6.8 million), the Ugashik (2.9 million), and the Togiak (0.7 million). Harvest size in each district can vary substantially due to the overall size of salmon runs. The ADF&G manages each district to ensure that the required number of salmon reach their spawning grounds to maximize long-term productivity. The number of salmon that are not harvested by the fishery is known as the "escapement number." Harvest numbers tend to vary more than escapement numbers because the escapement goal is a set range, while fishing effort is the tool used to balance between the number of fish returning and the escapement goal. In particular, the Naknek/Kvichak district in particular is known for its varying run strength. The 20-year minimum harvest in this district was 602,061 fish compared to an average of over 8 million fish, and a maximum near 17 million fish. Thus, the largest harvest was 28 times the smallest harvest. In the hydrologically connected to the project area Nushagak district, and the non-hydrologically connected Ugashik district, the largest harvest was nearly 13 times the smallest harvest. In the other districts the largest to smallest ratio was less than 5.5:1. In all districts, the average harvests from 2008 to 2017 have been larger than the average harvests from 1998 to 2007. Harvests by district are shown in Table 3.6-2.

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Table 3.6-2: 20-Year Annual Bristol Bay Salmon Harvest by District

	Naknek/ Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
20-Year Min.	602,061	2,369,459	526,114	2,761,086	198,926	10,721,140
20-Year Max.	16,885,517	12,143,186	6,705,869	13,334,168	1,082,937	40,592,915
20-Year Median	8,513,405	7,082,486	2,450,220	6,734,064	778,472	26,391,928
20-Year Average	8,220,622	6,829,737	2,901,849	7,263,097	764,344	26,041,124
1998-2007 Average	5,610,865	6,073,337	2,193,520	6,886,841	710,810	21,643,701
2008-17 Average	10,830,378	7,586,138	3,610,179	7,639,353	817,879	30,438,547

Source: ADF&G 2018m

The 20-year average escapements for each of the districts are 6.4 million fish in the Naknek/Kvichak district (which contains two major river systems), 2.6 million fish in the Nushagak district, 1.3 million fish in the Egegik district, 1 million fish in the Ugashik district, and 0.2 million fish in the Togiak district (see Table 3.6-3). In all districts except the Togiak district, escapement has been higher in the past 10 years than in the 10 years between 1998 and 2007. Subsistence users and recreational anglers access the resource after salmon enter freshwater, and after the fish have escaped the commercial fishery; the ADF&G's escapement goals include a portion expected to be harvested by these users.

Table 3.6-3: Annual Bristol Bay Salmon Escapement by District

	Naknek/ Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
20-Year Min.	2,303,463	927,054	596,332	1,389,975	128,118	6,200,639
20-Year Max.	15,033,216	2,600,982	2,599,186	7,705,277	390,080	22,366,676
20-Year Median	6,133,492	1,233,900	898,110	2,461,579	203,148	11,596,386
20-Year Average	6,443,397	1,298,181	1,045,789	2,603,847	225,016	11,616,230
1998-2007 Average	5,849,785	1,250,897	906,198	2,585,897	242,983	10,835,760
2008-17 Average	7,037,010	1,345,465	1,185,379	2,621,797	207,049	12,396,700

Source: ADF&G 2018m

Administration of the Bristol Bay fishery occurs through two different sets of permits: drift net permits and set net permits. Drift nets are nets attached by one end to boats, while set nets are attached to by one end to land. On average, drift net permit holders harvest four out of every five fish harvested in the fishery, but the ratio has been as low as two out of every three fish (see Table 3.6-4).

Table 3.6-4: Sockeye Drift Net and Set Net Harvest Split (Percent)

	20-Year Min.	20-Year Max.	20-Year Median	20-Year Average	1998-07 Average	2008-17 Average
Drift Net Portion	66	86	81	80	80	81
Set Net Portion	34	14	19	20	20	19

Source: ADF&G 2018m

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Nushagak and Kvichak District Historical Harvest and Escapement

The EIS analysis area is limited to river systems hydrologically connected to the project area, which contribute to the Bristol Bay salmon fishery. Only the Naknek/Kvichak district and the Nushagak district contain some rivers that are hydrologically connected to the project area.

The Naknek/Kvichak district contains three of the nine major river systems in the Bristol Bay fishery, but only the Kvichak River is hydrologically connected to the project area. Over the last 20 years, the average return (run) to this river is roughly 6.7 million fish, which is 43 percent of the total average run strength in the district (see Table 3.6-5 and Figure 3.6-2). The Kvichak River is known for its variable run strength; the smallest return to this river in the last 20 years was just 707,000 fish, while the largest run was 15.5 million fish. At the same time, the average return to the river system from 2008 to 2017 was more than double the average return from 1998 to 2007.

Table 3.6-5: Naknek-Kvichak District Run Distribution (Thousands of Fish)

	Kvichak	Alagnak	Naknek	Total
20-Year Min. Run Size	707	234	1,402	3,337
20-Year Max. Run Size	15,466	11,629	8,794	31,566
20-Year Median Run Size	5,694	2,530	4,718	15,361
20-Year Average	6,675	3,192	4,900	14,751
1998-2007 Average	4,381	2,436	5,196	11,996
2008-17 Average	8,969	3,949	4,605	17,506

Source: ADF&G 2017a

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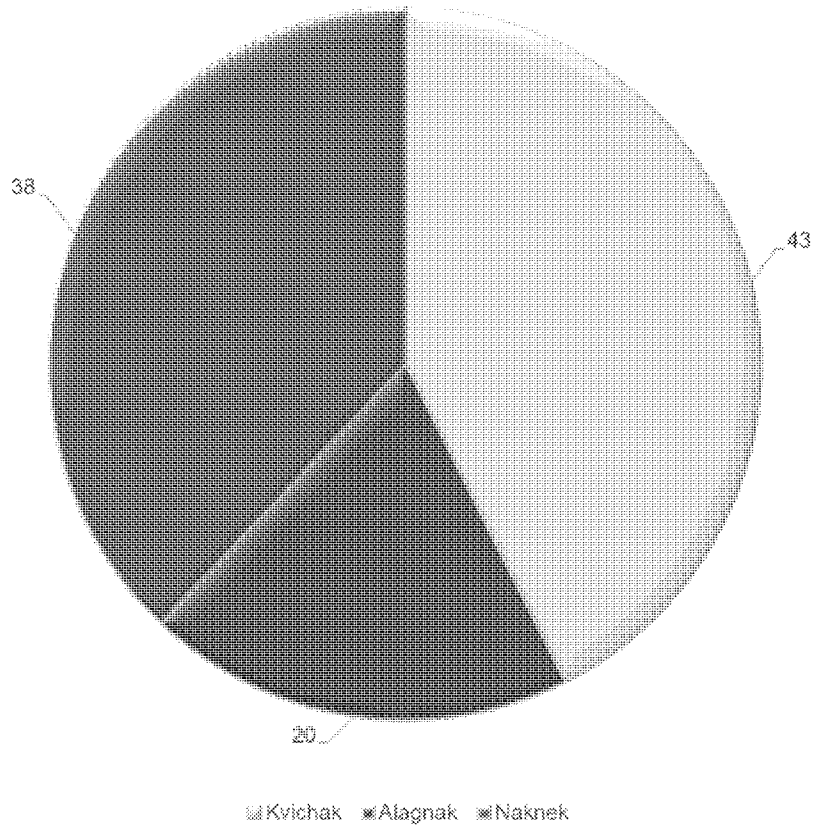
Figure 3.6-2: Naknek-Kvichak District 20-Year Run Distribution by River System (Percent of Run)



Source: ADF&G 2017a

The Nushagak district is also comprised of three large river systems: the Wood River, the Igushik River, and the Nushagak River. The Nushagak River is hydrologically connected to the project via the Mulchatna River system, but the other two river systems are not. The Wood River, fed by the Wood-Tikchik Lake system, is the dominant fish producer in the district and accounted for 62 percent of the estimated run strength over the last 20 years. The return to this system averaged 5.7 million fish per year. In comparison, the Nushagak River accounted for 2.3 million fish per year between 1998 and 2017, or 24 percent of the district total. The Nushagak River also experiences significant variations in run strength. While not as extreme as the variations found on the Kvichak River, the largest run in the past 20 years was nearly 12 times the size of the smallest run (see Table 3.6-6 and Figure 3.6-3).

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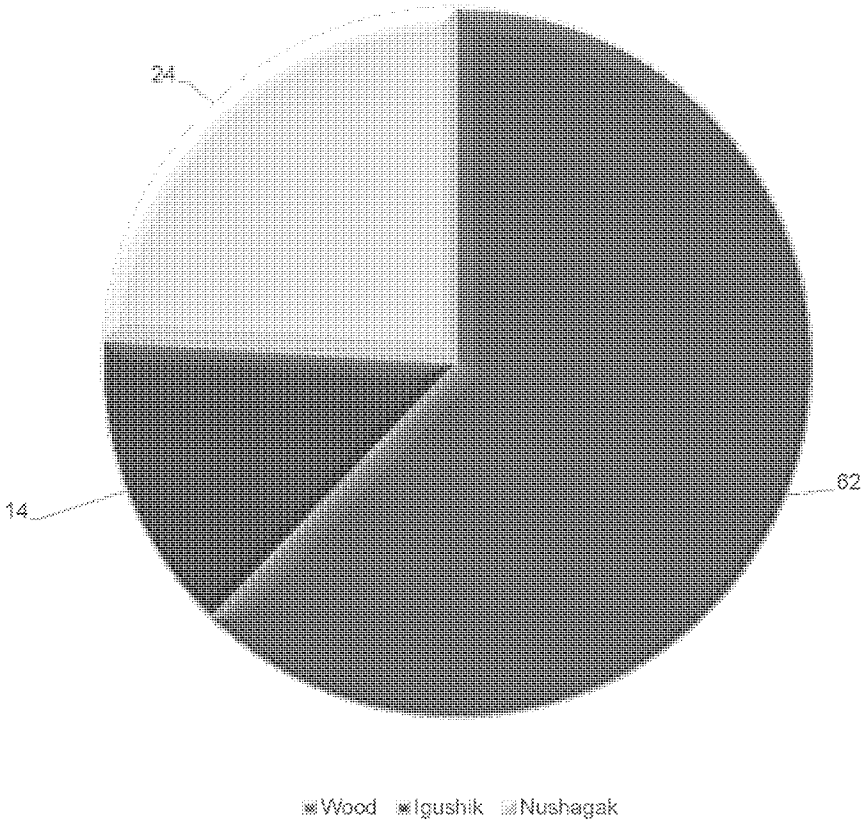
Table 3.6-6: Nushagak District Run Distribution (Thousands of Fish)

Year	Wood	Igushik	Nushagak	Total
20-Year Min. Run Size	2,449	207	674	4,053
20-Year Max. Run Size	11,064	2,394	7,700	20,028
20-Year Median Run Size	5,278	1,315	2,198	8,962
20-Year Average	5,768	1,258	2,327	9,353
1998-2007 Average	5,619	1,206	2,027	8,852
2008-17 Average	5,917	1,310	2,628	9,855

Source: ADF&G 2017a

Figure 3.6-3: Nushagak District 20-Year Run Distribution by River System (Percentages)



Source: ADF&G 2017a

In the context of other Bristol Bay rivers and other Alaska rivers such as the Kenai River and the Copper River, the Nushagak River does not particularly stand out for the average size of its sockeye salmon run. The Wood River is the dominant producer of sockeye in Nushagak district. However, the Nushagak River does stand out for the size of its Chinook salmon run. Over the last 20 years, on average, the entire Bristol Bay fishery harvested 32,908 Chinook each year, and 25,623 of these fish (78 percent) came from the Nushagak district. The 20-year average Chinook run size for the Nushagak is 179,000 fish (ADF&G 2017b). Average run sizes for Chinook in other river systems in Alaska are approximately 260,000 in the Kuskokwim drainage, 166,000 in the Yukon drainage, 100,000 to 200,000 in the Susitna drainage, 56,000 in the Kenai

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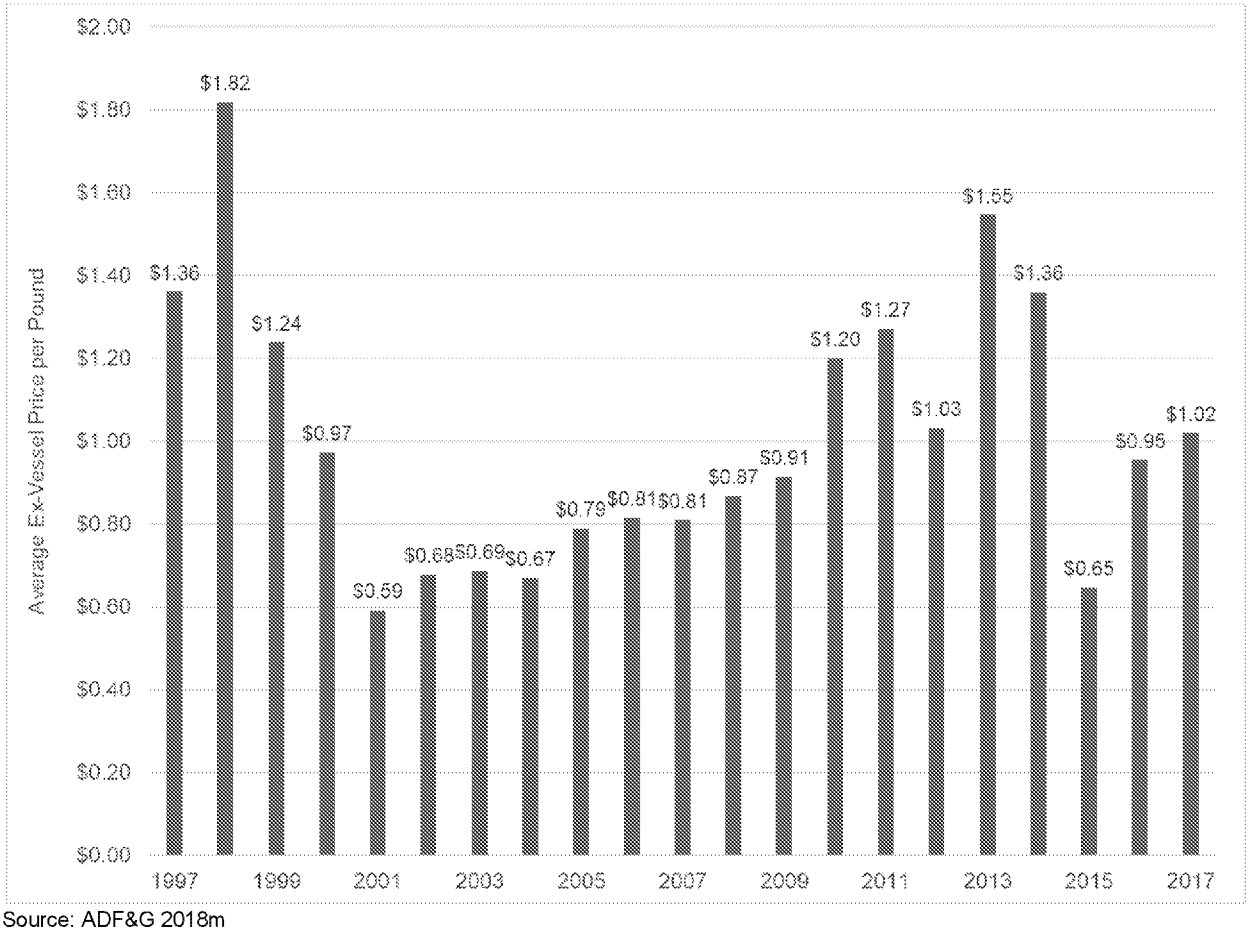
River, and 55,000 in the Copper River (JTC 2018, Poetter and Tiernan 2017, ADF&G 2008c, ADF&G 2016a, Russell et al. 2017).

The Value of the Fishery

The average price per pound that processors pay permit holders for their salmon depends largely on the condition of world salmon markets, including salmon produced by other wild and farmed sources. Individual and collective efforts around marketing, improving product quality, and developing new markets and products can also have long-term effects on the value of salmon at harvester level. The connection to a world commodity market means that ex-vessel prices for salmon can vary markedly from year to year. In 2017, permit holders in Bristol Bay received an average of $1.02 per pound. Four years earlier they received $1.55 per pound, which was the highest average price since 1998; two years earlier they received $0.65 per pound on average (see Figure 3.6-4)[2]. Between 2008 and 2017, the average price swing from year to year was +/- 20 percent.

Figure 3.6-4: Average Price per Pound for Bristol Bay Sockeye, 2017



Source: ADF&G 2018m

With the exception of 1998 when prices for sockeye were at their modern high, the prices that Bristol Bay permit holders receive for their salmon are lower than prices received for the same species of fish caught in other major Alaskan salmon fisheries. Over the past 20 years, the ex-vessel prices for sockeye salmon in the Cook Inlet, Copper River, Prince William Sound, and Southeast Alaska fisheries averaged 50 percent, 150 percent, 60 percent, and 54 percent

[2] All prices are in $US 2017.

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higher, respectively, than the price paid for Bristol Bay sockeye (see Table 3.6-7). The price differential can be explained by a number of factors, including the remoteness of the Bristol Bay fishery, which increases transportation and operating costs for processors, and the historic lack of a strong brand identity for Bristol Bay fish (in comparison to the Copper River fishery, which does have a strong brand identity). In recent years, Bristol Bay permit holders have worked with processors to increase quality throughout the chain of custody and to establish a brand identity (BBRSDA 2018). The annual data show that the price gap tends to be smaller when demand for sockeye is high, and tends increase to when demand for sockeye is low.

Table 3.6-7: Percentage Price Premium (Discount) for Other Alaska Sockeye Fisheries Relative to Bristol Bay

	Cook Inlet	Copper River	Prince William Sound	Southeast
20-Year Min. Price	-6	-2	-9	11
20-Year Max. Price	150	316	133	105
20-Year Median Price	53	159	61	55
20-Year Average	50	150	60	54
1998-2007 Average	35	143	56	56
2008-17 Average	63	156	64	52

Source: ADF&G 2018k

In 2017, the fishery generated $216.4 million in ex-vessel payments to all Area T permit holders, making that year the second-best year for permit holders collectively since 1997 (see Figure 3.6-5). The 20-year inflation-adjusted ex-vessel value of the fishery is approximately $134.4 million, but over the last 10 years the ex-vessel value has averaged $162.8 million.

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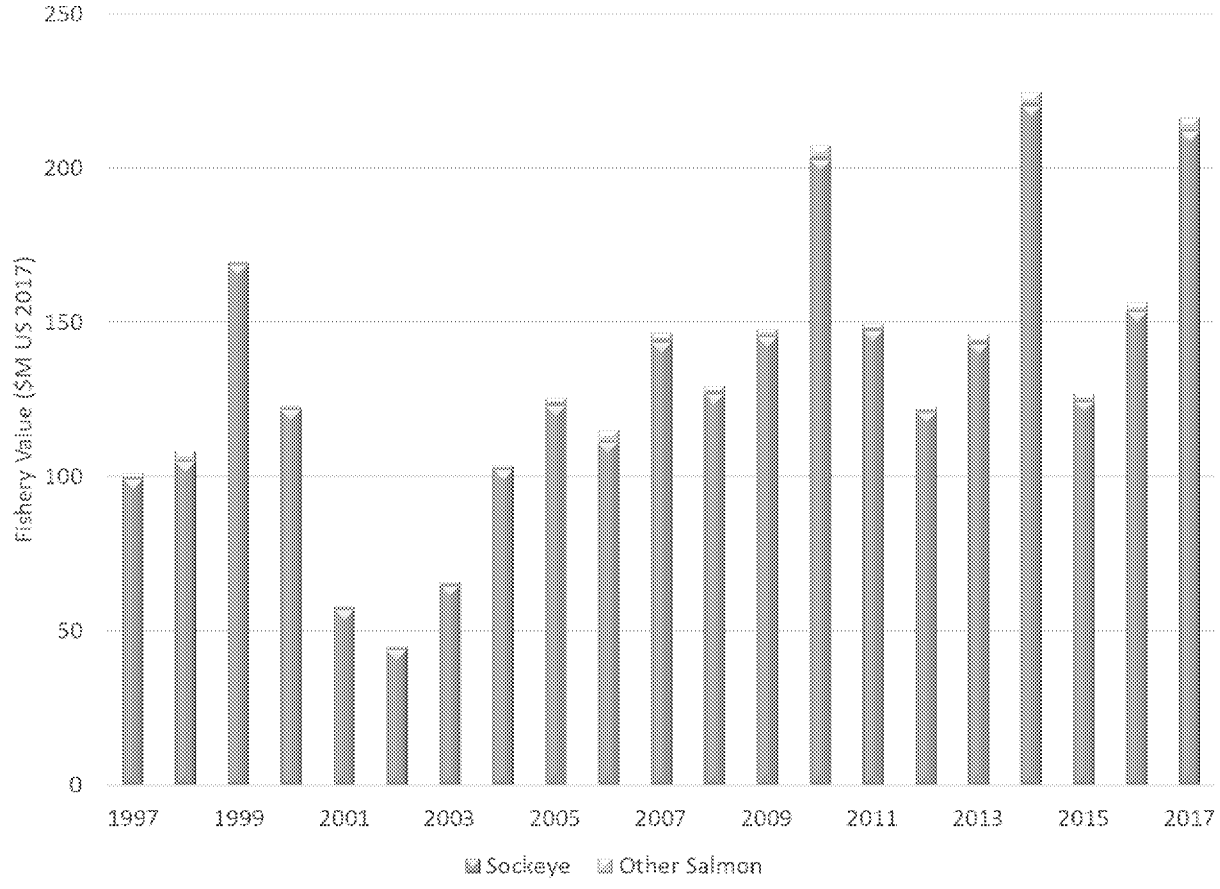
Figure 3.6-5: Total Ex-Vessel Fishery Value for Bristol Bay (Area T), $US 2017



Source: ADF&G 2018m

Average permit holder gross earnings vary from year to year with run and market strength, but increased substantially in both the set net and drift net fisheries since 2001 and 2002, when the fishery generated the lowest level of ex-vessel value in the modern era (see Figure 3.6-6). In 2017, drift net permit values had an estimated value of over $103,000, while set net permits had an estimated value of roughly $40,000. The estimated values of both types of permits have risen substantially since 2001 and 2002, when smaller average run sizes and lower prices depressed the permits' expected earnings power.

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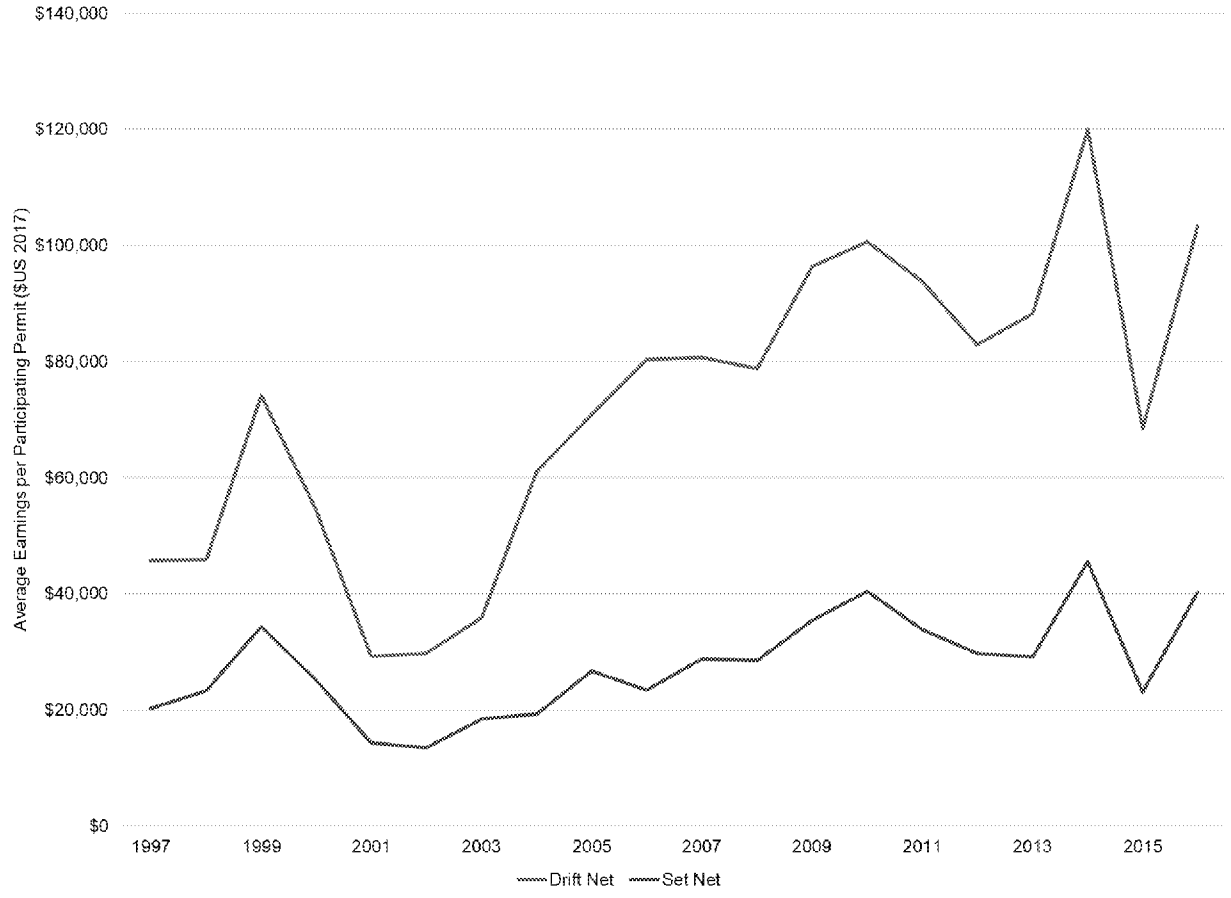
Figure 3.6-6: Annual Average Permit Holder Earnings per Year, 2017



Source: CFEC 2018

Alaska Commercial Fisheries Entry Commission (CFEC) data divide permit holders into four earnings (i.e., quartiles). The cumulative amount of earnings in each group is the same, but the number of permit holders and the average earnings per permit holder is different. For example, in 2016 each quartile group earned roughly $35.5 million in aggregate, but the top group included just 170 permit holders earning an average of $232,837 each, while the bottom group included 759 permit holders earning an average of $52,044 each (CFEC 2018). Permit holders who are residents of the District T are more likely to be in the bottom quartile compared to non-residents, and 80 percent less likely to be in the top quartile (see Figure 3.6-7). Between 2002 and 2012, 73 percent of watershed residents were in the bottom earnings quartile, while 40 percent of non-watershed residents landed in the bottom quartile. In the same period for the top quartile, 3 percent of watershed resident permit holders landed in the top quartile, while 14 percent of non-watershed residents earned enough to be in that quartile (NEI 2014).

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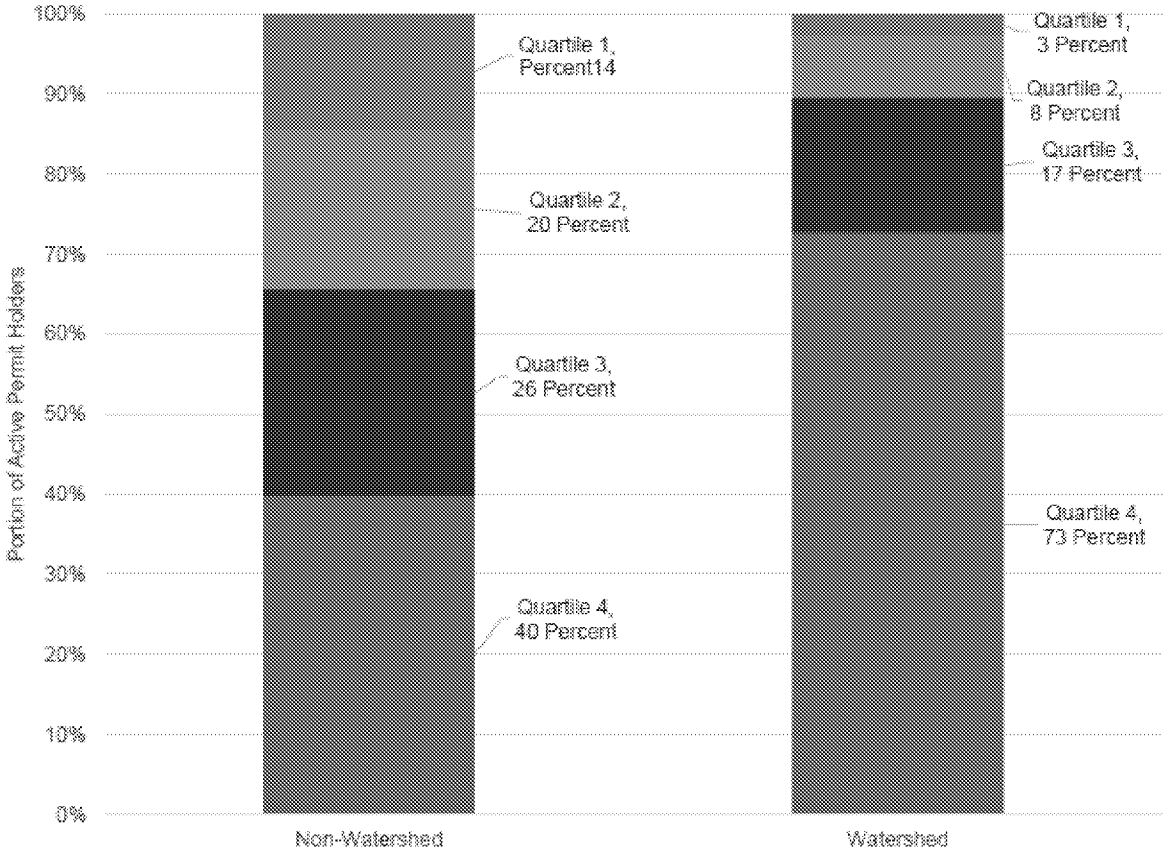
Figure 3.6-7: Distribution of Quartiles in the Drift Net Fishery by Area of Residence, 2002-2012



Source: NEI 2014

Participation in the Fishery and Permit Ownership

Permit holder participation in the fishery varies from year to year depending on permit holder expectations for both prices and the size of the overall Bristol Bay salmon run. Several distinct periods define permit holder participation over the past 20 years. Between 1997 and 2000, more than 97 percent of drift net permit holders and 90 percent of set net holders participated in the fishery. Fishery participation dropped substantially in 2001 and 2002 as low prices discouraged permit holders from fishing; only 63 percent of drift net permit holders and 67 percent of set net holders participated in the 2002 fishery. As ex-vessel prices have recovered, and the fishery has become better organized with the creation of the Bristol Bay Regional Seafood Development Association and combined permit holder/processor efforts to improve the value of the fishery, a greater percentage of permit holders are fishing their permits. Since 2010, at least 1,700 (91 percent) drift net permit holders have participated in the fishery each year, while at least 830 (85 percent) set net permit holders have participated since 2007 (see Figure 3.6-8).

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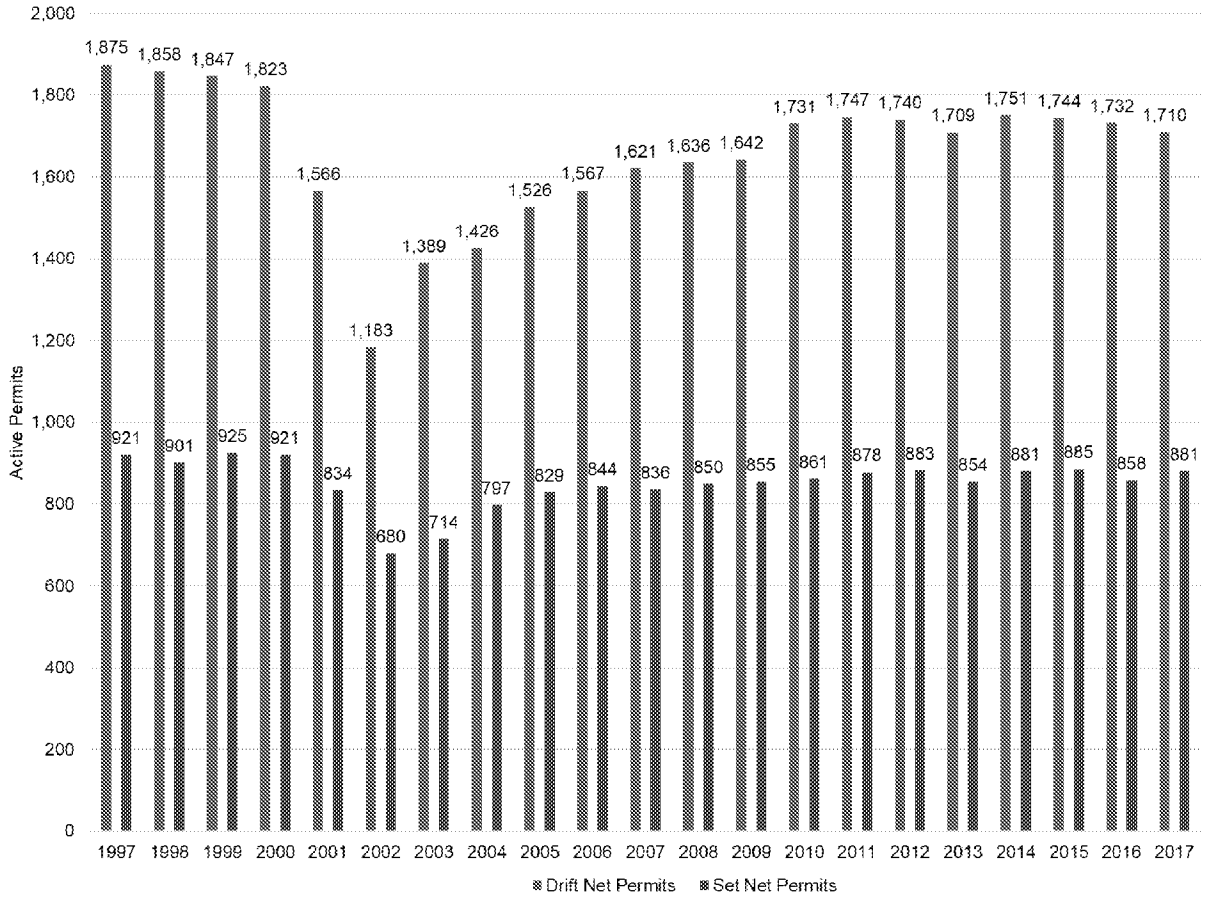
Figure 3.6-8: Annual Permit Holder Participation



Source: ADF&G 2018m

The fishery has experienced a gradual out-migration of permits from Alaskans to non-Alaskans; in particular from watershed residents to non-watershed Alaskans and non-Alaskans (ADF&G 2018m). Overall Alaskan permit ownership in the drift net fishery dropped from 55 percent to 45 percent between 1990 and 2017, while in the same period Alaskan ownership of set net permits fell from 76 percent to 65 percent (see Table 3.6-8).

Table 3.6-8: Permits Owned by Alaskans and Non-Alaskans

Year	Drift Net			Set Net		
	Alaskan	Non-Alaskan	Percent Resident	Alaskan	Non-Alaskan	Percent Resident
1990	1,039	839	55	783	243	76
1995	967	921	51	762	257	75
2000	959	940	51	757	262	74
2005	895	967	48	688	300	70
2010	866	997	46	672	311	68
2015	834	1,030	45	639	336	66
2017	842	1,021	45	635	337	65

Source: ADF&G 2018m

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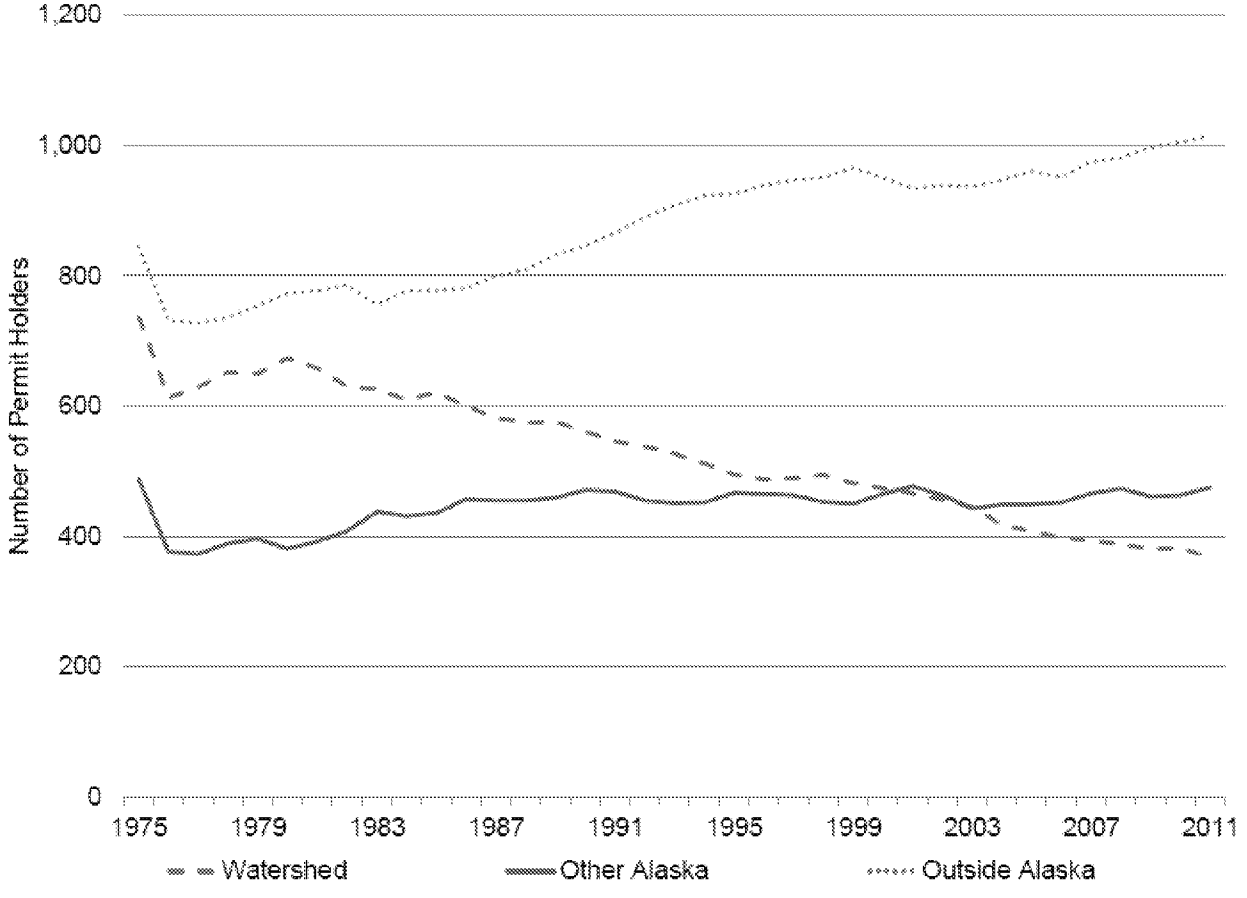
The collective data show a loss in Alaska-owned permits, but more refined data show that out-migration of permits is really an issue specific to the Bristol Bay watershed residents, as ownership by Alaskans based outside of the watershed is stable or increasing (see Figure 3.6-9). Between 1975 (when the limited-entry program started) and 2011, non-Alaskan ownership of the permits increased from roughly 850 permits to over 1,000 permits. Permit ownership by non-watershed Alaskans dipped after initial issuance as the CFEC adjudicated temporary permits, but has risen from a low of less than 400 permits to nearly 500 permits in 2011. Permit ownership by residents of the watershed fell steadily between the late 1970s and 2011, from roughly 700 permits to less than 400 permits. As permits leave the region, so too does the associated spending resulting from fishery earnings. With average permit holder earnings of over $100,000 in 2017, the roughly 300 drift net permits that have out-migrated from the watershed represent approximately $30 million dollars in annual gross income that is not available to support the local economy.

Figure 3.6-9: Drift Net Participation in the Fishery by Permit Holder Region, 1975-2011



Source: NEI 2014

Theories as to why permits have left Bristol Bay include: lower access to, and higher cost of capital; the long-term effect of consistently earning less than non-watershed peers; financial hardship; and the relative desirability of the fishery to outsiders who want to join the fishery because of the fishery's higher earning power (Apgar-Kurtz 2012). Prior research shows that Bristol Bay resident vessels tend to be older, have less horsepower, smaller fuel and less refrigeration capacity, as shown in Table 3.6-9 (NEI 2009).

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Table 3.6-9: Comparison of Vessels Used in the Bristol Bay Drift Gillnet Fishery, by Residency of Permit Holder

	Group	1983	1988	1993	1998	2003	2008
Average age of Vessels (years)	Bristol Bay Residents	9	11	14	18	22	26
	Other Alaska Residents	9	11	14	17	21	24
	Residents of Other States	11	12	13	16	20	24
	Average	10	11	14	17	21	25
Average horsepower of vessels	Bristol Bay Residents	239	279	282	294	287	337
	Other Alaska Residents	243	271	315	345	350	373
	Residents of Other States	252	286	335	368	372	382
	Average	245	278	311	366	366	364
Average displacement of vessels (gross tons)	Bristol Bay Residents	10	12	12	12	12	12
	Other Alaska Residents	12	13	13	13	14	15
	Residents of Other States	12	12	13	14	14	14
	Average	11	12	13	13	13	14
Average fuel capacity of vessels (gallons)	Bristol Bay Residents	239	288	292	294	287	299
	Other Alaska Residents	306	334	364	357	357	360
	Residents of Other States	283	311	348	352	350	364
	Average	276	311	331	335	331	341
Percent of vessels with refrigeration capacity	Bristol Bay Residents	0.5%	0.5%	2.3%	4.5%	5.5%	7.7%
	Other Alaska Residents	1.3%	2.3%	7.5%	13.7%	15.3%	20.8%
	Residents of Other States	0.5%	2.0%	8.1%	15.5%	17.8%	22.2%
	Average	0.8%	1.6%	6.0%	11.2%	12.9%	16.9%

Source: NEI 2009

The rate of loss of permits is not equally spread across communities in the watershed. Apgar-Kurtz (2012) showed that the rate of permit loss was higher amongst communities who were not part of the Bristol Bay Economic Development Corporation (BBEDC) region and thus not eligible for BBEDC's permit loan program. The non-BBEDC watershed communities include those that are closest to the proposed project including Iliamna, Nondalton, Pedro Bay, Port Alsworth, and Newhalen. The group also includes communities further from the proposed project, but still in water systems hydrologically connected to the project, including Igiugig, Koliganek, Kokhanok, and New Stuyahok. When permit holders sell their permits, there are secondary effects on the community that lower earnings and the likelihood of community participation in the fishery:

1. There are now fewer opportunities for community members to obtain crew member jobs and bring a share of their earnings back to that community. Permit holders prefer to hire people that they know, and they are more likely to know people from their own community (Apgar-Kurtz 2012).

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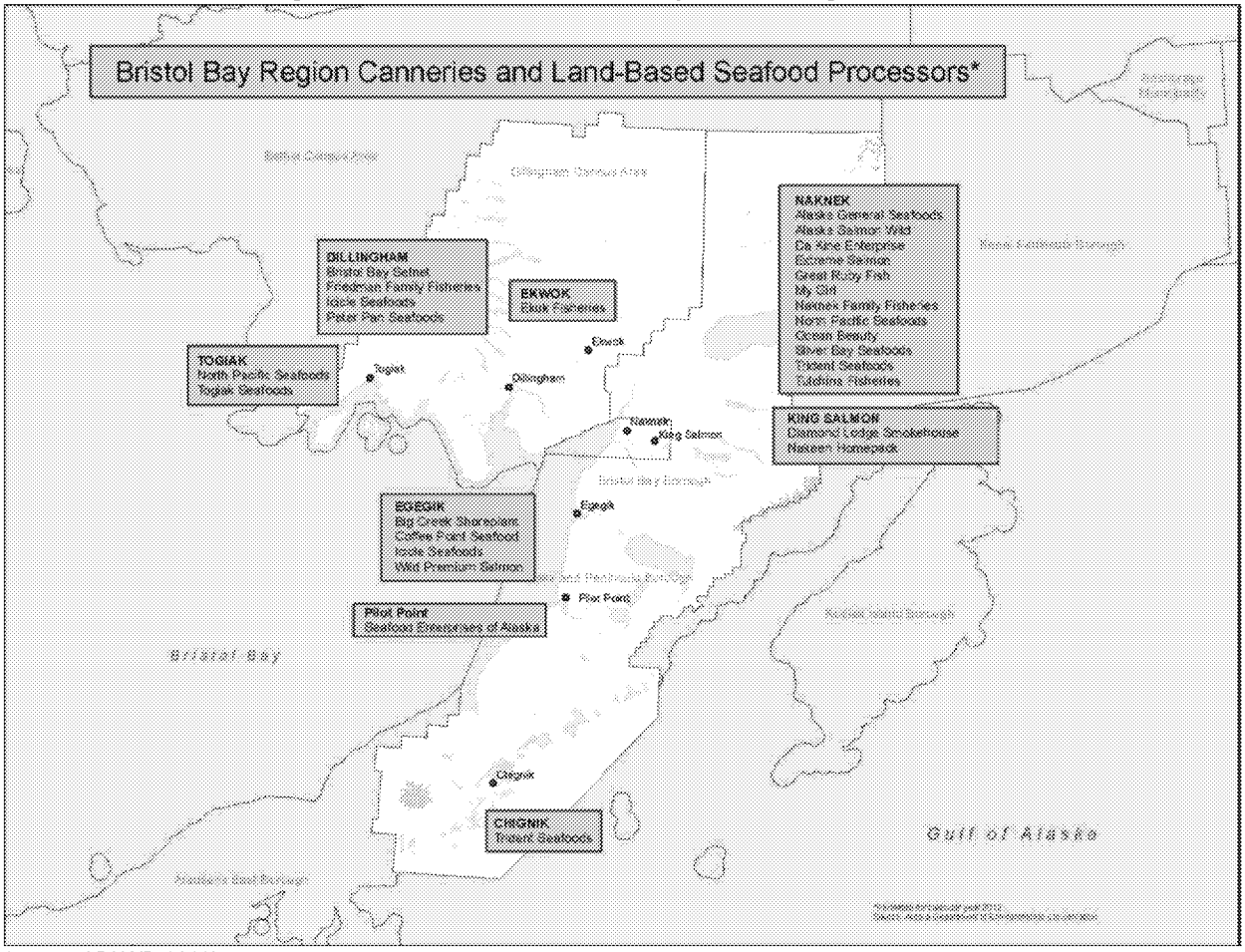
2. Family is the predominant way in which people learn to fish in the bay; if a family sells their permits the next generation is less likely to be commercial fishermen (Apgar-Kurtz 2012).

3.6.1.2 The Processing Sector

After harvest, permit holders deliver salmon to processors who pay them for their catch and prepare fish for distribution and sale into the broader seafood market. The processing sector in Bristol Bay ranges from small family owned operations to business units of multi-national corporations with operations across Alaska, the United States, and the rest of the world. While the Alaska Department of Environmental Conservation documents processing facilities in seven Bristol Bay communities, the heart of processing in Bristol Bay is located in the Bristol Bay Borough community of Naknek (see Figure 3.6-10). In 2015, the last year for which data are available, the processing sector employed 3,087 people in the Bristol Bay Borough, 908 in the Dillingham Census Area, and 162 in the Lake and Peninsula Borough (LPB) (ADLWD 2018a).

Figure 3.6-10: Current Bristol Bay Processing Locations[3]



Source: ADLWD 2018b.

From 1998 to 2017, the processing sector in Bristol Bay produced $6.93 billion of first wholesale value seafood products; processors derived $6.2 billion of this value (89.5 percent) from

[3] The Chignik processing facilities service the Chignik area salmon fisheries. These runs return to their spawning grounds via the Gulf of Alaska and not via Bristol Bay.

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sockeye salmon (see Table 3.6-10)[4]. The next most valuable species was Pacific herring, which occur every May in the Togiak/Twin Hills region of the Bristol Bay. The remaining salmon species represented 3.6 percent, or $246.3 million, of wholesale value; other species generated $23.6 million in wholesale value.

Table 3.6-10: Bristol Bay Wholesale Values by Species and Year (millions of dollars)

Year	Sockeye Salmon	Herring	Chum Salmon	Chinook Salmon	Coho Salmon	Pink Salmon	Other Species	Total
1998	$197.0	$25.0	$2.4	$3.8	$2.1	$0.8	$4.0	$235.1
1999	$301.4	$41.1	$2.3	$0.7	$0.3	$0.0	$2.7	$348.6
2000	$257.7	$33.4	$3.1	$0.6	$2.1	$0.2	$0.2	$297.3
2001	$164.3	$28.4	$5.1	$0.6	$0.8	$0.0	$3.2	$202.5
2002	$140.4	$18.7	$2.9	$1.1	$0.4	$0.0	$2.2	$165.6
2003	$156.1	$23.8	$7.9	$1.1	$0.6	$0.0	$4.1	$193.7
2004	$232.6	$21.8	$2.9	$3.2	$4.9	$0.6	$0.3	$266.2
2005	$280.7	$26.7	$6.5	$2.6	$0.8	$2.2	$0.4	$319.9
2006	$293.9	$21.8	$11.5	$4.5	$1.2	$0.4	$0.4	$333.7
2007	$300.6	$16.0	$26.0	$2.1	$0.7	$0.0	$0.3	$345.6
2008	$309.3	$21.1	$10.8	$1.4	$1.4	$0.9	$0.1	$345.0
2009	$334.0	$25.3	$9.2	$1.2	$0.6	$0.1	$0.0	$370.4
2010	$437.1	$27.5	$8.2	$1.3	$1.4	$5.0	$0.0	$480.4
2011	$382.6	$21.6	$8.4	$3.3	$0.7	$0.0	$0.0	$416.6
2012	$302.2	$19.8	$7.3	$0.9	$1.3	$6.5	$0.0	$337.9
2013	$321.7	$23.1	$9.5	$0.7	$0.5	$0.4	$0.0	$355.9
2014	$402.1	$16.0	$4.6	$0.9	$3.0	$3.4	$0.0	$430.0
2015	$376.9	$16.9	$6.4	$1.6	$0.1	$0.0	$0.0	$401.9
2016	$469.2	$15.1	$9.3	$1.3	$1.1	$3.4	$5.7	$505.2
2017	$542.2	$13.6	$16.4	$1.7	$2.8	$0.2	$0.0	$576.9
Total	$6,201.9	$456.7	$160.9	$34.6	$26.7	$24.1	$23.6	$6,928.5

Source: ADF&G 2018d

Between 2004 and 2015, the processing sector provided jobs for an average of 4,106 workers; just 2.4 percent of those workers were residents from the Bristol Bay watershed, while another 12.2 percent were Alaska residents from outside the watershed. The remaining 85.4 percent were residents from regions outside of Alaska. Collective watershed resident wages averaged $1 million per year between 2004 and 2015, while total worker wages averaged $29.4 million (see Table 3.6-11).

[4] All prices are in $US 2017.

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Table 3.6-11: Residency and Wages of Processing Workers

3.6-11Year	Total Worker Count	Percent of All Processing Workers			Wages ($M Nominal)		
		Percent Nonresident Workers	Alaska Resident Ex-Watershed Workers	Watershed Resident Workers	Non-Resident Wages	Alaska Resident Wages, Ex-Watershed	Watershed Resident Wages
2004	3,594	83.0	13.5	3.5	$18.7	$2.2	$1.2
2005	3,357	81.6	14.9	3.5	$19.5	$2.3	$1.2
2006	3,090	84.2	12.3	3.5	$21.5	$2.4	$1.3
2007	3,655	84.1	12.4	3.5	$25.2	$3.2	$1.4
2008	3,987	83.8	13.5	2.7	$24.3	$3.1	$1.4
2009	4,855	87.0	11.8	1.2	$28.8	$2.9	$0.7
2010	4,886	87.0	11.3	1.7	$30.1	$3.2	$0.7
2011	4,574	87.8	10.5	1.7	$26.1	$2.7	$0.8
2012	4,026	85.6	12.0	2.4	$22.5	$2.6	$0.8
2013	4,328	84.7	13.3	2.0	$25.1	$4.2	$0.8
2014	4,791	87.6	10.5	1.9	$33.5	$3.7	$0.9
2015	4,134	85.9	12.0	2.1	$29.9	$3.5	$0.6

Source: ADF&G 2018d

Over the last decade, processors, the BBEDC, and the Bristol Bay Regional Seafood Development Association have focused a number of efforts to increase raw product quality in the fishery. Processors consistently identify chilling fish at the point of harvest as the most important action that permit holders can take to increase product quality and they have offered bonuses to permit holders that chill their fish. Between 2008 and 2017, these bonuses have added between 12 percent and 28 percent to the base price paid to permit holders depending on the year. Permit holders responded to these incentives by increasing the portion of Bristol Bay salmon that is chilled immediately at harvest from 24 percent in 2008, to 73 percent in 2018 (Figure 3.6-11) (NEI 2018).

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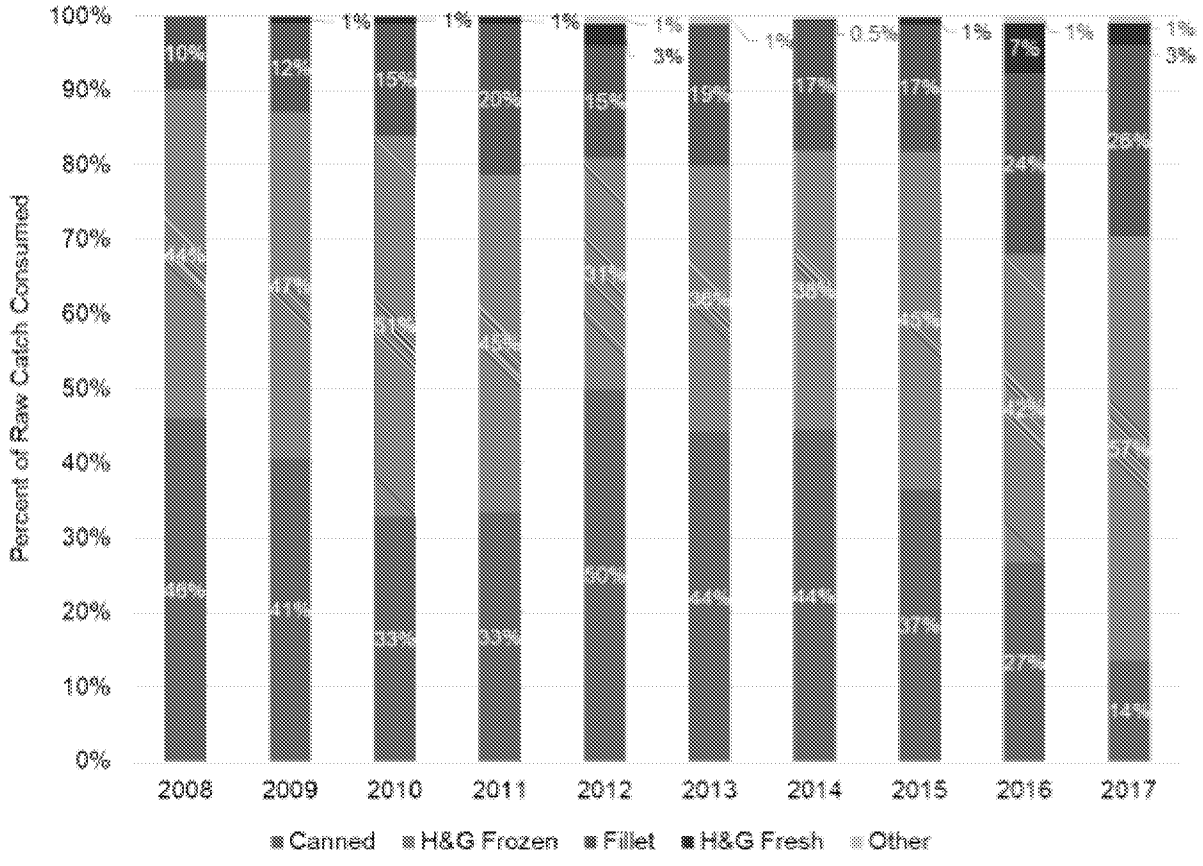
Figure 3.6-11: Raw Product Forms Processed in Bristol Bay, 2008-2017



Source: NEI 2018

3.6.1.3 Commercial Fishery Fiscal Contributions

The fiscal contributions of the Bristol Bay salmon fishery depend on the long-term health of the fishery. The harvest and processing of salmon in the Bristol Bay region provides millions in tax revenues to federal, state, and local governments. The federal government benefits through personal and corporate income taxes, and the State of Alaska benefits from Alaska Fisheries Business Tax (AFBT) (Alaska Statute 43.75.015), while local governments benefit from general taxes such as sales taxes, real and personal property taxes, and raw fish taxes on the ex-vessel value of salmon processed within the jurisdiction (EPA 2014a). Each municipality generates revenues in different ways: the Bristol Bay Borough, home to many processing plants, relies on real/personal property taxes and raw fish taxes; the city of Dillingham does not contain as many processing plants within the city limits, but it is home to lay-down and repair yards for boats, and a major provisioning center for fishing crews and so relies on sales taxes and property taxes; the LPB lacks a centralized population area that could provide it with sales and property tax revenues, but instead relies on raw fish taxes (see Table 3.6-12). Overall, these taxes depend on the long-term value of the fishery, the attractiveness of the fishery to investors who build business around the fishery, and total employment in the fishery including processing workers.

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Table 3.6-12: Community Revenue Sources, 2017

Community	Sales Tax	Real Property Tax	Raw Fish Tax	Professional Guide Tax
Bristol Bay Borough	No	$4,918,466	$2,117,857	No
City of Dillingham	$2,528,395	$2,256,826	No	No
Lake and Peninsula Borough	No	No	$1,638,335	Yes
Egegik	No	No	$1,230,569	No
Nondalton	$0	No	No	No
Newhalen	$272	No	No	No

Source: ADCCED 2018

The State of Alaska shares revenues generated from the AFBT with local municipalities. As noted in EPA (2014a), the State does not break out AFBT revenue by species or fishery. However, in 2010 when the ex-vessel value of the fishery topped $180 million in nominal terms, the Institute for Social and Economic Research estimated that the processors paid a minimum of $6.38 million in AFBT taxes (EPA 2014a). In 2016 and 2017, the ex-vessel of the fishery was $156 and $216 million respectively (see Table 3.6-13). Thus, one could expect that AFBT payment was slightly less than 2010 in 2016, and slightly more than 2010 in 2017.

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Table 3.6-13: Estimates of Historic Fishing Related Revenues 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Simple lower-bound estimate of fisheries business tax obligations											
Ex-vessel value of Bristol Bay salmon harvests ($ 000)	$84,014	$40,359	$31,898	$46,684	$76,461	$94,556	$108,570	$115,763	$116,717	$144,200	$180,818
Canned Share (assumed tax rate = 5.0%)	37%	32%	49%	39%	34%	32%	34%	35%	28%	25%	27%
Non-canned share (assumed tax rate = 3%)	63%	68%	51%	61%	66%	68%	66%	65%	72%	75%	73%
Lower-bound estimate of fishers tax obligation ($ 000)	$3,145	$1,467	$1,270	$1,760	$2,818	$3,439	$3,998	$4,287	$4,163	$5,061	$6,383
State of Alaska Share Business Tax Payments to Bristol Bay Boroughs and Cities ($ 000)											
Bristol Bay Borough	$1,440	$918	$494	N/A	$451	$835	$1,178	$1,296	$1,564	$1,543	$1,797
Lake and Peninsula Borough	$357	$246	$162	N/A	$113	$71	$99	$134	$138	$152	$215
Dillingham	$203	$176	$49	N/A	$100	$154	$148	$184	$176	$187	$239
Egegik	$30	$176	$78	N/A	$36	$29	$29	$74	$63	$63	485
Total	$2,029	$1,517	$784	N/A	$700	$1,089	$1,454	$1,687	$1,941	$1,944	$2,335

Source: ADR 2018, EPA 2014a

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3.6.2 Cook Inlet Commercial Fisheries

The proposed project alternatives include a natural gas pipeline extending from north of Anchor Point on the Kenai Peninsula across Cook Inlet to Amakdedori port or Ursus Cove. This route crosses a complex set of fishing boundary areas including the southern edge of the Upper Cook Inlet (UCI) Management Area, the Lower Cook Inlet (LCI) Management Area, and federally managed waters more than 3 miles offshore. The Upper Cook Inlet Management Area, which includes fisheries dependent on salmon headed to the Kasilof, Kenai, Susitna, Little Susitna, and Matanuska/Knik drainages, is home to extensive oil and gas pipeline infrastructure, which has operated since the 1960s.

The UCI Management Area is one of the Alaska's most complex salmon management areas as management has to balance runs escape goals for multiple river systems, competing user groups including commercial set net permit holders, commercial drift net permit holders, fresh and saltwater recreational anglers and guides, and personal use fisheries. Between 2007 and 2016, commercial fisheries harvested an average of 3.48 million fish per year generating, on average, $29.8 million in ex-vessel value. The 10-year average harvests for the fishery are 2.9 million sockeye salmon, 245,000 Pink salmon, 167,000 coho salmon, 149,000 chum salmon, and 9,477 Chinook salmon (Shields and Frothingham, 2018). The project's proposed pipeline would originate from just north of Anchor Point, with the highest potential to affect drift net commercial fisheries and saltwater recreational anglers. While the UCI Management Area primarily encompasses salmon fisheries, the ADF&G also manages small commercial herring, smelt, and razor clam fisheries within the area boundaries.

The proposed project's pipeline would pass through ADF&G drift gillnet statistical areas 244-63 and 244-70 before passing into the LCI Management Area (see Figure 3.6-12). The proposed pipeline would be located south of any set net fisheries contained in ADF&G statistical area 244-21 (encompassing the unnamed white area located east of Area 244-61 in Figure 3.6-12). Unfortunately, it is not possible to determine the amount of drift fleet harvest in areas 244-63 and 244-70. The ADF&G does not collect harvest data or attempt to estimate harvest in these specific areas. Instead, harvest from areas 244-60, 245-80, 245-90, 244-70, and 244-63 are reported in aggregate as "Area 244-60" or "Area 1/District Wide." In 2016, the drift net fleet harvest 728,037 of the 1,266,696 sockeye from this aggregate area; an amount equal to 57.5 percent of all UCI Management Area drift sockeye harvests. In the same year, the aggregate areas produced 70 percent of the coho salmon harvest and nearly two-thirds of the pink salmon harvest (Shields and Frothingham, 2018). In spite of the uncertainty around the magnitude of the overlap between drift net fleet harvest activities and the project's proposed natural gas pipeline, the potential for conflict is low because of the depth of the pipeline on the sea floor and the specifications of drift gillnet gear (ADF&G 2017c).

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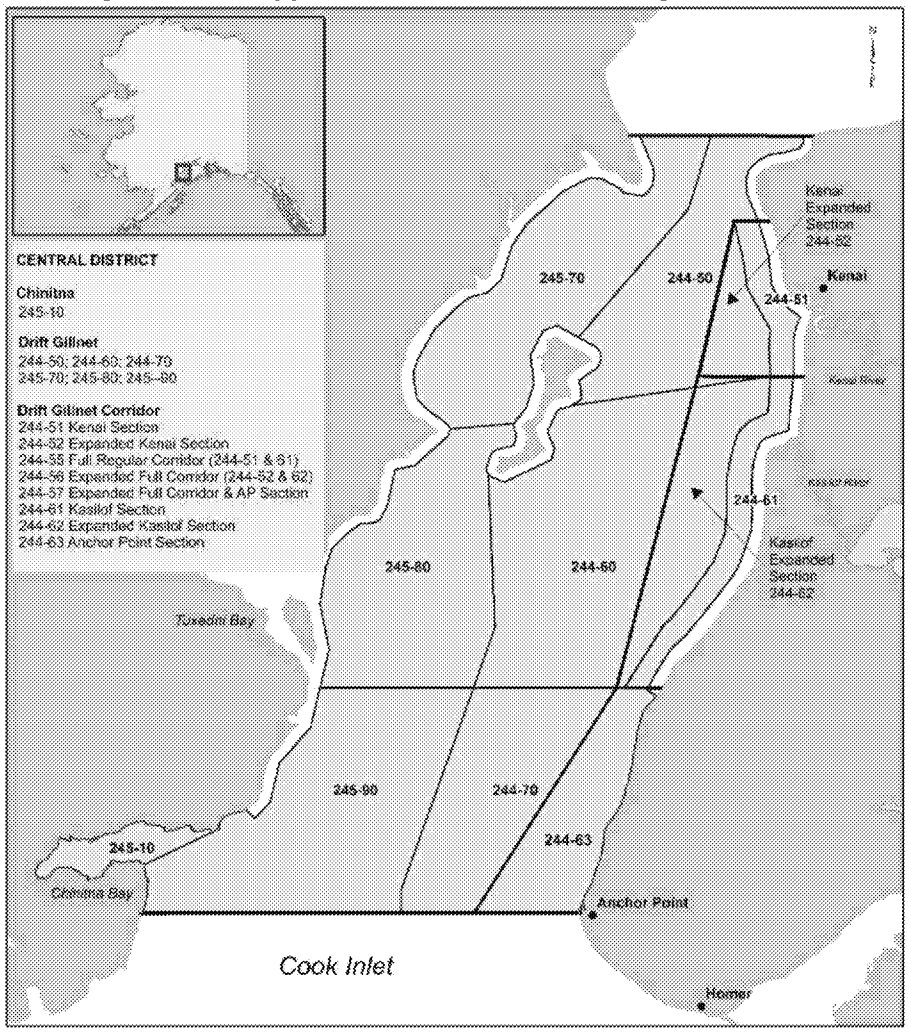
Figure 3.6-12. Upper Cook Inlet Drift Net Management Areas



Source: Shields and Frothingham, 2018

The harvest in the LCI Management Area focuses primarily on pink salmon and sockeye salmon from a combination of hatchery and wild sources, and is much smaller than UCI salmon harvests. Harvests in this area are much smaller than those in the UCI Management Area averaging $2.95 million per year in ex-vessel value between purse seine, set gillnet, and hatchery recovery operations. On average, 35 to 40 permit holders participate in salmon fisheries in these areas per year (Hollowell, Otis, and Ford 2017). The ADF&G also manages a commercial herring fishery in the LCI Management Area, but since 2000 the spawning biomass has been too small to allow the opening of this fishery.

The proposed pipeline would cross waters within the 3 nautical miles of shore managed by the State for groundfish fisheries for Pacific Cod, Sablefish, Rockfish, and Walleye pollock. These species are generally harvested by baited longlines or pots laid across the ocean floor, but can also be harvested using mechanical jigs or hand troll gear. ADF&G data indicate that Pacific cod is commercially the most important species of this group with Cook Inlet district harvests averaging between 1.7 and 3.0 million pounds annually; ex-vessel values average less than $2 million per year. Much of this harvest takes places inside Kachemak Bay, south and east of the proposed pipeline. Limited fishing occurs near the pipeline's western terminus (Rumble, Russ, and Russ 2016).

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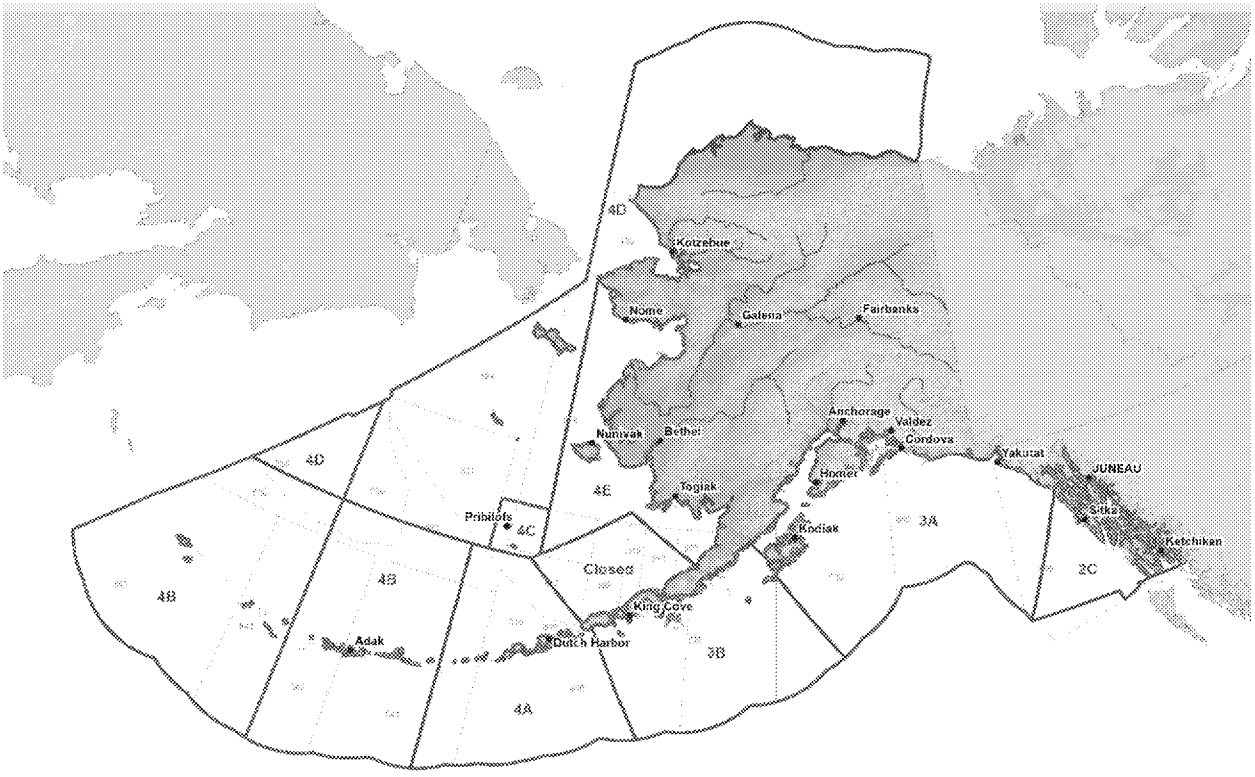
The proposed pipeline would cross federally managed waters in Cook Inlet beyond 3 nautical miles from shoreline. Commercial fisheries in these areas include fisheries for Pacific Halibut, Pacific Cod, and other groundfish (Figure 3.6-13). The halibut fishery is co-managed with the State of Alaska and the federal government and operates under limits established by the International Pacific Halibut Commission. The fishery for halibut uses longlines consisting of bait hooks laid on the ocean floor, while the cod fishery primarily uses longlines and pots. Federal management areas are much larger than state management areas; thus, fishermen have greater flexibility to avoid fixed assets such as buried pipelines and undersea cables. For example, halibut fishermen holding halibut quota for International Pacific Halibut Commission Area 3A, which includes Cook Inlet, can fish anywhere in the 3A managed area.

Figure 3.6-13. Federal Halibut Fishery Management Areas



Source: NOAA, 2018d

3.6.3 Guided and Unguided Recreational Fishing

The project area hosts numerous freshwater fishing resources that anglers use primarily to target Chinook salmon, sockeye salmon, rainbow trout, and other salmonid species. They value the area's low angler density, catch rates, and wilderness fishing conditions (EPA 2014a). In turn, these well-known fisheries resources support sport fishing lodges, fishing guides and related services such as air taxis, and generate revenue for the state of Alaska and local municipal governments.

The ADF&G measures recreational fishing effort via the annual Statewide Harvest Survey (SWHS). The SWHS measures effort and catch (i.e., harvest plus catch and release) across a set of geographic statistical areas via a mail survey distributed to a sample of individuals who purchased an Alaska fishing license in the year being surveyed. Each year, the ADF&G mails 47,000 SWHSs to anglers who bought licenses; it divides anglers into four sample frames: Alaskans, non-Alaskan US citizens, Canadian residents, and all other anglers. In 2016,

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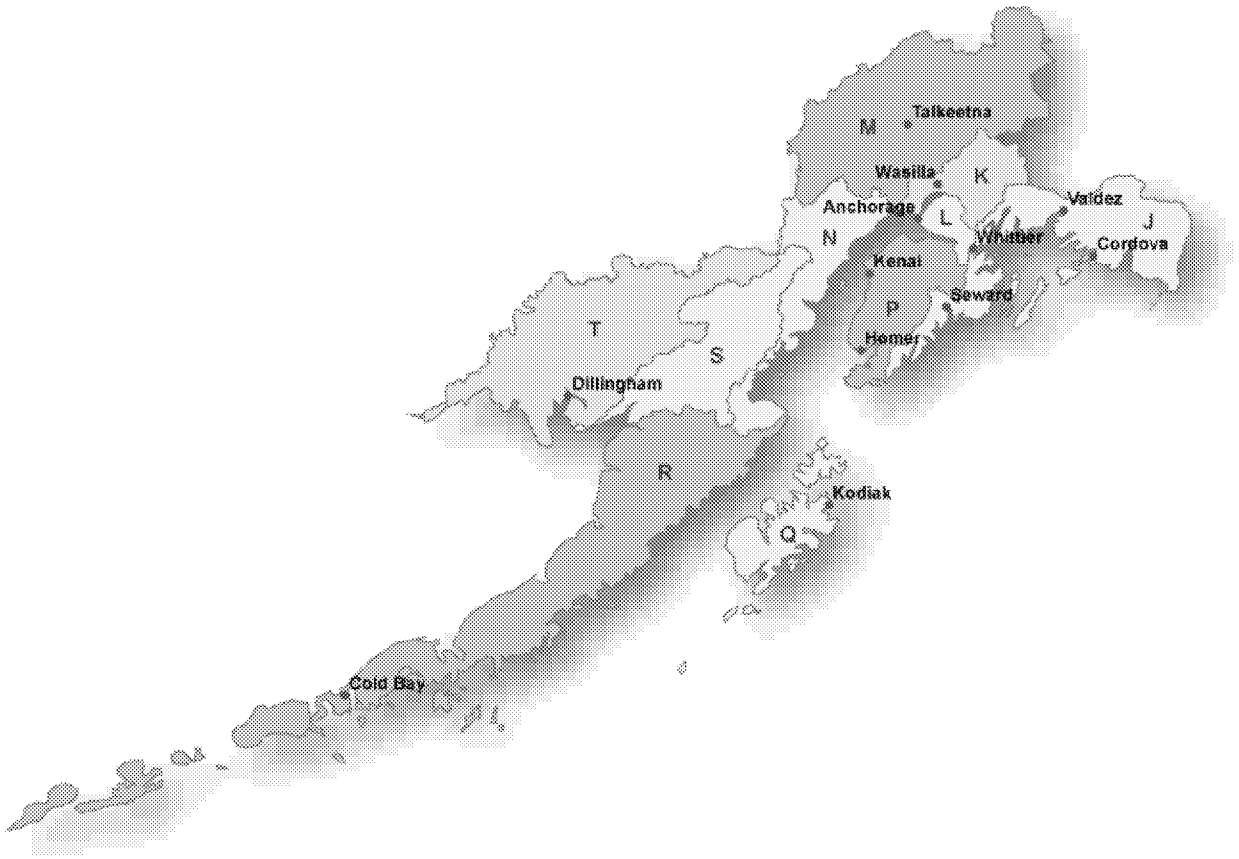
response rates across the frames varied between 26 percent and 50 percent; each year the ADF&G expects approximately 17,000 responses (ADF&G 2017m).

Figure 3.6-14: Map of ADF&G Recreational Fishing Areas



Source: ADF&G 2018d

The ADF&G SWHS statistical areas S, T, and N contain the waterbodies hydrologically connected to the project area; Area S contains the Kvichak River drainage while Area T contains the Nushagak, Wood, and Togiak river drainages (see Figure 3.6-14). In 2016, the ADF&G estimated that anglers fished just over 27,000 days in Area S, nearly 28,000 days in Area T, and 11,600 days in Area N; the vast majority of these days were freshwater fishing days. In comparison, the ADF&G estimates that anglers spent 497,000 days fishing the freshwaters of the Kenai Peninsula and 52,000 days in the Anchorage Bowl[5].

Each year, the ADF&G publishes estimates of angler counts, fishing days, and harvest for those waterbodies that they have received enough completed surveys; this is in order to generate results of a certain statistical reliability. The SWHS combines all waterbodies for which there are not enough responses into an "other" category. Thus, busier waterbodies generate enough angler survey responses for ADF&G to create effort estimates every year, while some less busy

[5] Area P includes the eastern terminus of the proposed natural gas pipeline, where the pipeline would connect with the existing natural gas supply system on the Kenai Peninsula. The primary facility would be a new compressor station north of Anchor Point and the Anchor River, which hosted an estimated 12,699 angler days in 2016. The facility would not be expected to affect angling in the area; thus, Area P is not discussed in further detail in this section.

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waterbodies may only generate enough results a couple of times in a 10-year period. The absence of an estimate in a particular year for one of these waterbodies does not indicate the absence of effort in that year, but rather a lack of angler survey responses. Therefore, for these waterbodies it is particularly important to look at effort across time get a truer sense.

In Area T, between 1997 and 2016, angler responses allowed the SWHS to estimate angling effort for eight distinct waterbodies, drainages, or systems. The survey identified the Nushagak River (excluding the Mulchatna drainage), the Wood River System, and the Togiak River System as the most frequently fished systems. These three systems accounted for 84 percent of estimated angling effort between 1997 and 2016, and each system received enough angler survey responses for the ADF&G to estimate effort on an annual basis. The Mulchatna River is the only system in Area S known to be hydrologically connected to the project area; the river accounted for 6.4 percent of estimated angling effort in the 20 years between 1997 and 2016. However, average annual angling effort on the Mulchatna River was 45 percent lower for the 2007 to 2016 period than it was during the 1997 to 2006 period (see Table 3.6-14).

Table 3.6-14: Area T Waterbodies, Average Annual Angling Days and SWHS Appearances

Waterbody	1997-2006		2007-2016	
	Average Annual Days	Years as a Specified Waterbody	Average Annual Days	Years as a Specified Waterbody
Nushagak River	16,990	10	14,958	10
Wood River System	10,992	10	8,416	10
Togiak River System	4,601	10	4,984	10
Tikchik-Nuyakuk Lake System	2,053	10	1,950	6
Mulchatna River Drainage*	2,999	10	1,672	10
Nuyakuk River Drainage		0	1,327	6
Other Waterbodies	1,798	10	1,065	10
Kulukak River		0	758	1
Chilikadrotna River	1,031	2		0
Freshwater Total	**39,638**	**10**	**33,137**	**10**

Source: ADF&G 2018d

*This estimate includes any activity on the Koktuli River. Data from the ADF&G from 2007-2016 indicate that on average 2.3 anglers per year return harvest surveys indicating they fish the Koktuli; a number below the threshold for estimating effort on a specific waterbody (Borden 2018). In comparison, Lower Talarik Creek responses ranged from 2 responses to 17 responses and averaged 9.5 responses per year in same period. The department only estimated effort for Lower Talarik Creek when the number of responses in a single year reached the mid-teens at a minimum. Responses indicating effort on the Koktuli are typically a fraction of the ADF&G's minimum for estimating and publishing specific waterbody effort.

Angler responses allowed the ADF&G to estimate angling effort for twice as many waterbodies in Area T as compared to Area S in the 1997 to 2016 period. However, Area S averages roughly one-quarter fewer angling days on average than Area T. The most popular waterbodies in Area S are the Alagnak/Branch River, the Kvichak River, the Copper River (tributary of Iliamna Lake), and the Lake Clark and Iliamna Lake drainages. Waterbodies that have been included in the SWHS annual report, which have the potential to be directly affected by the project, including transportation activity, are the Newhalen River, Lower Talarik Creek, the Kvichak River, the Gibraltar River, and Iliamna Lake (see Table 3.6-15).

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Table 3.6-15: Area S Waterbodies, Average Annual Angling Days and SWHS Appearances

Waterbody	1997-2006		2007-2016	
	Average Annual Days	Years as a Specified Waterbody	Average Annual Days	Years as a Specified Waterbody
Alagnak (Branch) River drainage	9,394	10	6,320	10
Kvichak River	7,813	10	5,167	10
Copper River (tributary of Iliamna Lake)	2,118	7	2,396	10
Lake Clark drainage	2,133	10	2,371	10
Other Waterbodies	2,133	10	2,371	10
Iliamna Lake and tributaries	1,931	7	2,187	10
Newhalen River drainage	2,972	7	1,862	7
Kulik River	1,073	7	1,652	10
Moraine Creek	1,063	6	1,616	10
Iliamna River		0	990	6
Kukaklek River		0	724	6
Gibraltar River drainage		0	655	7
Funnel Creek		0	515	4
Lower Talarik Creek	576	6	441	3
Battle River		0	436	5
Tazimina River	589	1		0
Gibraltar Lake	630	1		0
Freshwater Total	**29,036**	**10**	**26,239**	**10**

Source: ADF&G 2018d

In Area N, the SWHS estimated an average of 15,102 fishing days between 1997 and 2006, and 13,113 days between 2007 and 2016. Angler effort is concentrated north of the project area for all the named sites, with the exception of the Kamishak River located north of Tuxedni Bay. The Kamishak River, which appears once as a named site in 20 years' worth of data, is located south of the project area near the McNeil River State Game Sanctuary and roughly 25 to 30 air miles from the potential Amakdedori port site (see Table 3.6-16).

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Table 3.6-16: Area N Waterbodies, Average Annual Angling Days and SWHS Appearances

Waterbody	1997-2006		2007-2016	
	Average Annual Days	Years as a Specified Waterbody	Average Annual Days	Years as a Specified Waterbody
Wolverine Creek mouth	3,783	3	2,393	10
Other Freshwater	2,693	10	2,249	10
Chuitna River	2,634	10	1,412	6
Kustatan River	2,557	7	0	0
Big River Lakes	1,615	8	2,168	10
Silver Salmon Creek	1,087	10	856	8
Theodore River	850	9	765	3
Crescent Lake		0	692	1
Kamishak River		0	276	1
Freshwater Total	**15,102**	**10**	**13,113**	**10**

Source: ADF&G 2018d

In addition to the SWHS, the ADF&G collects data on guided saltwater and freshwater fishing trips via the Alaska Guide Logbook Program. Under the program, Alaska guides record data on each day they spend guiding including data and location of the trip(s), the license numbers of guided anglers, harvest, and catch. While SWHS data is superior in its breadth, including both guided and unguided angler effort, logbook data is a census of guided trips as opposed to estimates based on a survey. Appendix K3.6 summarizes 2011 to 2014 program data for SWHS areas N, P, S, and T. Table 3.6-17 shows the summarized data for "high interest" waterbodies, which would either be directly affected by the proposed project, have potential for cumulative or downstream effects, or have been mentioned in public scoping. The data provide interesting insights into guided effort in the area including:

- The vast majority (i.e., 95+ percent) of all guided Nushagak/Mulchatna effort is on the Nushagak River.
- The Copper River, which is located on the eastern shores of Iliamna Lake south of alternative leading to Diamond Point port, and north of the alternative leading to Amakdedori port, hosts an average of nearly 1,500 guided fishing days per year.
- The Gibraltar River, which would be crossed by the alternative leading to Amakdedori port, hosts an average of fewer than 300 guided fishing days per year.
- The Newhalen River, which would be crossed by the spur road to Iliamna or north route alternatives, hosts fewer than 200 guided days per year and only appeared in 3 years' worth of data out of a maximum of 4 years.
- Upper and Lower Talarik Creek host fewer than 200 guided angling days per year, combined. On average, Lower Talarik Creek is the more popular of the two waterbodies, hosting 75 percent of combined effort.
- The Koktuli River does not appear in the program data for these years.

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Table 3.6-17: Comparative Estimates of Sport Fishing Effort, Days

Waterbody	Average of 2011-2014 Data			
	Appear-ances in Data (Max=4)	Business Operating	Trips	Days
Area N				
No High Interest Waterbodies				
Area P				
Anchor River	4	7	52	115
Area S				
Copper River (Iliamna Lake Area)	4	11	613	1,466
Kvichak River	4	19	548	1,288
Iliamna River	4	7	185	430
Gibraltar River	4	9	123	289
Iliamna Lake	4	8	76	223
Newhalen River	3	9	58	174
Lower Talarik Creek	4	8	55	148
Upper Talarik Creek	3	5	16	48
Chekok Creek	2	7	19	46
Area T				
Nushagak River - Sonar Site to Outlet of Mulchatna	4	28	1,153	3,577
Nushagak River - Black Point upstream to Sonar Site	4	21	847	2,513
Mulchatna River	4	6	135	342

Sources: Sigurdsson and Powers 2012; Sigurdsson and Powers 2013; Sigurdsson and Powers 2014; Powers and Sigurdsson, 2016.

3.6.3.1 Estimates of Economic Contribution

Sport fishing is a consistently significant economic activity in the Bristol Bay Region (EPA 2014a). Anglers spend significant sums of money on transportation, lodging and meals, equipment, and guide services, amongst other expenditure categories. These expenditures help fuel local economies and generate local tax revenues for the City of Dillingham, the LPB, and the Bristol Bay Borough (which includes the community of King Salmon). Although annual estimates of sport fishing's economic contribution are not available, EPA (2014a) and Duffield et al. (2007) provide estimates of annualized value based on 2005 sport fishing effort. The Duffield et al. (2007) estimates indicate that in 2005, per trip expenditures ranged from $426 for watershed residents to $7,933 for those staying at remote lodges. Watershed resident anglers

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averaged 11.54 trips per year, while ex-watershed Alaska residents and non-residents average 1.3 and 1.49 trips per year[6] (see Table 3.6-18).

Table 3.6-18: Inflation-Adjusted Estimates of per Trip Expenditures

Category	Watershed Residents	Alaska Ex-Watershed	Non-Residents	Remote Lodges
Estimated per Trip Expenditures	$426	$1,806	$4,560	$7,933
Average Trips per Year	11.54	1.30	1.49	N/A

Source: EPA 2014a. Expenditures adjusted using Anchorage CPI.

The inflation-adjusted collective expenditures in Duffield et al. (2007) associated with recreational fishing in the Bristol Bay region equal $5.5 million by watershed residents, $6.9 million by Alaska residents living outside the region, and $54.1 million by non-residents, for a total of $66.58 million (see Table 3.6-19). The inflation-adjusted estimate of statewide expenditures from Duffield et al. (2007) is $69.32 million; thus, most angler expenditures occur in-region.

Table 3.6-19: Inflation-Adjusted Estimates of In-Region Expenditures

Category	Watershed Residents	Alaska Ex-Watershed	Non-Residents	Total
Estimated Bristol Bay Expenditures	$5,564,568	$6,910,211	$54,108,115	$66,582,894

Source: EPA 2014a. Expenditures adjusted using Anchorage CPI

In 2005, the year the Duffield et al. (2007) expenditure estimates are based on, the ADF&G SWHS estimated that anglers spent 75,083 days angling in SWHS areas S and T. In 2016, the same survey estimated that anglers spent 54,882 angling days in the region; a decline of 27 percent. For the 5-year periods of 2001 to 2005 and 2012 to 2016, effort was down 15 percent from the earlier period to the later period, as shown in Table 3.6-20. Presuming that angler expenditures have stayed the same adjusted for inflation, the decline in effort would result in a reduction in regional expenditures. A 27 percent adjustment applied to the Duffield et al. (2007) estimate of $66.58 million results in an estimate of $56.54 million in regional expenditures for 2016, presuming that the distribution of angler expenditures has remained constant.

Table 3.6-20: Comparative Estimates of Sport Fishing Effort, Days

SWHS Area	Annual Counts		Five-Year Averages	
	2005	2016	2001-2005	2012-2016
Nushagak	48,751	27,786	41,670	32,807
Kvichak	26,332	27,096	26,460	25,043
Total	75,083	54,882	68,130	57,851

Source: ADF&G 2018d

[6] Duffield et al. (2007) and EPA (2014a) defined a trip as "a roundtrip visit from home and return." Given the region's remoteness, this definition means that most trips involve multiple days of activity. Remote fishing lodge packages typically range from 3 to 7 days.

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3.6.3.2 Local Recreational Fishery Fiscal Contribution

Anglers can contribute to the fiscal resources of local governments through taxes such as sales (City of Dillingham) and lodging (LPB, City of Dillingham, Bristol Bay Borough). The LPB also raises revenue through a direct tax on guide services where guides pay $3 per angler day to the borough.

In fiscal year 2018, the LPB generated $56,282 from 147 guides licensed to work in the borough, and $177,566 from 64 lodges in the borough. These amounts are equal to roughly 6.8 percent of all LPB tax revenue, and 4.6 percent of the all fiscal year 2018 revenue (LPB 2018b).

Table 3.6-21: Lake and Peninsula Borough Recreational Fishing Revenues

Fiscal Year	Annual Revenues	
	Guide Tax	Bed Tax
2015	39,716	262,831
2016	46,030	180,069
2017	30,948	108,895
2018	56,282	177,566

Source: LPB 2018b

The Bristol Bay Borough, which does not have a guide tax, does have transient occupancy (i.e., bed) tax revenues and real property tax revenues associated with lodges. It is very likely that these revenues are a small subset of the borough's $4.9 million in annual property tax revenues given that fish processing facilities likely make up the bulk of the borough's tax base.

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3.9 SUBSISTENCE

Subsistence is the way of life for many cultural groups in Alaska, including the Dena'ina Athabascan of Southcentral Alaska, the Central Yup'ik of Southwest Alaska, and the Sugpiaq-Alutiiq of lower Cook Inlet and Alaska Peninsula. Subsistence encompasses hunting, fishing, trapping, gathering, camping, and ceremonial activities, as well as the processing, sharing, use, consumption, trade, and barter of wild resources. Subsistence resources include fish, wildlife, plants, and firewood. These renewable resources provide food, fuel, and materials to make clothing, shelter, tools, and art.

For indigenous people, subsistence activities are rooted in traditional cultural values, spirituality, and a sense of community. Subsistence activities help transmit cultural knowledge between generations, maintain the connection of people to their land and environment, and are a source of pride and identity (Boraas and Knott 2013; SRB&A 2011b). In addition to its inextricable roots in traditional Alaska Native culture, subsistence is integral to the contemporary mixed economic system in rural Alaska. For many, subsistence is a chosen lifestyle, preferred over or in conjunction with a wage-earning lifestyle. Wage employment opportunities are scarce in rural Alaska, and residents face high prices for store-bought goods; some may have to travel to other communities to visit a store. Cash incomes typically supplement and support subsistence activities, which for generations have provided considerable nutritional and economic value for rural households. Part-time work or commercial fishing can provide enough income to purchase tools for support of subsistence activities: boats, all-terrain vehicles and gear; as well as providing fuel for home and engines. For additional information on cash incomes and socioeconomic conditions, see Section 3.3, Needs and Welfare of the People—Socioeconomics.

The sharing of resources is a fundamental characteristic of the subsistence way of life. Sharing of subsistence foods within and between communities reinforces social bonds and helps the recipients meet economic, material, and nutritional needs. The percentage of households giving and receiving subsistence resources is provided below for the six communities closest to project infrastructure (Iliamna, Newhalen, Pedro Bay, Nondalton, Iguigig, and Kokhanok), and for other communities in the project area in Appendix K3.9. Sharing is an indicator of resilience of the culture to variations in household abilities to harvest and process wild foods (SRB&A 2011b).

A further indication of the importance of sharing practices in integrating communities is seen in the fact that some households are especially highly productive in their subsistence pursuits and provide a particularly large proportion of all subsistence harvest in a community. Studies conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence have documented a pattern in Alaska Native communities whereby 30 percent of a community's households produce 70 percent of the community's total subsistence harvest in terms of edible weight (known as the 30-70 rule) (Wolfe et al. 2005). This pattern is consistent, despite wide variation in community and household harvest profiles. The households that produce at a high level tend to be those with several older adult members who have access to cash and necessary equipment; these households are typically successful in both the subsistence and cash sectors of the mixed economy. The extra subsistence foods produced by high-harvesting households are usually shared with elders, single mothers with young children, young couples, and other segments of the community (ADF&G no date). Resources are shared widely through kinship and friendship relationships, among households in the community, and in other communities in Alaska. The 30-70 rule also illustrates the specialization in production of wild foods in the subsistence sector; particular individuals or individual households may benefit from technological ability, financial resources, or traditional knowledge. For example, although nearly all households participate in the harvest of salmon in the study area communities, there are a

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smaller number of individuals who have the equipment, expertise, and time necessary to harvest certain resources, such as moose. Therefore, a relatively small group of hunters meet the community need for moose meat through long-established sharing patterns.

Subsistence activities in Alaska are regulated by both the federal and state governments. The Alaska National Interest Lands Conservation Act (ANILCA) passed by Congress in 1980, gives *rural* Alaskans priority for subsistence harvest of fish and wildlife on federal public lands and waters. The multi-agency Federal Subsistence Board is the decision-making body that regulates subsistence hunting and fishing on federal lands and waters, with technical support from the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management. There would be no project components proposed on federal lands where the subsistence management provisions of ANILCA would apply (see Section 3.2, Land Ownership, Management, and Use).

On state and private lands and waters, including those affected by the proposed project, since the 1989 Alaska Supreme Court *McDowell* decision, *all* Alaskans are qualified to harvest subsistence resources. With technical support of ADF&G, the Alaska Board of Fisheries and the Board of Game have ultimate decision-making responsibility for hunting and fishing on lands within the state jurisdiction.

Harvest of certain species is also regulated by additional laws such as the Marine Mammal Protection Act and the Migratory Bird Treaty Act, and therefore these species are managed by different federal agencies. Pacific halibut and most marine mammals are managed by the National Marine Fisheries Service. Sea otter and walrus are managed by the USFWS. Migratory birds are jointly managed by the state and federal governments and a co-management body representing eligible Alaska Native tribes.

3.9.1 Traditional Ecological Knowledge

The detailed results of a study done by Steven R. Braund & Associates, in coordination with the ADF&G, are documented in SRB&A (2011b). Methods included mapping subsistence use areas, updating harvest data, and a literature review. The study also documented traditional knowledge on "changes in resource use, abundance, quality, distribution, and migration," as well as other factors like climate change and development projects (SRB&A 2011b). The data (tables, charts, and maps) used to determine the environmental baseline for this section reflect the findings of this study, and a subsequent data review of the six communities closest to the proposed project infrastructure, performed by SRB&A in 2018. Traditional Ecological Knowledge (TEK) and the culture value of subsistence as a chosen lifestyle, as described by Boraas and Knott (2013) were also reviewed during development of this section. Boraas and Knott concluded, based on elder and culture-bearer interviews, that this lifestyle has built strong networks of connected extended families in the Nushagak and Kvichak drainages based on sharing, traditional knowledge, and a respect for the environment, with salmon and clean water as the foundation of culture. A summary of specific TEK comments from Boraas and Knott (2013) is provided in Appendix K3.1. In this way, TEK regarding areas of subsistence use and harvest data, processing and sharing, and how information is transmitted over generations are incorporated into the analysis of Section 4.9, Subsistence. Scoping comments related to TEK were also considered in the analysis of impacts in Section 4.9, and are summarized in Appendix K3.1.

3.9.2 Seasonal Round

Subsistence users harvest a wide variety of resources throughout the year, and they often target specific species during certain seasons of the year, following a cyclical harvest pattern called the *seasonal round*. In general, communities in southwest Alaska share a similar

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seasonal round, with some variations depending on the area, available resources, and applicable hunting regulations. For example, coastal, lakeside, and riverside communities each rely on a somewhat different mixture of subsistence resources. Non-salmon fish and freshwater seals are harvested throughout the year, and many subsistence users prefer to harvest freshwater seals in the winter. In the spring, migratory birds, gull and waterfowl eggs, and Chinook salmon are harvested. Sockeye salmon are targeted in the spring or summer, depending on the run timing in different areas. Other salmon species, marine invertebrates, and green plants are harvested in summer. In late summer and into fall, spawning sockeye salmon and berries are harvested. During fall, subsistence users harvest migratory birds and upland game birds. In Dillingham, however, upland game birds are harvested year-round. Moose and caribou hunting typically occur in fall and/or winter, although hunters in Iliamna and Newhalen harvest caribou in spring. The coldest part of winter is the best time to harvest small, furbearing mammals (Fall et al. 2006; Krieg et al. 2009; Holen et al. 2011, 2012; Evans et al. 2013). The general gathering cycle of when harvests occur in the six communities closest to proposed project infrastructure is described in Table 3.9-1.

Table 3.9-1 Generalized Seasonal Round of Subsistence Activities, Project Area Communities

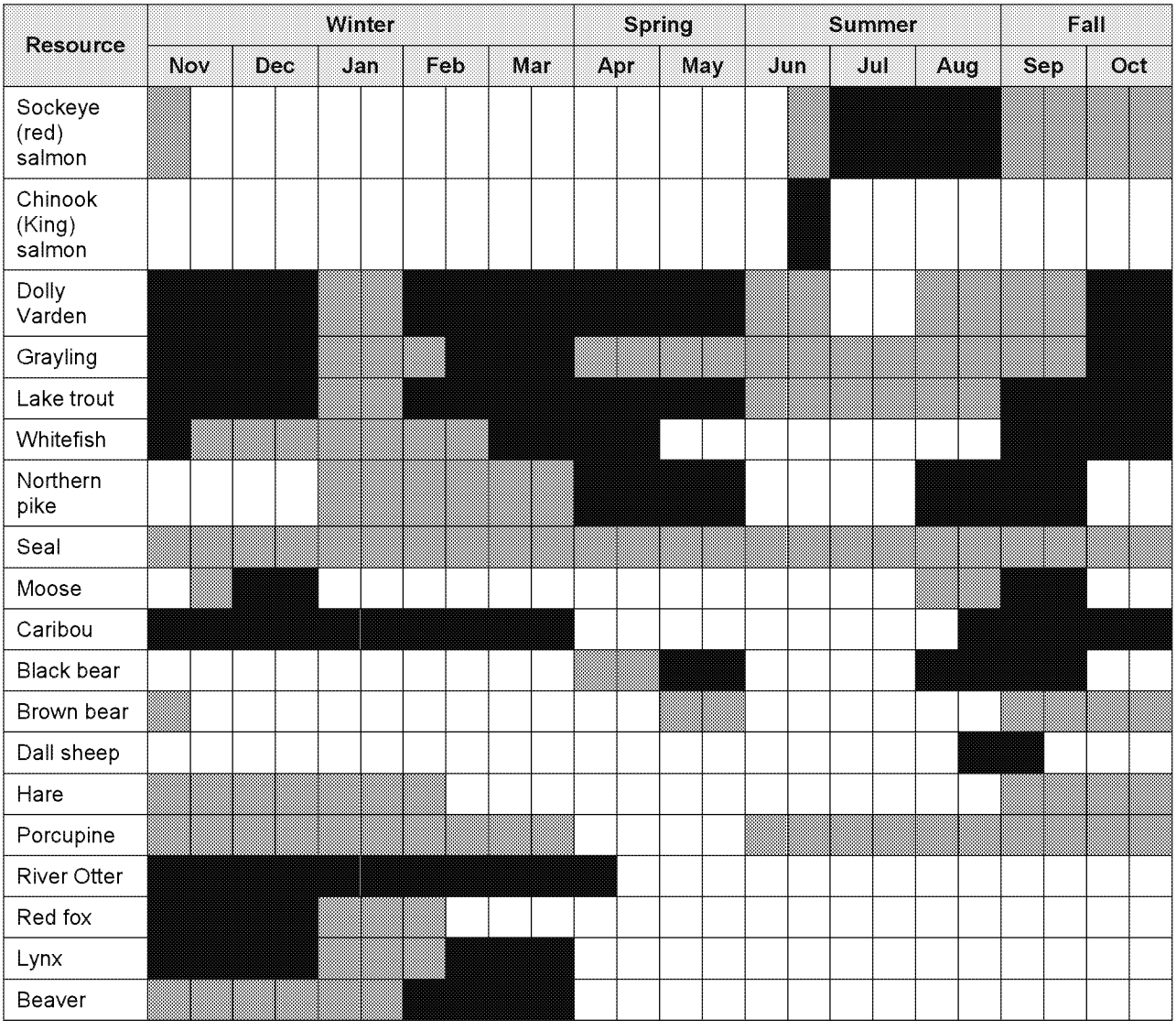

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Table 3.9-1 Generalized Seasonal Round of Subsistence Activities, Project Area Communities

Resource	Winter					Spring		Summer			Fall	
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Ptarmigan												
Spruce Grouse												
Ducks/ Geese												
Bird Eggs												
Clams												
Berries												
Other plants												

Notes: grey = occasional harvest; black = usual harvest.

Seasonal harvest is generalized for these communities, and patterns may differ slightly from community to community.

Source: SRB&A 2011b

Residents of Cook Inlet communities (i.e., Ninilchik and Seldovia) harvest many of the same resources at the same times of year as southwest Alaska communities, with some variations. In spring, green plants, mushrooms, and kelp are harvested. In summer, subsistence users gather berries, greens, marine invertebrates, and seaweed. The moose-hunting season occurs in late summer to early fall. During fall and winter, the residents hunt for upland game birds. Winter is the typical time for gathering firewood (Jones and Kostick 2016).

Subsistence hunters have observed that habitat change in southwest Alaska is affecting the Mulchatna caribou herd harvest in the Illiamna Lake and Bristol Bay areas (Van Lanen 2018). Many respondents said that the herd has moved away from these areas, and caribou hunting often requires traveling too far to make harvest worthwhile; moose are closer and more easily accessible. Hunters have adapted to changes in species availability by switching to greater reliance on increasing numbers of moose, rather than the more difficult-to-access caribou. Moose harvest data have verified local knowledge observations that habitat change, which is benefiting moose, is occurring. It was reported that since the late 1990s, the moose harvests by local residents have increased significantly in the southern portion of game management units (GMUs) 9B, 9C, and 17; and during the current decade, in the western portion of GMU 18. Increasing range expansion of moose in Alaska's tundra areas has been linked to warming, and has increased the shrub habitat (willows) that moose prefer (Tape et al. 2016). Changing winter conditions and more recent low snow and ice conditions are creating challenges in terms of access via snowmachine travel for winter caribou and moose hunting, and efforts focus on the fall season instead of the winter season.

3.9.3 Subsistence Harvest Patterns by Community

Routine operations would primarily affect the subsistence areas of six Iliamna Lake communities near the mine site, transportation corridor, and port site locations. There would be small effects on resources in the watershed as a whole; impacts would be localized to the vicinity of the project area. This section summarizes the most recent available comprehensive subsistence harvest surveys for the six communities. A summary of the subsistence harvest surveys for

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other communities in the project area and nearby watersheds is provided in Appendix K3.9. The results are organized geographically from those communities closest to the proposed project around Iliamna Lake, followed by more distant communities down the Kvichak River drainage, across to the Nushagak River drainage, and includes a pair of Cook Inlet communities. Study years range from 2004 to 2014, depending on the community. Communities for which there were older data or no data were not included. For most of the communities, the data available through ADF&G technical papers were reviewed and incorporated into this analysis, instead of the ADF&G Community Subsistence Information System, where data were not as recent.

In this region, salmon is the most important subsistence food and ranges up to 82 percent of the subsistence diet, with land mammals (moose and caribou) and non-salmon fish (northern pike, Dolly Varden/char, white fish, and trout) comprising the second and third most important type of subsistence resource (Boraas and Knott 2013). Within the region, the majority of subsistence harvested food is shared, which in turn accounts for high numbers of per capita harvest, because the people harvest and gather large volumes of wild food and subsistence resources, which forms the basis of the culture (Boraas and Knott 2013).

Table 3.9-2 shows subsistence harvest amounts for eight resource groups for each community. The six Iliamna Lake communities show a particularly high level of reliance on salmon. Annual per capita harvests of salmon ranged from 205 pounds in Igiugig to 513 pounds in Kokhanok. Port Alsworth was the exception, with a reported annual per capita salmon harvest of 89 pounds. In another indicator of high reliance, salmon represent 79 percent of total subsistence harvest for Iliamna and 73 percent for Newhalen, as examples. Additional information is shown on species diversity and proportions of total harvest in subsequent community accounts.

These communities show smaller harvest amounts for non-salmon fish; although, it is important to note that these fish are often taken throughout the year, providing a fresh food resource during winter months. Harvest levels of large land mammals, such as moose and caribou, are also smaller, although they too play an important role in subsistence food diversity.

Other communities in the study area beyond Iliamna Lake show varying levels of harvest for salmon, with particularly high per capita harvest levels reported for Koliganek (565 pounds) and Clark's Point (637 pounds), and low levels of per capita salmon harvest reported for the Cook Inlet communities of Ninilchik (43 pounds) and Seldovia (48 pounds).

Another important dimension of subsistence harvest patterns is found in the rates of household hunting, harvesting receiving, and giving resources. Data on these patterns are described below in the community accounts for the communities located closest to the proposed project infrastructure.

Subsistence use areas represent another important dimension of subsistence activities. Communities have traditional use areas that represent a sophisticated cumulative body of knowledge about where animals are likely to be available and in prime condition throughout the seasons of the year. Use areas for some species are relatively constant, such as salmon fishing areas; while use areas for other species, such as moose, caribou, and fur-bearers, would vary with changes in abundance and distribution. Cumulative traditional use areas are relatively constant over long periods of time, although not all portions of the long-term use area would be used each year. Instead, harvest patterns are dynamic and strategic, as subsistence users concentrate their efforts in areas likely to be productive, with current abundance and distribution of resources. Traditional places names identify significant locations in a traditional use area, and further indicate the long-term use patterns. Figure 3.9-1 shows the subsistence use areas for all communities. Subsistence use areas for the six communities closest to the project are shown below with relevant communities.

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Tables 3.9-3 to 3.9-8 generally show higher levels of harvest, which is an average over all study years (SRB&A 2018), compared to the 2004 and 2005 single-year studies and information in SRB&A 2011b. This may be because earlier studies used less precise methods to evaluate the data; and in comparison to the 1980s and 1990s, the use patterns after 2000 represent a reduction in subsistence effort and success. After 2000, the economics of village communities in Alaska generally become more difficult, with declining state spending and project hires, while energy costs increased considerably.

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Table 3.9-2: Estimated Per Capita Subsistence Harvests in Edible Weight (lbs.) by Community

Community	Year	All Resources	Salmon	Non-Salmon Fish	Large Land Mammals	Small Land Mammals	Marine Mammals	Birds and Eggs	Marine Invertebrates	Plants and Fungi
Iliamna	2004	469.4	370.1	34.1	32.1	0.6	6.5	4.4	1.6	20.0
Newhalen	2004	691.5	502.2	31.8	101.3	3.1	4.4	16.2	2.5	30.0
Pedro Bay	2004	305.5	250.3	15.3	30.0	0.0	0.0	2.9	0.0	6.9
Port Alsworth	2004	132.8	89.0	12.0	23.4	1.3	0.0	1.6	1.1	4.4
Nondalton	2004	357.7	219.4	33.9	74.4	7.4	0.0	3.8	0.4	18.4
Igiugig	2005	542.0	205.2	59.4	202.9	4.9	29.2	11.8	0.0	28.5
Kokhanok	2005	679.6	512.8	36.3	94.4	1.5	1.7	7.8	0.5	24.6
Koliganek	2005	898.5	564.7	90.4	177.9	8.3	0.0	9.1	0.0	48.1
Levelock	2005	526.7	151.8	39.9	251.9	5.5	37.7	14.7	2.9	22.3
New Stuyahok	2005	389.2	188.3	28.0	138.8	4.6	0.0	6.2	0.2	23.0
King Salmon	2007	313.0	255.7	5.3	34.5	2.1	0.4	6.7	3.9	4.3
Naknek	2007	264.2	177.4	18.1	32.0	0.6	12.9	3.4	4.6	15.1
South Naknek	2007	267.5	200.8	8.1	7.1	0.6	21.1	1.2	3.6	25.0
Aleknagik	2008	296.0	143.4	25.6	63.5	2.6	9.5	12.6	0.3	38.5
Clark's Point	2008	1210.1	637.2	33.8	209.1	15.4	127.1	53.0	2.3	132.1
Manokotak	2008	298.4	135.0	43.7	44.5	3.1	14.7	17.3	4.7	35.4
Dillingham	2010	212.1	130.6	7.3	49.4	2.2	4.4	5.7	1.1	11.4
Ninilchik	1998	163.8	42.5	38.3	65.6	0.5	0.0	1.43	11.0	1.0
Seldovia	2014	138.3	47.5	36.0	17.2	<0.1	1.1	0.9	5.5	30.0

Note: Small mammals harvested but not typically eaten are excluded from edible weight estimates. The marine mammals category includes saltwater and freshwater seals.

Sources: Fall et al. 2006; Krieg et al. 2009; Holen et al. 2011, 2012; Evans et al. 2013; Jones and Kostick 2016

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Figure 3.9-1 Subsistence Use Areas

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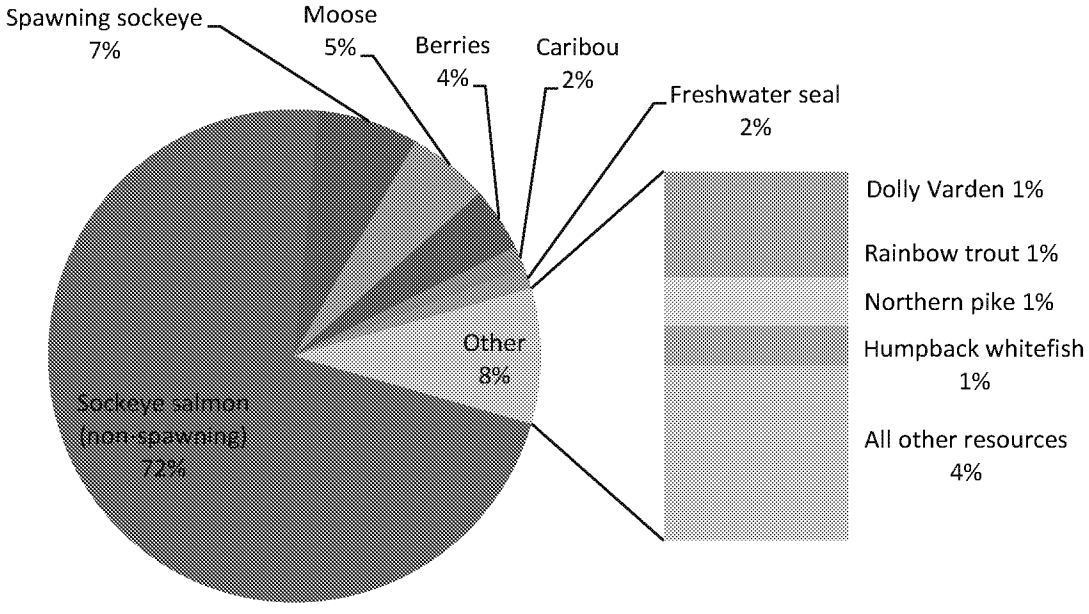
3.9.3.1 Iliamna

Iliamna was established at its present location on the northern shore of Iliamna Lake when the Dena'ina Athabascan community of Old Iliamna moved from the mouth of Iliamna River in 1935. Today, this majority Alaska Native community is a cultural mosaic of Dena'ina, Yupik, Alutiiq, and Euro-American people. In 2004, Iliamna had an estimated year-round population of 73 people in 22 households. Subsistence pursuits by Iliamna residents are highly productive, resulting in an estimated total of 34,160 pounds of wild foods (469 pounds per capita), according to a 2004 survey (Fall et al. 2006). Salmon dominate the subsistence production of Iliamna residents, as seen in Table 3.9-2, which displays per capita harvests by resource category. The top ten resources harvested by Iliamna residents in 2004 in terms of edible weight are shown in Figure 3.9-2.

Iliamna households show very high levels of participation in subsistence activities and uses. Salmon was the most widely used resource category (100 percent of households) followed by non-salmon fish (92 percent), plants and fungi (85 percent), large land mammals (77 percent), birds and eggs (69 percent), and marine invertebrates (46 percent). Sharing and distribution of subsistence foods extend widely across households.

In 2004, 77 percent of Iliamna households received wild resources, and 54 percent of households gave resources away (Fall et al. 2006).

Figure 3.9-2: Composition of Iliamna Subsistence Harvest by Estimated Edible Weight, 2004



Source: Fall et al. 2006

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

Table 3.9-3 describes the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies as described by SRB&A (2018) for Iliamna. Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, large land mammals.

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Table 3.9-3: Iliamna Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	100	97	97	73	86		58,495	1,980	481	100.0
Salmon	100	87	87	46	35	10,474	38,763	1,314	379	63.1
Non-Salmon Fish	86	70	69	35	49	2,982	4,102	144	42	8.4
Large Land Mammals	85	54	39	48	58	51	10,632	385	110	21.3
Small Land Mammals	35	32	29	15	19	91	433	14	4	0.6
Marine Mammals	38	22	14	20	20	8	1,235	42	13	2.2
Migratory Birds	43	24	24	22	14	144	212	11	2	0.3
Upland Game Birds	49	45	45	25	9	532	366	18	4	0.5
Bird Eggs	54	29	29	16	17	565	155	8	2	0.3
Marine Invertebrates	47	22	22	14	23	50	157	12	2	0.3
Vegetation	88	84	84	27	19	1,426	1,789	61	18	3.4

Notes: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Source: SRB&A 2018.

Trends in Iliamna subsistence harvest over time indicate that recent overall harvests and uses in 2004 were the same as the recent past, with some notable variations among uses of specific resources. Households reported changes in the uses of individual resources, with 46 percent reporting that their use of salmon and edible plants had increased, while the percentage of harvest of large land mammals had declined. Survey respondents noted competition, weather, animal population changes, and personal reasons as explanations for changes in their use of these resources (Fall et al. 2006; SRB&A 2011b). Iliamna residents expressed concern that non-local hunters were overharvesting caribou from the Mulchatna caribou herd. They also observed that lichen had become too thin to support the formerly large herd near the Mulchatna River, and it may be a decade before they can return to this area (Fall et al. 2006).

Figure 3.9-3 illustrates the total use area for subsistence activities (all resources) for Iliamna. The primary areas used are north and west of Iliamna Lake, extending around Lake Clark to the Koktuli and Stuyahok rivers, and over the flats to the Kvichak River. High-use areas show in the Chulitna River and on the islands in Iliamna Lake. Hunting and harvesting occurs along the Nushagak, Mulchatna, and Kvichak rivers. Iliamna residents travel along the lakeshore and rivers to harvest moose, caribou, waterfowl, and plants and berries. During the winter, inland use occurs for hunting and traping small land mammals and furbearers, along with caribou, moose, and ptarmigan. Egg harvest, berry picking, and plant harvest occurs on the islands in Iliamna Lake. Boats, snowmachines and all-terrain vehicles (ATV) were the most common method of travel; there is a direct route across Iliamna Lake between Iliamna and Kokhanok.

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Figure 3.9-3 Subsistence Use Areas, All Resources – Iliamna

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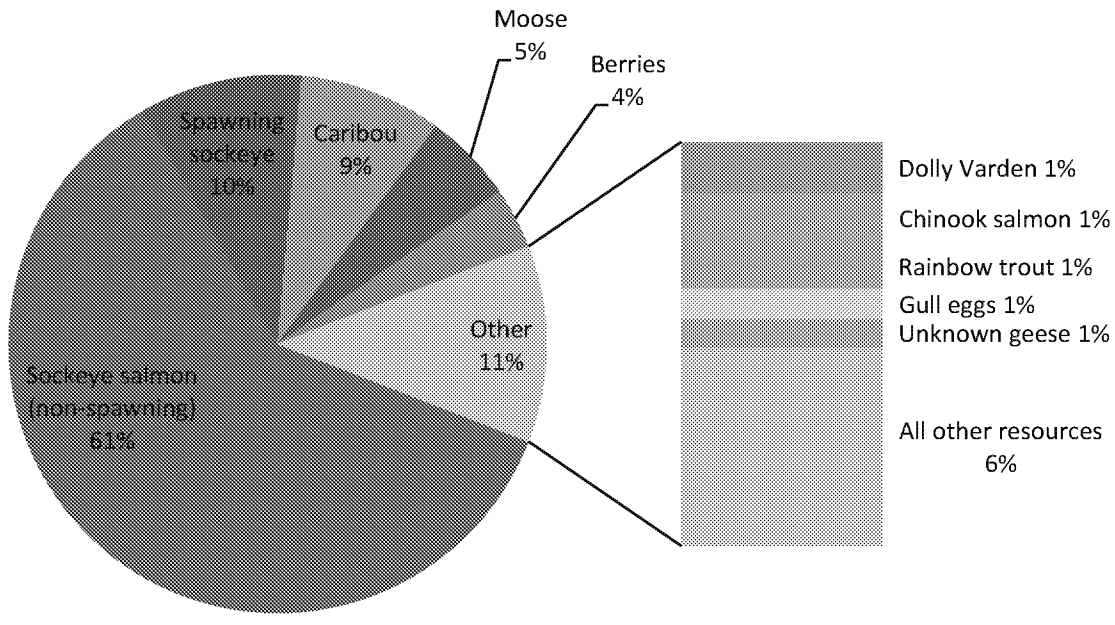
3.9.3.2 Newhalen

The Yup'ik village of Noghelingamiut was listed on the 1890 census in the location of present-day Newhalen at the mouth of Newhalen River on Iliamna Lake. Today, Newhalen is a predominantly Yup'ik community, but is also home to Alutiiq, Dena'ina, and Euro-American people. In 2004, Newhalen had an estimated year-round population of 125 people in 39 households. Newhalen residents were highly productive in subsistence activities, harvesting an estimated total of 86,607 pounds of wild foods (692 pounds per capita) in 2004. Salmon dominated the subsistence harvests, as seen in Table 3.9-2 for per capita harvests by resource category. The top ten resources harvested by Newhalen residents in 2004 in terms of edible weight are shown in Figure 3.9-4.

Household participation in subsistence activities was very high. Salmon was the most widely used resource category (100 percent of households), followed by plants and fungi (92 percent), birds and eggs (92 percent), large land mammals (92 percent), non-salmon fish (88 percent), marine invertebrates (56 percent), and marine mammals (52 percent). Sharing and distribution of subsistence foods extend widely across households. In 2004, 96 percent of Newhalen households received wild resources, and 80 percent of households gave resources away (Fall et al. 2006).

Figure 3.9-4: Composition of Newhalen Subsistence Harvest by Estimated Edible Weight, 2004



Source: Fall et al. 2006

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

Table 3.9-4 describes the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies, as described by SRB&A (2018) for Newhalen. Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, marine mammals.

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Table 3.9-4: Newhalen Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	100	97	94	82	96		100,139	3,389	711	100.0
Salmon	100	78	78	59	22	19,346	71,402	2,457	534	67.9
Non-Salmon Fish	93	77	71	48	55	3,167	3,870	118	27	6.3
Large Land Mammals	95	69	60	64	61	87	16,175	588	111	18.2
Small Land Mammals	59	54	54	29	33	352	1,816	60	12	1.7
Marine Mammals	61	28	22	25	35	14	773	24	5	0.8
Migratory Birds	63	41	40	33	20	505	826	40	6	0.8
Upland Game Birds	53	45	45	33	14	798	548	22	4	0.5
Bird Eggs	84	72	72	49	25	2,393	619	22	4	0.6
Marine Invertebrates	49	22	22	18	13	92	275	15	2	0.3
Vegetation	96	88	88	55	26	2,227	3,128	102	23	3.1

Notes: Blank cells indicate no data. Source: SRB&A 2018

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Trends in Newhalen subsistence harvest over time indicate that overall harvests were similar across all study years. Sockeye salmon, spawning sockeye salmon, and caribou were the top three harvested resources. Harvest and use of wild resources in 2004 was about the same as in the preceding 5 years, but they used less furbearers and large land mammals in recent years. Changes in resource populations have caused lower harvests in 2004, especially for large land mammals. A majority (61 percent of respondents) reported that having more cash and wage-based employment reduced the time to participate in subsistence activities. Newhalen residents expressed similar concerns as Iliamna residents that non-local hunters were overharvesting caribou from the Mulchatna caribou herd. They too observed that lichen has become too thin to support the formerly large herd near the Mulchatna River (Fall et al. 2006).

Figure 3.9-5 illustrates the total use area for subsistence activities (all resources) for Newhalen. Harvest areas extend from Lime Village to Naknek, and from Tikchik Lakes to the eastern edges of Lake Clark and Iliamna Lake, with some use in Cook Inlet. The primary areas of overlapping use are near the Newhalen, Kvichak, Nushagak, and Mulchatna river drainages for hunting of caribou, moose, waterfowl, and other game; and also for fish, berries, and plants in the summer and fall. Overlapping use areas occur inland close to the community, along the northwestern shore of Iliamna Lake, and toward Nondalton and the eastern shoreline. The primary means of travel are by snowmachine, boat, ATV, and truck. Travel routes to access resources were close to the Iliamna Lake shoreline, and there is a direct route across Iliamna between Newhalen and Big Mountain, and a similar direct route from Newhalen to Kokhanok.

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Figure 3.9-5 Subsistence Use Areas, All Resources – Newhalen

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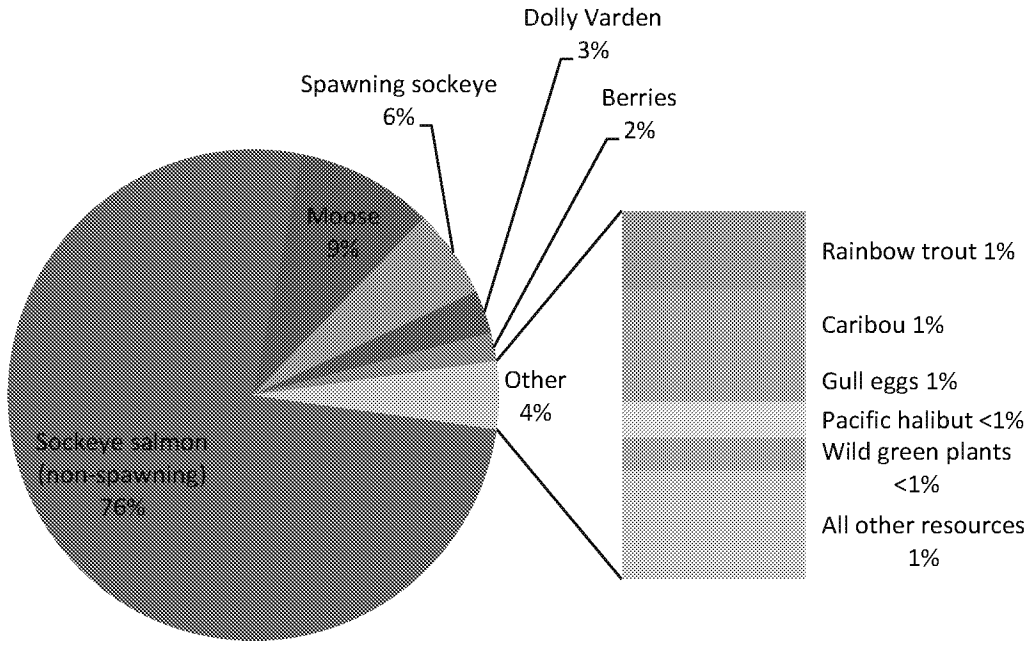
3.9.3.3 Pedro Bay

Pedro Bay is a Dena'ina Athabascan community at the eastern end of Iliamna Lake. In 2004, Pedro Bay had an estimated year-round population of 69 in 21 households. Pedro Bay residents harvested an estimated total of 21,026 pounds of wild food (306 pounds per capita) in 2004. See Table 3.9-2 for per capita harvests by resource category. The top ten resources harvested by Pedro Bay residents in 2004 in terms of edible weight are shown in Figure 3.9-6. Salmon, as well as plants and fungi, was the most widely used resource category (100 percent of households), followed by birds and eggs (94 percent), non-salmon fish (89 percent), and large land mammals (78 percent). Sharing and distribution of subsistence foods was widespread. In 2004, all Pedro Bay households received wild resources and almost all (89 percent) households gave resources away (Fall et al. 2006).

Figure 3.9-6: Composition of Pedro Bay Subsistence Harvest by Estimated Edible Weight, 2004



Source: Fall et al. 2006

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

Table 3.9-5 describes the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies, as described by SRB&A (2018) for Pedro Bay. Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, marine mammals and large land mammals.

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Table 3.9-5: Pedro Bay Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	100	95	95	83	66		33,130	1,619	554	100.0
Salmon	96	85	83	55	49	6,500	26,678	1,301	421	75.6
Non-Salmon Fish	83	68	68	36	46	1,052	1,612	91	29	7.4
Large Land Mammals	85	53	22	30	69	9	2,718	145	43	13.8
Small Land Mammals	16	14	14	3	6	13	99	5	2	0.2
Marine Mammals	3	7	2	3	0	0	19	1	1	<0.1
Migratory Birds	13	21	21	0	0	46	67	4	1	0.1
Upland Game Birds	62	57	51	23	10	98	65	4	1	0.3
Bird Eggs	52	40	40	11	24	217	73	6	1	0.3
Marine Invertebrates	22	10	10	9	14	48	115	6	2	0.3
Vegetation	96	95	95	35	21	401	485	23	8	1.5

Notes: Blank cells indicate no data. Source: SRB&A 2018.

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Trends in Pedro Bay overall subsistence harvest over time indicate that they remained relatively unchanged over the study years. Salmon accounted for the majority of the total harvest, and large land mammals and non-salmon fish contribute to the yearly subsistence harvest. Pedro Bay residents described sociocultural changes that were affecting harvest patterns. People had stopped harvesting smaller land mammals (beaver, snowshoe, and porcupine) as a food source as the community loses elders and there is less demand. Additionally, people were not spending as much time on subsistence activities because wage labor increased, and caused people to spend less time hunting and fishing for subsistence. Residents reported that Dolly Varden in the Iliamna River were being overharvested by the sport fishery, and that motorized boats were disturbing stream habitat. They observed that moose were being adversely affected by increased populations of wolves and bears (Fall et al. 2006).

Figure 3.9-7 illustrates the total use areas for subsistence activities (all resources) for Pedro Bay, and are concentrated on the eastern end of Iliamna Lake. Lower-use areas extended to near Upper and Lower Talarik creeks and along the Chulitna, Mulchatna and Nushagak rivers. Use areas extend toward Iliamna, near Tazimina Lakes, and east to Cook Inlet. The highest numbers of overlapping use areas are close to Pedro Bay, and along the coast to the Iliamna River for moose, other large land mammals, furbearers, small land mammals, waterfowl upland birds, berries, and plants. Flat and Porcupine islands were the prime harvesting locations for moose, seal, waterfowl, berries, and plants. Salmon and trout are taken in overlapping use areas near the community and near Pile Bay. Travel routes to access subsistence areas were reported to extend west along the lake to Dillingham, and east to Pile Bay and to Williamsport.

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Figure 3.9-7 Subsistence Use Areas, All Resources – Pedro Bay

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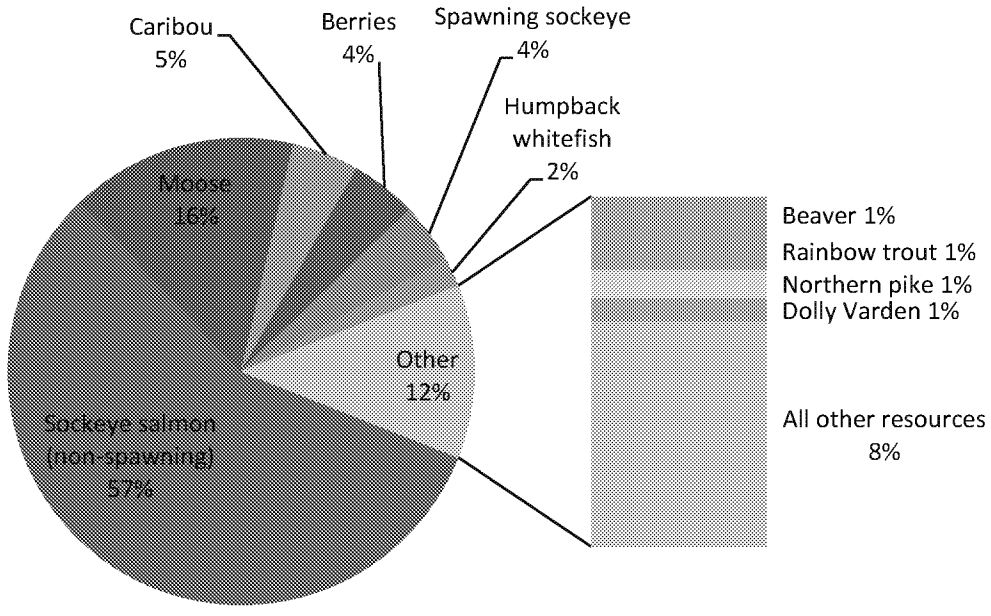
3.9.3.4 Nondalton

Nondalton is a primarily Dena'ina community on Sixmile Lake. In 2004, Nondalton had an estimated year-round population of 164 people in 43 households. Nondalton residents pursued a diverse range of productive subsistence activities, and harvested a total of 58,686 pounds of wild food (358 pounds per capita) in 2004. See Table 3.9-2 for per capita harvests by resource category. The top ten resources harvested by Nondalton residents in 2004 in terms of edible weight are shown in Figure 3.9-8. Plants and fungi was the most widely used resource category (97 percent of households) followed by salmon (92 percent), large land mammals (84 percent), non-salmon fish (82 percent), small land mammals (58 percent), and birds and eggs (50 percent). Sharing and distribution of subsistence foods was widespread. In 2004, 97 percent of Nondalton households received wild resources, and 92 percent of households gave resources away (Fall et al. 2006).

Figure 3.9-8: Composition of Nondalton Subsistence Harvest by Estimated Edible Weight, 2004



Source: Fall et al. 2006

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

Table 3.9-6 shows the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies, as described by SRB&A (2018) for Nondalton. Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, marine mammals.

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Table 3.9-6: Nondalton Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	100	99	99	92	97		166,534	4,152	822	100.0
Salmon	92	91	76	55	41	28,500	114,047	2,862	567	67.8
Non-Salmon Fish	88	82	82	59	48	12,548	12,386	266	55	7.4
Large Land Mammals	92	67	57	51	64	138	34,731	949	191	19.8
Small Land Mammals	67	63	63	45	13	445	4,542	122	24	2.9
Marine Mammals	8	1	0	0	4	0	0	0	0	0.0
Migratory Birds	42	48	48	24	7	341	618	18	3	0.4
Upland Game Birds	45	59	50	26	11	773	502	14	2	0.3
Bird Eggs	13	14	14	5	7	25	25	<1	<1	<0.1
Marine Invertebrates	13	4	4	3	7	13	33	10	<1%	0.1
Vegetation	97	89	89	55	25	3,755	4,816	96	21	3.6

Note: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Source: SRB&A 2018.

Trends in Nondalton subsistence harvest over time indicate that fish were the most commonly used resource, and sockeye salmon were the most shared resource. Large land mammals, mostly moose, were shared with other households, and comprised 75 percent of the total large land mammals harvest in 2004. Participants commented that caribou numbers have declined, affecting subsistence resources, so that locals could not compete with non-local hunters. They also noticed that disturbance from helicopter traffic causes the caribou herd to move farther away, and they were seeing a trend of overharvest by non-locals for caribou and moose (Fall et al. 2006).

Figure 3.9-9 illustrates the total use areas for subsistence activities (all resources) for Nondalton. Use areas for caribou, moose, black bear, and brown bear hunting were from the headwaters of the Mulchatna River and towards the Koktuli River system. Residents traveled south to Iliamna, to the headwaters of Upper Talarik Creek, and to the eastern end of Little Lake Clark (Fall et al, 2006). Fishing for salmon and freshwater fish occurred primarily at the outlet of Sixmile Lake north of the community. Small game and furbearers were trapped near Nondalton, close to the headwaters of Upper Talarik Creek, and in the Chulitna River valley. Waterfowl and upland bird hunting occurred in these same areas. Fishing also occurred in the Newhalen River near Petrof Falls, and on Lake Clark in Chulitna Bay. For berry picking, the area used was around the northern and southern shores of Iliamna Lake, and into the headwaters of the Koktuli River near Groundhog Mountain and Frying Pan Lake. Wild plant harvest occurred in the area immediately around Nondalton and on islands in Iliamna Lake, including Flat Island.

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Figure 3.9-9 Subsistence Use Areas, All Resources – Nondalton

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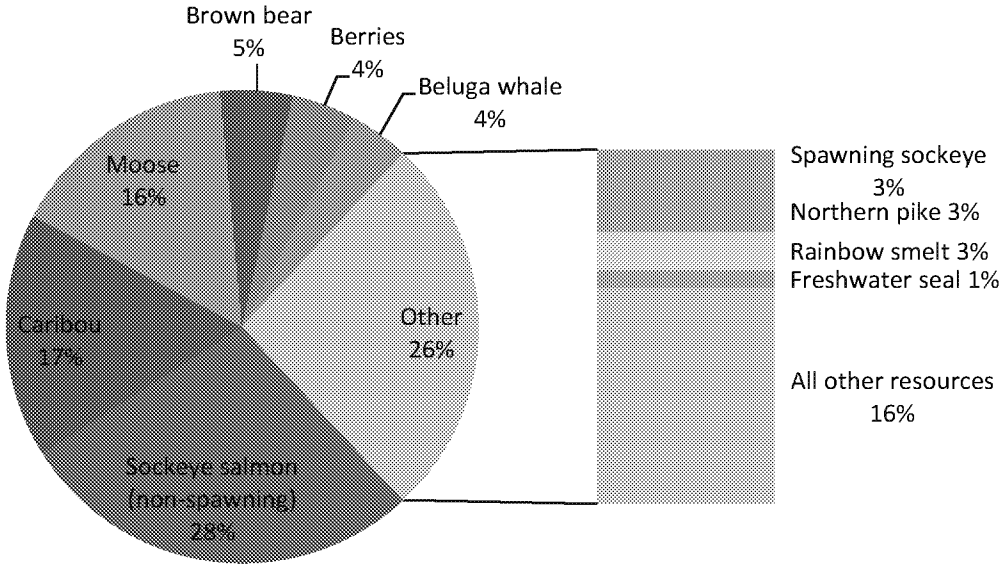
3.9.3.5 Igiugig

Igiugig is on the southeastern side of Iliamna Lake at the mouth of the Kvichak River, and was formerly a portage point for a reindeer station established at Kukaklek Lake in the early 1900s (Deur 2008). It was historically a Yup'ik village, and is now home to primarily Alutiiq, Yup'ik, and Dena'ina people. In 2005, Igiugig had an estimated year-round population of 41 people in 13 households. Residents pursue a wide array of productive subsistence activities. Krieg et al. (2009) surveyed residents about their 2005 subsistence activities, and found that Igiugig households harvested an estimated total of 22,310 pounds of wild foods (542 pounds per capita). Although salmon dominate the subsistence food production of residents, moose and caribou provide a larger portion of total subsistence food when compared to the other Iliamna Lake communities for per capita harvests, as shown in Table 3.9-2. The top ten resources harvested in 2005 in terms of edible weight are shown in Figure 3.9-10. In 2005, all households in Igiugig used salmon, non-salmon fish, plants and fungi, and large land mammals. Other widely used resource categories included birds and eggs (92 percent of households), marine mammals (67 percent), and small land mammals (50 percent). Sharing and distribution of subsistence foods is widespread. All households received and gave away at least one subsistence resource in 2005 (Krieg et al. 2009). In addition to relying heavily on subsistence hunting and fishing, the community relies on commercial fishing for cash income, with some families holding commercial fishing permits, and other working in the canneries (Deur 2008).

Figure 3.9-10: Composition of Igiugig Subsistence Harvest by Estimated Edible Weight, 2005



Source: Krieg et al. 2009

Note: The term "spawning sockeye" refers to late-run sockeye salmon that have a distinctive red color and white meat, and are harvested in the fall.

Table 3.9-7 describes the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies, for Igiugig (SRB&A 2018). Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, marine mammals.

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Table 3.9-7: Igiugig Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	100	100	100	100	100		33,084	2,818	679	100.0
Salmon	100	75	75	67	62	3,925	15,911	1,386	276	44.8
Non-Salmon Fish	96	90	84	68	63	3,471	2,705	224	51	13.1
Large Land Mammals	100	91	87	85	75	36	7,556	631	179	28.4
Small Land Mammals	77	77	71	36	18	185	788	67	15	2.2
Marine Mammals	73	38	33	45	45	7	1,694	126	34	5.3
Migratory Birds	87	72	72	41	21	231	356	30	7	1.1
Upland Game Birds	70	55	55	18	26	146	102	8	2	0.3
Bird Eggs	82	74	71	54	27	549	139	11	3	0.5
Marine Invertebrates	18	0	0	0	12	0	0	0	0	0
Vegetation	100	100	100	87	42	1,175	1,433	121	28	4.5

Notes: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Source: SRB&A 2018.

Trends in Igiugig subsistence harvest over time indicate that overall harvests remained relatively unchanged over the study years. Salmon use decreased, and harvest of large land mammals increased (SRB&A 2011b). Reasons residents cited for changes were personal reasons and change in animal populations. It was noted that personal reasons accounted for 75 percent of households using less salmon, and 50 percent of households using fewer non-salmon fish, birds and eggs, and wild plants. Residents noted that these declines were from a need for fewer resources due to smaller families. All households reported that they were using fewer furbearers due to lower fur prices and higher costs of transportation (fuel). Competition and regulations were not the reasons given for changes in harvest and the uses (Krieg et al. 2009).

Figure 3.9-11 illustrates the total use areas for subsistence activities (all resources) for Iguigig, encompassing a large area that extends around much of Iliamna Lake, and along the entire Kvichak River to Naknek. Travel for subsistence extends into Katmai National Park and Preserve and to the Mulchatna River. The majority of high-use areas for Igiugig are close to the community along the western shore of the lake, and along Kaskanak Creek, Kvichak, and Alagnak river corridors. Medium- to low-use areas for overlapping resources for waterfowl, upland birds, berries, and plants in the summer and fall are in the vicinity of the northern mine access roads and ferry terminals. Travel routes were across the same areas, with lake route crossings occurring close to the shorelines.

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Figure 3.9-11 Subsistence Use Areas, All Resources – Igiugig

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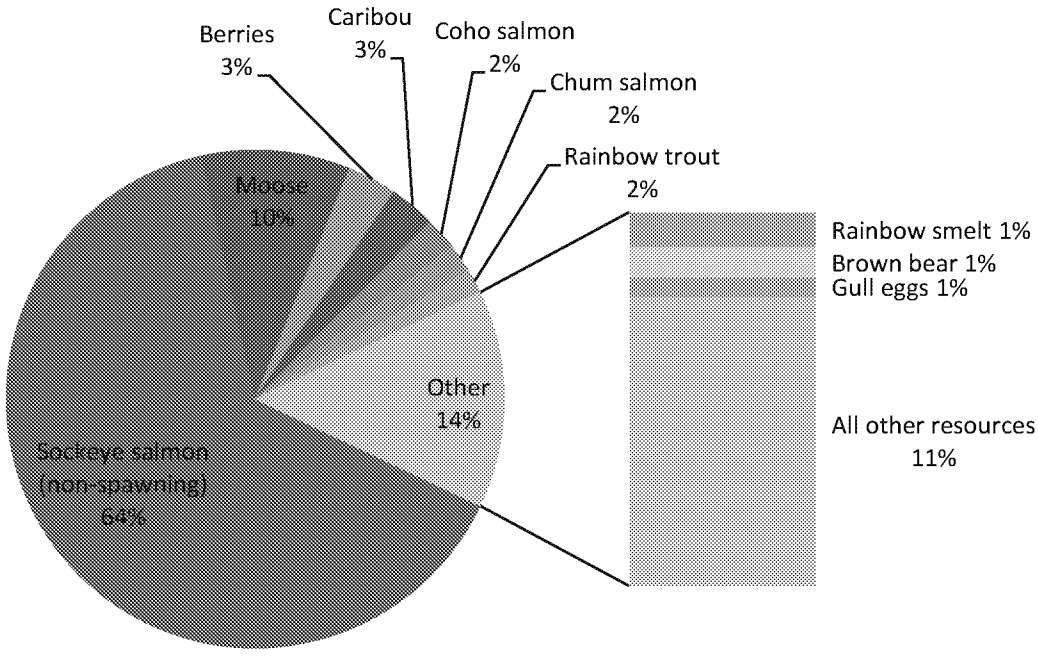
3.9.3.6 Kokhanok

Kokhanok is a predominantly Alaska Native community on the southern shore of Iliamna Lake. The Alaska Native population is a mix of Alutiiq, Yup'ik, and Dena'ina people. Economically, Kokhanok residents are highly dependent on subsistence fishing and hunting, with comparatively little industrial or tourist-based economic development; with subsistence hunting, fishing, and gathering representing a significant source of non-cash income (Deur 2008). In 2005, Kokhanok had an estimated year-round population of 158 people in 42 households. Kokhanok residents pursued a diverse range of productive subsistence activities, and harvested an estimated total of 107,645 pounds of wild foods (680 pounds per capita) in 2005. See Table 3.9-2 for per capita harvests by resource category. The top ten resources harvested by Kokhanok residents in 2005 in terms of edible weight are shown in Figure 3.9-12. Salmon, as well as plants and fungi, was the most widely used resource category (97 percent of households), followed by birds and eggs (91 percent), large land mammals (91 percent), non-salmon fish (74 percent), small land mammals (43 percent), and marine mammals (40 percent). Sharing and distribution of subsistence foods is widespread. In 2005, 94 percent of Kokhanok households received wild resources, and 83 percent of households gave resources away (Krieg et al. 2009).

Figure 3.9-12: Composition of Kokhanok Subsistence Harvest by Estimated Edible Weight, 2005



Source: Krieg et al. 2009

Table 3.9-8 describes the rates of household participation and harvest levels, as well as the average contribution to subsistence by resource category from inventory of subsistence studies, as described by SRB&A (2018) for Kokhanok. Salmon and large land mammals represent the higher volumes in terms of total pounds of the estimated harvest. Most households try for and harvest salmon, but a smaller proportion of households harvest several other species groups; notably, marine mammals.

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Table 3.9-8: Kokhanok Average Contribution to Subsistence by Resource Category, All Study Years

Resource	Percent of Households					Estimated Harvest				Percent of Total Harvest
	Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average Household Pounds	Per Capita Pounds	
All Resources	99	97	96	90	65		127,770	3,590	897	100.0
Salmon	97	87	86	67	55	18,973	77,486	2,102	505	68.0
Non-Salmon Fish	89	83	86	52	49	8,793	10,587	320	65	9.9
Large Land Mammals	93	56	48	56	73	87	22,834	606	138	15.9
Small Land Mammals	65	61	60	38	25	475	2,366	68	14	1.7
Marine Mammals	49	17	12	25	27	6	371	9	2	0.2
Migratory Birds	56	50	45	30	25	399	467	14	3	0.4
Upland Game Birds	69	58	55	45	21	1,296	894	24	5	0.6
Bird Eggs	78	61	60	54	28	2,308	626	16	4	0.5
Marine Invertebrates	20	10	10	13	8	205	216	5	1	0.1
Vegetation	96	88	88	46	28	2,477	3,393	94	21	2.7

Notes: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals, except in some cases, such as vegetation, where they may represent gallons.

[2]Estimated pounds include only edible pounds, and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Source: SRB&A 2018.

Trends in Kokhanok subsistence harvest over time indicate the top three resources consistently harvested over all of the study years were salmon, non-salmon, and large land mammals. Participation in harvest of non-salmon fish and small land mammals and furbearers was noted to have declined across the study years. Birds and egg harvest and vegetation harvest had increases in participation levels, and harvest of salmon has been the same across study years.

Figure 3.9-13 illustrates the total use areas for subsistence activities (all resources) for Kokhanok. The highest-use areas for all resources was the area closest to the community along the Iliamna Lake shoreline towards Big Mountain, near the south ferry terminal, and along the south mine access road. The areas of use for all resources extend as far north as the Chulitna River, and west from Nondalton and Newhalen to the upper Koktuli River, Kaskanak Creek, and the Kvichak and Alagnak rivers. To the south of the community, use areas extend into Katmai National Park and Preserve, and east into Cook Inlet. Overlapping resource use areas are between Dennis Creek to the west near the southern ferry terminal, to the south along the south access mine road near Gibraltar Lake and east to Tommy Point, as well as the islands near Kokhanok and Intricate, Leon, and Kokhanok bays. The lands to the south of Kokhanok are overlapping use areas for caribou, moose, bear, fish, waterfowl, upland birds, berries, and plants. Travel routes occurred close to the Iliamna Lake shoreline and crossing the southern ferry terminal location, with a direct route to Igiugig along the shoreline and a route directly across Iliamna Lake between Iliamna and Kokhanok.

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Figure 3.9-13 Subsistence Use Areas, All Resources – Kokhanok

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3.20 AIR QUALITY

This section describes the current air quality and climate for the Pebble Project area. The project area for air quality and climate analysis encompasses the mine site, Amakdedori port, the transportation corridor, and the natural gas pipeline corridor. The air quality and climate analyses presented are applicable for all alternatives, because they are generally located in the same area.

3.20.1 Regional Air Quality

Air quality is defined by the concentration of criteria pollutants and their interactions in the atmosphere, Hazardous Air Pollutants (HAPs), and the magnitude of haze and acidic deposition generally referred to as Air Quality Related Values (AQRVs). An understanding of current conditions and trends of these air quality metrics also provides a baseline for comparison of potential future impacts. Recent trends in air quality are important to consider when evaluating potential future changes, independent of an individual project.

Project area air quality is assessed through the analysis of values measured by the monitors listed in Table 3.20-1 and from the Alaska Air Monitoring Network. Criteria pollutants were analyzed using data obtained from the Alaska Department of Environmental Conservation (ADEC). Existing visibility conditions were assessed using monitors from the Intergraded Monitoring of Protected Environment (IMPROVE) network. The wet and dry deposition measurements are collected by the National Acid Deposition Program (NADP) and the Clean Air Status and Trends Network (CASTNeT), respectively. With the exception of Denali National Park monitors, all monitors are within 200 miles of the mine site.

Table 3.20-1: Monitor Name and Details Used in the Analysis

Network	Monitor Name	Monitor Period	Monitored Parameters[1]	Monitor Purpose[2]	Approximate Distance from Mine Site
ADEC[3]	Chevron Trading Bay	2008-2009	NO_2, CO	Maximum Impact	130 miles east
	Chevron Swanson River	2008-2009	NO_2, CO	Maximum Impact	160 miles east
	Agrium Nikiski	2013-2014	PM_{10}, $PM_{2.5}$, ozone	Maximum Impact	140 miles east
	Alaska LNG Nikiski	2015	NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, ozone	Background	140 miles east
	Chugach International Station	2011-2012	NO_2, ozone	Maximum Impact	200 miles east-southeast
Alaska Air Monitoring Network[4]	Select Anchorage monitors	2000-2014	$PM_{2.5}$, PM_{10}, ozone, CO	Background	180 miles east
IMPROVE[5]	Tuxedni	2008-2014	Visibility	Background	80 miles southeast
	Denali National Park	2008-2016	Visibility	Background	330 miles northeast
CASTNeT[6]	Denali National Park	1999-2016	Dry Deposition	Background	330 miles northeast

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Table 3.20-1: Monitor Name and Details Used in the Analysis

Network	Monitor Name	Monitor Period	Monitored Parameters[1]	Monitor Purpose[2]	Approximate Distance from Mine Site
NADP[7]	Denali National Park – Mt McKinley	1999-2015	Wet Deposition	Background	330 miles northeast

[1]NO_2 = nitrogen dioxide, CO = carbon dioxide, PM_{10} = PM particulate matter with an aerodynamic diameter less than or equal to 10 microns, $PM_{2.5}$ = PM particulate matter with an aerodynamic diameter less than or equal to 2.5 microns, and SO_2 = sulfur dioxide.

[2]For the purpose of monitors presented, the data are collected either to provide background data or to capture maximum impacts from emission sources near the monitor location.

[3]ADEC 2018c

[4]ADEC 2016a

[5]IMPROVE 2018a, b

[6]US Environmental Protection Agency 2018b

[7]NADP 2018

3.20.1.1 Criteria Pollutants

The relative importance of criteria pollutant concentrations can be determined by comparison with the Alaska Ambient Air Quality Standards (AAAQS) which are equivalent to, or more stringent than, the National Ambient Air Quality Standards (NAAQS). Air pollutant concentrations that are lower than the AAAQS provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. For this project, all pollutants in the region are below the AAAQS. With the exception of locations near airfields, where lead exposure from aircraft exhaust has the potential to occur, regional sources of lead are minimal. The project is far from any airfields where lead expose could occur. Given the extremely low levels of lead emissions from potential project-related air pollutant, ambient lead concentrations and comparisons to the lead AAAQS are not addressed further in this analysis.

The Alaska Air Monitoring Network measures certain criteria pollutants of interest throughout Alaska and can be used to assess the general air quality trends of the region. The nearest of these monitors are in relatively urbanized areas in and around Anchorage and are distant from the project area (ADEC 2016a). Due to the increased anthropogenic activity, measurements at these monitors are expected to be elevated compared to what should be observed in the project area; however, the long-term measurement record available from this network can provide an understanding of regional trends. The Alaska Air Monitoring Network only measures $PM_{2.5}$, PM_{10}, ozone, and carbon monoxide (CO) close enough to the project area to be relevant. For the remaining criteria pollutants, long-term trends are not available for analysis. For $PM_{2.5}$ and PM_{10}, the frequency of AAAQS exceedances has increased since 2000 (ADEC 2016a). ADEC documents that this increase is due to an increase in the frequency of wildfires near the monitors. For the more rural monitors that are more representative of the project area, the measured concentrations have remained relatively constant with average annual $PM_{2.5}$ values near 6.5 micrograms per cubic meter ($\mu g/m^3$), and well below the NAAQS. The measured CO concentrations at the Anchorage monitor have decreased to values consistently below 6 parts per million (ppm) from 2000 to 2014 (ADEC 2016a). An assessment of 4 years of ozone measurements at monitoring sites near Anchorage indicates that hourly ozone concentrations peak in the late spring, and are lowest in winter (ADEC 2016a).

Table 3.20-2 lists existing conditions measured at locations near the project study area; shown for all criteria pollutants except lead. Compared to the Anchorage monitors discussed previously, these monitors are found in more remote areas with fewer anthropogenic sources

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similar to the project study area. None of the monitoring programs documented in this table represent more than 1 year of data; therefore, multi-year averages that are required for the 1-hour nitrogen dioxide (NO_2), 1-hour sulfur dioxide (SO_2), and $PM_{2.5}$ AAAQS cannot be properly calculated. For those pollutants and averaging periods, the values presented in Table 3.20-2 are not directly comparable to the AAAQS, but are still a solid indicator of recent air quality and indicate if values in the vicinity of the project area are near AAAQS thresholds, keeping in mind that a single year of data could represent an anomalous event.

All values listed in Table 3.20-2 are well below the AAAQS. Unlike the measurement locations themselves, the project area is far away from large emissions sources, such as power and gas plants, with relatively sparse population. Therefore, measured concentrations in the project area are expected to be lower.

In most cases, the AAAQS are also protective of the health of plant and animal species because they are equal to or lower than the secondary NAAQS. Secondary NAAQS set limits to protect public welfare, including protection against decreased visibility, endangerment to animals and damage to crops, vegetation, and buildings. However, for some species of lichens, which can be particularly sensitive to SO_2, ADEC (2016b) recommends supplementing these standards with an annual SO_2 threshold of 13 $\mu g/m^3$. Annual SO_2 concentrations at the Alaska Liquefied Natural Gas (LNG) Nikiski monitor are reported as zero (Table 3.20-2), indicating that concentrations are less than 0.0005 ppm (1.4 $\mu g/m^3$) and well below the annual SO_2 threshold of 13 $\mu g/m^3$. Given that the project study area has limit sources of anthropogenic SO_2, it is expected that the SO_2 concentrations within the project study area would be similar to those measured at the LNG Nikiski monitor.

Table 3.20-2:Criteria Pollutant Data Complied by ADEC

Pollutant	Averaging Period	Rank	AAAQS	Monitor Name				
				Chevron Trading Bay	Chevron Swanson River	Agrium Nikiski	Alaska LNG Nikiski	Chugach International Station
NO_2	1-hour	98th Percentile of Daily Max	100 ppb	--	--	--	16.0 ppb	80.7 ppb
	Annual	n/a	53 ppb	3.0 ppb	7.0 ppb	--	1.0 ppb	15 ppb
SO_2	1-hour	99th Percentile of Daily Max	75 ppb	--	--	--	1.6 ppb	--
	3-hour	Second High	0.5 ppm	--	--	--	0 ppm	--
	24-hour	Second High	0.14 ppm	--	--	--	0 ppm	--
	Annual	NA	0.030 ppm	--	--	--	0 ppm	--
PM_{10}	24-hour	Second High	150 $\mu g/m^3$	--	--	58.5 $\mu g/m^3$	30.0 $\mu g/m^3$	--
$PM_{2.5}$	24-hour	98th Percentile	35 $\mu g/m^3$	--	--	8.0 $\mu g/m^3$	12 $\mu g/m^3$	--
	Annual	n/a	12 $\mu g/m^3$	--	--	3.6 $\mu g/m^3$	3.7 $\mu g/m^3$	--

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Table 3.20-2:Criteria Pollutant Data Complied by ADEC

Pollutant	Averaging Period	Rank	AAAQS	Monitor Name				
				Chevron Trading Bay	Chevron Swanson River	Agrium Nikiski	Alaska LNG Nikiski	Chugach International Station
CO	1-hour	Second High	35 ppm	1.5 ppm	1.7 ppm	--	1 ppm	--
	8-hour	Second High	9 ppm	1 ppm	0.9 ppm	--	1 ppm	--
Ozone	8-hour	Fourth High	0.070 ppm	--	--	0.051 ppm	0.047 ppm	0.047 ppm

n/a = not available

3.20.1.2 Hazardous Air Pollutants

HAPs can cause serious health effects or adverse environmental or ecological effects. Concentrations of HAPs are rarely measured and not measured in the region, therefore, there are no data available to assess the current concentrations or trends. HAPs are not generally measured except in the vicinity of large sources, such as factories, refineries, or power plants. The HAPs of major concern are reactive and short-lived in the atmosphere. Therefore, absent of large regional anthropogenic sources, there is no reason to expect measureable concentrations in the project area except for what is biogenic in nature. For the same reasons, there is no reason to expect increasing or decreasing trends over time of HAPs in the project area.

3.20.1.3 Air Quality Related Values

Thresholds for AQRVs have been set to protect resources sensitive to acidic deposition and visibility degradation, which includes vegetation, soils, water, fish wildlife, and recreation. Visibility and deposition are reviewed in more detail below for the purpose of establishing baseline conditions pertinent to vegetation, soils, water, fish and recreation.

Visibility

Visibility impairment only impacts recreation and people and is not a concern for vegetation, soil, water and fish. Regional haze is a visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area. Visibility impairment is caused by particles and gases in the atmosphere that scatter or absorb light. The primary cause of regional haze in many parts of the country is light scattering resulting from fine particles (e.g., $PM_{2.5}$) in the atmosphere. Additionally, coarse particles between 2.5 and 10 microns in diameter can contribute to both light absorption and scattering increasing regional haze. Coarse particles and $PM_{2.5}$ can be naturally occurring or the result of human activity. The natural levels of coarse particles result in some level of visibility impairment in the absence of any human influences and vary with season, daily meteorology, and geography (Malm 1999).

The US Environmental Protection Agency (EPA) and other agencies have been monitoring visibility in national parks and wilderness areas since 1988. Observations have shown that visibility at national parks and wilderness areas throughout the United States was not as good as natural background conditions (i.e., visibility is impaired relative to natural background conditions). The Regional Haze Rule was promulgated by the EPA in 1999 to established Reasonable Progress Goals for improving visibility (EPA 2018c).

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ADEC (2011) has determined that a primary source of visibility degradation for Alaska is short- and long-range transport of dust, and transport of combustion emissions from anthropogenic sources located in Asia and Northern Europe. The long-range transport of dust across the Pacific Ocean typically influences visibility in Alaska in spring and summer, while anthropogenic emissions from Northern Europe and Russia reach Alaska during the winter and early spring. Additionally, particulate and gaseous emissions from wildfires influence visibility throughout Alaska. Wildfire season typically starts once snow melt occurs in late spring and ends early fall (ADEC 2011).

Visibility impacts are expressed in deciviews (dv), which is a measure for describing perceived changes in visibility. Deciview values are calculated from either measured or estimated light extinction values in units of inverse megameters (Mm^{-1}); the smaller the dv value, the more pristine the atmosphere. For Tuxedni (approximately 50 miles east-northeast of the mine site), the estimated annual average natural visibility condition for the haziest days is 11.3 dv and for the clearest days is 3.1 dv measured. The natural visibility condition represents the long-term degree of visibility that is estimated to exist in a Federal Class I area in the absence of human-caused impairment and gives a sense for the magnitude of the deciview metric.

Visibility in the project area was inferred using the two closest visibility monitoring stations operated by the IMPROVE program as listed in Table 3.20-1. Visibility (in dv) for the 20 percent best days (i.e., clearest), 20 percent worst days (i.e., haziest), and natural conditions are shown in Table 3.20-3 for these two IMPROVE stations over the period from 2011 to 2016, noting that the Tuxedni monitor does not have data after 2014.

Data in Table 3.20-3 indicate that for either Tuxedni or Denali National Park, the haziest days generally have visibility values between 7 and 13 dv, while the clearest typically have visibility values less than 5 dv. When comparing the current visibility at either monitor to the estimated natural background conditions, both the haziest and clearest days are higher than natural background conditions. Overall, at the Tuxedni monitor, which is most representative of the project area, the annual average haze index is closer to the natural conditions on both the haziest and clearest days than the Denali National Park monitor; whereas the measured visibility at Denali National Park is worse compared to the natural condition for the both the haziest and clearest days. Most importantly, regardless of the location, visibility has been steadily trending toward natural conditions.

Table 3.20-3: Visibility Values by Year

Monitor Name	Type	Annual Average Haze Index (deciview)						
		2011	2012	2013	2014	2015	2016	Natural Condition
Tuxedni	Haziest Days	12.3	11.6	12.4	13.2	-	-	11.3
	Clearest Days	4.3	3.9	3.6	3.8	-	-	3.1
Denali National Park	Haziest Days	9.1	8.7	9.6	8.6	12	7.3	7.3
	Clearest Days	2.7	2.7	2.2	2.3	2.2	1.9	1.8

Source: IMPROVE 2018a, b

Deposition

Deposition can be from both wet and dry processes. Wet deposition refers to acidic rain, fog, and snow; whereas dry deposition refers to acidic gases and particles the wind blows onto buildings, cars, homes, and trees. The effects of atmospheric deposition of nitrogen and sulfur compounds on terrestrial and aquatic ecosystems are well documented and have been shown

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to cause leaching of nutrients from soils, acidification of surface waters, injury to high elevation vegetation, and changes in nutrient cycling and species composition. The effects of acidification through sulfur deposition are not as widespread in Alaska relative to the eastern US because sulfur deposition, which is a large source of acidification in the east, tends to be lower in Alaska. Due to the lower sulfur deposition rates in Alaska, nitrogen deposition is often the main contributor of acidification in Alaska.

In Alaska, deposition is routinely measured at Denali National Park. However, given that both SO_2 and NO_x emissions contribute to both visibility impairment and deposition, and knowing that visibility degradation in Denali National Park is slightly worse than Tuxedni, it is expected that deposition measurements in Denali National Park are conservatively representative of Tuxedni and the project area. Wet deposition measurements at Denali National Park are collected by NADP in micro-equivalent per liter (µeq/l), and dry deposition is estimated from ambient measurements collected by CASTNet in kilograms per hectare (kg/ha).. Deposition measurements in Denali National Park indicate that sulfate and nitrate deposition rates have steadily decreased since the start of the record (although for some species, the decrease is not statistically significant) (Table 3.20-4).

In the western US and Alaska, the focus is on nitrogen deposition, given low sulfur dioxide emissions and the expectation that the effects of nitrogen deposition will manifest before those from sulfur deposition. Currently, the National Park Service is recommending the use of nutrient nitrogen critical loads for the evaluation of deposition impacts in terrestrial and aquatic ecosystems. Nutrient nitrogen critical loads are a tool used to assess and understand the impacts of nitrogen deposition to ecosystems. The nitrogen critical loads are determined by amount of nitrogen deposition below, in which no harmful effects to an ecosystem are expected. This value varies based on the type of ecosystem present in an area. Estimates of nitrogen critical load values in Denali National Park range from 1.2 kilograms of nitrogen per hectare per year (kgN/ha/yr) for lichens and bryophytes to 17.0 kgN/ha/yr for forests and nitrate leaching (National Park Service 2018y). While additional information would be needed to convert the wet deposition rates into appropriate units for comparison to critical load values, the estimates of dry deposition at Denali National Park are well below the lowest critical load value of 1.2 kgN/ha/yr (Table 3.20-4). The same should be expected for the project area.

Table 3.20-4: Wet and Dry Deposition at Denali National Park Monitoring Location

Year	Wet Deposition (µeq/l)[1]		Dry Deposition (kg/ha)[2]	
	Sulfur	Nitrogen	Sulfur	Nitrogen
2016	n/a[3]	n/a	0.18	0.2
2015	1.8	1.5	0.23	0.31
2014	3.7	1.9	0.21	0.25
2013	2.5	1.5	0.23	0.3
2012	2.3	1.5	0.18	0.22
2011	2.4	1.0	0.2	0.24
2010	3.2	2.3	0.18	0.19
2009	6	1.7	0.33	0.41
2008	2.6	1.3	0.22	0.24
2007	3.4	1.2	0.21	0.31
2006	3.7	1.4	0.3	0.29

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Table 3.20-4: Wet and Dry Deposition at Denali National Park Monitoring Location

Year	Wet Deposition (µeq/l)[1]		Dry Deposition (kg/ha)[2]	
	Sulfur	Nitrogen	Sulfur	Nitrogen
2005	3	2.2	0.22	0.39
2004	3.2	2	0.25	0.5
2003	3.1	2.4	0.26	0.29
2002	6.5	3.5	0.23	0.35
2001	4.6	2.9	0.26	0.25
2000	3.5	1.7	0.24	0.29
1999	2.2	2	0.27	0.3

[1] Wet Deposition for station AK03 (NAPD 2018)

[2] Dry Deposition for station DEN417 (EPA 2018b)

[3] n/a= not available

3.20.2 Regional Climate

The project area is in a transitional climatic zone with a strong maritime influence (Hoefler 2010a). Terrain changes and proximity to large bodies of water locally influence the climate. For example, the proximity of Cook Inlet more heavily influences the climate around the Amakdedori port site than the vicinity of the mine site. Portions of the project area that are at higher elevation are likely to experience colder temperatures and differences in precipitation patterns relative to those areas at lower elevations. Summer temperatures are moderated by the open waters of Iliamna Lake, the Bering Sea, and Cook Inlet. During winter, ice forms on these open waters, resulting in a more continental temperature pattern. Overall, the weather systems arrive from the west and southwest, bringing cool to cold air that is often saturated with moisture. These systems result in frequent clouds, rain, and snow with possible thunderstorm activity during the warm season.

Meteorological monitoring was conducted at the mine site and Cook Inlet by Hoefler (2010a, b) and SLR (2013, 2015). The Cook Inlet monitor, also called Knoll Head, is located about 30 miles northeast of the proposed Amakdedori port site. Table 3.20-5 and Table 3.20-6 present monthly and annual averages for mean temperature, mean wind speed, and total precipitation for the mine site (Pebble Site 1) and Cook Inlet (Port Site 1) monitors, respectively. The Port Site 1 monitor has slightly warmer average monthly temperatures than the Pebble 1 monitor (Table 3.20-5 and Table 3.20-6). At the Port Site 1 monitor, wind is generally from the north and northeast due to local terrain influences (Hoefler 2010b). At the Pebble 1 monitor, the wind is bimodal, generally from the northwest or the southeast (Hoefler 2010a). The differences in observations are likely due the influence of Cook Inlet and elevation of the monitors.

Monthly climate averages for Iliamna Airport are listed in Table 3.20-7. These averages are from 30 years of data collection and represent long-term averages compared to the Pebble 1 monitor, which only collected data for 7 years. The 30-year record minimizes the naturally occurring year-to-year variability that can bias a shorter term record. Overall, the Iliamna Airport has colder temperatures during the winter, and warmer temperatures during the summer with more precipitation, than the Pebble 1 and Port Site 1 monitoring sites.

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Table 3.20-5: Monthly Climate Summary, Pebble 1 Monitor, 2005-2012[1]

Parameter	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Temperature	°F	24.9	27.5	26.5	30.8	34.2	36.1	37.8	36.9	35.5	31.3	26.3	26.8	31.2
Average Wind Speed	mph	18.7	21.3	18.5	17.5	15.9	14.8	14.7	14.3	15.8	16.9	20.3	20.9	17.5
Average Total Precipitation	inches	2.4	3.5	2.0	1.7	1.4	3.3	5.8	4.2	5.0	3.9	2.6	4.0	39.9

[1]Period of record January 2005 through 2012; elevation 1,560 ft amsl
°F = degrees Fahrenheit
mph = miles per hour
Source: Hoefler 2010a, SLR 2015

Table 3.20-6: Monthly Climate Summary, Port Site 1 Monitor, 2008-2012[1]

Parameter	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Temperature	°F	28.8	30.1	30.2	33.1	35.8	37.4	38.5	38.8	37.3	34.3	30.6	30.0	33.7
Average Wind Speed	mph	12.3	12.9	12.2	10.0	8.3	6.8	8.0	7.1	9.6	10.2	12.1	13.5	10.2
Total Precipitation	inches	4.5	4.4	1.5	4.9	3.7	4.3	9.5	5.5	6.6	6.4	3.2	4.0	58.5

[1]Period of record: August 2008 through 2012; elevation: 50 ft amsl
°F = degrees Fahrenheit
mph = miles per hour
Source: Hoefler 2010b, SLR 2013

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Table 3.20-7: Monthly Climate Summary, Iliamna Airport, 1981-2010[1]

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Maximum Temperature (°F)	24.6	26.3	30.7	39.8	51.6	59.4	62.5	61.1	53.9	40.8	29.3	26.9	42.4
Average Minimum Temperature (°F)	12.8	13.4	16.7	25.9	36.6	44.2	49.2	48.4	42.1	29.6	18.1	15.0	29.4
Average Mean Temperature (°F)	18.7	19.9	23.7	32.9	44.1	51.8	55.9	54.8	48.0	35.2	23.7	21.0	35.9
Average Total Precipitation (inches)	1.35	1.09	0.91	0.92	1.09	1.26	2.61	4.04	4.46	3.30	2.08	1.58	24.69
Average Total Snow Fall (inches)[2]	10.8	9.5	9.8	5.3	1.0	0.0	0.0	0.0	0.0	2.5	8.5	11.8	59.2
Average Snow Depth (inches) [2]	8	10	11	7	0	0	0	0	0	0	2	5	4

[1]Period of Record 1981-2010; elevation: 19 ft amsl

[2]Snow fall and snow depth are for period of record: February 1, 1920 to June 8, 2016

Source: WRCC 2018

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4.2 LAND OWNERSHIP, MANAGEMENT, AND USE

The environmental impact statement (EIS) analysis area for land ownership and management includes the project footprint, and use of those and adjacent lands. Potential direct and indirect impacts include:

- Change in/or conflict with land management as a result of the project.
- Change in land status if a lease was to be issued, an easement were to be altered or vacated, or if additional access were legally acquired.
- Change in land use from an existing or allowed land use.

4.2.1 No Action Alternative

Under the No Action Alternative, the development of the Pebble Project as proposed would not be authorized. Any existing or new land use activities at the mine site, such as exploration or cessation of field activities, would occur in accordance with the requirements of the State of Alaska as the landowner. Such activities may result in a reversion of use (i.e., cessation of activity) or continuation of the existing use (i.e., exploration). Land ownership and management of the mine site, Amakdedori port, transportation corridor, and natural gas pipeline corridor would remain the same. Because the project would not be implemented, the No Action Alternative would have no new impacts on existing land ownership, management, and use.

4.2.2 Action Alternative 1 – Applicant's Proposed Alternative

4.2.2.1 Land Ownership

For a description of land ownership under Alternative 1, see Section 3.2, Land Ownership, Management, and Use. No land in the project footprint would be conveyed or sold, although an Uplands Mining Lease and associated permits would be required for mining activities and facilities on State lands, and temporary use permits, easements, and ROWs for the transportation corridors and natural gas pipeline would be required on State and ANCSA corporation lands to construct and operate the project if approved (see Appendix E, laws, permits, approvals, and consultations required). This would result in a change in land status and an encumbrance on use at the mine site, and along the route of the mine access roads, ferry terminals, and pipeline. A tidelands lease would also be required for in-water facilities at the Amakdedori port site. These changes in land status constitute a direct impact. The impact would last through the duration of the project, and after closure as long as the project components were in use. There would be no aspects of the project developed on federal or municipal owned lands.

4.2.2.2 Land Management

Federal Management

Under Alternative 1, no physical project-related infrastructure would be developed on any federal land or in other legislatively designated areas. Therefore, project construction, operations, or closure would not result in any direct effects on the management, ownership, or use of federal lands. However, project-related activities could indirectly and cumulatively affect the environment, resources, and visitor experience of four federal management units: Lake Clark National Park and Preserve (NPP), Katmai NPP, Kachemak Bay National Estuarine Research Reserve, and the Alagnak Wild River. Some adaptation in land management may be

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needed in response to potential indirect impacts, such as noise and visual disturbance to recreationists and wildlife. See Section 4.5, Recreation, Section 4.11, Aesthetics, Section 4.19 Noise, and 4.23 Wildlife Values for discussions of impacts on those resources.

State Management

Mine Site. The mine site would be located on state-owned lands managed under the guidance of the state's Bristol Bay Area Plan. The State of Alaska selected much of the land mass in the Bristol Bay Area Plan planning area because of its mineral potential (ADNR 2013a). The Bristol Bay Area Plan specifies that these lands are to be retained in public ownership and managed for multiple use, which includes recreation; timber; minerals; fish and wildlife; and natural scenic, scientific, and historic values. This designation would not preclude construction of the mine or related facilities. The project would be consistent with the plan's goals for the use of subsurface resources, which call for making metallic and nonmetallic minerals available to contribute to the mineral inventory and independence of the United States generally and Alaska specifically, while protecting the integrity of the environment and affected cultures. The habitat resources of the North and South Fork Koktuli stream corridors that traverse this unit are managed for protection; in addition, the area is managed for moose wintering habitat. Active management for fish and wildlife protection would be modified as necessary in the immediate area as a result of the project. There would not be a conflict with management plans but may require permit conditions to accommodate additional plan direction related to fish and wildlife management.

Transportation Corridor and Pipeline. Some of the transportation corridor and natural gas pipeline would be located on state-owned lands managed under the guidance of the Bristol Bay Area Plan (see Section 3.2, Land Ownership, Management, and Use). The plan specifies that these lands are to be retained in public ownership and managed for a multiple use designation that would not preclude construction of the mine access roads. Active management for fish and wildlife protection would necessarily be modified in the immediate area through the life of the mine and into post-closure as a result of the project.

Iliamna Lake is managed as a navigable waterbody under the Bristol Bay Area Plan. The lake is co-designated for public recreation, dispersed tourism, and habitat. The designations allow for development insofar as essential habitat and recreation values are maintained. These designations would not preclude construction and operations of the project's proposed north and south ferry terminals, as well as the ferry route across the lake.

Amakdedori port and the pipeline compressor station on the Kenai Peninsula would fall under the management of the state's Kenai Area Plan. The plan has management guidelines for the development of transportation and utilities that include protection of hydrologic systems and roads near wetlands. The plan also provides guidelines for waterfront development with regard to soil erosion and fuel storage (ADNR 2001). These guidelines would not preclude the development of Amakdedori port or the pipeline facilities on the Kenai Peninsula.

Because the project would be in agreement with the state's planned land management of the area, project construction, operations and maintenance, or closure on state lands would not result in adverse direct or indirect effects on land management, but active management may be modified in some areas for the duration of the project and into post-closure.

Borough Management

The mine site, the majority of the transportation corridor, and a portion of the natural gas pipeline corridor would lie within the boundaries of the Lake and Peninsula Borough (LPB). Pebble Limited Partnership (PLP) would be required to obtain development permits from the LPB; however, no direct or indirect effects on land management in the LPB would occur. Any

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permits from a borough would likely only be issued with permit stipulations that would minimize potential land use conflicts.

Amakdedori port and a portion of the proposed transportation corridor and the natural gas pipeline corridor on the western side of Cook Inlet would be located in the Kenai Peninsula Borough (KPB). The KPB Comprehensive Plan does not contain goals, objectives, or implementation actions specific to development of the project on lands in the KPB. However, the KPB does regulate development on the floodplain, in the coastal zone, and near certain anadromous fish streams throughout the borough. No direct or indirect effects on land management in the KPB would occur.

Alaska Native Regional and Village Corporation Management

Portions of the mine access road (including the Kokhanok east ferry terminal variant) would cross surface lands owned by Alaska Peninsula Corporation, and Iliamna Natives Limited. The natural gas pipeline corridor would cross subsurface lands owned by Cook Inlet Region, Inc. and Bristol Bay Native Corporation. Uses on these surface and subsurface lands privately owned by Alaska Native corporations are subject to the approval of the landowners. Any activity would be conducted in accordance with lease and surface use agreements that PLP would establish with the landowners. Project construction, operations and maintenance, or closure would not result in adverse direct or indirect effects on management of these lands.

Local Management

Under Action Alternative 1, no physical project-related infrastructure would be developed on lands that are in local jurisdiction. Therefore, project construction, operations, or closure would not result in any direct effects on the ownership, management, or use of local lands. However, project-related activities could indirectly affect the environment and resources of local communities. Those impacts are discussed in relevant resource sections of this EIS.

Legal Access

There are no state-recognized Revised Statute (R.S.) 2477 rights-of-way (ROWs) in the footprint of Alternative 1.

The project area encompasses several section line easements. These easements do not prohibit development of a pipeline ROW or access roads across the affected section lines. Access to the easements would not be prohibited, although any future use may be conditioned by the presence of the access road and pipeline, if permitted and constructed.

The south access road would intersect one Section 17(b) easement, on the south shore of Lake Iliamna (EIN 17b C5). The road would not prevent access to the easement, and crossing points would be sign-posted, with appropriate traffic controls established to ensure public safety, if needed (PLP 2018-RFI 027). This easement would not be impacted by the Kokhanok east ferry terminal variant.

One state public access easement exists along the proposed pipeline route in Iliamna Lake (see Section 3.2, Land Ownership, Management, and Use). It is an easement for communication networks (for example, there are fiber optic cables in Iliamna Lake) and other utilities. Development of the project would not prohibit access to the easement, although PLP would need to be in contact with the easement holders to ensure that construction would not affect existing infrastructure.

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4.2.2.3 Land Use

As discussed in Section 3.2, Land Ownership, Management, and Use, the prevalent land uses around the EIS analysis area are undisturbed landscape and natural habitat, low-intensity recreational activities, and subsistence activity. Land development in the Bristol Bay area is generally limited to the areas in and around geographically isolated communities, fish processing facilities, and small fishing and hunting lodges.

Project construction, operations, and closure would not affect small-scale mining and exploration activities that may currently occur in the project vicinity. Residential and commercial uses in surrounding communities would not be directly affected by the project, but could expand based on employment and support service opportunities.

Mine Site. Land use at the mine site would change from minimal disturbance from exploration activities to intense industrial development. This would constitute an acute and obvious change over the life of the project. The area affected would represent only a small portion of the total land area owned and managed by the State in the Bristol Bay watershed. Subsistence activity and recreation would be excluded from the vicinity of the mine site during construction and operations. Land use would change again at closure of the mine, as the site would be restored per permit requirements and no longer used for mining. Impacts on those uses are described in Section 4.9, Subsistence, and Section 4.5, Recreation.

Transportation Corridor. Construction of the mine access roads would introduce artificial features to a previously undeveloped location, and therefore, would change the land use; associating it with heavy use of industrial trucks along the transportation corridor. The access roads would be restricted to mine-related traffic and some use by local residents and businesses, and would not facilitate land use associated with non-resident recreation and tourism activities. The ferry operating daily on Lake Iliamna would represent an addition to the watercraft currently used in open water. However, the ferry would present a new use of the lake during the winter, with the potential to interfere with other uses of the ice for local transportation and subsistence activities. Winter impacts would not occur under the summer-only ferry operations variant. The transportation corridor would remain in place upon project closure to support monitoring activities, although the intensity of use from the project would decrease substantially. Depending on any agreements between the State and LPB, some level of local use of the corridor may continue. These remaining features would constitute a permanent shift from an undisturbed landscape with low levels of intermittent use to transportation infrastructure supporting an industrial use.

Natural Gas Pipeline Corridor. The natural gas pipeline would be located in the transportation corridor from Amakdedori port to the mine site, and would not result in any foreseen additional land use changes. At the compressor station on the Kenai Peninsula, where the pipeline would connect to existing infrastructure, the land currently has some industrial development. There would be additional development from construction of the compressor station, but overall land use in that area would not change.

Amakdedori Port Site. Construction at the port site would introduce an industrial port facility to a previously undeveloped location, and therefore, would change the land use with industrial ship traffic, truck traffic and storage activities. Any use of the physical footprint of the port site would be displaced (including cultural education at the site), and adjacent use activities could be affected; however, access to the port site is limited and existing use activities are intermittent. Amakdedori port would remain in place until project closure when the port would no longer be needed to support reclamation and monitoring activities.

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4.2.3 Action Alternative 2 – North Road and Ferry

4.2.3.1 Land Ownership

For a description of land ownership under Alternative 2, see Section 3.2, Land Ownership, Management, and Use. No land in the project footprint would be conveyed or sold, although temporary use permits, easements, and ROWs for the transportation corridor and natural gas pipeline would be issued to construct and operate the project if approved. This would result in a change in land status and an encumbrance on use along the route of the mine access roads and pipeline, a direct impact. Impacts would generally be the same as described in Alternative 1, but affect different areas and communities along the transportation corridor and port site. Depending on the location of the port site, a new or amended tidelands lease may be required from the State of Alaska.

4.2.3.2 Land Management

Federal land management under Alternative 2 would be similar to Alternative 1; project construction, operations, or closure would not result in any direct effects on the management, ownership, or use of federal lands. The Alternative 2 transportation corridor is closer to Lake Clark NPP, where project transportation activities may be more noticeable to park users, and farther from both the Katmai NPP and the McNeil River State Game Refuge and Sanctuary. Project-related activities could indirectly and cumulatively affect the environment, resources, and visitor experience of the federal management units listed for Alternative 1.

State management at the mine site, transportation corridor, and on the Kenai Peninsula would be the same as Alternative 1, but would affect different areas and be primarily located on ANCSA corporation lands. There would be no port facilities on state-owned lands.

Land use of surface and subsurface lands privately owned by Alaska Native corporations are subject to the approval of the landowners. Any activity would be conducted in accordance with lease and surface use agreements that PLP would establish with the landowners. Project construction, operations and maintenance, or closure would not result in adverse direct or indirect effects on management of these lands.

The entirety of the Diamond Point port would be located on Native Allotments. The lands are held in trust by the federal government and generally require Bureau of Indian Affairs oversight for sales, gift deeds, leases permits, partitions, ROWs, and sand and gravel leases.

As with Alternative 1, the mine site, the majority of the transportation corridor, and a portion of the natural gas pipeline corridor would lie in the boundaries of the LPB. The Diamond Point port and a portion of the proposed transportation corridor and the natural gas pipeline on the western side of Cook Inlet would lie in the KPB. Impacts for borough management in these locations would be similar to borough management for Alternative 1.

Under Alternative 2, no physical project-related infrastructure would be developed on lands that are in local jurisdiction. Impacts would be the similar to those in Alternative 1.

Legal Access

The project area encompasses several section line easements, and impacts would be similar to Alternative 1.

There is one R.S. 2477 ROW that runs from the community of Pile Bay to the community of Iliamna (RST 396). Alternative 2 project components would bisect the ROW at several locations (see Section 3.2, Land Ownership, Management, and Use). Where a R.S. 2477 ROW is

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impacted from construction or operations of the project, alternate access or marked crossings would be provided as appropriate. Land ownership changes may not be measurable or apparent due to very low existing levels of use of the easement. Most local residents travel on Iliamna Lake via boat or snowmachine and not on this ROW.

The natural gas pipeline would intersect one Section 17(b) easement, on the northern shore of Iliamna Lake (EIN 30a C5 D1); the transportation corridor and natural gas pipeline would intersect one Section 17(b) easement, also on the northern shore of Iliamna Lake (EIN 15f C5). The project would not prevent access to the easements, and crossing points would be sign-posted, with appropriate traffic controls established to ensure public safety (PLP 2018-RFI 027).

Alternative 2 would intersect the same pubic access easements in Iliamna Lake as Alternative 1, although the number and locations of the crossings would be different. Impacts would be similar to Alternative 1. The natural gas pipeline under Alternative 2 would intersect two additional public access easements (one would also be intersected by the transportation corridor). The project would not prevent access to the easements, and crossing points would be sign-posted, with appropriate traffic controls established to ensure public safety (PLP 2018-RFI 027).

4.2.3.3 Land Use

Impact to land use at the mine site and the Kenai Peninsula pipeline compressor station would be the same as discussed under Alternative 1.

Impacts to land use from the transportation corridor would be similar to Alternative 1 for the mine access road from the Eagle Bay ferry terminal to the mine site, and for the ferry use across Iliamna Lake. The transportation corridor under Alternative 2 includes construction of a mine access road in the vicinity of and in places overlapping the current Williamsport-Pile Bay road, which is used for the summer season portage of fishing boats from Cook Inlet to the Bristol Bay fishery. Existing traffic would use the new road which would experience regular and heavy industrial use. The change would be high intensity and last through the life of the mine. After closure, the road would likely revert to the current level of use, although it may increase slightly, as an improved route could entice additional boat owners to use it.

At the Diamond Point port site, the area would change from active resource extraction to an industrial port. There would also be changes associated with industrial ship traffic in Iliamna Bay. The impacts would last through the duration of the project.

The natural gas pipeline from Pile Bay to the mine access road from Eagle Bay ferry terminal would introduce a land use change from a mostly undisturbed area to a utility corridor. Impacts would be low intensity and last until the pipeline was decommissioned, which could extend beyond the life of the project.

4.2.4 Action Alternative 3 – North Road Only

4.2.4.1 Land Ownership

For a description of land ownership under Alternative 3, see Section 3.2, Land Ownership, Management, and Use. No land in the project footprint would be conveyed or sold, although temporary use permits, easements, and ROWs for the transportation corridor and natural gas pipeline would be issued to construct and operate the project, if approved. This would result in a change in land status and an encumbrance on use along the route of the mine access roads and pipeline, a direct impact. Impacts would be the same as described in Alternative 1, but

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affect different areas and ANCSA corporation landowners; the length of the access road easement would be in the same area but longer than Alternative 2.

4.2.4.2 Land Management

Land management under Alternative 3 would be the similar to Alternative 2 for federal, State, borough, and local management. The transportation corridor would transect the same ANCSA native corporation lands as the transportation corridor and natural gas pipeline under Alternative 2, and the impacts to land management would be similar to those of the transportation corridor under Alternatives 1 and 2.

Legal Access

The project area encompasses several section line easements, and impacts would be similar to Alternative 1.

Alternative 3 transportation corridor and natural gas pipeline would bisect the same R.S. 2477 ROW (RST 396), Section 17(b) easements (EIN 30a C5 D1 and EIN 15f C5), and public access easements as in Alternative 2, and the impacts would be similar.

4.2.4.3 Land Use

Impact to land use at the mine site and the Kenai Peninsula pipeline compressor station would be the same as discussed under Alternative 1.

The impact to the transportation corridor along the Williamsport-Pile Bay road would be similar to Alternative 2. From Pile Bay to the mine site, impacts to the transportation corridor would be similar to Alternative 1 along the mine access roads. There would be no impacts to summer or winter transportation and subsistence use of Iliamna Lake, compared to Alternatives 1 and 2.

As with Alternative 2, the area at the Diamond Point port site would change from active resource extraction to an industrial port. There would also be changes associated with industrial ship traffic in Iliamna Bay.

4.2.5 Summary of Key Issues

See Table 4.2-1 for a summary of key issues.

Table 4.2-1: Summary of Key Issues for Land Ownership, Management, and Use

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Land management and ownership	The mine site would be entirely on lands by the State of Alaska and managed for multiple use, including habitat protection and mineral development.		
Land use	Land use at the mine site would change from minimal disturbance from exploration activities to intense industrial development.		
Transportation Corridor			
Land ownership	67% would be owned and managed by the State of Alaska. 33% would be owned and managed by ANCSA village corporations.	39% State of Alaska. 1% ANCSA regional corporations. 59% ANCSA village corporations.	35% State of Alaska. 3% ANCSA regional corporations. 62% ANCSA village corporations.

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Table 4.2-1: Summary of Key Issues for Land Ownership, Management, and Use

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Kokhanok east ferry terminal variant: 73% State of Alaska. 27% ANCSA village corporations.	*Summer-only ferry variant:* 100% ANCSA village corporations.	
Land management	The state would manage lands for multiple use that would not preclude a mine access road. Uses on surface and subsurface lands privately owned by Alaska Native corporations are subject to the approval of the landowners. There would be no direct effects to federal lands, but indirect impacts from the project may result in additional management considerations.		
Legal Access	R.S.2477 ROWs: 0 17(b) easements: 1 Public access easements: 1	R.S.2477 ROWs: 1 17(b) easements: 2 Public access easements: 3	R.S.2477 ROWs: 1 17(b) easements: 2 Public access easements: 3
Land use	The mine access roads would introduce a transportation system with industrial traffic to a previously undeveloped location, and would change the land use associated with industrial truck traffic. The ferry would represent increased summer traffic and an additional use to the lake during winter, with the potential to interfere with other uses that utilize the ice for local transportation and subsistence activities.	Similar to Alternative 1 except the Williamsport-Pile Bay road, which would change from intermittent, seasonal use, to heavy industrial use.	Similar to Alternative 1 for the mine access road from Pile Bay to the mine site, and similar to Alternative 2 from Diamond Point to Pile Bay.
Port Site			
Land ownership	Amakdedori port would be on lands owned by the State and managed with guidelines for waterfront development.	The Diamond Point port would be located entirely on lands privately owned on a Native Allotment.	
		Pile-Supported Dock Variant: 82% ANCSA regional corporations. 18% ANCSA village corporations.	
Land management		Uses on surface and subsurface lands privately owned by Alaska Native corporations are subject to the approval of the landowners.	

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Table 4.2-1: Summary of Key Issues for Land Ownership, Management, and Use

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Land use	Amakdedori port would introduce artificial features to a previously undeveloped location, changing the land use to industrial ship traffic and storage activities.	At the Diamond Point port site, the area would change from active resource extraction to an industrial port. There would also be changes associated with industrial ship traffic in Iliamna Bay.	
Natural Gas Pipeline			
Land ownership	67% State of Alaska. 33% ANCSA village corporations.	28% State of Alaska. 6% ANCSA regional corporations. 66% ANCSA village corporations.	27% State of Alaska. 6% ANCSA regional corporations. 67% ANCSA village corporations.
	Kokhanok east ferry terminal variant: 21% State of Alaska. 79% ANCSA village corporations.		*Concentrate pipeline variant:* 59% State of Alaska. 41% ANCSA village corporations.
Land management	The pipeline would cross subsurface lands owned by Cook Inlet Region, Inc. and Bristol Bay Native Corporation. Uses on surface and subsurface lands privately owned by Alaska Native corporations are subject to the approval of the landowners.		
Land use	The pipeline compressor station would add to the existing industrial development.	Same as Alternative 1 except the ROW from Pile Bay to the mine access road would introduce a land use change from a mostly undisturbed area to a utility corridor.	Impacts from the mine access roads and pipeline compressor station would be similar to Alternative 1. The impacts to the Williamsport-Pile Bay road and Diamond Point port would be similar to Alternative 2.

Note: See Section 3.2, Land Ownership, Management, and Use, for complete land ownership.

4.2.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to impacts in similar ways to land ownership, management, legal access, and use during construction, operation, and closure. All of the RFFAs identified in Section 4.1 have the potential to impact land ownership, management, or use in the analysis area.

All the RFFAs would impact land ownership and management in the ways described above, with the potential for some land conveyance and other changes in land ownership, such as encumbrance for an easement or a ROW; with those impacts would be changes to management actions.

Future actions for development of mineral deposits and oil and gas exploration and development, along with any related infrastructure, could contribute to a slow land use change in the region, from more undeveloped, pristine landscapes to more industrial use and resource extraction.

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The RFFA that would have the greatest cumulative impact to the immediate area would be the Pebble Project buildout, which would continue the impacts from this project for an extended amount of time, over a larger geographic area, adding intensity to activities (more traffic) and potentially more infrastructure to the Iliamna Lake area.

Expansion would affect land management, ownership and use in ways similar to the combined effects of Alternative 1 and 3, but over an operating life of 78 years then a period of closure. Effects of expansion would be similar to Alternative 3 with the concentrate pipeline variant, minus the concentrate truck traffic, and additive to the effects of Alterative 1. State permits and leases with the mine site would need to be amended and additional ROWs granted. Additional tidelands leases might also be required. The proximity of expanded facilities to federal lands management units would be similar to a combined Alternatives 1 and 3, because the expanded Pebble project would need to develop the Alternative 3 corridor for the concentrate export pipeline and would need a port at Diamond Point and/or Iniskin Bay. Some actions may be necessary to address indirect project impacts, although concentrate truck traffic would cease with the operations of the concentrate pipeline, reducing potential traffic and noise impacts on the Alternative 1 transportation corridor and not introducing those impacts along the Alternative 3 transportation corridor. The primary impacts would be the expanded industrial use at the mine site and the introduction of industrial activities in two undeveloped areas over two transportation corridors instead of one over an extended timeframe. The impacts would be partially offset with the construction of the concentrate pipeline, in that concentrate truck traffic would be eliminated. The contribution of the proposed action to cumulative impacts would be the extended duration of mining activities over an area and acreage double the size of the proposed action.

Transportation, infrastructure, energy, and utility RFFAs could contribute to a slow transition of land use to more developed movement through the area for people and utilities.

RFFAs that include current land uses (e.g., commercial fishing, subsistence, tourism, recreation, hunting and fishing, and scientific surveys and research), would continue along baseline trends as long as the resources are available to engage in those activities. These uses would be impacted cumulatively by the development RFFAs discussed above.

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4.6 COMMERCIAL AND RECREATIONAL FISHERIES

This section addresses the direct and indirect effects of the No Action Alternative and action alternatives on commercial and recreational fishing. As noted in Section 3.6, Commercial and Recreational Fisheries, the Alaska Department of Fish and Game (ADF&G) Commercial Salmon Fishery Area T and Area H and ADF&G Statewide Harvest Survey (SWHS) areas S, T, N and P comprise the study area for this resource. Potential impacts include:

- Long-term changes in salmon populations that reduce the number of returning adult spawners available for harvest by commercial permit holders and thus reduce:
  - wholesale fisheries value, payments to permit holders and crew, and expenditures into local economies;
  - delivery of fish to processors, revenue generated by processed fish, and employment of and payments to processing labor; and
  - generation of tax revenue to state and local governments through sales tax, real property tax, and raw fish tax.
- Reduction in consumer willingness to buy Bristol Bay salmon due to a perceived loss of quality resulting in a lower price paid to commercial fishermen.
- A reduction or displacement of recreational fishing effort associated with affected waterbodies, along with a reduction in government revenue generated by the professional guide tax.
- An increase in recreational fishing effort associated with long-term project driven population changes and/or changes in the regional transportation network.

Commercial Fisheries. The proposed project has the potential to affect the commercial fisheries sector and related fiscal contributions through two primary mechanisms: a decline in the productivity of Bristol Bay river systems, which would be reflected through a decline in total fishery harvest; and a change in market reception of Bristol Bay fish. The total value of the fishery in economic terms starts with volume (i.e., productivity) and price (i.e., what the market will pay for the fish). While the permit holders and processors are the two most frequently discussed groups associated with the fishery, the economic connections of the fishery extend to crew members, shipping companies, local businesses, utilities, and governments.

The loss of any harvestable fish from a project-induced decline in productivity would result in a lower total fishery value. Every harvested salmon has a quantifiable value to permit holders, processors, and state and local governments. This value varies from year-to-year with average ex-vessel price and average wholesale value, but it is demonstrable that every salmon lost to harvest has an economic value. This section uses estimates of lost productivity as noted in Section 4.24, Fish Values, to estimate lost ex-vessel payments, lost wholesale value, and lost fishery-related government revenues.

It is easier to connect lost productivity in the fishery to lost ex-vessel and first wholesale values than it is to connect the effect of a change in consumer willingness to pay to these same measures. As noted in Section 3.6, Commercial and Recreational Fisheries, Bristol Bay salmon is a "price-taker;" it does not have cohesive brand identification as the Copper River fishery has to help drive prices higher. Therefore, Bristol Bay prices reflect the broader market for salmon products and the market for wild Alaska salmon products. In addition, prices paid in Bristol Bay are nearly always lower than those paid in other Alaska salmon fisheries producing similar products, which reflects the higher transportation expense associated with Bristol Bay's geographic location.

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Recreational Fisheries. With recreational fisheries, the potential effects of the proposed project are:

- Direct loss of angling days on portions of the North and South Fork of the Koktuli River and Upper Talarik Creek, which are located in the project area.
- A reduction in angling days downstream of the project area if the project reduces fish populations in downstream waters.
- Reduction in angling days caused by the quality of opportunities on waterbodies affected by the selected transportation routes.
- An increase in angling days caused by an increase in the number of opportunities through expansion of the local road network or an increase in regional population.

The Bristol Bay watershed is renowned for the diversity of its recreational angling opportunities. Therefore, fishing effort (angling days) and the ability of anglers and guides to redirect operations to substitute sites would play a key role in determining the magnitude and duration of recreational fishing impacts.

4.6.1 No Action Alternative

Under the No Action Alternative, the Pebble Project would not be developed. No construction, operation, or closure activities would occur at the mine site, Amakdedori port, transportation corridor or the natural gas pipeline corridor. Therefore, no future direct or indirect effects on commercial or recreational fisheries would be expected. Under the No Action Alternative, the Pebble Limited Partnership (PLP) would have the same options for exploration activities that currently exist (ADNR-RFI 073). Therefore, it is anticipated that PLP would continue some level of activity in an effort to identify future opportunities.

4.6.1.1 Commercial Fishing

The total value of the Bristol Bay salmon fishery depends on two primary factors: the volume of salmon harvested, and the value per pound of that salmon. Direct and indirect effects to commercial fishing from the proposed project require a connection between any alternative and either or both of those factors.

Permit Holders and Crew Members

Under the No Action Alternative, there would be no project-associated change in the number of returning fish available for harvest, the long-term productivity from the Nushagak and Kvichak river systems, and no change in the reputational value, which could affect price. The ex-vessel value of the fishery earned by permit holders and wages paid to crew members would continue to be affected by the broader drivers of the value of the Bristol Bay salmon fishery including world protein markets, world salmon markets, the overall productivity of the fisheries, and the decisions of processors about what products to produce.

The Processing Sector

Without an effect on the value or volume of salmon produced by the ecosystem, the No Action Alternative would not have any effect on the processing sector.

Fiscal Contributions

The No Action Alternative would not negatively affect fiscal contributions to state and local governments. It is possible that the long-term attractiveness of the fishery could increase if

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permit holders and processors had been withholding investment in recent years with the expectation that the proposed project would be built and would materially affect the fishery. There is no evidence that permit holders or processors have been withholding investment in the fishery. In 2014, Silver Bay Seafoods opened the fishery's first new major plant in several years. The company expanded the plant in 2015 and has the capability to expand more if the flexibility is needed (SBS 2018). Over the last decade, permit holders have installed refrigerated seawater systems to properly chill their salmon immediately after harvest and obtain the chilling bonuses offered by processors. The amount of slush ice in Bristol Bay, usually provided by processors, has not increased in recent years. Without growth in slush ice availability, new chilling capacity is coming from refrigerated seawater installations (NEI 2018).

4.6.1.2 Recreational and Tourism-Based Fishing

Recreational fishing is driven by two populations: resident anglers and non-watershed resident anglers, including other Alaskans. The Bristol Bay region is renowned for its productive rainbow trout, king salmon, and sockeye salmon fisheries, as well as its ability to provide an uncrowded fishing experience in a remote and "pristine" environment. Fishery effort varies with fishing conditions, the availability of tour providers/guides, and the state and world economy. Recreational fishing in areas N, S, and T declined from 2000 to 2002 and from 2007 to 2009 as the US economy experienced economic recessions (Figure 4.6-1). Recreational fishing in Area T also declined from 2014 to 2016. Effort in individual fisheries varies with the quality of the runs, and weak Chinook returns can affect participation in Chinook fisheries. For example, weak runs over the last decade have reduced the number of guided angler days on the Kenai River between Cook Inlet and the Soldotna Bridge from 34,000 angler days in 2008, to just under 22,000 days in 2016. In 2010, the Nushagak River closed to Chinooks; angler days in between the ADF&G sonar site and the mouth of the Mulchatna River declined from 8,100 days in 2009 to 3,600 days (ADF&G 2018d). Under the No Action Alternative, recreational fishing would continue under current conditions and trends.

4.6.2 Action Alternative 1 – Applicant's Proposed Alternative

Project construction and operations could have an impact on both the commercial fishing community from crew members to the processing sector, on the recreational sector via recreational fishing, and on revenue generated to state and local government. Potential impacts are influenced by project-related effects on fish population, habitat, and runs (see Section 4.24, Fish Values), as well as on real and perceived effects on the quality of the fish, environment, and fishing experience.

4.6.2.1 Commercial Fishing

As noted in Section 3.6, Commercial and Recreational Fisheries, the ADF&G manages for the long-term health of the fishery by ensuring that a minimum, but preferably optimal, number of spawners reach their home rivers. ADF&G has no control over external factors such as ocean conditions, so it largely manages the number of returning spawners by adjusting commercial and recreational fishing harvest via effort. The ADF&G restricts effort when the strength of the returning run requires less harvest to meet the optimal escapement goals (OEGs), and liberalizes harvest opportunity when run strength threatens to exceed OEGs. Beyond the scheduling of fishing openings and closures, the ADF&G also has the ability to define the geographic extent of fishery openings. For example, the points at which the Naknek and Kvichak rivers empty into Bristol Bay are just miles apart. In years when the Kvichak sockeye run has been weak, the ADF&G has restricted the fishing fleet to the mouth of the Naknek River to limit the harvest of Kvichak-bound fish. Under more normal conditions, this district is

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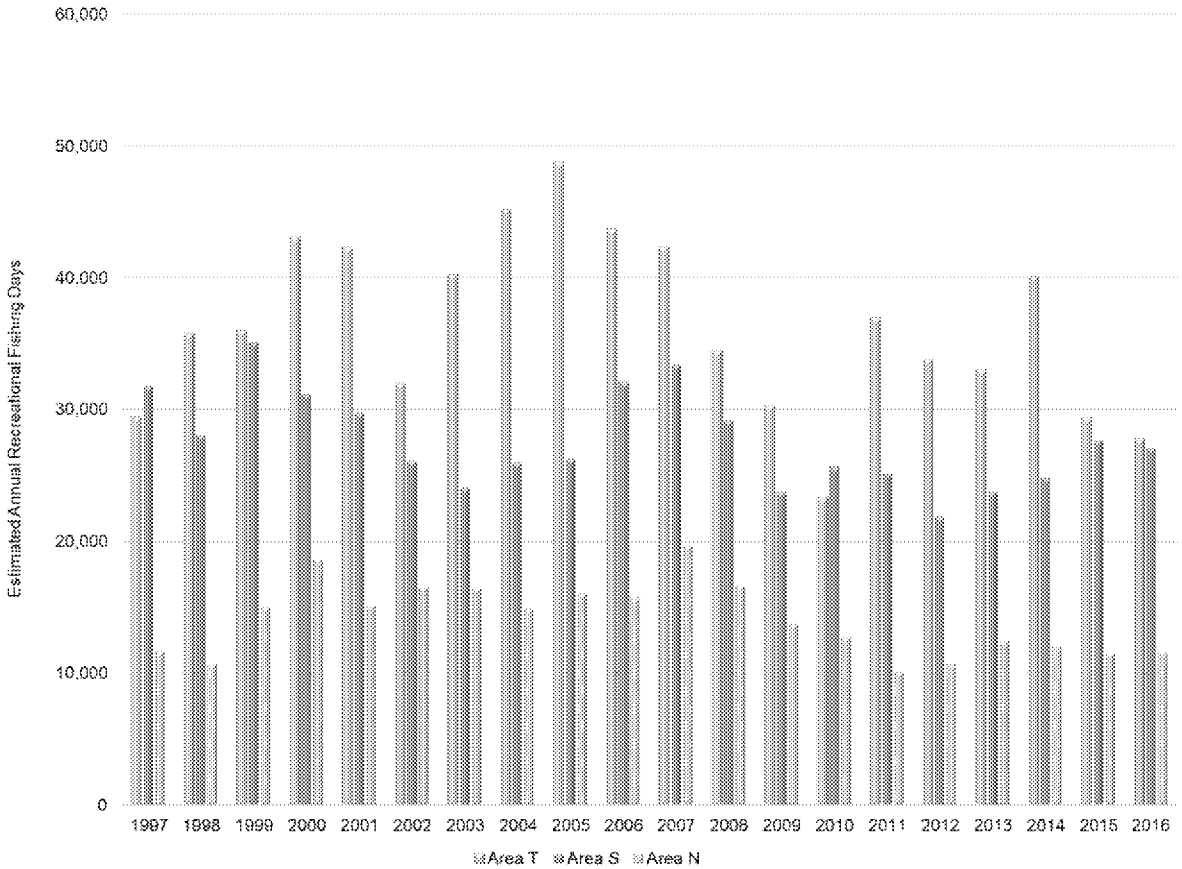
managed with less specificity. Under Pebble Project construction and operation, if the ADF&G does not adjust the OEGs to account for any lost carrying capacity associated with the project, then the reduction in returning spawners would directly translate into lost harvest opportunities for permit holders. If the ADF&G adjusts the OEGs for lost carrying capacity, then a portion of lost harvest opportunities would be captured with the adjusted OEGs, and the remaining portion would transmit to commercial permit holders as lost harvest opportunities.

Figure 4.6-1. Recreational Fishing Effort, 1997-2016



Source: ADF&G 2018d.

Crew members, permit holders, processors, and local municipalities are all dependent on the total value of the Bristol Bay fishery, which is a function of market price and harvested volume. When permit holders harvest fewer fish, the net result is that permit holders receive less net income, crew members are paid less, processors have less product to sell, and municipalities have less economic activity to tax.

This section relies on Section 4.24, Fish Values, which estimates that Alternative 1 would not reduce returning adult salmon to the Kvichak and Nushagak river systems as a result of project operations.

As noted above, the commercial fishing sector is concerned that the existence of the project could lower the perceived quality of Bristol Bay salmon and thus lower price. Prices paid in Bristol Bay are nearly always lower than those paid in other Alaska salmon fisheries producing similar products, which reflects the higher transportation expense associated with Bristol Bay's geographic location. Other salmon fisheries in Alaska exist in conjunction with non-renewable resources. For example, the Cook Inlet salmon fisheries exist in an active oil and gas basin and have developed headwaters of Anchorage and the Matanuska-Susitna areas. The Copper River

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salmon fishery exists in the remains of the historic Kennecott Copper Mine and the Trans Alaska Pipeline System in the headwaters of portions of the fishery. Both of these fisheries average higher prices per pound than the Bristol Bay Salmon Fishery (See Section 3.6, Commercial and Recreational Fisheries).

The Amakdedori port site would not be located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area, but it should not affect fishing effort.

The natural gas pipeline would follow the transportation corridor and would not directly interact with the Bristol Bay salmon fishery. The pipeline would cross waters fished by the Cook Inlet salmon fishery and Cook Inlet groundfish fisheries. It would not directly interact with the salmon fishery given that the salmon fishery occurs in the top 30 feet of the water column. Groundfish commercial fishermen may need to adjust their gear placement to avoid the natural gas pipeline, but they would have flexibility to do so.

Permit Holders and Crew Members

Based on estimations of the effect to fish populations discussed in Section 4.24, Fish Values, this alternative would not result in a measureable change in permit holder revenues, crew member payments, or permits based on a change in the return of adult spawners.

The Processing Sector

Any reduction in harvest by permit holders is immediately transmitted to the processing sector as fewer fish to be processed and sold into the world sockeye market. The lost harvest results in lower total wholesale value for processors. The magnitude of the financial loss depends on the size of the harvest reduction and individual choices by processor around how to adjust their product mix. Processors make these decisions based on run size, their individual capabilities, and the needs of the world market, which means that any long-term loss in harvest would express itself differently each year based on the aforementioned factors. Based on estimates from Section 4.24, Fish Values, and the historical relationship between ex-vessel values and wholesale values, there would be no measurable change to wholesale values or processor operations expected for this alternative.

Fishery Fiscal Contributions

As noted above, the fiscal contributions of the Bristol Bay salmon fishery to state and local government depend on the long-term health of the fishery. Lost harvest value would be directly expressed through reduced Fisheries Business Tax and Raw Fish Landings Taxes. Significant reductions in long-term value of the fishery would affect property taxes, sales taxes, and use taxes. Potential effects of reductions in state and local revenue are discussed in Section 4.3, Needs and Welfare of the People—Socioeconomics. However, based on the results of Section 4.24, Fish Values, no long-term measureable change in the fishery would be expected; therefore, there would be no long-term changes expected in fishery fiscal contribution attributable to this alternative.

4.6.2.2 Recreational and Tourism-Based Fishing

Recreational fishing effort in areas S, T, N, and P is based on several different types of fisheries with different goals, attributes, and experiences. For example, a Chinook salmon angler on the Nushagak River is likely to be fishing from a boat and focused on the harvest of Chinook salmon for consumption. An angler fishing the Gibraltar River is fishing a much smaller waterbody with more shore fishing and is more likely to be targeting rainbow trout for a non-consumptive

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purpose. The effects of Alternative 1 on the overall recreation fishery would depend on the factors noted above and the availability of alternative opportunities. There are few worldwide alternatives to the Nushagak River, as its Chinook fishery is the largest Chinook fishery in Alaska. The Gibraltar River offers a remote fishing experience for rainbow trout, but is one of several streams offering this type of experience in the Bristol Bay region. Rainbow trout are common and angling opportunities in remote conditions are widespread throughout the region. The loss of fishing opportunities in these areas would be more likely to be experienced by select guide and lodge operators than by a substantial portion of all anglers in the Bristol Bay region. These same operators could substitute fishing on different streams, albeit at potentially higher costs to themselves and their consumers, or anglers could redirect their fishing to other sites in the Bristol Bay region or in Alaska. Anglers themselves would likely be able to find similar opportunities on other streams in the region if the effect of Alternative 1 is limited to subset of regional fishing opportunities. Impacts would extend through construction and operations, and would be very likely.

Mine facilities under Alternative 1 would directly impact portions of the tributaries of the North and South Fork Koktuli River watersheds, while support and transportation infrastructure would affect the Upper Talarik Creek Watershed, the Gibraltar River, and Iliamna Lake. As noted in Section 3.6, Commercial and Recreational Fisheries, these watersheds account for a small portion of overall recreational fishing effort in SWHS areas S, T, and N. The ADF&G SWHS estimates and Guide Logbook Program data indicate that total fishing effort on the Koktuli River and Upper Talarik Creek is less than 100 angling days per year each, while total effort in SWHS areas S and T is estimated at over 40,000 days per year. The two most important fisheries that would interact with Alternative 1 are Iliamna Lake and the Gibraltar River. Iliamna Lake and unnamed tributaries host roughly 1,900 to 2,200 angling days per year. This effort is dispersed across the lake and numerous unidentified tributaries without enough SWHS survey responses to allow for individual effort estimates. Under normal operations, the ferry across the lake would not be expected to limit or affect the quality of these fishing days. The Gibraltar River (approximately 650 angling days per year) primarily hosts fly-in wade and float anglers. The river is currently roadless and the transportation corridor would create a new road and crossing along the river. While Section 4.24, Fish Values, does not estimate measurable changes in fish populations along the river, the presence of the road and bridge crossing would change the fishing experience on the river, particularly for float anglers who would have to pass the bridge to float the length of the river. Construction activities would be disruptive, and the road and bridge would be in place through project operations and post-closure until they are no longer needed. These impacts would not exist under the east Kokhanok ferry terminal variant, which avoids crossing the Gibraltar River.

The waterbodies affected by Alternative 1 have fewer total recreational angling days than the waterbodies affected by Alternatives 2 or 3. However, the main angling waterbodies affected by Alternatives 2 and 3 (the Newhalen, Pile, and Iliamna rivers), already have some minimal road access from local communities. Alternative 1 differs from Alternatives 2 and 3 in its establishment of new road affecting a waterbody without current road access and more than 500 recreational fishing days per year; Alternatives 2 and 3 would not affect a river with these qualities. Impacts would be fairly likely to occur and would last through closure until the road is no longer used.

The Amakdedori port site is not located near recreational fisheries resources so there would be no direct or indirect impacts expected.

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4.6.3 Action Alternative 2 – North Road and Ferry

Under Alternative 2, commercial fishing effects would not be expected to be any different than under Alternative 1; mine operations would be the same and the different transportation corridors would not be expected to affect long-term fish populations. Alternative 2 would affect different recreational fishery resources. This alternative would avoid the currently roadless Gibraltar River area and though the mine access road and/or the pipeline right-of-way (ROW) would cross a number of waterbodies with measurable fishing pressure, including the Newhalen River and the Iliamna River.

4.6.3.1 Commercial Fishing

As with Alternative 1, Alternative 2 would not be expected to measurably affect the health or value of Bristol Bay salmon fishery including permit holder earnings, permit holder value, crew earnings, fishery first wholesale values, processor earnings, or local fiscal contributions. The Diamond Point port site is not located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area.

4.6.3.2 Recreational and Tourism-Based Fishing

The Newhalen River drainage (approximately 1,900 angler days per year) and the Iliamna River (approximately 1,000 angler days per year) are the most frequently fished waterbodies along the Alternative 2 transportation corridor route. Transport activity may dislocate fishing effort where the corridor transects these waterbodies, but would not be expected to run along them for significant lengths. Fishing effort should not be negatively affected, as long as fish populations are unaffected, but may redistribute along the waterbodies. Iliamna Lake and unnamed tributaries host 1,900 to 2,200 angler days per year of recreational fishing effort, which is distributed across the entirety of the lake and where tributaries flow into it. Although detailed data about the geographic distribution of this effort are not available, a single transport route across the lake should not affect the number of fishing days under normal operations.

Alternative 2 would affect waterbodies with more measurable fishing effort than Alternative 1, but it would not establish new roads near waterbodies such as the Gibraltar River, which are known for the remote characteristics and have measurable fishing effort. Alternative 2 crosses fewer waterbodies along the lake's northern boundary than Alternative 3 by virtue of the ferry from Eagle Bay to Pile Bay and then the road corridor to Diamond Point port. However, the pipeline ROW would cross the same streams as discussed below for Alternative 3. Access along the ROW may increase slightly for recreational fishing, but the increase would be low intensity. The impacts would last through the duration of operations.

4.6.4 Action Alternative 3 Road Only

Under Alternative 3, commercial fishing effects would not be expected to be different than under Alternative 1, as mine operations would be the same and the transportation corridor would not be expected to affect long-term fish populations. Alternative 3 would affect different recreational fishery resources and lesser used recreational fishery resources than Alternative 2. This alternative would avoid the currently roadless Gibraltar River and would cross a number of waterbodies with measurable fishing pressure including the Newhalen River, the Pile River, and the Iliamna River.

4.6.4.1 Commercial Fishing

As with Alternatives 1 and 2, Alternative 3 would not be expected to measurably affect the health or value of Bristol Bay salmon fishery including permit holder earnings, permit holder

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value, crew earnings, fishery first wholesale values, processor earnings, or local fiscal contributions. The Diamond Point port site is not located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area.

4.6.4.2 Recreational and Tourism-Based Fishing

As with Alternative 2, Alternative 3 and the transportation corridor would continue on land across Chekok, Canyon, and Knutson creeks, on to Pile Bay, across the Pile River, and then cross the Iliamna River, leading to Diamond Point port.

As noted above, the Newhalen River drainage (approximately 1,900 angler days per year) and the Iliamna River (approximately 1,000 angler days per year) are the most frequently fished waterbodies along this route. Transport activity may displace fishing effort where the corridor intersects with these waterbodies, but the corridor overlap would be short in length. Truck traffic would adversely affect the recreation experience that occurs in the vicinity of the road. Fishing effort should not be negatively affected, but may redistribute along the waterbodies as long as fish populations are unaffected. ADF&G data indicate that Chekok Creek receives some fishing pressure (less than 50 days per year), while the other waterbodies along the Alternative 3 transportation corridor do not appear in published ADF&G data.

Alternative 3 would affect waterbodies with more measurable fishing effort than Alternative 1 and Alternative 3, but like Alternative 2 it would not establish new roads near waterbodies.

4.6.5 Summary of Key Issues

The alternatives would not be expected to result in a long-term change in the health of the commercial fisheries in Bristol Bay or Cook Inlet (see Table 4.6-1). Recreational fishing effort would be displaced along the Koktuli River and Lower Talarik Creek, but ADF&G data indicate that effort along these rivers is very modest at around 110 angling days per year. Alternative 1 would result in a new road alongside, and across the Gibraltar River, which receives six times the annual recreational fishing effort of the Koktuli River and Lower Talarik Creek combined. Alternatives 2 and 3 would intersect with the Newhalen and Iliamna rivers. Both of these rivers are already connected by road to local communities and together host approximately 2,900 angling days per year (see Table 4.6-1). The road corridor intersections may result in the redistribution of some angling days along the river.

Table 4.6-1: Summary of Key Issues for Commercial and Recreational Fisheries

Impact-Causing Project Component	Action Alternative 1 – Applicant's Proposed Alternative	Action Alternative 2 – North Road and Ferry	Action Alternative 3 – North Road Only
Mine Site			
Effects to commercial fisheries	Impacts from the mine site would be the same across all alternatives. The mine site would result in loss of fish habitat in the North and South Fork Koktuli rivers and, to a small extent, the Upper Talarik Creek. As noted in Section 4.24, Fish Values, this disturbance would not be expected to result in changes to salmon populations and the long-term average number of returning adult spawners to the Nushagak and Kvichak district. The mine site area is not connected to the Togiak, Ugashik, Naknek, and Egegik watersheds and is not expected to affect fish populations or harvests from these watersheds.		
Effects to recreational fisheries	All three action alternatives would affect the North and South Fork Koktuli rivers and Upper Talarik Creek. The Koktuli River does not appear in some ADF&G SWHS publications because not enough survey respondents report fishing on the river. The		

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Table 4.6-1: Summary of Key Issues for Commercial and Recreational Fisheries

Impact-Causing Project Component	Action Alternative 1 – Applicant's Proposed Alternative	Action Alternative 2 – North Road and Ferry	Action Alternative 3 – North Road Only
	river also does not appear in ADF&G Guided Logbook data for 2011-2014. The unpublished ADF&G SWHS estimates for the Koktuli River for 2007-2016 average 63 angler days per year. These days would be displaced if they occurred in the project area and could be displaced if they occur near the confluence of the Koktuli and the Mulchatna rivers.		
Transportation Corridor			
Effects to commercial fisheries	This corridor would intersect with Upper Talarik Creek, Pete Anderson Creek, the Gibraltar River, Dunultak Creek, and Amakdedori Creek and cross Iliamna Lake. The east Kokhanok ferry terminal variant would avoid impacts to Gibraltar River. This alternative would not be expected to change salmon populations or the number of returning adult spawners, and therefore would have no impact to commercial fisheries.	This corridor would intersect with Upper Talarik Creek, the Newhalen River and the Iliamna River while crossing Iliamna Lake. This alternative would not be expected to change salmon populations or the number of returning adult spawners.	This corridor would intersect with Upper Talarik Creek, the Newhalen River, Chekok Creek, Canyon Creek, Knutson Creek, the Pile River, and the Iliamna River. This alternative would not be expected to change salmon populations or the number of returning adult spawners.
Effects to recreational fisheries	Only the Gibraltar River hosts a measurable amount of angling pressure (~650 SWHS angling days per year). The Gibraltar River is currently roadless and the project would change the character of the river in the immediate vicinity of the intersection. Angling pressure on the river may redistribute to other locations along waterbody or to other waterbodies. There would be no impacts to the Gibraltar River under the east Kokhanok ferry terminal variant. The corridor would cross Iliamna Lake which (with its tributaries) host 1,900-2,200 angler days per year. Transport across the lake should not affect these fisheries.	Only the pipeline ROW would intersect with the smaller creeks noted in Alternative 3. The Newhalen River drainage (~1,900 angler days per year) and the Iliamna River (~1,000 angler days per year) are the most frequently fished waterbodies along this route. Transport activity may dislocate fishing effort where the corridor intersects with these creeks, but this effort should redistribute along the waterbodies as long as fish populations are unaffected. The lake itself and unnamed tributaries, host 1,900-2,200 angler days per year of effort. Transport across the lake should not affect these days	The Newhalen River drainage (~1,900 angler days per year) and the Iliamna River (~1,000 angler days per year) are the most frequently fished waterbodies along this route. Transport activity may disrupt fishing effort where the corridor intersects with these creeks, but this effort would redistribute along the waterbodies.
Port Site			
Effects to commercial	The Amakdedori port site	The Diamond Point port	The Diamond Point port

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Table 4.6-1: Summary of Key Issues for Commercial and Recreational Fisheries

Impact-Causing Project Component	Action Alternative 1 – Applicant's Proposed Alternative	Action Alternative 2 – North Road and Ferry	Action Alternative 3 – North Road Only
fisheries	is not located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area.	site is not located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area.	site is not located near substantial commercial fishery resources. Commercial fishermen would need to be aware of increased vessel traffic in the area.
Effects to recreational fisheries	The Amakdedori port site is located near Amakdedori Creek, which does not appear in SWHS or Guide Logbook data. The closest waterbody with measurable fishing effort Is the Kamishak River, which is more than 25 air miles to the south.	There are no recreational fishing resources of note near the Diamond Point port site. The closest waterbody with measurable fishing effort is the Iliamna River.	There are no recreational fishing resources of note near the Diamond Point port site. The closest waterbody with measurable fishing effort is the Iliamna River.
Pipeline Route			
Effects to commercial and recreational fisheries	Regardless of route, the pipeline would follow the transportation corridor and would not directly interact with the Bristol Bay salmon fishery. The pipeline would cross waters fished by the Cook Inlet salmon fishery and Cook Inlet groundfish fisheries. The pipeline would not directly interact with the salmon fishery given that the salmon fishery occurs in the top 30 feet of the water column. Groundfish commercial fishermen may need to adjust their gear placement to avoid the natural gas pipeline, but they would have flexibility to do so.		
Effects to recreational fisheries	The pipeline would follow the transportation corridor and is not expected to affect recreational fishing resources beyond those aforementioned under the transportation corridor. Cook Inlet and Anchor River fishing opportunities should be unaffected.	The pipeline ROW would cross the same streams as the mine access road in Alternative 3. Access along the ROW may increase for recreational fishing, but the increase would be low intensity.	The pipeline would follow the transportation corridor and is not expected to affect recreational fishing resources beyond those aforementioned under the transportation corridor. Cook Inlet and Anchor River fishing opportunities should be unaffected.

4.6.6 Cumulative Effects on Commercial and Recreational Fisheries

The list of Reasonably Foreseeable Future Actions (RFFAs) in Section 4.1, Introduction to Environmental Consequences, includes a number of potential mineral projects are likely to be subjected to continued exploration and study (i.e., Big Chunk South, Big Chunk North, Fog Lake, Groundhog, Johnson Tract, and Copper Joe), and a pair of projects that are reasonably foreseeable as future developments within the RFFA time frame (i.e., Pebble 78-year expansion, Pebble South, Shotgun). In addition, the RFFAs include transportation improvements and utility improvements spurred by economic activity in the area. Each project has the potential to impact fish population numbers, contributing to the cumulative effects to commercial and recreational fisheries in the region.

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4.6.6.1 Cumulative Effects- Commercial Fisheries

This study does not estimate fish population changes associated with cumulative effects of the RFFAs. It is clear that changes in the number of returning salmon spawners have a direct effect on the value of the Bristol Bay salmon fishery. The ADF&G is obligated to manage for the long-term health of the resource, which means that if escapement goals remain unchanged, reductions in returning spawners are directly transmitted as lost harvest opportunities for the commercial fleet. Cumulatively, the more development, the greater likelihood of declining number of fish. Between 1998 and 2017, the average individual salmon (of all species) harvested in Bristol Bay generated $5.16 (2017 US dollars) in ex-vessel value, and an additional $7.22 in first wholesale value to processors. Ex-vessel earnings are used to pay crew members, pay for boat maintenance and storage fees, cover the cost of supplies, and generate income for permit holders. Processor gross earnings pay permit holders, local and state taxes, utilities, and material suppliers as well as generate net earnings for processors. Any reduction in returning spawners and harvest opportunities has a value that can be calculated. Between 1998 and 2017, permit holders in Bristol Bay harvested an average of 60.4 to 60.7 percent of all returning sockeye salmon (Elison, T. et al. 2018). Presuming that the 20-year average real prices and historical harvest trends continue, each decline of 1,000,000 returning adult spawners (all species) in a year results in permit holders losing approximately $3.1 million in ex-vessel value, and processors losing another $4.3 million. Long-term declines in productivity would expand these losses across the duration of the fishery and the decline and the value of losses in real terms would change with the value of the fishery's products in real terms.

4.6.6.2 Cumulative Effects- Recreational Fisheries

Cumulative effects on recreational fisheries are harder to quantify than those on commercial fisheries. In addition to salmon, recreational anglers in the region primarily target rainbow trout and dolly varden, which depend on salmon eggs and salmon flesh for a good portion of their annual caloric intake. Fewer salmon means fewer eggs and carcasses on which to feed. In addition, cumulative effects can take their toll on the size and health of populations by degrading in-stream and near-stream habitats. Mineral development could contribute cumulatively to the reduction of the undeveloped nature of the region, and thereby reduce opportunities available for recreation activities fishing in remote areas. However, recreational anglers are more mobile and have the option to select similar substitute experiences. The most likely effect is a redistribution of days to different locations rather than a large reduction in total days. Lodges are not mobile and providers who frequent rivers that may no longer provide the same experience they once did may choose to change the services that they offer, access different locations via air, and/or lose a portion of their clientele. Changes in angler demand for trips in the region would depend on the magnitude of changes in the angling experience, angler preferences, and the type of responses by trip providers.

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4.9 SUBSISTENCE

This section describes potential impacts of the Pebble Project on subsistence in communities near Iliamna Lake, in the Kvichak and Nushagak river drainages, and on the southwest coast of Kenai Peninsula. The magnitude, geographic extent, and duration of impacts are assessed for each project phase. Potential impacts include:

- Changes in resource availability – construction and operation of project facilities may impact fish and wildlife habitat, and decrease or displace fish, wildlife, and vegetative resources used for subsistence.
- Changes in access to resources – project facilities and transportation corridors may open or remove areas from subsistence activities, or facilitate or restrict access to subsistence resources. In addition to physical access, project activity may change the character of the subsistence activities.
- Changes in competition for resources – changes to local population from direct and indirect employment and construction of project transportation access corridors may result in increased competition for subsistence resources.
- Changes in sociocultural conditions – direct/indirect employment opportunities for local residents and the presence of new large scale industrial facilities may have adverse and beneficial sociocultural effects.

4.9.1 No Action Alternative

Under the No Action Alternative, the mine would not be constructed; however, Pebble Limited Partnership (PLP) would still be permitted to perform exploratory activities and research at the site and would be expected to do so. Resource availability would not change from the conditions present during exploration activity and environmental studies at the action alternatives' proposed mine site. Local employment from exploration would be minimal. Potential effects to sociocultural aspects of subsistence (see below for an explanation of sociocultural dimensions of subsistence) would include a loss of income for a small number of people to fund subsistence activities (see Section 4.3, Needs and Welfare of the People—Socioeconomics), while labor and time available for subsistence would increase for those individuals. There would be no additional direct or indirect effects on subsistence. Existing trends in subsistence activities and resources would continue.

4.9.2 Alternative 1 – Applicant's Proposed Alternative

4.9.2.1 Changes in Resource Availability

During the 4-year construction phase, project activities would, in varying degrees, affect the availability and abundance of traditional and subsistence resources through habitat loss; behavioral disturbance and displacement resulting from increased noise, vehicle/aircraft/ferry traffic, and human activity; fugitive dust deposits on vegetation; concerns about contamination of resources; avoidance of traditional use areas; and increased costs and times for traveling to more distant areas (see Section 4.23, Wildlife Values, Section 4.24, Fish Values, Section 4.25, Threatened and Endangered Species, and Section 4.26, Vegetation, for discussions of project impacts on fish, wildlife, and vegetation).

During the operations phase, the effects of project activities would be similar. However, the effects would last for 20 years, and occur with less intensity along the transportation corridor than during construction because operations activities would be less disruptive than

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construction activities, although regular vehicle and ferry traffic and the physical presence of transportation corridor elements would continue to affect availability of subsistence resources. At the mine site, effects could occur with more intensity, associated with mining activity, noise, and expansion of the open pit and the waste rock and tailings storage.

Resources and species of concern that have been identified through the scoping process and environmental baseline documents include salmon, caribou, moose, seal, berries, small mammals, and firewood. With regard to the mine site, displacement and individual mortality of fish would occur in the upper portions of the North and South Fork Koktuli Rivers directly affected by mine facilities, but given the limited number of fish observed in that area and the quality of fish habitat, impacts would not be noticeable downstream from the affected channels (see Section 4.24, Fish Values). Similarly, there would be displacement of any moose, caribou, small land mammal, and upland birds that use the proposed mine site, but this would represent a small percentage of available habitat. These impacts to fish and wildlife would not be expected to impact harvest levels, since there would be no population-level decrease in resources and alternative, and in many cases more productive, habitats are available.

With regard to transportation facilities such as access roads and Iliamna Lake ferry operations, there would be loss of habitat from the facility footprint, potential displacement of individual fish and wildlife from human activities and noise, and potential injury and mortality from strikes with truck traffic (large and small land mammals) (see Section 4.23, Wildlife Values). However, the facility footprint would be small with regard to the total habitat available, and culverts would be required on the access road to allow for fish passage. Vehicle collisions with large and small land mammals would not have a population-level effect. There would be some site specific habitat fragmentation from project facilities, causing behavioral disturbance to terrestrial wildlife and birds and localized changes in distribution.

There would be direct loss of resource availability for berries and firewood in the project footprint and the immediate area of mine and transportation facilities; but these resources are commonly available in the project area, and there are alternative gathering areas available that are traditionally used.

Fugitive dust impacts would occur within a narrow corridor on either side of the roadways as described in Section 4.26, Vegetation. The heaviest dust deposition would be anticipated to occur within 35 feet of the road and vegetation and berry picking activity may avoid dusted areas. Some localized impacts of dust settlement in stream channels where fishing occurs may be noticeable, but implementation of dust suppression and enforcement of slow speed limits at all stream crossings would minimize dust-related impacts to aquatic ecosystems. Impacts would be expected to extend through the life of the project and would be localized to the area of disturbance. Fugitive dust from construction, roadways, and mining activities deposited in streams and on berries, other traditionally used plants, plants that animals eat, and water, would discourage subsistence users from harvesting these resources near the areas affected by the mine site and the transportation corridor. Subsistence users also may avoid harvesting waterfowl because of concerns about birds becoming contaminated from landing on and using open water at mine site facilities.

The communities closest to project infrastructure and transportation activities, including the mine site, transportation corridor, the ferry and terminals, port, and airports, would be the most affected by changes in resource availability. These communities include Nondalton, Iliamna, Newhalen, Pedro Bay, Igiugig, and Kokhanok. In contrast, communities in the Nushagak River drainage and in the Kvichak River drainage below Igiugig would experience little to no impact on resource availability as the potential impact on fish is small. Residents in Port Alsworth use an area in the vicinity of the mine site and along the north mine access road to harvest caribou,

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moose, other land mammals, waterfowl, upland birds, and berries though the areas closer to and surrounding this community see higher concentrations of use and it is expected that there would be little to no impact on resource availability in the concentrated use areas closer to the community during operations. On the east side of Cook Inlet, the construction and decommissioning of the natural gas pipeline would disturb a small area near the Sterling Highway but distant from communities traditionally pursuing subsistence activities, and would have a very low potential to impact subsistence users.

During construction and operations, the effects of project activities on resource availability would be primarily localized in the vicinity of project facilities and activities. While the mine site is within subsistence harvest areas used by five communities, it provides relatively poor fish and wildlife habitat and is not within the area of highest intensity overlapping subsistence users. Portions of the transportation corridor, primarily in the vicinity of Upper Talarik Creek and Gibraltar Lake and River are more heavily used (see Section 3.9, Subsistence). Truck traffic along these portions of the transportation corridor could displace moose and other land mammals in the immediate vicinity of the transportation corridor. Subsistence users that harvest resources in the immediate vicinity of the transportation corridor, particularly those from Iliamna, Newhalen, and Kokhanok, would likely need to make some adjustments to where they might traditionally harvest some subsistence resources to target resources that would be less affected by project activities. These adaptive approaches would likely sustain harvest levels for affected communities, but may increase the expenses and time needed to harvest subsistence resources.

Many project features would be removed or reclaimed, or both, during closure. Once restoration activities have been completed, impacts on the availability of subsistence resources would be reduced as these areas become revegetated and return to a more natural state than their condition during operations. The pit lake at the mine site would fill during the decades after mine closure. This would introduce a new standing waterbody, and concern about contamination of waterfowl was expressed during scoping. While there would be exceedance of water quality standards for specific metals, during the phases of closure (see Appendix K 4.18) risks to wildlife and birds from potential contaminants exposure would be limited and short-term, since the pit lake is anticipated to not support habitat that is attractive to many species of waterfowl and shorebirds and alternate habitat, including open water for staging, is available in the area. Some project facilities, including the pipeline, power plant, limited camp and storage facilities, access roads, and mine water treatment plant, would remain in use after mine closure as long as needed to support closure activities. Impacts on resource availability would be localized, in the vicinity of remaining infrastructure and activities (see Section 4.26, Vegetation, and Section 4.23, Wildlife Values, for discussions on vegetation restoration and impacts to wildlife).

The likelihood of impacts to subsistence resource availability in the project area during construction and operations would be high but have the highest intensity in the immediate vicinity of the project components. Disturbance, displacement, individual mortalities such as vehicle collisions with large land mammals and physical loss of stream habitat, and the loss of acres of habitat from project components would be the primary impacts to subsistence resources, but would be of low magnitude based on lack of population-level effects to fish and wildlife and the general availability of similar habitat to that affected by the project footprint. Impacts from the transportation corridor and associated uses would be intermittent to prolonged over the construction period and 20 year operations period. The duration of impacts would extend beyond the life of the mine but would decrease in intensity after closure and would cease when project restoration is complete.

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4.9.2.2 Changes in Access to Resources

During the construction phase, access to the area in the immediate vicinity of the project components would be impaired or restricted. Such restrictions would affect communities located near project infrastructure that use this land for or to access subsistence fishing, hunting, gathering, education of youth on subsistence traditions, and other customary practices. Construction of linear features, such as the roads and pipeline, could interrupt travel to resources or communities on the other side of the right-of-way (ROW). For example, construction of the natural gas pipeline and south access road could inconvenience residents of Kokhanok accessing subsistence areas south and west of the community during 1 of the 4 years of construction. Additionally, construction-related vessel traffic crossing Iliamna Lake could inconvenience other vessel traffic and subsistence activities. Safety considerations and presence of project equipment and personnel may restrict hunting activities in proximity to project facilities, and would be subject to consultation with potentially affected communities.

During the operations phase, the project footprint of the mine site, Iliamna Lake ferry terminals, access roads areas, and Amakdedori port would not be available for subsistence uses. Hunting may be restricted in the vicinity of those areas, and a raised gravel road may present a barrier to snowmachine and all-terrain vehicle (ATV) crossing. However, such restrictions would have minimal impact on access to subsistence resources because these project components would occupy a relatively small portion of the nearby communities' harvest areas, and because mitigating measures would be in place to minimize or avoid impact, such as providing marked crossing points across the transportation corridor and around the ferry terminals (PLP 2018-RFI 027). However, crossing at designated points may add travel time for subsistence users.

PLP would work with local communities to identify safe, practicable ways for residents to use the access roads, such as scheduled escorted convoys for private vehicle transport, and address hunting guidelines in proximity to project facilities. Trails and crossing points would be sign-posted and appropriate traffic controls would be established to ensure public safety (PLP 2018-RFI 027). Once constructed, the transportation corridor roads and the natural gas pipeline corridor ROW could have a positive effect on access to subsistence resources (depending on the level of access agreed to between the State, PLP, and the Lake and Peninsula Borough [LPB]) because these cleared routes could facilitate some overland travel by ATVs and snowmachines.

The Iliamna Lake ice-breaking ferry would disrupt winter travel over the frozen lake by creating a corridor of open water and potentially adding to travel time and increasing fuel expenditures by subsistence users. In addition, the open water in the ferry's wake would present a safety hazard for subsistence users. However, the project would work with communities (and supply funding) to provide for the marking and maintenance of snowmachine trails between communities across Iliamna Lake when lake ice is thick enough to support such traffic (PLP 2018-RFI 071a) (see Section 3.12 Transportation and Navigation). For the Kokhanok east ferry terminal site variant, snowmachine access to Iliamna Lake would be provided to the east of the terminal to enable access to the Sid Larson Bay area without crossing the ferry route (PLP 2018-RFI 078). PLP would work with local communities to find solutions for ferry transportation use (PLP 2018-RFI 027). The summer-only ferry variant would have no impact to winter access across Iliamna Lake.

At closure, roads in the transportation corridor would remain for monitoring purposes and so could continue to facilitate overland travel for subsistence access. The ferry facilities would be removed and supplies would be transported across the lake using a summer barging operation; thus, there would be no impacts from ice-breaking ferries after closure. Many of the other

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project features would be removed and/or reclaimed; therefore, adverse impacts on access to subsistence resources would be greatly reduced.

Impacts of access in the transportation corridor to subsistence users in the EIS analysis area would be of medium magnitude and localized geographic extent due to the ability to access other areas for harvest of resources. This is primarily because the Upper Talarik Creek portion of the transportation corridor is identified as a high overlapping area for subsistence users for two communities (Iliamna and Newhalen) and used by two others (Nondalton and Igiugig), and the Gibraltar River and Lake portion of the transportation corridor is a high overlapping subsistence use area for Kokhanok that is also used by Igiugig. Impacts of the transportation corridor and associated uses would be intermittent to prolonged over the 24 year period of construction and operation. The duration of impacts would be long-term, extending beyond the life of the mine. The likelihood of impacts is high.

The following sections evaluate project impacts on access to subsistence resource harvest areas for the six communities located closest to the project components, as project facilities and activities may restrict access in areas of overlapping subsistence use by these communities. It is based on reported and historical use of these areas as described by SRB&A (2011b), Fall et al. (2006), and Krieg et al. (2009) and presented in Section 3.9, Subsistence. For most of the communities, the contemporary use areas mirror the traditional use of the lands used to harvest subsistence resources, while in some communities the movement of animals (e.g., the Mulchatna caribou herd) to different areas has changed patterns of use and hunters have focused attention on different areas or resources. The figures in Section 3.9, Subsistence, show the multi-year subsistence use areas and the relative number of subsistence users for the six communities closest to the project components. It is possible that some downriver communities in the Kvichak and Nushagak River drainages may occasionally use the project area for subsistence activities, but their high frequency use areas are closer to the location of their communities (see Appendix K3.9).

The impacts to use areas and access to these areas from construction and operations of the natural gas pipeline would be the same as described for the transportation corridor.

The mine site would impact all six of the listed communities in similar ways. Construction, operations, and closure may affect access to subsistence hunting and fishing on these lands. Project-related activities, such as blasting and operation of heavy equipment and helicopters, would adversely restrict access. Lake community residents that may have otherwise traveled through the mine site area to reach subsistence resources further north and west would have to take alternative routes and potentially travel farther distances to avoid the mine site and infrastructure. However, the mine site is not shown as a high frequency overlapping use area for any of the six communities.

Impacts to accessing the mine site for subsistence use and harvest would be most concentrated near the mine site area and would diminish with distance. The effects would be localized in geographic extent; there is availability of alternate areas in traditional subsistence areas for activities. Impacts of the mine site and associated uses would be intermittent to prolonged. The duration of impacts would extend beyond the life of the project, with diminishing intensity as the site is reclaimed during closure. The likelihood of impacts would be high.

Iliamna

Construction and operations of the mine access roads (including a bridge over the Newhalen River) and the north ferry terminal under Alternative 1 would likely disrupt access to a portion of the overall harvest areas near Upper and Lower Talarik creeks, which are medium- to high-use areas for Iliamna subsistence users, particularly for moose and other land mammals. While

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there are other areas shown as medium to high uses areas for moose and other land mammals, hunters who traditionally use the Upper and Lower Talarik creeks areas would be affected. The south ferry terminal, Kokhanok east ferry terminal variant, and south mine access road would be located in lower overlapping use areas that Iliamna residents' access for resources.

Under the summer-only ferry variant the volume of haul trucks on the access roads would double in the summer, which could result in a greater impact in terms of access to resources in the use areas near the ferry terminals and access roads. Summer ferry traffic would also double, increasing from one daily round-trip to two; however, that impact would be low intensity, as boat traffic by subsistence users would only be minimally affected by the increase.

Until Iliamna Lake is connected to Cook Inlet through the transportation corridor at the southern ferry terminal, the Williamsport-Pile Bay Road may be used to transport supplies to Iliamna Lake during construction (PLP 2018-RFI 037). If this route were to be used, the volume of traffic on Williamsport-Pile Bay Road would increase during construction, which could affect access to resources, though this would be in an area accessed by a low to moderate number of subsistence users.

Newhalen

Construction and operations of the mine access roads (including a bridge over the Newhalen River) and the north ferry terminal under Alternative 1 and the variants may disrupt access to a portion of the overall harvest areas near Upper and Lower Talarik creeks, which are medium- to high-use areas for Newhalen subsistence users. Impacts to access would be similar to those described above for Iliamna. The south ferry terminal and south mine access road and variants are located in an area with lower overlapping uses that Newhalen residents access for resources. Under the summer-only ferry variant, the volume of haul trucks on the access roads would increase, which could result in a greater impact in terms of access to resources in the use areas near the ferry terminals and access roads. Ferry traffic would also double, increasing from one daily round-trip to two; however, that impact would be low intensity, as boat traffic would only minimally be affected by the increase.

If the Williamsport-Pile Bay Road is used during construction, the volume of traffic on this route would increase, which could affect access to resources though this would be in an area accessed by a low number subsistence users.

Pedro Bay

Construction and operations of the mine access roads and ferry terminals under Alternative 1 and the variants may displace access to a small portion of the overall harvest areas near the Upper and Lower Talarik creeks, which show low overlapping uses for Pedro Bay harvesters.

If the Williamsport-Pile Bay Road is used during construction, the volume of traffic on this route would increase, which could affect access to resources; this would be in an area accessed by a moderate to high number of residents.

Nondalton

Construction and operations of the mine access roads (including a bridge over the Newhalen River) and ferry terminals under Alternative 1 and variants may impact access to the use areas near the Upper and Lower Talarik creeks, which are used by a low to moderate number of Nondalton subsistence users. Impacts on access in this area would be similar to those described for Iliamna.

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Igiugig

Construction and operations of the mine access roads and the north ferry terminal under Alternative 1 may disrupt access to a small portion of the overall harvest areas near Upper and Lower Talarik creeks, although they are low-use areas for Igiugig subsistence users. The south ferry terminal, south mine access road, and Kokhanok east ferry variant would be located in areas that a low to moderate number of Igiugig residents report as accessing for resources.

The ferry traffic would be noticeable to those using Iliamna Lake to access areas at the north east end of the lake, in the Sid Larson Bay and areas around the community of Kokhanok. These areas are all used by a low number of subsistence users in Iguigig. The impact would be of higher magnitude in the winter, when the ice-breaking ferry would be operating. However, there would be safe access on the eastern side of Kokhanok to access Sid Larson Bay without crossing the path of the ferry under the Kokhanok east ferry terminal variant.

Kokhanok

Construction and operations of the mine access roads, ferry terminals, and the east Kokhanok ferry terminal may impact Kokhanok residents' access to portions of the high overlapping harvest use areas in the immediate area surrounding the community, and the Gibraltar Lake and River areas. Portions of lower overlapping use areas near the Upper and Lower Talarik creeks where large land mammals are hunted would also be affected. Under the summer-only ferry variant, the volume of haul trucks on the southern access road would double in the summer, which could result in a greater impact in terms of access to resources in the use areas near the ferry and south access road. Summer ferry traffic would also double, increasing from one daily round-trip to two; however, that impact would be low intensity, as subsistence user boat traffic would only minimally be affected by the increase.

During the winter when the ferry would be breaking ice, ferry traffic would be noticeable to those using Iliamna Lake to access areas at the north east end of the lake, in the Sid Larson Bay and areas around the community of Kokhanok. Traditional access routes used by some Kokhanok residents would be affected, but there would be safe access on the eastern side of Kokhanok to access Sid Larson Bay without crossing the path of the ferry under the Kokhanok east ferry terminal variant.

Construction and operations of the Amakdedori port under Alternative Action 1 would affect access for residents of Kokhanok to low overlapping use areas for taking of marine invertebrates and seals in Kamishak Bay. Construction of the Amakdedori Port under Alternative 1 is not expected to impact access to resources for communities other than Kokhanok because resident of other communities do not harvest resources in that area.

4.9.2.3 Changes in Competition for Resources

The project would result in employment opportunities for non-local workers during construction and operations; however, such opportunities are unlikely to increase competition for subsistence resources from sport hunting and fishing in areas where project employees are working or housed. Employees would be prohibited from hunting, fishing, and gathering while onsite to minimize competition to local subsistence resources. Non-local mine site employees would be transported to and from the mine site by aircraft, so that non-local employees could continue to live outside the region and commute to project work sites. Similarly, access to and use of project roads and other facilities for non-resident sport hunting would be prohibited. Non-local workers would not likely contribute to an increase in recreational use, although some may occasionally stay in the area when off duty or visit for recreational trips to nearby destinations.

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There is potential for a small population increase in communities closest to the mine site (see Section 4.3, Needs and Welfare of the People—Socioeconomics), which could increase resource competition among local residents. It is possible that visibility of the area for mine workers would encourage more recreational and sport hunting; however, such activities would require travel back to the region by non-local workers and be subject to the management of the ADF&G. The largest impacts could occur in Iliamna, which may see a small increase in population related to businesses developed to support the project.

After closure, the potential for non-local project employees to increase competition for subsistence resources would decrease.

4.9.2.4 Changes in Sociocultural Dimensions of Subsistence

Project construction and operations would result in both beneficial and adverse effects on sociocultural dimensions of subsistence. Subsistence activities are both cash dependent and highly cash-efficient. Cash income is required to pay for equipment, supplies, and operating costs, but modest cash investments result in large subsistence harvests and well-being. Increased incomes from project employment for local employees would likely be partially or largely invested in subsistence activities, increasing the efficiency and reliability of subsistence equipment and providing financial resources for a greater level of subsistence activities. Project activities would increase employment opportunities for residents of the project area, particularly for those living in communities surrounding Iliamna Lake. The number of local people who would be hired during the construction phase is not known, but PLP intends to prioritize opportunities for residents of the project area or those with close ties to the area (PLP 2018-RFI 027). During the operations phase, an estimated 50 employees would come from communities connected to project sites by road and an additional 200 employees would come from surrounding communities (out of 850 total employees during operations) (PLP 2018-RFI 027).

The effect of income on subsistence success (i.e., subsistence production) is evident among households with unique demographic structures. In many communities, 30 percent of households produce 70 percent of the subsistence harvest. These “super households” are distinguished because they include multiple working-age males, tend to have high incomes, and often are involved in commercial fishing. These three factors support high-producing households to be able to combine subsistence activities with paid employment and to arrange considerable labor in flexible ways that maximize harvests of subsistence foods, which are then shared with other households in the community and region. In contrast, the low-producing households usually have lower incomes, and are led by a single female or non-Native head of household, are single-person households, or households composed of elders (Wolfe et al. 2010).

At the same time, subsistence activities are labor intensive and require large investments of time and effort in hunting, fishing, and processing subsistence foods. Many subsistence resources are available only at certain times of the year. To the extent that project related employment reduces the time available for these employees to participate in subsistence activities and to pass on skills and knowledge to the next generation, their harvest effectiveness may decline. Proposed shift-work schedules, with two weeks at the project site and two weeks off in the community would likely reduce, but not eliminate, the conflict between project employment and subsistence activities.

Increased employment of adults and changes in work schedules would impact the nature of time spent training young people to subsistence hunt and fish. This change would impact the amount and quality of traditional knowledge passed on to younger generations and could potentially result in an adverse effect to communities. Households and communities would have

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to adjust to new roles of subsistence labor, changes in sharing networks, and possible changes in harvest levels. Rotational work schedules could affect levels of subsistence in different ways, since some families could adapt positively and some would find this an adverse effect. Legal hunting seasons are short, and if work schedules conflicted with seasons, then the effect on subsistence harvests could be greater. A main hunter's absence from the community at important times of the season or year could have a greater impact. However, the effects could be reduced, but not eliminated, with planned periods of leave options that allow for continuation of traditional subsistence practices and schedules during subsistence harvest periods.

Out-migration of mine project employees from local communities has been identified as an adverse sociocultural effect on subsistence. At the Red Dog Mine, nearly 50 percent of the workforce from local communities eventually migrated to lower cost, higher amenity communities like Anchorage and Wasilla, because the mine operator provided no-cost transportation to the mine site for workers' shifts (Tetra Tech 2009). To the extent that high-harvesting households relocated away from the community, the reduction in subsistence foods available in the community would be disproportionately larger. While a large in-migration of population is not anticipated, Alternative 1 may lead to changing population patterns in the region (see Section 4.3, Needs and Welfare of the People). The population in some potentially affected communities has been declining due to out-migration. The project could reduce or eliminate the decline because of the increase in employment opportunities and indirect effects improving education and infrastructure. Therefore, the impacts on population and effects to sociocultural changes of subsistence are difficult to anticipate.

Local residents participate in subsistence activities to a high degree. The level of participation may be affected by changes in resource abundance and quality, season and bag limits, changes in physical access, changes in cultural perceptions of resources (e.g., fish and animals are seen as tainted/contaminated, or water as polluted), the physical presence of project facilities in an area that was previously undeveloped and comfort level pursuing subsistence activities in their vicinity, and the times and funds available for subsistence activities. Changes in harvest participation are a leading indicator of cultural changes; continued participation is important to the transfer of knowledge and skills across generations, to the formation of social relationships within and between communities, and to cultural continuity. To the Yup'ik and Dena'ina cultures in the project area, salmon provide a large proportion of their nutritional food resources and represent an essential part of the language, spirituality, and social relations. In particular, subsistence and customary practices are the foundation of culture, maintain the connection of people to their land and environment, and support healthy diet and nutrition (Boraas and Knott 2013).

To the extent that project activities would have adverse impacts on resource abundance, availability, quality, and access, corresponding adverse sociocultural impacts on affected communities would occur, related to community health/well-being and cultural identity. Under routine operating conditions, the communities affected would likely be limited to those closest to the project's infrastructure and transportation activities: Nondalton, Iliamna, Newhalen, Pedro Bay, Igiugig, and Kokhanok. However, there could still be perceived concerns regarding potential contamination and the safety of subsistence resources in communities downriver from the project area.

At closure, both time commitments for and cash income from project employment would cease. Households would have to adjust to reduced cash income to support the maintenance and operating costs of a subsistence lifestyle. Workers who moved out of local communities may choose not to return. The indirect effects of mine employment and income on subsistence practices would cease.

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4.9.3 Action Alternative 2—North Road and Ferry

Impacts from the changes in the sociocultural dimension of subsistence would be the same as Alternative 1 for all project components. Impacts from the changes in resource availability, access to subsistence resources, and competition for resources would be the same as Alternative 1 at the mine site. Along the transportation corridor and natural gas pipeline, impacts would be similar to Alternative 1, except for differences described below.

Changes in resource availability along the transportation corridor and the natural gas pipeline for Alternative 2 would be similar to Alternative 1, but would affect a different area for the access road, ferry, pipeline and port, and therefore affect communities to a different degree. Individual mortality and behavior disturbance to and displacement of subsistence resources would occur at approximately the same levels as described under Alternative 1. The primary difference is that there are fewer communities using the area in between Pile Bay and Williamsport for subsistence, and so the magnitude and geographic extent of the impact would be less than Alternative 1. Based on the frequency of areas of overlapping subsistence users, Nondalton, Newhalen, and Pedro Bay use the North Road alignment to the Eagle Bay ferry terminal to a lesser degree, and Iliamna has a higher frequency use. Pedro Bay has high frequency overlapping use of the area of the Pile Bay terminal and portions of access road from Pile Bay to Williamsport. All six project area communities use the eastern end of Iliamna Lake for seal hunting to some degree.

Along the ferry route there would be a higher magnitude impact to resource availability for seals, than Alternative 1 because the ferry would pass through more seal hunting areas under Alternative 2. There would be less impact to seal hunting under the summer-only ferry operations as they do not tend to congregate in this area of the lake in the summer months and the preferred time for hunting seals is in the winter (see Section 4.23, Wildlife Values).

Under Alternative 2, there would be an overland pipeline ROW from Pile Bay to the mine site. This could introduce some competition to subsistence users from recreational sport hunting and fishing, although because of the relatively low recreational use of the area, the magnitude would be expected to be small.

4.9.3.1 Changes in Access to Resources

Iliamna

The mine access road from Eagle Bay would be located in medium- to high-use areas accessed by residents of Iliamna and would be likely to impact access. There are overlapping use areas near the Newhalen River and further inland, and near the site of the ferry terminal at Eagle Bay. The ferry under Action Alternative 2 would traverse the eastern portions of Iliamna Lake that are accessed by residents with low to medium overlapping uses. The ice-breaking ferry would disrupt access to these areas, and similar to Alternative 1 safe winter travel routes would need to be developed with arrangements between PLP and affected communities. With the summer-only ferry variant, there would be little disruption to access in the winter on Iliamna Lake or the mine access roads, but the summer access to resources would have a higher level of disruption from an additional daily ferry trip and a doubling of truck traffic on the mine access roads.

The addition of a pipeline ROW would potentially create an overland route that could be used by Iliamna residents to access additional subsistence resources.

Diamond Point port construction and operations under Alternative 2 could affect Iliamna residents' access to harvests locations in Cook Inlet. However, these areas are reported as low-use areas for harvested resources near Iliamna Bay and north of Augustine Island.

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Newhalen

The mine access roads of Alternative 2 would be located in the vicinity of a medium to high overlapping use area near the Newhalen River and would be likely to impact access to resources in the areas inland north of the community. The ferry route would be south of the islands in Iliamna Lake that are accessed by residents, but would not pass close to the islands and would not likely disrupt access in the summer. In the winter, the ice-breaking ferry could disrupt access to all resource use areas on the northeast end of the lake. With the summer-only ferry variant, there would be little disruption to access in the winter on Iliamna Lake or the mine access roads, but summer access to resources would have a higher level of disruption from an additional daily ferry trip and a doubling of truck traffic on the mine access roads.

The addition of a pipeline ROW would potentially create an overland route that could be used by Newhalen residents to access additional subsistence resources.

Diamond Point port construction and operations under Alternative 2 would not be expected to affect Newhalen access to harvests locations, as they do not access resources in that location.

Pedro Bay

The mine access roads and use of the Williamsport-Pile Bay Road under Alternative 2 would likely impact access to resource harvest areas for Pedro Bay residents in high overlapping use areas near the community and inland from Iliamna Lake and in Pile Bay, and have similar impacts to access as described in Alternative 1. However, there is the existing Williamsport-Pile Bay road, and Pedro Bay has experience with the adverse and beneficial effects of a road on subsistence access. The ferry route would be south of the islands in Iliamna Lake that are used by residents of Pedro Bay, and so access to those islands and their resources would not be likely to be affected. As described for Iliamna, winter ferry operations would impact traditional access and create travel safety concerns that would need to be mitigated in consultation with PLP.

The addition of a pipeline ROW would potentially create an overland route that could be used by Pedro Bay residents to access additional subsistence resources.

Diamond Point port construction and operations under Alternative 2 could impede access to subsistence activities and fishing and marine invertebrate harvesting for Pedro Bay residents in Iliamna Bay and near Augustine Island as the port would be located in the vicinity of these use areas. However, there is existing vessel traffic to Williamsport during the summer months, and some vessel traffic associated with the quarry at Diamond Point.

This community is smaller than the other lake communities and does not go as far to harvest subsistence resources. Therefore, small amounts of disruption would have a greater intensity of impact to this community.

Nondalton

The mine access roads of Alternative 2 are likely to impact access to resource harvest areas for Nondalton residents as they would be located in the vicinity of medium overlapping use areas. Impacts would be similar to those described for Iliamna. The ferry route would be south of the islands in Iliamna Lake that are used by residents of Nondalton; therefore, access to those islands and their resources would not likely be affected. However, winter subsistence harvest of seals would be affected by ferry operations, similar to impacts discussed for Iliamna.

The addition of a pipeline ROW would potentially create an overland route that could be used by Nondalton residents to access additional subsistence resources.

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Diamond Point port construction and operations under Alternative 2 would not be expected to affect Nondalton access to harvests locations as they do not access resources in that location.

Iguigig

Neither the transportation corridor, ferry, nor Diamond Point port of Alternative 2 are anticipated to impact the access to resource harvest areas for Igiugig residents as fewer subsistence users search for and harvest resources in these areas.

Kokhanok

The mine access roads of Alternative 2 are less likely to impact access to resource harvest areas for Kokhanok residents as fewer subsistence users search and harvest in areas inland from the north side of Iliamna Lake and closer to the mine site.

The ferry route would be south of islands in Iliamna Lake that are accessed by residents for seal hunting, but would not pass close to the islands and would not likely disrupt access in the summer. In the winter, the ice-breaking ferry could disrupt access to seal hunting in winter which is the preferred time of year when this activity occurs. With the summer-only ferry variant, there would be no disruption to access in the winter on Iliamna Lake, but summer access to resources would be more noticeable from an additional daily ferry trip. This area sees a low level of use by Kokhanok residents and the magnitude of disruption from the ferry would be small.

Diamond Point port construction and operations under Alternative 2 would not be expected to affect Kokhanok residents' access to harvest locations, as they do not typically access resources in that location.

4.9.4 Action Alternative 3—North Road Only

Impacts from the changes in the sociocultural dimension of subsistence would be the same as Alternative 1 for all project components. Impacts from the changes in resource availability, access to subsistence resources, and competition for resources would be the same as Alternative 1 at the mine site. Along the transportation corridor and natural gas pipeline, impacts would be the same as Alternative 1, except that there would be no ferry operations and access would be provided entirely by road.

Changes in resource availability along the transportation corridor and the natural gas pipeline for Alternative 3 would be similar to Alternative 1, but occurs over a different geographic area. Individual mortality and behavioral disturbance to, and displacement of, subsistence resources would occur at approximately the same levels. The primary difference is that there are slightly fewer communities using the area between Pile Bay and Williamsport for subsistence (Iliamna, Newhalen, Nondalton, and Pedro Bay). However, there are a high number of overlapping use areas along the road corridor of Alternative 3 from Pedro Bay to the mine site for Iliamna and Pedro Bay, and so the magnitude of the impact to those communities would be a little higher than Alternative 1.

Under Alternative 3, there would be a road from Pile Bay to the mine site, it would be under controlled access, limiting potential competition to subsistence uses of resources from non-local recreational sport hunting and fishing. The magnitude of potential would be expected to be small.

Access to subsistence resource use areas would be the similar to Alternative 2 for residents of Iliamna, Newhalen, Pedro Bay, Nondalton, Iguigig, and Kokhanok. The primary difference is the road from Pile Bay to the mine site, which would affect access in ways similar to the discussion

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for Alternative 1. There would be no ferry operations, and therefore no impacts to winter seal hunting access on Iliamna Lake.

4.9.5 Summary of Key Issues

See Table 4.9-1 for a summary of key issues.

Table 4.9-1: Summary of Key Issues for Subsistence

Impact	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Impacts to availability of subsistence resources	Reduced availability of subsistence resources through habitat loss, disturbance and displacement of resources, fugitive dust deposits on resources, and increased costs and time for traveling to harvest areas.	Similar impacts to Alternative 1 would affect subsistence resources in the Alternative 2 project area.	Similar impacts to Alternative 1 would affect subsistence resources in the Alternative 3 project area.
Impacts in competition for resources	There would be some availability to access other areas for harvest of resources, which could increase competition in some areas by providing additional access for local residents.	The addition of the pipeline ROW may increase competition for resources in that area by providing additional access for local residents.	Similar to Alternative 1
Impacts to sociocultural dimensions of subsistence	Beneficial effects from new income to invest in subsistence activities. Challenges in balancing time required for employment and time for subsistence activities. Adverse effects from out-migration, particularly if high-harvesting households leave.	Same as Alternative 1	Same as Alternative 1
Impacts to access to subsistence resources	Snowmachine access could be disrupted in the winter by the ice-breaking ferry, and could also create a safety hazard. PLP would put measures in place to minimize impacts, such trail marking and crossings. The east Kokhanok ferry terminal variant would allow for access to Sid Larson Bay without crossing the ferry route. There would be no impact from ferry traffic during the winter under the summer-only ferry variant.	Impacts would be the same as for Alternative 1, except that the routes affected would be trails from Pedro Bay and the north end of the lake instead of the mid-lake region. There would be no impact during the winter under the summer-only ferry variant.	Impacts would be similar to Alternative 2, except the impacts from the road from Pile Bay to the mine site would be more similar to the road under Alternative 1.

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4.9.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) as described in Section 4.1, Introduction to Environmental Consequences, have the potential to contribute cumulatively to effects on subsistence resources and uses. These RFFAs may result in direct and indirect effects on subsistence resources and uses. The following RFFAs apply to the consideration of cumulative effects on subsistence resources and uses.

- Pebble Project build-out—develop 55 percent of delineated resources over a 78 year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun
- Johnson Tract*
- Copper Joe*
- Donlin Gold
- Diamond Point Rock Quarry
- ASAP
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Hydrocarbon Exploration*
- LPB Transportation Projects
- LPD Capital Improvement Projects
- USDA Rural Development Projects
- LBP Renewable Energy Projects
- Nushagak Intertie Project
- Subsistence Activity
- Tourism, Recreation, Hunting, Fishing
- Scientific Surveys and Research

**Indicates exploration activities only.*

Each of these RFFAs contribute to the increased potential for impacts on subsistence resources, as each involves some aspect of ground-disturbing activity that can lead to the disturbance and displacement of subsistence resources at those locations.

Actions that expand mineral development near the Pebble deposit and around Iliamna Lake contribute to landscape-level effects, where there is continuous introduction of additional impediments to the movement of people and animals; increased noise, vibration, and atmospheric pollution; and increased numbers of people to the area. Expansion would increase the geographic area affected by the project by combining project elements of Alternative 1 and 3, with potential combined impacts to resource availability, access to resources, competition, and sociocultural dimensions of subsistence. Expansion of the mine site would affect more fish habitat in the upper reached of the North and South Forks of the Koktuli Rivers, and Upper Talarik Creek. The Pebble Project build-out RFFA would contribute to the cumulative effects with additional infrastructure, habitat loss, and disturbance over a long period of time, up to an additional 98 years depending on the period of post-mining milling and closure activities.

These effects can affect the quality and cultural experience of subsistence activities, leading to adverse impacts on subsistence resources that are central to cultural belief systems and the way of life of local people. Effects such as habitat fragmentation, noise, and potential for increased access for recreational hunting and fishing disrupt subsistence cycles, which may result in direct impacts on resource gathering areas and harvest quantities. Local residents have observed that there has already been a loss to subsistence opportunities and the way of life due to planning and exploration activities that are associated with the Pebble Project from helicopter traffic and that there have been disruptions to local wildlife. Subsistence users in Nondalton noted that their community uses traditional trapping and hunting areas near Groundhog

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Mountain (Fall et al. 2006). Impacts to Nondalton from the Groundhog project (listed above) would be additive to impacts from the proposed Pebble Project and the Pebble expansion RFFA, likely causing them to travel further and expend more time to trap and hunt.

These types of effects are also applicable to an increase in resource development actions along the coast of Cook Inlet, which may impact those communities that use Amakdedori and Iniskin Bay areas for subsistence resources and access to sites that are important for harvest and cultural practices central to the healthy relationship of people to the land they inhabit. The cumulative impacts would be long-term to permanent, and geographically broad in scope (i.e., regional level).

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4.20 AIR QUALITY

This section addresses air quality impacts during the project. Direct and indirect air quality impacts from all phases of the project are evaluated using project emissions, and where applicable, air modeling results. Project emissions consist of criteria pollutants, hazardous air pollutants (HAPs), and greenhouse gases (GHG). The project's HAP emissions include acetaldehyde, benzene, formaldehyde, hexane, hydrochloric acid (HCl), toluene, lead compounds, mercury compounds, and arsenic compounds.

4.20.1 Methodology for the Analysis of Air Quality Impacts

Emissions in the project area are described as direct emissions. The Environmental Impact Statement (EIS) analysis area is the larger geographical area that would experience indirect impacts; those impacts are also described for each project component. Indirect emissions are not quantified in this EIS.

Emission sources are categorized three ways: fugitive, mobile, and stationary point sources:

- Fugitive emission sources are those that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening (40 Code of Federal Regulations [CFR] 52.21[b][20]). Some examples of fugitive sources are fugitive dust from vehicles on unpaved roads, fugitive leaks from piping and connectors, blasting, or dust from material handling.
- Mobile sources are on-road and off-road vehicles, non-road engines, or portable sources such as trucks, light plants, heaters, portable generators, construction equipment, ships, and aircraft.
- Stationary point sources are those that pass through a stack, chimney, vent, or other functionally equivalent opening (40 CFR 52.21[b][20]). Examples of stationary sources associated with the project are enclosed material processing and handling activities (for which emissions pass through a stack or vent), power plant generators, and incinerators.

Expected air quality impacts are evaluated based on the results of dispersion modeling and emissions estimates. The impact methodology framework applied to assessing direct or indirect impacts on air quality is based on the following factors:

- Magnitude or intensity – Modeled project impacts are compared to Alaska ambient air quality standards (AAAQS) and prevention of significant deterioration (PSD) increments (Table 4.20-1), and/or regulatory standards. In addition, if regulatory standards are not met, an assessment of the effectiveness of the mitigation measures is conducted.
- Duration – The time span of project impacts is quantified. For example, an assessment is conducted to determine whether air quality would be either reduced infrequently but not beyond the project's construction phase, would be reduced only during the project's lifespan, or would continue to be reduced after project completion.
- Extent – An assessment of the spatial range of project impacts is conducted. For example, an assessment is conducted to determine whether the impacts would locally affect air quality in only discrete portions of the project area, or would occur outside of the project area.

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The type of area (attainment, maintenance, nonattainment, or Federal Class I area) affected by project impacts is also assessed. No project components would be in or near an area of nonattainment or maintenance, or an area with local regulations.

The PSD increments and AAAQS criteria used to evaluate project impacts based on the results of dispersion modeling are provided in Appendix K4.20. The comparison of impacts using PSD increments has been provided for informational purposes only, and does not represent a regulatory PSD increment consumption analysis. PSD increment consumption would be assessed as part of a formal increment consumption analysis during the permitting process, if required. Additionally, details of the air quality permit applicability assessment are provided in Appendix K4.20.

To estimate emissions for the air quality impact analyses for all project components, several avoidance and control measures were considered. Examples are listed below, and a more comprehensive list of measures is provided in Chapter 5, Mitigation:

- During the summer months, dust suppression techniques, such as watering, would be used to minimize the impacts of fugitive dust emissions from the unpaved roads.
- Following an idling policy, such as not allowing haul trucks to idle for more than a set amount of time if the vehicle or equipment is not in motion, would reduce fuel consumption, thereby reducing oxides of nitrogen (NO_X), carbon monoxide (CO), particulate matter (PM), volatile organic compounds (VOCs), sulfur dioxide (SO_2), and GHG emissions.
- The combustion turbines would be equipped with post-combustion emission controls (catalytic oxidation and selective catalytic reduction systems), which reduces NO_X, CO, and VOC emissions.
- For the mine site, the heat recovery steam generator (HRSG) steam would be used to drive a steam turbine attached to a generator to provide ancillary power to the facility, which would reduce the need for additional fuel use.
- The boilers would be equipped with low NO_X burners, which would reduce NO_X emissions.

Total potential criteria pollutant and hazardous pollutant emissions are calculated using vendor data, US Environmental Protection Agency (EPA) AP-42 emission facts, mass balances, EPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, and New Source Performance Standards (NSPS). The methods for estimating GHG emissions for fuel combustion sources are applied in accordance with the guidance provided in Subpart C of the Mandatory Reporting of Greenhouse Gases Rule (40 CFR Part 98) for Tier 1 units, and EPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories for marine vessel emissions. The carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emission estimates are calculated for all stationary and mobile equipment on an individual basis using Equation C-1 from 40 CFR 98.

4.20.2 No Action Alternative

Under the No Action alternative, the project would not be constructed, and would not have any new effects on air quality.

4.20.3 Alternative 1 – Applicant's Proposed Alternative

The results of the assessment of emissions and impacts of Alternative 1 are addressed for each project component by project phase (construction, operations, and decommissioning) in the following sections.

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4.20.3.1 Mine Site

For the mine site, the emissions from the construction, operations, and decommissioning phase are presented. Additionally, the potential mine site impacts are presented for mine construction activities and mine operations activities by completing a near-field and far-field impacts assessment.

Construction

Emissions during construction would be related to quarry crushing operation, concrete batch plant operation, incineration, and power generation.

The total emissions were calculated based on the worst-case construction year of the mine site. Emissions were calculated assuming that each emission unit would be operated continuously (8,760 hours per year) with the appropriate load factors, except for quarry crushing operations and for those emission units that would be subject to operating restrictions under an air quality permit. Quarry crushing operations emission calculations were based on operating 300 days per year. The potential emissions for restricted emission units were calculated assuming those emission units would be operated at the maximum load for the maximum allowed hours per year. The construction emission inventory for the mine site is provided in Table 4.20-1 for a representative year of construction activities.

Table 4.20-1: Mine Site Construction Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Non-road Engines (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NOx	110	24	2,050	9	2,193
CO	589	23	1,414	54	2,080
PM	17	1	83	2,909	3,010
PM_{10}	17	1	83	1,030	1,131
$PM_{2.5}$	16	1	83	124	224
VOCs	34	5	171	N/A	209
SO_2	1	negligible	0	N/A	1
Pb	0.00	negligible	negligible	N/A	0.00
Total HAPs	5.5	0.1	negligible	N/A	5.5
CO_2	90,086	1,873	18,230	N/A	110,188 tonnes/year
CH_4	4.2	0.1	0.7	N/A	5.0 tonnes/year
N_2O	0.8	0.0	0.1	N/A	0.9 tonnes/year
CO_2e	90,442	1,879	18,292	N/A	110,614 tonnes/year

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

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NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

The representative air quality impacts related to the construction of the mine site were assessed using a near-field model demonstrating compliance with modeled air quality standards and PSD Class II increment. Minimal and localized impacts would occur during construction of the mine site. Impacts would dissipate once the construction was complete. Details of the near-field impact assessment are presented in Appendix K4.20.

Operations

Emissions during mine site operations would be related to mining activities, ore processing activities, incineration, and power generation.

The mine site stationary emission unit inventory would include a combined-cycle combustion turbine power plant, internal combustion engines, boilers, fuel storage tanks, and a small incinerator. The mobile equipment inventory would include haul trucks, bulldozers, graders, shovels, light-duty vehicles, and loaders that would be used in the mining activities. Fugitive emissions would result from blasting, drilling, vehicle traffic on unpaved roads, and material handling. The fuel-burning equipment are sources of combustion-related air pollutant emissions. A summary of the emissions during operations at the mine site is presented in Table 4.20-2 for a representative operations year.

Table 4.20-2: Mine Site Operations Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NO_x	83	4,321	31	4,436
CO	133	2,658	179	2,970
PM	159	164	8,319	8,642
PM_{10}	159	164	2,686	3,009
$PM_{2.5}$	159	164	322	645
VOC	32	305	N/A	337
SO_2	8	2	N/A	10
Pb	negligible	negligible	negligible	0.0
Total HAPs[1]	9.1			9.1
CO_2	580,804	182,701	N/A	763,504 tonnes/year
CH_4	11.5	7.4	N/A	18.9 tonnes/year
N_2O	1.2	1.5	N/A	2.7 tonnes/year

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Table 4.20-2: Mine Site Operations Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
CO_2e	581,451	183,328	N/A	764,779 tonnes/year

[1] Total HAPs are calculated for all emission units and are not broken out by type.

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

A near-field modeling assessment was prepared to address the likely air quality impacts related to the operation of the mine site. Compliance with modeled air quality standards and PSD Class II increments is demonstrated. Any air quality impacts that would occur would be minimal and localized occurring when the mine is operational.

A far-field impact assessment was prepared to assess representative air quality impacts related to the operation of the mine site and included an analysis of impacts to air quality–related values (AQRVs). AQRVs are a resource adversely affected by a change in air quality, such as visibility, deposition, and ozone. Far-field AQRV impacts from the mine site are not anticipated at any nearby Federal Class I area. Appendix K4.20 presents additional information regarding the near-field and far-field assessments.

Decommissioning

Closure and reclamation activities are described in Chapter 2, Alternatives. Support facilities would include operation of the camp and power generation. The reclamation emissions inventory would include internal combustion engines, a gas turbine, boilers, and an incinerator. The mobile equipment would include haul trucks, shovels, bulldozers, compactors, graders, and service and light-duty vehicles. Fugitive dust emissions would result from stockpile overburden handling, bulldozing, grading, vehicle traffic on unpaved roads, and wind erosion of road surfaces and active reclamation areas. The duration of the closure phase at the mine site is expected to be approximately 20 years. Table 4.20-3 presents a summary of the mine site decommissioning emissions for a representative decommissioning year.

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Table 4.20-3: Mine Site Decommissioning Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NO_x	600	43,876	N/A	44,476
CO	1,534	46,369	N/A	47,903
PM	564	2,354	45,529	48,447
PM_{10}	564	2,354	19,560	22,478
$PM_{2.5}$	563	2,354	2,777	5,694
VOC	214	5,688	N/A	5,902
SO_2	34	6	N/A	40
Pb	0.1	negligible	N/A	0.1
Total HAPs[1]	94.5			94.5
CO_2	2,542,547	597,343	N/A	3,139,890 tonnes/year
CH_4	59	24	N/A	83 tonnes/year
N_2O	7	5	N/A	12 tonnes/year
CO_2e	2,546,130	599,393	N/A	3,145,523 tonnes/year

[1] Total HAPs are calculated for all emission units and are not broken out by type.

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

4.20.3.2 Transportation Corridor

For analysis of impacts to air quality, the transportation corridor includes all-season gravel roads, ferry terminals on Iliamna Lake, port, and spur roads, and the onshore pipeline segment at the port, because the pipeline and road would be constructed jointly. The transportation corridor would be operational throughout the life of the project.

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This section addresses the emissions from the construction and operations phases of the facilities in the transportation corridor. Because the road and onshore pipeline are constructed in the same right-of-way at the same time, the emissions from the construction of both the road and onshore pipeline are calculated together. It is anticipated that the construction and operations of the transportation corridor would have similar or lower near-field and far-field impacts as presented for the mine site.

Construction

During construction, the main emission sources would be heavy-duty non-road and mobile construction vehicles, as well as fugitive dust generated by vehicles on unpaved roads and wind erosion. Additional fugitive emissions would result from blasting, drilling, and material handling. Stationary emissions sources would include internal combustion engines and fuel storage tanks. The representative emissions were calculated based on the total construction duration of the transportation corridor and estimated equipment operation. The duration of construction for the road corridor and onshore pipeline facilities is expected to be approximately 1 year. Table 4.20-4 presents a summary of the construction emissions for the transportation corridor during the one year of construction. Further details of the transportation corridor emission inventory are provided in PLP 2018-RFI 007. Air quality impacts would be localized and minimal occurring while construction activities are on-going. Once construction is complete, the impacts would diminish.

Table 4.20-4: Transportation Corridor Construction Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Non-road Engines (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year	Total Emissions (tons/year
NO_x	13	48	288	4	353
CO	80	46	1,057	23	1,205
PM	2	2	24	5,734	5,762
PM_{10}	2	2	24	1,838	1,866
$PM_{2.5}$	2	2	6	N/A	11
VOC	7	9	59	N/A	76
SO_2	0.14	0.04	0.21	N/A	0.39
Pb	0.01	negligible	negligible	N/A	0.01
Total HAPs	7.25	0.10	negligible	N/A	7.35
CO_2	16,693	3,745	20,441	N/A	40,879 tonnes/year
CH_4	1.3	0.2	0.8	N/A	2.3 tonnes/year
N_2O	0.2	0.0	0.2	N/A	0.4 tonnes/year
CO_2e	16,788	3,758	20,512	N/A	41,058 tonnes/year

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

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CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

Operations

Emissions sources during operations would consist of internal combustion engines at the ferry terminals, fuel storage tanks, and other fuel burning engines such as ferry engines, light duty vehicles, truck/trailer vehicles, container-handing forklifts, graders, and aircraft. Additionally, fugitive dust emissions would result from vehicle traffic on unpaved roads. A summary of the operations emissions within the transportation corridor is presented in Table 4.20-5. Further details of the transportation corridor emission inventory are provided in PLP 2018-RFI 007. Air quality impacts would be localized and minimal occurring when the transportation corridor is in use.

Table 4.20-5: Transportation Corridor Operations Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NO_x	25.9	49.4	N/A	75.3
CO	84.2	101.6	N/A	185.8
PM	1.6	7.3	1,558.8	1,567.7
PM_{10}	1.6	7.3	398.5	407.4
$PM_{2.5}$	1.6	7.3	38.4	47.3
VOC	18.1	8.4	N/A	26.5
SO_2	0.1	0.6	N/A	0.7
Pb	0.0	negligible	N/A	0.0
Total HAPs[1]	2.6			2.6
CO_2	11,894	9,621	N/A	21,515 tonnes/year
CH_4	0.5	0.4	N/A	0.9 tonnes/year
N_2O	0.1	0.1	N/A	0.2 tonnes/year
CO_2e	11,935	9,654	N/A	21,589 tonnes/year

[1] Total HAPs are calculated for all emission units and are not broken out by type.

CH_4 = methane

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CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

Decommissioning

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. As operations end, the Iliamna Lake ferry facilities would be removed, and all supplies would be transported across the lake using a summer barging operation. Impacts to air quality during closure activities are expected to be similar to those during the construction phase.

4.20.3.3 Amakdedori Port

This section presents the emissions from the construction and operations phases of the Amakdedori port and offshore pipeline portions in the Cook Inlet and Iliamna Lake. Additionally, the potential near-field impacts are presented for Amakdedori port operations. It is anticipated that the construction of the Amakdedori port would have similar near-field impacts as presented for the mine site.

Construction

The construction of the port and offshore pipeline uses similar equipment and methods. Therefore, the emissions are calculated together; however, the construction would not take place at the same time. The construction of the offshore pipeline would occur after the port construction. The construction emissions are calculated based on the estimated construction time, regardless of which activity takes place first.

The port site construction activity would include construction of port facilities to support later phases of construction and mine operations. Emissions from material mining and crushing operations required for fill material, principally for the earthen access causeway, are captured in the road construction emissions provided for the transportation corridor. Emissions associated with operation of the port facilities, including trucking or offshore pipeline construction, are assumed to be similar to emissions during mine operation, and are represented by the annual transportation emissions estimate for mine operations.

The construction activity of the port and offshore pipeline would include reciprocating internal combustion engines, an asphalt plant, boilers, fuel storage tanks, and a small incinerator. The mobile equipment inventory would include bulldozers, excavators, loaders, and cranes in the port construction; and tugs, long-reach excavators, and welders in the pipeline construction. The

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fuel-burning equipment would be sources of combustion-related air pollutant emissions. Fugitive emissions would result from site grade preparation and mobile equipment traffic. The construction of the port and offshore pipeline is expected to take approximately one year. Table 4.20-6 presents an emission summary for construction of the port and associated offshore pipeline. Air quality impacts would be localized and minimal occurring during construction activities. Once construction is complete, the impacts would diminish.

Table 4.20-6: Amakdedori Port and Offshore Pipeline Construction Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Non-road Engines (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NO_x	6.2	11.3	363.0	N/A	380.5
CO	13.5	16.5	164.0	N/A	194.0
PM	17.5	0.3	14.5	3.5	35.8
PM_{10}	17.5	0.3	14.5	1.3	33.6
$PM_{2.5}$	17.5	0.3	14.5	0.2	32.5
VOC	2.5	2.7	23.7	N/A	28.9
SO_2	0.4	0.0	4.7	N/A	5.1
Pb	0.007	negligible	negligible	N/A	0.007
Total HAPs	3.6	0.0	negligible	N/A	3.6
CO_2	5,343	15,958	27,500	N/A	48,801 tonnes/year
CH_4	0.5	0.1	0.3	N/A	0.9 tonnes/year
N_2O	0.1	0.0	1.2	N/A	1.3 tonnes/year
CO_2e	5,386	15,964	27,872	N/A	49,222 tonnes/year

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

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Source: PLP 2018-RFI 007

Operations

Operations would consist of barge loading and unloading activities, lightering activities, power generation, heating, and incineration.

The Amakdedori port emission unit inventory would include reciprocating internal combustion engines, heaters, fuel storage tanks, and a small incinerator. Mobile equipment would include light-duty vehicles, skidsteers, forklifts, and container-handing forklifts. Marine vessels would include barges, tugs, and bulk carriers at the lightering locations. The concentrate containers would be emptied into the bulk carriers at the bulk carrier lightering point. A summary of the operations emission at the port is presented in Table 4.20-7 for representative year of operations activity.

Table 4.20-7: Amakdedori Port Operations Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tonsyear)
NO_x	53.8	271.1	N/A	324.9
CO	169.0	37.0	N/A	206.0
PM	4.0	15.4	2.00E-03	19.4
PM_{10}	4.0	15.4	1.00E-03	19.4
$PM_{2.5}$	4.0	14.5	1.00E-03	18.5
VOC	38.2	14.3	N/A	52.5
SO_2	0.3	1.9	N/A	2.2
Pb	0	negligible	N/A	0
Total HAPs[1]	8.9			8.9
CO_2	27,439	13,704	N/A	41,143 tonnes/year
CH_4	1.4	0.5	N/A	1.9 tonnes/year
N_2O	0.3	0.6	N/A	0.9 tonnes/year
CO_2e	27,551	13,883	N/A	41,434 tonnes/year

[1] Total HAPs are calculated for all emission units and are not broken out by type.

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

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PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

Air quality impacts from port operations emissions have been demonstrated to be in compliance with modeled air quality standards and PSD Class II increments. If near-field impacts occur from the port, those impacts would be minimal and localized. The far-field impact assessment is based on an analysis of the port emissions that would affect the AQRVs in the nearby Federal Class I areas. As a result of this assessment, the AQRVs would not likely to be impacted at any of the Federal Class I areas. The details of the near-field and far-field impact assessment are found in Appendix K4.20.

Decommissioning

There would continue to be emissions and air quality impacts associated with the port until operations end, when physical site closure work would commence. At that time, the Amakdedori port facilities would be removed, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Air impacts from port decommissioning are expected to be minimal occurring while the port is being decommissioned. Any remaining activities at the port would result in localized and negligible air quality impacts.

4.20.3.4 Natural Gas Pipeline Corridor

The pipeline corridor consists of onshore pipeline in the transportation corridor, offshore pipeline, and the Kenai compressor station. The construction air quality impacts of the onshore portion of the pipeline are addressed above under transportation corridor. The construction air quality impacts of the offshore portion of the pipeline are addressed above under Amakdedori port. This section addresses emissions and air quality impacts from the construction of the Kenai compressor station on the east landfall of the natural gas pipeline corridor, as well as the air quality impacts from operations and decommissioning of the entire pipeline corridor.

Additionally, potential near-field impacts are present for compressor station operations. It is anticipated that the construction of the compressor station would have lower near-field air quality impacts as presented for the mine site in Section 4.20.3.1 since the construction of the compressor station has less emissions than the construction of mine site making the mine site a conservative surrogate.

Pipeline Corridor Construction

During construction of the compressor station, activity would involve site grading and mobile equipment use for assembly of the compressor station from pre-constructed modules. The compressor station emissions inventory would include combustion engines and mobile equipment inventory, including bulldozers, loaders, excavators, cranes, and light-duty vehicles. The fuel-burning equipment would be sources of combustion-related air pollutant emissions. Fugitive dust emissions would result from site grade preparation and mobile equipment traffic. The emissions from the compressor station construction are presented in Table 4.20-8. Further details of the Compressor Station emission inventory are provided in PLP 2018-RFI 007. Air quality impacts would be localized and minimal occurring while construction activities are on-going. Once construction is complete, the impacts would diminish and become negligible.

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Table 4.20-8: Compressor Station Construction Emission Summary

Air Pollutant	Stationary Emission Units (tons/year)	Non-road Engines (tons/year)	Mobile Emission Units (tons/year)	Fugitive Emission Units (tons/year)	Total Emissions (tons/year)
NO_x	N/A	2.60	1.40	N/A	4.00
CO	N/A	6.40	5.60	N/A	12.00
PM	N/A	0.10	0.03	2.40	2.53
PM_{10}	N/A	0.10	0.03	0.53	0.66
$PM_{2.5}$	N/A	0.10	0.03	0.08	0.21
VOC	N/A	0.68	0.30	N/A	0.98
SO_2	N/A	0.01	0.01	N/A	0.02
Pb	N/A	negligible	negligible	N/A	0.0
Total HAPs	N/A	negligible	0.02	N/A	0.02
CO_2	N/A	796	867	N/A	1,663 tonnes/year
CH_4	N/A	0.03	0.04	N/A	0.07 tonnes/year
N_2O	N/A	0.01	0.01	N/A	0.01 tonnes/year
CO_2e	N/A	799	870	N/A	1,669 tonnes/year

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

Pipeline Corridor Operations

During the operations of the pipeline corridor, the emissions and associated impacts from the onshore and offshore pipelines would be negligible. The Kenai compressor station, which would be the single compressor station for the natural gas pipeline, would have emissions and possible air impacts. For the operations phase, only the compressor station is assessed.

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The Kenai compressor station inventory would include natural-gas-fired simple-cycle combustion turbines driving the compressors. A summary of the operations emissions at the compressor station is presented in Table 4.20-9.

Table 4.20-9: Pebble Compressor Station Operations Emission Summary

Air Pollutant	Total Emissions (tons/year)
NO_x	69.30
CO	17.80
PM	1.40
PM_{10}	1.40
$PM_{2.5}$	1.40
VOC	0.50
SO_2	0.20
Pb	0.00
Total HAPs	0.22
CO_2	22,992 tonnes/year
CH_4	0.43 tonnes/year
N_2O	0.04 tonnes/year
CO_2e	23,015 tonnes/year

CH_4 = methane

CO = carbon monoxide

CO_2 = carbon dioxide

CO_2e = CO_2 equivalent

HAPs = hazardous air pollutants

N/A= not applicable

N_2O = nitrous oxide

NO_x = oxides of nitrogen

Pb = lead

PM = particulate matter

PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns

$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Source: PLP 2018-RFI 007

Air quality impacts from the compressor station have been demonstrated to be in compliance with modeled air quality standards and PSD Class II increments. If near-field impacts occur from the compressor station, those impacts would be minimal and localized. The far-field impact assessment is based on an analysis of the compressor station emissions that would affect the AQRVs in the nearby Federal Class I areas. As a result of this assessment, the AQRVs would not likely be impacted at any nearby Federal Class I areas. The details of the near-field and far-field impact assessment are provided in Appendix K4.20.

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Pipeline Corridor Decommissioning

The natural gas pipeline would be maintained until such time as it is no longer required to provide energy to the project site. The pipeline would be pigged and cleaned before being abandoned in place. Surface utilities associated with the pipeline would be removed and reclaimed. The air quality impacts from the decommissioning activities are expected to be short-term and negligible.

4.20.4 Alternative 2 – North Road and Ferry

The mine site under Alternative 2 would be similar to the mine site under Alternative 1 (Chapter 2, Alternatives). Under Alternative 2, the locations of the transportation corridor, natural gas pipeline corridor, and port would be different. However, it is anticipated that emissions and impacts from the construction, operations, and decommissioning of the project components from Alternative 2 would be similar to Alternative 1. The results of the assessment of emissions and impacts of Alternative 2 are addressed for each project component by project phase in the following sections.

4.20.4.1 Mine Site

Criteria pollutants, HAPs, and greenhouse gas (GHG) emissions from mine construction, operations, and decommissioning would be similar to those presented for Alternative 1, because the mine construction, operations, and decommissioning are the same as Alternative 1. Although modeling was not directly assessed for Alternative 2, representative near-field and far-field air quality impacts from mine construction, operations, and decommissioning would be the same as impacts predicted under Alternative 1.

4.20.4.2 Transportation Corridor

Although the total length of road and distance of the ferry route would be different under Alternative 2 versus Alternative 1, it is not anticipated that the total emissions presented for Alternative 1 would differ meaningfully from Alternative 2, and would not result in a change of the possible project impacts.

4.20.4.3 Diamond Point Port

Because construction and operations for a port at Diamond Point would be similar to Amakdedori port (Alternative 1), the criteria pollutant, HAPs, and GHG emissions from construction and operations would be consistent with those presented for Alternative 1. Maximum potential near-field effects from the operations at the port would be similar to impacts predicted under Alternative 1.

4.20.4.4 Natural Gas Pipeline Corridor

For the onshore and offshore pipeline, the emissions and impacts from the construction of the onshore and offshore pipeline would be similar to those presented in Alterative 1. Although a portion of the pipeline would not follow the road alignment, the differences in emissions based on construction changes would not be meaningfully different. The operations and decommissioning of the pipeline would be negligible, as discussed in Alternative 1.

Because the compressor station would be identical to Alternative 1, the criteria pollutant, HAPs, and GHG emissions from compressor station construction and operations would be same with those presented for Alternative 1. Maximum potential near-field effects from the compressor station operations would be the same as the impacts predicted under Alternative 1.

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4.20.5 Alternative 3 – North Road Only

Alternative 3 eliminates the need for ferry transportation across Iliamna Lake. The assessment of emissions and impacts of Alternative 3 are addressed for each project component by project phase in the following sections.

4.20.5.1 Mine Site

Criteria pollutants, HAPs, and GHG emissions from mine construction, operations, and decommissioning would be consistent with those presented for Alternative 1, because the mine construction, operation, and decommissioning are the same as Alternative 1. Although modeling was not directly assessed for Alternative 3, maximum potential near-field and far-field effects from mine construction, operations, and decommissioning would be the same as impacts predicted under Alternative 1.

4.20.5.2 Transportation Corridor

Alternative 3 does not include ferry transportation, because traffic and materials transport would only use roads. Relative to emissions calculated for the Alternative 1 transportation corridor construction, the increase in road construction would increase emissions, while the removal of ferry traffic and terminal construction would decrease emissions. Overall, the changes in the construction emission inventory are not anticipated to be meaningfully different from Alternative 1, and would not result in a change of the possible construction impacts. The operations and decommissioning emissions and air impacts are anticipated to be lower than Alternative 1, because the ferry terminals would not be operated and constructed.

4.20.5.3 Diamond Point Port

Because construction and operation of a port at Diamond Point would be similar to Amakdedori port (Alternative 1), the criteria pollutants, HAPs, and GHG emissions during construction and operation would be consistent with those presented for Alternative 1. Maximum potential near-field effects from the operations at the port would be similar to impacts predicted under Alternative 1.

4.20.5.4 Natural Gas Pipeline Corridor

For the onshore and offshore pipeline, the emissions and impacts from the construction of the onshore and offshore pipeline would be similar to those presented in Alterative 1. Although a portion of the pipeline would not follow the road alignment, the differences in emissions based on construction changes would not be meaningfully different. The operations and decommissioning of the pipeline would be negligible, as discussed in Alternative 1.

Because the compressor station would be identical to Alternative 1, the criteria pollutants, HAPs, and GHG emissions from compressor station during construction and operations would be the same as those for Alternative 1. Maximum potential near-field effects from the compressor station operations would be the same as the impacts predicted under Alternative 1.

4.20.6 Key Issues/Impacts Summary

Table 4.20-10 provides summary statements regarding key issues or impacts related to air quality for the project.

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Table 4.20-10: Summary of Key Issues for Air Quality Resources

Impact-Causing Project Component and Phase	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Construction	Direct, minimal, and localized, impacts to air quality would result from stationary, fugitive, and mobile sources. Impacts would dissipate once the construction was complete. Impacts due to air emissions would not exceed the modeled AAAQS and PSD Class II increments, and would meet regulatory standards during this phase.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Operations	Direct impacts to air quality would result from fugitive, stationary, and mobile sources. Impacts would occur through the duration of the operations phase. Impacts would comply with modeled AAAQS, and PSD Class II increments.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Decommissioning	Direct impacts to air quality would result from fugitive, stationary, and mobile sources. Impacts would dissipate after decommissioning was complete.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Transportation Corridor			
Construction	Direct, minimal, and localized, impacts to air quality would result from stationary, fugitive, and mobile sources. Impacts would dissipate once the construction was complete.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to or less than Alternative 1.
Operations	Direct impacts to air quality would result from fugitive, stationary, and mobile sources. Impacts would occur through the duration of the operations phase.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to or less than Alternative 1.

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Decommissioning	Direct impacts to air quality would be less than the mine site decommissioning phase.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to or less than Alternative 1.
Port Site			
Construction	Direct, minimal, and localized, impacts to air quality would result from stationary, fugitive, and mobile sources. Impacts would dissipate once the construction was complete.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Operations	Direct impacts to air quality would result from fugitive, stationary, and mobile sources. Impacts would occur through the duration of the operations phase. Impacts would comply with modeled AAAQS, and PSD Class II increments.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Decommissioning	Direct impacts to air quality would be less than the mine site decommissioning phase.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Natural Gas Pipeline			
Construction	Direct, minimal, and localized impacts to air quality would result from stationary, fugitive, and mobile sources. Impacts would dissipate once the construction was complete.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Operations	Direct impacts to air quality phase would result from fugitive, stationary, and mobile sources. Impacts would occur through the duration of the operations phase. Impacts would comply with modeled AAAQS, and PSD Class II increments.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.
Decommissioning	Direct impacts to air quality phase would be less than the mine site decommissioning phase.	The impacts are anticipated to be similar to Alternative 1.	The impacts are anticipated to be similar to Alternative 1.

4.20.7 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to impacts on air quality. Section 4.1

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details the past, present, and RFFAs that may impact air quality. The potential future actions are similar to the proposed project in how they impact air quality by emitting combustion-related air pollutant emissions from fuel-burning equipment; and fugitive emissions from blasting, drilling, vehicle traffic on unpaved roads, and material handling. The following RFFAs identified in Section 4.1 were carried forward in this analysis, based on their potential to impact air quality in the analysis area:

- Pebble Project buildout – develop 55 percent of the resource over the 78-year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold

**Indicates exploration activities only.*

- Diamond Point Rock Quarry
- Alaska Stand Alone Pipeline Project
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure and Energy Projects
- Villages and Communities in/nearby the project area

All of project components would be located in remote areas of Alaska characterized as attainment/unclassified areas for air quality. Past and present actions are expected to continue, such as existing infrastructure operations, transportation modes, and energy and utility development and upgrades. RFFAs were identified in the EIS analysis area, but these would likely induce minimal cumulative changes to air quality. Relevant future actions for air quality impacts include mineral exploration and mining activities occurring in southwest Alaska; oil and gas exploration and development in Cook Inlet; surface, marine, and air transportation developments such as new roads, bridge rehabilitation, shipping and barging traffic, and port and airport improvement projects; and transmission upgrades, installations, and maintenance. The proposed Donlin Gold Mine would be situated roughly 175 miles northwest of the Pebble mine site, and the proposed Alaska LNG facility would be roughly 140 miles east of the Pebble mine site. Combined with the RFFAs mentioned above, these projects could result in some potential for effects on air quality. However, given the distance between the RFFAs and the project components, and that the RFFAs would be developed on different timelines, the potential for regional cumulative air quality effects would be minimal. Overall, the cumulative impacts to air quality from the project and the past, present, and future actions are expected to increase air emissions, including GHGs, in the region and the state.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 7:01:53 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: figures AppK 3.9 (UNCLASSIFIED)
Attachments: Figure_K3_09_03_Salmon_NonSalmon_CommGroup1.pdf; Figure_K3_09_04_Salmon_NonSalmon_CommGroup2.pdf

VR

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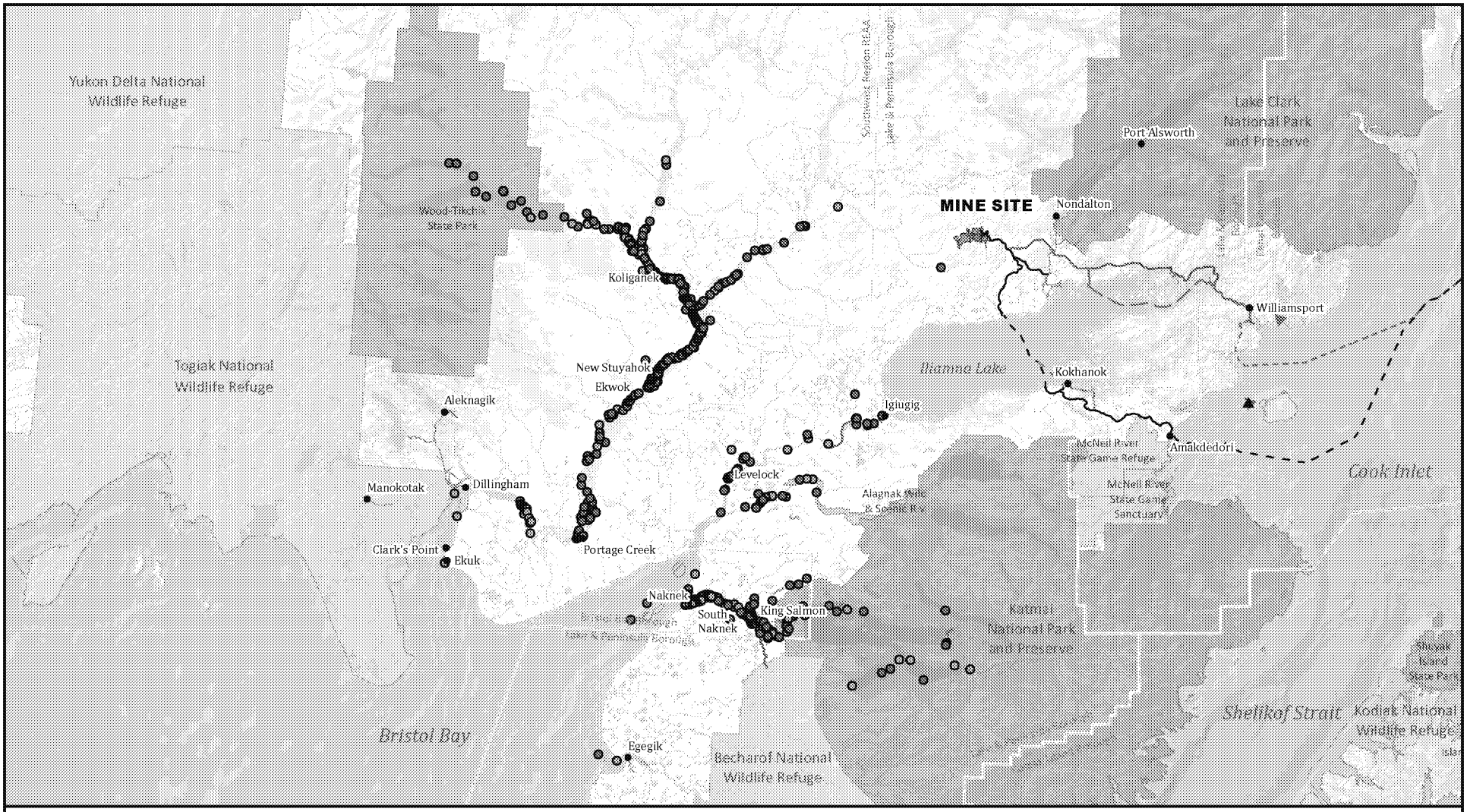

Sources: PLP 2018; Krieg et al. 2009;
Holen et al. 2011 (Study years 2005 and 2007)

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15 0 15 30
Miles

Salmon and Non-Salmon Harvest Areas
- Non-Salmon Fish (Point)
- Salmon (Point)
- Non-Salmon Fish (Line)
- Salmon (Line)
- Non-Salmon Fish
- Salmon

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route

- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

SALMON AND NON-SALMON HARVEST AREAS: KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-3

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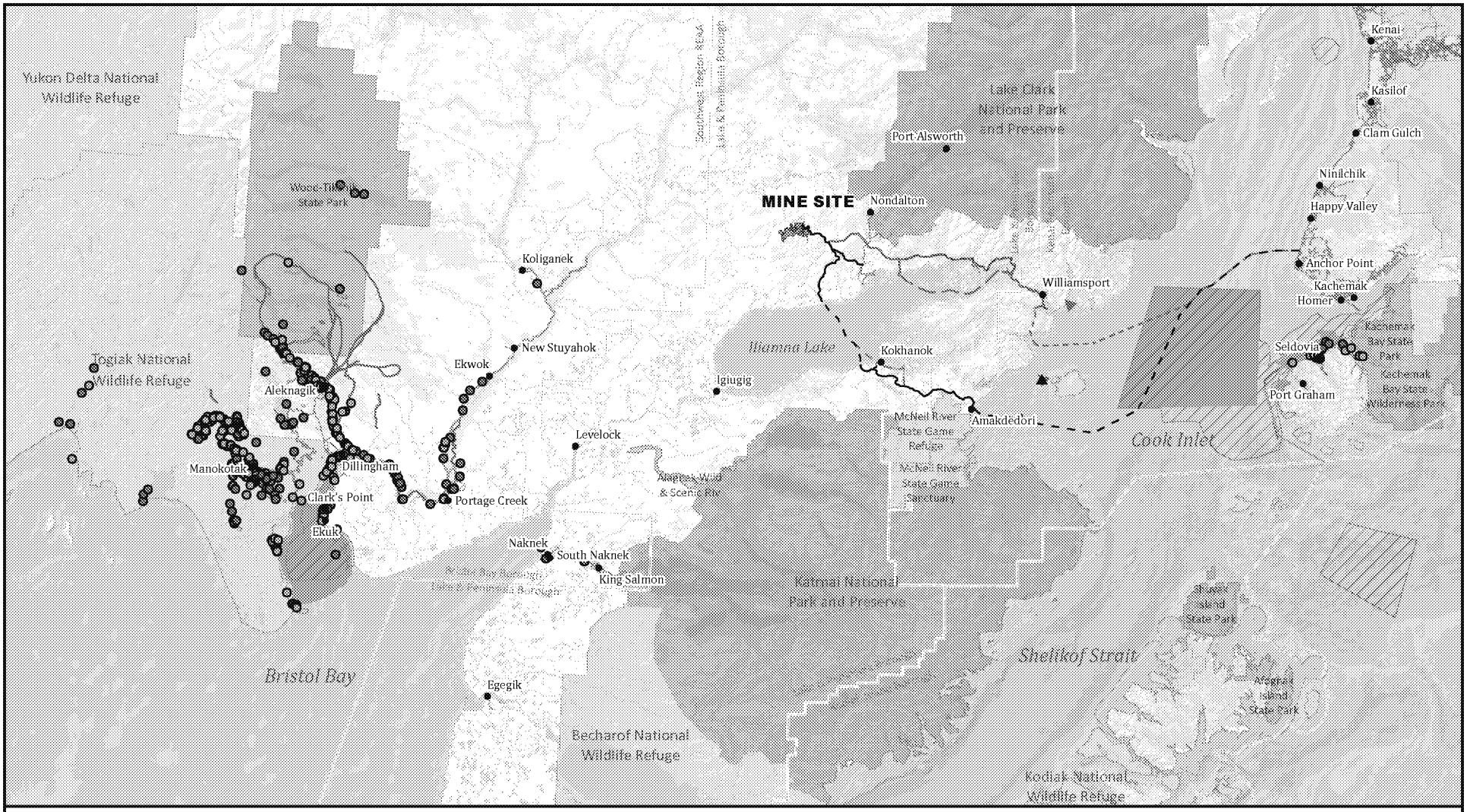

Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

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15 0 15 30
Miles

Salmon and Non-Salmon Harvest Areas
- Non-Salmon Fish (Point)
- Salmon (Point)
- Non-Salmon Fish (Line)
- Salmon (Line)
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Kokhanok East Ferry Terminal Variant
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- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

SALMON AND NON-SALMON HARVEST AREAS: ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

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FIGURE K3.9-4

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/16/2018 8:05:54 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: 5th/final email figures 4.16 (UNCLASSIFIED)
Attachments: 11_09_2018_04_16_01_MaximumFootprint.pdf; 11_09_2018_04_16_02_GeneralArrangement.pdf

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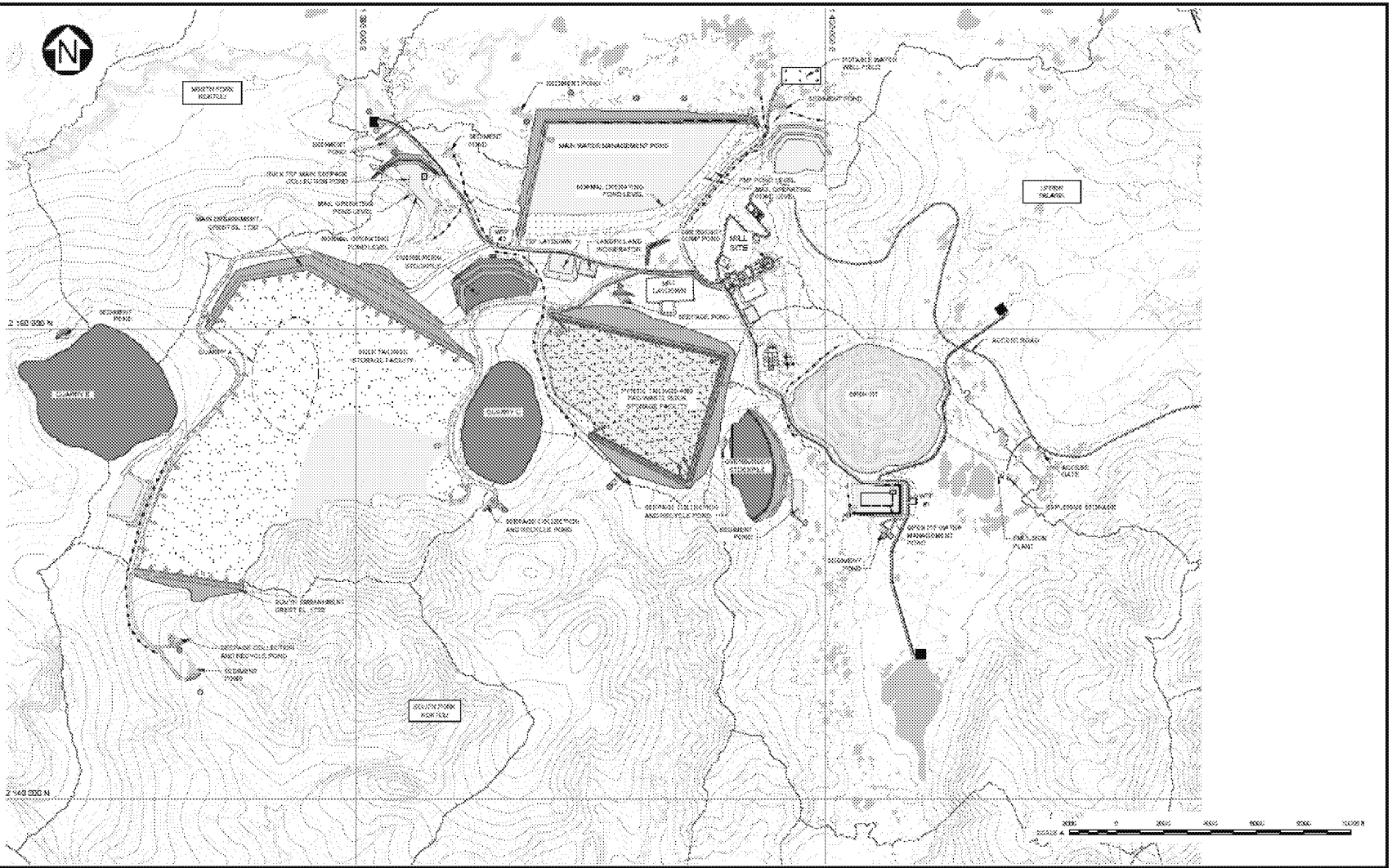

Source: Knight Piesold 2018d

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LEGEND:

- OPEN PIT
- BULK TAILINGS
- OVERBURDEN STOCKPILE
- GROWTH MEDIUM STOCKPILE
- EMBANKMENT FILL
- POND
- PYRITIC TAILINGS
- LINER
- MINERAL CLOSING ORDER
- DRAINAGE DIVIDE
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- BULK TAILINGS PIPELINE
- BULK TAILINGS DISCHARGE
- PYRITIC TAILINGS PIPELINE
- PYRITIC TAILINGS DISCHARGE
- WTP POTABLE WATER PIPELINE
- WTP DISCHARGE PIPELINE
- NATURAL GAS PIPELINE (10" DIAMETER)
- ROAD
- WTP DISCHARGE POINT
- WATER QUALITY MONITORING POINT
- GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- DIVERSION CHANNEL
- COLLECTION DITCH
- EMERGENCY SPILLWAY

NOTES

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANE, ZONE 5.
2. CONTOUR INTERNAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP, JUNE 14 2018.
5. ACCESS ROAD PROVIDED BY RECON LLC. ROAD CONNECTION TO MINE SITE COMPLETED BY AUSENCO LTD.
6. CONCEPTUAL HAUL, SERVICE, AND ACCESS ROAD CUT AND FILL EXTENTS SHOWN INCLUDE ALLOWANCE FOR BERMS, DITCHES, AND POWER POLES, AS REQUIRED.
7. ORIGINAL DRAINAGE DIVIDES PROVIDED BY HDR, JUNE 15, 2018. DRAINAGE DIVIDES HAVE BEEN REVISED AROUND MINE FACILITIES AS REQUIRED.

GENERAL ARRANGEMENT MAXIMUM FOOTPRINT

PEBBLE PROJECT EIS

FIGURE 4.16-1

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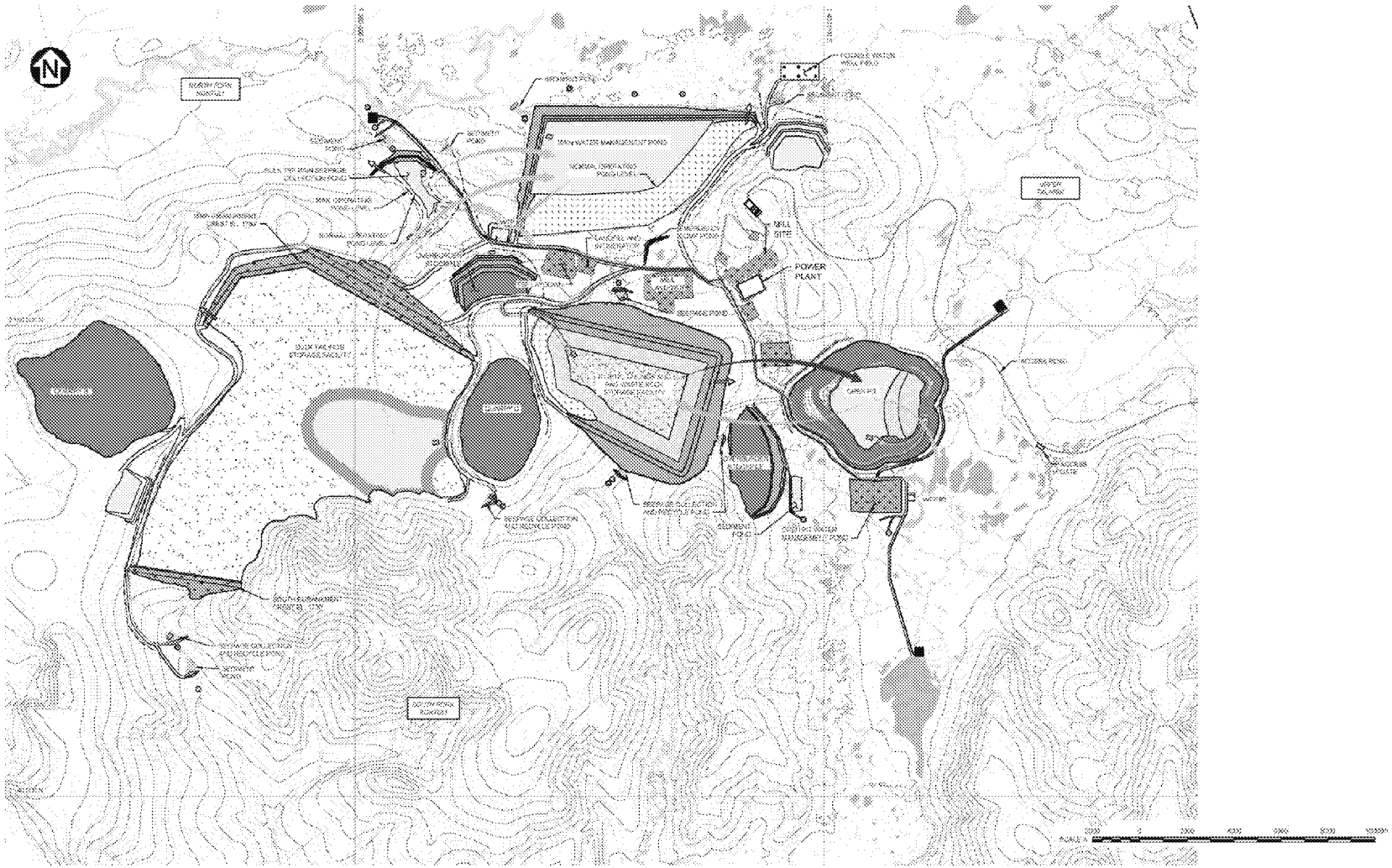
N
MAIN WATER MANAGEMENT POND
NORMAL OPERATING POOL ELEVATION
MILL SITE
POWER PLANT
OPEN PIT
ACCESS ROAD
SEDIMENT POND
SEEPAGE COLLECTION AND RECYCLE POND
SOUTH EMBANKMENT CREST EL. 1730'
SOUTH EMBANKMENT
SEEPAGE COLLECTION AND RECYCLE POND
SEDIMENT POND
DIVERSION CHANNEL
DIVERSION CHANNEL
DIVERSION CHANNEL

Message

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Sent: 11/17/2018 7:44:22 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Bella, Elizabeth [elizabeth.bella@aecom.com]; Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
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CLASSIFICATION: UNCLASSIFIED

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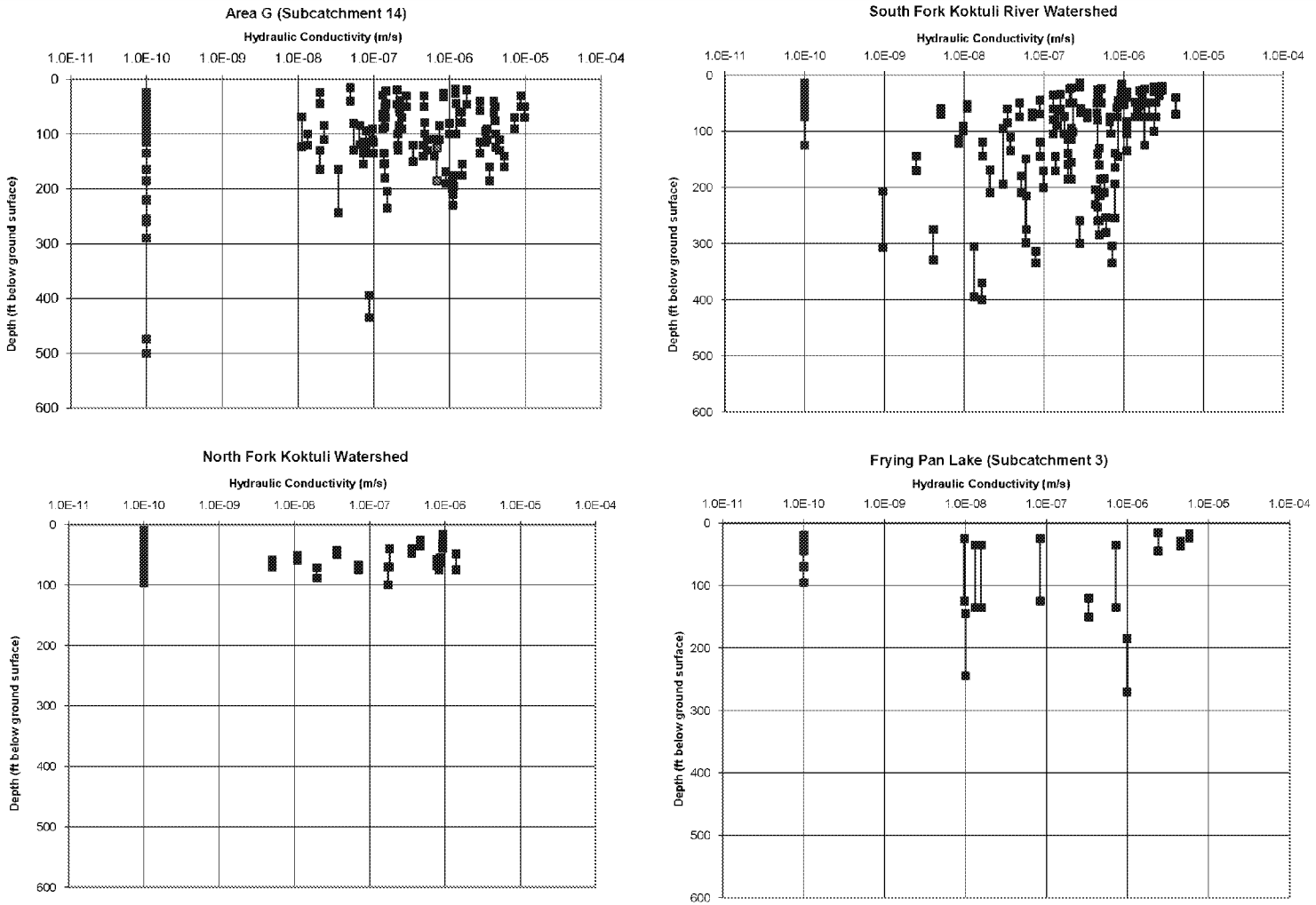


Sources: Schlumberger 2015a, Figure 8.1-11b

Legend

Packer Testing Intervals Collected by Knight Piesold (2004 to 2008)

Packer Testing Interval with No Water Take

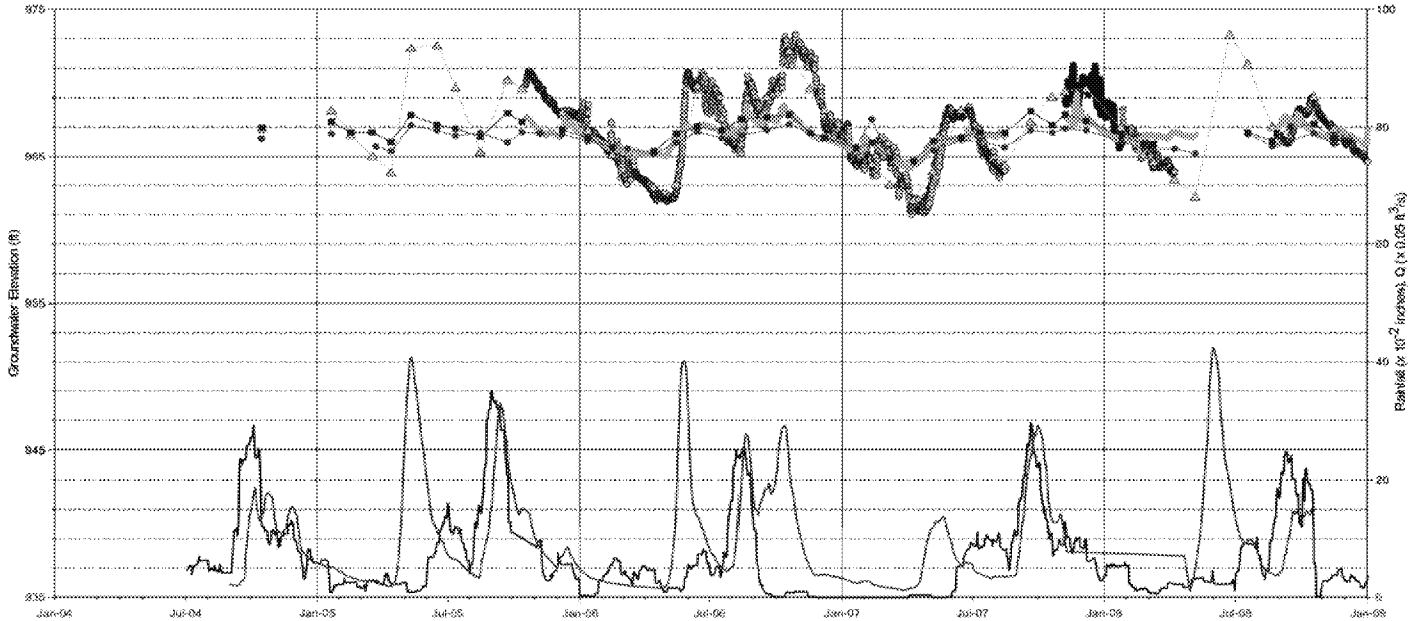
US Army Corps of Engineers®

HYDRAULIC CONDUCTIVITY VS. DEPTH PROFILE FOR BEDROCK OUTSIDE THE PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS

FIGURE 3.17-14

AMERICAN OVERSIGHT



Sources: Schlumberger 2015a, Figure 8.1-13b

US Army Corps of Engineers

Legend

- MW-5S
- MW-5M
- MW-5D
- MW-5S(Transducer)
- MW-5D(Transducer)
- Streamflow at SK100B: 15 day Running average
- Rainfall at Iliamna Airport: 31 day running average

S = Shallow Monitoring Zone
M = Medium Monitoring Zone
D = Deep Monitoring Zone

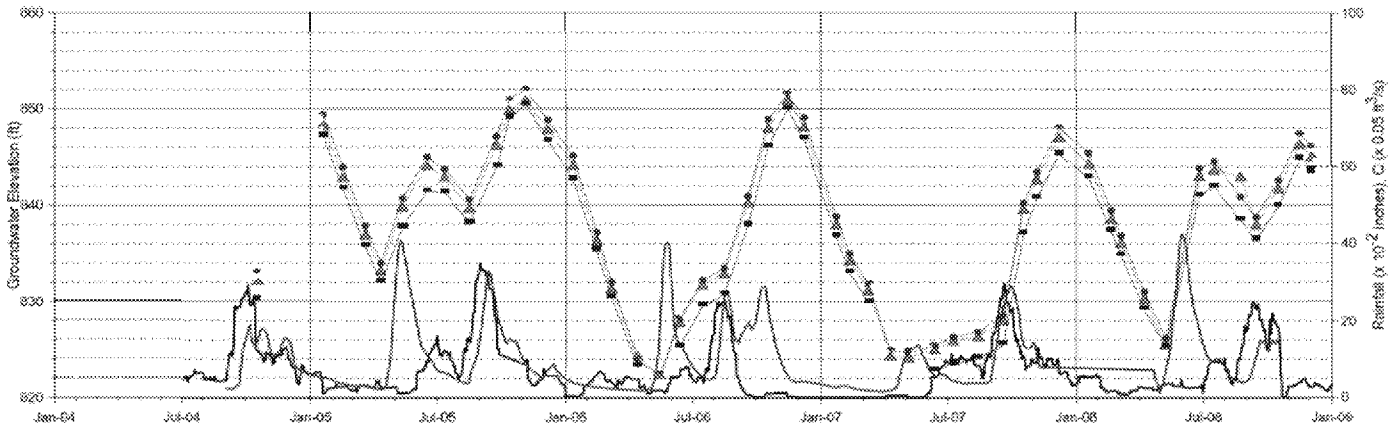
Screens (feet above sea level)
MW-5S: 936.6 - 922.9
MW-5M: 912.9 - 922.9
MW-5D: 873.0 - 888.0

TIME SERIES OF PIEZOMETRIC ELEVATIONS AT MW-5, PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS

FIGURE 3.17-15

AMERICAN OVERSIGHT



Sources: Schlumberger 2015a, Figure 8.1-13a

Legend

MW-1S
MW-1M
MW-1D
Streamflow at SK100B: 15 day Running average
Rainfall at Iliamna Airport: 31 day running average

S = Shallow Monitoring **Zone**
M = Medium Monitoring **Zone**
D = Deep Monitoring **Zone**

Screens (ft asl):
MW-11S : 810.4 - 830.4
MW-11M : 769.3 - 779.3
MW-11D : 745.2 - 755.2

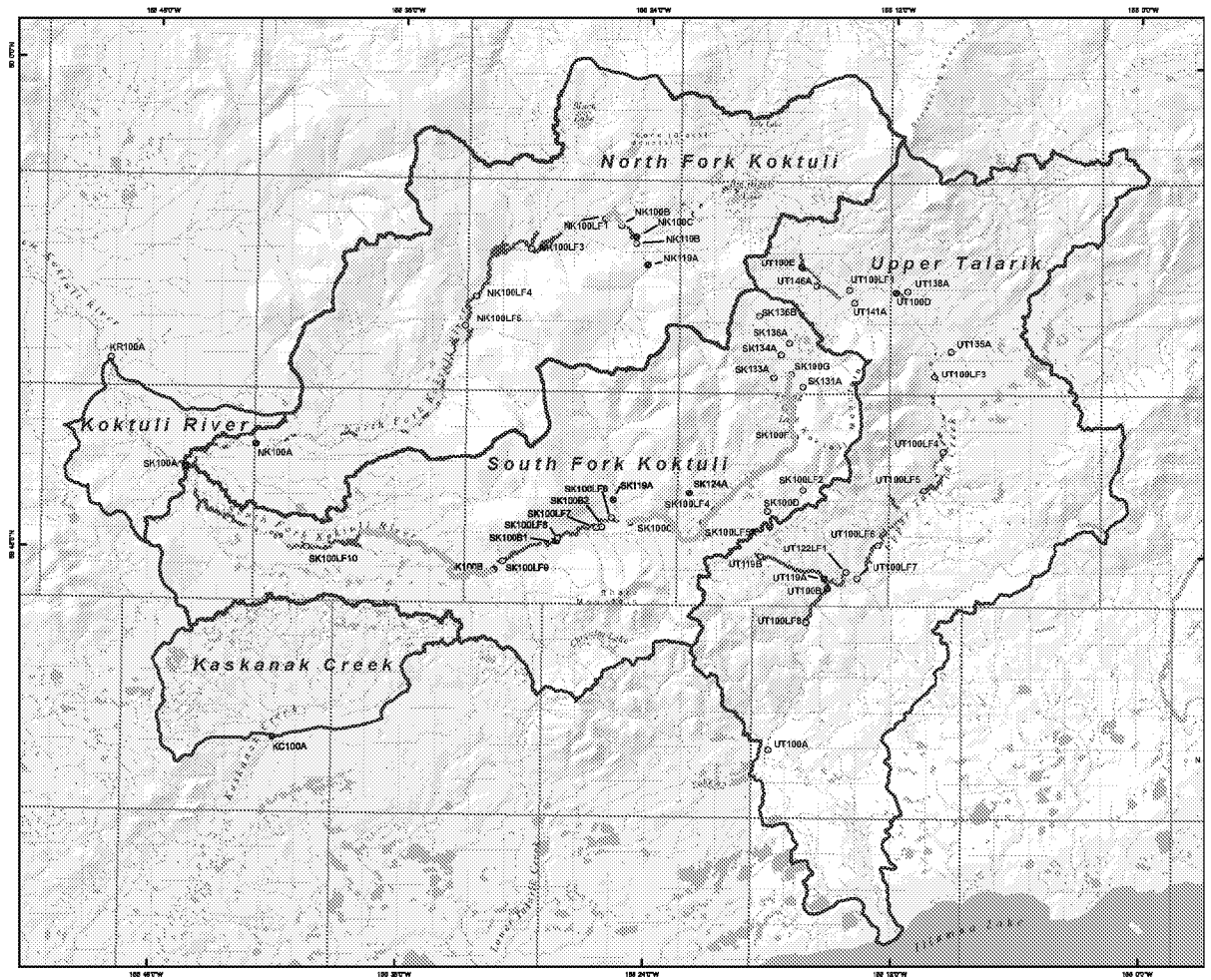
US Army Corps of Engineers

TIME SERIES OF PIEZOMETRIC ELEVATIONS AT MW-11, SOUTH FORK KOKTULI FLATS AREA

PEBBLE PROJECT EIS

FIGURE 3.17-16

AMERICAN OVERSIGHT



Sources: Knight Piesold et al. 2011a; Knight Piesold 2015a

US Army Corps of Engineers

Miles
0 1.25 2.5 3.75 5
Kilometers
0 1.25 2.5 3.75 5

UT100B: Gage Station Identification Label

Gage Stations
- Continuous
- Instantaneous

Losing Stream Segment

Major Drainage Boundary

General Deposit Location

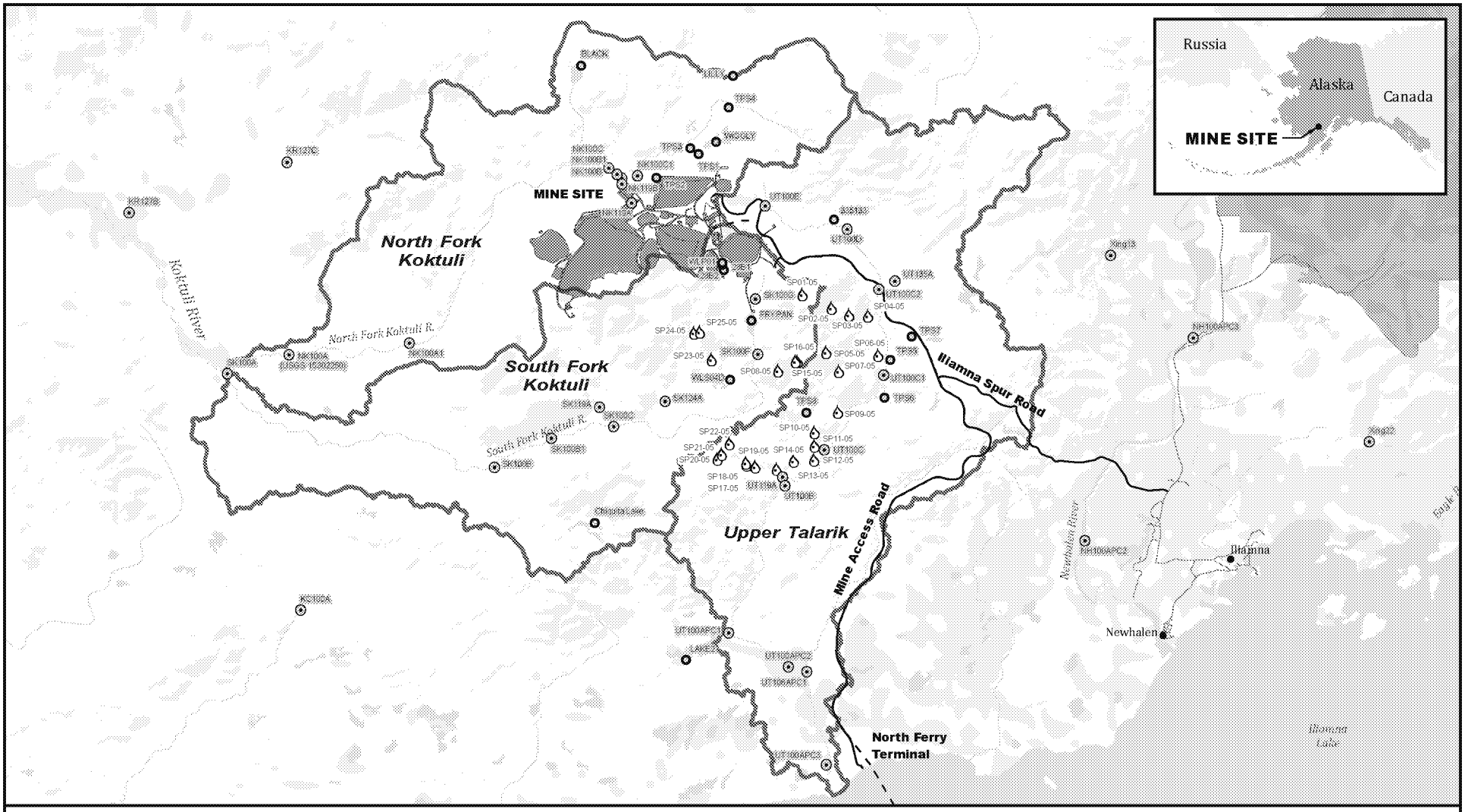
February 2006 Open Water Survey Results
- No Flow
- Intermittent
- Open Water
- Ice Covered/Not Surveyed

2016 OPEN WATER SURVEY RESULTS DEPICTING LOSING STREAM SEGMENTS

PEBBLE PROJECT EIS

FIGURE 3.17-17

AMERICAN OVERSIGHT



Sources: EBD Chapter 9, Figure 9.1-2

US Army Corps of Engineers

2 0 2 4
Miles

Sampling Locations
- Streams
- Lakes
- Seeps
- Major Drainage Boundary

Alternative 1
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Other Features
- Local Roads
- National Park

SURFACE WATER QUALITY SAMPLE LOCATIONS, MINE SITE AREA

PEBBLE PROJECT EIS

FIGURE 3.18-1

AMERICAN OVERSIGHT

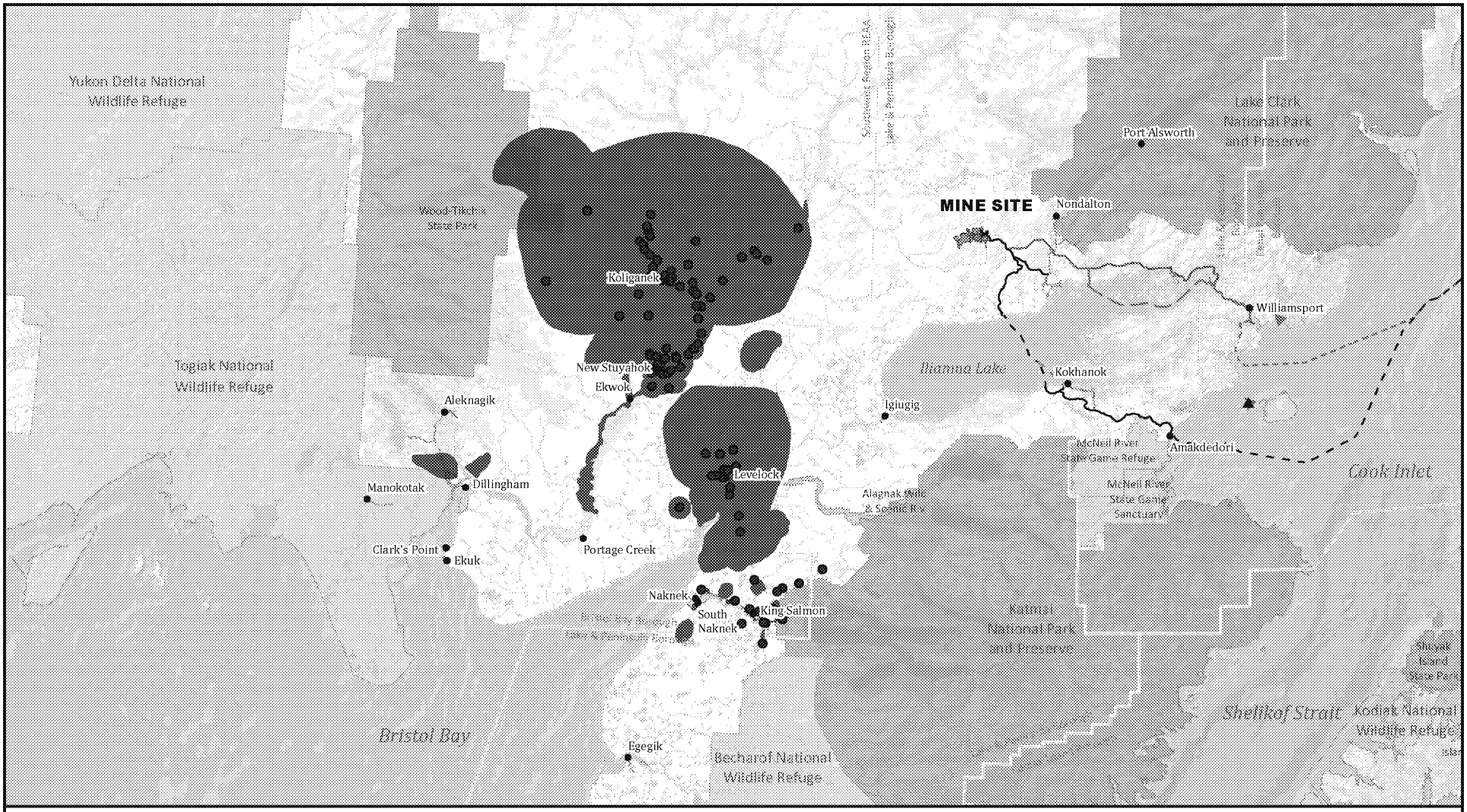
Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 7:04:22 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: figures APPK 3.9 part 4 (UNCLASSIFIED)
Attachments: Figure_K3_09_11_Furbearers_CommGroup1.pdf; Figure_K3_09_12_Furbearers_CommGroup2.pdf

VR

Shane McCoy
Program Manager
(907) 753-2715

AMERICAN OVERSIGHT



Sources: PLP 2018; Krieg et al. 2009; Holen et al. 2011 (Study years 2005 and 2007)

US Army Corps of Engineers

15 0 15 30
Miles

Harvest Areas
- Small Land Mammals (Point)
- Small Land Mammals

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

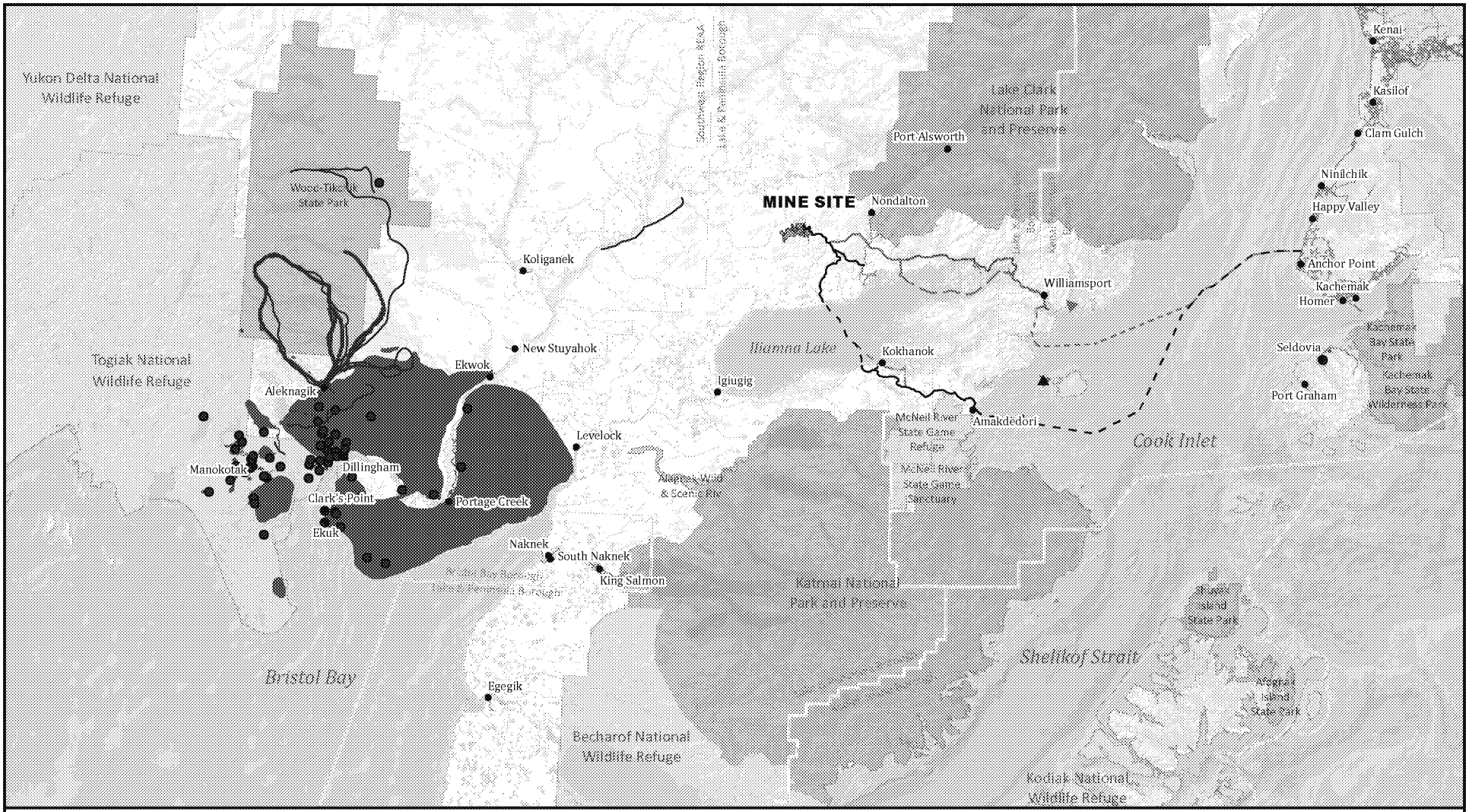
Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

SMALL LAND MAMMAL HARVEST AREAS: KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-11

AMERICAN OVERSIGHT



Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

US Army Corps of Engineers

15 0 15 30
Miles

Harvest Areas
- Small Land Mammals (Point)
- Small Land Mammals (Line)
- Small Land Mammals

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

SMALL LAND MAMMAL HARVEST AREAS: ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

PEBBLE PROJECT EIS

FIGURE K3.9-12

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 6:31:37 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: please provide input by 12/07/2018 as requested (UNCLASSIFIED)
Attachments: 11_09_2018_Section_3_02_01B-E_Land_Status_Pages_v2.pdf

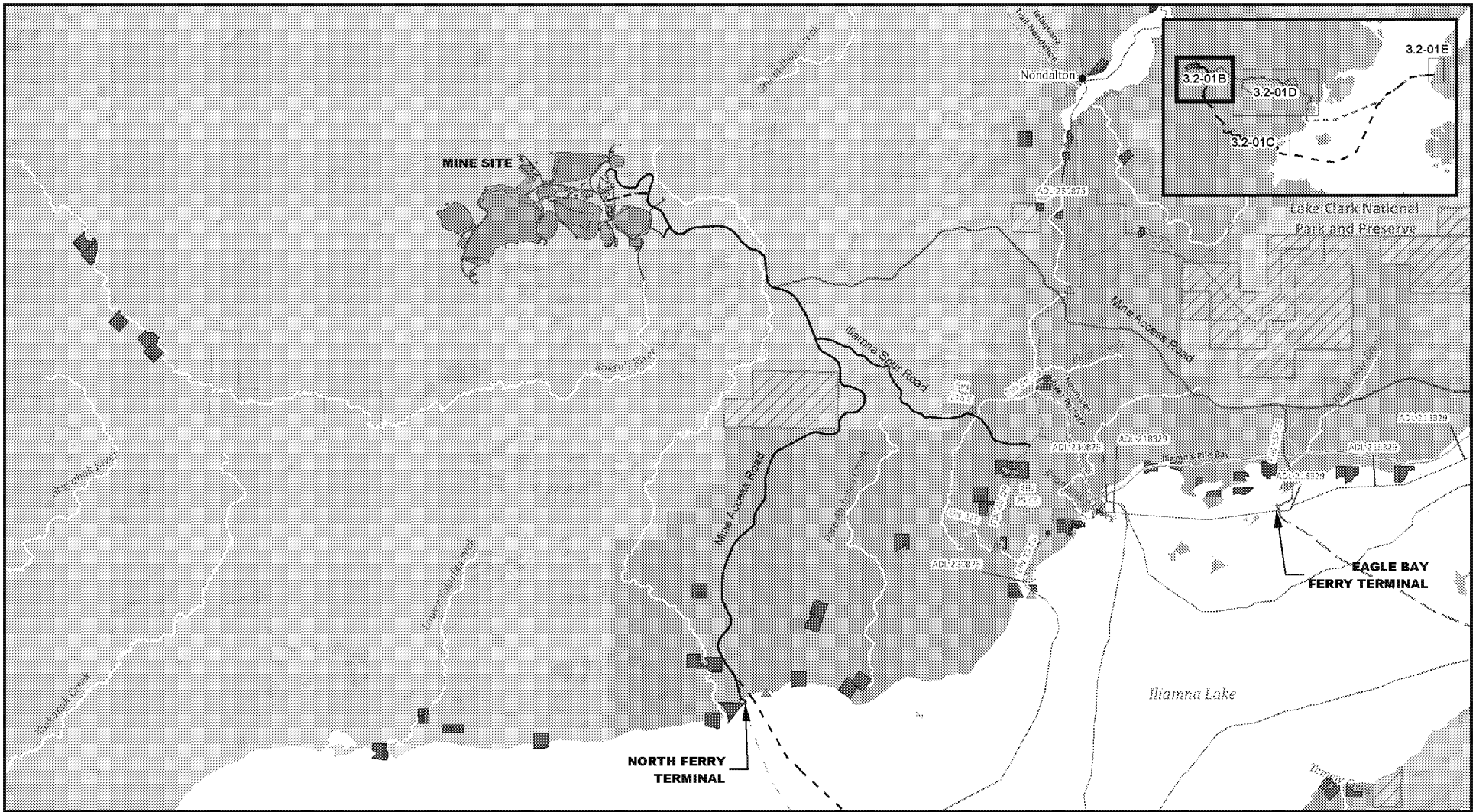
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



Sources: ADNR 2015, 2017, 2018; BLM 2013, 2017, 2018; NERRS 2000; NOAA 2011; USFWS 2017

US Army Corps of Engineers

1 0 1 2
Miles

Administrative Boundaries
- Outer Continental Shelf
- Borough Boundary
- State Easements
- Bureau of Land Management
- National Park Service
- Native Patent or IC
- Native Selected
- State Patent or TA
- State Selected
- Water
- Native Allotments
- Alaska Special Use Lands Designation
- Federal Conservation System Unit
- 17(b) Easement Site
- 17(b) Easement Trail
- RS 2477

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

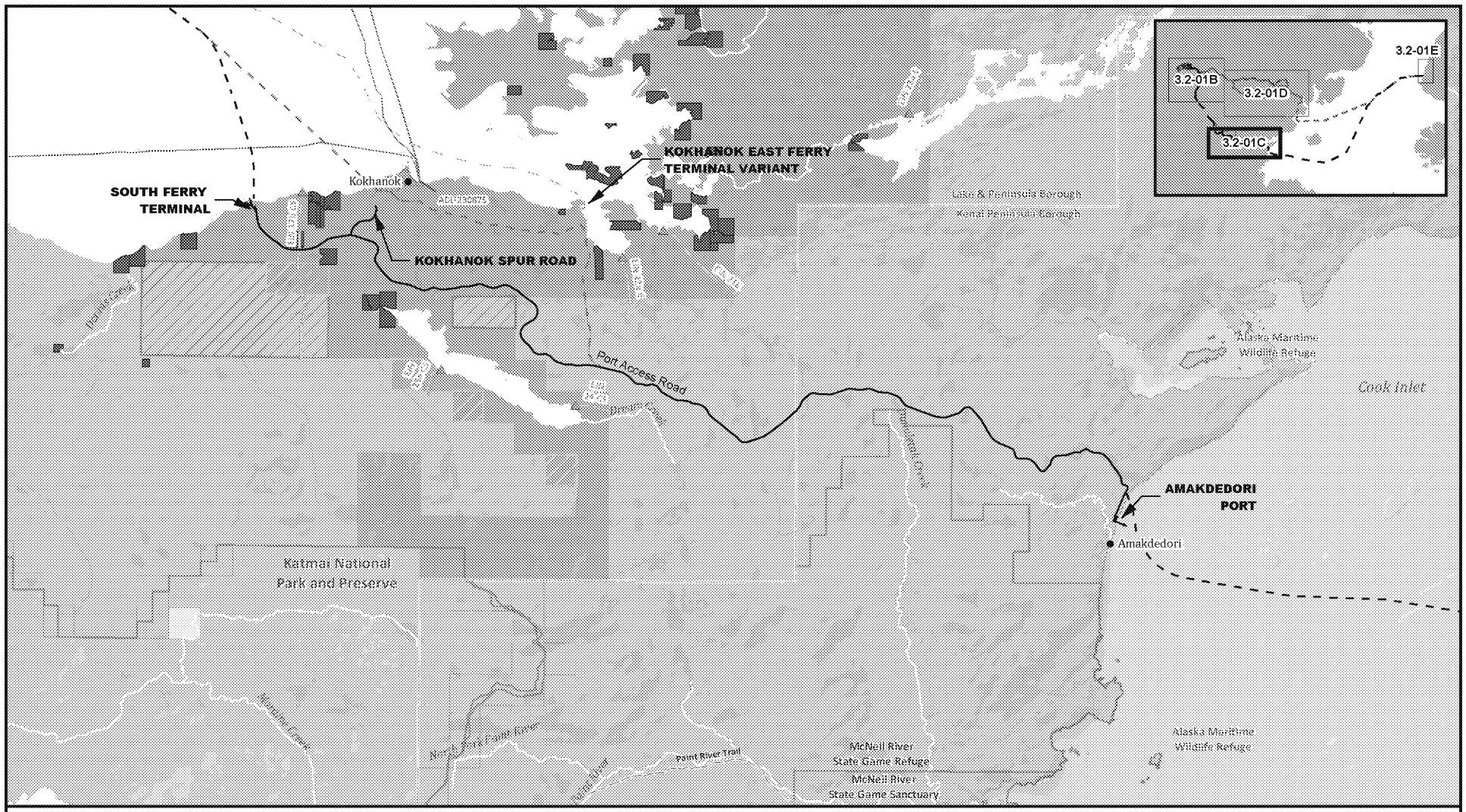
Other Features
- Local Roads

GENERALIZED LAND STATUS

PEBBLE PROJECT EIS

FIGURE 3.2-1B

AMERICAN OVERSIGHT



Sources: ADNR 2015, 2017, 2018; BLM 2013, 2017, 2018; NERRS 2000; NOAA 2011; USFWS 2017

US Army Corps of Engineers

1 0 1 2
Miles

Administrative Boundaries
- Outer Continental Shelf
- Borough Boundary
- State Easements
- Bureau of Land Management
- National Park Service
- Native Patent or IC
- Native Selected
- State Patent or TA
- State Selected
- Water
- Native Allotments
- Alaska Special Use Lands Designation
- Federal Conservation System Unit
- 17(b) Easement Site
- 17(b) Easement Trail
- RS 2477

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

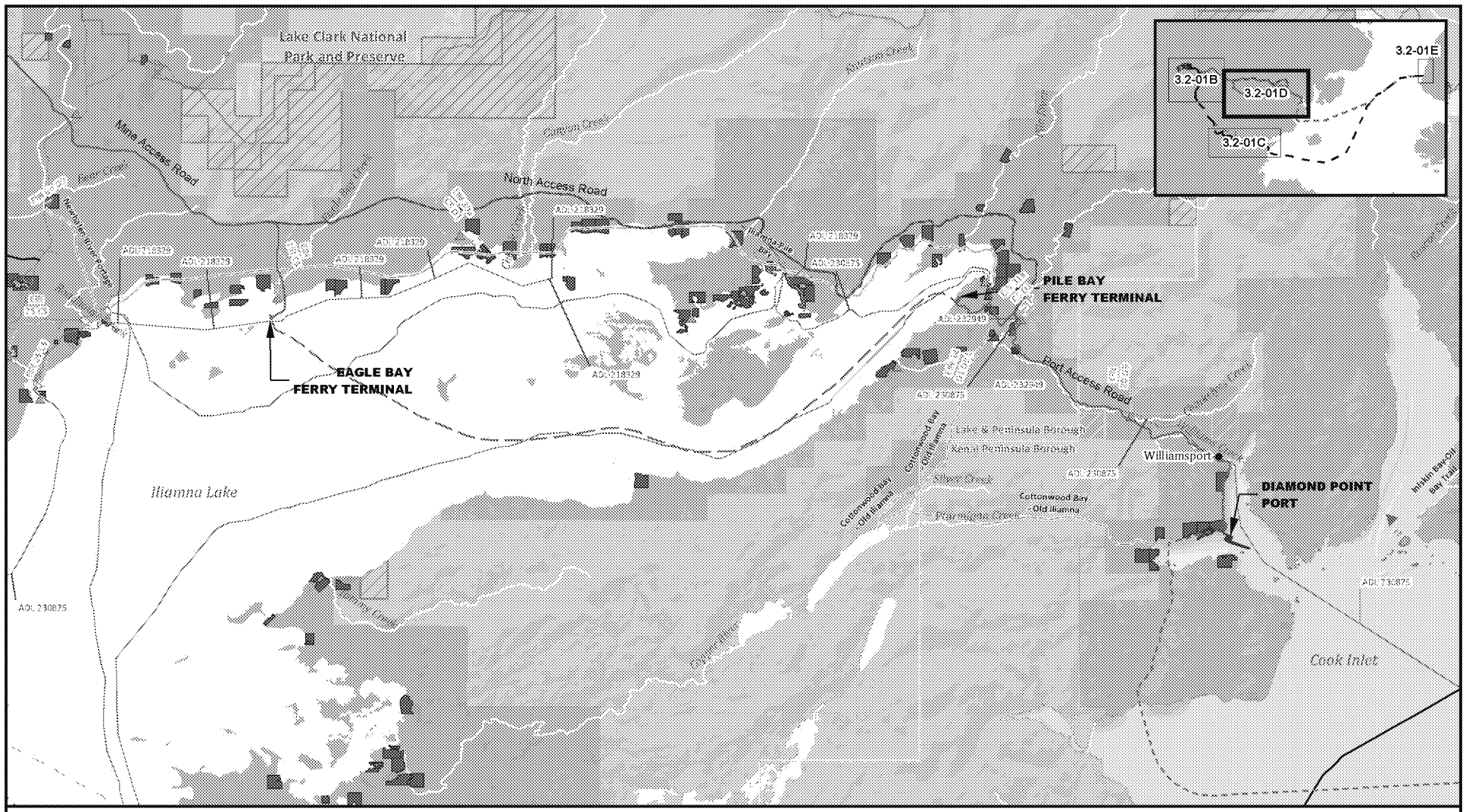
Alternative 3
- Transportation Corridor

Other Features
- Local Roads

GENERALIZED LAND STATUS

PEBBLE PROJECT EIS **FIGURE 3.2-1C**

AMERICAN OVERSIGHT



Sources: ADNR 2015, 2017, 2018; BLM 2013, 2017, 2018; NERRS 2000; NOAA 2011; USFWS 2017

US Army Corps of Engineers

1 0 1 2
Miles

Administrative Boundaries
- Outer Continental Shelf
- Borough Boundary
- State Easements
- Bureau of Land Management
- National Park Service
- Native Patent or IC
- Native Selected
- State Patent or TA
- State Selected
- Water
- Native Allotments
- Alaska Special Use Lands Designation
- Federal Conservation System Unit
- 17(b) Easement Site
- 17(b) Easement Trail
- RS 2477

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route

- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

Other Features
- Local Roads

GENERALIZED LAND STATUS

PEBBLE PROJECT EIS **FIGURE 3.2-1D**

AMERICAN OVERSIGHT



Sources: ADNR 2015, 2017, 2018; BLM 2013, 2017, 2018; NERRS 2000; NOAA 2011; USFWS 2017

US Army Corps of Engineers

1 0 1 2
Miles

Administrative Boundaries
- Outer Continental Shelf
- Borough Boundary
- State Easements
- Native Patent or IC
- Native Selected
- State Patent or TA
- Water
- Alaska Special Use Lands Designation
- Federal Conservation System Unit
- Kachemak Bay National Estuarine Research Reserve
- Stariski State Recreational Site
- 17(b) Easement Site
- 17(b) Easement Trail
- RS 2477

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

Other Features
- Local Roads

GENERALIZED LAND STATUS

PEBBLE PROJECT EIS

FIGURE 3.2-1E

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/16/2018 7:59:55 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: 4th email Figures 4.16 (UNCLASSIFIED)
Attachments: 11_09_2018_04_16_06_GeneralArrangementPhase4.pdf; 11_09_2018_04_16_07_Water_Extraction_Sites.pdf

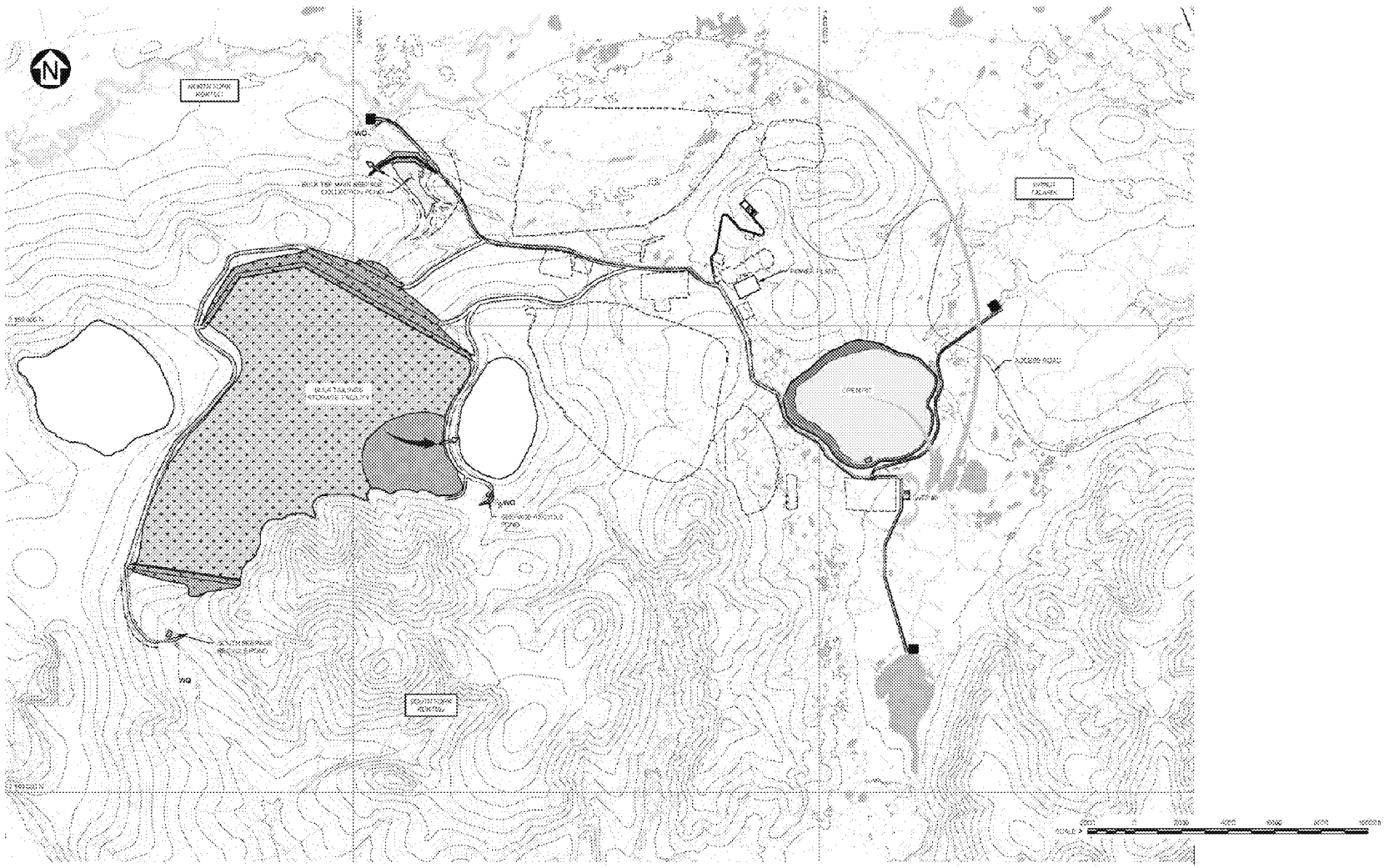
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



NOTES

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANE, ZONE 5
2. CONTOUR INTERNAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP, JUNE 14 2018.

Source: Knight Piesold 2018d

US Army Corps of Engineers

LEGEND:

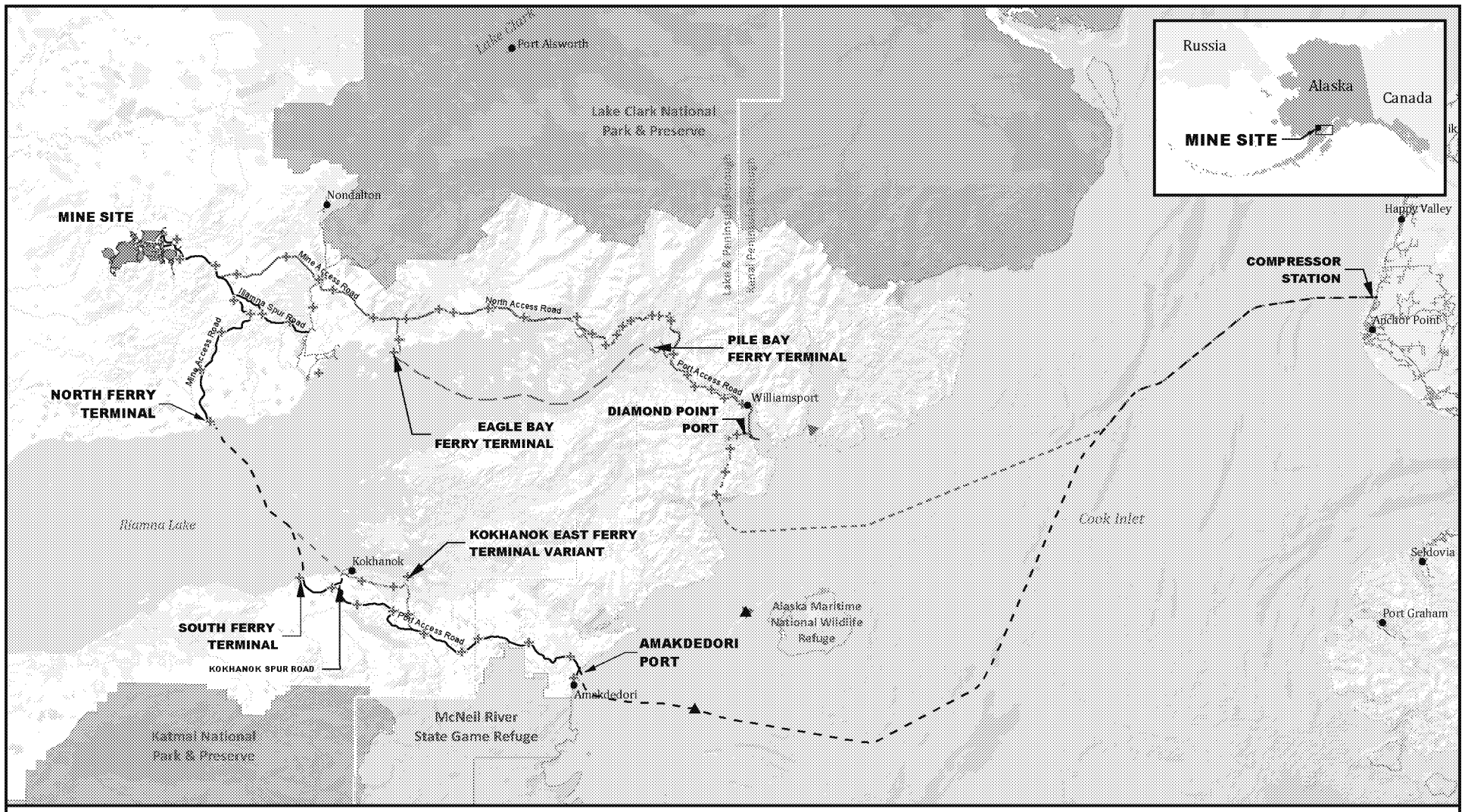
- OPEN PIT
- REVEGETATED - EMBANKMENT FACE
- REVEGETATED - BEACH
- SEASONAL WETLAND
- REVEGETATED - OTHER
- POND
- MINERAL CLOSING ORDER
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- WTP DISCHARGE PIPELINE
- WTP DISCHARGE POINT
- WQ WATER QUALITY MONITORING POINT
- GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- CLEAN (NON-CONTACT) WATER DIVERSION
- EMERGENCY SPILLWAY
- RECLAIMED FACILITY OUTLINE
- CONTACT WATER
- TREATED WATER
- CLEAN WATER

GENERAL ARRANGEMENT POST CLOSURE PHASE 4

PEBBLE PROJECT EIS

FIGURE 4.16-6

AMERICAN OVERSIGHT



Sources: PLP 2018; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

All Action Alternatives
- Water Extraction Sites

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- National Park
- National Wildlife Refuge
- State Game Refuge/Sanctuary

WATER EXTRACTION SITES

PEBBLE PROJECT EIS

FIGURE 4.16-7

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/17/2018 7:45:32 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 sixth email (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_18_04_SamplingLocationsSurfaceWaterQuality.pdf

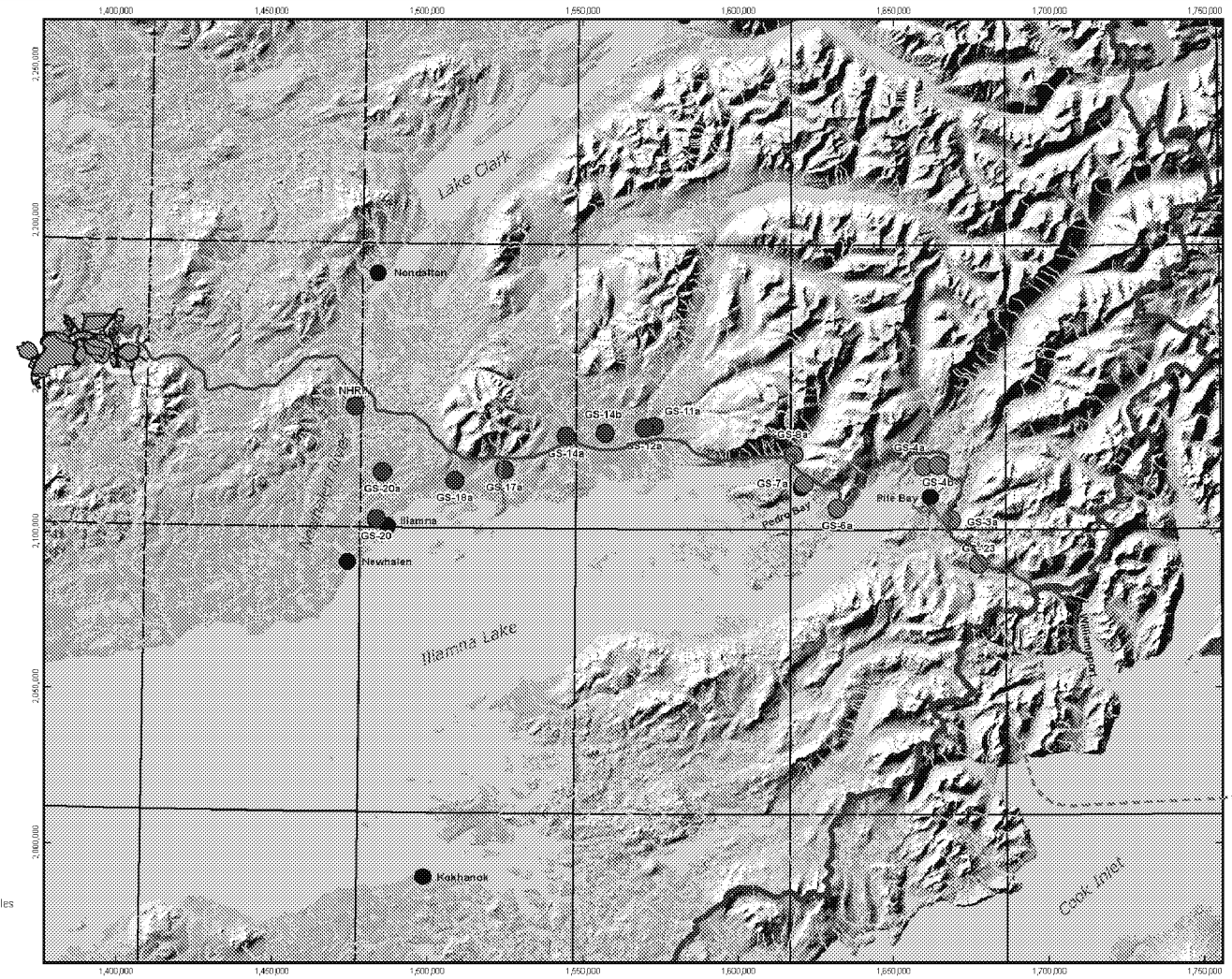
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



0 4 8 12 16 Miles

0 5 10 15 20 Kilometers

Source: EBD Chapter 9, Figure 9.3-1

US Army Corps of Engineers®

- Surface Water-Quality Sample Location - East
- Surface Water-Quality Sample Location - West
- Community
- Bristol Bay/Cook Inlet Drainage Boundary
- General Deposit Location

SURFACE WATER QUALITY SAMPLE LOCATIONS

PEBBLE PROJECT EIS

FIGURE 3.18-4

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 6:31:47 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: please provide input by 12/07/2018 as requested (UNCLASSIFIED)
Attachments: 11_09_2018_Section_3_02_01A_Land_Status_Overview_v2.pdf

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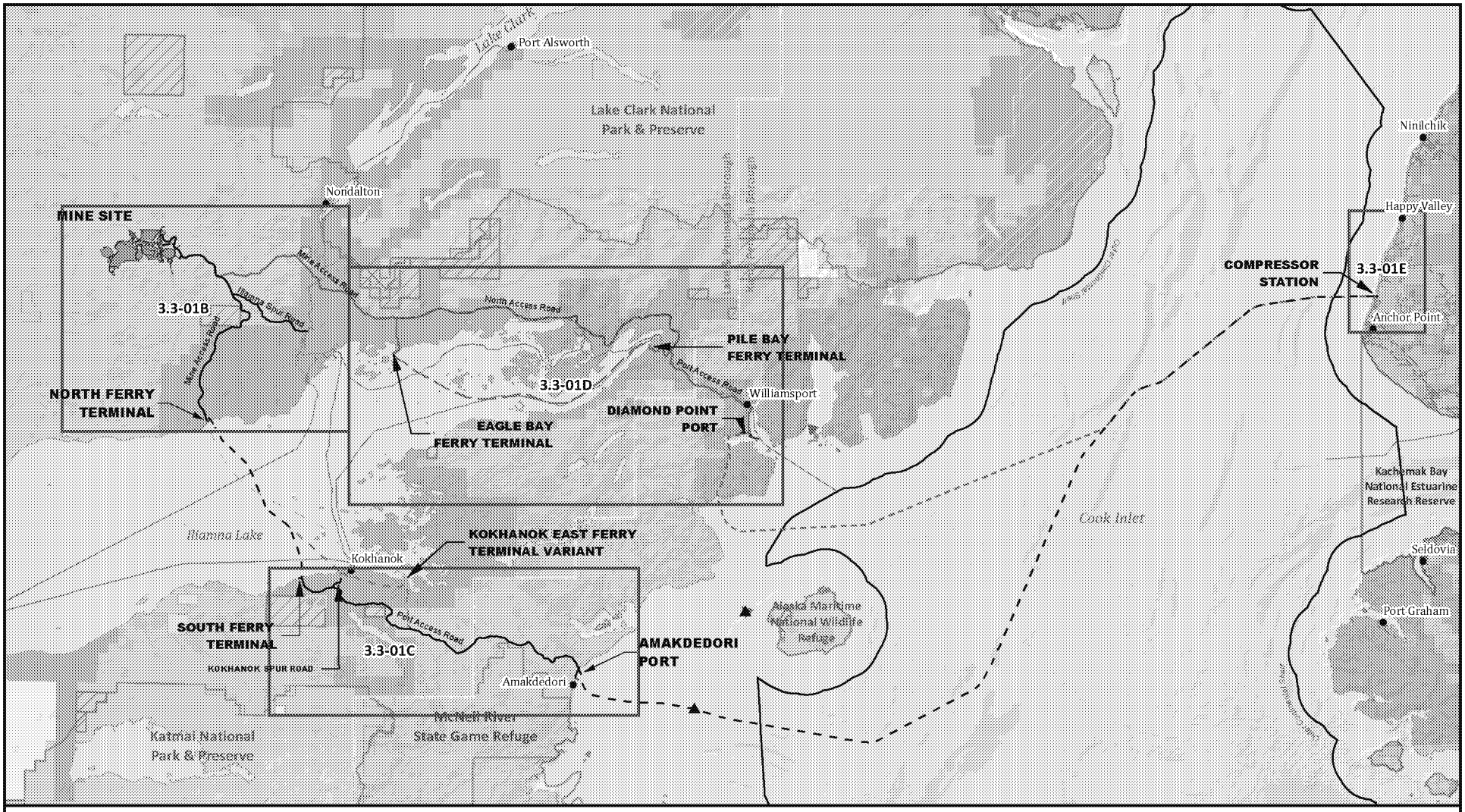

GENERALIZED LAND STATUS OVERVIEW MAP

PEBBLE PROJECT EIS

FIGURE 3.2-1A

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Sent: 11/9/2018 7:01:28 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: figures Appk 3.9 (UNCLASSIFIED)
Attachments: Figure_K3_09_01_Large_Land_Mammals_CommGroup1.pdf; Figure_K3_09_02_Large_Land_Mammals_CommGroup2.pdf

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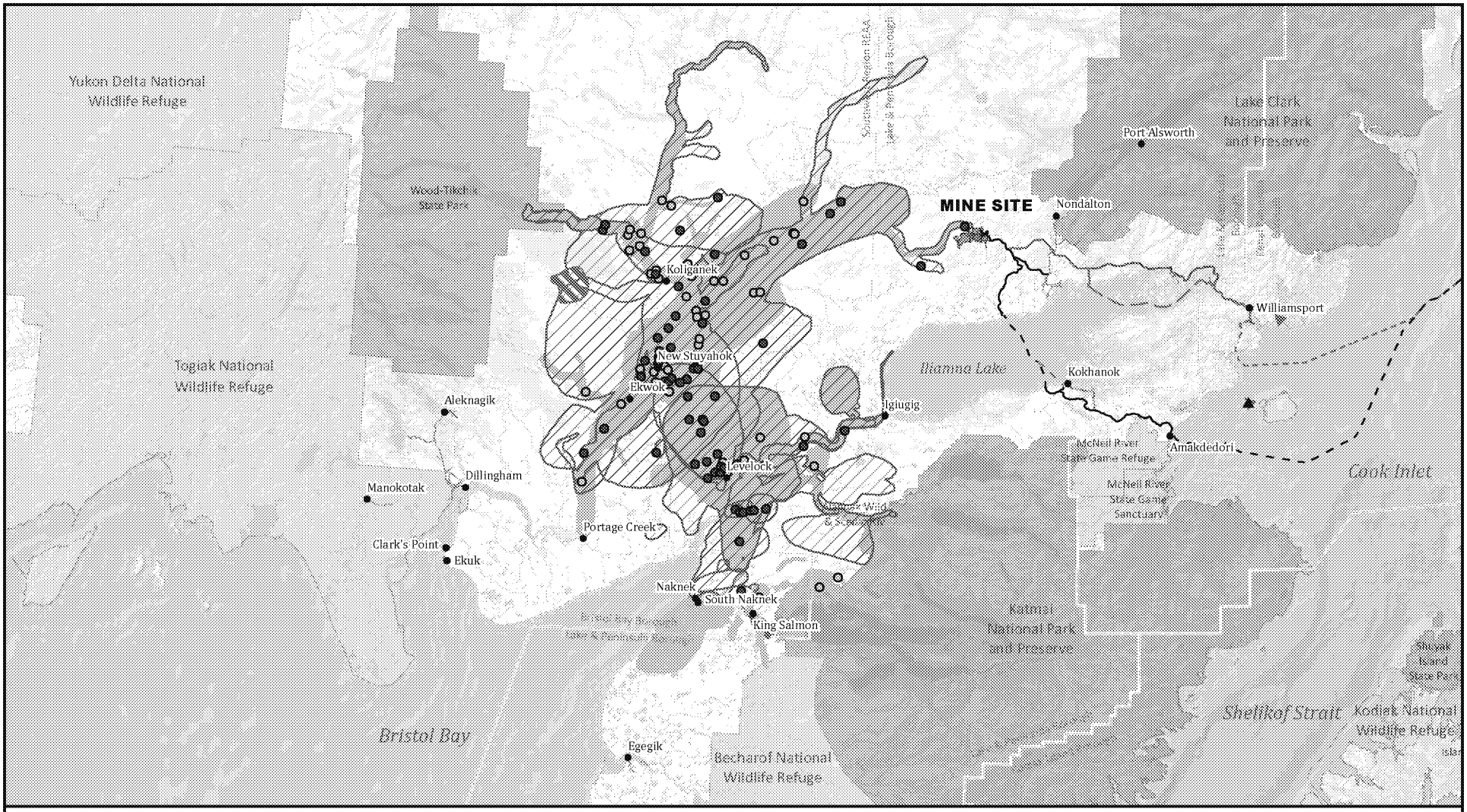

Sources: PLP 2018; Krieg et al. 2009; Holen et al. 2011 (Study years 2005 and 2007)

US Army Corps of Engineers

15 0 15 30
Miles

Large Land Mammal Harvest Areas
- Caribou (Point)
- Moose (Point)
- Brown bear
- Caribou
- Moose

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

LARGE LAND MAMMAL HARVEST AREAS: KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-1

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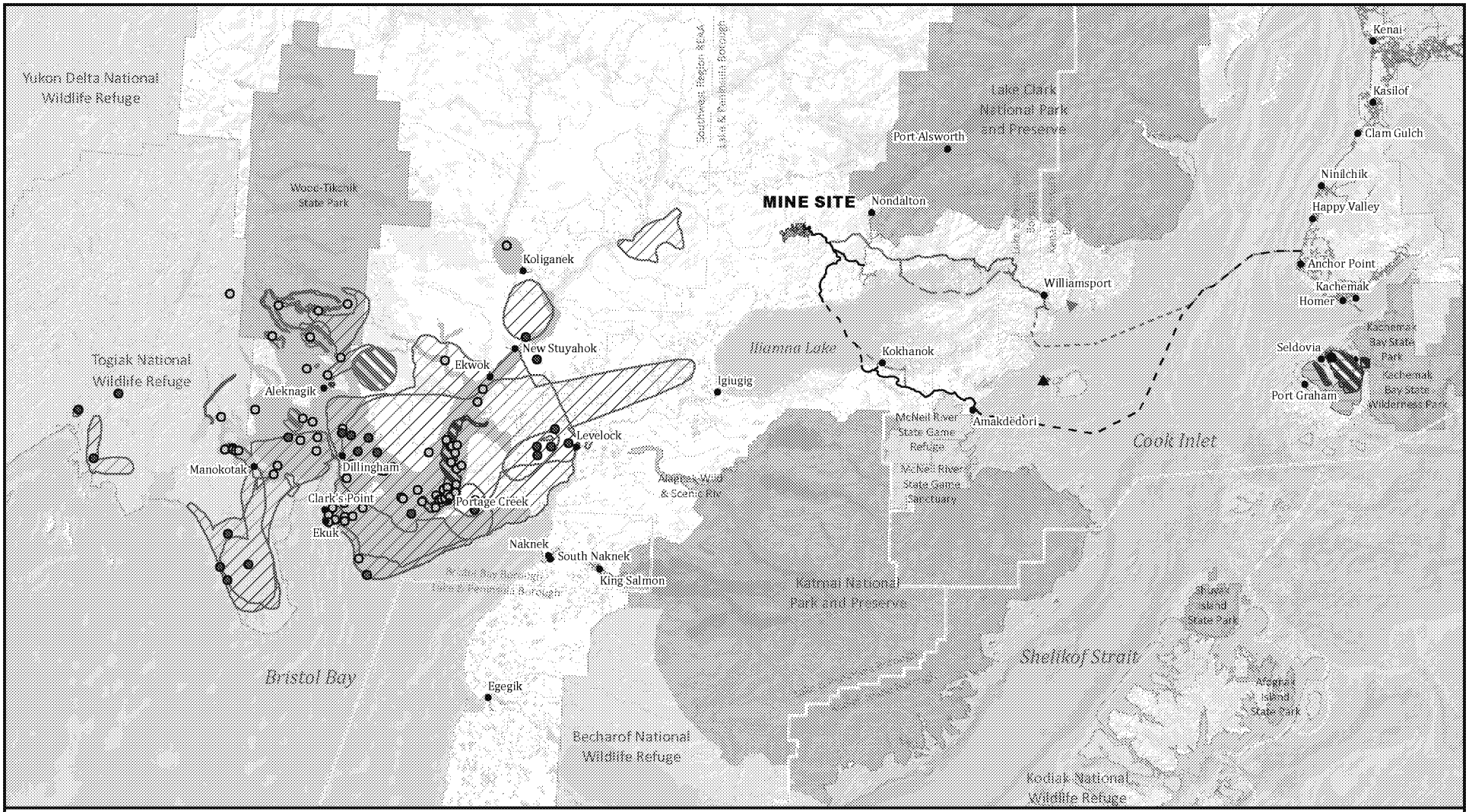

Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

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15 0 15 30
Miles

Large Land Mammal Harvest Areas

- Black bear (Point)
- Brown bear (Point)
- Caribou (Point)
- Moose (Point)
- Black bear (Line)
- Caribou (Line)
- Black bear
- Brown bear
- Caribou
- Moose
- Sheep or goats

Alternative 1

- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant

- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2

- Transportation Corridor
- Ferry Route

Alternative 2/3

- Lightering Location
- Natural Gas Pipeline

Alternative 3

- Transportation Corridor

Other Features

- Local Roads
- Borough Boundary
- Locality
- National Park

LARGE LAND MAMMAL HARVEST AREAS: ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

PEBBLE PROJECT EIS

FIGURE K3.9-2

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From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/17/2018 7:46:34 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]
Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 seventh email FINAL (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_18_05_IliamnaLakeSamplingSites.pdf; 11_17_2018_FigK3_18_01_NPPlottedasFunctionofAPTailings.pdf; 11_17_2018_FigK4_18_01_OpenPitWaterSurfaceElevations.pdf; 11_17_2018_FigK4_18_02_MainWMPVolumesEarlyClosure.pdf; 11_17_2018_FigK4_18_03_AverageAnnualFlowWTPs.pdf; 11_17_2018_FigK4_18_04_BulkTSFPondWaterQuality.pdf

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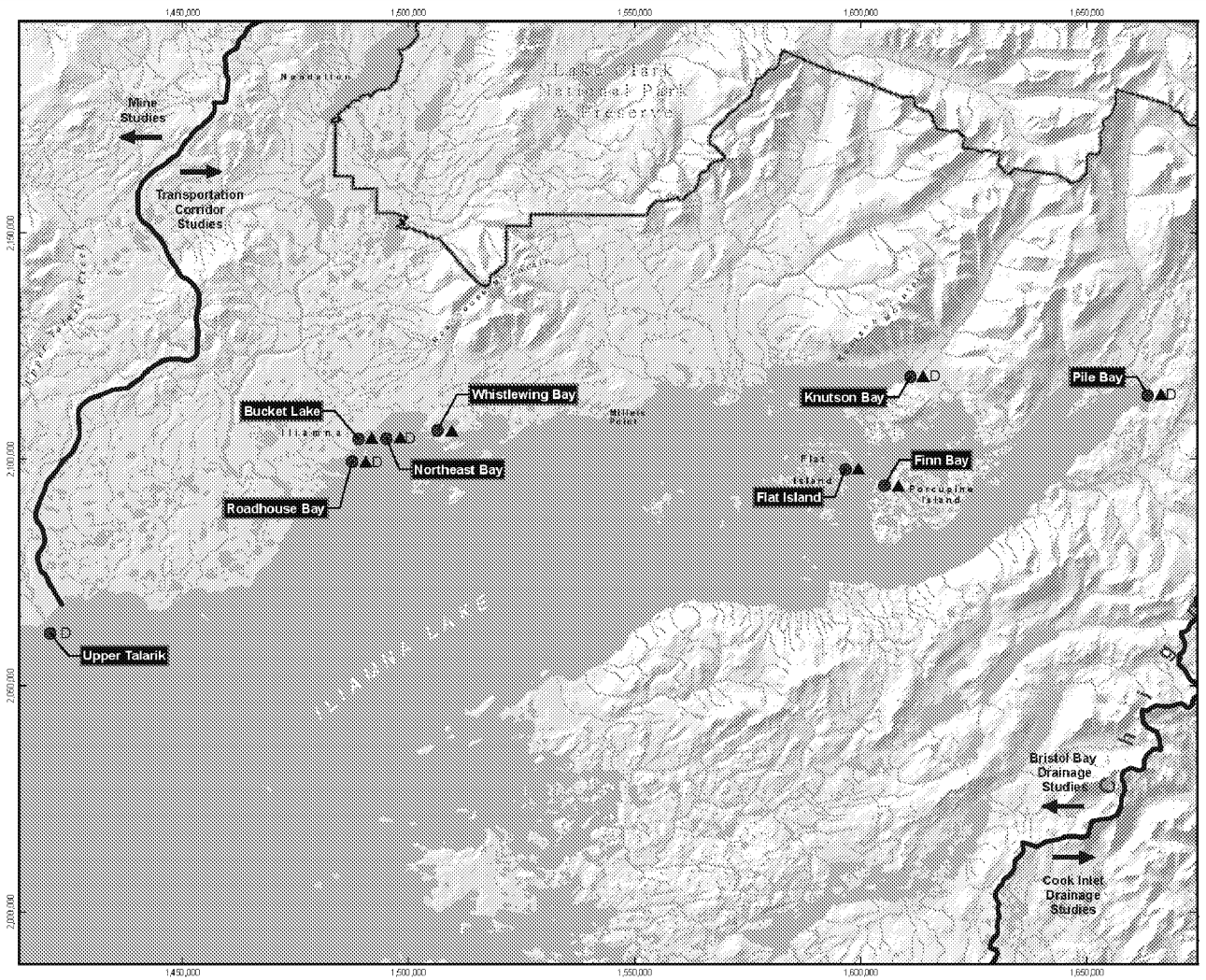

Source: EBD Appendix B, Figure B-1

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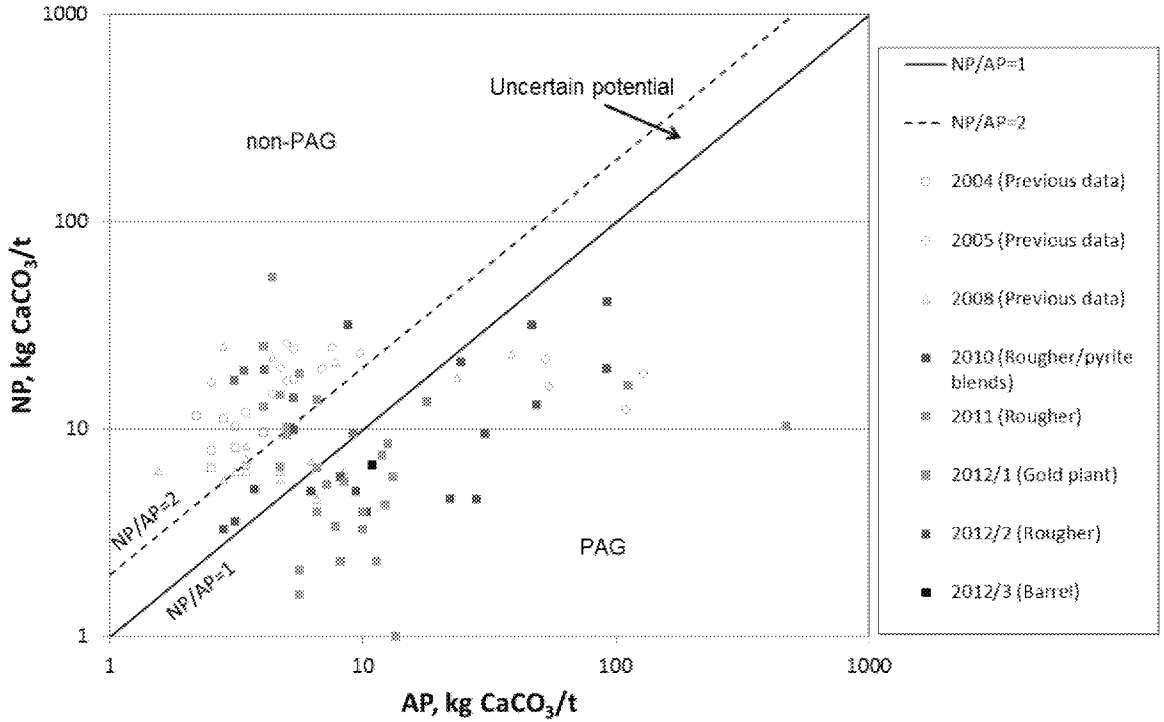
Water Sample Locations

- Shallow samples collected 3' below lake surface
- D Deep samples collected at 1/2 total depth + 3' above lake bottom
- ▲ Sediment sample location

SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

PEBBLE PROJECT EIS **FIGURE 3.18-5**

AMERICAN OVERSIGHT



AP = acid potential
NP = neutralizing potential
PAG = potentially acid generating
kg $CaCO_3$/t = kilograms calcium carbonate/ton

Source: SBD Chapter 11 (SRK 2018a), Figure 11-34

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NP PLOTTED AS FUNCTION OF AP FOR TAILINGS

PEBBLE PROJECT EIS **FIGURE K3.18-1**

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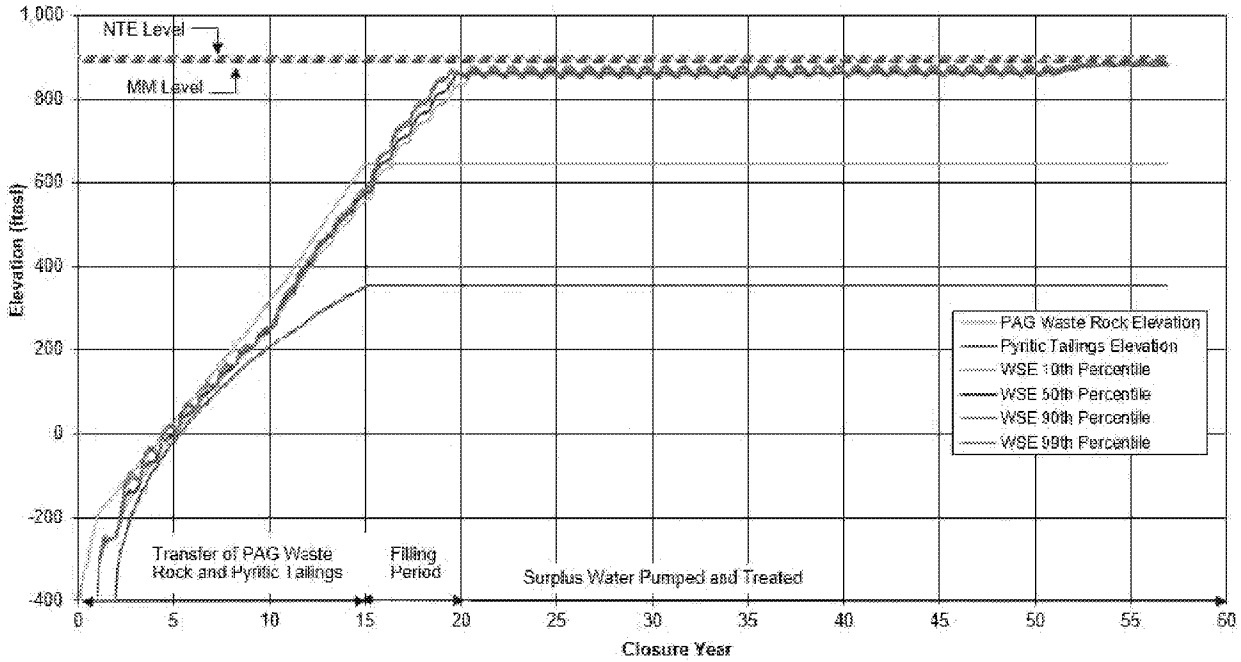

NOTES:
1. NTE LEVEL: NOT TO EXCEED LEVEL.
2. MM LEVEL: MAXIMUM MANAGEMENT LEVEL.

Source: KP 2018d, Figure 5.1

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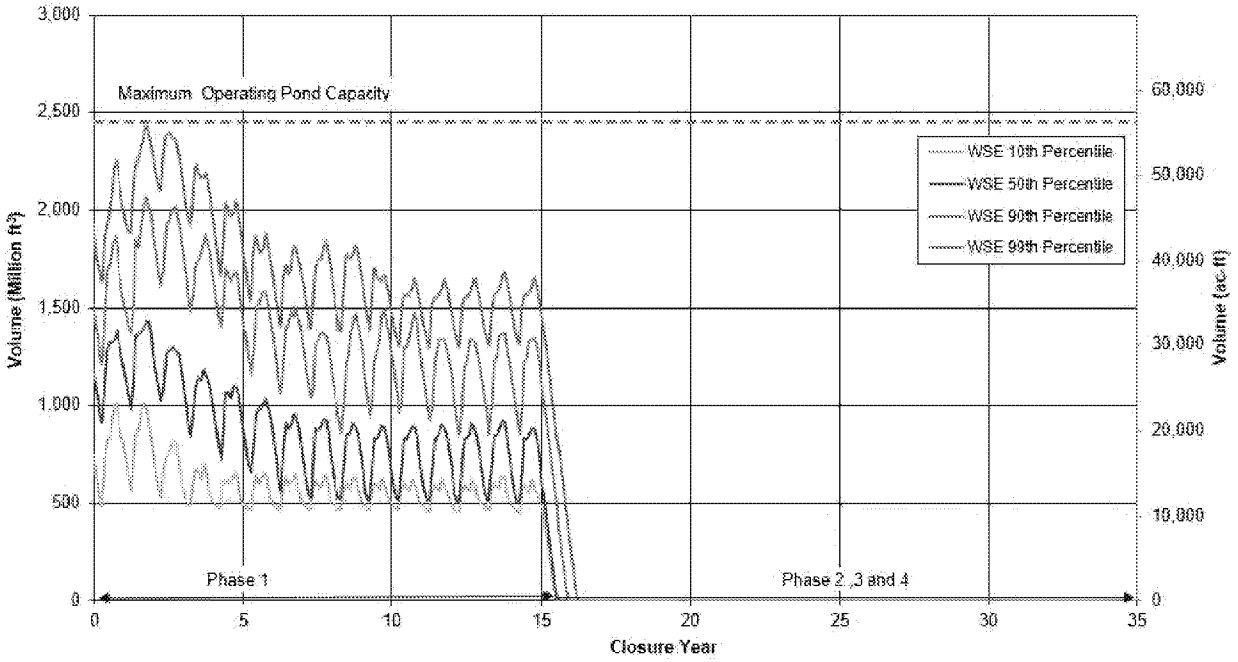
OPEN PIT WATER SURFACE ELEVATIONS

PEBBLE PROJECT EIS **FIGURE K4.18-1**

AMERICAN OVERSIGHT



Source: KP 2018d, Figure 5.2

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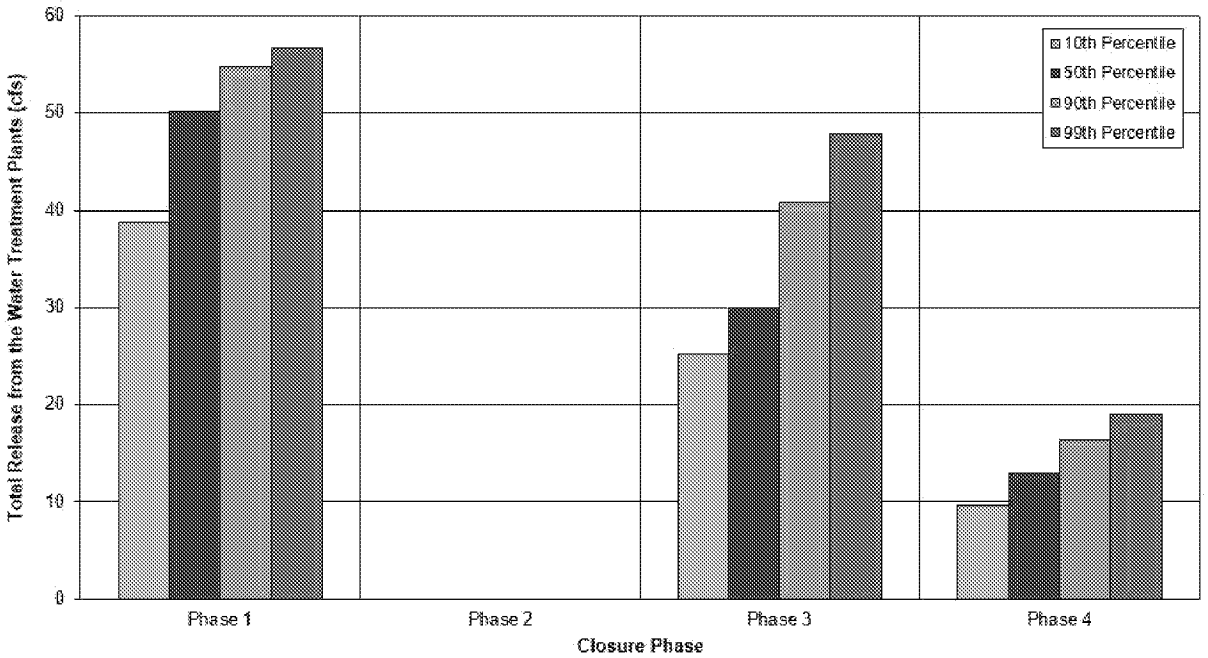
MAIN WMP VOLUMES IN EARLY CLOSURE

PEBBLE PROJECT EIS **FIGURE K4.18-2**

AMERICAN OVERSIGHT



NOTE: RELEASES INCLUDE THOSE FROM BOTH WTP#2 AND WTP#3 IN CLOSURE PHASE 3.

Source: KP 2018d, Figure 5.3

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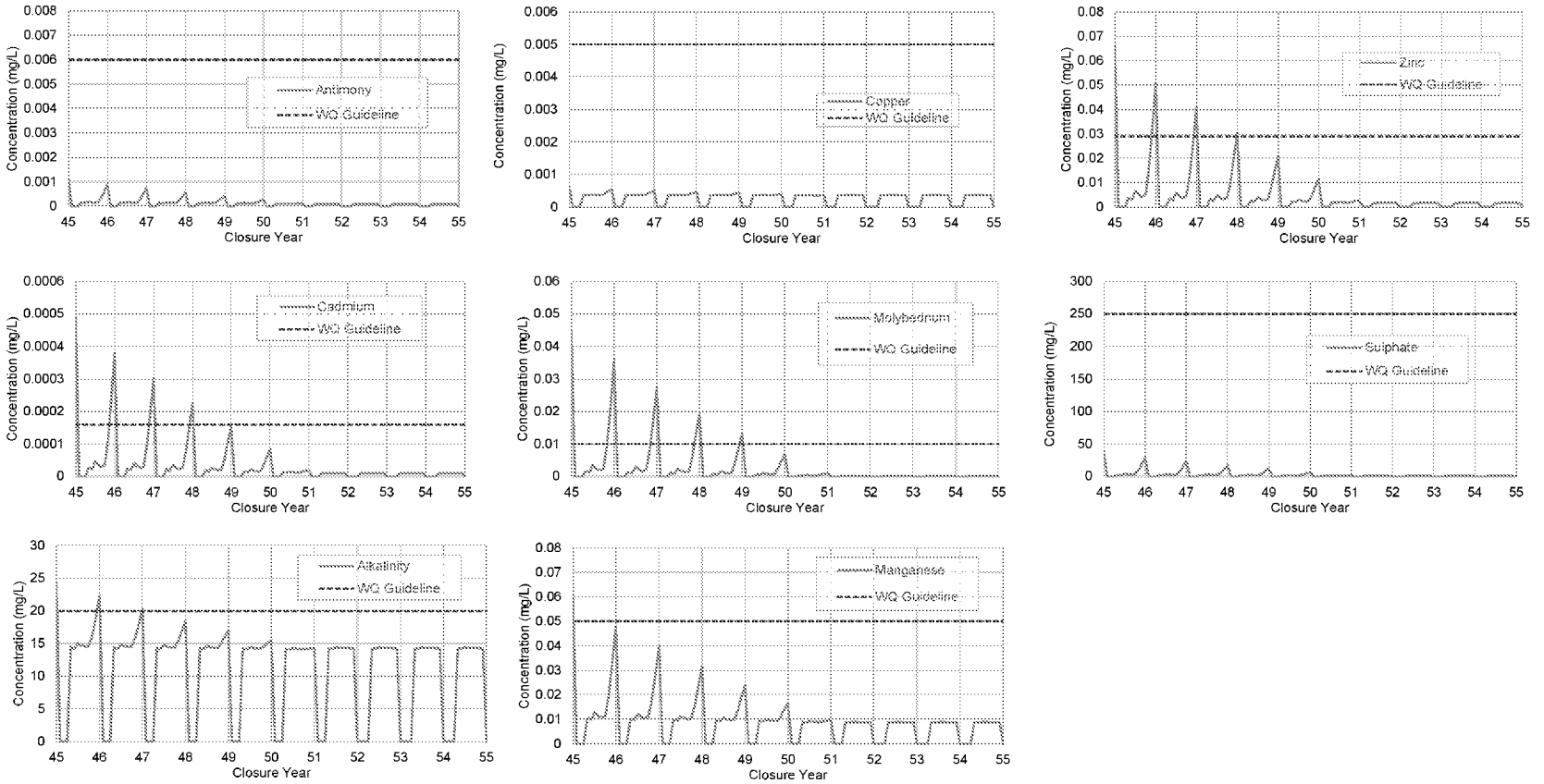
AVERAGE ANNUAL FLOW FROM WTPS IN CLOSURE

PEBBLE PROJECT EIS **FIGURE K4.18-3**

AMERICAN OVERSIGHT



NOTES:

1. BULK TSF BEACHES UNDERGO CAPPING BEGINNING IN CLOSURE YEAR 10.

2. VALUES REPRESENT 50TH PERCENTILE WATER QUALITY PREDICTIONS IN THE BULK TSF SUPERNATENT POND NEAR THE END OF CLOSURE PHASE 3 AND BEGINNING OF CLOSURE PHASE 4.

Source: KP 2018d, Figure 6.1

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BULK TSF POND WATER QUALITY PREDICTIONS - CLOSURE PHASES 3 AND 4

PEBBLE PROJECT EIS

FIGURE K4.18-4

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Sent: 11/9/2018 7:02:21 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: Figures AppK 3.9 (UNCLASSIFIED)
Attachments: Figure_K3_09_05_Vegetation_CommGroup1.pdf; Figure_K3_09_06_Vegetation_CommGroup2.pdf

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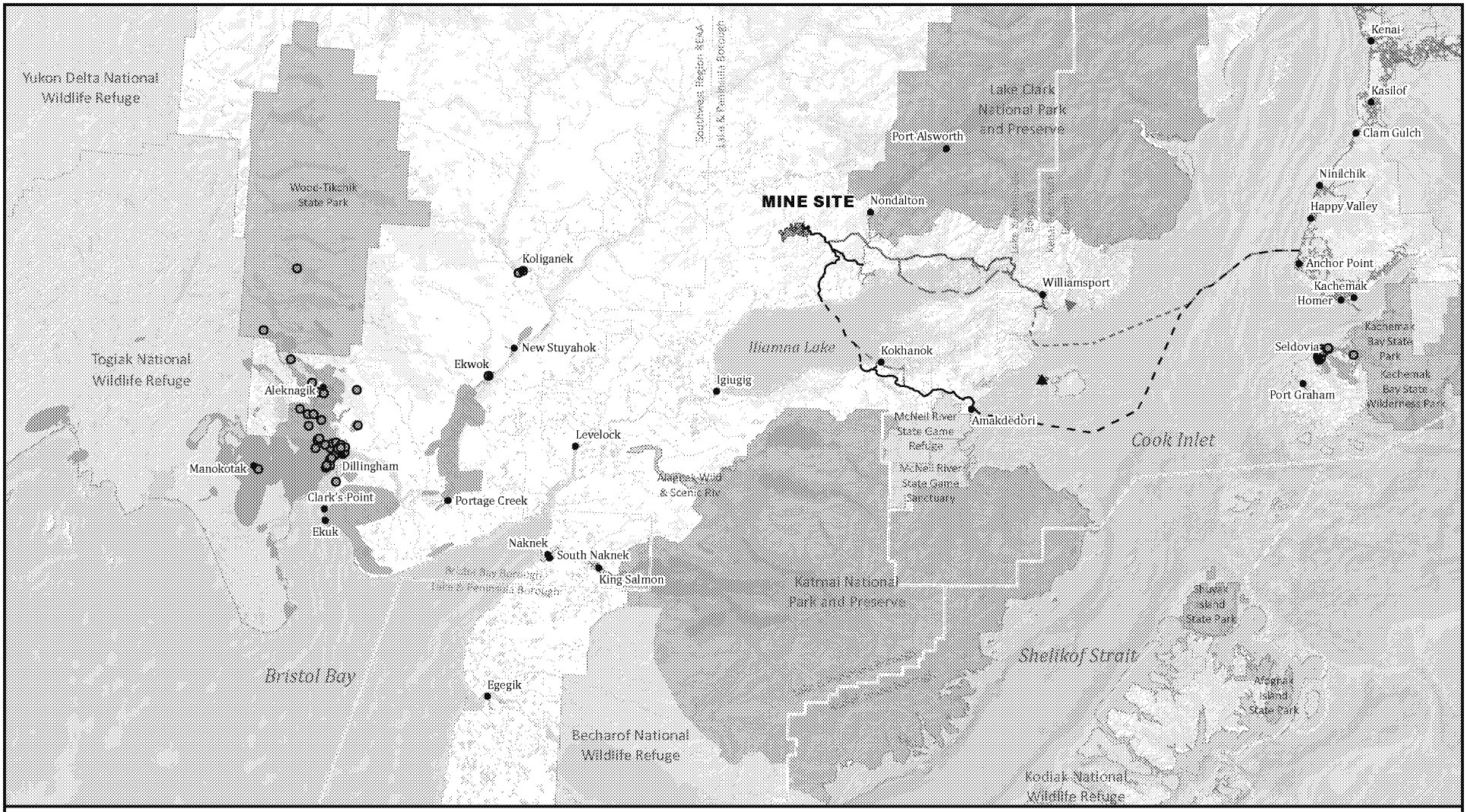

Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

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15 0 15 30
Miles

Vegetation Harvest Areas
- Plants, Wood, Berries, and Fungi (Point)
- Plants, Wood, Berries, and Fungi (Line)
- Plants, Wood, Berries, and Fungi

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

VEGETATION HARVEST AREAS (PLANTS, WOOD, BERRIES, FUNGI): ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

PEBBLE PROJECT EIS

FIGURE K3.9-6

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Sent: 11/17/2018 7:43:27 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 third email (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_17_10_DeepGroundwaterElevation.pdf;
11_17_2018_Fig3_17_11_HydraulicConductivityDeposit.pdf;
11_17_2018_Fig3_17_12_HydraulicConductivityOutsideDeposit.pdf;
11_17_2018_Fig3_17_13_HydraulicConductivityvsDepthProfileDeposit.pdf

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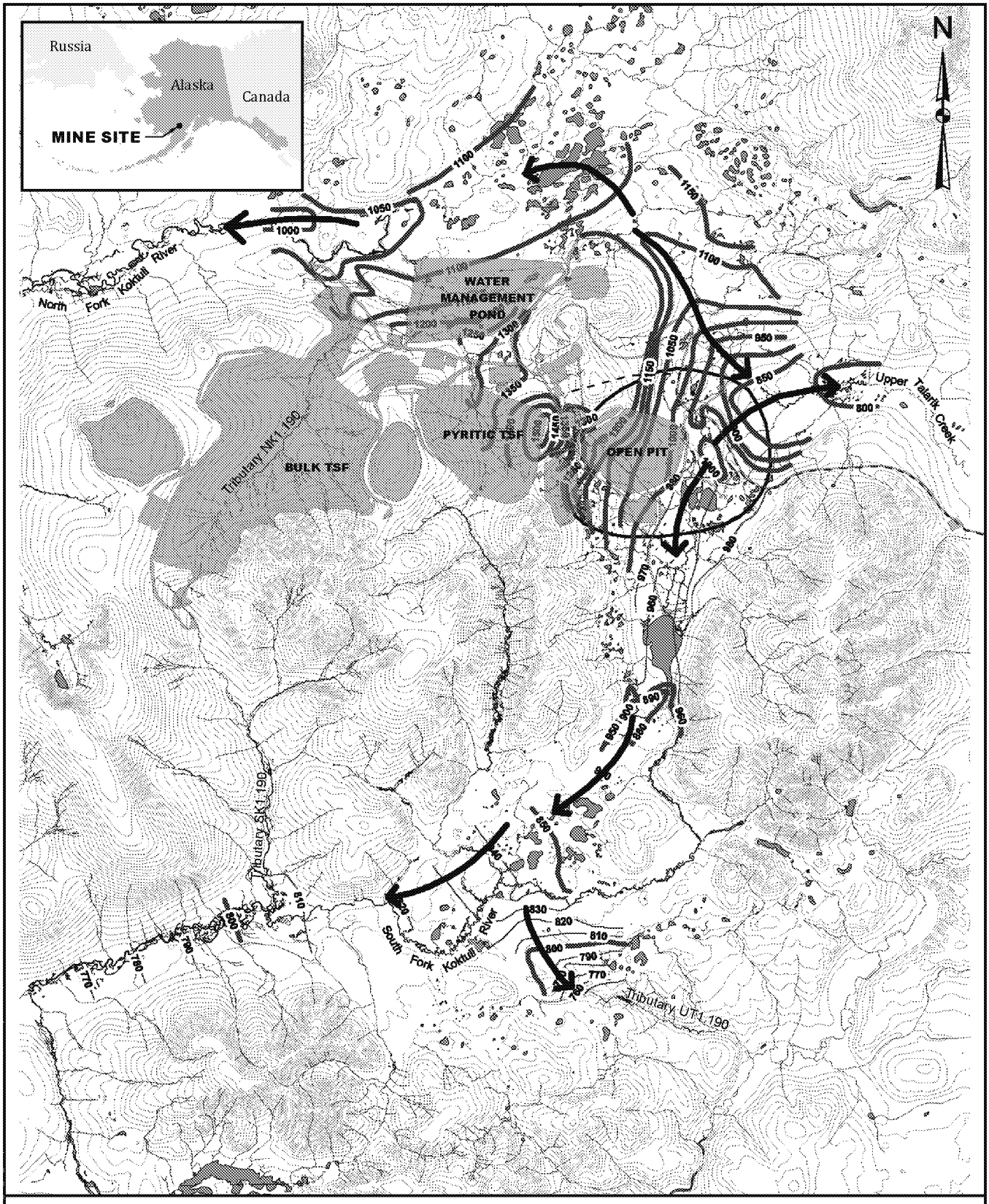

Sources: Schlumberger 2015a, Figure 8.1E-3

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0.5 0 0.5 1

Miles

Project Features

Natural Gas Pipeline

Deep GWE Contours

10 ft

100 & 50 ft

Lake

River

50-ft Contour Interval

Groundwater Flow Direction

General Deposit Location

DEEP GROUNDWATER ELEVATION
APRIL 2011 SEASONAL LOW WATER

PEBBLE PROJECT EIS

FIGURE 3.17-10

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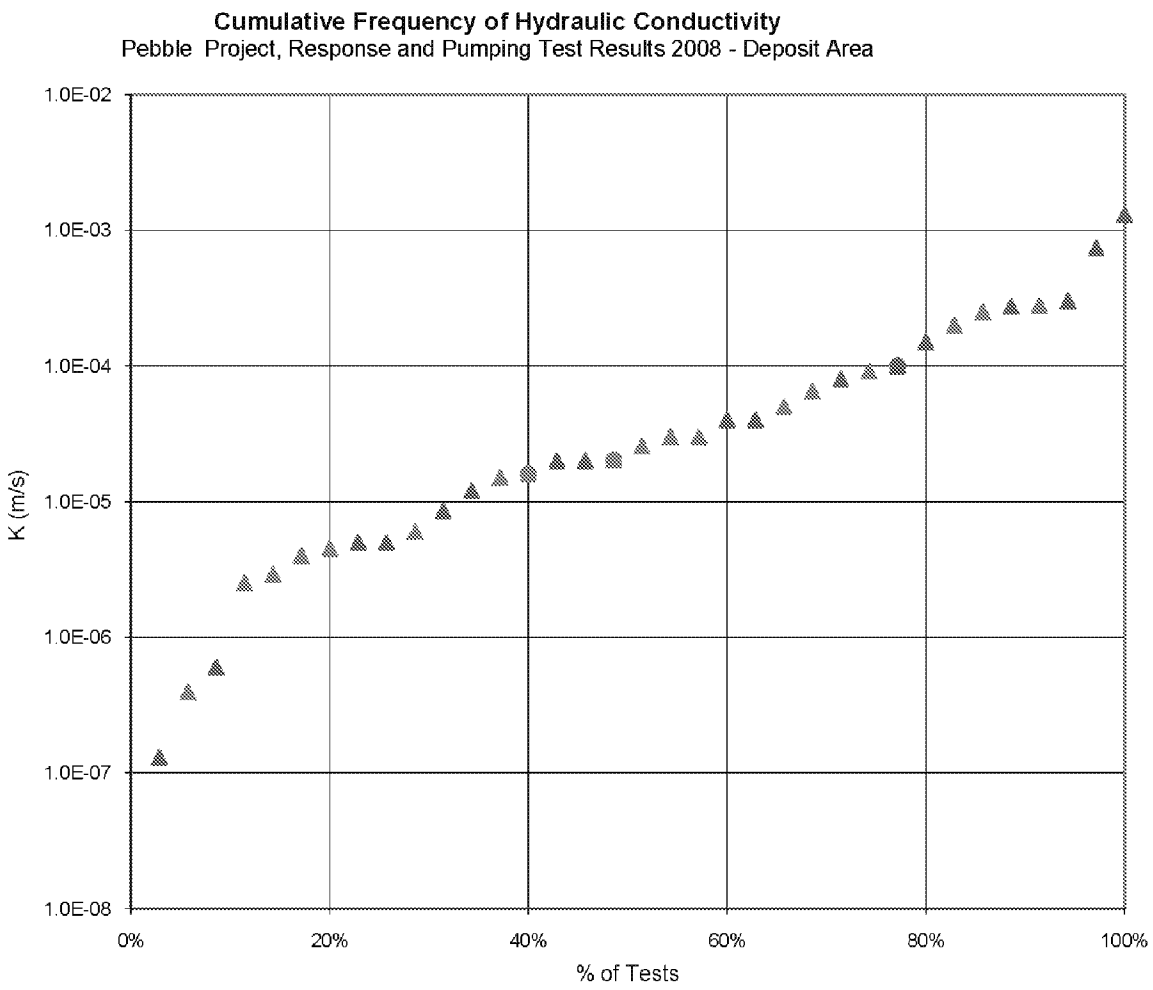

Sources: Schlumberger 2015a, Figure 8.1-9b

Legend:

- Pumping test - bedrock
- Pumping test - overburden
- Response test - bedrock
- Response test - overburden

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HYDRAULIC CONDUCTIVITY MEASUREMENTS IN THE PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS

FIGURE 3.17-11

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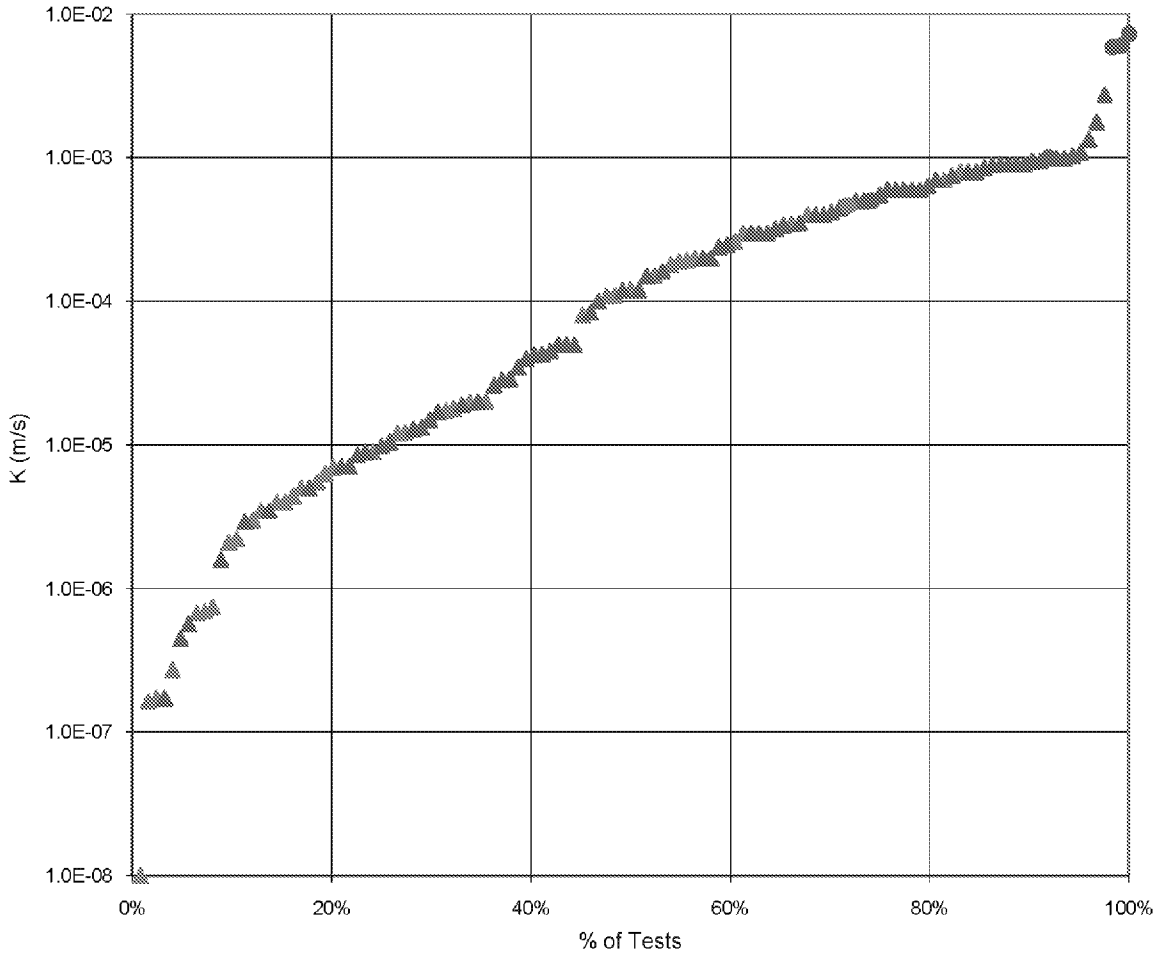
Cumulative Frequency of Hydraulic Conductivity
Pebble Project, Response and Pumping Test Results 2008 - Outside Deposit Area



Sources: Schlumberger 2015a, Figure 8.1-9c

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Legend:

- Pumping test - bedrock
- Pumping test - overburden
- Response test - bedrock
- Response test - overburden

HYDRAULIC CONDUCTIVITY MEASUREMENTS OUTSIDE THE PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS **FIGURE 3.17-12**

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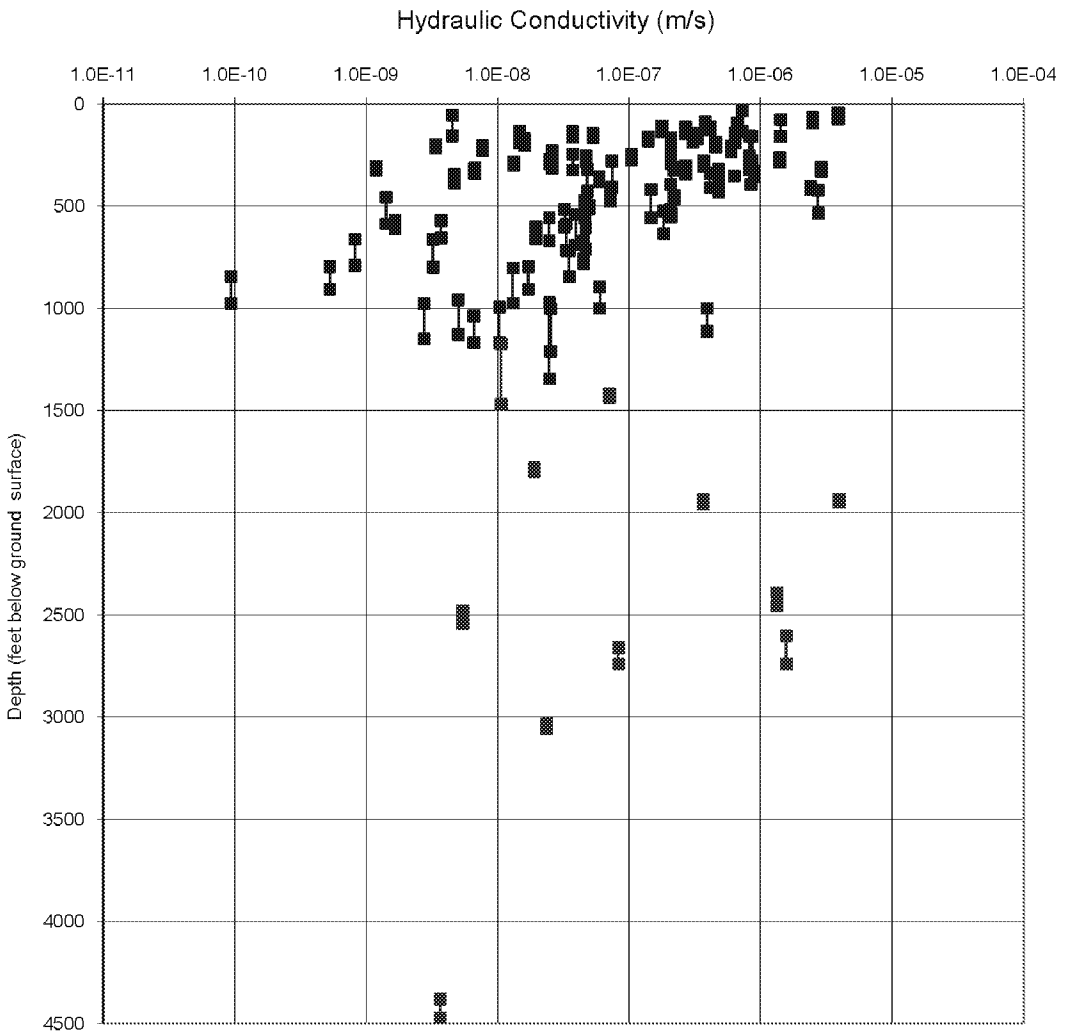

Sources: Schlumberger 2015a, Figure 8.1-11a

Legend

Packer Testing Interval Collected by Knight Piesold (2004 to 2008)

Packer Testing Interval Collected by SLR

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HYDRAULIC CONDUCTIVITY VS. DEPTH PROFILE FOR BEDROCK IN THE PEBBLE DEPOSIT AREA

PEBBLE PROJECT EIS

FIGURE 3.17-13

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From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 2:55:48 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: figures (UNCLASSIFIED)
Attachments: 3_13_01_Pebble_Project_Area_Geology.pdf; 3_13_02_Mine_Site_Surficial_Geology.pdf; 3_13_03_Mine_Site_Bedrock_Geology.pdf; 3_15_01_Earthquakes_Active_Faults.pdf; 3_15_04_Active_Volcanoes.pdf; 3_15_02_Seismic_Hazard_Map.pdf; 3_15_03_Geotechnical Data Coverage.pdf; 3_13_04_Bedrock_Blasting_Intervals.pdf

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Sent: 11/8/2018 3:36:23 PM
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Subject: please provide comments as requested by 12/07 (UNCLASSIFIED)
Attachments: 11_08_2018_Sec3.23_Wildlife_reviewdraft.docx; 11_08_2018_Sec4.23_Wildlife_reviewdraft.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 2 Word files, the review drafts of:

Sections 3.23/4.23 - Wildlife. There are no figures in either section. There are no technical appendices. CAs requested for comment include USFWS and State of Alaska.

VR

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CLASSIFICATION: UNCLASSIFIED

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3.23 WILDLIFE VALUES

The following section provides a description of the birds, and the terrestrial and marine mammals, that are known and have a potential to occur in the project area. Wildlife currently listed as federally threatened or endangered are discussed separately in Section 3.25, Threatened and Endangered Species. This chapter is divided based on the species present in or near the various components of the three action alternatives. Project components that are similar across all alternatives (such as the mine site) are only discussed once, under Action Alternative 1 – Applicant's Proposed Alternative.

3.23.1 Action Alternative 1 – Applicant's Proposed Alternative

3.23.1.1 Mine Site

Birds

The bird species present in the proposed action include those that are protected under the Migratory Bird Treaty Act of 1918 (MBTA) (16 United States Code [U.S.C.] 703-712) and the Bald and Golden Eagle Protection Act (16 USC 668-668c). Additionally, multiple agencies, as well as non-profit organizations, have created Alaska-specific lists of bird species of conservation concern due to small or vulnerable population sizes in Alaska, restricted geographic ranges (including breeding and wintering), and decreased population trends, among other reasons. Bird species of conservation concern are species listed on at least one of the following three lists: the US Fish and Wildlife Service's (USFWS) Birds of Conservation Concern in Bird Conservation Regions (BCR) 2 (western Alaska) and BCR 4 (northwestern interior forest US portion only) (USFWS 2008); the Alaska Department of Fish and Game's (ADF&G) Wildlife Action Plan (listed as a species of greatest conservation need in southwest Alaska) (ADF&G 2015a), and Audubon Alaska's WatchList 2017-Red List of Declining Populations (Warnock 2017). Bird species of conservation concern do not receive the same level of protection as those listed under the federal Endangered Species Act (ESA), but are protected by the MBTA. Bird species of conservation concern are not specifically detailed herein, but are recognized as occurring in the mine analysis area. Lists of all bird species and their conservation status detected within the mine analysis area and transportation and natural gas pipeline corridors are located in the various Pebble Project Environmental Baseline Data Reports (ABR 2011a-e). Avian species present in the mine site are divided into groups that include raptors, waterbirds, landbirds, and shorebirds.

Historical bird surveys around the mine site include cliff-nesting raptor surveys (detailed in ABR 2011a), reconnaissance avian surveys of the mine site and surrounding areas including waterfowl surveys on the Kvichak and Naknek rivers (Smith 1991), and landbird and shorebird studies from the Iliamna Lake region (Williamson and Peyton 1962). These historical studies cannot be directly compared to the surveys conducted in the mine analysis area due to differences in survey methods, timing of surveys, habitat surveyed, geographical extent, etc. (ABR 2011a). Therefore, historical survey data are of limited use and generally not presented herein. More recently, an examination of the wildlife resources of the Nushagak River and Kvichak River watersheds conducted by Brna and Verbrugge (2013) reviewed the mammalian and avian resources in these watersheds. These data are included where appropriate.

Avian surveys for the mine site were conducted from 2004 through 2005 by ABR, Inc. The full details of the survey methods and results are located in the Pebble Project Environmental Baseline Document 2004 through 2008 Chapter 16 Wildlife and Habitat Bristol Bay Drainages

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(ABR 2011a). The methods and results are summarized herein for the specific project components, where applicable.

Habitat mapping and habitat-value assessments were conducted across the mine analysis area in 2004 and 2005 in an effort to better understand the biological conditions present and how they relate to avian abundance and distribution. Wildlife habitats in the mine analysis area were mapped to provide a baseline inventory of the availability of wildlife habitats for use by various wildlife species (ABR 2011a).

The mine analysis area was defined as an area 476 square kilometers, centered on the mine footprint. The area is primarily composed of alpine and unforested, upland habitats on glacial moraine deposits with three prominent river corridors in the area (North Fork Koktuli [NFK] River, South Fork Koktuli [SFK] River, and Upper Talarik Creek [UTC]). Field data on the vegetation, physiography, landforms, and surface forms were applied to assess the potential use of the mapped habitat by avian species as detailed in ABR 2011a. Habitat use for each species was qualitatively categorized into one of four value classes (high, moderate, low, or negligible value) based primarily on avian survey data specific to the mine analysis area, and habitat-use information from scientific literature (ABR 2011a). Twenty-five wildlife habitat types were mapped in the mine analysis area, with Upland Moist Dwarf Scrub and Alpine Moist Dwarf Scrub representing over 52 percent of the mine analysis area wildlife habitat types. The complete list of all avian habitat types, their plant-species composition, and their value as avian habitat are detailed in ABR 2011a. The avian habitat mapping is useful for understanding the locations where various avian species are likely to occur, and how impacts from the project are anticipated to affect the vegetation communities used by birds.

The following sections detail the specific survey methods and results for the three categories of birds (raptors, waterbirds, and landbirds and shorebirds) that breed, stage, winter, and migrate through the mine analysis area.

Raptors

Methods. Historical raptor survey data were reviewed to understand the level of field effort by previous studies; however, data are not representative because the ABR data from 2004 and 2005 are more recent and comprehensive. Aerial-based raptor studies were conducted from April to May 2004 and May to August 2005 to collect baseline data on the distribution, abundance, nesting status, and habitat use of large tree and cliff-dwelling birds of prey (and large corvids) which included: bald eagles (*Haliaeetus leucocephalus*), golden eagles (*Aquila chrysaetos*), gyrfalcon (*Falco rusticolus*), peregrine falcon (*Falco peregrinus*), rough-legged hawk (*Buteo lagopus*), northern goshawk (*Accipiter gentilis*), osprey (*Pandion haliaetus*), great horned owl (*Bubo virginianus*), and common raven (*Corvus corax*). Additional fall and winter bald eagle surveys were conducted in 2005 and 2006 to gather information on wintering bald eagles. The mine analysis area included all suitable cliff habitat and woodland tracts that could provide nesting platforms for large cliff and tree-nesting raptors. Detailed survey methods are discussed in ABR 2011a, and followed the Draft Environmental Baseline Studies, Proposed 2004 and 2005 study plans (NDM 2004, 2005).

Two helicopter aerial surveys were conducted in the mine analysis area in 2004 and 2005, with the first survey conducted prior to leaf-out of deciduous trees to identify tree-nesting species, such as northern goshawk and bald eagle. The second survey for each year was timed to coincide with peak nesting for cliff-nesting raptors, such as golden eagle, gyrfalcon, peregrine falcon, and rough-legged hawk. During 2005, additional aerial surveys were conducted during the nestling period to determine nest success and productivity. Wintering bald eagle surveys were conducted

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in February and November 2005 and November 2006 to determine bald eagle winter use of the mine analysis area.

Results. No raptor nests were found directly within the mine site footprint based on ABR surveys (ABR 2011a). The mine site footprint itself lacks cliffs, large trees, and other structures that could support nesting raptors. The habitat is primarily open rocky tundra surrounded by rolling hills. Habitat for most tree-nesting raptors is limited in the mine analysis area to trees along UTC and its tributaries, as well as the lower reaches of the Koktuli River. More extensive woodlands (spruce-dominated) occur in the area between Iliamna Lake, and between Upper and Lower Talarik creeks. Habitat for cliff nesting species is limited to isolated cliffs, and bluffs along riparian areas. This includes hills between the NFK and Upper SFK rivers, the eastern side of Koktuli Mountain, the eastern and southern slopes of Groundhog Mountain, and along UTC.

Of the 19 raptor species (12 day-active raptors and seven species of owl) that may occur in the mine analysis area and surrounding areas, 10 species were recorded during aerial surveys. A complete list of the detected raptor species, along with their breeding status, nest abundance, and nest productivity can be found in ABR 2011a, and is summarized herein. The most commonly detected nesting raptors were bald eagle (with the closest nest over 4 miles from the mine site footprint in the NFK), golden eagle, rough-legged hawk, and gyrfalcon (Figure 3.23-1). Not all of the nests detected were active or occupied at the time of survey, and the number of active raptor territories varied depending on prey availability. The nesting success (percentage of total nests that contained at least one live nestling at approximately 80 percent of the average age of first flight for the species during the productivity surveys) ranged from 67 percent for rough-legged hawk and golden eagle to 71 and 80 percent for bald eagle and gyrfalcon, respectively (ABR 2011a). Merlin (*Falco columbarius*), osprey, and great horned owls were detected nesting in the mine analysis area in low abundance and no peregrine falcon or northern goshawk nests were detected during surveys. Additionally, suitable nesting habitat existed for the northern harrier (*Circus hudsonius*), and short-eared owl (*Asio flammeus*); however, because both of these are ground-nesting species, it is difficult to find their nests via aerial surveys, and no nests of these species were detected. Additionally, these species exhibit variation in nest timing, nesting areas, and density in relation to prey species abundance. Therefore, while the mine site footprint lacks habitat suitable for tree- and cliff-nesting raptors, there is potential habitat for ground-nesting raptors, especially around wetland and marsh areas.

Bald eagle nests were found primarily along the lower NFK and SFK rivers, Upper and Lower Talarik creeks, along the Newhalen River, and generally were not in close proximity to the mine site (Figure 3.23-1). Cliff-nesting raptors such as golden eagles, gyrfalcons, and rough-legged hawks had nests located on cliffs much closer to the mine site along the NFK, SFK, and UTC drainages, including Groundhog Mountain and the mountains east of Frying Pan Lake (Figure 3.23-1). The closest nests of gyrfalcons and golden eagles to any component of the mine site were approximately 0.4 mile (near the bulk tailings storage cell south embankment sediment pond), and 0.8 mile away (near Frying Pan Slough water treatment plant discharge-south), respectively. Overall, two gyrfalcon nests were less than a mile from the mine site (south of the bulk tailings storage cell), and four golden eagle nests were observed in a large area between 0.8 mile to 2.5 miles from the mine site. Several rough-legged hawk nests were also in the vicinity and ranged from 1.7 to 2.5 miles from the mine site.

In summary, aerial raptor surveys in 2004 and 2005 documented nesting in the main river valleys and adjacent cliffs in the mine analysis area. Although no raptors were detected nesting directly in the mine site facilities (due to a lack of nesting structures, such as trees or cliffs), the habitat is suitable for foraging for a variety of raptor species that nest in the vicinity, including golden eagles, gyrfalcons, and rough-legged hawks.

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Waterbirds

The Iliamna Lake region serves as a migration route for many species of waterbirds (swans, geese, ducks, loons, shorebirds, and gulls) moving to and from the breeding grounds in western and northern Alaska (Platte and Butler 1995). The USFWS conducts aerial-based waterbird surveys annually each spring and summer as part of the North American Waterfowl Breeding Pair Survey (USFWS 2012a). In the late 1980s, the survey effort was expanded to include additional wetlands, to improve population estimates and map the distribution of several species. This expanded breeding pair survey area included the wetlands around the mine site (labeled the Bristol Bay lowlands; Platte and Butler 1995) and aerial surveys were conducted. A series of maps (USFWS 2012d) depicting the abundance and distribution of various waterbird species were created, and generally correlate to the distribution of waterbird species found during baseline surveys. Although these data are useful for understanding historical distributions of waterbird species around the mine site, the baseline data presented below are more recent, thorough, and include ground based surveys.

Important waterbird species that use the mine analysis area for breeding or staging include tundra swan (*Cygnus columbianus*), common loon (*Gavia immer*), harlequin duck (*Histrionicus histrionicus*), surf scoter (*Melanitta perspicillata*), black scoter (*Melanitta americana*), long-tailed duck (*Clangula hyemalis*), and a variety of dabbling and diving ducks (Williamson and Peyton 1962). Surveys were conducted in the mine analysis area from April to October 2004, in 2005, and in September 2006 using helicopters, fixed wing aircraft, and ground personnel to document the distribution, abundance, species composition, and habitat use of waterbird species during the breeding season (pre-nesting, nesting, molting, and brood-rearing), and during spring and fall migration. Waterbirds included species of geese, swans, ducks, loons, grebes, cormorants, cranes, shorebirds, gulls, terns, and jaegers. The complete details of the methods used for these various surveys are outlined in the Draft Environmental Baseline Studies, proposed 2004 and 2005 study plans (NDM 2004, 2005), and are summarized below.

Methods. The mine analysis area for waterbirds in 2004 and 2005 encompassed the mine site facilities plus a large buffer encompassing adjacent wetlands (Figure 3.23-2 and Figure 3.23-3). Field work was conducted from April to October 2004, April to October 2005, and September 2006. For waterbird spring and fall migration surveys, fixed-wing aircraft flew throughout suitable habitat in the mine analysis area every 7 to 10 days during spring and fall migration in 2004 and 2005. Waterfowl breeding population surveys were conducted with fixed-wing aircraft in June 2004 and May 2005. Swan nesting and productivity surveys were conducted in the mine analysis area in June 2005, May 2005, and September 2006 by aircraft. Harlequin duck pre-nesting and brood-rearing surveys were conducted by helicopter in the mine analysis area in May, July, and August 2004 and 2005. Species of loons were recorded incidentally as part of the spring and fall migration surveys and the waterbird brood-rearing surveys. A helicopter survey for nesting gulls was conducted in June 2005 in the mine analysis area. Ground surveys for brood-rearing waterbirds were conducted in July 2004 and 2005, and included a search of wetlands, ponds, and lakes in selected locations in the mine analysis area. Finally, surveys for flocks of molting waterbirds were conducted in the mine analysis area in July and August 2005. The complete details of the survey data, flight paths, data recorded, and timing of surveys are detailed in ABR 2011a.

Results. Thirty-seven species of waterbirds were observed, with 21 confirmed to breed in the mine analysis area due to the presence of a brood. A complete list of the waterbird species detected in the mine study area is not included here, but is detailed in ABR 2011a. Waterbirds used lakes and rivers throughout the mine analysis area for staging during spring and fall migration, with swans and dabbling ducks (*Anas species*) arriving late in April to early May. Many of these birds likely nested in the area. Diving duck species arrived in mid-to-late May, and staged

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on rivers and lakes. Some of these birds likely nested in the area, while small flocks (approximately 60 birds) were observed resting and feeding on lakes before continuing their northern migration. During fall migration, both dabbling and diving ducks were observed in the larger lakes in the mine analysis area in flocks of between 60 and 120 birds. Concentrations of birds in both spring and fall were noted in the northern half of the mine survey area from Frying Pan Lake, north to lakes in the NFK River basin. In the mine analysis area, UTC was the creek most heavily used by dabbling and diving ducks.

Nikabuna and Long lakes, and the outlets of UTC and Lower Talarik Creek are important migratory stopover locations for large flocks of waterfowl. In late April, hundreds of swans, greater white-fronted (*Anser albifrons*) and Canada geese (*Branta canadensis*), and dabbling and diving ducks staged on these lakes (Figure 3.23-2). Between August and mid-October, thousands of ducks (2,000 to 5,000 birds) staged around the Nikabuna and Long lakes, with hundreds of swans starting in early October (Figure 3.23-3). The outlets of UTC and Lower Talarik Creek at Iliamna Lake are important staging locations for swans, ducks, and gulls during spring and fall migration.

Tundra swans were common breeding birds in the mine analysis area in 2004 and 2005, with about half of the 14 nests (from 2004) and 15 nests (from 2005) found around the lakes in the NFK River drainage. Many swans returned to their same territories and nest sites in 2005 (ABR 2011a).

Harlequin ducks were common breeders in the UTC followed by the NFK and the SFK rivers. The highest numbers of broods counted by drainage were seven broods each on UTC and the NFK River, and three broods on the SFK River, totaling 71 young in 17 broods.

Common loons nested in the mine analysis area in 2004 and 2005 on Big Wiggly Lake and in 2004 on lakes east of UTC. One Pacific loon (*Gavia pacifica*) nest was found in the northern part of the NFK River drainage in 2005.

Small groups of nesting mew gulls (*Larus canus*) were found north of Frying Pan Lake (six nests) and in the NFK River drainage. A single Bonaparte's gull (*Chroicocephalus philadelphia*) brood was seen near Big Wiggly Lake in 2004.

Eighteen species of waterbird broods were recorded in the mine analysis area, with brood-rearing groups on 33 percent of the sampled lakes in 2004 (69 broods), and 26 percent in 2005 (168 broods). American wigeon, northern pintail, and scaup were the most common species seen on lakes, with red-breasted merganser (Mergus serrator), green-winged teal, and mallard broods more commonly seen on rivers. Most broods were found in lowland lakes in the central part of the NFK River drainage, in Frying Pan Lake, and in lakes in the floodplain of the lower SFK River drainage.

During the summer waterbird molting period, small flocks of ducks and numerous brood-rearing groups were observed in the mine analysis area. Flocks of 35 to 60 birds were observed on Big Wiggly Lake, Frying Pan Lake, and other large lakes adjacent to the NFK and SFK rivers. Species of scaup were the most commonly observed duck.

In summary, the mine analysis area encompasses a vast area of lowland lakes and rivers that support habitat for staging, migrating, and breeding waterbirds. The highest numbers of waterbirds pass through in late May on their northern migration, and in mid-August during fall migration. Nikabuna and Long lakes support large numbers of migrating waterbirds (primarily ducks). These lakes are approximately 20 kilometers north of the mine site facilities. The NFK River supported the greatest numbers of waterbird broods observed on ponds and lakes in the mine analysis area. The UTC supported the greatest number of waterfowl broods observed on rivers, and scaup species were the most numerous waterbirds observed during summer molt surveys.

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Landbirds and Shorebirds

Project baseline studies conducted in 2004 and 2005 are the most relevant source of data for landbirds and shorebirds in the mine analysis area. Various avifaunal studies have been conducted in the broader region around the mine analysis area, however; none of these studies were conducted directly in the mine site (ABR 2011a). The breeding landbird and shorebird survey mine site analysis area encompassed the mine site facilities plus a large surrounding buffer. Surveys for breeding landbirds and shorebirds were conducted in June 2004, and May and June 2005, to document the landbird and shorebird species present in the mine analysis area, their abundance, and the use of mapped habitats to provide data for the wildlife habitat mapping.

Landbirds were defined as passerines or songbirds (including species of ptarmigan, corvids, flycatchers, larks and pipits, swallows, kinglets, thrushes, warblers, sparrows and allies, and finches), and did not include any species of raptors, waterbirds, or waterfowl. Shorebirds consisted of species of plovers, sandpipers, and allies.

Methods. Surveys for breeding landbirds and shorebirds were conducted following the Draft Environmental Baseline Studies, proposed 2004 and 2005 study plans (NDM 2004, 2005). Surveys used variable circular-plot point count methods (Ralph et al. 1995; Buckland et al. 2001), which are designed primarily to detect singing male passerines defending their territories and to inventory breeding shorebirds. Prior to fieldwork, researchers used aerial photography to allocate point count locations (based on prominent photo signatures), with adequate spatial representation to sample the variety of habitats in the mine analysis area, and ensure point counts were at least 500 meters apart. Ten-minute point count surveys were conducted between 4:30 AM and 4:00 PM (but more were between 5:00 AM and 4:00 PM); point counts were accessed by helicopter and on foot. One biologist conducted each point count, and point counts were only conducted once at each location. Surveys in 2004 were conducted in June; those in 2005 were conducted at the end of May and throughout June to coincide with the peak breeding period for landbirds in southwestern Alaska. Point count locations were chosen to adequately determine the species and density of birds (using distance sampling methods), using specific habitat types (vegetation communities) that could be correlated to the wildlife habitat mapping.

Results. In 2004, 166 point count locations recorded 1,794 individual birds; in 2005, 227 point count locations recorded 2,636 birds. Including birds incidentally detected, 28 landbird species and 14 shorebird species were detected in 2004 and 2005, as detailed in ABR 2011a. Point count data were used to calculate a mean of 10.2 landbirds and 1.1 shorebirds per point count when both 2004 and 2005 data are combined. The following nine landbird species were the most abundant breeders in the mine analysis area: savannah sparrow (*Passerculus sandwichensis*), golden-crowned sparrow (*Zonotrichia atricapilla*), Wilson's warbler (*Cardellina pusilla*), orange-crowned warbler (*Vermivora celata*), common redpoll (*Acanthis flammea*), American tree sparrow (*Spizella arborea*), gray-cheeked thrush (*Catharus minimus*), fox sparrow (*Passerella iliaca*), and yellow warbler (*Setophaga petechia*). Of these species, the savannah sparrow, golden-crowned sparrow, and Wilson's warbler were the most common, constituting approximately 37 percent of the point count observations in both years. Species of larks, pipits, and swallows were less common; ptarmigan, flycatchers, corvids, and kinglets were rarely recorded.

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Figure 3.23-1: Raptor Nests around the Mine Site

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Figure 3.23-2: Staging Waterbird Locations during Spring 2005 around the Mine Site

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Figure 3.23-3: Staging Waterbird Locations during Fall 2005 around the Mine Site

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No shorebird species were considered common breeders. Six of the 14 species were the most common, and include greater yellowlegs (*Tringa melanoleuca*), Wilson's snipe (*Gallinago delicata*), least sandpiper (*Calidris minutilla*), black-bellied plover (*Pluvialis squatarola*), whimbrel (*Numenius phaeopus*), and American golden-plover (*Pluvialis dominica*).

Landbirds were recorded in 15 of the 19 wildlife-habitat types, and shorebirds were recorded in 12 wildlife-habitat types. The most productive breeding habitats in terms of bird abundance were Lowland Low and Tall Willow Scrub, Riverine Tall Alder or Willow Scrub, and Upland Moist Tall Willow Scrub. More than nine birds were observed per point count in these habitats. Most landbirds regularly used tall and low scrub habitats; most shorebirds were found in open habitats, including bogs, meadows, dwarf scrub types, and barren habitats.

Of the landbird and shorebird species that nested in the mine analysis area, gray-cheeked thrush and blackpoll warbler (*Setophaga striata*) prefer to breed in dense, tall-scrub habitats, including willows and alders (along riverine alder-willow thickets), with a thick understory of low shrubs. Breeding shorebirds such as surfbird (*Aphriza virgata*) and American golden-plover use high-elevation alpine habitats for nesting, including barren and dwarf-scrub-dominated types. The other shorebird species, such as whimbrel, Hudsonian godwit (*Limosa haemastica*), lesser yellowlegs (*Tringa flavipes*), and short-billed dowitcher (*Limnodromus griseus*), use open, wet, lowland and riverine habitats such as meadows scrub-bogs and marshes.

In summary, the majority of the mine site supports landbird species that are common in similar vegetation communities across Alaska. Shorebird species are not particularly numerous as breeding residents in the mine site.

Terrestrial Mammals

Historical terrestrial mammal surveys have been conducted in the area surrounding the mine site, including population and inventory studies by the ADF&G (ADF&G 1985; Butler 2006, 2007a, 2007b, 2008; Woolington 2006, 2007a, 2007b, and 2009). Smith (1991) conducted a broad reconnaissance survey to document the wildlife species present in the area around the mine site. Under an agreement with Cominco Alaska Exploration, ADF&G surveys focused on the area around the Pebble deposit in the early 1990s. Additional studies and analyses in recent years have been conducted as part of broad scale species inventories by the National Park Service and USFWS (Cook and MacDonald 2004a, 2004b; Brna, P.J, and L. A. Verbrugge 2013).

The mine site facilities are in the far eastern corner of Game Management Unit (GMU) 17B. Terrestrial mammal surveys for the mine site were conducted from 2004 through 2010 by ABR, Inc., for a variety of species. The full details of the survey methods and results are provided in the Pebble Project Environmental Baseline Document 2004 through 2008 Chapter 16 Wildlife and Habitat Bristol Bay Drainages (ABR 2011a). The methods and results are summarized herein for the specific project components.

To quantify the suitability of vegetation communities in the mine site as wildlife habitat, habitat mapping and habitat-value assessments were conducted across the mine analysis area in 2004 and 2005. Wildlife habitats were mapped in the mine analysis area to provide a baseline inventory of the availability of wildlife habitats for use by wildlife; specifically, for a selected set of mammal species (ABR 2011a). The mine analysis area for terrestrial mammals was defined as an area 476 square kilometers, centered on the mine footprint. The mine analysis area is primarily composed of alpine and unforested upland habitats on glacial moraine deposits, with three prominent river corridors in the area (NFK and SFK rivers and UTC). Field data on the vegetation, physiography, landforms, and surface forms were used to assess the use of the mapped habitat by 13 mammal species (see Section 16 in ABR 2011a). Habitat use for each species in each mapped habitat type was qualitatively categorized into one of four value classes (high, moderate,

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low, or negligible value), based primarily on wildlife survey data specific to the mine analysis area, and habitat-use information from scientific literature (ABR 2011a). Twenty-five wildlife habitat types were mapped in the mine analysis area, with Upland Moist Dwarf Scrub and Alpine Moist Dwarf Scrub representing over 52 percent of the mine analysis area wildlife habitat types. The complete list of all 25 wildlife habitat types, their plant-species composition, and their value as wildlife habitat is provided in Appendix 16.1C in ABR 2011a.

The following sections detail the specific survey methods and results for mammals that breed and migrate throughout the mine analysis area. Data from these surveys were applied to wildlife habitat mapping to understand the value of the wildlife habitat in the mine analysis area.

Large Mammals

Aerial strip-transect surveys were conducted from April to November 2004, March through December 2005, May through July and December 2006, June and July 2007, May 2009, and April 2010 to document the large mammal species present in the mine analysis area. A general bear (*Ursus species*) survey in 2009 and moose (*Alces alces*) survey in 2010 were designed to estimate the density of those species, while additional aerial surveys were intended to gather distribution, relative abundance, and general patterns of use of the analysis area. Specifically, ABR conducted the following surveys and analyses:

- Detailed analysis of ADF&G's radio telemetry data for the Mulchatna caribou (*Rangifer tarandus*) herd;
- Aerial strip-transect surveys in the mine analysis area during late winter, caribou calving, caribou post-calving, caribou rut/fall migration, and early winter;
- Aerial line-transect surveys to estimate the density of bears in the Iliamna Lake region;
- Aerial surveys of brown bears (*Ursus arctos*) along salmon-spawning streams and an examination of brown bear and gray wolf (*Canis lupus*) dens in and around the mine analysis area;
- Aerial quadrat surveys to estimate the moose population in the mine and transportation corridor analysis area; and
- Aerial survey of beaver (*Castor canadensis*) colonies throughout the mine analysis area.

Analysis of ADF&G's radio telemetry data for the Mulchatna caribou herd involved a detailed fixed-kernel analysis (a statistical method using spatial data for a defined area to estimate the relative density of use of that area by a species) of 29 years' worth of radio transmitter and satellite collar data. The data included 12,198 locations of radio-collared caribou representing a range of age and sex classes across the years. The fixed-kernel distributions for radio-collared caribou locations were analyzed using geographic information system software, with the output mapping represented by utilization-distribution contours of different-intensity colors (Rodgers et al. 2007). The high-density contour encompassed 50 percent of all collar locations, the moderate-density contour enclosed 75 percent of all collar locations, and the low-density contour enclosed 95 percent of all locations.

A series of aerial strip-transect surveys were flown to coincide with seasonal timing to detect late-winter moose and caribou distribution, spring bear locations, caribou and moose calving, caribou post-calving, bear locations along salmon streams, caribou rut, and early winter moose and caribou distribution. Surveys involved a fixed-wing aircraft at low altitude along established transects with two observers in the aircraft. The complete details of the methods for each survey type, including type of aircraft, count method, sampling method (e.g., quadrate or line/strip transects), and other pertinent details, are provided in ABR 2011a.

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Caribou

Caribou inhabit the Arctic and alpine tundra, as well as forested habitats throughout Alaska. At the time of Smith's reconnaissance survey in 1991 during early exploration of the area, the mine area was located within a calving and wintering area for the Mulchatna herd, and the valley where the deposit was located was in a known migration route. Between 1981 and 1988, the population of the Mulchatna caribou herd ranged from 20,000 to 60,000 caribou; from 1991 to 1993 the population expanded to 90,000 to 150,000 animals, and from 1994 and 1996 the population was 180,000 to 200,000 animals (Demma 2011). During this time, the Mulchatna caribou herd shifted their traditional calving grounds west and north. By 2008, that number decreased to around 30,000 animals (Woolington 2009); in 2012 and 2013, there were 22,809 and 18,308 caribou estimated, respectively (Barten 2015). The most recent survey data from July 2, 2014 yielded a population estimate of 26,275 caribou in the Mulchatna herd (Butler 2015). The downward trend in the Mulchatna caribou herd from historical high numbers in the 1990s is not fully understood. However, based on traditional knowledge of local elders in the region, one potential reason for the decline is that the population grew so large that the caribou herd had limited food, which led to an epidemic of hoof rot and the herd shifted their range north (Van Lanen 2018).

Analysis of telemetry data indicate that between 1993 and 2004, use of the mine area by the Mulchatna caribou herd occurred primarily during the post-calving aggregation period; and to a lesser extent, during the rut (Woolington 2003). Fixed-kernel analysis of the radio-collar data indicate that across 29 years' worth of data, the Mulchatna caribou herd has occurred in moderate to high-densities throughout the mine analysis area during spring; low-density during calving, high-density during summer and winter; and moderate density during autumn (Figure 3.23-4). Despite population declines, the herd continues to use a vast area primarily west of the mine analysis area. Although the mine analysis area does not appear to historically be a calving area, the area around the mine analysis area is used periodically, primarily in summer, by large groups of caribou. In summary, the area west and northwest of the mine site facilities (as compared to south or east) is used by the Mulchatna caribou herd to a greater degree (Figure 3.23-4).

Aerial transect surveys of the mine analysis area in 2004, 2006, and 2007 confirmed the Mulchatna caribou herd telemetry analysis in that the greatest numbers of caribou were found in the mine analysis area during the summer post-calving period (Figure 3.23-5). Incidental observations of caribou during other biological surveys for the project revealed small groups of caribou scattered throughout the mine analysis area in June 2004 and 2005. During post-calving surveys in July 2004, close to 10,000 caribou were observed in the mine analysis area moving southwest (ABR 2011a). Historical caribou trails are depicted on Figure 3.23-5 and illustrate that most of the caribou activity is located to the west of the mine site. Currently, the mine site does not appear to be used by the majority of the Mulchatna caribou herd for calving (Figure 3.23-6), but may occasionally be used by the herd during the post-calving summer period. Figure 3.23-6 depicts the density of calving areas from 1981 to 2010 based on radio-collar data.

Overall, the herd primarily occurs to the north and west of the mine site, with the mine site on the periphery of their annual range. Small groups of caribou that are likely associated with the Mulchatna caribou herd occur in the general vicinity of the mine site throughout the year based on surveys in 2004 and 2005, but not in large concentrations (ABR 2011a). Observations from locals in the eastern part of the Mulchatna caribou herd range indicate that habitat conditions are improving in formerly overgrazed areas and the population appears to be increasing (Van Lanen 2018).

Moose

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A moose population survey in April 2010 estimated 33 moose in the 1,178 square kilometer survey area, which corresponds to an estimated density of 0.03 moose per square kilometer (ABR 2011a). The mine site appeared to have a low density of moose; however, the population of moose may be higher in the fall and early winter, when moose use higher-elevation habitats. No moose were recorded directly in the mine site facilities footprint during the April 2010 survey, or during other surveys from 2004 through 2007. This is consistent with the habitat types and vegetation communities in the mine site, which are composed primarily of low-growing tundra plant species that are not the preferred habitat for moose. Moose were sighted in UTC and the drainages surrounding the mine site facilities footprint, which contain preferred forage and cover species.

Brown Bear

Brown bears are widespread and common in the Bristol Bay and Cook Inlet drainages, primarily because of large salmon runs that provide an abundant source of protein. Brown bears are relatively common tundra inhabitants in the mine analysis area (Figure 3.23-7)(ABR 2011a). Historical surveys by the ADF&G of the various GMUs around the mine site have yielded varying population estimates, but the focus of these surveys has been in areas not specifically related to the mine site. Therefore, those data are not included. Standardized surveys specifically for the mine site were conducted in 2009 by ABR and the ADF&G (Becker 2010). Aerial line-transect surveys flown in May 2009 used two similar analytical methods to determine the density of brown bears in the survey area surrounding the mine site, which included all of Iliamna Lake (which overlaps with the transportation and natural gas pipeline corridors). One analytical method (double-count method) resulted in a population density of 47.7 brown bears per 1,000 square kilometers (Becker 2010), and the second method (using the plane model) resulted in 58.3 brown bears per 1,000 square kilometers (ABR 2011a). Using the double-count method, the survey area contained approximately 412 brown bears. Per Becker (2010), the estimate of 47.7 brown bears per 1,000 square kilometers is a reasonable estimate given brown bear population estimates for other nearby areas. Surveys north of the Iliamna study area around Lake Clark National Park and Preserve in 1999 and 2000 (Becker 2003, Butler 2007) yielded estimates of 38.6 brown bears per 1,000 square kilometers and to the south in GMU 9C (in spring 2005 and 2006) had density estimates of 78.4 brown bears per 1,000 square kilometers (Olson and Putera 2007). Overall, brown bears were not common in the mine site footprint itself, but were distributed throughout the mine analysis area, primarily along streams and waterways.

Helicopter surveys of salmon-spawning streams around the mine site on August 18 and 19, 2004 recorded 16 brown bears located mainly 15 to 30 kilometers south and southeast of the mine site. Dense vegetation along streams limited visibility, and therefore the number of bears reported is likely under estimated. The survey area included the NFK and SFK rivers, and the mine analysis area south to Iliamna Lake and east to the Newhalen River (ABR 2011a). More recent surveys of bear use at select salmon-spawning streams from July to September 2012 utilized timelapse remote-sensor wildlife cameras positioned at one location in UTC (Figure 3.23-7). Overall, low bear activity was recorded (0.03 percent of useable photographs contained bears) with most activity in the late afternoon in July and August. No bears were recorded during September. Bears spent little time fishing at the location visible to the camera (ABR 2015a).

Figure 3.23-4: Mulchatna Caribou Herd Seasonal Range Use Summary of Year 1981 to 2010

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Figure 3.23-5: Caribou Group Locations from Radio-Telemetry Surveys near the Mine Site

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Figure 3.23-6: Mulchatna Caribou Herd Seasonal Range Use, Calving 1981 to 2010

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Figure 3.23-7: Bear Observations, Den Locations, and Iliamna Lake Seal Haul-Outs around Iliamna Lake

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Surveys of bear dens and incidentally detected brown bear dens (during other biological surveys) from 2004 through 2006 indicated suitable denning habitat was common in the mine analysis area, and dens were generally found in low-elevation wooded sites and high-elevation scree slopes. Brown bear dens were not found in the mine site footprint.

Black Bear

Black bears (*Ursus americanus*) are uncommon in forested areas around the mine site, and tend to be more common on the eastern side of Iliamna Lake. Black bears were not observed in the mine analysis area during project wildlife surveys in 2004 through 2007 (Figure 3.23-7). During regional surveys in May 2009, which encompassed the mine analysis area and Iliamna Lake, black bears were found in more forested habitats (which are lacking in the mine analysis area) on the east side of Iliamna Lake. During the survey, which covered 1,004 20-kilometer long transects, only 18 black bear groups were observed. Given the intensive survey effort and scarcity of black bear sightings, abundance estimates were not developed. Black bears were almost absent from the study area in spring 2009 (Becker 2010).

Gray Wolf

Wolves are generalist species found and able to thrive in a wide variety of habitats, whose main prey items in the northern Bristol Bay region include moose, caribou, and beaver (Woolington 2006), and salmon seasonally, among other items. Several individual wolves were detected scattered across the mine site over multiple years, but no packs or groups of wolves were detected (ABR 2011a). Three wolf dens were found during bear den surveys and during other biological surveys (one in UTC, one at the base of Sharp Mountain, and one on the east side of the Newhalen River), but none appeared to be active (ABR 2011a).

Currently, the ADF&G has an intensive caribou management plan for the Mulchatna Caribou Herd involving wolf predation control (ADF&G 2014). The ADF&G actively removes wolves in a large portion of GMU 17B/C in the range of the Mulchatna Caribou Herd, west of Iliamna Lake, which does not overlap with the mine site.

Small Terrestrial Vertebrates

No project-specific surveys were conducted for small mammal species. Some species are managed by the ADF&G as "furbearers," which are trapped or hunted for hides, fur, or meat. Population information for these species is limited, and is provided by trapper questionnaires (Parr 2018). Table 3.23-1 lists species with their relative abundance, if known, based on trapper questionnaires for GMU 17B, where the mine site facilities are located, and for GMU 9, where the transportation and natural gas pipeline corridors exist (west of Cook Inlet)(Parr 2018).

Table 3.23-1: Furbearer Species Status

Common Name	Scientific Name	General Habitat	Mine Site (GMU 17B[1])	Transportation and Natural Gas Pipeline Corridors (west of Cook Inlet; GMU 9A/B[1])
Coyote	*Canis latrans*	Diverse	scarce	scarce
Red fox	*Vulpes vulpes*	Diverse	abundant	abundant
Arctic fox	*Vulpes lagopus*	Tundra/grassland	not present	scarce
Canadian lynx	*Lynx canadensis*	Forests and shrubs	scarce	common

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Table 3.23-1: Furbearer Species Status

Common Name	Scientific Name	General Habitat	Mine Site (GMU 17B[1])	Transportation and Natural Gas Pipeline Corridors (west of Cook Inlet; GMU 9A/B[1])
American marten	*Martes americana*	Conifer and mixed forests	abundant	scarce
American mink	*Mustela vison*	Mixed forests	common	common
Ermine	*Mustela erminea*	Diverse	common	common
River otter	*Lutra canadensis*	Riparian	abundant	common
Wolverine	*Gulo gulo*	Diverse	common	scarce
Beaver	*Castor canadensis*	Wetlands/riparian	abundant	abundant
Muskrat	*Ondatra zibethicus*	Wetlands	common	common
Red squirrel	*Tamiasciurus hudsonicus*	Forests	common	abundant

[1]Source: Parr 2018

Of the fur-bearers listed above, only two coyotes were observed in the mine analysis area; however, red foxes were more common, and were observed on numerous occasions. Two groups of river otters were detected in the mine analysis area in 2005, and two wolverines were incidentally detected in the mine analysis area during avian surveys in 2004 and 2005. Aerial surveys for beaver colonies were conducted in October 2005, and recorded 113 active colonies in the mine analysis area. Active colonies were also found along UTC, and in both NFK and SFK rivers, as well as isolated tundra ponds. The locations of these species in relation to the mine site are shown on figures in ABR 2011a.

There are additional mammal species that are not considered "furbearers," and are known to occur in the mine analysis area. These include hoary marmot (*Marmota caligata*), arctic ground squirrel (*Spermophilus parryii*), snowshoe hare (*Lepus americanus*), tundra hare (*Lepus othus*), collared pika (*Ochotona collaris*), and various species of mice, lemmings, shrews, and voles. These species are generally common to abundant, depending on their population cycles.

Wood Frog

The wood frog is the most widely distributed amphibian in Alaska, ranging from the mainland of southeast Alaska north to the Brooks Range, and is the sole amphibian found north of Prince William Sound (ADF&G 2015b). Wood frogs breed virtually anywhere that has standing water for at least part of the summer, including ponds, bogs, marshes, temporary pools, tire tracks, or roadside ditches. However, specific studies have shown that the highest breeding activity is in waters from about 1 to 7 feet deep (ABR 2011a). The waterbodies must remain long enough for the tadpoles to mature and metamorphose. Another important habitat factor is vegetation nearby for hibernating (typically forest vegetation with enough dead leaves and duff covering the ground to form suitable hibernating sites).

The ADF&G has a wood frog monitoring program, with the goal of assessing the current status of wood frogs in Alaska (ADF&G 2018). Therefore, wood frog studies were conducted in 2007 by ABR to determine their occupancy and distribution in the mine site, as detailed below.

Occupancy surveys for wood frogs were conducted in the mine analysis area in 2007 to determine their distribution and rate of occupancy for waterbodies in the mine analysis area, and to describe the important habitat characteristics associated with breeding waterbodies. ABR conducted

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ground-based surveys in May 2007, in which 119 randomly selected waterbodies (out of 1,668 potential waterbodies) were sampled for wood frogs. Surveys were conducted by passive listening for vocalizing male wood frogs from these preselected waterbodies at locations spaced around each waterbody following standard amphibian-calling survey protocols, with slight modifications for time of day (USGS 2005). The sampling design involved a repeat survey for each waterbody (2 to 4 days apart) during peak breeding.

Wood frogs were detected at waterbodies throughout the mine analysis area, and the occupancy rate of wood frogs breeding in the mine analysis area was estimated at approximately 50 percent (ABR 2011a). In the mine site facilities, several waterbodies contained wood frogs. Deep waterbodies, greater than 1.5 meters deep, were 10 times more likely to be occupied by wood frogs than waterbodies less than 1.5 meters. Wood frogs seemed to prefer waterbodies with herbaceous, low shrub shoreline vegetation and aquatic vegetation.

3.23.1.2 Transportation Corridor and Natural Gas Pipeline Corridor

Terrestrial wildlife resources along the transportation and natural gas pipeline corridors from the mine site to Amakdedori port are described below. The portion of the natural gas pipeline corridor that occurs on the Kenai Peninsula would be trenched into the ground (via horizontal directional drilling), tie into an existing pipeline near Anchor Point, and connect to a compressor station built on private land.

The portion of the transportation and natural gas pipeline corridors from the mine site south to the north ferry terminal (mine access road) was previously surveyed as part of the mine analysis area. The methods used for biological surveys for this portion of the transportation and natural gas pipeline corridors are the same methods used for the mine analysis area, and are not repeated in the individual sections below. Only specific results that relate to the portion of the Iliamna spur road and mine access road are discussed.

Birds

In general, many of the same species that were documented in the mine analysis area also occur along the transportation and natural gas pipeline corridors. The main difference is that portions of the corridor on the north side of Iliamna Lake and south of the mine site tend to lack the high-elevation alpine tundra habitats that characterize the mine site, and the corridor includes a greater portion of lowland marsh, meadows, scrub, and boreal forest habitat types. This is reflected in a transition of avian species where obligate-tundra nesting species are less common, and species that prefer more scrub and forested habitat types are more common, as detailed in the following sections. However, the portion of the corridor from Kokhanok to Amakdedori port (south access road) is similar in habitat types and vegetation communities to the mine site.

Raptors

Raptor data for the transportation corridor and natural gas pipeline corridor along the mine access road and Iliamna spur road were collected by ABR in 2004 and 2005 (ABR 2011a). The methods are the same as those detailed above, for the mine analysis area, and are not repeated here. Raptor data along the mine access road are included in the mine site section, above, and shown on Figure 3.23-1. The main species documented along the mine access road include bald eagles along UTC, osprey, and cliff nesting raptors such as gyrfalcons and rough-legged hawks. Based on surveys in 2004 and 2005, bald eagles were the main raptor species nesting in trees along the Newhalen River. On the hills and bluffs to the west of the Newhalen River were several cliff-nesting species, including golden eagle, gyrfalcon, rough-legged hawk, and common ravens (Figure 3.23-1).

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Based on project-specific raptor surveys conducted in summer 2018 for areas south of Iliamna Lake, from the south ferry terminal to the Amakdedori port along the south access road, bald eagles were the most commonly detected nesting raptor species followed by golden eagles (Figure 3.23-8). Overall, there were few nests along the south access road due to a lack of large trees and limited cliff habitat. Several nests were located on the north and south sides of Gibraltar Lake with additional nests clustered along the coastal bluff around Cook Inlet. The closest golden eagle nest is approximately 0.2 miles north of the south access road near one of the proposed material sites. The nest was not active in 2018, but may be active in the future. Overall, most nests were located over 0.5 miles away from the south access road.

Waterbirds

No project-specific waterbird surveys have been conducted to date for areas south of Iliamna Lake. All waterbird data north of Iliamna Lake were collected in 2004 and 2005, and are described above. This section details waterbird distribution and abundance along the Newhalen River near the Iliamna spur road, based on surveys conducted by ABR in 2004 and 2005 (ABR 2011a). Timing of waterbird migration in spring and fall was similar to the mine analysis area, with similar species detected. During spring, the highest concentrations of swans, geese, and ducks were found in an area of the Newhalen River known as Three-mile Lake (Figure 3.23-2). During fall migration, concentrations of waterbirds occurred at many of the same locations as in spring (Figure 3.23-3). No groups of swans or geese were observed staging in the area during fall, only brood-rearing groups and adult swans as singles and pairs. Thousands of ducks and gulls were recorded during fall surveys, with duck abundance remaining high from mid-August to mid-October, and gull abundance peaking in mid-to late September. The northern part of Iliamna Lake (near creek outflows) also supports large concentrations of staging and migrating waterbirds. Waterfowl breeding density was estimated at 12.2 birds per square kilometer in 2004, and 6.8 birds per square kilometer in 2005.

Several tundra swan nests (four nests in 2004 and two in 2005) were observed around the Newhalen River, but primarily on the east side in the greater floodplain area of the river.

A few pairs of harlequin ducks were found along the Newhalen River during pre-nesting surveys, along with a few broods later in the season.

Several common loon broods were detected in lakes in the floodplain of the Newhalen River, with adult birds on several lakes in the vicinity. They were found on large, deep lakes from early May to late September in 2004 and 2005. No Pacific or red-throated loon (*Gavia stellata*) nests or broods were observed.

In summary, the transportation and natural gas pipeline corridors north of Iliamna Lake do not overlap any areas where large concentrations of waterbirds breed or stage. The Iliamna spur road crosses the Newhalen River several miles south of Three-mile Lake, where the majority of waterbirds are located. The northern part of Iliamna Lake (near creek outflows) also supports large concentrations of staging and migrating waterbirds. Waterfowl breeding density was estimated at 12.2 birds per square kilometer in 2004, and 6.8 birds per square kilometer in 2005.

[Note: 2018 field data for the south access road will be incorporated into the analysis of the Draft EIS.]

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Figure 3.23-8: Raptor Nests around the South Access Road and Amakdedori Port

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Landbirds and Shorebirds

Landbird and shorebird surveys were conducted in 2005 for the Alternative 2 transportation corridor, but a small portion of this corridor overlaps with the proposed corridor where the Iliamna spur road connects to the existing road heading south to the town of Iliamna. The point count survey methods for conducting landbird and shorebird surveys are detailed above. The analysis area for the transportation corridor in 2005 was 610 meters wide, and stretched from the mine site along the north side of Iliamna Lake to the Cook Inlet. Only the portion that overlaps with the Iliamna spur road is discussed here. In this section of the analysis area, 15 point counts (all located around the Newhalen River) were conducted in June 2005. Additional point counts were located on the east side of the Newhalen River near the base of Roadhouse Mountain, but these were considered to be outside of the proposed transportation and natural gas pipeline corridors. The wildlife habitats east of the mine site in the transportation and natural gas pipeline corridors include a large percentage of Upland and Lowland Spruce and Moist Mixed Forest. These wildlife habitats support a slightly different assemblage of bird species that are more dependent on forested habitats. Ten landbird species were considered the most abundant in the area, and include Wilson's warbler, orange-crowed warbler, Swainson's thrush (*Catharus ustulatus*), yellow-rumped warbler (*Setophaga coronata*), golden crowned sparrow, dark-eyed junco (*Junco hyemalis*), ruby-crowned kinglet (*Regulus calendula*), American robin (*Turdus migratorius*), varied thrush (*Ixoreus naevius*), and hermit thrush (*Catharus guttatus*); with Wilson's warbler, orange-crowned warbler, and Swainson's thrush being the most abundant. The two most frequently observed common breeding shorebirds were greater yellowlegs and Wilson's snipe. Upland and Lowland Moist Mixed Forest, Upland and Lowland Spruce Forest, and Riverine Moist Mixed Forest had the highest numbers of breeding landbird and shorebird species.

The vegetation around the south ferry terminal and around Kokhanok is similar to the vegetation along the Iliamna spur road, and includes scattered sections of forest interspersed with types of low and tall shrubs. Therefore, avian species are anticipated to be similar to birds found on the north side of Iliamna Lake. However, a large portion of the south access road south of Kokhanok consists of rocky terrain with low growing tundra vegetation interspersed with small ponds. This habitat is similar to the montane areas of Katmai National Park and Preserve; from 2004 to 2006 the National Park Service conducted an inventory and monitoring program to document bird species in montane regions of Katmai National Park and Preserve and Lake Clark National Park and Preserve (Ruthrauff et al. 2007). Both Katmai and the south access road are in the Alaska Peninsula ecoregion and their habitat similarities indicate that species are likely to be similar between the two locations. From late May to early June 2004 through 2006, biologists conducted avian counts at sample plots across both national parks. The most commonly detected species were golden-crowned sparrow, fox sparrow, and American pipit (*Anthus rubescens*). High elevation sites (those most similar to the south access road) were composed of a high percentage cover of dwarf shrub and bare ground habitat. This type of habitat supported species such as rock ptarmigan (*Lagopus muta*), American golden-plover, wandering tattler (*Tringa incana*), surfbird (*Aphriza virgata*), and snow bunting (*Plectrophenax nivalis*). Therefore, the south access road is anticipated to contain a similar list of bird species, several of which are species of conservation concern.

The natural gas pipeline corridor traverses lower Cook Inlet, which is an important nesting, wintering, molting, and migrating area for a variety of seabirds. The most recent seabird surveys were conducted by the Bureau of Ocean Energy Management from 2012 through 2016 to document the seasonality of seabird distribution in lower Cook Inlet (Renner et al. 2017). Surveys were conducted from a boat traveling established transects at different times of the year across lower Cook Inlet. Overall, the total marine bird densities were high in winter, spring, and summer and half as abundant during the fall. Densities were higher on the east side of Cook Inlet,

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especially in the shallow waters close to shore. The most common species were white-winged scoter (*Melanitta deglandi*); common murre (*Uria aalge*), observed year-round; black-legged kittiwake (*Rissa tridactyla*) observed in summer; red-necked phalarope (*Phalaropus lobatus*), observed in spring); and sooty shearwater (*Ardenna grisea*), observed in summer and fall. White-winged scoter was the most abundant marine bird across all seasons, with the highest numbers during winter. High concentrations were located north of Augustine Island near Ursus Cove in Kamishak Bay (Renner et al. 2017).

Several of the species detected in the transportation corridor are considered conservation species for Alaska, and were also detected in the mine analysis area. A list of all species of conservation concern for Alaska that were detected in the transportation and natural gas pipeline corridors are included in the Pebble Project Environmental Baseline Data Reports (ABR 2011a-e). Species only detected in the transportation and natural gas pipeline corridors include black-backed woodpecker (*Picoides arcticus*), olive-sided flycatcher (*Contopus cooperi*), varied thrush, rusty blackbird (*Euphagus carolinus*), and solitary sandpiper (*Tringa solitaria*). These species are associated with coniferous-forested habitats, which are generally lacking in the mine analysis area. Black-backed woodpecker, olive-sided flycatcher, rusty blackbird, and solitary sandpiper were detected in very low densities in appropriate habitat for these species.

[Note: 2018 field data for the south access road will be incorporated into the analysis of the DEIS.]

Terrestrial Mammals

Baseline surveys conducted in the mine site analysis area considerably overlap the transportation and natural gas pipeline corridors' analysis areas, which were discussed previously above. The transportation and natural gas pipeline corridors, including the mine access road, Iliamna spur road, and the northern two-thirds of the south access road, are in GMU 9B. The southern third of the south access road is in GMU 9A. The portion of the natural gas pipeline corridor on the Kenai Peninsula is in GMU 15C. Since the natural gas pipeline would connect below ground to existing infrastructure on the Kenai Peninsula, a discussion of terrestrial mammals on the Kenai Peninsula is not included here. The methods used for biological surveys for this portion of the transportation and natural gas pipeline corridors are the same methods used for the mine analysis area, and are not repeated in the individual sections below. Only specific results that relate to the portion of the Iliamna spur road and mine access road are discussed.

The general vegetation types along the transportation and natural gas pipeline corridors consist of spruce forest and mixed-species forest. This change in vegetation from an open landscape in the mine site to a more closed, forest-dominated landscape in the corridor is reflected in the species type and abundance, as detailed in the following sections.

Large Mammals

The majority of the Mulchatna caribou herd does not typically range in the area of the transportation and natural gas pipeline corridors (Figure 3.23-6). They tend to occur farther north and west, and the 29 years' worth of telemetry data that were analyzed found few instances of caribou in the area covered by the transportation and natural gas pipeline corridors. The Northern Alaska Peninsula caribou herd occurs in GMUs 9E and 9C, with the northern extent of their current range approximately 70 miles south of the transportation and natural gas pipeline corridor around Naknek Lake (ADF&G 2015). The population of the Northern Alaska Peninsula caribou herd is approximately 2,700 individuals (ADF&G 2015) and it is possible that the herd may expand their range north in the future. While there are no designated herds that regularly use the transportation and natural gas pipeline corridor as part of their home range, there are isolated groups of caribou that use the area. Some of these groups may be associated with the Mulchatna caribou herd.

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According to the ADF&G, there are localized herds that inhabit parts of the transportation and natural gas pipeline corridors, such as a herd in the area south and east of Kokhanok, in the higher country around Kukaklek and Nonvianuk lakes, and east to the Kamishak Bay coast (ADF&G pers comm 2018). Surveys conducted during the summer of 2018 along the south access road documented a few individual caribou (usually one or two caribou, with one group of four individuals) between Iliamna Lake and the port, but no large groups were detected.

Brown bear density estimates from the bear population survey in May 2009 ranged from 47.7 to 58.3 brown bears per 1,000 square kilometers (Becker 2010). The area covered by the survey included the southern portion of GMU 9B, plus a small section of the eastern part of GMU 17B. All but one of the black bear sightings occurred east of Nondalton and north of Kokhanok. Therefore, black bears appear to be more closely tied to forested environments, with brown bears occurring in more open terrain and around salmon streams during periods of salmon spawning. Specific to the transportation and natural gas pipeline corridors, brown bears were concentrated around the northern portion of Katmai National Park and Preserve, south of Gibraltar Lake (Becker 2010).

Surveys conducted by the National Park Service in May 2003 using an aerial line-transect double-count technique estimated that in GMU 9A the brown bear density was 150 bears per 1,000 square kilometers with a standard error of +/- 28 bears, and for black bears the density was 85 +/- 20 bears per 1,000 square kilometers. This corresponds to a population of 703 +/- 134 brown bears and 413 +/- 62 black bears in GMU 9A (Olson and Putera 2007). No surveys were conducted in 2003 to determine a density estimate for GMU 9B. The aerial surveys by Becker (2010) included GMU 9B; therefore, in conjunction with the National Park Service survey in 2003 (Olson and Putera 2007) for GMU 9A, the entire transportation and natural gas pipeline corridors have had bear surveys conducted. Overall, brown bears were more common along the coast and around the southern part of Iliamna Lake, with black bears more common to the east of Iliamna Lake and areas adjacent to Lake Clark National Park and Preserve.

Surveys conducted in May 2018 documented a concentration of brown bear dens on both sides of the south access road and around Amakdedori port (Figure 3.23-7). Surveys documented bear dens throughout the length of the south access road, with the majority observed near Cook Inlet north of Amakdedori Creek. Additional dens were located around the outflow to Gibraltar Lake near the south shore of Iliamna Lake. Several of the dens were close to the south access road, with the closest one around 300 feet north of the road. Additional surveys for bears around salmon streams were conducted in mid-August 2018. Bears were primarily located near the south shore of Iliamna Lake, at the east end of Gibraltar Lake, and fishing in the river flowing into Bruin Bay, with a few individuals upstream in Amakdedori Creek.

The moose density was estimated at 0.05 moose per square kilometer, based on data from the April 2010 aerial survey (ABR 2011a). Moose were more heavily concentrated in river drainages, due to the presence of suitable forage. Per ADF&G area management biologist Dave Crowley, for GMUs 9 and 10, there are approximately 0.19 moose per square kilometer or less for most of the Alaska Peninsula due to limited habitat (Lill 2017). Generally, the habitat along the south mine access road is rocky substrate covered in low-growing tundra plant species. Therefore, moose densities are generally low along the south mine access road with moose limited to river valleys and drainages with appropriate forage and cover. Surveys in summer 2018 documented very low numbers of moose along the south access road, primarily in drainages on the south side of Iliamna Lake.

Multiple beaver colonies were detected on the western side of the Newhalen River, but were generally absent from the south access road.

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In summary, the transportation and natural gas pipeline corridors contain more suitable caribou and brown bear habitat compared to habitat for moose and black bears.

Small Terrestrial Vertebrates

Although no specific small mammal surveys were conducted for the project, Table 3.23-1 details the general abundance of furbearers in GMU 9A and 9B, based on the results of trapper questionnaires from 2013 (Parr 2018). Many of the same species have abundance similar to the mine site. Some of the main differences are that lynx are considered common, and American martins and wolverines are considered scarce in GMUs 9A and 9B. Additional non-furbearer small mammal species occur in the transportation and natural gas pipeline corridors, including species of hares, squirrels, mice, lemmings, voles, and others previously mentioned under the mine site.

Other mammal species were incidentally detected during surveys conducted by ABR, and included red fox and river otter around the mouth of the Newhalen River (ABR 2011a). During surveys conducted in summer 2018, both red fox and wolverine were detected.

Surveys for wood frogs were not conducted; however, the species is anticipated to occur throughout the region in freshwater ponds, lakes, streams, and adjacent wetland vegetation.

3.23.1.3 Amakdedori Port

Birds

Existing data for avian surveys conducted in lower Cook Inlet, along with vegetation community mapping and aerial imagery, were used to describe the avian community around the Amakdedori port. Surveys around Amakdedori port were conducted in 2018 by ABR and the results are still being summarized. Therefore, only preliminary results are provided, where possible.

Raptors

The area immediately adjacent to Amakdedori port does not support habitat for tree-nesting raptors due to a lack of large trees to support bald eagle nests. Coastal bluffs to the north and south of the port support nesting bald eagles. These nests are approximately 0.6 and 0.7 miles north and south of the port, respectively (Figure 3.23-8). Both nests successfully raised one young eagle in 2018.

Waterbirds

The terrestrial habitat around the Amakdedori port generally lacks large waterbodies where waterbirds may breed and stage. Habitat is composed primarily of upland vegetation communities that drain east toward Cook Inlet and do not form extensive wetland areas. The port location itself does not contain rocky outcrops, crags, or other features along the water's edge that may support nesting seabirds.

The marine portion of the Amakdedori port is in Kamishak Bay, a globally important bird area (IBA) located along the Pacific Flyway. Kamishak Bay was designated by the National Audubon Society as an IBA due to large numbers (i.e., over 9,000) of breeding glaucous-winged gulls (National Audubon Society 2013a; Smith et al. 2012). In Kamishak Bay, there are two colony IBAs: Amakdedulia Cove Colony and Contact Point Colony (Smith et al. 2012; National Audubon Society 2014). Amakdedulia Cove is just south of the proposed port location in Kamishak Bay and supports 1 percent of a sub-species of double-crested cormorant (*Phalacrocorax auritus*), small numbers of glaucous-winged gulls (*Larus glaucescens*), tufted puffins (*Fratercula cirrhata*), and large numbers (i.e., 105 birds per square kilometer) of seaducks (National Audubon Society

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2013b). North of the proposed port location is another IBA known as Contact Point, which forms the southeastern border of Bruin Bay. A large seabird nesting colony exists here and includes over 1,000 seabirds of several species, including red-faced cormorants (*Phalacrocorax urile*), pelagic cormorants (*Phalacrocorax pelagicus*), common murres (*Uria aalge*), pigeon guillemots (*Cepphus columba*), tufted puffins, and horned puffins (*Fratercula corniculata*). Large numbers (i.e., 54 birds per square kilometer) of seaducks raft in the nearby waters (National Audubon Society 2013c). Therefore, although the Amakdedori port footprint may not support large numbers of breeding waterbirds, it is flanked by two nearby IBAs, and is situated in a global IBA (Smith et al. 2017).

Additionally, Kamishak Bay is an important molting and wintering location for a variety of waterbirds, including the federally threatened Steller's eider (*Polysticta stelleri*)(discussed in detail in Section 3.25), and merganser and scoter species (Larned 2005). In Kamishak Bay, the area around the Douglas River Delta (a series of shoals, reefs, and islands at the mouth of the Douglas River), which are approximately 15 to 20 miles south of the port location, is the primary location where waterbirds congregate in the winter.

[Note: 2018 field data for the Amakdedori port is being synthesized and will be provided in a later EIS draft]

Landbirds and Shorebirds

The main landbird and shorebird species at the Amakdedori port is similar to species that breed in various shrub habitats in the mine site (listed above), including species of sparrows, warblers, and flycatchers. The main difference is the potential for wintering rock sandpipers (*Calidris ptilocnemis*) to use the mudflats at the Amakdedori port for foraging during the winter. Rock sandpipers that spend the winter along the shores of Cook Inlet are the northernmost wintering shorebird species in the Pacific Basin (Ruthrauff et al. 2013). They often gather in large flocks numbering in the thousands during the winter, and forage on a variety of bivalve species depending on shore ice accumulation. Although rock sandpipers generally winter in a few locations in upper Cook Inlet, during periods of extreme cold, they shift their distribution to more southerly locations in the inlet (Ruthrauff et al. 2013). The subspecies of rock sandpiper that typically winters in Cook Inlet is the sensitive *Calidris ptilocnemis ptilocnemis* (Ruthrauff et al. 2013). Data from the citizen science project, eBird, have documented rock sandpipers in Amakdedulia Cove and Kamishak Bay in September and early October, and early March and late April (eBird 2018). Numbers range from several individuals to several hundred birds, and there is likely great fluctuation in numbers throughout the fall, winter, and spring.

Additional avian species that use the area around the Amakdedori port likely include a variety of shorebird species that may rest, forage, stage, and then continue migration. One historical survey conducted across four seasons in 1976 documented roughly 20,000 shorebirds using the embayments along the west side of lower Cook Inlet, of which 80 percent occurred during spring (Erickson 1977 as cited in Gill and Tibbits 1999). Surveys conducted each spring between 1994 and 1996 documented 86,000 to 122,000 shorebirds using Tuxedni and Chinitna Bays (Bennett 1996). Therefore, the Cook Inlet provides important migratory and breeding habitat for a variety of shorebird species. Surveys conducted from February 1997 to February 1999 in upper Cook Inlet from Susitna Flats south to Tuxedni Bay (approximately 80 miles north of Amakdedori port) confirmed that the Cook Inlet is important migratory bird habitat (Gill and Tibbits 1999). Twenty-eight species of shorebirds were recorded using the area, with a rapid increase in numbers of birds during early May, followed by an abrupt departure in mid-to-late May. During this time, the total number of birds frequently exceeded 150,000 birds per day with western sandpiper (*Calidris mauri*) accounting for three-fourths of all birds recorded (Gill and Tibbits 1999). Approximately 20 to 47 percent of the Pacific Flyway population of western sandpipers used Cook Inlet

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embayments, especially southern Redoubt Bay (approximately 100 miles north of Amakdedori port). Cook Inlet also supported approximately 11 to 21 percent of the population of dunlin (*Calidris alpina*), which travel in the Pacific Flyway. The main areas along the west side of Cook Inlet that provided critical shorebird habitat included southern Redoubt Bay (an average of 32,000 birds per day during spring) and Susitna Flats (8,400 rock sandpipers per day during winter)(Gill and Tibbits 1999). Therefore, the intertidal habitats and coastline around Amakdedori port likely provide critical shorebird migration habitat and support winter habitat for rock sandpipers.

[Note: 2018 field data for the Amakdedori port is being synthesized and will be provided in a later EIS draft]

Terrestrial Mammals

The Amakdedori port would be located in GMU 9A, on the northern side of Amakdedori Creek. Primary vegetation communities are shrub-dominated, with small, isolated wetlands. Amakdedori Creek is an anadromous creek surrounded by shrubs; the creek supports brown bears, moose, and other wildlife. Information previously provided for the transportation and natural gas pipeline corridors encompasses the Amakdedori port; only new information specific to the port is provided below. The most recent surveys around Amakdedori port were conducted in summer 2018. These surveys included aerial surveys for a host of terrestrial mammals including searching for bear dens and conducting aerial surveys of bears at salmon-spawning streams and along the coast. These data are being compiled and only preliminary results are included here. These results are detailed above under the transportation and natural gas pipeline corridors, and generally not repeated here.

Large Mammals

Large mammal species around the port are similar to those in the mine site, including caribou, brown and black bear, and moose. While the primary range of the Mulchatna caribou herd does not extend to the Cook Inlet based on 29 years' worth of radio-telemetry data, there may still be groups of caribou that occasionally move through the area (Figure 3.23-6). In 2018, the ADF&G observed caribou at Chenik Lake, about 5.5 miles south of the proposed Amakdedori port site (ADF&G pers comm 2018). The current range of the Northern Alaska Peninsula herd is approximately 70 miles south of the Amakdedori port site around Naknek Lake (Demma 2011, ADF&G 2015). Additional scattered individual caribou were observed in 2018 between 3 and 5 miles west of Amakdedori port.

As detailed in Section 3.24, sockeye and pink salmon are abundant in Amakdedori Creek near the port. Amakdedori port would be north of the McNeil River State Game Refuge and Sanctuary, which is a world-famous brown bear viewing location. During bear surveys in May 2009 for the mine site, black bears were more commonly documented east of Iliamna Lake and in some areas near the Cook Inlet. Brown bears were also common on the southern side of Iliamna Lake near Gibraltar Lake. Surveys for bears around salmon-spawning streams in summer 2018 documented a few brown bears fishing upstream in Amakdedori Creek, approximately 1 to 1.5 miles west of the port (Figure 3.23-7).

Moose are anticipated to occasionally occur in low and or tall willow scrub habitat in uplands, lowland, and riverine settings around the port. However, no moose were detected around the proposed Amakdedori port site during surveys in summer 2018, likely due to the presence of brown bears in the area.

Two gray wolves were incidentally detected at the Amakdedori port site during summer 2018 surveys during aerial bear surveys at salmon streams.

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Small Terrestrial Vertebrates

The same small mammal species and furbearers listed in Table 3.23-1 would be anticipated to occur around the Amakdedori port, but in proportion to their respective habitats. Additionally, wood frogs would be expected to occur in freshwater ponds around Amakdedori port, although specific surveys have not been conducted at this location.

Marine Mammals

[Note: the marine mammal section will be updated with 2018 marine mammal baseline survey data for the Draft EIS.]

This section addresses non-ESA whales, porpoises, and seals that may occur in the Cook Inlet project area, which includes the Amakdedori port and the natural gas pipeline corridor project components.

The Marine Mammal Protection Act (MMPA)(16 U.S.C. 1361 et seq.) mandates management of marine mammal population stocks and was enacted in 1972 to prevent the decline of marine mammal species and populations. The MMPA specifically prohibits the "taking" of marine mammals in US waters and by US citizens on the high seas, and the importation of marine mammals and marine mammal products into the US. As defined under the MMPA, “take” means, “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” The MMPA defines “harassment” as, “any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].” The MMPA provides exceptions for subsistence uses by Alaska Natives and authorized (i.e., permitted) scientific research. Also allowed, through a permit application process, is the "incidental," but not intentional, taking of small numbers of marine mammals by US citizens who engage in a specified activity (other than commercial fishing).

Implementation of the MMPA is shared between the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the Department of the Interior's USFWS, with NMFS managing whales, dolphins, porpoise, seals and sea lions and the USFWS responsible for the sea otters. Additional information on ESA species potentially found in the project area can be found in Section 3.25, Threatened and Endangered Species.

Under Section 3 of the MMPA, the “…term ‘population stock’ or ‘stock’ means a group of marine mammals of the same species, or smaller taxa in a common spatial arrangement, that interbreed when mature” (16 U.S.C. § 1362 (11)). “Population stock” (usually referred to simply as “stock”) designations of many groups of marine mammals have changed over the past decade, in large part due to focused efforts to define the stocks coupled with the availability of relatively new tools from molecular genetics. In the cases of marine mammals for which separate stocks have been delineated, the description and evaluation of potential effects on those stocks is focused on those that may occur in the Cook Inlet project area. However, information on the biological species as a whole is included if it enhances the understanding of the relevant stock(s) or aids in evaluation of the significance of any potential effects on the stock that occurs in or near the program area.

Gray Whale

There are two recognized stocks of gray whales (*Eschrichtius robustus*): the Eastern North Pacific (ENP) and Western North Pacific (WNP). The ENP gray whale stock range includes the project area.

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The ENP stock has been reported feeding along the Pacific Coast during their annual northern summer migration in waters off of southeastern Alaska, British Columbia, Washington, Oregon, and California. Northward migration, primarily of individuals without calves, begins in February; some cow/calf pairs delay their departure from the calving area until well into April (Muto et al. 2017).

Generally, gray whales arrive in the Gulf of Alaska between March and June, and typically depart in November and December (Consiglieri et al. 1982). Most of the population follows the outer coast of the Kodiak Archipelago to the Kenai Peninsula in spring or the Alaska Peninsula in fall (Consiglieri et al. 1982). This annual migration takes them past the mouth of Cook Inlet to northern feeding grounds in the Bering and Chukchi seas. Although most gray whales migrate past Cook Inlet on their way north, small numbers have been reported near Kachemak Bay, roughly 80 miles from the proposed Cook Inlet project area (USDOI BOEM 2015). During NMFS aerial surveys in Cook Inlet, gray whales were observed in June in 1994, 2000, 2001, 2005, and 2009 on the western side in Kamishak Bay (Shelden et al. 2013) near the project area.

Minke Whale

Minke whales (*Balaenoptera acutorostrata*) are most abundant in the Gulf of Alaska during summer where they occupy localized feeding areas (Zerbini et al. 2006). Minke whales become scarce in the Gulf of Alaska in fall; most whales are thought to leave the region by October. The current estimate for minke whales between Kenai Fjords and the Aleutian Islands is 1,233 individuals (Zerbini et al. 2006).

During NMFS Cook Inlet-wide aerial surveys conducted from 1993 through 2004, minke whales were observed on three separate occasions (1998, 1999, and 2006) near Anchor Point, approximately 90 miles south of the project area (Shelden et al. 2013, 2015, 2017). A minke whale was also reported in the same general location in 2011 and 2013 (Owl Ridge 2014).

Killer Whale

The killer whales (*Orcinus orca*) inhabiting Cook Inlet are thought to be a mix of resident and transient individuals from two different stocks: the Alaska Resident Stock, and the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock (Muto et al. 2017). Both stocks have the potential to occur in the project area. The Alaska Resident Stock is estimated at 2,347 individuals, with a minimum population estimate of 2,084 (Muto et al. 2017). The Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock is estimated at a minimum of 587 individuals (Muto et al. 2017).

Killer whales are occasionally observed in lower Cook Inlet, especially near Homer and Port Graham (Rugh et al. 2005), approximately 80 miles south of the project area. Killer whales are not expected to occur in the project area.

Dall's Porpoise

Dall's porpoises (*Phocoenoides dalli*) are present year-round throughout their entire range, including the Cook Inlet area and Kamishak Bay (Morejohn 1979). They are regularly observed throughout Cook Inlet (Nemeth et al. 2007), particularly during spring eulachon and summer salmon runs. They have been observed in lower Cook Inlet around Kachemak Bay (USDOI BOEM 2015a), approximately 80 miles east of the project area.

Dall's porpoises were observed on NMFS aerial surveys during June 1997 (Iniskin Bay, approximately 40 miles north of Amakdedori port), 1999 (Barren Island, approximately 70 miles

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east of Amakdedori port), and 2000 (Barren and Elizabeth islands, approximately 70 and 80 miles east of Amakdedori port, respectively, and Kamishak Bay) (Shelden et al. 2013).

Harbor Porpoise

In Alaskan waters, three stocks of harbor porpoises (*Phocoena phocoena*) are currently recognized: Gulf of Alaska, Southeast Alaska, and Bering Sea stocks (Muto et al. 2017). Only the Gulf of Alaska Stock has the potential to occur in Cook Inlet near the project area.

Harbor porpoises have been reported in lower Cook Inlet from Cape Douglas north to the West Foreland and offshore (Rugh et al. 2005a). They have been frequently observed during aerial surveys in Cook Inlet; most sightings are of single animals and are concentrated at Chinitna and Tuxedni bays (north of the project area) on the west side of lower Cook Inlet, and in the upper inlet (Shelden et al. 2014). The most recent population estimate for the Gulf of Alaska Stock is 31,046 individuals (Muto et al. 2017).

NMFS aerial surveys for belugas have documented harbor porpoise presence throughout Cook Inlet since 1993, except in 2002, 2003, 2006, and 2013. These surveys encompass the project area, and typically included Chinitna, Iniskin, and Iliamna bays and connecting coastline, all north of the project area.

Harbor Seal

Harbor seals (*Phoca vitulina*) are common in Alaskan waters, with statewide abundance estimates at 152,602 animals (Muto et al. 2017). There are 12 recognized stocks of harbor seals in Alaska. The Cook Inlet/Shelikof Strait harbor seal stock range extends from Unimak Islands along the coast north into upper Cook Inlet, and includes the project area. The current Cook Inlet/Shelikof Strait harbor seal stock population estimate is 27,386 individuals (Muto et al. 2017).

Harbor seals are found throughout the entire lower Cook Inlet coastline, hauling-out on beaches, islands, mudflats, and at the mouths of rivers, where they whelp and feed (Muto et al. 2017). Montgomery et al. (2007) recorded over 200 haul-out sites in lower Cook Inlet alone. Harbor seal haul-out areas occur in Kamishak Bay in close proximity to the project area, including the Amakdedori port.

A strong seasonal pattern of more coastal and restricted spatial use has been documented during the spring and summer for breeding, pupping, and molting, and more wide-ranging seal movements in and outside of Cook Inlet during the winter months (Boveng et al. 2012). Large-scale patterns indicate that a portion of harbor seals tagged in Cook Inlet move out of the area in the fall, and into habitats in Shelikof Strait, North of Kodiak Island, and coastal habitats of the Alaska Peninsula, considerably south of the project area. In the fall, harbor seals are concentrated in Kachemak Bay on the east side of Cook Inlet, Iniskin and Iliamna bays on the west side of Cook Inlet, and south through the Kamishak Bay to Cape Douglas (Boveng et al. 2012). A portion of the Cook Inlet seals move into the Gulf of Alaska and Shelikof Strait during the winter months (London et al. 2012). Seals move back into Cook Inlet as the breeding season approaches (London et al. 2012).

NMFS has conducted annual aerial surveys for beluga whales in Cook Inlet since 1993, which encompass the project; these surveys have also included incidental sightings of harbor seals every year from 1993 to 2016. Bennett (1996) counted a maximum of 90 harbor seals hauled-out along tidal channels in inner Chinitna Bay during aerial surveys conducted from 1994 to 1996.

Iliamna Lake Seal

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A discrete (Burns et al. 2013) population of approximately 400 harbor seals inhabit the freshwater environment of Iliamna Lake (Boveng et al. 2016). Iliamna Lake seals forage mainly on salmonids (salmon, trout, char, and grayling), but also forge heavily on lamprey, smelt, sculpin, whitefish, and stickleback (Hauser et al. 2008).

In spring, when the ice breaks up, seals begin to redistribute broadly in Iliamna Lake. When migrating salmon arrive in the summer and into autumn, seals may be found throughout the lake, but are especially common near and in spawning streams, including the lake's outflow, the Kvichak River, and along nearshore areas. Iliamna Lake seals are thought to overwinter in Iliamna Lake (Boveng et al. 2016). The peak date of births in Iliamna Lake was based on the peak percentage of pups found in aerial surveys of the lake during May through August of 2010 to 2013 (excluding 2012), compared to those in Navak Bay. The average peak pup-count dates were determined to be anywhere from July 12 to July 20 (Boveng et al. 2016).

A few seals are occasionally observed in small areas of open water in the southwestern portion of the lake during the ice-cover period, such as the head of the Kvichak River at Igiugig, roughly 40 miles from the proposed project barge route over Iliamna Lake near Kokhanok, but these are not regular occurrences (Burns et al. 2013). There are known and potential haul-out sites on islands found in the central portion of Iliamna Lake (Figure 3.23-7)(ABR 2011a).

3.23.2 Action Alternative 2 – North Road and Ferry

The components of Alternative 2 are described in Chapter 2. The mine site footprint is generally the same between Alternatives 1 and 2 with no expected difference in wildlife species presence and abundance; therefore, the affected environment is considered the same and not repeated here. Only aspects of Alternative 2 that differ substantially are discussed below. For Alternative 2, the port at Diamond Point is not discussed separately because it is part the transportation and natural gas pipeline corridors.

The most recent comprehensive biological surveys of the Alternative 2 area were conducted by ABR primarily between 2004 and 2006 with additional surveys conducted up until 2012. These surveys are detailed in the various chapters of the Environmental Baseline Document (ABR 2011a, 2011c, 2011d, 2013a, 2013b, 2015a-c) and are summarized briefly below. Details of the specific survey methods and results are referenced, and a summary of the results are provided. The area where biological surveys were conducted for the Environmental Baseline Document (referred to as the transportation corridor study area) stretches approximately from the Newhalen River east along the north shore of Iliamna Lake to Williamsport, and then along the western edge of Cook Inlet to Chinitna Bay. The transportation corridor study area included a swath of land between the northern edge of Iliamna Lake and the base of the nearby mountains (Roadhouse and Knutson Mountains) to the north of the lake. Specific to the project, the study area included the area around Eagle Bay, Pedro Bay, Pile Bay, Diamond Head, Williamsport, Cottonwood Bay, Iliamna Bay, and Iniskin Bay. Therefore, the entire terrestrial portion of Alternative 2 was surveyed apart from the portion of the natural gas pipeline corridor from Ursus Cove to Diamond Point. The only survey conducted in this section was an aerial raptor nesting platform survey in 2012, as detailed below.

3.23.2.1 Birds

Project-specific avian surveys conducted by ABR in 2004 and 2005 are the most comprehensive surveys that have been conducted for the region along the northern and eastern edge of Iliamna Lake from the mine site to Cook Inlet (ABR 2011a, c, d).

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Raptors

Raptor surveys were conducted in 2004 and 2005 for all large tree and cliff-nesting raptor species. Winter surveys for bald eagles were conducted in 2005 and 2006. Bald eagles were the most abundant nesting species (43 percent of all nests), followed by golden eagles (19 percent of nests), with low numbers of nesting common ravens, osprey, peregrine falcon, gyrfalcon, rough-legged hawk, great horned owl, and red-tailed hawk (ABR 2011a, 2011c)(Figure 3.23-9). The greatest densities of tree-nesting raptors were along the Newhalen and Iliamna rivers and along the shoreline of Iliamna Lake. Scattered bald eagle nests were also distributed on various islands in the eastern edge and along shoreline of Iliamna Lake. The greatest densities of cliff-nesting raptors were found in Canyon Creek and along the southern edge of the Alaska Range north of Iliamna Lake (Figure 3.23-9). Near Cook Inlet, most bald eagle nests were located in the trees along the coastline or in the lower reaches of rivers draining into Iliamna Lake and Cook Inlet. One peregrine falcon nest and several bald eagle nests were detected around Diamond Point and several golden eagle nests were located along the steep cliffs around Williamsport (Figure 3.23-9). The peregrine falcon nest at Diamond Point is located approximately 500 feet to the west/above the proposed road to Diamond Point. In September 2012, additional surveys were conducted by ABR for nesting raptors (ABR 2013a). One bald eagle nest is located directly in the area to be used as the Diamond Point barge dock cut and fill area (Figure 3.23-9). An additional bald eagle and one golden eagle nest were located in the valley between Ursus Cove and Cottonwood Bay, adjacent to the proposed natural gas pipeline corridor (ABR 2013a).

During surveys to determine if there were wintering congregations of bald eagles around Iliamna Lake, bald eagles were detected in February and November 2005, and November and December 2006, with a drastic decline in eagle by mid-winter suggesting that the area is not heavily used as a wintering area for bald eagles (ABR 2011a).

Waterbirds

The Iliamna Lake region of the Alaska Peninsula is an important migration route for many species of waterbirds moving to and from breeding areas in western and northern Alaska (Conant and Groves 2005). Waterbird surveys were conducted along the transportation and natural gas pipeline corridors by ABR in 2004 and 2005, with a 2006 survey for swans. Thirty-four species of swans, ducks, loons, cranes, and gulls were observed, with 14 of them recorded as breeding in the area. Waterbirds used lakes, rivers, and bays for staging during spring and fall migration. During spring migration, most swans, geese, and dabbling ducks arrived by late April to early May and staged along rivers and areas of open water on lakes and bays of Iliamna Lake (Figure 3.23-10). The highest concentrations were along the Newhalen River at Three-mile Lake, Goose Cove, and in Chekok Bay. Other locations where species staged included the floodplain of the Iliamna River and Eagle, Fox, and Pile bays. Diving ducks arrived in mid- to late May and staged in large flocks in Whistlewing Bay, Alexcy Lake, and on the Iliamna and Newhalen rivers (ABR 2011a).

During fall migration, waterbirds were congregated in many of the same locations as spring with additional concentrations of gulls and mergansers on Iliamna Lake at Knutson and Pile bays, and along the south shore of the lake (Figure 3.23-11). The highest numbers of birds were detected along the lower reaches of the Iliamna River and the southern shore of Iliamna Lake.

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Figure 3.23-9: Raptor Nests along Action Alternatives 2 and 3 Transportation Corridor

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Figure 3.23-10: Staging Waterbird Locations during Spring 2005 Along the Action Alternatives 2 and 3 Transportation Corridor

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Figure 3.23-11: Staging Waterbird Locations during Fall 2005 Along the Action Alternatives 2 and 3 Transportation Corridor

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Thousands of ducks and gulls were observed during fall surveys with high duck abundance during mid-August to mid-October (ABR 2011a). In contrast to the vast numbers of ducks and gulls, no groups of swans or geese were observed staging during the fall, only local groups that bred in the area were observed. Overall, there were low numbers of grebes, cormorants, cranes, and shorebirds during spring and fall migrations periods in 2004.

Tundra swans were documented breeding between Chekok Creek and the Newhalen River with more nests located in 2005 between UTC and the Newhalen River north of Iliamna Lake. Swans returned to the same territories on subsequent years and were on nests by early May. One pair of trumpeter swans (*Cygnus buccinator*) that bred locally was located near the Pile River, which is near the western edge of their breeding range.

Harlequin duck pairs were found along streams flowing into Iliamna Lake, with broods located on Stonehouse Lake, and on the Newhalen, Pile, and Iliamna Rivers.

Common loons were found on deep and large lakes between UTC and the Iliamna River with most broods locations near the Newhalen and Iliamna rivers. Both Pacific and red-throated loons were uncommon and no nests or broods were documented.

The marine waters of Iliamna, Cottonwood, and Iniskin bays are important year-round habitat for a variety of waterbird species. The rocky shoreline, adjacent cliffs, islands, and rock outcrops around these bays provide important breeding habitat. Some of the first intensive surveys of this area in 1976 detected the following species breeding around the mouths of Iliamna and Iniskin bays: common eider (*Somateria mollissima*), double-crested cormorant, pelagic cormorant, black oystercatcher (*Haematopus bachmani*), glaucous-winged gull, pigeon guillemot, horned puffin, and tufted puffin (Erickson 1977). The North Pacific Seabird Data Portal (an online database of seabird colony population numbers from various surveys) includes several seabird colonies in this area. These include South Head, White Gull Island, North Head, Knoll Head, Toadstools, Entrance Rock, Vert Island, Scott Island, Mushroom Islets, Iniskin Island, Twin Rocks, Pomeroy Island, and Oil Reef (USFWS 2018). Several of these islands (White Gull Island, Vert Island, Iniskin Island, and Pomeroy Island) had greater than 500 breeding birds in the late 1970s (Erickson 1977; ABR 2011a). In total, breeding birds recorded in 1976 and 1978 totaled 4,172 birds. ABR resurveyed many of these islands and the surrounding area and observed 1,264 and 1,585 breeding birds in 2004 and 2005, respectively. The main differences between surveys in the 1970's and ABR surveys were a drastic decrease in the number of breeding tufted puffins, and a smaller decrease in the number of most other species. The only species that increased in number between the 1970s and in the mid-2000s were red-faced cormorant and mew gull, both of which were not documented breeding in the 1970s (ABR 2011a). Overall, since the 1970s the number of breeding seabirds has declined drastically with the most recent surveys documenting 1,740 to 1,195 birds in 2011 and 2012, respectively. Numbers of nesting double-crested cormorants, common eiders, glaucous-winged gulls, pigeon guillemots, and tufted puffins all showed declines. Tufted puffin populations have declined by approximately 97 percent and double-crested cormorants by 88 percent. This may have been due to a collapse of the Pacific herring (*Clupea harengus*) fishery (ABR 2015c).

Surveys by ABR from summer 2004 to spring 2006 documented similar results from previous surveys, which indicated that the number of birds in Iliamna and Iniskin bays is substantial. In the mid-1970s the largest wintering concentration of seaducks in all of lower Cook Inlet occurred in Iniskin Bay; Iliamna and Iniskin bays contained a large concentration of summering scoters; and gulls, dabblers, and scaup all concentrated in Iniskin and Chinitna bays in the summer (Erickson 1977). Agler et al. (1995) documented large concentrations of birds on the western side of lower Cook Inlet in summer, and the number of wintering birds (primarily waterfowl) in Iliamna and Iniskin bays was the highest in western Cook Inlet.

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ABR surveys (2011c) recorded 69 species of birds within marine waters of Cook Inlet including Iliamna, Iniskin, and Chinitna bays. The greatest number of bird species and density occurred in spring (primarily due to large numbers of shorebirds). Large numbers of waterfowl migrate through the area in spring and fall and a substantial number of birds winter in the protected bays, especially seaducks. The highest densities of birds in spring and summer occur in nearshore waters and near the mouths of the bays, while the highest densities in winter occur in the offshore waters in the bays (ABR 2011c).

A supplemental reconnaissance-level waterbird survey was conducted in September 2012 between Iniskin and Bruin bays (ABR 2013b). This survey covered the area of the natural gas pipeline corridor between Ursus Cove and Cottonwood Bay. Several groups of waterbirds were located in the river delta at the end of Ursus Cove, but none were detected along the creek between Ursus Cove and Cottonwood Bay (ABR 2013b).

Landbirds and Shorebirds

Point count surveys were conducted throughout the transportation corridor study area in June 2005. The habitat types with the highest bird abundance (more than five birds per point count) included Riverine Moist Mixed Forest, Riverine Low Willow Scrub, Upland and Lowland Moist Mixed Forest, Upland and Lowland Spruce Forest, Upland Moist Tall Alder Scrub, and Upland Moist Low Willow Scrub. Forty-six species of landbirds (mainly passerines) and seven shorebird species were recorded. Warblers were the most abundant birds followed by thrushes, waxwings, sparrows and allies, finches, and kinglets. Lower numbers of flycatchers, woodpeckers, swallows, corvids, shrikes, chickadees, nuthatches, and sandpipers were recorded.

The 10 most common landbird species (in descending order of abundance) include Wilson's warbler, orange-crowned warbler, Swainson's thrush, yellow-rumped warbler, golden-crowned sparrow, dark-eyed junco, ruby-crowned kinglet, American robin, varied thrush, and hermit thrush. The two most common shorebird species, which comprised 92 percent of all shorebird detections, were greater yellowlegs and Wilson's snipe. Seven of the 53 landbird and shorebird species detected are considered conservation priority species in Alaska and include olive-sided flycatcher, gray-cheeked thrush, varied thrush, blackpoll warbler, rusty blackbird, American golden-plover, and solitary sandpiper.

The nearshore marine waters of Iliamna, Cottonwood, and Iniskin bays are important year-round habitat for a variety of shorebird species, primarily during spring migration. Surveys conducted from 2006 to 2012 documented a wide variety of species within Iliamna and Iniskin bays with the highest numbers of shorebirds moving through the area in early May on their northern spring migration. Surveys from summer 2004 through spring 2006 documented the numbers and species of shorebirds within Iliamna and Iniskin Bays. On May 3, 2005, over 5,000 shorebirds were recorded in Iliamna and Iniskin bays (ABR 2011c). During Spring 2006, the most common shorebirds were western sandpiper (5,682 birds) followed by unidentified sandpipers (17,322 birds), and dunlin (2,157 birds)(ABR 2011c). These birds fed on the mudflats at the back end of Iniskin Bay. Low numbers of rock sandpipers (generally less than 200 birds) also used the bays during fall, winter, and spring from late October through last April; however, they were most abundant in November when with a high of 406 were observed in early November 2006 (ABR 2015c). The largest flocks of rock sandpipers were found foraging on the soft-sediment substrates of inner Iliamna and Iniskin bays.

The only breeding shorebird species detected around Iliamna and Iniskin bays was the black oystercatcher. This species breeds in low numbers among the rocky edges around the bay and surrounding areas with seven nests recorded in 2011, and five nests in 2012 (ABR 2015c).

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Historical data from 1976 and 1978 documented 42 black oystercatchers in the area, and surveys in 2005 documented 41 birds, hence numbers had remained relatively constant (ABR 2011c).

3.23.2.2 Terrestrial Mammals

Large Mammals

Almost no caribou were observed during wildlife surveys in 2004 or 2005, the area is almost completely outside of the range of the Mulchatna caribou herd, and the steep coastal mountains that dominate the area are not preferred caribou habitat (ABR 2011a, ABR 2011d). A few caribou are located around the Newhalen River, and both radio and satellite-collared data indicate the species rarely occurs along the north shore of Iliamna Lake.

Moose were detected throughout the study area in low density, with the greatest local densities east of Roadhouse Mountain. The highest numbers of moose observations were at lower elevations along the Pile River and Chekok Creek. The estimated density of moose in the transportation corridor study area was 0.05 moose per square kilometer (ABR 2011a). Historical surveys in late March 1992 in the area between the Newhalen River and Williamsport found an estimated density of 0.07 moose per square kilometer, and 0.16 moose per square kilometer in the area between the mine site and Iniskin Bay (Boudreau et al., 1992).

The transportation corridor study area is in an area of transition between substantially higher coastal densities of brown bears and lower inland densities. Historical surveys have estimated 50 bears per 1,000 square kilometers in GMU 9B (excluding Lake Clark National Park and Preserve and Katmai National Park and Preserve lands)(Butler 2005). A more rigorous survey from May 1999 to 2000 estimated 38.6 brown bears per 1,000 square kilometers in GMU 9B North, including the area east of Iliamna Lake and Lake Clark National Park and Preserve (Becker 2003; Butler 2007). The line-transect bear survey in May 2009 (Becker 2010), which encompassed the transportation corridor study area (plus a large area around Iliamna Lake), resulted in two different brown bear estimates based on different models and ranged between 47.7 and 58.3 brown bears per 1,000 square kilometers.

Bear surveys around the eastern part of Iliamna Lake to Diamond Point and Iliamna and Iniskin bays between 2004 and 2007 documented high densities of brown bears particularly along the Iniskin River and the end of Iniskin Bay (ABR 2011c). Brown bears were also detected around Cottonwood and Iliamna bays, but in lower numbers. Large aggregations of brown bears were observed in the sedge meadows and mudflats at the heads of Iniskin and Chinitna bays during spring and summer each year, with highest numbers in June (ABR 2011c). Brown bears shifted to salmon-spawning streams later in July and August, which are primarily located in the eastern portion of the study area (ABR 2011a). Little evidence was found for bears digging clams, with only one observation of this behavior in May 2006. Brown bears were observed fishing for salmon in Iniskin River, and Portage Creek in Iniskin Bay. Overall, brown bears were concentrated foraging on vegetation early in the summer, and transitioned to salmon later in the summer and fall following the season salmon runs in the area.

From July through September 2012, ABR conducted a study of bear activity using timelapse cameras placed near the location where the transportation corridor and natural gas pipeline would cross UTC, to capture bear activity along the stream. Overall, little bear use was recorded on photographs, but bear activity peaked from late July to early August. The highest level of activity occurred late in the evening. Despite the abundance of salmon in UTC, it did not appear that the location where the camera was placed was important to foraging bears during daylight and twilight hours (ABR 2015a). Additional cameras were placed along seven anadromous streams along the north shore of Iliamna Lake from Roadhouse Mountain to the Pile River. Bear use reflected

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salmon run timing, with the highest activity from late July to early August. Small, shallow streams with high numbers of spawning salmon were the preferred foraging areas. The highest level of activity occurred during early morning and late evening, but bears spent limited time fishing in the portions of the river in the camera's viewshed according to the timelapse photography (ABR 2015a).

Black bears were more common in the area north and east of Iliamna Lake than any other locations around Iliamna Lake; their density estimate from 1999 to 2000 for GMU 9B North was 76.7 black bears per 1,000 square kilometers (with most bears in the northernmost portion of the subunit)(Becker 2003). Most black bears were observed in the eastern part of the survey area around the Iliamna River. Timelapse cameras placed along salmon-spawning streams in 2012 did not document any black bears.

Few wolves were detected during surveys along the north shore of Iliamna Lake to Diamond Point, but tracks of a pack of six individuals were noted during late fall 2004 along Chekok Creek (ABR 2011a). A lone wolf was incidentally detected along the Iliamna River. Therefore, the species is anticipated to occur in low numbers in the transportation and natural gas pipeline corridors.

Beavers were recorded west of the Newhalen River, along the Pile and Iliamna rivers, and west of Pile Bay north of Iliamna Lake.

Small Terrestrial Vertebrates

Small mammals were incidentally recorded during surveys in 2004 and 2005. Species detected included red fox, river otter, wolverine, and coyote (ABR 2011a). No particular spatial distribution for these species was noted, as most were incidental detections and dense vegetation made observations for less visible species more challenging.

Wood frog studies were not conducted for the transportation and natural gas pipeline corridors. The species is expected to occur in suitable habitat in ponds, lakes, streams, and other waterbodies along the north shore of Iliamna Lake to Cook Inlet.

3.23.2.3 Marine Mammals

Alternative 2 includes a more northern barge route across Iliamna Lake (Figure 3.23-7), which does not affect the species descriptions discussed in this section, except for harbor seals that occur year-round in Iliamna Lake. The species discussed in this section have broad distributions and are expected to occur in similar densities throughout the marine environment. A general description of marine mammals in the project area is discussed above. Where there are anticipated differences between species' distribution and habitat use or specific sightings during surveys identified during literature review across the preferred alternative and the other alternatives, further discussion is provided.

Gray Whale

During boat-based nearshore (Iliamna, Iniskin, and Chinitna bays) surveys, one gray whale was recorded off-transect in the summer of 2004, near the mouth of Iniskin Bay (ABR 2011d).

Minke Whale

Surveys conducted in Iliamna, Iniskin, and Chinitna bays did not record any sightings of minke whales (ABR 2015c). A single minke whale was recorded just inside the entrance of Iliamna Bay in 2006 (Houghton 2013, as cited in ABR 2015c).

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Killer Whale

A single killer whale was recorded near North Head, at the mouth of Iliamna Bay in 2009 (ABR 2015c). This is the only record of this species on all aerial and boat-based surveys combined (ABR 2015c).

Dall's Porpoise

During surveys of the northern portion of the analysis area between 2006 and 2012, ABR (2015c) observed one Dall's porpoise near North Head in 2009.

Harbor Porpoise

During helicopter-based surveys of the northern portion of the analysis area between 2006 and 2012, harbor porpoises were observed in Iniskin, Iliamna, and Chinitna bays, as well as offshore; but were most common near the mouths of Iliamna and Iniskin bays (ABR 2015c), all north of the project area. Harbor porpoises exhibited seasonality in abundance and inter-annual variation in abundance (ABR 2015c). There was a pronounced increase in the number and frequency of observations of harbor porpoise in the spring, specifically in late April and May. Harbor porpoises were recorded in every month except for January, June, and October, although in generally low numbers, and with a low frequency of observations (ABR 2015c).

Harbor Seal

Marine mammal surveys (Iliamna, Iniskin, and Chinitna bays) were conducted between 2004 and 2008 (ABR 2011d). Harbor seals were recorded during all seasons, and were the most abundant marine mammal encountered (ABR 2011d). During the boat-based surveys in Iliamna, Iniskin, and Chinitna bays, harbor seals occurred primarily in nearshore waters and were present primarily in the summer, with lower densities in the spring, and much lower densities in the winter and late winter (ABR 2011d). During offshore boat-based surveys, harbor seals were observed in the spring surveys in low densities, but higher in the summer, early winter, and late winter (ABR 2011d). In the spring, harbor seals occurred mostly in the nearshore waters, with only one recorded in the offshore area (ABR 2011d). The seals occurred throughout the entire bay systems, but were commonly hauled-out on the mudflats in upper Iniskin Bay. In the summer, harbor seals were primarily observed on the islands near the mouth of the bays, and secondarily on the mudflats in upper Iniskin Bay. In early winter, few seals were seen during the offshore surveys; those that were seen during the nearshore surveys were concentrated in the bays, and secondarily on the mudflats in upper Iniskin Bay (ABR 2011d). In the late winter, few seals were seen during the offshore surveys, and the few seals that were seen during the nearshore surveys were concentrated on the Iniskin Islands; few seals were seen in the bays, likely due to ice presence (ABR 2011d).

During fixed-wing surveys described above, the highest counts of harbor seals were during July and August. Most seals were recorded on the Iniskin Islands, but some seasonal variation occurred, especially with respect to the increased numbers hauled-out on Gull Island in Chinitna Bay (ABR 2011d).

Iliamna Lake Seal

Iliamna Lake seals are primarily found in the northeastern half of Iliamna Lake near Pedro Bay; however, depending on the time of year, stage of fish migrations, and state of ice cover on the lake, seals may be distributed throughout the lake (Burns et al. 2013).

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The highest use of haul-outs was in the Flat/Seal Island group (southwest of Pedro Bay) and the Thompson Island group (north of Kokhanok) (Figure 3.23-7)(ABR 2011a). Two haul-out locations identified during aerial surveys accounted for two-thirds of all the seals observed in Iliamna Lake (ABR 2011a).

In winter, the number of seals observed is relatively low as the vast majority of the lake surface freezes solid in winter, but is greatest in the northeastern parts of the lake (Burns et al. 2013). Small areas of water remain open, particularly in the northeastern portion of the lake, where harbor seals most commonly occur (Figure 3.23-7)(Boveng et al. 2016).

Pupping and nursing occur in June through August, taking place at haul-out sites in the northeastern half of the lake (Burns et al. 2013) near Pedro Bay.

3.23.3 Action Alternative 3 – North Road Only

There are no new geographic areas that are exclusive for Alternative 3 not previously covered under Alternatives 1 and 2. Since there will not be a ferry associated with this alternative, affected environment descriptions for Iliamna Lake do not apply to Alternative 3. The affected environment descriptions associated with all other components of this alternative is previously described by Alternatives 1 and 2 in the sections above.

3.23.4 Climate Change and Wildlife

Climate change trends are common to all alternatives.

Potential impacts from climate change on bird species are closely tied to changes in the physical and biological environment, including water resources (e.g., timing of spring thaw, freezing, ice/snow cover) and vegetation changes. Changes to vegetation from climate change are discussed in Section 3.26, Vegetation, and would directly impact avian communities. Changes in temperature, precipitation, their level of intensity, and timing all have the potential to impact avian species. Waterbird and shorebird species may experience an increase in habitat due to increased thawing. Warmer winters may permit an expansion of spruce bark beetles, which would attract various woodpecker species, but result in forest habitat loss. Some species, such as ptarmigan, which depend on adequate snow cover to survive winter, are likely to be adversely impacted. There is the potential for tropic mismatch where seasonally timed migration events and reproduction are not synchronized with vegetation and insect population fluctuations. Overall, some bird species may increase in abundance, while others may decline due a warming climate.

Climate change is anticipated to have a wide variety of impacts for various terrestrial species. An overall warming/drying trend would tend to convert some wetlands to uplands and tend to increase the cover of shrubs and trees in previously open areas. For terrestrial wildlife, a combination of more open water and more nearby upland or forested areas may benefit species like beavers, river otters, wood frogs, and others. An increase in fires due to drying may benefit caribou that use early successional habitat areas, but would be a detriment to species that rely on forested cover. Habitat important for moose would be affected, but effects are uncertain. Warming conditions may also lead to increases in infectious disease in wildlife (Bradley et al. 2005).

Climate change may cause shifts in plant phenology; species that cannot shift the timing of their reproductive cycle may be adversely impacted. This potential mismatch between a wildlife species and its food may vary depending on the degree to which they depend on dietary consumption and stored fat reserves (Gustine et al. 2017). A recent study in Alaska by Gustine et al. (2017) examined the long-term (i.e., from 1970 to 2013) changes in temperatures, and characteristics of the growing seasons in relation to forage quality for caribou during important life

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stages. Despite advanced thaw dates and increased growing season lengths, no decline in forage quality and no evidence for trophic mismatch was found during peak parturition or peak lactation. Another study in northern Canada examined the impacts of climate change on the seasonal distribution of two migratory caribou herds (Sharma et al 2009). The study found consequences of climate change may include alteration in habitat use, migration patterns, foraging behavior, and demography. Migratory caribou preferred regions with higher snowfall and lichen availability in fall and winter, and cooler areas in summer. Both herds of caribou avoided disturbed and recently burned areas.

Habitat changes in southwest Alaska have been documented by traditional ecological knowledge, which has resulted in improved moose forage with areas of taller and denser willows, dwarf birch, and alders (Lanen 2018). Traditional knowledge has documented ice breakup occurring earlier in the spring, freeze-up occurring later in the fall, lower than normal snowfall amounts, and other climatic changes. This has translated into earlier spring thaw, lakes opening up faster, expanding and taller-growing deciduous shrubs, and earlier leaf-out in spring (Lanen 2018). The result has been increased moose abundance, due to increasing range expansion of moose.

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4.23 WILDLIFE VALUES

The following section provides a description of the potential environmental consequences from the proposed project to non-federally listed birds, terrestrial wildlife, and marine mammals and their habitats. Impacts to federally listed wildlife species are discussed in Section 4.25, Threatened and Endangered Species. Direct and indirect impacts comprise:

- behavioral disturbance, including:
  - noise
  - presence of humans, vehicles, vessels, and aircraft
  - avoidance of nearby habitat
- injury and mortality, including:
  - collision with vehicles, vessels, and aircraft
  - exposure to contamination from pit lake or other project attractants
  - defense of life and property
- habitat changes, including:
  - vegetation removal (habitat loss)
  - fragmentation
  - spills (discussed in Section 4.21)
  - fugitive dust impacts (discussed in Section 4.26, Vegetation)
  - invasive species introduction or spread (discussed in Section 4.26, Vegetation)

The magnitude of impacts depends on the specific species' sensitivity to the disturbance or change, and the type of disturbance or change. The duration of potential impacts depends on the location and season in which the impact occurs. The extent of impact would vary depending on the location of the impact in relation to the species' range that may be impacted.

Potential impacts from a spill or leak (including natural gas, oil, diesel, and all other substances being transported to and from the mine site) are not discussed in this section, but are detailed in Section 4.27, Spill Risk.

Specific mitigation measures to minimize impacts are currently being developed. Impacts to wildlife species would be minimized or mitigated by development of a Wildlife Management Plan (WMP), which would detail management measures to minimize impacts to wildlife species. The WMP would describe the equipment, methodology, training, and assessment techniques that would be used to minimize the potential for wildlife interaction and minimize impacts to species from all aspects of the project.

4.23.1 No Action Alternative

Under this alternative the project would not be constructed and there would be no project-related impacts to wildlife species.

4.23.2 Action Alternative 1 – Applicant's Proposed Alternative

4.23.2.1 Birds

The project has the potential to directly and indirectly impact breeding, wintering, migrating, and staging bird populations through behavioral disturbance, injury and mortality, and habitat changes as detailed in the following sections. Impacts to raptors, waterbirds, landbirds, and shorebirds are

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anticipated to differ among individual species; however, impacts are discussed collectively herein for the majority of avian groups. Additionally, potential impacts at the mine site, transportation and natural gas pipeline corridors, and the Amakdedori port are discussed collectively under each project component.

Behavioral Disturbance

All project phases and components would result in elevated noise levels (above current ambient levels) from a variety of sources (e.g., blasting activities in the open pit, aircraft, vehicles, construction equipment, barges and other oceanic vessels, operations-related noise) and would occur in varying levels throughout the life of the mine. Noise levels would increase above present levels (detailed in Section 4.19, Noise) during all phases of the project because there are currently no recurrent anthropogenic noise sources in the mine site. Blasting would occur on a regular basis during construction as needed at several material sites to construct the access roads and other infrastructure, and during operations in the mine pit (as outlined in Chapter 2, Alternatives). Various studies have been conducted around the globe detailing impacts of noise on bird populations and a general conclusion is that some bird species are sensitive at least during the breeding season to noise levels and the distance of disturbance can vary from several feet to more than 2 miles (Kaseloo and Tyson 2004). Loud noises from short-term events (e.g., blasting) are known to startle nearby birds and may cause them to leave the area, and can also lead to nest abandonment. Bird use of otherwise suitable habitat may be reduced due to sensitivity to noise. The degree of disturbance would vary among individuals, species, and time of year. Noise can change the composition of avian communities in favor of more noise-tolerant species, thereby reducing nesting species richness (number of species), although not necessarily density. Predatory birds may avoid noise because it could mask their calls or make it more difficult to locate prey, thereby causing nests in noisier areas to be safer from predators (Francis et al. 2009). See Section 4.19, Noise, for detailed analysis of current and proposed noise levels.

Some birds may habituate to noise from continuous sources, such as equipment and facilities, and such noise alone may not result in substantive changes in normal activities. Because mining-related exploration activities have occurred in and around the mine site, some birds may already be habituated to human-related disturbances. Birds migrating through the area may avoid the project vicinity during noisy periods rather than stopping over during migration.

[Note: Additional information on noise will be included in Appendix K4.25].

Vehicle traffic along the access roads, vessel and aircraft traffic at the Amakdedori port, and barge traffic on Iliamna Lake may cause behavioral disturbance to birds in the surrounding areas. These types of traffic may have three classes of impacts: direct impact on offspring survival due to brood scattering; reduction in foraging behavior and an increase in energetically costly behavior; and a loss of suitable habitat (Kaiser and Fritzell 1984; Korschgen et al. 1985; Keller 1991; Mikola et al. 1994).

Disturbances of nesting birds may cause abandonment of the nest, disruption of the pair bond, reduction in clutch size, increased egg mortality, abandonment of the nesting area, and increased predation of the nest. Disturbances during brood-rearing may cause exhaustion of young and an increase in losses from predation (Korschgen and Dahlgren 1992). Disturbances during critical times of the nesting cycle may eventually cause birds to nest elsewhere or not to nest at all (Korschgen and Dahlgren 1992). One study has shown that human disturbance may compel waterfowl to change food habits, feed only at night, lose weight, or desert the feeding area. Waterfowl generally respond to both loud noises and rapid movements, such as boats powered by outboard motors or other threatening visible features (Korschgen and Dahlgren 1992).

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Some species are easily disturbed by the presence of humans, vehicle, and other activities around their nest sites, even if their nesting habitat has not been directly impacted. Several species of raptors (e.g., golden eagles [*Aqulia chrysaetos*]) are especially prone to disturbance around nest sites and may abandon them if disturbed early in the nesting season. Disturbance to golden eagle foraging and roosting areas can stress eagles, leading to reproductive failure or mortality (USFWS 2011).

Habituation of some bird species to disturbance may occur (Stolen 2003). Waterbird responses to vessel traffic may be dependent on species, biological cycle (e.g., breeding, migrating, stopover, and wintering), and/or vessel attributes (e.g., vessel type, size, and speed). When vessels are closer to occupied habitat, a flight response is likely to be greater, especially if the vessel is approaching rapidly. Waterbirds in Cook Inlet may be habituated to vessel traffic (especially around existing port locations); however, additional vessel traffic at the proposed Amakdedori port may cause disturbance as the area currently has no port development.

Behavioral disturbances to birds in Cook Inlet could occur while the pipeline is being installed in Cook Inlet, but the disturbance would be temporary during the installation period, and expected to return to current disturbance levels after installation. Pipeline installation is anticipated to occur during summer months, when breeding birds are nesting. There are no nearby seabird colonies that could be disturbed (e.g., by being flushed off the nest or avoiding foraging areas) during pipeline installation. Additionally, there is a high level of summer vessel traffic in Cook Inlet, and additional boats associated with pipeline installation are not anticipated to contribute in a measurable manner to avian disturbance due to increased vessel traffic.

Injury and Mortality

Avian vehicle collision mortality may occur throughout the mine site and along the transportation and natural gas pipeline corridors. Currently, there are no roads to the mine site, and the project would involve the construction of approximately 76 miles of road through habitat that supports nesting birds; this would create vegetation edge habitats on either side of the road. There is potential for vehicle collisions for birds flying across the new roads created by the project. Mortality rates for avian species may be expected to decline over time, due to a postulated "learning effect," whereby resident birds may acclimate to the presence of the road and develop behaviors to avoid collisions (e.g., flying higher when crossing the road to avoid vehicles) (Havlin 1987). However, this is not likely to apply to migratory birds passing through the area that are unfamiliar with the road. Birds have been shown to change flight initiation distances in response to vehicles according to road speed limit (a factor affecting mortality rates on roads) rather than particular car speed, suggesting that birds are able to associate road sections with overall speed limits as a way to assess collision risk (Legagneux and Ducatez 2013). Bird species that spend a considerable amount of time on the ground (e.g., species of grouse and ptarmigan) are more susceptible to vehicular collisions as opposed to species that are found higher up in the tree canopy (such as species of flycatcher, warblers, and sparrows). Some avian groups tend to fly low/close to the ground and may be more prone to vehicle strikes when flying between brushy areas that are bisected by a road.

Bird collisions with aircraft have been well documented and appear to be increasing (Dolbeer et al. 2013). Contributing factors are greater populations of large birds near some airports, more air traffic, and higher use of quieter aircraft (e.g., turbofan-powered). Waterfowl, gulls, and raptors were groups with the most numerous and most damaging strikes. Species with high numbers of strikes in Alaska (Dolbeer et al. 2013) include bald eagle (*Haliaeetus leucocephalus*), Canada goose (*Branta canadensis*), American golden-plover (*Pluvialis dominica*), bank swallow (*Riparia riparia*), and ducks (*Anas* species and others), which all occur in the project area.

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Air traffic over Cook Inlet around Amakdedori port may pose a collision risk to bird species (particularly waterbird species), as well as a safety hazard to the aircraft. The degree of risk would be related to number and timing of the flights with respect to avian habitats (such as over ponds, lakes, and Cook Inlet), time of year, weather conditions, and flight pathways. The number of birds potentially affected is expected to be small because the interaction opportunities would be relatively small; however, there would be increased potential during periods of inclement weather with reduced visibility and higher winds. Flight paths toward the east end of the proposed runway would be over the water upon final approach (as low as 300 feet for approximately 1 mile based on a 3 degree angle [Owl Ridge 2018]). This may result in waterbirds swimming, diving, scattering, or flying away, which could lead to avian injury and mortality.

Additionally, collisions may occur from vessel traffic on Iliamna Lake and Cook Inlet. Avian species that breed, stage, migrate, and winter on Iliamna Lake and at Amakdedori port would be at risk of collision with watercraft. However, in both locations, the watercraft would be traveling slowly, particularly as they reach the shore; therefore, birds are anticipated to be able to move to avoid collision. In some port areas, waterbirds have become accustomed to boats (particularly around the Homer harbor); therefore, waterbirds are anticipated to develop some level of habituation to vessel traffic at Amakdedori port.

The project would create new areas of standing water that may attract birds, including the various freshwater storage impoundments, the tailings pond, and the pit lake. Environmental contamination by contact with water in these locations is possible. The pit lake is anticipated to be deep, contain no shallow water habitats (due to the steep walls), and not support freshwater vegetation that is attractive to many species of waterfowl and shorebirds. Wildlife management around the pit lake will be addressed in the WMP. [Note: Analysis of risk to wildlife from pit lake water is pending].

Habitat Changes

Temporary and permanent habitat loss would occur as existing vegetation is removed and replaced with buildings, roads, runways, mine pit, and other project facilities and infrastructure. See Section 4.26, Vegetation, for information on direct and indirect impacts to vegetation, which would relate to loss of nesting, foraging, migrating, and staging habitat for species in various vegetation communities.

Habitat loss would directly impact bird species with home ranges in the disturbance area, as well as those migrating through the area. Loss of habitat during migration may affect bird populations beyond the project area, because migrating birds could be forced to use other areas to rest and forage. The effect on migrating birds would be smaller than the effect on breeding birds, because migrants would use the habitat briefly and would not depend on it to feed young. Waterbirds would be the primary migratory species around the mine site that would be impacted. As detailed in Section 3.23, Wildlife Values, there are several important staging areas to the north of the mine site where large numbers of waterbirds congregate. Large numbers of waterbirds stage during spring at Nikabuna Lakes, Long Lake, and along the Chultina River, over 11 miles north of the mine site. Development of the project is not anticipated to impact spring migratory waterbird habitat in these distant areas. However, in the fall, high numbers of waterbirds are located directly adjacent to the mine site. Waterbirds are anticipated to move to other nearby ponds and lakes not directly in or adjacent to the mine site.

The avian response to habitat fragmentation is species-specific. Some species avoid edge habitat for reasons such as less suitable microclimate or increased predation. Some avian species prefer early successional habitats; habitat availability for these species may increase as a result of fragmentation. Some avian species, particularly raptors, would lose foraging habitat (due to lower

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prey abundance) as the vegetation communities in the mine site are converted to urban/developed land cover types. This could cause raptor species to seek new foraging locations, thereby potentially placing them in competition with nearby occupied territories. This may lead to fewer individual raptor territories in and adjacent to the mine site, reduced number of young, and decreased raptor abundance in the area. Based on the most recent surveys (detailed in Section 3.23, Wildlife Values), one golden eagle nest was located within a 1-mile radius of the mine site. According to the Bald and Golden Eagle Protection Act (Eagle Act)(16 United States Code Sections 668-668c), activities that result in nest-site abandonment constitute take under the Eagle Act since they are cited in the definition of "disturb" (Pagel et al. 2010). Disturb also extends to impacts that decrease eagle productivity by substantially interfering with normal breeding, feeding, or sheltering behavior (USFWS 2007). Therefore, both the direct impact of loss of foraging habitat, and indirect impacts, may necessitate the application for an Eagle Take Permit (USFWS 2016).

4.23.2.2 Terrestrial Wildlife

Behavioral Disturbance

Terrestrial mammals may be affected by blasting and noise from heavy machinery used during construction and operations. See Section 4.19, Noise, for detailed analysis of noise impacts. Individuals may move away from the construction zones to avoid loud continuous sounds, periodic percussive sounds, and the presence of people and machinery that would disrupt their normal behaviors. Behavioral responses to disturbance can range from mild "alert" behavior to fleeing, depending on disturbance type, distance, species, season, or other variables. The size of the "avoidance zone" would depend on the type of disturbance, terrain/topography, vegetative cover, as well as species' behavior, but could result in indirect loss of habitat for each species. Some species, such as moose (*Alces alces*) may habituate (i.e., adapt) to human disturbance, while others, such as gray wolves (*Canis lupus*) and brown bears (*Ursus arctos*), generally do not, and will avoid areas or move as people approach. Some facility noise and operations disturbances may allow for habituation. For example, lower level, continuous noise disturbance at the water treatment plant, would have lower effects than louder erratic sources of activity, such as blasting, vehicles or aircraft. The size of the area avoided would vary by species and would fluctuate over time, but would be larger than construction area footprints. Avoidance of project activities could cause increased physical stress, habitat fragmentation, or abandonment, thereby reducing survival and reproductive success for certain species.

Behavioral avoidance may function as a barrier to movement for some species (particularly small species with reduced home ranges and dispersal distances) or for particular sex and age classes within species. Physical features of the mine and port facilities, access roads, ferry terminals, steep cutbanks, holding ponds, material yards, or retaining walls may prevent or limit animal movements through the area. For species with large home ranges, or species that travel seasonally between winter and summer ranges, such as caribou (*Rangifer tarandus*), moose, brown and black bears (*Ursus americanus*), and gray wolves, a barrier to movement could fragment and decrease the size of preferred habitat. Traffic on the access road during the operations phase would be subject to speed restrictions, but would be a long-term, intermittent source of disturbance.

Project activities may disturb terrestrial mammals throughout construction and operations, with the disturbance zone expanding as the mine is developed to its maximum size. During the closure phase, the mine site would be subject to periodic monitoring activities involving small numbers of workers and vehicles for relatively brief periods of time. The potential disturbance of animals from these activities would be minimal and periodic.

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In addition to inhibiting movement patterns, high levels of disturbance could have effects that range from physiological reactions to stress, potential for injury and mortality from exposure to predators (including interspecific species competition) and from sub-optimal habitats, injury and mortality for denning mammals and small mammals in sub-nivean (under snow) spaces during winter construction, and reduced survivability and/or reproductive success in unfamiliar territories. Some species are particularly sensitive at certain times of year (e.g., caribou calving in spring, bear and wolf denning in winter, and moose rutting in fall). Ground-based activities would be the primary concern for most species, but airplane and helicopter traffic could also adversely impact certain species, such as caribou, which are known to react strongly to low-flying aircraft by fleeing.

If animals abandon their familiar territories or alter their movement patterns, they may enter the territories of other animals that aggressively defend their area, with the potential for injury or mortality. They may also be more susceptible to predation through lack of experience with local cover and escape terrain. Disturbance may also lead to mortality due to young separation or abandonment, or if the animal is injured trying to flee.

The Amakdedori port would also be a source of long-term disturbance due to vessel traffic, loading and unloading activities, and the presence of workers and vehicles. The disturbance zone around the port site would likely be much smaller than the area around the mine site due to a lack of explosives, smaller vehicles, and less frequent human presence.

Caribou

Various studies have been conducted on caribou behavior associated with development such as roads, oil drilling, pipelines, and mines. In Alaska, several studies on caribou have been conducted on the North Slope around Prudhoe Bay to document impacts from roads, oil drilling operations, oil pipelines, and other infrastructure. One study (Shideler 1986) found that maternal caribou groups avoided the Trans Alaska Pipeline corridor (including the Dalton Highway) during every season except fall, while bull caribou did not appear to avoid the corridor. Maternal groups almost completely avoided the Prudhoe Bay oil field during summer. Shideler found that traffic levels averaging 15 vehicles per hour caused significant declines in crossing success of caribou during the mosquito season; traffic levels averaging six vehicles per hour have not impacted crossing success of a road or pipeline complex. Multiple factors affect the ability of caribou to successfully cross a road including time of year, effects of mosquitoes and other insect harassment, and group size. Therefore, while the project transportation corridor is primarily east of the main use area of the Mulchatna caribou herd, the summer-only ferry variant would double vehicle traffic during a time that coincides with post-calving use of the mine site.

A study in the Canadian Arctic estimated the zone of influence (i.e., area of reduced caribou occupancy based on a change in behavior, habitat selection, and distribution relative to disturbance) surrounding two open pit mines in a caribou herd's summer range (Boulanger et al. 2012). During operation of the mines, an 8.7-mile zone of influence based on aerial surveys and a 6.8-mile zone based on satellite-collar locations were detected. The study found that caribou were approximately four times more likely to choose habitats greater than 8.7-miles from the mine complex (Boulanger et al. 2012). Caribou responded to industrial development at greater distances, possibly related to fine dust deposition from mine activities in areas of open tundra habitats. Therefore, in addition to avoiding the mine site facilities, caribou may avoid a 6.8- to 8.7-mile radius buffer around the mine site.

The Mulchatna caribou herd currently does not typically range in the area of the transportation and natural gas pipeline corridors. Caribou move between calving grounds (May to June), insect relief areas (June to July), and seasonal foraging areas (fall and winter months); however, none of these movements are through the transportation and natural gas pipeline corridors. They tend

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to occur further west (toward the mine site); 29 years of telemetry data that were analyzed found rare instances of caribou in the area covered by the transportation and natural gas pipeline corridors. Therefore, they are not anticipated to occur in large numbers in this area of the project, and may only be encountered on rare occasions. Therefore, no behavioral disturbance impacts on the population (such as shifting migration routes or patterns) are expected to occur.

Moose

Moose seasonally migrate between higher elevations in the summer, and lower elevations in the winter; bull moose move extensively during the fall rut (in September and October) as they search for cows. These movements may be affected by activities at the mine site, which may cause abandonment of foraging and rutting areas and alteration of movement routes. However, moose densities are low in the mine site due to a lack of suitable habitat; therefore, moose impacts would be anticipated to be low.

Moose are known to occur more commonly in the transportation corridor (due to higher quality habitat), and may be adversely affected during construction and operations; and to a lesser extent, after closure, because the roadway would remain open but the traffic level would be reduced. Laurian et al. (2008) found that moose avoid roads by up to 1,640 feet, which can fragment their available habitat. Shanley and Pyare (2011) studied the effect of roads on moose distribution in Yakatat, Alaska, and found that even dispersed vehicular activity on rural road networks significantly affects moose distribution. This activity could also substantially affect the amount of available habitat by moose avoiding areas near roads, particularly if roads are near preferred habitat. In particular, male moose were negatively impacted at least 1,640 feet from rural roads; for female moose, the road-effect zone extended greater than 3,281 feet (Shanley and Pyare 2011). Therefore, the extent of road avoidance by moose would be anticipated to be approximately 0.6 miles on either side of the road. The level of avoidance would vary depending upon time of day and actual vehicular traffic, and is likely to increase under the summer-only ferry variant, where vehicle traffic would be doubled during the summer. Possible reasons for the road effect may be related to actual vehicle noise, as well as perceived risk from hunting (Stankowich 2008). Stankowich (2008) found that ungulates in rural landscapes with low-levels of disturbance are less likely to habituate, and therefore show stronger effects from disturbance.

Bear

Brown and black bears may experience a range of potential impacts from the project. This includes loss of habitat due to land conversion, increased mortality from vehicular collisions and defense of life and property, and behavioral changes based on avoidance of humans. Since brown bears are common around all components of the project (see Section 3.23, Wildlife Values for specific bear densities), and black bears only occur at a low density in the area, this impacts section will focus primarily on impacts to brown bears.

Brown bears have been shown to avoid roads regardless of traffic volume (McLellan and Shackleton 1988), and may avoid mine facilities. McLellan and Shackleton found that most bears used habitat within 328 feet of roads less than expected, resulting in an additional 8.7 percent habitat loss. They found that roads and adjacent areas were used more at night and avoided during the day. Additionally, yearlings and females with cubs used habitats near roads more than other bears, likely because roads were avoided by adult male bears. However, some brown bears at a coal mine in Alberta, Canada have appeared to adapt to disturbance from the mine (Cristescu et al. 2016). Based on the study, female brown bears with cubs appeared most adaptable to mining disturbance (their home ranges overlapped with areas of active mining), while male brown bears appeared to leave the area during active mining. This study concluded that active mining influenced the incidence of encounters between male bears and females with cubs, which may

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increase the likelihood of cubs' survival while active mining is taking place. Once mining stopped and the area was restored, male bears appeared to return to the area, and females indicated some flight response (Cristescu et al. 2016).

In Denali National Park between 1996 and 1997, a study was conducted that compared brown bear, caribou, and moose densities in proximity to the gravel road in the park with backcountry areas (Yost and Wright 2001). Overall, brown bear and caribou distributions indicated no pattern of traffic avoidance, while moose distribution suggested possible traffic avoidance (confounded by preferred forage located farther from the road).

Roads can also cause functional habitat loss if bears avoid them. While roads can cause habitat avoidance, alter movement patterns, and become ecological traps, many of the negative effects of roads are related to human use of roads, and not the roads themselves (Northrup et al. 2012). In a study in Alberta, Canada, Northrup et al. (2012) found that traffic patterns caused a clear behavioral shift in brown bears, with increased use of areas near roads and movement across roads during the night, when traffic was low. Typically, brown bears in areas of low human population are most active during the day with no daily pattern of road use (Boyce et al. 2010); Northup et al. (2012) found that vehicular activity shifted these patterns. Bears selected areas near roads traveled by fewer than 20 vehicles per day, and were more likely to cross these roads, avoiding roads receiving moderate traffic (i.e., 20 to 100 vehicles per day). They strongly avoided high-use roads (i.e., more than 100 vehicles per day) at all times. The traffic on the transportation corridor roads is expected to be approximately 35 round trips per 14-hour work day (one truck passing in either direction every 12 minutes) during operations, and therefore bears may avoid crossing the mine access road, especially during daytime hours. Under the summer-only ferry variant, the number of truck trips on the access roads would double during the summer to 78 round-trip truck trips per 14-hour work day, or one truck passing in either direction every 5 minutes. Therefore, under this alternative, brown bears are more likely to avoid the transportation corridor roads, especially during the summer when road volumes are expected to be highest.

In summary, bear movement patterns around the mine site and along the transportation corridor would be impacted by the project. Some age and gender groups of bears may avoid the mine site, specifically during operations (such as adult male bears), and others may be less affected or become habituated to mine site disturbance. Vehicular traffic along the transportation corridor (in particular the south mine access road) is anticipated to alter movement patterns as there are currently no roads in the majority of the transportation corridor. Some bears may avoid the transportation corridor or shift their movement patterns during periods of increased vehicular use. The WMP would detail specific parameters to prevent disturbance to bears.

Gray Wolf

Gray wolves travel widely in pursuit of prey, using a variety of habitat types; however, gray wolves strongly avoid roadways and other areas with high levels of human activity (USFWS 2000; Person 2001) and may have a large avoidance zone around the mine site and access roads. As detailed in Chapter 3.23, Wildlife Values, low numbers of wolves were incidentally detected, and no wolf dens were detected in the mine site. Wolf behavior in the transportation corridor may be affected; either by avoiding the roadways or using them for travel (especially during the winter when roads are plowed/maintained). Overall, impacts to gray wolves would be anticipated to be low, due to overall low numbers of wolves in the area and their general avoidance of humans.

Small Terrestrial Vertebrates

Some small mammals present at the mine site at the beginning of construction are anticipated to vacate the area due to human presence. Other species may be attracted to the mine site, due to

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newly created shelter. Some individual small mammals and wood frogs (*Lithobates sylvaticus*) may be more susceptible to predation during the process of mine site development. Any habitat avoidance during construction and operations would be additive to the direct habitat loss at the mine site.

Some small mammals and wood frogs are expected to avoid the transportation and natural gas pipeline corridors and Amakdedori port due to loss of habitat, and resulting edge impacts (e.g., increased predation along edge habitats and habitat changes).

Injury and Mortality

Species may experience injury and mortality from a variety of sources such as habitat avoidance and food/territory competition, vehicular collisions, lethal removal due to defense of life and property, and increased access to areas for hunting. The potential for an increase in access for hunting from the transportation corridor is discussed in detail in Section 4.5, Recreation, and Section 4.9, Subsistence. The WMP will outline measures to reduce impacts to wildlife species including proper trash disposal, containment of wildlife attractants, defining speed limits on roads, and prohibition of hunting among others.

The main source of injury and mortality directly related to the project is the potential for wildlife strikes along the transportation corridor. Overall injury and mortality is not anticipated to occur at the mine site and Amakdedori port, and therefore it is not discussed herein. Injury and mortality on project roads would be greatest during construction when the road is built through previously undeveloped habitats. In the transportation corridor, 76 miles of gravel road would be constructed between the Amakdedori port and the mine site (including mileage from spur roads to Iliamna and Kokhanok). During operations, daily truck traffic is anticipated at 35 roundtrip truck trips per day during all seasons and on both sides of Iliamna Lake. Therefore, in a 14-hour work day, a vehicle will pass along the road every 12 minutes (i.e., five vehicles every hour). Under the summer-only ferry variant, the number of round-trip truck trips would increase to 78, and therefore a truck would pass every 5 minutes. A low speed on the gravel transportation corridor roads will be maintained for dust suppression and safety. While the WMP will outline ways to reduce the potential for wildlife mortality along the road, varying weather and seasonal conditions would likely cause periods of increased mortality for some species (such as increased moose mortality during winter months, and reduced bear mortality during hibernation).

Caribou

Caribou distribution around project components is detailed in Section 3.23, Wildlife Values. Caribou would not be anticipated to occur in large numbers in the vicinity of the mine site during construction and operations, would be anticipated occur as scattered individuals around Amakdedori port, and anticipated to occur uncommonly in the transportation and natural gas pipeline corridors. Caribou are likely to move away from areas of human activity during operations, especially during blasting. As detailed in Boulanger et al. 2012, caribou are likely to avoid a large area of habitat around the mine site due to behavioral disturbance; therefore caribou are not anticipated to occur within range during any blasting. The primary potential for injury or mortality is through vehicle collision while crossing roads in the mine site. A low speed limit at the mine site and regular presence of equipment, vehicles, and humans, would likely cause caribou to avoid the area altogether, which would reduce the potential for injury or mortality. Additionally, the WMP will outline vehicle restrictions for when caribou are adjacent to roadways to prevent injury and mortality.

Moose

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Moose are known to occur in the project area, and are at risk of vehicular collisions during construction and operations; and to a lesser extent, after closure because the roadway will remain open to local traffic.

The mine site contains low densities of moose due to less suitable habitat, compared to the habitat of the transportation and natural gas pipeline corridors. Moose sometimes feed near roads (often depending on shoulder vegetation management), and rest or travel along cleared roads during heavy snow conditions. They frequently cross roads when vehicles are present, and are often startled, running from one side to the other. This may cause cows to be temporarily separated from their calves, and increases their risk of injury or mortality through vehicle collisions when the animals try to reunite. Although construction vehicles typically travel at slower speeds that would reduce the risk of collisions, the potential for injury and mortality exists during all three project phases, especially at night or during other periods of poor visibility, and in winter when animals may use access roads to escape deep snow. Since most vehicles and equipment will be traveling at low speeds in the mine site, moose density is low, and the open, low-growing vegetation permits greater visibility, the potential for moose to be struck in the mine site is low. However, the transportation and natural gas pipeline corridors contain higher quality moose habitat. The vegetation is taller and dense, and vehicles will likely be traveling at higher speeds. Therefore, there is a greater potential for moose injury or mortality while crossing the 76 miles of road in the transportation corridor. This risk would be greatest during winter months and periods of low visibility. The summer-only ferry variant is likely to decrease the potential for moose collision, even though truck traffic will double, due to improved visibility for truck drivers during summer.

Bear

Across the species' range, one factor causing reduction in brown bear populations has been the availability of human access into brown bear habitat by roads built for resource extraction (Boulanger and Stenhouse 2014). One study in Alberta, Canada by Boulanger and Stenhouse (2014) attempted to estimate the direct demographic impact of roads on survival rates, reproductive rates, and other demographic parameters for brown bears. They found that sex and age class survival was related to road density with sub-adult bears being most vulnerable to road-based mortality. Additionally, females with young of the year and/or yearling cubs had lower survival rates compared to females with 2 year olds or no cubs (Boulanger and Stenhouse 2014).

Bears are at risk of vehicular collisions during construction and operations; and to a lesser extent after closure, because the transportation corridor would remain open, but the traffic level would be reduced. The south mine access road would remain in place for Kokhanok residents to travel to Amakdedori port.

The south mine access road is located in an area with high brown bear densities and occurs between Katmai National Park and Preserve and Lake Clark National Park and Preserve. Brown bears are common in the area, especially along coastal plains in the early summer, and then along salmon-spawning streams later in the summer and fall. Thus, bears are moving around in relation to available food resources. Bears would likely cross the south mine access road as part of their regular movement patterns, and would experience increased traffic with the summer-only ferry variant. As detailed above under "Behavioral Disturbance," brown bears in particular would likely avoid the transportation corridor during periods of high vehicular traffic. The number of bears that may potentially be injured or killed in the transportation corridor across the life of the project may demonstrate an initial increase, until bears become accustomed to the road. Overall, the impact from vehicle collisions would be anticipated to be low.

There is a potential for bear mortality due to defense of life and property. Bears that become habituated and frequent the mine site, ferry terminal vicinity, Amakdedori port, or other project

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locations, may become a safety risk. Implementation of a WMP is anticipated to minimize the potential for conflict between wildlife and humans. Additionally, the project will have a no hunting policy for non-local employees.

Gray Wolf

Similar to other large mammal species discussed above, the greatest risk to gray wolves from the project would be the potential for vehicular collisions. However, given the low abundance of wolves in the area, regulated speed limits on the access roads, and guidance provided in the WMP, the potential for injury and mortality to gray wolves would be anticipated to be low.

Small Terrestrial Vertebrates

Small mammal species have the potential for injury and mortality from a variety of sources, and impacts are often species-specific. Blasting and removal of rock and vegetation during construction and operations of the mine (including clearing and grubbing) may cause injury and mortality especially to small mammal and wood frogs that have limited abilities to move away or avoid heavy machinery. Some species may experience injury and mortality due to collisions with project vehicles, especially along the transportation and natural gas pipeline corridors. The number and frequency of vehicles on the mine access road would be high, especially while mine equipment and construction materials are delivered to the Amakdedori port and transported on the road. Given speed restrictions and the noise of heavy equipment moving along the road, the risk of injury or mortality due to collisions with some wildlife on the road may be reduced. The risk of injury and mortality from collisions with vehicles would be higher during limited visibility such as during the winter, twilight hours, and during inclement weather. When roads are icy, increased slowing and stopping distances, coupled with decreased visibility, may lead to increased mortality. Additionally, small mammals may experience increased predation from predatory species using the newly created edge habitat.

Habitat Changes

There would be permanent and long-term removal of vegetation in the mine site during construction and operations of the mine, which currently provides habitat for a variety of wildlife species. Project component acreages are provided in Chapter 2, Table 2-11 and highlighted in this section. Terrestrial wildlife species that use the mine site will experience a loss of 8,129 acres of breeding, foraging, summering, wintering, and dispersing habitat during construction and operations. Some of the large mammal species such as caribou, moose, bears, and gray wolves occupy the habitat in the mine site at varying densities and at different times of the year. A large portion of this habitat would be revegetated once the project is completed, and the species are anticipated to return over time as the vegetation and habitat mature to conditions suitable for each species. The open pit lake, at approximately 608 acres, and other project components that are not reclaimed and restored, would result in a permanent loss of habitat for all terrestrial species.

The Amakdedori port facilities would result in a loss of 14 acres of vegetation that support a variety of wildlife species. The port facilities would be removed during closure, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation.

Construction of the transportation and natural gas pipeline corridors would include the removal and conversion of 1,157 acres of vegetation to gravel roads, ferry terminals, and material sites. This habitat removal would be additive to that at the mine site and Amakdedori port; post-closure the roads would remain in place.

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Changes in vegetation communities are discussed in Section 4.26, Vegetation. These changes would affect the availability and quality of habitat for terrestrial wildlife in the immediate project area, during both construction and operations, and potentially post-closure. Although affected habitat would not be directly lost (apart from habitat converted to open water, such as the pit lake), it may be become less suitable, and may cause displacement of individuals to more suitable habitat.

Caribou

As described previously in Chapter 3.23, the mine site is in the historical range of the Mulchatna caribou herd. While the mine site does not appear to be currently used by the herd for calving, the habitat in the mine site may be used by the herd during the post-calving summer period. Traditional ecological knowledge of the Mulchatna caribou herd identified areas of caribou concentration, which has shifted over time from the eastern portion of the range (1960-1979) to the west during the 1990s (Lanen 2018). During the mid-1990s when the Mulchatna herd had reached its peak population, the herd expanded its range north and west. At the same time, the herd shifted away from the project area. The Mulchatna caribou herd may shift back toward its traditional calving areas at some point in the future, which are closer to the mine site. Therefore, construction and operations of the mine site would represent a loss of 8,129 acres of post-calving summer habitat. In addition to direct removal of habitat, per Boulanger et al. 2012, caribou avoided area radius of 6.8 to 8.7 miles around an active mine in Alberta, Canada. This area of avoidance is considered habitat that may not be used due to behavioral disturbance. With a conservative approach, an 8.7-mile buffer around the mine site corresponds to a total avoidance area of approximately 291,313 acres.

Loss of habitat from development of Amakdedori port and the transportation and natural gas pipeline corridors represent habitat that is not currently used extensively by caribou.

Moose

As detailed in Section 3.23, moose density is low in the project area (i.e., 0.01 moose per square mile)(ABR 2011a). Moose density in the transportation and natural gas pipeline corridors is slightly higher at an estimated 0.02 moose per square mile (for areas around Iliamna Lake). Given the low density of moose throughout the project area, the combined acreage of direct habitat removal from all project components (9,300 acres) would have a low impact on moose.

Bear

The loss of approximately 9,300 acres of habitat from construction and operations of the project (including the mine site, Amakdedori port, ferry terminals, and transportation and natural gas pipeline corridors) would likely displace a few individual brown bears that use the habitat for foraging as part of their home range. These individual bears would be anticipated to use the surrounding habitat, although they may encounter increased competition with other bears. Brown bears are not evenly distributed throughout the landscape and are concentrated around resources such as high quality vegetation sources (sedges, grasses, berry sources) and salmon-spawning streams. Density estimates from a bear population survey in May 2009 ranged from 47.7 to 58.3 brown bears per 386 square miles (Becker 2010). Given the brown bear density estimate and the acreage of habitat that would be removed by the project, habitat would be lost for a few brown bears. This estimate is based entirely on direct habitat removal, and additional brown bears would likely avoid areas around the project. A large portion of the project would be restored following closure of the mine; therefore, the actual amount of long term habitat loss would be less.

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Brown bears congregate along salmon-spawning streams seasonally and may avoid locations or alter foraging patterns where the transportation corridor crosses the stream. The indirect loss of this habitat may force bears into adjacent suitable habitat, potentially causing competition with other bears, which may result in injury or mortality to displaced bears. However, time-lapse wildlife cameras at the location where the transportation corridor crosses Upper Talarik Creek revealed that brown bears spent little time fishing at that specific location (ABR 2015a).

The project area is generally considered low-quality habitat for black bears, and the loss of habitat would be anticipated to have little effect on the species.

Gray Wolf

Several individual gray wolves were detected dispersed across the project area over multiple years, but no packs of wolves or dens were detected in the mine site (ABR 2011a). This is likely correlated to the low numbers of caribou and moose in the project area. Therefore, the loss of habitat from the project is expected to have minimal impact on gray wolves in the area, which are likely to continue to forage in the surrounding habitat.

Small Terrestrial Vertebrates

As detailed in Chapter 3.23, Wildlife Values, multiple smaller mammalian species such as coyotes (*Canis latrans*), red foxes (*Vulpes vulpes*), river otters (*Lontra canadensis*), wolverines (*Gulo gulo*), beavers (*Castor canadensis*), and others were found throughout the project area. There are additional mammal species that are not considered "furbearers," and are known to occur in the project area. This includes hoary marmot (*Marmota caligata*), arctic ground squirrel (*Spermophilus parryii*), snowshoe hare (*Lepus americanus*), tundra hare (*Lepus othus*), collared pika (*Ochotona collaris*), and various species of mice, lemmings, shrews, voles, and wood frogs. These species would experience a direct loss of habitat during construction and operations of the mine. Some of the habitat would be restored and likely repopulated by these species, but the pit lake would remain a permanent loss of habitat.

4.23.2.3 Marine Mammals

Potential impacts specific to construction, operations, and reclamation activities of the mine site, transportation corridor across Iliamna Lake, Amakdedori port, and the natural gas pipeline corridor across Cook Inlet are described in the following sections. The project has the potential to directly and indirectly impact marine mammal populations through behavioral disturbance and habitat changes, as detailed in the following sections. Injury and mortality of marine mammals would not be anticipated to be significant factors as a result of any of the components of the proposed project.

Impacts as a result of the construction and operations of the proposed mine site would not be expected for marine mammals. Project sources of noise, which may disturb the behavior of marine mammals in project component areas include vessels used during installation of the natural gas pipeline across Iliamna Lake and Cook Inlet from Kamishak Bay to Nikiski and associated vessel traffic; pile driving and other construction noise associated with the construction of the Amakdedori port, ice breaking to conduct barging operations across Iliamna Lake, and aircraft used during construction and operations.

Project components most likely to impact marine mammals are the marine and freshwater portions of the transportation corridor, which would involve near and offshore vessel activity across Iliamna Lake and Cook Inlet, and the construction of the Amakdedori port. In this section, species-specific potential impacts are discussed by project component, if information is available. Potential impacts from oil or another substance spill are discussed in Section 4.27, Spill Risk.

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Noise sources described in Section 3.23, Wildlife Values, for non-listed marine mammals are the same for listed marine mammals. Potential environmental consequences to threatened and endangered species are discussed in Section 4.25, Threatened and Endangered Species. Where available, species-specific information is discussed regarding potential impacts from published literature, otherwise potential impacts to all marine mammals are discussed.

Behavioral Disturbance

Underwater and Airborne Noise

The effects of underwater and airborne sound from industrial activities on marine mammals might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical effects (Richardson et al. 1995). See Section 4.19, Noise, for detailed analysis of noise impacts.

Anticipated sources of noise include vessels used during installation of the natural gas pipeline in Iliamna Lake and Cook Inlet; anchor handling operations associated with natural gas pipeline construction, construction noise associated with the Amakdedori port and ferry terminals on Iliamna Lake; vessels used in the transportation corridor across Iliamna Lake, which includes the need to break ice during mining operations; and aircraft during construction and operations. A variant includes operating the ferry for 6 months during summer. The east Kokhanok ferry terminal variant includes moving the ferry terminal to the east of Kokhanok, which may bring ferry operations closer to areas where the harbor seals that inhabit Iliamna Lake are more regularly observed. The pile-supported dock variant under Alternative 1 includes pile driving a dock structure instead of using a solid fill dock.

Vessel and aircraft noise generally does not exceed thresholds that may result in injury, but pile-driving noise may exceed injury thresholds. A detailed discussion on project noise is presented in Appendix K4.25; there are no seal haul-out sites in range to exceed airborne thresholds.

The magnitude of the impact from underwater noise from construction, operations, and reclamation activities of the mine site, transportation corridor, Amakdedori port, and the natural gas pipeline corridor across Cook Inlet and Iliamna Lake on non-threatened and endangered marine mammals would be expected to be minimal with the anticipated implementation of industry-standard mitigation measures required through required Marine Mammal Protection Action (MMPA) permitting. The extent to which project noise would be audible depends on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and sensitivity of the receptor (Richardson et al. 1995).

However, project activity noise would be expected to be localized, and only affect the area in the immediate vicinity of project activities. Noise from ice-breaking operations in Iliamna Lake could displace harbor seals from overwintering sites. During periods when Iliamna Lake is covered in ice, seals may access dry platforms for hauling-out, and air spaces for breathing by exploiting air pockets that develop along shorelines when the water levels drop (Burns et al. 2016). In winter months when ice breaking would occur, seals have historically been located on the eastern portion of the lake, east of an imaginary line between Kokhanok and Newhalen, where small areas of water can remain open (Burns et al. 2016). Should the summer-only ferry operations variant be implemented, ice breaking will not occur and therefore would have no effect on overwintering seals in Iliamna Lake. The pile-supported dock variant would produce more noise into the water than constructing a solid fill dock. The duration of time that marine mammals may be exposed to underwater sound would be short-term and temporary during pipeline installation, dredging, and construction activities, and from vessel traffic during mine operations. Exposure is only expected when seasonal distribution and habitat selection overlap in time and space with in-water project

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activities. Further MMPA permitting will define likely impacts from noise on marine mammal species.

Physical Presence (Vessel and Aircraft)

Impacts from physical presence can occur either from increased vessel traffic or newly erected human-made structures. Sources of physical presence include vessels used during installation of the natural gas pipeline in Iliamna Lake and across Cook Inlet from Kamishak Bay to Nikiski; in-water construction associated with the development of Amakdedori port and the ferry terminals; vessels used throughout the transportation corridor (across Iliamna Lake and Cook Inlet); and aircraft and vessels during construction and operations.

The physical presence of low-flying aircraft can disturb marine mammals, particularly individuals resting on the sea surface (reviewed in BOEM 2012). Observations made from low-altitude aerial surveys report that the behavioral responses of marine mammals are highly variable, ranging from no observable reaction to diving or rapid changes in swimming speed or direction (Smultea et al. 2008). Helicopter traffic may result in temporary behavioral responses.

Reactions of marine mammals to vessels often include changes in general activity (from resting or feeding to active avoidance), changes in surfacing-respiration-dive cycles, and changes in speed and direction of movement (NMFS 2013). Because there is existing oil and gas infrastructure in Cook Inlet, as well as numerous shipping routes and large amounts of vessel traffic, it is unlikely that the addition of physical presence as part of this project would change marine mammals' behavioral patterns.

Minke whales have been observed to avoid boats when approached, and approach boats when they are stationary (Richardson et al. 1995). Minke whales are thought to react similarly to baleen whales, namely the humpback and fin whales, discussed in Section 4.25, Threatened and Endangered Species. Harbor porpoises often rest at the surface, and their reaction to boats can be strong within 1,300 feet (Polachek and Thorpe 1990) out to 10.9 miles (Palka 1993). Harbor porpoises have often been seen changing direction in the presence of vessel traffic (Richardson et al. 1995). Avoidance has been documented up to 1 mile away from an approaching vessel, but the avoidance response is strengthened in closer proximity to vessels (Palka 1993). Collisions with vessels associated with the project would not be expected to occur, and are not known to have occurred in lower Cook Inlet to date.

The distances at which harbor seals were disturbed and the level of disturbance (e.g., detection, alarm, and harassment) varied by region, type of vessel, and vessel speed. The presence and movements of ships in the vicinity of seals can cause disturbance to harbor seals' normal behaviors (Jansen et al. 2010), and could potentially cause seals to abandon their preferred breeding habitats in areas with high traffic (Reeves 1998). Depending on circumstance, seals may not respond at all to vessel traffic, or may respond by deflection from the noise source, avoidance behavior, short-term vigilance behavior, or short-term masking behavior (NMFS 2015). Harbor seals hauled-out on mudflats have been documented returning to the water in response to nearing boat traffic (Richardson et al. 1995). Vessels that approach haul-outs slowly may also elicit alert reactions without flushing from the haul-out; small boats with slow, constant speed elicit the least noticeable reactions (Richardson et al. 1995). However, in Alaska specifically, harbor seals are documented to tolerate fishing vessels with no discernable reactions, and habituation is common (Johnson et al. 1989). Overall, vessel noise does not seem to strongly affect pinnipeds that are in the water (Richardson et al. 1995).

Impacts from physical presence of vessels or construction equipment on marine mammals are expected at some level of intensity. Cook Inlet has historical and current high use from fishing- and tourism-related vessel traffic, and the incremental addition of vessels associated with the

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project would be unlikely to result in increased impacts to marine mammals. The construction of the natural gas pipeline and later operations of the proposed ferry across Iliamna Lake may initially cause some disturbance of harbor seals occurring in the immediate area; however, harbor seals are known for vessel tolerance (Richardson et al. 1995). Thus, whereas impacts are expected at some level of intensity to harbor seals inhabiting Iliamna Lake, they are not expected to have a detrimental effect on the species. Also, as discussed under "Underwater and Airborne Noise," above, harbor seals inhabiting Iliamna Lake are most commonly observed on the eastern side of the lake, east of an imaginary line between Kokhanok and Newhalen, and therefore east of the natural gas pipeline and transportation corridor. If the Kokhanok east ferry terminal variant is chosen, the ferry terminal would be moved to the east of Kokhanok and closer to areas where harbor seals that inhabit Iliamna Lake are more regularly observed. The extent that physical presence would occur is expected to be local, and only affect the area in the immediate vicinity of the project activity. The duration that marine mammals may be exposed to vessel presence would be temporary during pipeline installation and construction activities, but would result in permanent increase in physical presence from the operations of the ferry across Iliamna Lake. However, vessels associated with activities would have a transitory presence in any specific location with a likely limited effect on marine mammals, because marine mammals typically avoid known high-vessel areas.

Impacts from the physical presence of aircraft on marine mammals would be expected at some level of intensity. The project area has a high volume of small aircraft, and the incremental addition of aircraft is unlikely to be detected by marine mammals. The duration that marine mammals may be exposed to aircraft presence is temporary, because aircraft support is expected to be intermittent and of short duration. Based on the short duration of potential exposure to aircraft-related noise and visual disturbance at any given location when the aircraft passes over, it is expected that effects on marine mammals would be limited to brief behavioral responses. The potential of impacts is unlikely, because aircraft presence is expected to occur infrequently. Any potential impacts on marine mammal behavior would be localized in the project area, and would not result in population-level effects. If any responses of marine mammals associated with aircraft were to occur, they would likely be of short duration.

Injury and Mortality

Vessel Collision

Marine mammal species are vulnerable to collisions with moving vessels (Pace 2011). There would be increased vessel traffic through Cook Inlet from Kamishak Bay to Nikiski as well as through Iliamna Lake as a result of the proposed project components, and therefore a greater possibility of vessel strikes of marine mammals. Between 1999 and 2003, the California Stranding Network reported only one ship strike of a gray whale in Alaska (Allen and Angliss 2012). No collisions of gray whales with vessels have been reported in Cook Inlet. The majority of the gray population migrates outside of the project area, and those individuals that do occur in lower Cook Inlet would be expected to avoid vessels. There have been three reports of whale-vessel collisions in Alaska waters between 1978 and 2011 (Neilson et al. 2012), but none have been reported in lower Cook Inlet. In rare instances, killer whales have been injured or killed by collisions with passing ships and powerboats, primarily from being struck by the propeller blades (Carretta et al. 2004).

Impacts to marine mammals as a result of injury or mortality from vessel collision would not be expected; therefore, the extent and duration that injury or mortality would occur is not included in this analysis.

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Habitat Changes

Habitat alteration, turbidity, and discharge from routine activities may impact prey species. Turbidity may affect the prey species distribution and diversity, as well as the ability of marine mammals to locate prey in the immediate area of the project activity. The effects of habitat alteration would not be expected to impact gray or minke whales, because gray whales are not expected to feed in the project area, and minke whales are not found in great concentrations. Impacts to killer whales from habitat alteration include the reduction of prey availability, but the area affected over time is too limited to have adverse effects to populations of fish and shellfish in the project area. Habitat alteration would be limited over time, and would not have adverse effects to populations of fish and shellfish prey of Dall's or harbor porpoises.

Development of onshore support facilities might displace a small number of harbor seals near the Amakdedori port and the south ferry terminal site (in Iliamna Lake and Kamishak Bay), as well as the proposed variant to the transportation corridor, which involves construction of the ferry terminal to the east of Kokhanok, but would not have measurable effect on local populations. Localized, temporary habitat alteration should not affect harbor seals, because the animals are highly mobile and feed near river mouths. Harbor seals have not been documented feeding at the mouth of Amakdedori Creek.

Impacts from habitat alteration as a result of construction activities on marine mammals are expected at some level of intensity. Impacts to marine mammals from habitat alteration as a result of mining or reclamation operations at the mine site would not be expected. These effects should be consistent with, or less than, what is currently occurring throughout Cook Inlet. The extent that habitat alteration would occur is expected to be local, and only affect the immediate area around the south ferry terminal and Amakdedori port during construction. Potential effects from seafloor disturbance are likely to limit the foraging quality of the disturbed area during construction. Direct habitat loss would result from the construction of the south ferry terminal in Iliamna Lake and Amakdedori port in Kamishak Bay under Alternative 1 and the pile-supported dock variant. The duration that marine mammals may be exposed to habitat alteration from construction would be temporary, because habitat alteration activities would be of short duration, and possibly for a few years afterward in some locations. The duration that marine mammals may be exposed to habitat loss from development of Amakdedori port and the south ferry terminal would be permanent. The amount of habitat affected in the project area would be small compared to that available to marine mammal species for foraging.

4.23.3 Action Alternative 2 – North Road and Ferry

Impacts to wildlife from the mine site are discussed previously under Action Alternative 1 and not reiterated here. Under this alternative, the mine site footprint would be approximately 115 acres larger than Action Alternative 1. From a wildlife perspective, the primary difference with Action Alternative 2 is the geographical shift of the transportation and natural gas pipeline corridors to the north above Iliamna Lake, and the Diamond Point port. Impacts that may occur to wildlife species along Action Alternative 2 transportation and natural gas pipeline corridors are discussed below.

4.23.3.1 Birds

Impacts to birds that occur along the transportation and natural gas pipeline corridor would be similar to Alternative 1, but located along the northern shore of Iliamna Lake. These include a loss of foraging and nesting habitat as a result of construction, increased potential for injury and mortality along the road, behavioral disturbance due to increased noise and other edge effects associated with a road. The main difference is that the Diamond Point port is located in an area

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that provides important migratory bird stop-over habitat (especially for shorebirds), important summering and wintering habitat for a variety of waterbirds, and an important nesting area for several species of seabirds.

Behavioral Disturbance

As discussed in Section 3.23, Wildlife Values, there are several golden eagle nests located along the Williamsport-Pile Bay Road, one peregrine falcon nest at Diamond Point, a bald eagle nest located in the Diamond Point barge dock cut and fill area, and bald and golden eagle nests in the valley between Ursus Cove and Cottonwood Bay. Construction of the transportation corridor to Diamond Point, and construction of the port will likely cause disturbance through increased noise (particularly if blasting is needed to construct the road) and increased human presence. The greatest source of disturbance would occur during road construction since there is currently no road to Diamond Point. Disturbance to any golden eagle or bald eagle nest would likely involve coordination with the US Fish and Wildlife Service, and possibly an Eagle Take Permit (USFWS 2016).

Additional impacts to avian species may occur through noise and physical presence of vessels near the mouths of Iliamna and Iniskin bays, where multiple seabird species (e.g., gulls, cormorants, and puffins) nest on adjacent cliffs, rock outcrops, and small islands. The increase in vessel traffic would likely cause disturbance to birds molting, wintering, feeding, resting, and migrating through Iliamna and Iniskin bays. In particular, the protected Iliamna and Iniskin bays provide sheltered feeding and wintering habitat for a variety of waterbirds (especially scoter species). Vessel traffic would likely cause species to swim away, fly, dive, or otherwise avoid approaching vessels. Since vessel speeds would be low in the bays, birds would likely avoid approaching vessels and the impact would be anticipated to be low.

Injury and Mortality

There would be potential for avian mortality along the transportation corridor while flying between patches of habitat bisected by the road. Since the transportation corridor along the northern shore of Iliamna Lake includes large portions of forested habitats, the avian species that may be impacted include warblers, thrushes, waxwings, sparrows, finches, kinglets, flycatchers, woodpeckers, and others that use those types of habitats. There may be increased predation from predatory species along the road due to increased visibility and clear flight path along the road edge.

There is increased potential for bird collisions during inclement weather in Iliamna and Iniskin bays, especially if lights are used on the lightering vessels. As detailed in Section 4.25, Threatened and Endangered Species, some waterbird species such as eiders have a potential to collide with stationary objects, especially if illuminated by lights at night during inclement weather. Therefore, there would be potential for vessels moored at the lightering location to pose a collision hazard to birds in Iniskin Bay. The lightering location is near the mouth of Iniskin Bay, and the local topography creates narrow passage at the mouth where there would be increased potential for avian collisions.

Habitat Changes

Loss of habitat from construction of the transportation and natural gas pipeline corridors would occur primarily in forested habitat types to the north of Iliamna Lake. There is suitable habitat adjacent to the transportation corridor that species may disperse to; however, loss of some individual territories may occur. Overall impacts from habitat changes are anticipated to be

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minimal due to the relatively narrow nature of the transportation corridor and presence of nearby suitable habitat.

4.23.3.2 Terrestrial Wildlife

Impacts to terrestrial wildlife from the mine site under Action Alternative 1 would be similar and not repeated here. The primary difference would be the impact to wildlife from the transportation and natural gas pipeline corridors along the northern part of Iliamna Lake. This area is forested compared to the mine site, and therefore has a lower abundance and distribution of caribou, and a higher population of moose and black bears. Overall, the abundance of caribou from Newhalen east to Cook Inlet along the transportation and natural gas pipeline corridors would be low (due to a lack of suitable caribou habitat); therefore, impacts to caribou are not expected from the transportation and natural gas pipeline corridors of Action Alternative 2 and not discussed herein. Impacts to moose, brown and black bears, gray wolves, and other terrestrial wildlife are primarily related to increased noise, vehicular traffic, increased human interaction, and loss of habitat (both directly through vegetation removal, and avoidance of areas near the transportation and natural gas pipeline corridors). Therefore, these species are discussed collectively. Additionally, potential impacts to terrestrial wildlife from the port at Diamond Point would be expected, since the habitat is primarily rocky coastline that is not suitable habitat for most terrestrial wildlife species.

Impacts to small mammal species and wood frogs would be similar to those detailed under Action Alternative 1 and are not repeated here. Impacts would be primarily related to loss of habitat, increased potential for injury and mortality along the access road, and increased edge effects. These impacts would be anticipated to be localized around the access road, impact species with home ranges that overlap the road, and impact dispersing individuals (e.g., juveniles seeking new territories, or males in search of mates).

Behavioral Disturbance

Wildlife would be anticipated to avoid the transportation and natural gas pipeline corridors as a result of vehicular traffic in an area that currently has no established roads (apart from the existing Williamsport-Pile Bay Road). Moose have been known to avoid roads by up to 1,000 feet, and bears would be anticipated to alter feeding patterns in salmon-spawning streams adjacent to the transportation and natural gas pipeline corridors. Traffic volumes, at 35 round-trip truck trips per day (one vehicle every 12 minutes) would be anticipated to temporarily disturb wildlife while vehicles are passing. The summer-only ferry variant would double traffic during the 6 months that the ferry is in operation, and therefore a vehicle would travel the road approximately every 5 minutes, which would result in greater avoidance of the road. The summer-only ferry variant would have lower impacts on moose because fewer moose might be struck on the road during winter (due to lower traffic volumes), but the increased traffic may cause road avoidance in bears.

Injury and Mortality

Since the transportation and natural gas pipeline corridors roughly parallel to the north shore of Iliamna Lake, wildlife that follow the various creek and stream drainages the flow towards Iliamna Lake would intersect the access road. While fish passage structures would permit some wildlife to pass underneath the road along anadromous streams, other wildlife may cross the road while moving to and from Iliamna Lake. The elevated road prism, regulated speed limit, and WMP are designed to minimize wildlife injury and mortality. Increased moose densities along several of the creek and river drainages that flow into Iliamna Lake, along with increased black bear density, may result in increased wildlife injury and mortality compared to Action Alternative 1.

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Habitat Changes

Construction and operations of the transportation and natural gas pipeline corridors will result in loss of wildlife habitat detailed in Chapter 2, Table 2-11. Habitat removal may result in edge effects, such as wildlife traveling along the road in winter (especially if the road is plowed), dust accumulation of surrounding vegetation, changes in plant phenology due to earlier spring melt in vegetation along the road prism, and other vegetation changes that directly affect foraging habitat for several mammal species.

4.23.3.3 Marine Mammals

A discussion of the affected environment for marine mammals is presented in Section 3.23, Wildlife Values. Marine mammals would generally be expected to occur in the same densities throughout the marine environment analyzed and all impacts would be anticipated to be the same for the proposed alternatives. The exception would be the temporary modification of habitat resulting from an increase in turbidity and water quality during construction activities. Increased turbidity may potentially have impacts on marine mammal prey. The transportation corridor crossing Iliamna Lake would be longer under Action Alternative 2, potentially increasing interaction with harbor seals that inhabit Iliamna Lake. Likewise, the location of the north and south ferry terminal locations presented in Action Alternative 2 would be closer to areas where harbor seals are more commonly observed in Iliamna Lake (see Section 3.23, Wildlife Values, Figure 3.23-7). The transportation corridor component of Action Alternative 2 includes the summer-only ferry operations variant, which would limit ferry use to 6 months in the summer, resulting in less likelihood for impacts to harbor seals that overwinter in Iliamna Lake. The natural gas pipeline route presented in Action Alternative 2 would be shorter and impact fewer acres than that proposed for Action Alternative 1. Therefore, impacts to marine mammals would be anticipated to be low.

4.23.4 Action Alternative 3 – North Road Only

Direct and indirect impacts to wildlife species from Action Alternative 3 are similar to Action Alternatives 1 and 2, except there would be no ferry in Iliamna Lake, and the length of the road associated with the transportation corridor would be 82 miles. This all-road option for the transportation corridor would increase the amount of permanent habitat loss (1,085 acres of habitat loss) and increase the potential for vehicular collisions.

Anticipated wildlife impacts from Action Alternative 3 variants include habitat loss from the concentrate pipeline pump house (1 acre located in the mine site), booster station (0.7 acre), and a slight increase in the transportation and natural gas pipeline corridors' width by 3-feet to accommodate the concentrate pipeline and return water pipeline. Under the concentrate pipeline variant, the number of round-trip truck trips would be greatly reduced, with a potential reduction in wildlife injury and mortality along the transportation corridor.

Action Alternative 3 would have no ferry in Iliamna Lake; therefore, there would be no impacts to Iliamna lakes seals from the project. All other impacts to marine mammals would be anticipated to be the same as Action Alternative 2.

4.23.5 Summary of Impacts

The project is anticipated to have a wide variety of potential impacts to terrestrial wildlife, birds, and marine mammals. Table 4.23-1 summarizes the key issues for wildlife resources from Alternatives 1, 2, 3, and their variants.

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Table 4.23-1: Summary of Key Issues for Wildlife Resources

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Behavioral changes	Avoidance of the mine site by the majority of terrestrial wildlife and bird species, especially during construction and operations. N/A for marine mammal species	Same as Alternative 1	Same as Alternative 1
Injury and mortality	During construction, and less so during operations, some terrestrial wildlife and bird species unable to move out of harm's way may be crushed during initial site clearing. Potential for bears to be killed in defense of life and property. N/A for marine mammal species	Same as Alternative 1	Same as Alternative 1
Habitat changes	Loss of 8,129 acres of habitat and 8,167 acres with the summer only ferry operations variant. Additional terrestrial wildlife avoidance of surrounding habitat. Potential water quality degradation due to turbidity from runoff.	Loss of 8,248 acres of habitat and 8,286 acres with the summer-only ferry operations variant. Additional terrestrial wildlife avoidance of surrounding habitat. Potential water quality degradation due to turbidity from runoff.	Loss of 8,130 acres of habitat. Potential water quality degradation due to turbidity from runoff.
Transportation Corridor			
Behavioral changes	Terrestrial wildlife avoidance due to increased noise, vehicle, and human presence. Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels over 18 miles of travel and aircraft may displace harbor seals that inhabit Iliamna Lake.	Same as Alternative 1. Physical presence of vessels over 29 miles of travel and aircraft may displace harbor seals that inhabit Iliamna Lake.	Same as Alternative 1.
Injury and mortality	Potential for terrestrial wildlife collisions with vehicles across 76 miles of road. Summer-only ferry operations variant may increase collisions	Potential for terrestrial wildlife collisions with vehicles across 54 miles of road. Summer-only ferry operations variant may increase collisions	Potential terrestrial wildlife collisions with vehicles across 82 miles of road.

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Table 4.23-1: Summary of Key Issues for Wildlife Resources

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	for species such as brown bears. Kokhanok east ferry terminal variant would increase total length of road and potential for collisions. Potential for harbor seals that inhabit Iliamna Lake to collide with vessels during construction and operation over 18 miles of travel across Iliamna Lake.	for species such as brown bears. Potential for harbor seals that inhabit Iliamna Lake to collide with vessels during construction and operation over 29 miles of travel across Iliamna Lake.	
Habitat changes	Loss of 916 acres of terrestrial wildlife and bird habitat. Additional terrestrial wildlife avoidance of surrounding habitat. Kokhanok east ferry terminal variant would increase habitat loss. Small loss of habitat around ferry terminals for harbor seals in Iliamna Lake. Potential impacts to prey species as a result of turbidity and discharge from construction and routine operations.	Loss of terrestrial wildlife and bird habitat, acreage currently unknown. Additional terrestrial wildlife avoidance of surrounding habitat. Small loss of habitat around ferry terminals for harbor seals in Iliamna Lake. Potential impacts to prey species as a result of turbidity and discharge from construction and routine operations.	Loss of 1,085 acres of terrestrial wildlife and bird habitat. Additional habitat loss from concentrate pipeline variant. Additional terrestrial wildlife avoidance of surrounding habitat.
Port			
Behavioral changes	Terrestrial wildlife avoidance of area. Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may displace marine species.	Same as Alternative 1.	Same as Alternative 1.
Injury and mortality	Potential for terrestrial wildlife to be killed in defense of life and property. Potential for bird species to collide with port infrastructure, vessels, and bulk carriers at lightering locations.	Same as Alternative 1.	Same as Alternative 1.
Habitat changes	Loss of 14 acres of bird and terrestrial wildlife habitat under the	Loss of 27 acres of terrestrial wildlife habitat. Loss of 76 acres of	Loss of 27 acres of terrestrial wildlife habitat. Loss of 76 acres of

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Table 4.23-1: Summary of Key Issues for Wildlife Resources

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	preferred alternative and an additional 27 acres under the summer-only ferry operations variant. Loss of 10.5 acres of benthic marine foraging habitat with an earthen causeway port and 0.07 acre of marine habitat loss with a pile supported dock.	benthic marine foraging habitat with an earthen causeway port and 57.2 acres of marine habitat loss with a pile supported dock.	benthic marine foraging habitat.
Natural Gas Pipeline			
Behavioral changes	Underwater noise may exceed injury thresholds as defined by regulatory agencies. Physical presence of vessels and aircraft may displace marine species.	Same as Alternative 1.	Same as Alternative 1.
Injury and mortality	Potential for bird species to collide with vessels during construction.	Same as Alternative 1.	Same as Alternative 1.
Habitat changes	446 acres of disturbed habitat from pipe lay activities.	Acreage of disturbed habitat has not been determined from pipe lay activities.	Similar to Alternative 2.

Note: Acres and miles derived from Table 2-11.

4.23.6 Cumulative Effects

4.23.6.1 Terrestrial Wildlife and Birds

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to impacts on terrestrial mammals. This includes species with large home range sizes such as caribou, moose, bears, and wolves, in addition to smaller-bodied species with more restricted home range sizes. The potential future actions are similar to the proposed project in how they could impact terrestrial wildlife through habitat loss and alteration, disturbance from construction and operations activities, collisions with vehicles, altered predator-prey relationships, and increased/altered subsistence and recreational hunting, among others.

The following RFFAs identified in Section 4.1 were carried forward in this analysis based on their potential to impact terrestrial wildlife in the analysis area:

- Pebble Project buildout- develop 55 percent of the resource over 78-year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*
- Donlin Gold

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- Diamond Point Rock Quarry
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure and Energy Projects

**Indicates exploration activities only.*

The most important potential future actions included in this analysis are those that contribute to the cumulative loss of habitat for terrestrial wildlife, such as avoidance of areas that are noisy or have increased human presence. Habitat loss for raptors, waterbirds, landbirds, and shorebirds would contribute to the global decline of many avian species. Loss of habitat or habitat fragmentation for wide-ranging species, such as caribou, may occur through the creation and expansion of new roads into calving areas and other critical life stage areas. New active mining projects in the range of the Mulchatna caribou herd may cause the herd to shift locations at critical times or seek out new foraging areas, thus reducing overall fitness. New roads, gas lines, and other infrastructure features may cause habitat fragmentation or avoidance of insect-relief habitat. Moose may be more prone to vehicular collisions while crossing new roads and may avoid areas of high quality forage habitat in close proximity to roads. Additional development may alter predator-prey relationships through increased levels of certain predators, such as red foxes. Bear species may have altered foraging locations and have increased mortality through the killing of bears for defense of life and property.

4.23.6.2 Marine Mammals

The following past, present, and reasonably foreseeable future actions were carried forward in this analysis based on their potential to impact marine mammals in Cook Inlet:

- Johnson Tract
- Diamond Point Rock Quarry
- Alaska Stand Along Pipeline Project / Alaska LNG (one or the other, project would be developed based on funding)
- Drift River Oil Pipeline Transportation Project
- Cook Inlet Oil and Gas Lease Sales
- Lake and Peninsula Borough and other regional Renewable Energy Initiatives
- Commercial, Sport and Subsistence Fishing
- Subsistence Activities
- Scientific Surveys and Research

Potential types of effects on marine mammals from the above include:

- Air and marine noise
- Behavioral disturbance of marine wildlife
- Marine mammal displacement from habitat alteration
- Resource consumption
- Bottom sediment disturbance

The important potential future actions included in this analysis are based on the spatial and temporal overlap of activities on marine mammals. Some potential future actions will increase exposure to marine mammals (e.g., underwater noise, vessel traffic). The expected potential incremental cumulative effects from project impacts are not expected to result in population level impacts for non-TES species of marine mammals utilizing the project area in Cook Inlet.

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Potential incremental cumulative effects from vessel traffic from the project would be expected. Those individuals or groups of marine mammals that could be disturbed by the project may experience high vessel activity during summer from recreation, commercial fisheries, barging, and other forms of commercial and scientific vessel traffic. Because of this frequent vessel activity in Cook Inlet, some marine mammals in the area may be at least partially habituated to vessel presence and noise, and impacts from vessel traffic from the project is expected to add negligible effects to marine mammals relative to the overall risks from vessel traffic in this area.

Noise, behavioral disturbance from physical presence, and vessel and helicopter traffic associated with routine operations could affect marine mammals. Noise generated during construction and operations may temporarily disturb some marine mammals, causing them to leave or avoid the area. Such effects would likely be short-term and would not be expected to result in population-level effects. While collisions with vessels may injure or kill some individuals, collisions are thought to be unlikely because of the low level of traffic expected from the proposed project.

Cumulative effects of past, present, and reasonably foreseeable future actions on marine mammals would be expected, except for large spill events, in which case the impacts may be measurable. The greatest potential adverse effect from the project to cumulative effects on marine mammals would be a result of increased exposure to oil from a large spill. Other potential adverse effects include those from increased noise levels and increased vessel strikes. There would be potential cumulative effects from noise for non-threatened and endangered marine mammals but not a population level effect. This is due to the existing large acoustic footprint in this area from marine traffic and other construction activities with no known population-level effects, as well as due to the expected monitoring and mitigation methods likely to be required from regulatory agencies to reduce the effects from noise and vessel traffic. Those individuals or groups of marine mammals that could be disturbed by the project experience vessel activity during summer from recreation, commercial fisheries, barging, and other forms of commercial and scientific vessel traffic. Because of the frequent vessel activity in Cook Inlet, some marine mammals in the area are thought to be at least partially habituated to vessel presence and noise, and impacts of vessel traffic from the project would be expected to add little contributions to marine mammal impacts relative to the overall risk from vessel traffic in the region.

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Message

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To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: email 3 Figures 4.16 (UNCLASSIFIED)
Attachments: 11_09_2018_04_16_05_GeneralArrangementPhase3.pdf

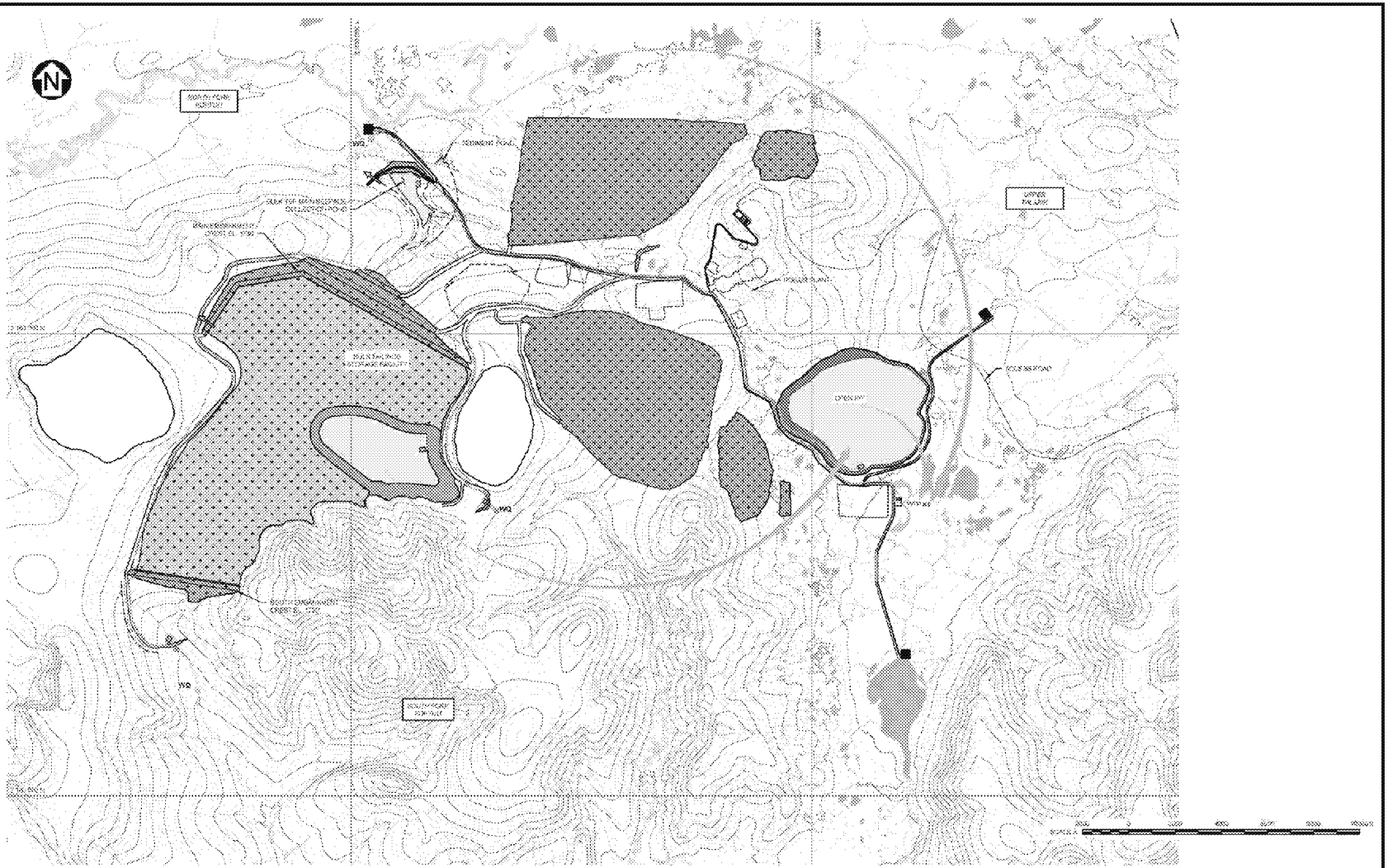
CLASSIFICATION: UNCLASSIFIED

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



NOTES

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANE, ZONE 5
2. CONTOUR INTERNAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP, JUNE 14 2018.

Source: Knight Piesold 2018d

LEGEND:

- OPEN PIT
- REVEGETATED - EMBANKMENT FACE
- REVEGETATED - BEACH
- SEASONAL WETLAND
- REVEGETATED - OTHER
- POND
- MINERAL CLOSING ORDER
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- WTP DISCHARGE PIPELINE
- WTP DISCHARGE POINT
- WQ2 WATER QUALITY MONITORING POINT
- GRO GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- CLEAN (NON-CONTACT) WATER DIVERSION
- EMERGENCY SPILLWAY
- RECLAIMED FACILITY OUTLINE
- CONTACT WATER
- TREATED WATER

US Army Corps of Engineers

GENERAL ARRANGEMENT CLOSURE PHASE 3

PEBBLE PROJECT EIS

FIGURE 4.16-5

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/17/2018 7:42:36 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Bella, Elizabeth [elizabeth.bella@aecom.com]; Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures: 3.17-01 to 3.17-17,3.18-01 to 3.18-05, K3.18-01 NPP, k3.18-1OpenPit, k4.18-02 to k4.18-04 second email (UNCLASSIFIED)
Attachments: 11_17_2018_Fig3_17_07_Cross_Section_S1.pdf; 11_17_2018_Fig3_17_08_Cross_Section_M1.pdf; 11_17_2018_Fig3_17_09_ShallowGroundwaterElevation.pdf

CLASSIFICATION: UNCLASSIFIED

VR

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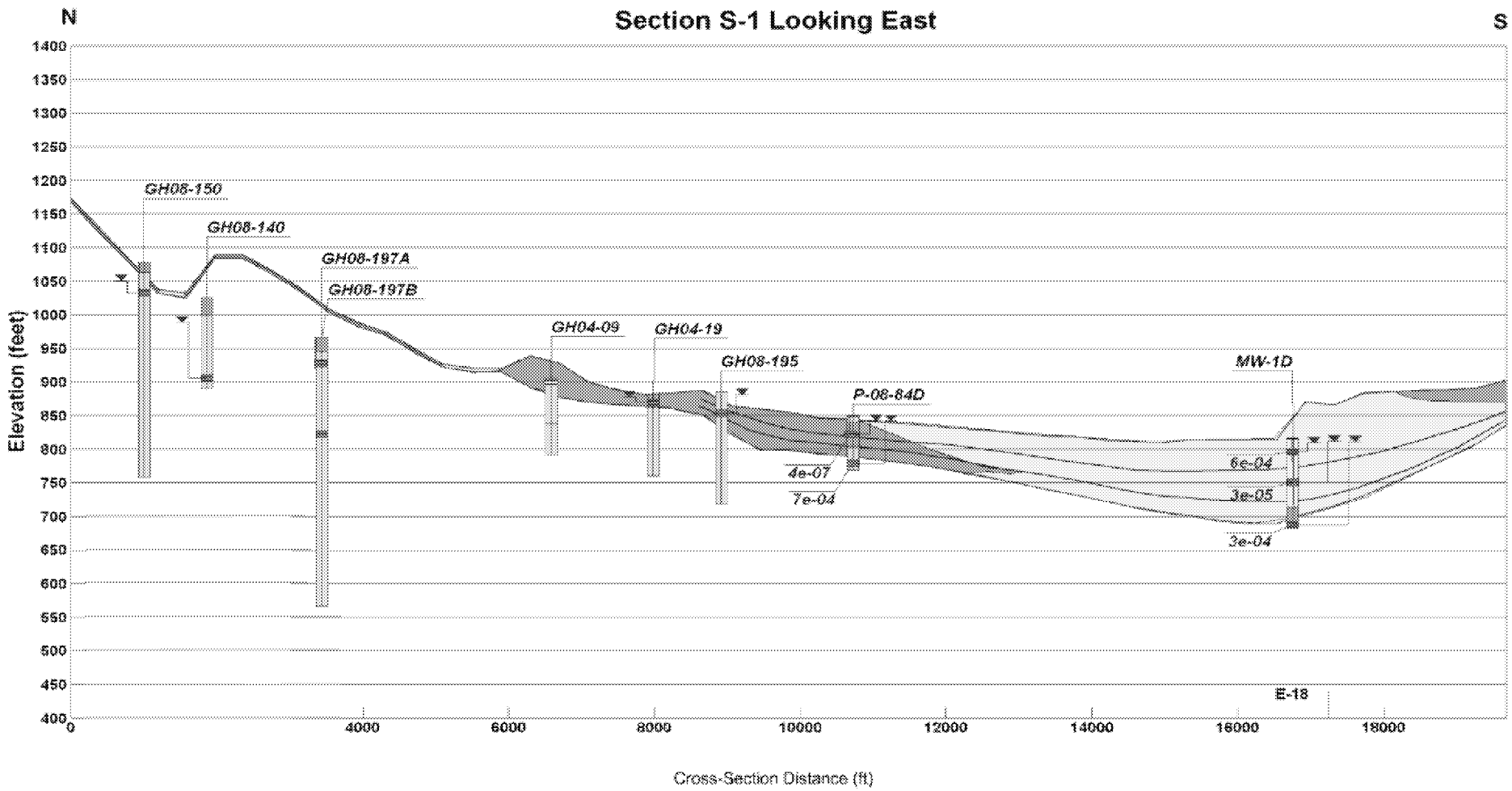


Note: Location of cross-section is depicted on Figure 3.17-4.

Sources: Schlumberger 2015a, Appendix 8.1B

US Army Corps of Engineers

Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

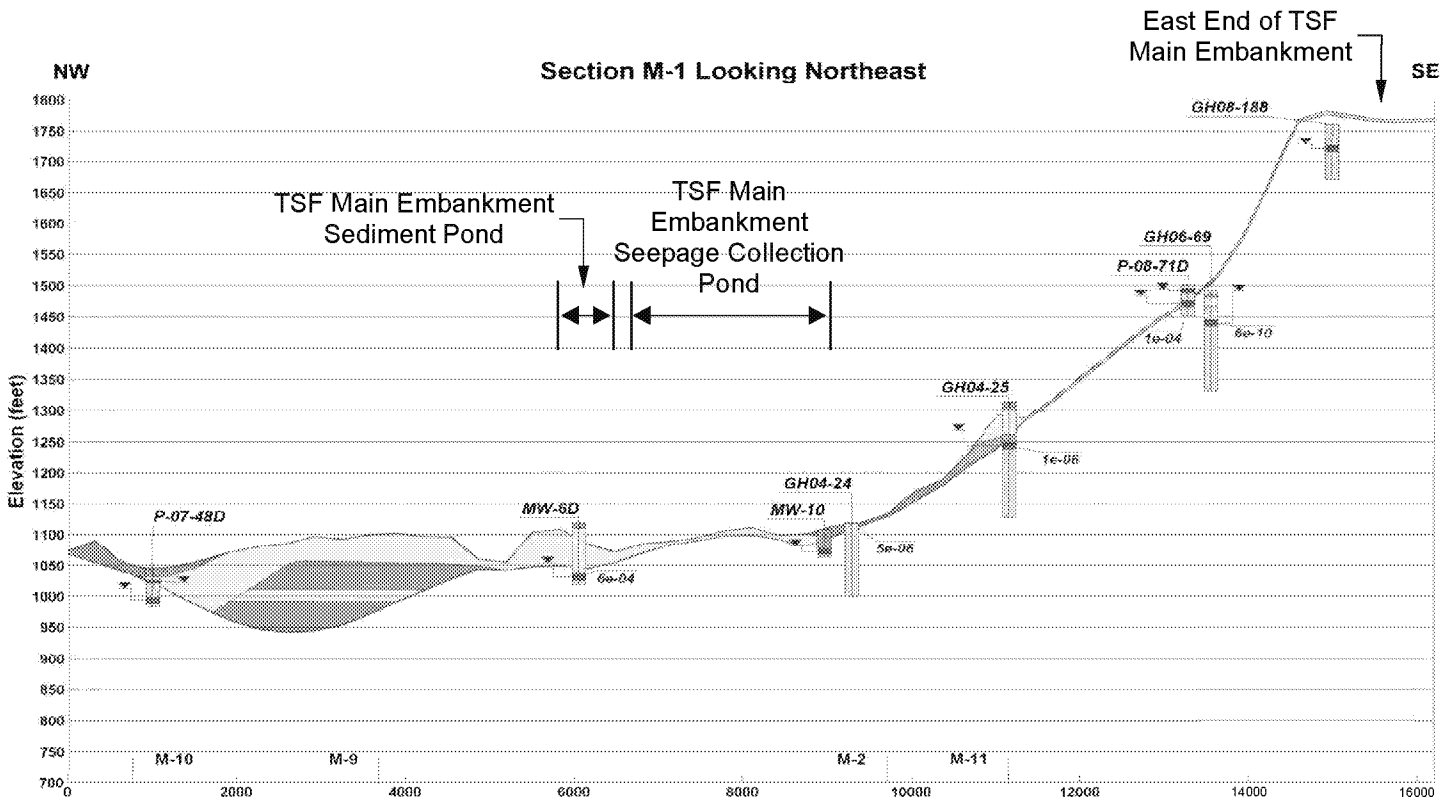
- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- 4e-05 Hydraulic Conductivity (m/s)
- Screened Interval
- GH08-xx Well Name
- E-xx Intersecting Cross-Section

CROSS-SECTION S-1
SOUTH FORK KOKTULI DISCHARGE AREA

PEBBLE PROJECT EIS

FIGURE 3.17-7

AMERICAN OVERSIGHT



Note: Location of cross-section is depicted on Figure 3.17-4.

Sources: Schlumberger 2015a, Appendix 8.1B

US Army Corps of Engineers®

Lithology
- sand, silty sand
- clay, silty clay
- gravel, gravelly sand

Model Layer Surfaces

4e-06 Hydraulic Conductivity (m/s)

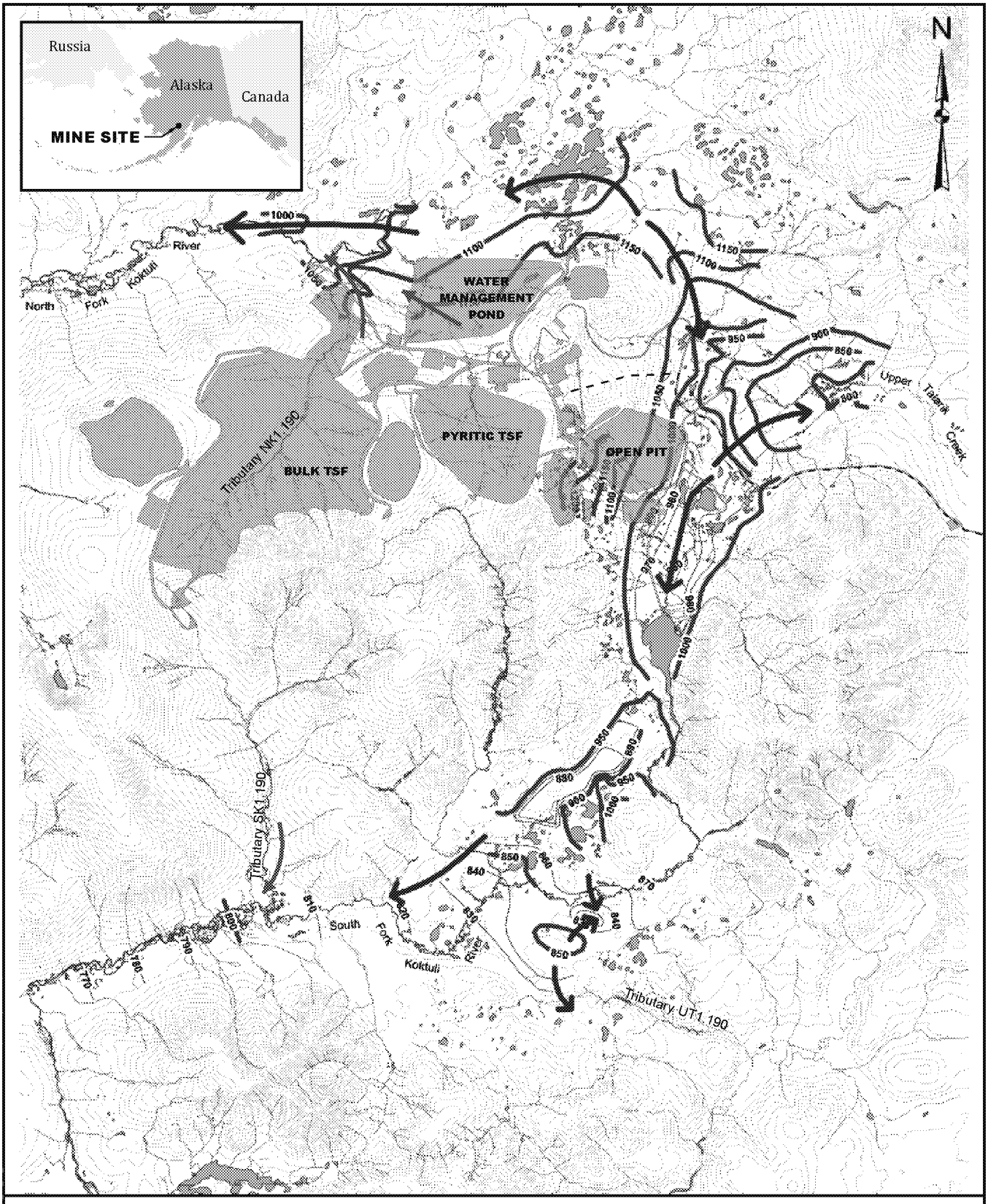
Screened Interval

CROSS-SECTION M-1
NORTH FORK KOKTULI DRAINAGE

PEBBLE PROJECT EIS

FIGURE 3.17-8

AMERICAN OVERSIGHT



Sources: Schlumberger 2015a, Figure 8.1E-1

US Army Corps of Engineers®

0.5 0 0.5 1
Miles

- Project Features
- Natural Gas Pipeline
- Shallow GWE Contours
  - 10 ft
  - 100 & 50 ft
- Lake
- River
- 50-ft Contour Interval
- Groundwater Flow Direction

SHALLOW GROUNDWATER CONTOURS APRIL 2011 SEASONAL LOW WATER

PEBBLE PROJECT EIS

FIGURE 3.17-9

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/9/2018 7:03:46 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: Figures AppK 3.9 part 3 (UNCLASSIFIED)
Attachments: Figure_K3_09_09_Birds_CommGroup1.pdf; Figure_K3_09_10_Birds_CommGroup2.pdf

VR

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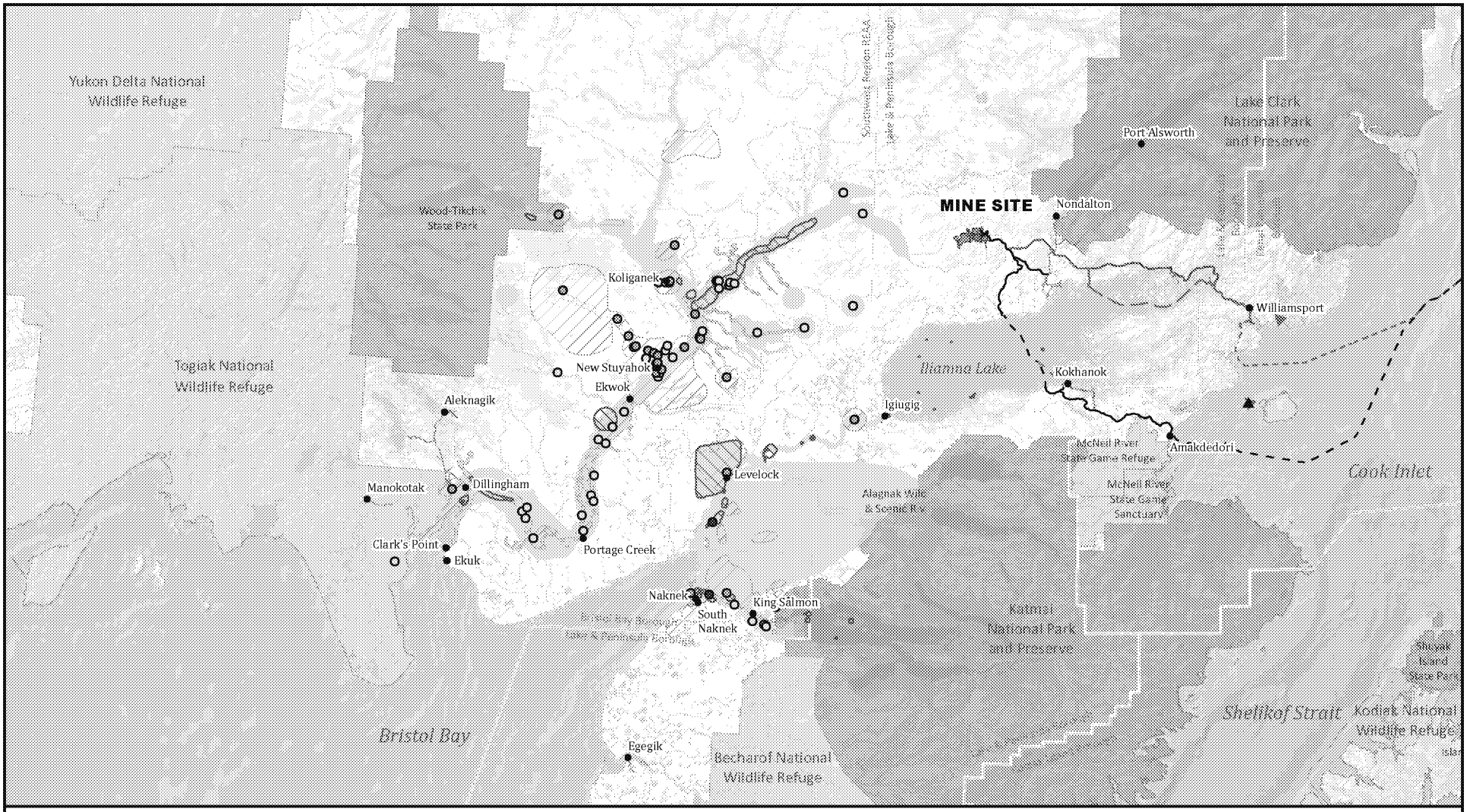
AMERICAN OVERSIGHT



Sources: PLP 2018; Krieg et al. 2009; Holen et al. 2011 (Study years 2005 and 2007)

US Army Corps of Engineers

15 0 15 30
Miles

Avian Harvest Areas
- Eggs (Point)
- Upland Game Birds (Point)
- Waterfowl (Ducks/Geese) (Point)
- Eggs
- Upland Game Birds
- Waterfowl (Ducks/Geese)

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

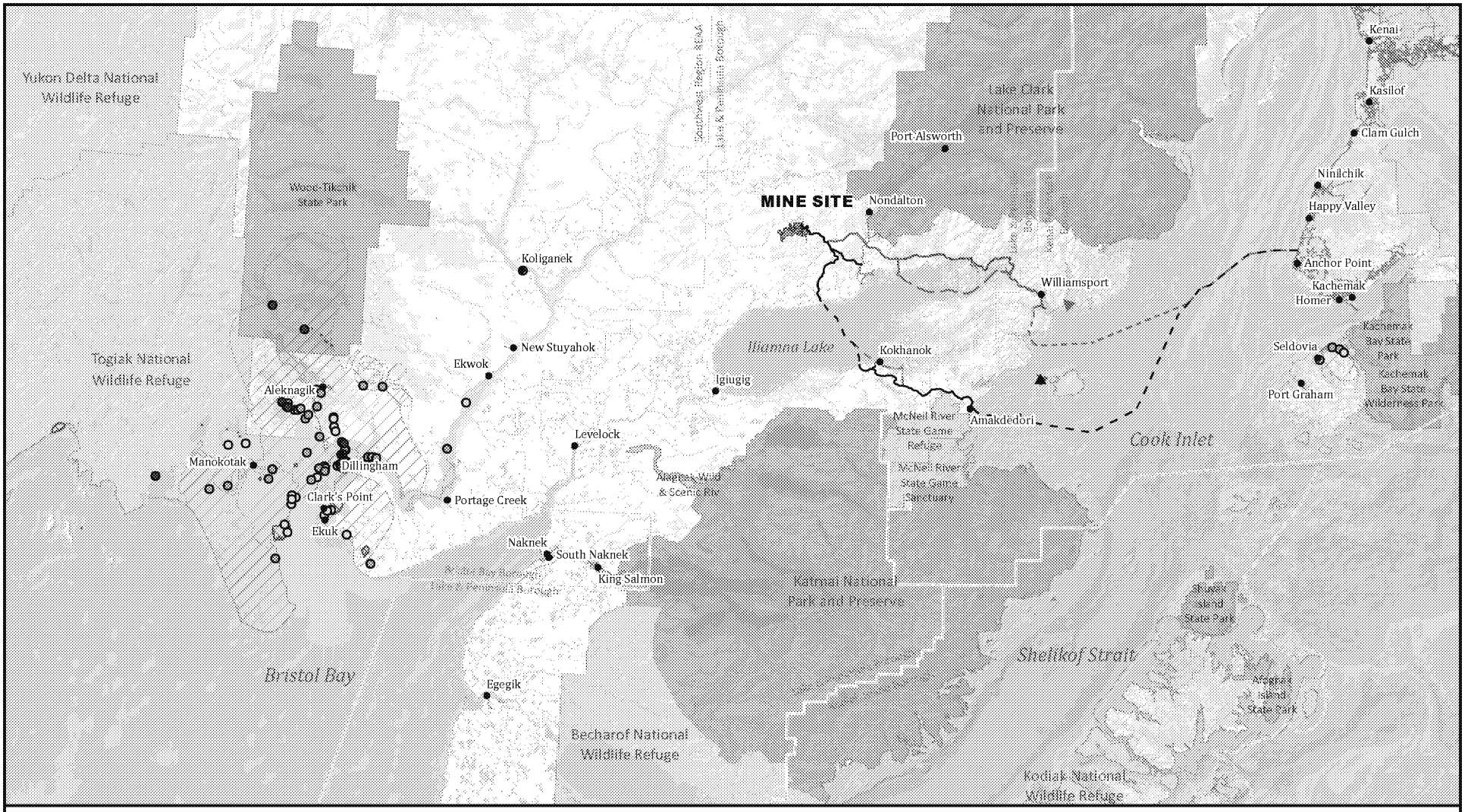
Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

AVIAN HARVEST AREAS: KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-9

AMERICAN OVERSIGHT



Sources: PLP 2018; Holen et al. 2012; Evans et al. 2013; Jones and Kostick 2016 (Study years 2008, 2010, and 2014)

US Army Corps of Engineers®

15 0 15 30
Miles

Avian Harvest Areas
- Eggs (Point)
- Upland Game Birds (Point)
- Waterfowl (Ducks/Geese) (Point)
- Upland Game Birds (Line)
- Waterfowl (Ducks/Geese) (Line)
- Eggs
- Upland Game Birds
- Waterfowl (Ducks/Geese)

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route

- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

PEBBLE PROJECT EIS

AVIAN HARVEST AREAS: ALEKNAGIK, CLARK'S POINT, MANOKOTAK, DILLINGHAM, AND SELDOVIA

FIGURE K3.9-10

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/16/2018 7:49:25 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Figures for 4.16 (UNCLASSIFIED)
Attachments: 11_09_2018_04_16_03_GeneralArrangementEndPhase1.pdf

CLASSIFICATION: UNCLASSIFIED

I erroneously missed disseminating the figures for 4.16. as many of the recipients have size limits, there will be multiple emails

VR

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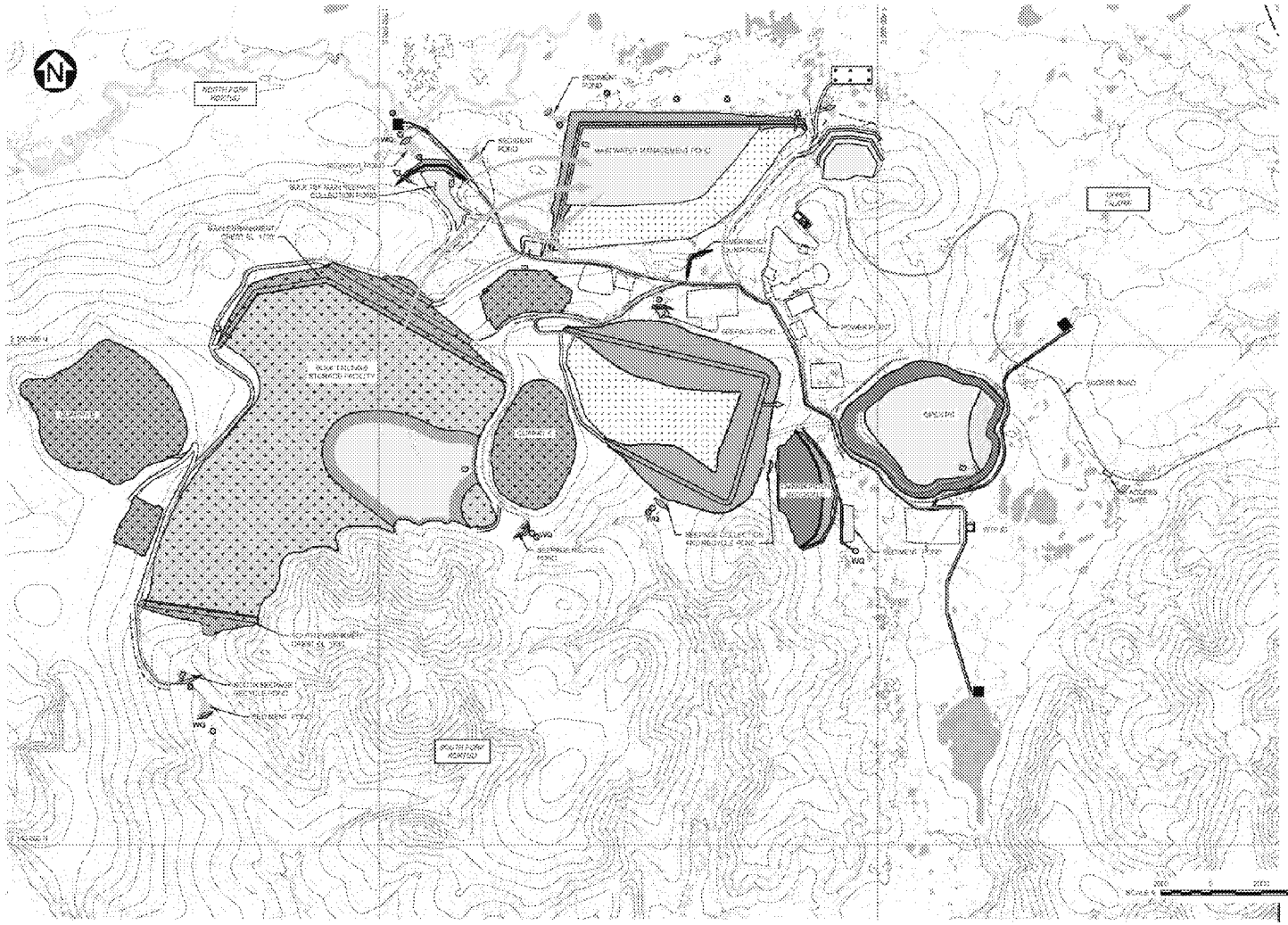
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT



NOTES

1. COORDINATE GRID IS UTM NAD83, ALASKA STATE PLANE, ZONE 5.
2. CONTOUR INTERNAL IS 25 FEET.
3. DIMENSIONS AND ELEVATIONS ARE IN FEET, UNLESS NOTED OTHERWISE.
4. OPEN PIT OUTLINE PROVIDED BY PLP, JUNE 14 2018.
5. ACCESS ROAD PROVIDED BY RECON LLC. ROAD CONNECTION TO MINE SITE COMPLETED BY AUSENCO LTD.

Source: Knight Piesold 2018d

LEGEND:

- OPEN PIT
- REVEGETATED - EMBANKMENT FACE
- GROWTH MEDIUM STOCKPILE
- REVEGETATED - BEACH
- SEASONAL WETLAND
- REVEGETATED - OTHER
- POND
- PAG WASTEROCK
- LINER
- MINERAL CLOSING ORDER
- RECLAIM PIPELINE
- RECLAIM WATER PUMPING BARGE
- WTP DISCHARGE PIPELINE
- WTP DISCHARGE POINT
- WATER QUALITY MONITORING POINT
- GROUNDWATER QUALITY MONITORING AND POTENTIAL PUMP BACK AREA
- CLEAN (NON-CONTACT) WATER DIVERSION
- CONTACT WATER DIVERSION
- EMERGENCY SPILLWAY
- PYRITIC TAILINGS PIPELINE
- RECLAIMED FACILITY OUTLINE
- CONTACT WATER
- TREATED WATER

US Army Corps of Engineers

GENERAL ARRANGEMENT CLOSURE END OF PHASE 1

PEBBLE PROJECT EIS

FIGURE 4.16-3

AMERICAN OVERSIGHT

Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/15/2018 6:41:56 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Sections 3.21 and 4.21 (UNCLASSIFIED)
Attachments: 11_14_2018_Sec4.21_Food&Fiber_reviewdraft.docx; 11_14_2018_Sec3.21_Food&Fiber_reviewdraft.docx

CLASSIFICATION: UNCLASSIFIED

All,
These are the sections specific to food and fiber; as was requested, Subsistence became its own section.

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3.21 FOOD AND FIBER PRODUCTION

The Farmland Protection Policy Act of 1994 was enacted to reduce the amount of highly productive farmland being converted to non-agricultural uses as a result of various federal programs. The United States Army Corps of Engineers is required to assess the potential impacts on farmland during the National Environmental Policy Act review process. Prime farmland is available land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. While there may be some small outdoor or indoor garden projects in individual communities, there are no designated prime or unique farmlands in the project area.

In most of the United States, agriculture provides food, natural fibers, biofuels, and other products to American consumers. In southwest Alaska, however, subsistence is the most important source of non-imported food and raw materials; discussed in Section 3.9, Subsistence.

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3.21 FOOD AND FIBER PRODUCTION 3.21-1

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4.21 FOOD AND FIBER PRODUCTION

While there may be some small outdoor or indoor garden projects in individual communities, there are no designated prime or unique farmlands in the project area. Therefore, there would be no impact to farmlands from the proposed project or any of the alternatives discussed in this Environmental Impact Statement (EIS).

In the project area, subsistence activities (e.g., hunting, fishing, and gathering) are the primary sources of food and fiber production; discussed in Section 4.9, Subsistence.

4.21.1 Cumulative Effects

There would be no contribution of cumulative impacts to farmlands from the proposed project or any of the reasonably foreseeable future actions discussed in this EIS due to the absence of designated prime or unique farmlands in the project area.

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TABLE OF CONTENTS

4.21 FOOD AND FIBER PRODUCTION 4.21-1
4.21.1 Cumulative Effects 4.21-1

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/14/2018 5:43:38 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: Pebble Review Drafts Transmission, Ch 5 and Ch 6 (UNCLASSIFIED)
Attachments: Ch5_Mitigation_reviewdraft_2018.11.06.docx; Ch6 Consultation&Coord_reviewdraft_2018.10.02.docx

CLASSIFICATION: UNCLASSIFIED

Good Morning:

Upon review of the files which were sent out, we have found that we had not yet provided Chapter 5 and Chapter 6.

Please find attached 2 Word files, the review drafts of Chapter 5, Mitigation, and Chapter 6, Consultation and Coordination.

v/r,

Katie McCafferty
Project Manager
Direct: 907-753-2692

U.S. Army Corps of Engineers-Alaska District
Regulatory Division
P.O. Box 6898
JBER, AK 99506
main office line: 907-753-2712

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

5.0 MITIGATION

5.1 INTRODUCTION

This section defines terminology, describes the process of identifying mitigation during the National Environmental Policy Act (NEPA) and the US Army Corps of Engineers' (USACE) Clean Water Act (CWA) Section 404 permitting processes, and identifies mitigation measures intended to avoid or minimize project impacts.

5.1.1 Overview of Mitigation

NEPA requires federal agencies to consider appropriate mitigation measures to avoid or minimize specific impacts. Consideration of project mitigation is a continuous process through completion of the Environmental Impact Statement (EIS) and Record of Decision (ROD). This includes efforts made as part of the project design or standard procedures; Best Management Practices (BMPs), industry standards, or standard permit requirements; and assessment of measures recommended for consideration during the NEPA process.

Additionally, the USACE, pursuant to Section 404 of the CWA, has very specific requirements for mitigation, including a sequence of: 1) impact avoidance, 2) minimization, and 3) compensatory mitigation for unavoidable impacts under their jurisdiction. Mitigation measures are also developed through other processes, such as consultation under Section 106 of the National Historic Preservation Act (NHPA), permit authorization by other federal and state agencies, and monitoring and adaptive management associated with specific permit requirements.

5.1.2 Definitions and Process

A general description of the key terms used in this chapter is provided in Table 5-1. Where mitigation measures are analyzed as part of the Proposed Action, their effectiveness in avoiding or reducing potential impacts has been taken into consideration in assessing potential environmental consequences.

Table 5-1: Common Mitigation Terms

Term Used in This EIS	Description
Applicant's Proposed Mitigation	Impact-reducing actions or designs that an applicant has committed to as part of their Proposed Action. Commonly referred to as avoidance and minimization.
Best Management Practices and industry standards	BMPs and industry standards are predictable actions necessary to comply with regulations and standard permit requirements that are designed to reduce impacts to the environment. These are typically reflected in the applicant's design and are analyzed as part of the Proposed Action. For example, the Construction General Stormwater Permit for Storm Water Discharges for Large and Small Construction Activities (2016 CGP, AKR100000) will require a Storm Water Pollution Prevention Plan (SWPPP).
Agency Considered Mitigation	Measures agencies consider that would further reduce impacts. These are not considered part of the Proposed Action. Special conditions are added to Department of the Army permits when such conditions are necessary to satisfy legal requirements or to otherwise satisfy the public interest requirement. Permit conditions will be directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable.

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Table 5-1: Common Mitigation Terms

Term Used in This EIS	Description
Compensating for Unavoidable Impacts	Compensating for an impact by replacing or providing substitute resources or environments is one way an agency can use mitigation to reduce environmental impacts associated with proposed projects (CEQ 2010). Compensatory mitigation is a requirement under the CWA for impacts to Waters of the US (WOUS) that cannot be avoided or minimized. Compensatory mitigation requirements are identified in RODs based on the Final EIS.
Monitoring and Adaptive Management	Through monitoring, appropriate data are collected to assess predicted project impacts and the effectiveness of mitigation after initial and ongoing implementation. Mitigation that is not proving effective can be adapted. Adaptive management is often defined as "a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring." Mitigation monitoring can incorporate elements of adaptive management if monitoring results indicate a basis for changes to a mitigation program.

5.1.3 NEPA Guidance

NEPA requires federal agencies to describe potential impacts to resources potentially affected by the Proposed Action and alternatives to the Proposed Action. Alternatives may be designed to avoid or minimize potential impacts that may be caused by the Proposed Action. Because one of the purposes of NEPA is to promote efforts that will prevent or minimize damage to the environment (42 US Code Section 4321), mitigation and monitoring are important tools used to avoid, minimize, or compensate for potential adverse impacts. Early consideration of measures to avoid and reduce impacts is often integral to project design, and the effort to avoid, reduce, or offset impacts is a key component of the alternatives development and decision-making process. Many federal agencies, laws, and regulations have specific guidance regarding required efforts to reduce impacts to resources, and the Council on Environmental Quality (CEQ) requires mitigation to be considered during the NEPA process. According to the CEQ (1981):

> *Mitigation measures discussed in an EIS must cover the range of impacts of the proposal. […]. Mitigation measures must be considered even for impacts that by themselves would not be considered "significant." Once the proposal itself is considered as a whole to have significant effects, all of its specific effects on the environment (whether or not "significant") must be considered, and mitigation measures must be developed where it is feasible to do so.*
>
> *All relevant, reasonable mitigation measures that could improve the project are to be identified; even if they are outside the jurisdiction of the lead agency or cooperating agency, and thus would not be committed as part of the RODs of these agencies.*
>
> *The ROD must state whether all practicable measures have been adopted, and if not, why not.*
>
> *However, to ensure that environmental effects of a proposed action are fairly assessed, the probability of mitigation measures being implemented must also be discussed. Thus, the EIS and ROD should indicate the likelihood that such measures will be adopted or enforced by the responsible agencies.*

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> *Lead agencies "shall include appropriate conditions [including mitigation measures, monitoring, and enforcement programs] in grants, permits, or other approvals" and shall "condition funding of actions on mitigation." Any such measures that are adopted must be explained in the ROD.*

CEQ regulations describe several ways an agency can use mitigation to reduce environmental impacts associated with proposed projects (CEQ 2010). These include:

- Avoiding an impact by not taking a certain action or parts of an action.
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation.
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action.
- Compensating for an impact by replacing or providing substitute resources or environments.

On January 14, 2011, the CEQ issued a memorandum to federal departments and agencies containing guidance on establishing, implementing, and monitoring mitigation commitments identified and analyzed in Environmental Assessments and EISs, and adopted in the final decision documents. The Pebble Project EIS complies with federal guidance by considering mitigation during alternatives development and by disclosing mitigation as components incorporated into the Proposed Action as efforts to avoid and minimize potential impacts.

5.2 AVOIDANCE AND MINIMIZATION MEASURES UNDER NEPA

5.2.1 Best Management Practices, Industry Standards, and Standard Permit Requirements

Numerous state, federal, and local government permits and approvals are required before development and operation of a mining project in Alaska can begin. Appendix E describes the relevant permits and regulatory requirements for the Pebble Project. These permitting processes and regulatory requirements are established to ensure that projects are designed, operated, and reclaimed in a manner consistent with applicable laws and regulations.

5.2.1.1 Permitting for Large Mine Projects in Alaska

In order to coordinate state agency permitting and integrate federal and local permitting for large mining projects, the State of Alaska has developed a Large Mine Permitting Team (LMPT) process. The LMPT is an interagency group of regulatory experts that works cooperatively with large mine applicants and operators, federal resource agencies, and the Alaska public to ensure that projects are designed, operated, and reclaimed in a manner consistent with state laws and regulations. The goal of the LMPT process is to coordinate the sequencing and intergovernmental review of the numerous permits required of a large, complex hardrock mine. The following is a summary of the general process the State follows (ADNR 2017b):

Pre-Application. One of the first tasks for the LMPT is to work with the potential applicant to ensure the pending permitting process and regulatory requirements are understood, that appropriate baseline environmental data are collected, to define application information requirements, and develop a realistic schedule.

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Permit Application. The applicant submits an application package, typically consisting of the Plan of Operations, Reclamation Plan, Waste Management Plan, reclamation and closure cost estimates, associated monitoring and management plans, and baseline study reports. The LMPT reviews the package to make sure all the necessary information for a complete review is included.

Review and Analysis. The LMPT collaboratively reviews the proposed plans and supporting documents to inform their respective agencies' permitting decisions and to ensure the project design complies with all applicable state laws and regulations.

Issues Resolution. The team works with the applicant to resolve issues, usually resulting in modifications to the project design, operations, and monitoring plans.

Public Notice and Permit Issuance. Draft Plan of Operations Approval, Reclamation Plan Approval, Integrated Waste Management Permit, and financial assurance costs are publicly noticed together with final proposed plans and supporting documents from the applicant. Public comments are reviewed by the LMPT and incorporated, as appropriate, into final agency approvals, which are then publicly posted on the Alaska Department of Natural Resources' (ADNR) Large Mine Project website.

Post Permit Issuance. Once the permits are issued and construction and operations begin, the LMPT is active in permit maintenance, site inspections, and compliance monitoring.

Reclamation and Final Closure. The LMPT ensures that reclamation and closure objectives are met, including long-term environmental management, and that financial assurances are in place to ensure an orderly and stable closure.

5.2.1.2 Best Management Practices

Pebble Limited Partnership (PLP) would follow BMPs and industry standards required to comply with regulations and standard permit requirements that are designed to reduce impacts to the environment. A list of standard BMPs, permit requirements, and/or industry standards that would likely be required for the Pebble Project is provided below. This is not intended to be a complete list; rather, it reflects the most predictable actions for this type of project that would be necessary to comply with regulations and standard permit requirements designed to reduce impacts to the environment. Many of these are also captured in PLP's proposed mitigation measures discussed in the following section. USACE took these standard BMPs, permit requirements, and industry standards into consideration when assessing the impacts of the project.

- Using secondary containment for the storage of all fuel and hazardous chemicals during all phases of the proposed project to prevent potential releases from fuel handling, tank failures, or contaminated stormwater from reaching the aquatic environment.
- Designing and installing culverts and bridges on transportation routes to optimize fish passage.
- Implementation of Storm Water Pollution Prevention Plans (SWPPPs), Erosion and Sediment Control Plans (ESCPs), and use of industry standard BMPs for sediment and erosion control.
- Development and maintenance of Oil Discharge Prevention and Contingency Plan (ODPCPs), Spill Prevention, Control and Countermeasure (SPCC) Plans, and Facility Response Plans (FRPs).

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- Use of BMPs, such as revegetation planning, watering, and use of dust suppressants to control fugitive dust.
- Preparation and implementation of a Reclamation and Closure Plan (RCP).
- Compliance with ADNR Dam Safety requirements through certificates of approval to construct and operate dams to include preparation of Emergency Action Plans and completion of a Failure Modes Effects Analysis (FMEA).
- Appropriate bonding/financial assurance required by ADNR and ADEC.
- Compliance with ADNR Temporary Water Use Authorization conditions for water withdrawal, such as screening requirements to avoid fish entrainment or injury, establishing water withdrawal rates and volumes, and as appropriate timing of water withdrawal to avoid fish migration, spawning, and incubating eggs.
- Monitoring of water withdrawals to ensure permitted limits are not exceeded.
- Verification that project vessels are equipped with proper emergency towing equipment in accordance with 18 AAC 75.027(f).
- Application of industry-standard BMPs relating to invasive species prevention and management.
- Development of a Cultural Resources Management Plan (CRMP) as part of the Section 106 process.
- Verifying pipeline integrity with visual and other non-destructive inspections of welds, hydrostatic testing, use of in-line inspection tools, and aerial inspections.

5.2.2 Mitigation Measures, Best Management Practices, and Environmental Protections Incorporated into the Project

The EIS serves in part to inform the public and review agencies of mitigation measures, project elements, or other environmental protections that are included to reduce or avoid impacts. The USACE views these elements as part of the project, and considers PLP's proposed mitigation measures as inherent to the Proposed Action as well as applicable components of the other alternatives' descriptions. These measures, including any potential impacts associated with these measures, were considered when assessing the impacts of the project on the resources as described in Chapter 4, Environmental Consequences.

Table 5-2 lists the mitigation measures, project elements, and environmental projections, including BMPs that PLP is proposing to implement to avoid and minimize impacts. A description of PLP's Proposed Action (Alternative 1 – Applicant's Proposed Alternative) can be found in Chapter 2, Alternatives. Engineering design and construction, operations, or closure phase procedures are often preliminary at the time that an EIS is prepared; typically final engineering designs and construction and operations plans are finalized during the successive State permitting phase. Similar measures would be employed for the other action alternatives (Alternatives 2 and 3), as applicable.

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
Where feasible, mine facilities would be reclaimed in such a manner as to create new wetland areas and ponds.	General	Closure	Wetlands/Special Aquatic Sites
Overburden removed during construction would be stockpiled for use in reclamation.	General	Closure	Soils; Vegetation
Cultural resource experts would be retained during construction activities to respond to any potential cultural sites identified during construction.	General	Construction	Cultural Resources
Access agreements with Alaska Native Claims Settlement Act (ANCSA) Village Corporations would include bidding and employment preferences, revenue sharing, and other benefits to enhance local employment and revenue generation.	General	Construction/Operations	Needs and Welfare of the People—Socioeconomics; Environmental Justice
A Reclamation and Closure Plan (RCP) would be developed during feasibility design work to support State permitting. The RCP and associated bonding would be in place prior to construction commencement, would be updated on a regular basis, and regular site compliance audits would be conducted as required by State regulations. The project would fully bond for reclamation and closure before commencing construction and the bonding amounts would be updated to address any changes required on a regular basis. The RCP would document the plan for long term closure of the site in a stable condition in compliance with all applicable closure criteria and regulations and would serve as the basis for the development of the closure cost estimate and associated bonding.	General	Construction/Operations/ Closure	Land Ownership, Management and Use; Health and Safety; Water and Sediment Quality
The project would establish a local advisory committee to facilitate communications and address concerns during construction and operations.	General	Construction/Operations/ Closure	Transportation and Navigation; Subsistence
The project would provide for controlled use of the road corridor and ferry for local residents, improving the supply of goods and reducing the cost of importing goods.	General	Construction/Operations/ Closure	Transportation and Navigation; Needs and Welfare of the People—Socioeconomics
The project would implement workforce development programs and training to prepare local residents for employment at the project.	General	Construction/Operations/ Closure	Needs and Welfare of the People—Socioeconomics; Environmental Justice

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
The project would have a no hunting, fishing, or gathering policy for non-local employees to minimize competition for local resources.	General	Construction/Operations/ Closure	Subsistence; Commercial and Recreational Fisheries
A Fugitive Dust Control Plan (FDCP) would be developed for the project and the project would use Best Available Control Technology (BACT) and Best Management Practices (BMPs) for fugitive dust management. The FDCP would describe the equipment, methodology, training, and performance assessment techniques that would be utilized for controlling fugitive dust from site activities and wind erosion. The FDCP would be developed during feasibility design work to support State permitting and would be in place prior to construction commencement.	General	Construction/Operations/ Closure	Air Quality
A Wildlife Management Plan(s) (WMP) would be developed for the project prior to commencement of construction, and the project would use BMPs for wildlife management. The WMP would describe the equipment, methodology, training, and assessment techniques that would be used to minimize the potential for wildlife interaction with project activities and to minimize impacts to wildlife in the project area.	General	Construction/Operations/ Closure	Wildlife Values
The project would utilize BMPs for prevention, control, and management of invasive species. An invasive species management strategy would describe the equipment, methodology, training, and assessment techniques that would be utilized to avoid the importation of invasive species into the project area due to project activities during construction, operations, and closure.	General	Construction/Operations/ Closure	Vegetation; Wetlands/Special Aquatic Sites; Fish Values; Wildlife Values
An Aquatic Resources Monitoring Plan(s) (ARMP) would be developed for the project. The ARMP would be developed in consultation with ADF&G and ADNR as part of the plans of operation during State permitting and would be in place prior to construction commencement. The ARMP would describe the equipment, methodology, training, and assessment techniques that would be utilized to monitor the aquatic environment for any changes resulting from project activities and to allow for an adaptive management approach to address impacts identified.	General	Construction/Operations/ Closure	Wetlands/Special Aquatic Sites; Fish Values; Water and Sediment Quality

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
The project would propose fish habitat mitigation measures to enhance or create new habitat outside of the immediate project footprint.	General	Construction/Operations/ Closure	Wetlands/Special Aquatic Sites; Fish Values
A Cultural Resources Management Plan (CRMP) would be developed for the project. The CRMP would describe the equipment, methodology, training, and assessment techniques that would be utilized to manage cultural resources on State and private lands impacted by the project. The plan would describe the process for managing effects to these resources and ensure that agreed upon protocols and procedures are established and followed if any unanticipated cultural resources or human remains are discovered. The CRMP would be developed as part of the Section 106 consultation process and would be in place prior to the Record of Decision (ROD).	General	Construction/Operations/ Closure	Cultural Resources
A Project Communications Plan (PCP) would be developed for the project prior to construction commencement. The PCP would establish the methodology and infrastructure that would be utilized to keep local residents, guides, and other users informed about upcoming and ongoing activity.	General	Construction/Operations/ Closure	Recreation; Subsistence; Transportation and Navigation; Recreational and Commercial Fisheries
Drug and Alcohol Abuse Prevention, Cultural Sensitivity, Safety, and other workplace programs would be developed for all employees. The programs would be designed to provide employees with the training and resources needed to allow for a safe, healthy, and conflict-free workplace. These programs would be implemented for all project staff and contractors prior to construction commencement.	General	Construction/Operations/ Closure	Needs and Welfare of the People—Socioeconomics
The project would develop a Storm Water Pollution Prevention Plan (SWPPP) and follow BMPs for storm water management. The SWPPP would describe the BMPs (equipment, methodology, training, and assessment techniques) that would be used for the management of stormwater on the project, in compliance with State and federal requirements, to minimize the transfer of sediment and other pollutants in stormwater associated with project activities. The SWPPP would be developed during detailed design and would be in place prior to construction commencement.	General	Construction/Operations/ Closure	Water and Sediment Quality

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
The project would develop an Erosion and Sedimentation Control Plan (ESCP) and follow BMPs for erosion and sediment control. The ESCP would describe the BMPs (equipment, methodology, training, and assessment techniques) that would be used to minimize erosion and sedimentation associated with project activities. The ESCP would be developed during detailed design and would be in place prior to construction commencement.	General	Construction/Operations/ Closure	Soils; Water and Sediment Quality
The project would use BACT for all air emissions sources.	General	Construction/Operations/ Closure	Air Quality
Secondary containment would be used for all fuel and hazardous chemical storage and the project would utilize BMPs for handling of fuel and hazardous materials.	General	Operations	Health and Safety; Spill Risk
The project would contract with a Spill Response Organization (e.g., Alaska Chadux Corporation) to provide on-call response services and would also stockpile spill response equipment at all appropriate locations.	General	Construction/Operations/ Closure	Spill Risk
The project would offer to negotiate a Payment in Lieu of Taxes (PILT) to the Lake and Peninsula Borough as an alternative to the borough severance tax, to allow for predictability in annual revenues.	General	Operations	Land Ownership, Management, and Use
A shift schedule would be established to enable local employees to maximize opportunities to remain active in subsistence harvest activities.	General	Operations	Subsistence
Use of natural gas and a combined cycle power plant to generate power reduces air impacts and removes the need to transport large amounts of diesel fuel.	General	Operations/Closure	Air Quality; Transportation and Navigation
The natural gas pipeline design has been oversized to allow for regional access to gas which could reduce regional power costs and fuel shipments.	General	Operations/Closure	Needs and Welfare of the People—Socioeconomics
Blasting during construction would be done following the guidelines established in the 2013 ADF&G Technical Report (No. 13-03) Alaska Blasting Standard for the Proper Protection of Fish.	General	Construction	Fish Values

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
Dry closure of the bulk tailings storage facility (TSF) reduces both the likelihood and consequence of potential TSF failure post closure	Mine Site	Closure	Spill Risk; Water and Sediment Quality
At closure, the pit lake would be maintained at a level that promotes hydraulic containment of pit water during closure, protecting site groundwater.	Mine Site	Closure	Surface Water Hydrology; Hydrogeology
The pit lake would be maintained at a level that provides for additional storage capacity to allow for treatment downtime due to water treatment plant maintenance or other problems without over-topping.	Mine Site	Closure	Surface Water Hydrology; Water and Sediment Quality
TSF and mine facility locations were selected to minimize impacts to spawning habitat in the middle reaches of the South Fork Koktuli and Upper Talarik Creek (UTC) watersheds.	Mine Site	Construction/Operations/ Closure	Fish Values
The layout was designed to consolidate the majority of the site infrastructure in a single drainage, the North Fork Koktuli, and avoid the placement of waste rock, tailings and primary mine infrastructure in the UTC drainage.	Mine Site	Construction/Operations/ Closure	Surface Water Hydrology
The project would use only non-pit quarried rock, or non acid-generating (NAG) pit waste that is confirmed not to be neutral metal leaching, in site construction.	Mine Site	Construction/Operations/ Closure	Water and Sediment Quality
The project design uses flattened TSF slopes to improve factor of safety beyond industry norms.	Mine Site	Construction/Operations/ Closure	Geohazards
BMPs and design guidelines would incorporate avian protection for all powerlines.	Mine Site	Construction/Operations/ Closure	Wildlife Values
Construction laydown areas would be reused as material stockpiles or other storage facilities to minimize project footprint.	Mine Site	Construction/Operations/ Closure	Vegetation; Wetlands/Special Aquatic Sites
Two separate operations water treatment plants are proposed to avoid co-mingling mine water and contact water and optimize treated water quality.	Mine Site	Operations/Closure	Water and Sediment Quality
Immediate treatment and release of excess water to mitigate flow impacts to fish habitat.	Mine Site	Operations	Fish Values

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
The project would use pit blasting techniques that minimize the amount of explosives per delay, thereby reducing the overall vibration associated with the blast.	Mine Site	Operations	Noise
Only mining near surface portion of deposit, reduces strip ratio and eliminates the need for a permanent waste rock storage facility.	Mine Site	Operations/Closure	Vegetation; Wetlands/Special Aquatic Sites
Storage of all potentially acid -generating (PAG) and/or metal neutral metal leaching waste rock in the pyritic TSF and placement of that waste rock back into the pit at closure improves post closure water quality.	Mine Site	Operations/Closure	Water and Sediment Quality
Segregation of bulk and pyritic tails and placement of pyritic tails back into the pit at closure improves post-closure water quality and removes any potential for post-closure failure of the pyritic TSF.	Mine Site	Operations/Closure	Water and Sediment Quality
The pyritic TSF will be a fully lined facility to minimize water quality impacts and facilitate closure.	Mine Site	Operations/Closure	Water and Sediment Quality
Bulk TSF designed as a flow through facility, reducing pore pressures and allowing for improved tailings consolidation, reducing the impacts of a potential TSF failure.	Mine Site	Operations/Closure	Geohazards
A water balance that does not store excess water in the bulk TSF reduces the potential for TSF failure or spills.	Mine Site	Operations/Closure	Spill Risk
Three separate discharge points for treated water and strategic timing of water release to minimize impacts, or avoid, impacts to fish habitat.	Mine Site	Operations/Closure	Fish Values; Water and Sediment Quality
No secondary gold recovery plant, eliminating the need to use cyanide on the project.	Mine Site /Transportation Corridor	Operations	Health and Safety
The design of the lake ferry (relative to using standard tug/barge) significantly reduces the risk of grounding or sinking, thereby reducing the risk of any kind of spill.	Transportation Corridor	Operations	Spill Risk
Use of diesel electric propulsion for the ferry reduces noise impacts and air emissions.	Transportation Corridor	Operations	Noise

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
The project would work with communities (and supply funding) to provide for the marking and maintenance of snowmachine trails between communities across Iliamna Lake when lake ice is thick enough to support such traffic.	Transportation Corridor	Operations	Transportation and Navigation
Fuel delivery barges would be double hulled to reduce spill risk.	Transportation Corridor/Port	Construction/Operations/ Closure	Spill Risk
Tug and barge speeds in sea otter critical habitat would be controlled to minimize the potential for impacts with sea otters.	Transportation Corridor/Port	Construction/Operations/ Closure	Threatened and Endangered Species
Lightering concentrate at Amakdedori port eliminates the need for dredging a deep water channel.	Port	Construction	Water and Sediment Quality
The road includes crossing rivers at a right angle where feasible to minimize impacts in the riparian areas.	Transportation Corridor	Construction	Vegetation; Wetlands/Special Aquatic Sties
Culverts and bridges would be designed to optimize fish passage and the project would use BMPs for design, construction, and maintenance.	Transportation Corridor	Construction	Fish Values
Material sites would be sampled for acid rock drainage (ARD) and metal leaching potential prior to development during detailed design. Material sites that have the potential for ARD or metal leaching would not be utilized.	Transportation Corridor	Construction	Water and Sediment Quality
Use of a ferry to cross Iliamna Lake reduces the road length and associated wetlands impacts and other impacts.	Transportation Corridor	Construction/Operations/ Closure	Vegetation; Wetlands/Special Aquatic Sties
Road connections to communities enhance opportunities for local employment while residing at home.	Transportation Corridor	Construction/Operations/ Closure	Needs and Welfare of the People—Socioeconomics; Environmental Justice
Road connections to communities enables the use of existing airport facilities, eliminating the need to construct and operate parallel facilities.	Transportation Corridor	Construction/Operations/ Closure	Transportation and Navigation

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
Road and ferry terminals are sited to avoid private (non-Alaska Native Claims Settlement Act) lands, environmentally sensitive areas, archaeological resources, and areas of known high subsistence use.	Transportation Corridor	Construction/Operations/ Closure	Cultural Resources; Subsistence; Land Ownership, Management, and Use
Use of closed containers to transport concentrate reduces spill potential while trucking, barging, loading, and on the ferry and eliminates potential for concentrate dust.	Transportation Corridor	Operations	Spill Risk; Air Quality
All reagents would be shipped in their original, approved for shipping, containers. These original containers would be placed inside steel shipping containers at the factory or consolidation terminal and shipped to the mine site prior to unloading from the steel shipping containers.	Transportation Corridor	Construction/Operations/ Closure	Spill Risk; Transportation and Navigation
The use of fuel isotainers to transport diesel fill reduces spill potential while trucking and on the ferry.	Transportation Corridor	Operations	Spill Risk; Transportation and Navigation
Co-location of the road and natural gas pipeline alignment reduces wetlands and other impacts and removes the need for a separate corridor.	Transportation Corridor/Natural Gas Pipeline Corridor	Construction/Operations	Vegetation; Wetlands/Special Aquatic Sties
All road/pipeline material sites would be tested for ARD and metal leaching prior to excavation and use.	Transportation Corridor/Natural Gas Pipeline Corridor	Construction	Water and Sediment Quality
The road/pipeline alignment and material sites were designed to minimize impacts to wetlands.	Transportation Corridor/Natural Gas Pipeline Corridor	Construction/Operations	Wetlands/Special Aquatic Sties
Gas pipeline would be attached to bridge crossings, removing the need for horizontal directional drilling (HDD) under major river crossings, removing the potential for frac-out.	Natural Gas Pipeline Corridor	Construction	Surface Water Hydrology; Fish Values; Water and Sediment Quality
Detailed HDD plans would be developed during detailed design for all HDDs that are required and would be in place prior to construction commencement. The HDD plans would ensure that all HDD work is done in compliance with applicable regulations and would outline measures to be undertaken to avoid the potential for a frac-out and measures to respond to a frac-out should one occur.	Natural Gas Pipeline Corridor	Construction	Water and Sediment Quality

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Table 5-2: Applicant's Proposed Mitigation Incorporated into the Project

Description	Project Component(s)	Project Phase(s)	Primary Resource(s) Affected
Water used for hydrostatic testing of the pipeline would be obtained from and discharged back to sources local to the section of pipeline being tested, thereby minimizing the potential for mobilization of invasive species.	Natural Gas Pipeline Corridor	Construction	Water and Sediment Quality; Vegetation; Wetlands/Special Aquatic Sties
The pipeline would use HDD to access deep water from the compressor station area to avoid shoreline impacts from trenching on the Kenai Peninsula.	Natural Gas Pipeline Corridor	Construction	Soils; Geohazards

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5.2.3 Additional Mitigation Identified for Consideration in Permit Decisions

The mitigation and monitoring discussed in this section is used to inform agencies with individual permit reviews and authorizations as an outcome of the NEPA process. Mitigation and monitoring measures identified or recommended during the NEPA process have been compiled and will be considered by the USACE and cooperating agencies as part of their permit decisions to further minimize project impacts. However, it is important to note that measures identified during the NEPA process may not be required by the federal agencies in their RODs. For example, CEQ guidance uses terms such as "reasonable, practicable, and appropriate" when considering potential mitigation and permit conditions. In addition, there may be potential mitigation measures identified through the public process that are not within the federal agencies' authority to require as a condition to a permit. It is also possible that some of the individual mitigation measures listed in this section may be adopted by PLP and incorporated into project plans prior to completion of environmental review. Furthermore, the USACE may continue to refine mitigation subsequent to completion of the EIS and issuance of their ROD during the permit application review process, and other permitting agencies may do likewise. Additional mitigation identified during that process may include project modifications that are in part considered feasible from a cost and constructability perspective. The ROD would identify those mitigation measures that the agency has committed itself to adopt and explain why any other practicable mitigation measures have not been adopted.

It should also be recognized that many of the permits required for approval of the Pebble Project are under the jurisdiction of the State of Alaska. Specific agencies may have clear compliance standards and requirements for monitoring of environmental conditions; future risks associated with unexpected conditions may also be addressed in specific permitting authorizations. Potential mitigation and monitoring measures put forward for consideration in the EIS are not intended to dictate conditions of State permit approval, but to identify potential measures for consideration as applicable. In assessing whether or not to adopt a mitigation measure in a project permit, agencies may further take into account whether they have adequate resources to enforce mitigation or a source of funding to do so, and measurable metrics in the mitigation measure to assess compliance and performance.

Appendix M includes a list of specific measures suggested during the scoping process. This list will be updated after public review of the Draft EIS for a comprehensive list of all measures identified during the NEPA process. All measures will be assessed based on the following criteria, with the goal of disclosing the likelihood that the measure would be adopted by responsible agencies as part of their permit decisions following completion of the NEPA process.

1. Effectiveness: assessment of the measures effectiveness in reducing the project-related impact.
2. Jurisdiction/Enforcement: assessment of potential agency jurisdiction/authority to require the measure and if the measure is reasonably enforceable by the agency with potential jurisdiction.
3. Reasonable/Practicable: assessment of the measures ability to achieve the basic project goal and if it is capable of being done after taking into consideration cost, existing technology, and logistics.

See Appendix M for a preliminary assessment of all measures identified during the EIS process. Measures assessed as likely to be implemented are presented in Table 5-3.

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Table 5-3: Mitigation and Monitoring Measures Assessed as Likely to be Implemented

Proposed Measure	Resource(s)	Potential Jurisdiction
Use palliatives to reduce airborne dust.	Air quality; Water and Sediment Quality; Fish Values; Soils; Health and Safety	ADEC
Measure hydrocarbon concentrations and related compounds in surface and groundwater during the periodic water quality monitoring events.	Water and Sediment Quality	ADEC
Consider mitigation banks and in-lieu fee programs as forms of compensatory mitigation.	WOUS, including Wetlands	USACE
Treat bilge water to remove more than oil before discharging to protect Iliamna Lake's ecology.	Water and Sediment Quality	ADEC

5.3 AVOIDANCE, MINIMIZATION, AND COMPENSATORY MITIGATION UNDER THE CLEAN WATER ACT

Compensatory mitigation can be a critical tool to help the federal government meet the longstanding national goal of "no net loss" of wetland acreage, function, and value. For projects authorized under Section 404, compensatory mitigation is not considered until all appropriate and practicable steps have been taken to first avoid and then minimize adverse impacts to the aquatic ecosystem pursuant to 40 CFR Part 230 (e.g., the CWA Section 404(b)(1) Guidelines).

Regulatory standards and criteria for the use of compensatory mitigation to offset unavoidable impacts to Waters of the US (WOUS), including wetlands, authorized under the CWA, were established on April 10, 2008 under 33 CFR Part 332 (USACE) and 40 CFR Part 230 (US Environmental Protection Agency [EPA]). Compensatory mitigation for unavoidable impacts may be required to ensure that activities requiring a permit comply with Section 404(b)(1) Guidelines. Compensatory mitigation is the restoration (reestablishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources to offset unavoidable adverse impacts. Compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Section 404 permit and may be achieved by purchasing credits through mitigation banks or in-lieu fee programs, by permittee-responsible mitigation, or by a combination of the three.

USACE and EPA signed a Memorandum of Agreement (MOA) in June 2018 concerning mitigation sequence for wetlands in Alaska under Section 404 of the CWA (US Department of the Army and EPA 2018). In this MOA, the agencies recognize that specific to the State of Alaska:

- Avoiding wetlands may not be practicable where there is a high proportion of land in a watershed or region which is jurisdictional wetlands.
- Restoring, enhancing, or establishing wetlands for compensatory mitigation may not be practicable due to limited availability of sites and/or technical or logistical limitations.
- Compensatory mitigation options over a large watershed scale may be appropriate given that compensation options are frequently limited at a smaller scale.
- Where a proportion of land is under public ownership, compensatory mitigation opportunities may be available on public land.

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- Out-of-kind compensatory mitigation may be appropriate when it better serves the aquatic resource needs of the watershed.
- Applying a less rigorous permit review for small project with minor environmental impacts is consistent with the Section 404 program regulations.

The MOA further specifies that although the USACE considers compensatory mitigation options in the order of: (1) purchase of credits from an approved mitigation bank; (2) purchase of credits from an approved in-lieu fee program; and (3) completion of a permittee-responsible mitigation project, in many parts of Alaska, the first two options may not be available or may not provide the appropriate number of resource type of credits to offset the proposed project impacts. In this case, some form of permittee-responsible mitigation is the only option and permittee-responsible mitigation developed using a watershed approach is preferred.

PLP is developing a Compensatory Mitigation Plan (CMP) in coordination with federal, state, and local governments, and landowners (Appendix M). The CMP will describe how PLP would compensate for the unavoidable losses of WOUS including wetlands, streams, ponds, and creeks in the project area. PLP will be required to evaluate a full suite of available and practicable permittee-responsible mitigation options to comply with the provisions of the 2008 Mitigation Rule and the 2018 MOA. [Note: This will be updated when the draft CMP is available].

Mitigation will be considered throughout the NEPA and permitting processes. The USACE has completed a draft 404(b)(1) evaluation for compliance with the CWA prior to issuance of the ROD (Appendix F). Specific mitigation conditions would be determined following completion of the environmental review and will be included in the ROD for any permit that may be issued. [Note: This section will be updated for the Draft EIS after the draft 404(b)(1) analysis is complete].

5.3.1 Applicant's Proposed Avoidance and Minimization

Note to USACE: We believe these are captured in Table 5-2. Will there be separate avoidance and minimization measures in the CMP?

5.3.2 Applicant's Proposed Compensatory Mitigation

Note: This section will be updated when the draft CMP is available.

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6.0 CONSULTATION AND COORDINATION

This section summarizes the consultation and coordination with agencies, as well as the public involvement opportunities for the Environmental Impact Statement (EIS), through preparation of the Draft EIS.

6.1 AGENCY COORDINATION

The U.S. Army Corps of Engineers (USACE) is the lead federal agency for this EIS. Six federal agencies, the State of Alaska, Lake and Peninsula Borough, and two tribes are serving as cooperating agencies for this EIS, listed below. These cooperating agencies are involved in informing the EIS process based on their expertise, to ensure that this EIS provides a full and fair disclosure of the probable impacts of the proposed project and provides a sound basis for agency permit decisions. The cooperating agencies also informed the alternatives selection process to determine which alternatives would be carried through for analysis (see Chapter 2, Alternatives).

- Advisory Council on Historic Preservation
- Bureau of Safety and Environmental Enforcement
- Curyung Tribal Council
- Lake and Peninsula Borough
- Nondalton Tribal Council
- National Park Service
- Pipeline and Hazardous Materials Safety Administration
- State of Alaska
- U.S. Coast Guard
- U.S Fish and Wildlife Service

6.1.1 Biological Assessments

Additional agency consultation is required if there may be impacts to a resource under the jurisdiction of an agency outside of the lead agency. The Pebble Project has the potential to impact threatened or endangered species protected under the Endangered Species Act (ESA), and therefore requires consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NFMS). The USACE requested initiation of informal consultation to the USFWS and NMFS on [Date to be added once informal consultation is initiated]. Four species under ESA jurisdiction of USFWS are evaluated in a Biological Assessment (BA) regarding the impacts of project activities to each of the listed species (this Draft BA is included as Appendix G). Two species under the ESA jurisdiction of NMFS are evaluated in a BA regarding the impacts of project activities to each of the listed species (this Draft BA is included as Appendix H).

6.1.2 Essential Fish Habitat Assessment

Additional agency consultation is required if there may be impacts that potentially affect Essential Fish Habitat (EFH) for the species regulated under a federal Fishery Management Plan (FMP). Under the Magnuson-Stevens Fishery Conservation and Management Act, each FMP must describe and identify EFH for the fishery; minimize, to the extent practicable, the adverse effects of fishing on EFH; and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies must consult with NMFS regarding any action they authorize, fund, or undertake that may adversely affect EFH, and NMFS must provide conservation recommendations to federal and state agencies regarding any action that would adversely affect EFH. The USACE requested initiation of informal consultation to the NFMS on

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[Date to be added once informal consultation is initiated]. The Pebble Project has the possibility to affect EFH for five species of Pacific salmon that could occur within the project area, including Chinook, sockeye, coho, chum, and pink salmon. A Draft EFH Assessment is included as Appendix I.

6.2 TRIBAL CONSULTATION AND GOVERNMENT-TO-GOVERNMENT CONSULTATION

Federal agencies are charged with engaging in regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, pursuant to Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments (November 6, 2000). The USACE Tribal Consultation Policy (2013) states that, "Commands will ensure that all Tribes with an interest in a particular activity that has the potential to significantly affect protected tribal resources, tribal rights (including treaty rights) and Indian lands are contacted and their comments taken into consideration." As the lead federal agency for the development of the Pebble Project EIS, the USACE is responsible for government-to-government consultation and coordination with federally recognized tribes that may be impacted by the proposed project.

The government-to-government consultation process for the Pebble Project EIS is designed to provide federally recognized tribes in Alaska that may potentially be impacted by the proposed project with opportunities for meaningful participation in the federal permitting process. Tribes and other Alaska Native stakeholders will have several opportunities throughout the environmental review process to participate and provide input. The USACE developed a list of 35 federally recognized tribes that could be potentially impacted by the proposed project. USACE notified and invited these tribes into government-to-government consultation early in the process. The consultation process was coordinated with the NEPA scoping effort to the extent possible. Information learned through tribal consultation will inform the EIS, as appropriate.

An initial letter was sent to the tribes on the USACE's list, including basic project information, how tribes may participate in the development of the EIS, and an invitation for formal government-to-government consultation. A tribe that does not request formal consultation may participate in informal consultation throughout the project review. Informal consultation consisted of the two-way sharing of information through mailings, teleconferences, and regional meetings with tribes during the NEPA process, held separately from the public meetings.

[Additional information to be added from USACE].

During consultations, the USACE took the opportunity to discuss Traditional Ecological Knowledge (TEK) and solicit information on subsistence, archaeological sites, and traditional cultural properties, and additionally to obtain special expertise regarding any environmental, social, and/or economic impacts. See Section 3.1, Introduction to Affected Environment, and Appendix K3.1 for more information on how TEK was collected and incorporated into the EIS.

6.2.1 National Historic Preservation Act, Section 106

In August 2018, the USACE initiated the process for the National Historic Preservation Act Section 106 Programmatic Agreement (PA), with an invitation to consult. The invitations were sent to the 35 federally recognized tribes, several village and regional Alaska Native corporations, and other interested organizations and individuals. An initial meeting was held with consulting parties on [Date to be added after the initial meeting is held]. After collecting input from the consulting parties, a draft PA was circulated [Date to be added after the draft PA is

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circulated] for consulting party review and comment. More information on the PA process can be found in Section 3.7, Cultural Resources. The PA is included in Appendix L.

6.3 SCOPING AND PUBLIC OUTREACH

Scoping is conducted to assist in determining the breadth of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. NEPA requires "scoping," which is described in 40 Code of Federal Regulations 1501.7 as, "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action, the process shall be termed scoping…" The scoping process provides an opportunity for people potentially affected by the project to express their views and concerns, and to contribute to the completeness of the EIS. The scoping period began on April 1, 2018 and continued through June 29, 2018.

The scoping effort for the Pebble Project EIS began with a press release issued by the USACE, and included mailing a scoping package to the 35 identified tribes, a newsletter mailed to every post office box in potentially affected communities, development of the project website, and nine public scoping meetings, detailed in Table 6-1.

Table 6-1: Scoping Meetings

Date	Community	Location and Time
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM
April 19, 2018	Anchorage	Dena'ina Center, 11:00 AM-9:00 PM

The complete scoping effort for the Pebble Project EIS is described in Appendix A.

Participation in the scoping process was widespread, with many hours of questions and testimony, along with comments submitted via the project website, email, and mail to the USACE. Public comments during scoping meetings were recorded as transcripts and used to identify specific comments for documentation in the scoping process. A summary of issues received during scoping is provided in Appendix A.

6.4 ONGOING COORDINATION EFFORTS

Coordination with cooperating agencies will continue to occur following the release of the Draft EIS. Agency expertise will remain important for informing the analysis and addressing critical comments from the public to develop the Final EIS. Consultation with the USFWS and NMFS will continue for ESA and EFH assessments.

Tribal consultation is an ongoing effort by the USACE to connect with leaders to share information, express concerns, and answer questions. Outreach and coordination for the PA will continue, with the Final PA being released around the same time as the Final EIS.

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Scoping was the first opportunity for public involvement under the NEPA process. A Notice of Availability of this Draft EIS was published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment for 90 days. The Draft EIS comment period will include public meetings in the same communities where scoping meetings were held. A second newsletter announced the release of the draft; providing information for attending meetings and instructions on commenting.

The project website will continue to be updated throughout the EIS process.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/6/2018 3:15:40 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: Review Sections 3.19/4.19; Please review and comment if requested of your agency by 12/04/2018 (UNCLASSIFIED)
Attachments: 11_06_2018_Sec3.19_Noise_reviewdraft.docx; 11_06_2018_Sec4.19_Noise_reviewdraft.docx

CLASSIFICATION: UNCLASSIFIED

Attached are 2 Word files, the review drafts of:

Sec3.19/4.19-Noise (CAs listed as NPS, USACE, and State of Alaska). There are no figures associated with these sections.

A four-week review period for CAs gives a return date to USACE of 12/4/2018.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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3.19 NOISE

Noise is typically characterized as unwanted sound. Because ambient sound is generally not considered a problem, they are not typically classified as noise. The ambient sound level is a composite of sound from all sources, including the natural background and anthropogenic sources—it is, by way of example, the total sound received by the microphone of a sound level meter. Ambient sound levels are often the starting point for analyzing noise impacts, since such environmental noise analysis typically compares Project-attributed noise to either ambient or natural background sound based on applicable adverse effect or impact assessment criteria.

The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment.

At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of each day and throughout the week and year. This variation is caused not only by various noise source activities, but also by changing weather conditions, the effects of seasonal vegetative ground cover, and the presence of ice or flowing water from nearby creeks and rivers.

Table 3.19-1 provides examples of outdoor noise levels used in this section to provide context for describing existing conditions in the project area. Table 3.19-2 provides examples of indoor noise levels that could be experienced by current residents of communities near the project area. These levels are measured in terms of "A-weighted" decibels (dBA), which are used to quantify sound and its effect on people (EPA 1978), and emphasize frequencies that humans hear best. In addition, noise levels in Table 3.19-1 represent day-night sound levels (L_{dn}), an energy-averaged value over a 24-hour period that reflects increased sensitivity to noise when people are usually sleeping. Additional information on applicable noise and vibration concepts and methodologies used in characterizing noise of the affected environment is provided by AECOM (2018b).

Table 3.19-1: Examples of Noise Levels

Outdoor	Noise Levels (dBA, L_{dn})	Indoor
Jet Fly-over at 1,000 feet	100	Rock band
Gas lawn mower at 3 feet	90	Blender at 3 feet
Next to Busy Highway	87.5	
0.75 Mile from Touchdown at Major Airport	86.0	Garbage disposal at 3 feet
Noisy urban area during the day	70	Vacuum cleaner at 10 feet
Wooded Suburban Residential	51.0	Refrigerator at 3 feet
Rural Residential	39.0	
Wilderness Ambient	35.0	Library

Notes:

dBA = A-weighted decibel

L_{dn} = Day-night sound level, expressed in dBA

Source: EPA 1978, Caltrans 2009

Existing noise levels in the areas of each project component are discussed below as compared to the typical levels shown in Table 3.19-1. A radius of 10 miles from the mine site is used as a reference distance for potential noise impact in this EIS because it is considered to be a distance

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beyond which the noise effects are expected to be negligible. For the project alternative port site, transportation routes, and natural gas pipeline corridors, a reference distance of 0.5 mile from the project feature or alignment was selected (FERC 2017) to help locate and identify potential noise-sensitive receptor (NSR) property parcels discussed in each of the subsequent subsections organized by alternative.

3.19.1 Action Alternative 1 – Applicant's Proposed Alternative

3.19.1.1 Mine Site

Existing Sound

The mine site would be in a remote region of Alaska, characterized as having no development. No actual baseline noise data were collected in the vicinity of the mine site. However, data on ambient noise levels for generic land use types are available (Table 3.19-1). The values in Table 3.19-1 can be used to estimate the baseline ambient sound level for corresponding land use types in the EIS analysis area. Due to its remoteness and lack of development, the existing land use in the vicinity of the mine site corresponds to the "wilderness ambient" classification in Table 3.19-1. Therefore, the baseline ambient sound level for the mine site would be 35 L_{dn} (Table 3.19-3).

Table 3.19-2: Baseline Outdoor Noise Levels at Mine Site

Pebble Project Component	Baseline Outdoor Ambient Sound Level (dBA)	Basis
Component includes all facilities in the mine site including: open pit, mill and ore processing, water treatment plants, water management ponds, bulk and pyritic tailings storage facilities, power plant, utilities, services and infrastructure, mine maintenance and safety controls	35 L_{dn}	Typical L_{dn} for Wilderness (EPA 1978), L_{dn} for Outdoor Locations

Notes:

dBA = A-weighted decibel

L_{dn} = day-night sound level, expressed as dBA

Source: EPA 1978

For purposes of comparison, National Park Service (NPS) staff measured outdoor sound levels at a variety of geographically and biologically representative regions of Denali National Park based on a percentile-exceeded sound level, L_{50} (NPS 2009b). This value reflects the time-varying character of environmental noise and represents the noise level exceeded during 50 percent of the measured time interval, which is also the statistical median during the measurement interval. Levels will be above and below this value exactly one-half of the measurement time. NPS (2009b) found that measured L_{50} for a set of five monitored areas ranged from 23.1 dBA to 41.4 dBA, depending on acoustical contributors such as proximity of flowing water and frequency of aircraft overflights. Assuming these monitored wilderness-type locations have geographic and biologic (e.g., vegetative ground cover and terrain) similarity to the mine site, if 32 dBA were to represent an arithmetic average of these L_{50} values, and if L_{50} were to be considered essentially equivalent to L_{eq} in these cases (L_{eq} is an energy-averaged value over a specific time period), then the corresponding calculated L_{dn} would be 38 dBA and thus comparable (i.e., within 3 dBA) to the presented L_{dn} value for the mine site in Table 3.19-3.

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Sensitive Receptors

There are no apparent existing NSR or properties known to have any "residential" classification within approximately 10 miles of the mine site.

3.19.1.2 Transportation Corridor

Existing Sound

For the purpose of describing existing noise levels, facilities in the transportation corridor are grouped and summarized according to location and use, as follows:

- **Mine Access Road** – As with the mine site, most of the mine access road would be in a remote area with no development. No actual ambient sound data were collected in the vicinity of the mine access road. The existing land use in the vicinity of the mine access road (including its southern terminus on the northern shoreline of Iliamna Lake) corresponds with the "wilderness ambient" classification in Table 3.19-1 and thus has a baseline noise level of 35 dBA L_{dn}.
- **Iliamna Spur Road** – As with the mine access road, the spur road would in a remote area with very little development. Aside from its southern terminus near Iliamna Airport, no actual ambient sound data were collected in the near vicinity of the spur road; existing sound levels appear to correspond with the "wilderness" classification in Table 3.19-1 and thus have a baseline noise level of 35 dBA L_{dn}. Within one mile of the vicinity of the southern terminus, where the spur road intersects with the existing Portage Road, existing outdoor noise levels were measured at position "M2" as reported in Michael Minor & Associates (MMA 2010) (Table 3.19-4). From measured L_{eq} data collected during daytime, evening[1], and nighttime periods at M2, and additional baseline field survey positions representing a variety of land uses (residential areas, a school, and a medical clinic), baseline L_{dn} values were calculated for the communities of Iliamna and Newhalen (shown in Table 3.19-4).

Table 3.19-3: Calculated Baseline Day-Night Sound Levels at Representative Iliamna and Newhalen Community Land Uses

Measurement Location (and Summary Description)[1]	Summer Season L_{dn} (dBA)	Winter Season L_{dn} (dBA)
M2 – Central Newhalen River Road (north of Iliamna Airport at the northernmost occupied residence on the Newhalen River Road)	53	47
M3 – Iliamna Airport (near Iliamna Air Taxi terminal)	54	61
M4 – Post Office and Community Medical Clinic (intersection of Iliamna Road and Newhalen Road)	51	52
M5 – North Newhalen (residential area just off Newhalen Road)	47	42

[1] The day-night level (L_{dn}) calculation considers 15 daytime hours (7 AM to 10 PM) and 9 nighttime hours (10 PM to 7 AM), the latter of which are penalized by +10 dB. Because the MMA (2010) report presents day and evening measured levels separately, this means the 3 evening (7 PM to 10 PM) hours in the L_{dn} calculated were potentially different from the daytime (7 AM to 7 PM) hours, but not penalized with the +10 dB for the nighttime hours.

If this were a community noise equivalent level (CNEL) value (weighted average of noise level over time) being calculated, these 3 evening hours (7 PM to 10 PM) would be penalized by +5 dB.

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Table 3.19-3: Calculated Baseline Day-Night Sound Levels at Representative Iliamna and Newhalen Community Land Uses

Measurement Location (and Summary Description)[1]	Summer Season L_{dn} (dBA)	Winter Season L_{dn} (dBA)
M6 – Newhalen School (in front of the school near Newhalen Road)	56	63
M7 – Roadhouse Bed and Breakfast (and single-family residence on Iliamna Road)	47	42
M8 – Iliamna General Store and Vicinity (on Iliamna Village Spur close to several residential buildings)	54	59
M9 – Iliamna Lake (near the docks at Slop Bucket Road and Iliamna Village Spur close to floatplane moorage)	59	47

Notes:

dBA = A-weighted decibel

L_{dn} = day-night sound level, expressed as dBA

Source: MMA 2010

- **Kokhanok Airport Spur Road** – Most of this spur road route is undeveloped and appears to be considered compatible with the "wilderness" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}. Baseline noise level measurements were not conducted in this vicinity. At the northern terminus of the spur road are an airstrip and the community of Kokhanok, a census-designated place with a population of 140 residents, which could be considered "wilderness ambient," per Table 3.19-1. Not counting noise from occasional aircraft taking off and landing from the existing airstrip (an active public airport with Federal Aviation Administration [FAA] identifier "9K2"), the indicated level of 35 dBA L_{dn} would be conservative when compared with an Federal Transit Administration (FTA) based estimate of 31 dBA L_{dn}, which used population density as an input (8.2 people per square mile, based on US Census Bureau [USCB] [2018c] data).
- **North Ferry Terminal** – The vicinity of this Iliamna Lake coastal area is undeveloped and considered compatible with the "wilderness ambient" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}, except for temporary increases in noise level due to wind and lake wave activity. Baseline noise level measurements were not conducted in this vicinity. Because the ferry terminal and natural gas pipeline corridor would be within a mile of the Upper Talarik Creek outlet into Iliamna Lake, the area is exposed to seasonal transportation noise sources such as small boat traffic for sport fishing during the summer, and possibly snowmachines during winter. No such motorized boats or vehicles would be expected during the shoulder seasons of lake freeze-up and break-up.
- **South Ferry Terminal** – The vicinity of this Iliamna Lake coastal area is undeveloped and would be considered compatible with the "wilderness ambient" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}, except for temporary increases in noise level due to winds and lake wave activity. Baseline noise level measurements were not conducted in this vicinity. Because the ferry terminal and natural gas pipeline corridor would be within 2 miles of the Gibraltar River outlet into Iliamna Lake, the area is exposed to seasonal transportation noise sources such as small boat traffic for sport fishing during the summer, and possibly snowmachines

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during winter. No such motorized boats or vehicles would be expected during the shoulder seasons of lake freeze-up and break-up.

  - **Kokhanok East Ferry Terminal Variant** – The south ferry terminal site would be on the southern shore of Iliamna Lake, east of the terminal site described in Alternative 1 (Chapter 2). The aforementioned seasonal transportation noise sources near the mouth of the Gibraltar River would not be expected, but the outdoor ambient sound level would be expected to have the same baseline noise level of 35 dBA L_{dn} with temporary increases due to winds and lake wave activity.

- **South Access Road** – This road would traverse between Iliamna Lake and Cook Inlet. No actual ambient sound data was collected in this undeveloped area. The expected baseline outdoor ambient sound level corresponds with the "wilderness ambient" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}.

Sensitive Receptors

- **Iliamna Spur Road** – Within 0.5 miles from the intersection of the spur road route with Portage Road, there are three possible NSRs with undetermined parcel types, which are apparently "Native allotments" with regard to ownership.
- **North Ferry Terminal** – Within 0.5 miles from the natural gas pipeline route (and the parallel road route) at the terminal location, there are two possible NSRs with undetermined parcel types, which are apparently "Native allotments" with regard to ownership.
- **South Ferry Terminal** – Within 0.5 miles from the natural gas pipeline route (and the parallel road route) at the terminal location, there are no identified possible NSRs.
- **South Access Road** – Within 0.5 miles from the natural gas pipeline route (and the parallel road route along this route), there are four possible NSRs with undetermined parcel types, which are apparently "Native allotments" with regard to ownership. All are within 6 miles of the south terminal ferry location, and within 4 miles of the village of Kokhonak.

3.19.1.3 Amakdedori Port

Existing Sound

The area in the vicinity of the Amakdedori port site that serves as both the western Cook Inlet landfall (see Section 3.19.1.4) and the southern terminus of the transportation corridor (see Section 3.19.1.3) is currently undeveloped, and thus is generally expected to have outdoor ambient sound levels consistent with the "wilderness ambient" classification in Table 3.19-1 and a baseline noise level of 35 dBA L_{dn}. Depending on proximity to the Cook Inlet shoreline along with the magnitude and direction of winds and wave activity, localized sound levels may be higher. Baseline noise levels were not measured at the Amakdedori port site.

Sensitive Receptors

Within 0.5 mile from the port site, there are three large properties that may be NSRs (depending on existing land use and/or occupancy) with parcel types and ownership as follows: two Bureau of Land Management properties, with one indicated as "residential vacant," and the other as "institutional vacant;" and one Alaska Department of Natural Resources property, classified as "residential vacant."

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3.19.1.4 Natural Gas Pipeline Corridor

Existing Sound

For the purpose of describing existing noise levels, features along the natural gas pipeline corridor are grouped and summarized according to location as follows:

- **Mine Site to Amakdedori Port** – This section of the pipeline corridor parallels the mine access road, ferry terminals, south access road, and Amakdedori port site described previously. It shares the same area and existing outdoor ambient sound environment with these project components, and thus is considered compatible with the "wilderness" classification in Table 3.19-1, with a baseline noise level of 35 dBA L_{dn}.
- **Anchor Point** – This census-designated community of 1,930 residents is near the compressor station site at the eastern Cook Inlet landfall of the natural gas pipeline. Baseline noise level measurements were not conducted in this vicinity. Using an FTA-based estimation method that uses population density (21.2 people per square mile, based on US Census data [USCB 2018a]) as input, the baseline outdoor ambient sound level could be calculated as 35 dBA L_{dn}, a value comparable to the "wilderness ambient" designation per Table 3.19-1; however, the Sterling Highway (Alaska Route 1), a major two-lane roadway that parallels the coastline with minimum posted speed limits of 50 miles per hour, would be expected to raise outdoor ambient noise levels to a minimum of 50 dBA L_{dn} per FTA guidance.

Sensitive Receptors

- **Mine Site to Amakdedori Port** – This section of the pipeline corridor parallels the mine access road, ferry terminals, south access road, and Amakdedori port site, and would have the same sensitive receptors described previously.
- **Anchor Point** – A total of 43 possible NSRs were identified within 0.5 mile of the compressor station, located approximately 0.25 mile southeast of the Sterling Highway near its intersection with Bourbon Avenue, where the proposed pipeline makes landfall from Cook Inlet. These 43 potential NSRs are indicated to be "residential" with respect to current land use. There are also the following property parcels in this 0.5-mile distance range from the boundary of the planned compressor station:
  - 33 privately owned "vacant"
  - 3 state-owned "vacant"
  - 1 Native-owned "vacant"
  - 9 privately owned with "accessory building"
  - 5 privately owned "commercial".

The methodology and data sources used to identify the possible NSRs and compile these other properties are described by AECOM (2018b).

3.19.2 Action Alternative 2 – North Road and Ferry

3.19.2.1 Mine Site

Existing sound and potential NSRs near the mine site would be the same as described for Alternative 1.

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3.19.2.2 Transportation Corridor

Existing Sound

For the purpose of describing existing noise levels, facilities in the transportation corridor are grouped and summarized according to location and use, as follows:

- **Mine Access Road** – As with the mine site, the majority of the mine access road would be in a remote area with no development. No actual ambient sound data were collected in the vicinity of the mine access road. The existing land use in the vicinity of the mine access road (including its southern terminus on the northern shoreline of Iliamna Lake, near Eagle Bay) appears to correspond with the "wilderness ambient" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}.
- **Eagle Bay Ferry and Pile Bay Ferry Terminals** – The vicinities of these Iliamna Lake coastal areas are generally undeveloped and would be considered compatible with the "wilderness ambient" classification in Table 3.19-1, and thus have a baseline noise level of 35 dBA L_{dn}, aside from temporary increases in noise level due to winds and lake wave activity. Baseline noise level measurements were not conducted in these vicinities.
- **Port Access Road** – This road would connect the Pile Bay ferry terminal site to the Diamond Point port site, bypassing all but 5 miles of the existing Williamsport-Pile Bay road. The existing road is primarily used by large tractor-trailer rigs in the summer season to haul boats and other bulky freight between Iliamna Lake and the Cook Inlet. No actual ambient sound data was collected in this area, which has little development. Given this existing land use condition, the expected baseline outdoor ambient sound level would appear to correspond with the "wilderness ambient" classification in Table 3.19-1, and thus has a baseline noise level of 35 dBA L_{dn}. The infrequent truck traffic on the existing Williamsport-Pile Bay road would temporarily raise the outdoor ambient sound level near the route.

Sensitive Receptors

- **Mine Access Road** – A portion of a Native patent property parcel (AKAA 007124) intersects the 0.5-mile distance from the proposed road alignment, and may be considered noise-sensitive if a structure (e.g., seasonal shelter or residence) is occupied.
- **Eagle Bay Ferry and Pile Bay Ferry Terminals** – There are no potential NSR parcels identified within 0.5 miles of the Eagle Bay ferry terminal site. The Pile Bay ferry terminal site appears to be within 0.5 miles of six Native patent parcels (AKAA 032735, AKAA 006025A, AKAA 033441, AKAA 063898B, AKAA 005720, and AKAA 003103). The potential for NSRs would depend on whether the seasonal shelters or residences on these properties are occupied.
- **Port Access Road** – This road alignment, which includes a portion of the existing Williamsport-Pile Bay Road, is within 0.5-mile distance of the following identified Native patent property parcels: AKAA 004592A, AKAA 051014, AKAA 008064B, AKAA 007125A, AKAA 001032B, AKAA 062887B, AKAA 006025B, AKAA 063898B, AKAA 005720, AKAA 003103, AKAA 032735, AKAA 006025A, and AKAA 033441. The potential for NSRs would depend on whether the seasonal shelters or residences on these properties are occupied. There is also property parcel 23116002, which is identified as "residential vacant," and thus a possible NSR.

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3.19.2.3 Diamond Point Port

Existing Sound

Based on recent project site vicinity visit observations (AECOM 2018h), the area in the vicinity of the Diamond Point port site that would serve as both the western end of the natural gas pipeline (see Natural Gas Pipeline Corridor, below) crossing the Cook Inlet, and the eastern terminus of the transportation corridor (see Transportation Corridor, above), is undergoing apparent development activity due to a nearby gravel and rock quarry. According to Special Condition #6 on the USACE permit (POA-2008-523) associated with this work (USACE 2012), such activities would only be permitted to occur from May 1 to October 31 each year. Depending on the progress of tideland fill and the corresponding pace of gravel and granite quarry production, noise-producing activities could include dredging, pile-driving, rock blasting, distribution of materials, and the operation of heavy equipment and trucks, consistent with the description in POA-2008-523. One or more of these noise-producing sources would temporarily elevate outdoor ambient sound levels to a degree that would depend largely on the distance between the listener and the source of the noise-producing activity or event.

Outside of this permitted site development activity, from October 31 to May 1, little or no noise-producing activities would be expected at the Diamond Point port site. This suggests that outdoor ambient sound levels would reflect naturally occurring acoustical contributors and be more consistent with the "wilderness ambient" classification in Table 3.19-1 and a baseline noise level of 35 dBA L_{dn}. Depending on proximity to the Cook Inlet shoreline and the magnitude of winds and wave activity, localized sound levels may be higher. Baseline noise levels were not measured at this project area.

Sensitive Receptors

Within 0.5 mile of the port site, there are three large properties that may be NSRs (depending on existing land use and/or occupancy) with parcel types and ownership as follows: three Native patent parcels (AKAA 006342, AKAA 004225B, and AKAA 004592A). According to online aerial imagery sources available through Google Earth, there are no apparent existing structures on these properties at the time of this writing.

3.19.2.4 Natural Gas Pipeline Corridor

Existing Sound

For the purpose of describing existing noise levels, features along the natural gas pipeline corridor are grouped and summarized according to location as follows:

- **Mine Site to Diamond Point Port** – This overland section of the pipeline corridor would parallel the north route mine access road (see description of Alternative 2, Chapter 2). Existing outdoor ambient sound environment along this corridor is considered compatible with the "wilderness" classification in Table 3.19-1, and thus have a baseline noise level of 35 dBA L_{dn}.
- **Ursus Cove to Diamond Point Port** – This section of the pipeline would be buried from Ursus Cove to Cottonwood Cove, on the seafloor across the cove, and connect to the onshore portion at the Diamond Point port site. The overland area represented by this pipeline section is undeveloped; it would be compatible with the "wilderness" classification in Table 3.19-1 and have a baseline noise level of 35 dBA L_{dn}.
- **Anchor Point** – This is the same natural gas pipeline eastern terminus on the Kenai Peninsula as described for Alternative 1.

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Sensitive Receptors

- **Mine Site to Diamond Point Port** – This section of the pipeline corridor parallels the north route mine access road described for Alternative 2, Chapter 2, and would have the same potential NSRs.
- **Anchor Point** – This is the same natural gas pipeline eastern terminus on the Kenai Peninsula as described for Alternative 1.

3.19.3 Action Alternative 3 – North Road only

3.19.3.1 Mine Site

Existing sound and potential NSRs near the mine site would be the same as what is described for Alternative 1.

3.19.3.2 Diamond Point Port

Existing sound and potential NSRs near the mine site would be the same as described for Alternative 1.

3.19.3.3 Transportation Corridor

Existing Sound

For the purpose of describing existing noise levels, facilities in the transportation corridor are grouped and summarized according to location and use, as follows:

- **Mine Access Road** – As with the mine site, most of the mine access road is remote with no development. Along the undeveloped portion of the overland transportation route, the "wilderness ambient" classification in Table 3.19-1 would be expected, and thus have a corresponding baseline noise level of 35 dBA L_{dn}. Pedro Bay is a village along the proposed route, where existing outdoor noise levels were measured at positions M10, M11, and M12 (Michael Minor and Associates [MMA 2010). From measured L_{eq} data collected during daytime, evening, and nighttime periods at these three positions, calculated baseline L_{dn} values for the Pedro Bay community are shown in Table 3.19-5.

Table 3.19-4: Calculated Baseline Day-Night Sound Levels at Representative Pedro Bay Community Land Uses

Measurement Location (and Summary Description)	Summer Season L_{dn} (dBA)	Winter Season L_{dn} (dBA)
M10 – Pedro Bay on Iliamna Lake (along the lake shore next to several cabins used for fishing trips and where several floatplanes were moored)	48	42
M11 – Pedro Bay Tribal Center (behind Tribal Center, up the hill)	48	40
M12 – Pedro Bay School (on school grounds near the main school entrance, additional readings taken behind school at power plant)	44	44

Notes:

dBA = A-weighted decibel

L_{dn} = day-night sound level, expressed as dBA

Source: MMA 2010

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Sensitive Receptors

- **Mine Access Road** – This road alignment, which includes a portion of the existing Williamsport-Pile Bay road, is within a 0.5-mile distance of the following identified Native patent property parcels: AKAA 004592A, AKAA 051014, AKAA 008064B, AKAA 007125A, AKAA 006055, AKAA 003102, AKAA 008064C, AKAA 050508, AKAA 006734A, AKAA 008060, AKA 062761, AKAA 006081, AKAA 007913, AKA 061262A, AKAA 006722, AKAA 001032A, AKA 057267, AKA 053553, AKA 062076, AKA 063273, AKA 063274A, AKAA 007150A, AKAA 008064A, AKAA 007844, AKAA 007724, and AKAA 007721. The potential for NSRs would depend on whether the existing seasonal shelters or residences on these properties were occupied. The parcels in the immediate vicinity of the Pedro Bay community, where the aforementioned sound level measurements were conducted by MMA in 2010, include AKA 057267, AKAA 006722, AKAA 001032A, and AKA 061262A. Near the eastern terminus of the road route, approximately 3 miles north of the Diamond Point port site, there is a property parcel (23116002) identified as "residential vacant," thus a possible NSR.

3.19.3.4 Natural Gas Pipeline Corridor

Existing Sound

For the purpose of describing existing noise levels, features along the natural gas pipeline corridor are grouped and summarized according to location as follows:

- **Mine Access Road** – This section of the pipeline would parallel the mine access road and Diamond Point port site as described for Alternative 2. It shares the same area and existing outdoor ambient sound environment with these project components, which are considered compatible with the "wilderness" classification in Table 3.19-1 (and thus have a baseline noise level of 35 dBA L_{dn}), or would be expected to have higher L_{dn} values in the vicinity of the Pedro Bay village per Table 3.19-5.
- **Ursus Cove to Diamond Point Port** – Existing sound would be the same as described for Alternative 2.
- **Anchor Point** – This is the same natural gas pipeline corridor east Cook Inlet landfall as described or Alternative 1.

Sensitive Receptors

- **Mine Site to Diamond Point Port** – This section of the pipeline parallels the aforementioned mine access road and Diamond Point port as described for Alternative 2and would have the same potential NSRs.
- **Anchor Point** – This is the same natural gas pipeline eastern terminus on the Kenai Peninsula as described for Alternative 1.

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4.19 NOISE

This section addresses primarily direct effects on human receptors during all three project phases. Potential noise impacts resulting from the project on resources, such as wildlife or threatened and endangered species, are described in Section 4.23, Wildlife Values, and Section 4.25, Threatened and Endangered Species.

4.19.1 Noise Impacts Analysis Methodology

The methodology framework applied to assessing direct noise-related impacts considers the intensity of project-attributed sound (or the resulting increase in outdoor ambient sound level over existing [pre-project] conditions), the geographic extent of noise transmission, and the duration over which that project-caused noise is expected to occur.

The quantitative and qualitative descriptions in this section use US Environmental Protection Agency (EPA) noise concepts and guidelines (EPA 1978) to assess the degree of noise impacts at the nearest noise-sensitive receptor (NSR) for each phase, and for each component of the project.

To quantitatively assess potential noise impacts at NSR locations, this analysis considers the aggregate of project-attributed noise sources of interest, on average, emitting from a common point (or in some cases, such as for transportation routes, a line segment) and applies the following sound attenuation factors:

- Geometric divergence – for point-source sound propagation, this yields 6 A-weighted decibels (dBA) of noise reduction per doubling of distance (DD) traveled by the sound, or 3 dBA per DD for a line source
- Atmospheric absorption – although frequency-dependent, the rate of sound attenuation due to sound energy absorbed by the air can typically be expressed as 1 dBA per 1,000 feet traveled
- Ground absorption – given acoustically absorptive ground surfaces near the source of noise emission and the receiver, up to 5 dBA can be realized.

Although natural terrain may offer expanses of forests and ridgelines that might occlude the direct sound paths between project noise source(s) and the noise-sensitive area (NSA) of interest, these additional attenuation factors are, unless otherwise noted, conservatively not incorporated into these analyses.

Reference sound levels of equipment, vehicles, and activities associated with the project are provided in AECOM 2018c. AECOM 2018c also includes acoustical terminology and concepts used during analysis and discussed in this section.

4.19.2 No Action Alternative

Under the No Action Alternative, the project would not be undertaken, and the required permits would not be issued. Consequently, there would be no noise or vibration impacts on any sensitive receptors from the implementation of the No Action Alternative.

4.19.3 Alternative 1 – Applicant's Proposed Alternative

4.19.3.1 Mine Site

The following factors used in the noise impact analyses are common to all project phases for the mine site component:

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- There is no known residential land use or other type of NSR within 10 miles of the mine site. However, subsistence hunters and recreationists may be temporarily present in any of these Alaska Department of Fish & Game (ADF&G) Management Areas that adjoin or are near the mine site: Mulchatna River, Lake Clark, and Iliamna Lake.
- The existing ambient noise level at the mine site and its adjoining vicinity is estimated to be comparable to "wilderness ambient" per Table 3.19-1, and therefore is 35 dBA day-night average sound levels (L_{dn}).

Although there are caribou, moose, bear, and other wildlife in the Bristol Bay Area Plan Management Unit Region 9 area that surrounds the mine site, there are no unique resources or resources protected by legislation with respect to noise. Impacts from noise on wildlife are addressed in Section 4.23, Wildlife Values.

Noise Sources

Construction

Construction of the mine site would occur over a 4-year period. Construction activities in the mine site would include initial pioneering and development of the pit to be mined; and the construction of mining facilities, milling facilities, tailings storage facilities, overburden storage facilities, roads, and support infrastructure. These activities would require use of heavy equipment such as wheel loaders, dozers, drills, and haul trucks.

Construction noise levels are rarely steady; instead, they fluctuate and are intermittent, depending on the number and type of equipment in use at any given time. There would be times when no large equipment is operating, and noise would be at or near existing ambient levels. In addition, construction-related sound levels experienced by a sensitive receptor in the vicinity of construction activity would be a function of distance and the presence and extent of vegetation and intervening topography between the noise source and the sensitive receptor.

Operations

Mine site operation would involve noise-producing activities and processes that include extracting rock from the ground (including blasting) and delivering ore to the milling facilities. Routine and preventive maintenance of support facilities and infrastructure would occur in the mine site area for management and safety practices.

Closure

In addition to reclamation activities conducted during mine closure, concurrent reclamation would be performed during operations whenever possible in areas that are no longer required for active mining. Closure earthwork activities would require major grading, contouring, and possible growth media placement using industry-standard heavy equipment; operation of this heavy equipment would in turn cause noise and vibration.

AECOM 2018c lists noise levels emitted by expected mobile and stationary machinery that would be operated at the mine site during construction, operation, and closure.

Impacts Analysis

Sound attenuation with distance and other factors were considered in prediction of noise impacts. Table 4.19-1 presents results of the predicted noise analyses, listing distances within which

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adverse noise effects would be expected and considered significant for the indicated NSR types as follows:

- When the predicted mine site noise level would exceed 30 dBA equivalent noise level (L_{eq}) at a location, it would risk causing sleep disturbance for recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient" per Table 3.19-1. This 30 dBA L_{eq} threshold at night is based on World Health Organization (WHO) guidance for sleep disturbance (WHO 1999), assuming that these receptors are not housed, and therefore, fully exposed to the outdoors (e.g., fabric tents, "lean-to" structures, hunting blinds, and other temporary structures assumed to provide no meaningful noise reduction).
- The noise level attributed to the mine site would exceed 45 dBA L_{dn} at a building exterior, and thereby be 10 dBA greater than the existing outdoor ambient sound level at a potential NSR (e.g., a temporarily occupied seasonal shelter).

Table 4.19-1: Distances from Mine Site within which Noise-Sensitive Receptors in Wilderness (35 dBA L_{dn}) would be Impacted

Project Phase	Operational Season/Notes	Distance from Mine Site (feet), where 30 dBA L_{eq} Predicted	Distance from Mine Site (feet), where > 10 dBA over Existing L_{dn} Predicted
Construction	Summer & Winter	17,250	11,900
Operation	Summer & Winter	18,450	12,900
Closure	Summer & Winter	15,900	10,750

Notes:

dBA = A-weighted decibel; Leq = equivalent sound level (e.g., hourly)

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 35 dBA Ldn (wilderness)

The opportunity for noise effects at potential NSR within the indicated distances would last only as long as the project phase under consideration.

4.19.3.2 Transportation Corridor

The facilities associated with the transportation corridor include the subcomponents of surface transportation, air transportation, and water transportation, which are discussed below.

Surface Transportation

The four primary road segments in Alternative 1 are the mine access road, Iliamna spur road, south access road, and Kokhanok Airport spur road. Road segments were studied individually and by phase, as described in the following paragraphs.

Mine Access Road

Noise Sources

Construction

AECOM 2018b (Table 5) provides an estimated roster of equipment required to construct the mine access road. This analysis conservatively assumes that all equipment in AECOM 2018b (Table 5) would be operating and emitting noise from a common geographic point along the road

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alignment. As road construction progresses, this acoustical center-point would slowly travel from one endpoint (the mine site) to the other (north ferry terminal). Therefore, an NSR would only be as close to the construction activity as its perpendicular distance to the road alignment.

Operations

During operation, truck traffic along the mine access road would require up to 39 round-trips per day to deliver concentrate, fuel, reagents, and consumables. Given this anticipated average daily truck volume, plus an assumed similar number of light vehicles expected for transport of locally residing mine workers (i.e., not staying in the on-site camp), traffic noise can be estimated with general assessment techniques from Federal Transit Administration (FTA) guidance, with inputs as follows:

- Reference sound exposure levels (SEL) of 82 dBA at 50 feet for the big vehicles, and 74 dBA for the passenger vehicles (pick-up trucks and vans).
- Maximum road speed of 25 miles per hour (mph).
- Speed constants (C_s) of 15 for the large diesel-engine vehicles, and 30 for the passenger vehicles.

With these inputs, the traffic noise estimate, in terms of L_{dn}, is as follows:

- Within a distance of approximately 200 feet from the mine access road, the estimated traffic-attributed noise level would be greater than 45 dBA L_{dn} at a building exterior, and therefore 10 dBA greater than the existing outdoor ambient sound level at a potential NSR (e.g., a temporarily occupied seasonal shelter).

In addition to regular truck traffic volumes, operation of the mine access road would involve regular maintenance activities that vary with the summer and winter seasons. AECOM 2018b (Table 6) provides an estimated roster of equipment required to maintain the road for each of these two seasons. This analysis conservatively assumes that all listed equipment for the season in AECOM 2018b (Table 6) would be operating and emitting noise from a common geographic point along the road. As maintenance progresses, this acoustical center-point would slowly travel from one endpoint (the mine site) to the other (north ferry terminal). Therefore, an NSR would only be as close to the maintenance activity as its perpendicular distance to the roadway alignment.

Closure

The mine access road would be needed for post-mining closure and reclamation activities, and would remain as a long-term asset after the end of mining. Therefore, no noise would be expected related to project closure and reclamation activities associated with the mine access road. However, where there may be borrow pits or staging areas adjoining the road that would undergo reclamation, this analysis assumed the same equipment listed in AECOM 2018b (Table 4) for the Amakdedori port closure would be involved.

Impacts Analysis

There are two Native allotments (AKA 052447 and AKA 006290) with boundaries that are tangential to the road alignment. Within these properties, as well as accessible public lands that adjoin the alignment, the predicted analysis findings are presented in Table 4.19-2, showing distances within which adverse noise effects would be expected, and considered significant for two types of NSR: recreationists and subsistence hunters sleeping outdoors and subject to disturbance; and occupants of structures.

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Table 4.19-2: Distances from Mine Access Road within which Noise-Sensitive Receptors in Wilderness (35 dBA L_{dn}) would be Impacted

Project Phase or Activity(ies)	Operational Season/Notes	Distance from Alignment (feet), where 30 dBA L_{eq} Predicted	Distance from Alignment (feet), where > 10 dBA over Existing L_{dn} Predicted
Construction	Summer & Winter	8,800	5,280
Operations	Summer	8,500	5,000
Operations	Winter	7,600	4,500
Closure	Summer & Winter	10,550	6,400

Notes:

dBA = A-weighted decibel

Leq = equivalent sound level (e.g., hourly)

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 35 dBA Ldn (wilderness)

The anticipated noise impacts within the two above-stated distances would be temporary, enduring only for as long as the project phase occurs.

During operation, and with respect to a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the road, the "worst-case" possibility would be a concurrent pass-by of two trucks on the road—traveling in opposite directions. The sleep disturbance criteria in this context would be the aforementioned 45 dBA maximum L_{EQ} (L_{max}) value per WHO guidance (WHO 1999); therefore, the perpendicular distance from the road within which this truck noise might awaken an unhoused receptor is 0.5 mile. Should wide expanses of dense, linearly occluding vegetation or the presence of terrain features like ridgelines or hills obscure the receptor's view of the road, the actual traffic noise L_{max} value should be less at this distance. Put another way, a line-of-sight blocking ridgeline that yields a 10 dBA reduction in the propagated sound would enable the outdoors-sleeping receptor to be up to 1,000 feet away from the road without experiencing sleep disturbance from traffic.

Iliamna Spur Road

Construction

The spur road would connect the mine access road with the existing Portage Road, at a tee-intersection approximately 2 miles north of Iliamna Airport. Construction of the Iliamna spur road would be expected to involve the same type of equipment shown in AECOM 2018b (Table 5); therefore, anticipated noise levels would be similar to those predicted for the mine access road, and the distances at which 30 dBA L_{eq} and 45 dBA L_{dn} occur would also be the same (see Table 4.19-2). Given these distances, noise impacts may be realized depending on the location of potential inhabited structures, recreationists, or subsistence hunters in the Native allotments (AKAA 007347A, 006622A, and 007125B) that are identified as having some portion of their parcels within 0.5 mile of the spur road.

Operations

Because the spur road is expected to experience traffic between the mine site and the communities of Iliamna and Newhalen, the type of traffic would probably be limited to lighter vehicles (e.g., passenger cars, vans) for commuting project workers and visitors. The regular flow

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of truck traffic making deliveries to and from the north ferry terminal would tend to avoid this spur; and as a result, the predicted traffic noise levels along the Iliamna spur road would be lower than that of the mine access road. Using the same FTA-based mathematical expression and input parameters, but without the trucks, the traffic noise estimate in terms of L_{dn}, is as follows:

- Within a distance of approximately 20 feet from the spur road, the estimated traffic-attributed noise level would be greater than 45 dBA L_{dn} at a building exterior, and therefore 10 dBA greater than the existing outdoor ambient sound level to a potential NSR (e.g., a temporarily occupied seasonal shelter). This distance is close to the road because the day-night project-attributed traffic noise level would be, without the trucks, much quieter under this condition.

With respect to a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the road, the "worst-case" possibility would be a concurrent pass-by of two vehicles on the road—traveling in opposite directions. The sleep disturbance criteria in this context would be the aforementioned 45 dBA L_{max} value per WHO guidance (WHO 1999); therefore, the perpendicular distance from the road within which an unhoused receptor might be awakened is 1,000 feet. Should linearly occluding forest or ground terrain features block line-of-sight and yield a 10 dBA reduction in the propagated sound, this distance at which sleep disturbance might occur would shorten to 330 feet.

In addition to traffic noise from vehicles on the spur road, noise from regular maintenance activities would also occur during summer and winter seasons, as studied for the mine access road, with the same noise impact potential, depending on distance as shown in Table 4.19-2.

The significant anticipated noise effects associated with project-attributed traffic and road maintenance would continue through operation.

Closure

Any reclamation activities for areas adjoining the Iliamna spur road would be expected to involve equipment similar to the closure roster presented in AECOM 2018b (Table 4), and generate the same predicted potential for noise impact, depending on distance and type of NSR (i.e., housed or unhoused receptor).

South Access Road

Construction

The south access road would connect the south ferry terminal with the Amakdedori port site. Construction of the south access road would be expected to involve the same type of equipment shown in AECOM 2018b (Table 5); therefore, anticipated noise levels would be similar to those predicted for the mine access road, and the distances at which 30 dBA L_{eq} and 45 dBA L_{dn} occur would also be the same (see Table 4.19-2). Given these distances, noise impacts may be realized depending on the location of potential inhabited structures, recreationists, or subsistence hunters in the three Native allotments (AKAA 006264, 006268, and 052505) and the Bureau of Land Management and Alaska Department of Natural Resources (ADNR) lands (24101003, 24103001, and 24103002), respectively, that are identified as having some portion of their parcels within 0.5 mile of the south access road.

Operations

Because the south access road is essentially the southern segment of the mine access road, the type of traffic would largely be the trucks identified in the study of the mine access road operations,

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with a few expected lighter vehicles (passenger cars, vans, etc.) for commuting project workers and visitors who may reside in Kokhanok. As a result, the predicted traffic noise levels along the south access road would be comparable to that of the mine access road. Using the same FTA-based mathematical expression and input parameters, but only a fraction (10 percent) of the passenger vehicle traffic as assumed for the Mine Access Road, the traffic noise estimate, in terms of L_{dn}, is as follows:

- Within a distance of approximately 200 feet from the access road, the estimated traffic-attributed noise level would be greater than 45 dBA L_{dn} at a building exterior, and therefore 10 dBA greater than the existing outdoor ambient sound level for a potential NSR (e.g., a temporarily-occupied seasonal shelter).

With respect to a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the roadway, the "worst-case" possibility would be a concurrent pass-by of two trucks on the roadway—with one in each direction. The sleep disturbance criteria in this context would be the aforementioned 45 dBA L_{max} value per WHO guidance (WHO 1999); therefore, the perpendicular distance from the roadway within which an unhoused receptor might be awakened is 0.5 mile. Should linearly occluding forest or ground terrain features block line-of-sight and yield a 10 dBA reduction in the propagated sound, the distance at which sleep disturbance might occur would shorten to 1,000 feet.

In addition to traffic noise from vehicles on the south access road, noise from regular road maintenance activities would also occur during summer and winter seasons, as studied for the mine access road, with the same noise impact potential, depending on distance as shown in Table 4.19-2. The significant anticipated noise effects associated with project-attributed traffic and road maintenance would endure through operation.

Closure

Any reclamation activities for areas adjoining the south access road would be expected to involve equipment similar to the roster presented under closure in AECOM 2018b (Table 4), and generate the same predicted potential for noise impact, depending on distance and type of NSR (i.e., housed or unhoused receptor).

Kokhanok Airport Spur Road

Construction

The spur road would connect the south access road with the community of Kokhanok and its airport. Construction of this spur road would be expected to involve the same type of equipment shown in AECOM 2018b (Table 5); therefore, anticipated noise levels would be similar to those predicted for the mine access road, and the distances at which 30 dBA L_{eq} and 45 dBA L_{dn} occur would also be the same (see Table 4.19-2). Given these distances, noise impacts may be realized depending on the location of potential inhabited structures, recreationists, or subsistence hunters in the lands that abut the planned spur road.

Operations

Because the spur road is essentially a short connection between the existing Kokhanok Airport and its community and the south access road, the type of traffic would probably be limited to lighter vehicles (e.g., passenger cars, vans) for commuting project workers and visitors. The regular flow of truck traffic making deliveries to and from the north ferry terminal would tend to avoid this spur; and as a result, the predicted traffic noise levels along the Kokhanok Airport spur road would be much less than that of the mine access road. Using the same FTA-based

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mathematical expression and input parameters, but without the trucks, and only a fraction (10 percent) of the light vehicle traffic as expected on the mine access road on the north side of Iliamna Lake, the traffic noise estimate in terms of L_{dn}, is as follows:

- With respect to a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the roadway, the "worst-case" possibility would be a concurrent pass-by of two vehicles on the roadway—with one in each direction. The sleep disturbance criteria in this context would be the aforementioned 45 dBA L_{max} value per WHO guidance (WHO 1999); therefore, the perpendicular distance from the roadway within which an unhoused receptor might be awakened is 1,000 feet. Should linearly occluding forest or ground terrain features block line-of-sight and yield a 10 dBA reduction in the propagated sound, the distance at which sleep disturbance might occur would shorten to 330 feet.

In addition to traffic noise from vehicles on the spur road, noise from regular road maintenance activities would also occur during summer and winter seasons, as studied for the mine access road, with the same noise impact potential, depending on distance. The significant anticipated noise effects associated with project-attributed traffic and road maintenance would endure through operation.

Closure

Reclamation activities for areas adjoining the Kokhanok Airport spur road would be expected to involve equipment similar to closure presented in AECOM 2018b (Table 4), and generate the same predicted potential for noise impact, depending on distance and type of NSR (i.e., housed or unhoused receptor).

Air Transportation

Already constructed and operating as public airports, existing airfields at Iliamna and Kokhanok would be expected to experience project-related aviation traffic to support construction activities and to provide non-resident transportation to and from the mine site vicinity. However, the Kokhanok Airport would not be used to support project construction until the Kokhanok Airport spur road is completed. Therefore, for the first year of construction, the airstrip at Amakdedori port would temporarily be used as described in the following paragraphs.

Amakdedori Port Airstrip

Construction

On completion, the airstrip at Amakdedori would be expected to experience between 20 and 40 flights per month by a Twin Otter (Bombardier DHC-6 or similar aircraft type) during the May-September periods of the first and second years of project construction. Between these periods, during the winter months, up to 20 flights per month may be required. According to Federal Aviation Administration data, the Twin Otter is estimated to exhibit 67 dBA (at a distance of 6,500 meters from takeoff start roll) during takeoff; and 78 dBA (at 2,000 meters from runway threshold) during approach.

With respect to a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the airstrip, the "worst-case" possibility would be an aircraft takeoff or landing at night. Using the same aforementioned sleep disturbance criterion of 45 dBA L_{max}, the perpendicular distances within which an unhoused receptor might be awakened is 6.5 miles and 4.5 miles for takeoff and approach, respectively. Should linearly occluding forest or ground terrain features block line-of-sight and yield a 10 dBA reduction in the propagated sound, the distance at which sleep disturbance might occur would shorten to 5 miles and 3.1 miles, respectively.

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For potential receptors within shelters, where exterior noise levels not exceeding 45 dBA L_{dn} would be expected for avoiding adverse effects with respect to existing outdoor ambient noise levels (35 dBA L_{dn}), perpendicular distances would need to be 3.4 miles for takeoff and 1.8 miles for approach. If terrain-based occlusion of aircraft sound yields 10 dBA of reduction, these distances would shorten to 2.2 miles and 4,900 feet for aircraft takeoff and approach, respectively.

Iliamna Airport

Operations

During airport operations, major noise sources would consist of operating aircraft and on-site facility operations. These are pre-existing sources of noise that acoustically contribute to the outdoor sound environment close to the airport.

For the 12-month period ending December 31, 2015, the airport had 15,400 aircraft operations, an average of 42 per day: 73 percent general aviation, and 27 percent air taxi (AirportIQ™ 5010, 2018). The project would be expected to increase the frequency of fixed-wing and rotary-wing aircraft by an average quantity of 11 aircraft per week, and include Twin Otter and Q400 (Bombardier DHC-8) type aircraft. Assuming the airport's stationary noise-producing noise sources do not change, the increase in noise from the airport would primarily be due to the increase in aviation traffic. The average increase in daily operations of no more than 2 per day due to the project's operation phase represents less than a 5 percent increase in traffic volumes. Unless the size and/or power of project-related aircraft are substantially different than that comprising existing aviation traffic, the per-event sound levels associated with aircraft takeoff, landing, and taxiing would not change, and therefore would not be expected to cause a perceptible difference or adverse effect. Upon closure of the project, and aside from development unrelated to the project that might cause an increase in aviation traffic at Iliamna Airport, noise levels would likely revert to pre-project conditions.

Kokhanok Airport

Operation

During airport operations, major noise sources would consist of operating aircraft and on-site facility operations. These are presumably pre-existing sources of noise that acoustically contribute to the outdoor sound environment close to the airport. However, for the 12-month period ending December 31, 2013, the airport had no aircraft operations (AirportIQ™ 5010, 2018). The project would be expected to add an average quantity of up to 10 Twin Otter–type aircraft operations per week during project construction, and 5 to 10 Twin Otter aircraft operations per week during project operations. Assuming the airport's stationary noise-producing noise sources do not change, the increase in noise from the airport would primarily be due to the increase in aviation traffic. If levels of aircraft operation activity at Kokhanok continue to be modest or non-existent, then these project-attributed operations could be considered relatively new sources of noise, and—for purposes of this analysis—be assessed in a manner similar to what was previously described for the temporary reliance on the proposed Amakdedori port airstrip. Distances within which adverse effects would be anticipated for outdoor subsistence hunters, recreationists, or occupants of shelters and other structures due to Twin Otter takeoffs and landings would be the same as those presented for Amakdedori port.

Closure

Upon closure, anticipated aviation traffic at Kokhanok would likely return to pre-project levels.

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Water Transportation

North and South Ferry Terminals

Noise Sources

The ferry terminals would serve as transfer points for cargo conveyed over the lake via an ice-breaking ferry, at an expected average frequency of one round trip per day. Consistent with the project description, this analysis assumes that each terminal has a manned office with a generator and some equipment (e.g., forklifts) to handle loading and unloading of cargo between the moored ferry and trucks. The ferry engine would be offline while such loading/unloading occurs.

Construction

Construction activities associated with the ferry terminals would include ground preparation and development of ferry terminal facilities. This analysis assumes that the intensity of construction activity, as well as type and quantity of equipment and vehicles involved, will resemble AECOM 2018b (Table 5) for the mine access road, and thereby demonstrate an overall reference sound level of 88 dBA L_{eq} at 50 feet.

Operations

This analysis assumes the local power supply (generator) at each ferry terminal would conservatively operate continually (day and night), and represents the dominant site sound source (apart from intermittent forklift operation and related activity during up to twice-per-day ferry loading or unloading), and produces a reference sound level no greater than 70 dBA L_{eq} at a distance of 50 feet.

Closure

The ferry terminals would likely support closure and reclamation. Because activities at these lake ports would continue, the potential for noise impacts would be similar to those discussed under operations. However, it is assumed that once mine site closure and reclamation has been completed, the amount of activity at these ferry terminals would decrease. Any reclamation activities for areas adjoining the ferry terminal sites would be expected to involve equipment similar to closure, as presented in AECOM 2018b (Table 4); and generate the same predicted potential for noise impact, depending on distance and type of NSR (e.g., housed or unhoused receptor).

Impacts Analysis

There is one Native allotment (AKAA 006290) with an easternmost boundary apex that adjoins the northern ferry terminal site. For this property, as well as accessible public lands that adjoin it and the north ferry terminal site on which subsistence hunters and sportsmen may temporarily dwell, the predicted analysis findings are as shown in Table 4.19-3.

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Table 4.19-3: Distances from Iliamna Lake Ferry Terminals within which Noise-Sensitive Receptors in Wilderness (35 dBA L_{dn}) would be Impacted

Project Phase or Activity(ies)	Operational Season/Notes	Distance from Alignment (feet), where 30 dBA L_{eq} Predicted	Distance from Alignment (feet), where > 10 dBA over Existing L_{dn} Predicted
Construction	Summer & Winter	8,550	5,000
Operations	Summer & Winter	2,250	1,000
Closure	Summer & Winter	10,600	6,500

Notes:

dBA = A-weighted decibel; Leq = equivalent sound level (e.g., hourly)

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 35 dBA Ldn (wilderness)

The anticipated noise impacts within the two above-stated distances would last only as long as the project phase noise sources occur.

4.19.3.3 Amakdedori Port

Noise Sources

Construction

Construction of the port would involve conventional heavy construction equipment, vehicles, and stationary systems (e.g., air compressors, generators) similar to those listed in AECOM 2018b (Table 3), and expected to prepare and grade the site and construct the port terminal and facilities, including power generation plant and offshore facilities (dock and causeway). Using FTA general assessment techniques to estimate construction noise, it could be assumed that two pieces of equipment, each exhibiting no more than 85 dBA L_{max} (e.g., two simultaneously operating graders on site) at 50 feet and operating at full power, would yield an aggregate average sound level of 88 dBA L_{eq} at 50 feet, and represent the noise from most port construction activities. However, unique to this facility, impact pile-driving would occur during construction that can generate noise levels of 95 dBA L_{max} at 50 feet (FHWA 2006).

Operations

Operation of the port would involve generally persistent stationary noise sources such as on-site power generation and heating, ventilation, and air conditioning systems, punctuated by loading/off-loading activity to handle concentrate containers, other cargo, and fuel from vessels.

Closure

As activities at the port continue to support closure and reclamation, potential noise impacts at the sensitive receptor would be similar to those discussed under the operations above. However, it is assumed that once mine closure and reclamation have been completed, the amount of activity at the port site would decrease.

AECOM 2018b (Table 4) lists noise levels emitted by expected mobile and stationary machinery that would be operated at Amakdedori port during the construction, operation, and closure. Unless otherwise noted, these lists per project phase represent estimates of maximum operating units at one time.

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Impact Analysis

The nearest potential NSR to the port would be subsistence hunters and seasonal visitors (recreationists) temporarily inhabiting the surrounding ADNR parcel (ID# 24103002). Such NSR may also dwell on public lands beyond this parcel boundary. Although the equipment and vehicle rosters are different, the technique for estimating noise exposure at NSR due to Amakdedori port operation would be similar to that used for estimating aggregate noise emission from mine site operation, and use the same conservative assumptions. Accounting for sound attenuation with distance and other considered factors, the predicted analysis findings are presented in Table 4.19-4, showing distances within which adverse noise effects would be expected, and considered significant for the same two types of NSR: recreationists and subsistence hunters sleeping outdoors and subject to disturbance; and occupants of structures.

Table 4.19-4: Distances from Amakdedori Port within which Noise-Sensitive Receptors in Wilderness (35 dBA L_{dn}) would be Impacted

Project Phase or Activity(ies)	Operational Season/Notes	Distance from Alignment (feet), where 30 dBA L_{eq} Predicted	Distance from Alignment (feet), where > 10 dBA over Existing L_{dn} Predicted
Construction	Summer & Winter	8,550	4,900
Operations	Summer & Winter	9,750	5,800
Closure	Summer & Winter	10,550	6,400

Notes:

dBA = A-weighted decibel

Leq = equivalent sound level (e.g., hourly)

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 35 dBA Ldn (wilderness)

The anticipated noise impacts at potential NSR within the above-stated distances would be temporary, enduring only as long as the project phase occurs.

With pile-extraction during closure, a subsistence hunter or recreationist who may be sleeping outdoors at some distance from the port may be startled if exposed to 45 dBA L_{max} per WHO guidance (WHO 1999); therefore, the perpendicular distance from the pile-driving activity within which this awakening of an unhoused NSR would occur is 5,100 feet. Should wide expanses of dense, linearly occluding vegetation or the presence of terrain features like ridgelines or hills obscure the receptor's view of the pile-driving activity, the actual noise L_{max} value should be less at this distance. Put another way, a line-of-sight blocking ridgeline that yields a 10 dBA reduction in the propagated sound would enable the outdoors-sleeping receptor to be up to 2,250 feet away from the activity without experiencing sleep disturbance.

4.19.3.4 Natural Gas Pipeline Corridor

For purposes of this noise analysis, the pipeline corridor study is organized as follows:

- Mainline, which includes the natural gas pipeline, temporary construction and operational rights-of-way (ROWs), and temporary work areas outside of the ROW (access roads, construction camps, pipe and equipment storage yards, material sites, and airstrips)

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- Above-ground facilities would include the new compressor station at Anchor Point, the main line block valve stations, metering stations, and pig launching and receiving facilities.

Mainline

The distances of the nearest NSR vary for each subcomponent (surface, water, and air) being analyzed; however, the general existing ambient noise level is estimated at 35 dBA L_{dn} (adapted from Table 3.19-3).

Construction

Noise impacts associated with the mainline would occur mainly during construction. Construction-related noise sources would be generated by helicopter traffic, diesel-powered mobile equipment, pipe installation equipment, equipment operating at material sites, and blasting (in the event it would be necessary). Increased noise levels would vary depending on the construction stage, and would be localized and transitory as construction activity proceeds at various locations along the length of the pipeline. Noise impacts for specific construction activities are described below.

The overall project schedule for construction of infrastructure build-out, pipe installation, and ROW stabilization, rehabilitation and reclamation work concurrent with and immediately following pipe installation would take place over a period of 3 to 4 years. The first year would involve ROW civil work and mobilization of material and equipment, including clearing of vegetation (as applicable), preliminary civil construction of access roads, airstrips, barge landings, pipe storage yards, construction campsites, etc. The pipeline installation would occur for a period of 2 to 3 years.

AECOM 2018b (Table 5) lists equipment used for construction of a typical pipeline section, the corresponding noise levels, and season of operation, grouped by construction activities. Because noise impacts and affected sensitive receptors vary with specific construction activities during a certain period of time, as well as the conditions of the affected environment where the activities may be located with respect to potential NSR, the noise impacts are discussed relative to the pipeline major construction activities, as described below.

The equipment rosters presented in AECOM 2018b (Table 5) show the expected assortment of stationary and mobile equipment per construction phase; this analysis predicts distant NSR noise exposure from only the two loudest units operating at full power—in a manner similar to the FTA "general assessment" technique (FTA 2006). By way of example, for the general activities and utility equipment category, the forklift and carrier are each rated at 85 dBA at 50 feet; therefore, the combined representative reference noise level for this phase would be 88 dBA L_{eq} at 50 feet.

Table 4.19-5 lists the distances from the centerline of the pipeline alignment on land in which the indicated sound levels attributed to construction would be exceeded. As consistently used in the preceding analyses, the 30 dBA L_{eq} metric would be the impact criterion applied to recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient," per Table 4.19-1. Correspondingly, the 45 dBA L_{dn} limit (representing a 10 dBA increase over the presumed existing 35 dBA L_{dn} of the pre-project outdoors) applies to such individuals sleeping within structures.

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Table 4.19-5: Distances from Construction of the Pipeline Alignment within which Noise-Sensitive Receptors in Wilderness (35 dBA L_{dn}) would be Impacted

Construction Phase or Activity(ies)	Operational Season/Notes	Distance from Alignment (feet), where 30 dBA L_{eq} Predicted	Distance from Alignment (feet), where > 10 dBA over Existing L_{dn} Predicted
General Activities and Utility Equipment (GA&UE)	Summer & Winter	8,550	5,000
GA&UE with helicopter support (40%)	Summer & Winter	19,500	14,000
Civil Construction	Summer & Winter	8,550	5,000
Drilling and Blasting	Summer & Winter	12,600	8,000
Ice Road Construction and Maintenance	Winter	8,550	5,000
Pipe Laying	Summer & Winter	8,550	5,000
River Crossings and HDD	Summer	7,800	4,400
Backfilling and Ground Restoration	Summer & Winter	8,550	5,000
Pipe Cleaning, Pressure Testing and Drying	Summer & Winter	5,100	2,600

Notes:

dBA = A-weighted decibel

HDD = horizontal directional drilling

Leq = equivalent sound level (e.g., hourly)

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 35 dBA Ldn (wilderness)

The anticipated noise effects within the two distances noted in Table 4.19.5 would be considered temporary, lasting only as long as the indicated construction phase activities occur and in the vicinity of the receptors. In other words, pipeline construction activity tends to be intensive at a particular area, and moves away from a stationary NSR as construction progresses.

Where the pipeline makes the east Cook Inlet landfall at Anchor Point, the existing outdoor ambient sound environment is anticipated to be higher (50 dBA L_{dn}), due to road traffic on the nearby Sterling Highway; therefore, the distance buffers within which pipeline construction noise would potentially cause impacts to neighboring NSR are much shorter, as presented in Table 4.19-6. In this sound environment, the outdoor ambient noise is already well above 30 dBA L_{eq}, and would not be expected to have receptors sleeping outdoors. For people sleeping inside their residences in this developed environment, the EPA guidance level of 55 dBA L_{dn} for the NSR exterior serves as the impact threshold for project-attributed noise.

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Table 4.19-6: Distances from Construction of the Pipeline Alignment within which Noise-Sensitive Receptors in Anchor Point (50 dBA L_{dn}) would be Impacted

Construction Phase or Activity(ies)	Operational Season/Notes	Distance from Alignment (feet), where 55 dBA L_{dn} Predicted
General Activities and Utility Equipment (GA&UE)	Summer & Winter	2,150
GA&UE with helicopter support (40% AUF)	Summer & Winter	8,300
Civil Construction	Summer & Winter	2,150
Drilling and Blasting	Summer & Winter	4,000
Ice Road Construction and Maintenance	Winter	2,150
Pipe Laying	Summer & Winter	2,150
River Crossings and HDD	Summer	1,850
Backfilling and Ground Restoration	Summer & Winter	2,150
Pipe Cleaning, Pressure Testing and Drying	Summer & Winter	990

Notes:

dBA = A-weighted decibel

HDD = horizontal directional drilling

Ldn = day-night sound level, expressed as dBA; presumes outdoor ambient noise is 50 dBA Ldn

With the exception of helicopter-supported activities and drilling, all listed activity groups in Table 4.19-6 for pipeline construction are expected to cause impactful noise levels within a distance of 2,150 feet from the pipeline alignment. Therefore, it is possible that up to 43 of the potential NSR counted as being within 0.5 mile of the compressor station (in Section 3.19, Noise, Affected Environment) may experience temporary impacts, lasting only as long as construction. Development of a detailed construction noise mitigation plan, including scheduling of noise-producing activities, the proper design and implementation of practical and site-appropriate noise-reducing measures, and sound level monitoring to check for compliance with the outdoor EPA guidance threshold, would help minimize the magnitude of construction noise, and thereby reduce the likelihood, duration, and quantity of impacted NSR.

Construction and installation of the proposed pipeline segments along the bottom of Iliamna Lake and Cook Inlet would be carried out by appropriate equipment and water-borne vehicles sufficiently distant from NSR, and would not cause noise impacts. Section 4.23, Wildlife Values, addresses noise impacts to wildlife.

Operations

Pipeline Operations

There would be no major noise-producing sources along the pipeline corridor during pipeline operation. Gas traveling through the pipeline would not emit audible noise at potential NSR; therefore, there would be no noise impacts associated with pipeline operation.

Periodic Pipeline Maintenance and Inspection

Periodic maintenance and routine inspection would be conducted on the mainline, and noise sources would include pigging. Given the similarity of expected activities, noise level emissions

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from pigging would be considered comparable to those of the pipeline cleaning, pressure testing, and drying activities, as described in AECOM 2018b (Table 5), with the potential for impact at NSR depending on the existing sound environment and the proximity (i.e., within the indicated screening distances), per Tables 4.19-5 and 4.19-6. The duration of these impacts would be intermittent throughout the project operation.

Pipeline ROW Maintenance and Safety Inspection

As part of maintenance and safety procedures, the pipeline ROW would be cleared of brush at approximately 10-year intervals, or as required to preserve pipeline integrity and access. AECOM 2018b (Table 6) lists equipment operated for a typical ROW clearing and the corresponding noise levels, and represents an estimate of maximum operating units at one time.

Using the aforementioned FTA-based general assessment technique of estimating construction noise from the two loudest pieces of equipment operating at full power, the resulting reference noise level for pipeline ROW maintenance would be 88 dBA L_{eq} at 50 feet. The predicted analysis findings are as follows:

- Within a distance of approximately 8,550 feet from the pipeline area being cleared, the estimated noise level would be at least 30 dBA L_{eq}, and therefore risk causing sleep disturbance for recreationists and subsistence hunters sleeping outdoors during their seasonal activities on lands considered "wilderness ambient," per Table 3.19-3. At Anchor Point, such receptors would not be expected, and therefore not impacted.
- Within a distance of approximately 5,000 feet, the estimated operations noise level would be at least 45 dBA L_{dn} at a building exterior, and therefore 10 dBA greater than the existing outdoor ambient sound level at a potential NSR (e.g., a temporarily occupied seasonal shelter). For NSR at Anchor Point, where such ROW maintenance may occur, the screening distance would only be 2,150 feet.

The anticipated noise impacts within the two distances noted above would be temporary, and localized to where such activities occur during project operation.

Closure

All disturbed areas (such as the ROW, temporary construction camps, pipe storage yards, material sites, airstrips, roads, barge landings, and other temporary use areas) would be cleaned up, stabilized, prepared for natural revegetation, and reclaimed to their original state. Noise estimates are calculated based on the two loudest equipment units from AECOM 2018b (Table 5) under the backfilling and ground restoration. The two loudest equipment units from the table each have a noise level of 85 dBA at 50 feet, and would therefore combine to a source reference level of 88 dBA L_{eq} at 50 feet. Because this is the same reference level for the pipeline maintenance activity, potential impacts would be anticipated at NSR within the same distances. The significance of these anticipated noise effects would be temporary, localized, and last only through project closure.

Intermittent noise impacts from helicopters used to transport personnel to and from pipeline locations would also be expected. However, because the flight routes and vertical aircraft distances are unknown at this time, resulting noise levels during an NSR fly-over could not be estimated.

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Pipeline Aboveground Facilities

Pipeline aboveground facilities consist of a compressor station (Anchor Point), metering stations, mainline valves, and pig launcher and receiver stations. Noise impacts for each of these facilities are described below.

Compressor Station

For purposes of this noise analysis, each compressor station is assumed to feature the following (USACE 2018):

- 1,000-horsepower natural gas compression machines driven by two gas-fired microturbines (one 100 percent unit and a 100 percent backup)
- Outdoor fin-fan cooler
- Unmanned, with fully automated equipment operated by a remote-control system
- Pig launcher and a mainline block valve (as an emergency shutdown or blowdown valve) on the site.

The nearest NSR to the Kenai compressor station would be residents and seasonal visitors of Anchor Point.

Construction

Noise impacts during the construction of the compressor station would be generated during operations of heavy construction equipment. Noise and vibration calculation methodologies and assumptions would be in accordance with the FTA guidance on general assessment for noise impacts (FTA 2006), whereby noise estimates are predicted based on two of the loudest expected equipment units shown under the general activities category of Table 4.19-5 and Table 4.19-6, resulting in 88 dBA L_{eq} at 50 feet. The predicted analysis finding is as follows:

- Within a distance of approximately 2,150 feet, the estimated operations noise level would be at least 55 dBA L_{dn} at a building exterior, and therefore potentially greater than the EPA guidance level for the exterior of an NSR in the community of Anchor Point.

Subsistence hunters and recreationists would not generally be expected to be sleeping outdoors in this developed area of the Kenai Peninsula; thus, they would not be potential NSR with respect to this noise source. The significant anticipated noise effects within the above-stated distance would be temporary, and localized to where such activities occur during construction of the facilities.

Operations

Noise generated at the compressor station during operations would originate mainly from operation of the compressor machines, one microturbine, fin-fan coolers, blowdown processes, and pipeline pig(s). This analysis assumes (USACE 2018):

- The compressors and microturbines would be housed inside buildings or provided enclosures to reduce noise emissions.
- External to these buildings or enclosures, air intakes and combustion exhaust ducting for the power units would feature typical sound-attenuating means.
- In aggregate, sound levels attributed to the enclosed compressors and power units operating at full load would be limited to 68 dBA L_{eq} at a distance of 50 feet (based on

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line source propagation from an exterior wall, where the emitted noise is 80 dBA L_{eq} at 3.28 feet from the surface).

- Unenclosed fin-fan coolers would emit up to 88 dBA L_{eq} at a distance of 50 feet, and are the dominant compressor station noise sources.

The predicted analysis finding for compressor station operation noise is as follows:

- Within a distance of approximately 2,150 feet, the estimated operations noise level would be at least 55 dBA L_{dn} at a building exterior, and therefore potentially greater than the EPA guidance level for the exterior of an NSR in the community of Anchor Point.

Subsistence hunters and recreationists would not generally be expected to be sleeping outdoors in this developed area of the Kenai Peninsula; thus, they would not be potential NSR with respect to this noise source. The anticipated noise effects within the above-stated distances would endure as long as the compressor station operates during project operation.

Pipeline pigging is needed for maintenance and testing, and most likely would be performed on an annual basis. The noise from pipeline pigging would be transient in nature, and would only occur at the pig trap, and the short, aboveground pipe segment. The noise from a pipeline blowdown event would be rare, because it would only occur during an emergency pressure relief or blowdown due to an incident requiring a major repair on a pipeline segment or compressor station equipment. Noise from a pipeline blowdown would be loud and transient, lasting for several minutes, until the pressure is relieved.

Closure

Reclamation activities at the compressor station would occur following construction, and at the beginning of closure. Disturbed ground would be graded and stabilized after construction of facilities. At closure, all equipment at the compressor station would be dismantled and transported away for salvage, recycling, or disposal, as appropriate. Noise estimates are calculated based on the two loudest equipment units from AECOM 2018b (Table 5) under backfilling and ground restoration. The two loudest equipment units from the table each have a noise level of 85 dBA at 50 feet, and would therefore combine to a source reference level of 88 dBA L_{eq} at 50 feet. Because this is the same reference level for the pipeline maintenance activity, potential impacts would be anticipated at Anchor Point NSR within the same distances. The significance of these anticipated noise effects would be temporary, localized, and last only through project closure.

Metering Stations

Metering stations would be at the project pipeline tie-in with existing natural gas pipeline infrastructure in the vicinity of the compressor station at Anchor Point. Each of these stations would also have a mainline block valve and a pig launcher and receiver. Noise impacts would generally not be anticipated due to construction, operation, and closure of metering facilities co-located at the compressor stations, where outdoor noise sources such as the unenclosed fin-fan gas coolers are expected to dominate the local sound environment.

Mainline Block Valve Stations

Mainline block valves would be placed at no more than 20-mile intervals along the pipeline route. They would be constructed as part of the pipeline installation, and operate with aboveground features that would be designed to emit low noise levels due to exterior thermal/acoustic lagging materials or insulated housings or enclosures. No noise impacts are anticipated at distances beyond the pipeline ROW when the mainline block valves are conveying gas to the mine site

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under normal conditions. Maintenance of these facilities would be considered categorized as pipeline maintenance, which has been previously discussed.

4.19.3.5 Alternative 1 – Variant: Kokhanok East Ferry Terminal

Aside from a relocation of the south ferry terminal to the east of the community of Kokhanok, the Kokhanok east ferry terminal variant avoids a road crossing the Gibraltar River. Regarding noise impact analysis, this variant is identical to Alternative 1.

4.19.3.6 Alternative 1 – Variant: Summer-Only Ferry Operations

Noise impacts with implementation of summer-only ferry operations would be identical to Alternative 1.

4.19.4 Alternative 2

4.19.4.1 Mine Site

Potential noise impacts to NSR with respect to the construction, operation, and closure of the mine site are the same as those for Alternative 1. This section is organized by the subcomponents of the transportation corridor: surface transportation, air transportation, and water transportation.

4.19.4.2 Transportation Corridor

Chapter 2, Alternatives, provides a detailed description of Alternative 2. This section is organized by the subcomponents of the transportation corridor: surface transportation, air transportation, and water transportation.

Potentially affected NSR may include the same property parcels, if occupied, identified for Alternative 2 in Section 3.19, Affected Environment. Along the transportation corridor for Alternative 2, distances within which impacts would be anticipated at NSR would be the same as those as previously discussed in Section 4.19.3, and listed in Tables 4.19-2 and 4.19-3.

4.19.4.3 Diamond Point Port

Assuming the facility is comparable to those of a port at Amakdedori, potential noise impacts to NSR with respect to the construction, operation, and closure of the Diamond Point port would be the same as for Alternative 1.

4.19.4.4 Natural Gas Pipeline Corridor

Distances within which impacts would be anticipated at NSR would be the same as those presented in Section 4.19.3, and listed in Tables 4.19-5 and 4.19-6.

4.19.4.5 Alternative 2 – Variant: Summer-Only Ferry Operations

Implementation of the summer-only ferry operations under Alternative 2 would have the same noise impacts as Alternative 1 during the summer.

4.19.5 Alternative 3

4.19.5.1 Mine Site

Potential noise impacts to NSR with respect to the construction, operation, and closure of the mine site are the same as those for Alternative 1.

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4.19.5.2 Transportation Corridor

Potentially affected NSR may include those property parcels, if occupied, identified in Section 3.19, Affected Environment. Along the transportation corridor for Alternative 3, distances within which significant impacts would be anticipated at NSR would be the same as those described for Alternative 1 (Section 4.19.3), and listed in Tables 4.19-5 and 4.19-6. The route passes near the community of Pedro Bay; therefore, the existing outdoor ambient sound environment would not be 35 dBA L_{dn}, but reflect those values shown in Table 3.19-5, and therefore cause the impact distances to reflect use of the EPA guidance-based noise threshold of 55 dBA L_{dn} for the exteriors of occupied residences or seasonal shelters. During construction of the mine access road near the Pedro Bay community, this distance would be 2,250 feet. Maintenance of the road would potentially cause noise impacts to NSR near Pedro Bay at a distance of up to 2,150 feet in summer, and 1,800 feet in the winter.

Expected road traffic would cause noise impact to NSR at a distance of up to 200 feet in an otherwise 35 dBA L_{dn} undeveloped environment; but near Pedro Bay, the distance would shorten to 35 feet. During closure and reclamation activities along the road near the Pedro Bay community, the impact distance would be 3,000 feet.

4.19.5.3 Diamond Point Port

Assuming the facility features and their construction and operation are comparable to those of Amakdedori port (Alternative 1), potential noise impacts to NSR with respect to the construction, operation, and closure of the Diamond Point Port are the same as those for Alternative 1.

4.19.5.4 Natural Gas Pipeline Corridor

Potential noise impacts to NSR with respect to the construction, operation, and closure of the natural gas pipeline corridor should be the same as those for Alternative 1 shown in Section 4.19.3, and listed in Tables 4.19-5 and 4.19-6. The proposed pipeline route passes near the community of Pedro Bay; therefore, the existing outdoor ambient sound environment would not be 35 dBA L_{dn}, but would reflect values shown in Table 3.19-5, and therefore cause the impact distances to reflect use of the EPA guidance-based noise threshold of 55 dBA L_{dn} for the exteriors of occupied residences or seasonal shelters.

4.19.5.5 Key Issues/Impacts Summary

Table 4.19-7 provides summary statements of key issues and impacts from the project on noise.

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Table 4.19-7: Summary of Key Issues for Noise Resource

Impact Causing Project Component/Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Note: The following acronyms are used to describe three categories of potentially impacted receivers: • *RSH* = outdoor sleeping Recreationists and Subsistence Hunters in a remote rural or wilderness setting (where 35 dBA day-night sound level [L_{dn}] is the expected existing outdoor ambient sound environment); • *SPR-W* = occupants of Seasonal shelters and Permanent Residences in a remote rural or Wilderness setting (where 35 dBA L_{dn} is the expected existing outdoor ambient sound environment); and • *SPR-D* = occupants of Seasonal shelters and Permanent Residences in a Developed (e.g., Pedro Bay) setting (where exterior noise threshold of 55 dBA L_{dn} per EPA guidance would be expected to apply).			
Mine Site			
Operating stationary and mobile equipment, including occasional blasting	By project phase, distance (feet) from open pit within which RSH may be disturbed: *Construction* = 17,250 *Production* = 18,450 *Closure* = 15,900 By project phase, distance (feet) from mine site pit within which SPR-W may be disturbed: *Construction* = 11,900 *Production* = 12,900 *Closure* = 10,750	By project phase, distance (feet) from open pit within which RSH may be disturbed: *Construction* = 17,250 *Production* = 18,450 *Closure* = 15,900 By project phase, distance (feet) from mine site pit within which SPR-W may be disturbed: *Construction* = 11,900 *Production* = 12,900 *Closure* = 10,750	By project phase, distance (feet) from open pit within which RSH may be disturbed: *Construction* = 17,250 *Production* = 18,450 *Closure* = 15,900 By project phase, distance (feet) from mine site pit within which SPR-W may be disturbed: *Construction* = 11,900 *Production* = 12,900 *Closure* = 10,750
Transportation Corridor			
Operating equipment, including occasional blasting, to *construct* access road(s)	Distance (feet) from access road(s) within which RSH may be disturbed: 8,800 Distance (feet) from access road(s) within which SPR-W may be disturbed: 5,280	Distance (feet) from access road(s) within which RSH may be disturbed: 8,800 Distance (feet) from access road(s) within which SPR-W may be disturbed: 5,280	Distance (feet) from access road(s) within which RSH may be disturbed: 8,800 Distance (feet) from access road(s) within which SPR-W may be disturbed: 5,280 Distance (feet) from access road(s) within which SPR-D may be disturbed: 2,250

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Table 4.19-7: Summary of Key Issues for Noise Resource

Impact Causing Project Component/Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Seasonal (winter/summer) maintenance activities of access or spur roads	Distance (feet) from access road(s) within which RSH may be disturbed: *Winter* = 7,600 *Summer* = 8,500 Distance (feet) from access road(s) within which SPR-W may be disturbed: *Winter* = 4,500 *Summer* = 5,000	Distance (feet) from access road(s) within which RSH may be disturbed: *Winter* = 7,600 *Summer* = 8,500 Distance (feet) from access road(s) within which SPR-W may be disturbed: *Winter* = 4,500 *Summer* = 5,000	Distance (feet) from access road(s) within which RSH may be disturbed: *Winter* = 7,600 *Summer* = 8,500 Distance (feet) from access road(s) within which SPR-W may be disturbed: *Winter* = 4,500 *Summer* = 5,000 Distance (feet) from access road(s) within which SPR-D may be disturbed: *Winter* = 1,800 *Summer* = 2,150
Expected traffic on roadway (during operation and closure phases of the project)	Distance (feet) from road(s) within which RSH may be disturbed: *Access Road* = 2,640 *Spur Road* = 1,000 Distance (feet) from access road(s) within which SPR-W may be disturbed: 200	Distance (feet) from road(s) within which RSH may be disturbed: *Access Road* = 2,640 *Portage Road* = 1,000 Distance (feet) from access road(s) within which SPR-W may be disturbed: 200	Distance (feet) from road(s) within which RSH may be disturbed: *Access Road* = 2,640 *Portage Road* = 1,000 Distance (feet) from access road(s) within which SPR-W may be disturbed: 200 Distance (feet) from road(s) within which SPR D may be disturbed: 35
Operating equipment, including occasional blasting, for *closure and reclamation* of road land(s)	Distance (feet) from access road(s) within which RSH may be disturbed: 10,550 Distance (feet) from access road(s) within which SPR-W may be disturbed: 6,400	Distance (feet) from access road(s) within which RSH may be disturbed: 10,550 Distance (feet) from access road(s) within which SPR-W may be disturbed: 6,400	Distance (feet) from access road(s) within which RSH may be disturbed: 10,550 Distance (feet) from access road(s) within which SPR-W may be disturbed: 6,400 Distance (feet) from access road(s) within which SPR-D may be disturbed: 3,000
Construction of Lake Ferry Terminals	Distance (feet) from ferry terminal within which RSH may be disturbed: 8,550 Distance (feet) from ferry terminal within which SPR-W may be disturbed: 5,000	Distance (feet) from ferry terminal within which RSH may be disturbed: 8,550 Distance (feet) from ferry terminal within which SPR-W may be disturbed: 5,000	Not Applicable

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Table 4.19-7: Summary of Key Issues for Noise Resource

Impact Causing Project Component/Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Operation of Lake Ferry Terminals	Distance (feet) from ferry terminal within which RSH may be disturbed: 2,250 Distance (feet) from ferry terminal within which SPR-W may be disturbed: 1,000	Distance (feet) from ferry terminal within which RSH may be disturbed: 2,250 Distance (feet) from ferry terminal within which SPR-W may be disturbed: 1,000	Not Applicable
Aviation traffic at airports/airstrips during Project *Construction*	Distance (miles) from Amakdedori Airstrip or Kokhanok Airport, within which RSH may be disturbed = 6.5 (takeoff); 4.5 (approach) Distance (miles) from Amakdedori Airstrip or Kokhanok Airport, within which SPR-W may be disturbed = 3.4 (takeoff); 1.8 (approach)	Distance (miles) from existing Pile Bay airstrip, within which RSH may be disturbed = 6.5 (takeoff); 4.5 (approach) Distance (miles) from existing Pile Bay Airstrip, within which SPR-W may be disturbed = 3.4 (takeoff); 1.8 (approach)	Distance (miles) from existing Pile Bay airstrip, within which RSH may be disturbed = 6.5 (takeoff); 4.5 (approach) Distance (miles) from existing Pile Bay Airstrip, within which SPR-W may be disturbed = 3.4 (takeoff); 1.8 (approach)
Aviation traffic at airports/airstrips during Project *Operation*	Distance (miles) from Kokhanok Airport, within which RSH may be disturbed = 6.5 (takeoff); 4.5 (approach) Distance (miles) from Kokhanok Airport, within which SPR-W may be disturbed = 3.4 (takeoff); 1.8 (approach)	Not Applicable	Not Applicable
Port Site			
Construction of port site	Distance (feet) from port site within which RSH may be disturbed: 8,550 Distance (feet) from port site within which SPR-W may be disturbed: 4,900	Distance (feet) from port site within which RSH may be disturbed: 8,550 Distance (feet) from port site within which SPR-W may be disturbed: 4,900	Distance (feet) from port site within which RSH may be disturbed: 8,550 Distance (feet) from port site within which SPR-W may be disturbed: 4,900
Port site operation	Distance (feet) from port site within which RSH may be disturbed: 9,750 Distance (feet) from port site within which SPR-W may be disturbed: 5,800	Distance (feet) from port site within which RSH may be disturbed: 9,750 Distance (feet) from port site within which SPR-W may be disturbed: 5,800	Distance (feet) from port site within which RSH may be disturbed: 9,750 Distance (feet) from port site within which SPR-W may be disturbed: 5,800
Port site closure and reclamation	Distance (feet) from port site within which RSH may be disturbed: 10,550 Distance (feet) from port site within which SPR-W may be disturbed: 6,400	Distance (feet) from port site within which RSH may be disturbed: 10,550 Distance (feet) from port site within which SPR-W may be disturbed: 6,400	Distance (feet) from port site within which RSH may be disturbed: 10,550 Distance (feet) from port site within which SPR-W may be disturbed: 6,400

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Table 4.19-7: Summary of Key Issues for Noise Resource

Impact Causing Project Component/Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Natural Gas Pipeline			
Construction of Mainline	Depending on activity, distance (feet) from mainline within which RSH may be disturbed: 5,100 to 19,500 Depending on activity, distance (feet) from mainline within which SPR-W may be disturbed: 2,600 to 14,000 Depending on activity, distance (feet) from mainline within which SPR-D (Anchor Point) may be disturbed: 990 to 8,300	Depending on activity, distance (feet) from mainline within which RSH may be disturbed: 5,100 to 19,500 Depending on activity, distance (feet) from mainline within which SPR-W may be disturbed: 2,600 to 14,000 Depending on activity, distance (feet) from mainline within which SPR-D (Anchor Point) may be disturbed: 990 to 8,300	Depending on activity, distance (feet) from mainline within which RSH may be disturbed: 5,100 to 19,500 Depending on activity, distance (feet) from mainline within which SPR-W may be disturbed: 2,600 to 14,000 Depending on activity, distance (feet) from mainline within which SPR-D (Anchor Point) may be disturbed: 990 to 8,300
Construction of compressor station	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150
Mainline maintenance	Distance (feet) from mainline within which RSH may be disturbed: 8,550 Distance (feet) from mainline within which SPR-W may be disturbed: 5,000 Distance (feet) from mainline within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from mainline within which RSH may be disturbed: 8,550 Distance (feet) from mainline within which SPR-W may be disturbed: 5,000 Distance (feet) from mainline within which SPR-D (Anchor Point or Pedro Bay) may be disturbed: 2,150	Distance (feet) from mainline within which RSH may be disturbed: 8,550 Distance (feet) from mainline within which SPR-W may be disturbed: 5,000 Distance (feet) from mainline within which SPR-D (Anchor Point or Pedro Bay) may be disturbed: 2,150
Compressor station operation	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from compressor station within which SPR-D (Anchor Point) may be disturbed: 2,150

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Table 4.19-7: Summary of Key Issues for Noise Resource

Impact Causing Project Component/Activity	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mainline and compressor station closure and reclamation of land(s)	Distance (feet) from pipeline feature within which RSH may be disturbed: 8,550 Distance (feet) from pipeline feature within which SPR-W may be disturbed: 5,000 Distance (feet) from pipeline feature within which SPR-D (Anchor Point) may be disturbed: 2,150	Distance (feet) from pipeline feature within which RSH may be disturbed: 8,550 Distance (feet) from pipeline feature within which SPR-W may be disturbed: 5,000 Distance (feet) from pipeline feature within which SPR-D (Anchor Point or Pedro Bay) may be disturbed: 2,150	Distance (feet) from pipeline feature within which RSH may be disturbed: 8,550 Distance (feet) from pipeline feature within which SPR-W may be disturbed: 5,000 Distance (feet) from pipeline feature within which SPR-D (Anchor Point or Pedro Bay) may be disturbed: 2,150

4.19.6 Cumulative Effects

Past, present, and RFFAs in the cumulative impact study area have the potential to contribute cumulatively to impacts on outdoor recreationists, subsistence hunters, and occupants of seasonal and year-long residences. Section 4.1 and Appendix K4.19 detail the past, present, and reasonably-foreseeable future actions that may impact these receivers. There may also be cumulative effects to wildlife in the study area, which has been studied and addressed in Section 4.23, Wildlife Values. The potential future actions are similar to the proposed project in how they may generate noise, and therefore the possibility of sleep disturbance from construction and operations activities, and alter subsistence and recreational hunting, among others. The following RFFAs identified in Section 4.1 were carried forward in this analysis based on their potential to impact outdoor recreationists, subsistence hunters, and occupants of seasonal and year-long residences in the analysis area:

- Pebble project buildout – develop 55 percent of the resource over the 78-year period
- Pebble South/PEB
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun*
- Johnson Tract*
- Copper Joe*

**Indicates exploration activities only.*

- Donlin Gold
- Diamond Point Rock Quarry
- Alaska LNG
- Drift River Oil Pipeline
- Cook Inlet Lease Sales
- Onshore Hydrocarbon Exploration*
- Lake and Peninsula Transportation, Infrastructure and Energy Projects

The most important potential future actions included in this analysis are those that contribute to the risk of sleep disturbance for outdoor recreationists and subsistence hunters; the potential for cumulative project activities to raise the outdoor ambient sound level to a degree that may impact hunting activities or the perception of natural soundscape characteristics (and their consistency with recreationist expectations); and the quality of life for residents (both seasonal and permanent) that dwell in the study area. Cumulative rise of ambient or background sound would potentially

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mask sounds produced by the hunters, as well as those of the prey, at shorter distances from the listener when all other conditions are otherwise equivalent. Such rise of the outdoor ambient sound level may also be considered a source of annoyance.

However, because noise emission naturally attenuates with distance and other environmental factors (e.g., acoustical air absorption [that varies with air temperature and moisture content], ground surface acoustical absorption, and presence of vegetative ground cover and path-occluding terrain features), an affected receptor would need to be proximate to multiple concurrent cumulative projects for logarithmic addition of sound levels from these combination of sources to cause the resulting increase in outdoor ambient noise to attain impactful levels. If cumulative projects are not concurrent, such as sequential construction activities, then noise emission would not combine, and therefore not create a cumulative effect. Additionally, if only the proposed project is in proximity to the receptor, and other cumulative projects are sufficiently distant, the acoustic contributions from the other projects would have insignificant cumulatively considerable effect.

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Message

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Sent: 10/25/2018 8:04:47 PM
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Subject: 10_25_2018_PreDraft_Ch1_PurposeNeed.docx (UNCLASSIFIED)
Attachments: 10_25_2018_PreDraft_Ch1_PurposeNeed.docx

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the preliminary draft Chapter 1 for your teams consideration during the reviews.

Shane McCoy
Program Manager
907-753-2715
CLASSIFICATION: UNCLASSIFIED

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The US Army Corps of Engineers (USACE), Alaska District, Regulatory Division is examining the potential environmental impacts associated with Pebble Limited Partnership's (PLP) submittal of a Department of the Army (DA) Permit application (POA-2017-271). PLP has asked for authorization to discharge fill material into waters of the US (WOUS) and work in navigable waters for the purpose of developing a copper-gold-molybdenum porphyry deposit (Pebble deposit). PLP's proposed discharges and activities are located in the Lake and Peninsula Borough and Kenai Peninsula Borough of Alaska.

1.2 APPLICATION DESCRIPTION

PLP has applied for authorization to discharge dredged and fill material into WOUS as part of development of the Pebble deposit. Authorization for the discharge of dredged and fill material into WOUS is required by Section 404 of the Clean Water Act (CWA) (33 US Code [USC] 1344). PLP has also applied for authorization to work in and place structures in navigable waters of the US (NWUS). Authorization for work and placement of structures in NWUS is required by Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403).

The proposed discharges and work in navigable waters would facilitate the creation of an open-pit mine and associated ore processing facilities for the purpose of producing copper, gold, and molybdenum, and other commodities for sale. Additional elements necessary for this purpose, identified in the application include: the construction of a 29-mile road from the mine site to Iliamna Lake; a 37-mile road from Iliamna Lake to the Cook Inlet at Amakdedori Creek; spur roads to the villages of Iliamna, Newhalen, and Kokhanok; ferry terminals to support an 18-mile ice-breaking ferry crossing; a port facility and lightering locations in Cook Inlet; an 187-mile gas pipeline originating on the Kenai Peninsula and extending across the Cook Inlet to Amakdedori port, terminating at the mine site; and power generation facilities located at the mine and the port site. PLP states that the operating life of the resultant surface mine would be an approximate 20-year period, and that mine closure and monitoring activities would extend for many years thereafter. The complete project description submitted, including updates to applicant's preferred alternative, is provided in Appendix N.

1.3 FEDERAL DECISIONS TO BE MADE

DA authorization is required for the proposed permanent discharges of dredged or fill material into XX acres and temporary discharge of fill into XX acres of WOUS (actual acreage to be inserted prior to DEIS) associated with the construction of the mine and associated roads, port, and natural gas pipeline in wetlands and other WOUS under Section 404 of the CWA. DA authorization is also required for the work and structures associated with construction of the port facilities, ferry terminals, lightering locations and the natural gas pipeline in NWUS. The USACE has set forth implementing regulations in 33 Code of Federal Regulations (CFR) Parts 320-332.

Through review of the application, the USACE identified two additional federal decision makers; the US Coast Guard (USCG), and the Department of the Interior's Bureau of Safety and Environmental Enforcement (BSEE). USCG has authority over locations and clearances of bridges and causeways in or over NWUS. USCG authorization is required for a proposed bridge over the Newhalen River. The USCG has set forth implementing regulations in 33 CFR Parts 114-118. The BSEE oversees safety, environmental protection, and conservation of resources related

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to the exploration for and development of offshore resources on the Outer Continental Shelf. BSEE authorization is required for the right of way encompassing the natural gas pipeline between the Kenai Peninsula and the proposed port facility, but only that portion of the right of way that would lie on the Outer Continental Shelf of Cook Inlet. This authority derives from the Outer Continental Shelf Lands Act, as implemented by BSEE regulations at 30 CFR Part 250, Subpart J.

1.4 ENVIRONMENTAL ANALYSIS

All federal permit actions are major federal actions. The USACE has determined that the proposed discharge of fill material into WOUS and/or work in NWUS associated with the application could significantly affect the quality of the human and natural environment. Based on this determination, this Environmental Impact Statement (EIS) has been prepared under Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.) and its implementing regulations promulgated by the Council on Environmental Quality (40 CFR 1500–1508), and USACE regulations found at 33 CFR 325 Appendix B, NEPA Implementation Procedures for the Regulatory Program. NEPA procedures are designed to ensure that federal agencies identify and assess the reasonable alternatives to proposed actions, along with the environmental consequences of a proposed action and reasonable range of alternatives, in order to avoid or minimize the adverse effects of those actions upon the quality of the human environment.

Information gathered as part of the NEPA process will be used to inform USACE's public interest review determination, required by 33 CFR 320.4. Information will also be used by the USACE to make a determination of the least environmentally damaging practicable alternative under the CWA's Section 404(b)(1) Guidelines (see Appendix F) and any appropriate required compensatory mitigation for unavoidable impacts to WOUS. No discharges of dredged or fill materials are permitted to be authorized by the USACE under the CWA if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences.

A joint record of decision (ROD) by the USACE, BSEE, and USCG, issued at the conclusion of the NEPA process, will record each appropriate federal agency's decision(s), identify the alternatives considered in reaching those decision(s), and identify practicable means to avoid or minimize environmental harm (if required).

The USACE has taken the lead, under NEPA, in preparing this EIS. A Notice of Intent to prepare an EIS and a Notice of Scoping for the Pebble Project was published in the Federal Register (FR) on March 29, 2018 (83 FR 13483; pages 13483-13484). The scoping comment period was extended by 60 days to continue through June 29, 2018. Nine public meetings were held during the scoping period. A total of 174,889 submissions were received through June 29, 2018. Further details on the scoping process are found in the Scoping Report (Appendix A).

1.5 PURPOSE AND NEED

A permit applicant's stated purpose and need is used as part of the NEPA process to inform the reasonable alternatives to a proposed action, and the stated need is used by the USACE to determine the overall purpose (and thus, practicable alternatives for the CWA 404(b)(1) evaluation) and to evaluate a proposed project from the public's perspective (under the public interest review criteria). PLP's (the applicant) stated need for the proposed project is, "to meet the increasing global demand for commodities such as copper, gold, and molybdenum."

From the broad, macro-economic scale, the project need is reflected in the worldwide demand for copper. In 2018, the International Copper Study Group projected a small surplus of projected

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available copper; however, worldwide demand for copper is projected to exceed the available supply in 2019 (ICSG 2018).

Gold is used for the production of jewelry, electronics and electrical components, official coins, and other uses. In the first 9 months of 2017, domestic consumption of gold used in the production of coins and bars decreased by more than 50 percent; however, gold consumption for jewelry increased slightly, and demand for gold coins and bars increased by 13 percent in comparison to the first 9 months of 2016 (USGS 2018).

Molybdenum is used for the production of ferromolybdenum, metal powder, and various chemical products. Metallurgical application accounted for 87 percent of the total molybdenum consumed. In 2017, US imports for consumption of molybdenum increased by 68 percent from 2016; US exports increased by 37 percent from 2016, mainly owing to an increase in export of molybdenum ores and concentrates and molybdates. Apparent consumption increased by 26 percent in comparison to 2016 (USGS 2018).

The applicant has stated that the proposed project's purpose is to produce commodities, including copper, gold, and molybdenum from the Pebble deposit in a manner that is commercially viable, using proven technologies that are suitable for the project's remote location. According to the applicant, because the area the applicant has leased for mineral development is not served by existing infrastructure, achieving the project purpose requires the construction of facilities for the mining and processing of mineral-bearing rock, as well as construction of support and access infrastructure. The purpose of the natural gas pipeline from the Kenai Peninsula is to provide a long-term stable supply of natural gas to meet the energy needs of the project by connecting to the existing regional gas supply network.

Although the USACE generally focuses on an applicant's stated purpose and need for a proposed project, in all cases the USACE exercises independent judgment in defining the purpose and need from both the applicant's and the public's perspective. The USACE has determined that the applicant's stated purpose is made too narrow by limiting the proposed development to the Pebble deposit. The public's interest in commodities such as copper, gold, and molybdenum does not dictate a particular source of these commodities.

In addition, USACE has determined that the construction of facilities and other infrastructure to support the proposed project is more appropriately evaluated as part of the alternatives, and therefore requires no inclusion in the overall purpose. No specific piece of the proposed infrastructure is required to meet the stated need. An overall project purpose is determined solely by the USACE, while considering the applicant's and the public's perspective, and is used to help identify practicable alternatives (i.e., those that are available and capable of being done after taking into consideration cost, existing technology, and logistics) to be evaluated under CWA 404(b)(1) guidelines. Any overall purpose must seem feasible as well as take into account the need for the type of proposed development.

The USACE has determined that the overall project purpose is to develop and operate a copper, gold, and molybdenum mine in Alaska in order to meet current and future demand.

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Message

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Subject: 10_25_2018_PreDraft_Ch2_ no response needed (UNCLASSIFIED)
Attachments: 10_25_2018_PreDraft_Ch2_Alternatives.docx

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the text of the draft Chapter 2 for your consideration as you continue your teams reviews. AECOM will send a link so that you can download all the figures; this document would be too large to send if they were imbedded. At this time, based on the conversation yesterday at the meeting, USACE is not requesting comments prior to the NOA. Thanks.

Shane McCoy
Program Manager
907-753-2715
CLASSIFICATION: UNCLASSIFIED

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2.0 ALTERNATIVES INCLUDING APPLICANT'S PROPOSED ALTERNATIVE

The Council on Environmental Quality's (CEQ's) regulations describe the alternatives section as the "heart of the Environmental Impact Statement," and require federal agencies to "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." (40 Code of Federal Regulations [CFR] 1502).

Alternatives screening is also pertinent to Clean Water Act (CWA) 40 CFR Part 230 Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (hereafter identified as 404(b)(1) guidelines), which require the analysis of practicable alternatives to the proposed discharge. The 404(b)(1) guidelines define a practicable alternative as one that is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.10(a)(2)).

For actions subject to the National Environmental Policy Act (NEPA), where the US Army Corps of Engineers (USACE) is the permitting agency, the analysis of alternatives required for NEPA environmental documents would in most cases provide the information for the evaluation of alternatives under the 404(b)(1) guidelines. The alternatives development process for the proposed Pebble Project (the project) considers a broad range of alternatives in sufficient detail to address both NEPA and CWA Section 404(b)(1) requirements.

Chapter 2 summarizes the alternatives development process, lists alternatives eliminated from further consideration, and describes the alternatives carried forward for detailed analysis in the Environmental Impact Statement (EIS).

2.1 ALTERNATIVES DEVELOPMENT PROCESS

2.1.1 Public Input on Alternatives

As part of scoping, the public was encouraged to provide specific suggestions for alternatives that should be considered in preparing the EIS. The following guidelines for providing input on alternatives were communicated in scoping materials:

1. Any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (e.g., mining methods, water treatment, tailings management), the port site, the transportation corridor and modes (e.g., rail), and the natural gas pipeline.
3. You can suggest changes in location of project components (e.g., road, port site, mine components).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (e.g., construction of a rail connection may eliminate truck traffic and reduce dust levels).

Specific suggestions for alternatives that were provided by the public, stakeholders, and agencies during scoping have been fully considered in the alternatives development process.

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2.1.2 Screening for Full Range of Alternatives

Appendix B details each step of the alternatives development process for the Pebble Project EIS. A summary of the screening of alternatives is provided below.

The EIS team screened alternative options around four criteria:

- Purpose and need,
- Reasonable under CEQ guidance,
- Practicable under CWA 404(b)(1) Guidelines, and
- Environmental impacts.

The criteria screening steps were followed sequentially. If an option clearly did not meet one of the screening criteria, it was dismissed from further consideration, and did not proceed to the subsequent screening tests.

2.2 ALTERNATIVES CARRIED FORWARD FOR DETAILED ANALYSIS

CEQ regulations require the consideration of a No Action Alternative [40 CFR 1502(e)]. In this case, the No Action Alternative would assume that the mine, transportation facilities, port, and pipeline would neither be permitted nor constructed as currently proposed.

PLP's Proposed Action for analysis in this EIS is Action Alternative 1 – Applicant's Proposed Alternative.

As a result of this alternatives development process, two action alternatives were identified for detailed analysis in the EIS: Action Alternative 2 – North Road and Ferry, and Action Alternative 3 – North Road Only. These two alternatives vary from the Proposed Action in key engineering design, siting, and operational features, which address concerns raised in scoping, and provide a reasonable range of alternatives for comparison.

2.2.1 No Action Alternative

The No Action Alternative would result from federal agencies with decision-making authorities on the project not issuing permits under their respective authorities. The USACE would not issue a permit for development of proposed project components that require the discharge of dredged and fill material in Waters of the US (WOUS), and work and structures in Navigable Waters of the US (NWUS). The US Coast Guard (USCG) Bridge Administration Program would not issue approval for proposed bridges over waters that the USCG considers navigable. The Department of the Interior's Bureau of Safety and Environmental Enforcement (BSEE) would not issue a right-of-way (ROW) for the proposed natural gas pipeline on the outer continental shelf. Federal regulatory authorities are described in Chapter 1, Purpose and Need.

Under the No Action Alternative, PLP would retain the ability to apply for continued mineral exploration activities under the State's authorization process, as well as any activity that would not require Federal authorization. Current State-authorized activities associated with mineral exploration and reclamation and scientific studies would be expected to continue at similar levels. PLP would be required to fully restore and remediate any remaining sites at the conclusion of their exploration program. If reclamation approval is not granted immediately after the cessation of reclamation activities, the State may require continued authorization for ongoing monitoring and reclamation work as deemed necessary by the State of Alaska.

The No Action Alternative is intended to be used as a baseline to facilitate the comparison of impacts between the Proposed Action and other action alternatives analyzed in detail in the EIS. Baseline conditions for all resources are described in the affected environment sections of

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Chapter 3. Impacts from the proposed project (beneficial or adverse) would not occur under the No Action Alternative.

The No Action Alternative does not meet the Purpose and Need of the project.

2.2.2 Action Alternative 1 – Applicant's Proposed Alternative

This section summarizes the Proposed Action for the project. Detailed information about engineered facilities and operations for the project from initial construction through closure and reclamation is included in Appendix N. Mitigation measures, Best Management Practices (BMPs), and environmental protections that are integral to the project are described in Chapter 5, Mitigation.

PLP's October 2018 Project Description (PLP 2018d), the Pebble Project Department of the Army Application for Permit POA-2017-271 and supporting documents (PLP 2017), various responses to Request for Information (RFIs) as cited herein, and associated Geographic Information System (GIS) data provided by PLP form the basis for the description of Alternative 1. PLP's October 2018 Project Description supersedes any prior iterations of the Pebble Project description.

PLP proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble deposit) as an open-pit mine, with associated infrastructure. The project is in a sparsely populated region of southwest Alaska near Iliamna Lake, in the Lake and Peninsula and Kenai Peninsula boroughs. The Pebble deposit is approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. See Figure 2-1.

The project is comprised of four primary components: the mine site at the Pebble deposit location, the Amakdedori port on the western shore of Cook Inlet, a transportation corridor connecting these two sites, and a natural gas pipeline corridor connecting to existing infrastructure on the Kenai Peninsula. See Figure 2-1 showing the natural gas pipeline corridor and Figure 2-2 showing the general project layout of Alternative 1.

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Figure 2-1: Regional Map

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Figure 2-2: Alternative 1 – General Project Layout

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The proposed operating life of the project is 20 years. Construction would last for approximately 4 years, followed by a commissioning period and 20 years of mineral processing. A construction overview is provided in Appendix N. Mining pre-production would start during construction with removal of overburden and waste rock material, and active mining from the pit would continue through the 20-year operations period. The project would have an operating schedule of two 12-hour shifts per day, 365 days per year, and employ approximately 850 to 2,000 personnel for operations and construction, respectively.

Other project details are listed below and summarized in the following sections.

- A total of 1.44 billion tons of material mined over the life of the project.
- Final pit dimensions of 6,800 feet in length, 5,600 feet in width, and 1,970 feet in depth.
- Mining rate up to 73 million tons per year, average rate of 70 million tons per year.
- Milling rate up to 66 million tons per year.
- Average annual copper-gold concentrate production (dry concentrate) of 613,000 tons.
- Average annual molybdenum concentration production (dry concentrate) of 15,000 tons.
- Final bulk tailings storage facility (TSF) capacity of 1,140 million tons.
- Temporary storage of 155 million tons of pyritic tails in the pyritic TSF.
- Temporary storage of up to 50 million tons of PAG and/or Metal Leaching (ML) waste rock in the pyritic TSF until closure.
- Power plant generating capacity of 270 megawatts (MW).
- An 84-mile transportation corridor from the mine site to a year-round port site located on Cook Inlet near the mouth of Amakdedori Creek consisting of:
    - A 29-mile private two-lane unpaved road from the mine site to a ferry terminal on the north shore of Iliamna Lake.
    - An 18-mile lake crossing using an ice breaking ferry to a ferry terminal on the south shore of Iliamna Lake.
    - A 37-mile private two-lane unpaved road from the south ferry terminal to Amakdedori port.
    - Lightering of concentrate between Amakdedori port and offshore lightering locations for loading onto bulk carriers.
- Unpaved spur roads from the transportation corridor to the communities of Iliamna, Newhalen, and Kokhanok.
- A port facility and jetty with docking for lightering and supply barges.
    - Annual vessel traffic of up to 27 concentrate vessels and 33 supply barges.
- A 187-mile gas pipeline from the Kenai Peninsula across Cook Inlet to the project site with a compressor station on the Kenai Peninsula.

2.2.2.1 Mine Site

The fully developed mine site would include the open pit, bulk TSF, pyritic TSF, overburden stockpiles, material sites, water management ponds (WMPs), milling and processing facilities, and supporting infrastructure such as the power plant, water treatment plants (WTPs), camp facilities, and storage facilities. See Figure 2-3 showing the mine site layout. The site is currently undeveloped and not served by any transportation or utility infrastructure. Figure 2-4 presents a digital simulation of the mine site at the end of mining, before closure. Simulations presented in Chapter 2 were generated by Resolution 3D LLC using a fully digital process based on actual

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terrain scans, three dimensional mapping, and modelling and rendering software to present alterations to the landscape from proposed facilities (PLP 2018-RFI 034d).

Mining Methods and Phasing

The mine would be a conventional drill, blast, truck, and shovel operation with an average mining rate of 70 million tons per year, and an overall stripping ratio of 0.12 ton of waste per ton of mineralized material.

The open pit would be developed in stages, with each stage expanding the area and deepening the previous stage. The final dimensions of the open pit would be approximately 6,800 feet long and 5,600 feet wide, with depths to 1,970 feet. See Figure 2-5 showing the open pit design.

Mining would occur in two phases: pre-production, and production. The mine operation would commence during the last year of the pre-production phase, and extend for 20 years during the production phase. During this period, 1,300 million tons of mineralized rock and 150 million tons of waste rock and overburden would be mined. Non-potentially acid-generating (NPAG) waste rock would be used in construction of the tailings embankments. The PAG waste rock would be stored in the pyritic TSF until closure, when it would be back-hauled into the open pit. Fine- and coarse-grained soils would be stored southwest of the pit and north of the TSF embankments, and would be used for reclamation during mine closure.

The pre-production phase consists of dewatering the pit area and mining of non-economic materials overlying the mineralized material from the initial stage of the open pit. Dewatering would begin approximately 1 year before the start of pre-production mining. Approximately 33 million tons of material would be mined during this phase.

The production phase encompasses the period during which economic-grade mineralized material would be fed to the metallurgical process plant that produces concentrates for shipment and sale. The production phase is planned to last for 20 years. Mineralized material would be mined, and would be fed through the process plant at a rate of 180,000 tons/day. The open pit would be mined in a sequence of increasingly larger and deeper stages. Approximately 1.4 billion tons of material are planned to be mined during the production phase.

Blasting

Initial operations during the pre-production phase may use pre-packed emulsion blasting agents or a mobile bulk emulsion manufacturing plant. After the explosives plant is completed, emulsion-based ammonium nitrate and fuel oil (ANFO) explosives would be used as the primary blasting agent.

Blasting events during the pre-production phase would occur approximately once per day. The frequency would increase during the production phase, with events occurring as often as twice per day.

Waste Rock and Overburden Storage

Waste rock is mined material with a mineral content below an economically recoverable level that is removed from the open pit, exposing the higher-grade production material. Waste rock would be segregated by its potential to generate acid. NPAG and non-ML waste rock may be used for embankment construction. PAG and ML waste rock would be stored in the pyritic TSF until mine closure, when it would be back-hauled into the open pit.

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Figure 2-3: Alternative 1 – Mine Site Layout

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Figure 2-4: Alternative 1 – Digital Simulation of Mine Site

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Figure 2-5: Alternative 1 Open Pit Design

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During the pre-production phase, approximately 33 million tons of non-mineralized and mineralized material would be removed from the open pit. Non-mineralized waste and overburden would be stockpiled, or used in construction. Mineralized waste would be stockpiled and relocated to the pyritic TSF once complete; or if grades are sufficient, stockpiled for milling once the mill is complete. Material would be stockpiled within the pit footprint, or in designated stockpiles, as appropriate.

Overburden is the unconsolidated material lying at the surface. At the Pebble deposit, the overburden depth ranges from 0 to 140 feet. Overburden removal would commence during the pre-production phase, and would recur periodically during the production phase at the start of each pit stage. The overburden would be segregated and stockpiled in a dedicated location southwest of the open pit. A berm built of non-mineralized rock would surround the overburden to contain the material and increase stability. Overburden materials deemed suitable would be used for construction. Fine- and coarse-grained soils suitable for plant growth would be stockpiled for later use as growth medium during reclamation. Growth medium stockpiles would be stored at various locations around the mine site, and stabilized to minimize erosion potential.

Mineral Processing

Mineral processing facilities would be located at the mine site. Blasted mineralized material from the open pit would be fed to a crushing plant, and then conveyed to a coarse ore stockpile, which in turn feeds a grinding plant in the process plant. In the grinding plant, it would be reduced to the consistency of very fine sand. The next step is froth flotation, in which the copper and molybdenum minerals are separated from the remaining material to produce concentrates. The concentrates are then filtered for shipment.

The copper-gold concentrate would be loaded into covered bulk shipping containers, and the molybdenum concentrate would be packaged in bulk bags and loaded into shipping containers for off-site transport using the proposed transportation corridor described under Section 2.3.2.2. Other economically valuable minerals—such as palladium and rhenium—would be present in the concentrates, and may be recovered at the refineries. See Figure 2-6 showing the process flow diagram.

Over the life of the project, approximately 1.3 billion tons of mineralized material would be fed to the process plant at a rate of 180,000 tons/day. On average, the process plant would produce approximately 613,000 tons of copper-gold concentrate per year, containing approximately 318 million pounds of copper, 362,000 ounces of gold, 1.8 million ounces of silver, and approximately 15,000 tons of molybdenum concentrate, containing about 14 million pounds of molybdenum.

Tailing Storage Facilities

Separate TSFs for the bulk and pyritic tailings would be located primarily in the North Fork Koktuli (NFK) watershed but would also have some footprint in the South Fork Koktuli (SFK) watershed (See Figure 2-3).[1] The TSFs would be designed to meet or exceed the standards of the updated 2017 Guidelines for Cooperation with the Alaska Dam Safety Program (ADSP) prepared by the Alaska Department of Natural Resources (ADNR). The TSFs would be designed to the standards

[1] Bulk tailings are comprised of relatively inert, non-acid-generating fine-grained ground waste rock that remains after economic minerals and pyritic materials have been extracted through ore processing at the mine site. See also pyritic tailings.
Pyritic tailings are comprised of potentially acid-generating fine-grained ground waste rock containing the naturally occurring mineral pyrite.

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of a Class I hazard potential dam (the highest classification). Total TSF capacity would be sufficient to store the 20-year mine life tailings volume (1.3 billion tons).

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Figure 2-6: Alternative 1 – Process Flow Diagram

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Approximately 88 percent (1,140 million tons) of the tailings would be bulk tailings, and approximately 12 percent (155 million tons) would be pyritic tailings.

The unlined bulk TSF has two embankments: the main and south embankments. The pyritic TSF would be lined, and has three embankments: north, south, and east. Starter embankments for both facilities would be constructed as part of the initial TSF construction. The main embankment of the bulk TSF would function as a permeable structure to maintain a depressed zone of saturation in the embankment, and tailings mass in proximity to the embankment. A basin underdrain system would be constructed at various locations throughout the bulk TSF basin to provide preferred drainage paths for seepage flows. The pyritic TSF would be a fully lined facility. See Figure 2-7 for the proposed TSF layouts.

The pyritic TSF, which would also contain the PAG waste, would have a full water cover during operations, while the bulk tailings cell would have a relatively small supernatant pond, located away from the embankments, to promote large tailings beach development upstream of the embankments.

The bulk TSF downstream embankment slopes would be maintained at approximately 2.6 horizontal:1 vertical (H:V), including buttresses established at the downstream toe of the main embankment. The final embankment crest elevation would be approximately 1,730 feet above sea level for bulk TSF. Embankment heights, as measured from lowest downstream slope elevation, would be 545 feet (main) and 300 feet (south). See Figure 2-8 showing the bulk TSF embankment cross sections.

The pyritic TSF embankment slopes would be maintained at 2.6H:1V. The final crest elevation would be 1,710 feet above sea level. The north embankment height would be 425 feet, the south embankment height would be 305 feet, and the east embankment height would be 315 feet. See Figure 2-9 showing the pyritic TSF embankment cross section.

Tailings Deposition

Each tailings stream would be delivered to its respective TSF using two pump stations: one in the process plant, and one booster station positioned approximately mid-way along the pipeline route. The bulk tailings would be discharged via spigots spaced at regular intervals along the interior perimeter of the bulk tailings cell to promote beach development, which would allow the supernatant pond to be maintained away from the main embankment.

PAG waste rock would be placed in a ring around the interior of the pyritic TSF. Pyritic tailings from the cleaner scavenger flotation circuit would be discharged into the pyritic TSF at sub-aqueous discharge points, with the level maintained just below the upper bench level for the PAG waste being stored. The sub-aqueous discharge is necessary to prevent oxidation and potential acid generation.

Construction

A "Certificate of Approval to Construct a Dam" is required from ADNR for the construction of impounding structures meeting the minimum height or impounding thresholds. The TSFs, seepage collection ponds, and WMPs would be jurisdictional dam structures regulated by ADSP. The certificate would include any special conditions or limitations on the construction.

The embankments would be constructed using suitable rockfill or earthfill materials, including quarried rock, NPAG, and non-ML waste rock excavated from the open pit, if available, and stripped overburden.

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Figure 2-7: Alternative 1 – Tailings Storage Facility Layout

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Figure 2-8: Alternative 1 – Bulk Tailings Storage Facility Embankment Cross Sections

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Figure 2-9: Alternative 1 – Pyritic TSF Embankment Cross Sections

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The main Bulk TSF embankment would be constructed using the centerline construction method with local borrow materials. The centerline construction method provides a high level of embankment stability while reducing the embankment material requirements associated with the downstream method. The south Bulk TSF embankment would be constructed using the downstream construction method to facilitate lining of the upstream face.

The pyritic TSF embankments would be constructed using the downstream method. The embankments would be constructed using select borrow materials, and include a liner bedding layer, overlain by a liner, on the upstream slope and over the entire internal basin. Basin underdrains would collect and convey any seepage to the downstream seepage collection ponds.

TSF embankments would be constructed in stages throughout the life of the project, with each stage providing the required capacity until the next stage is completed. A 'Certificate of Approval to Modify a Dam' is required from ADSP for each construction lift. Planned embankment raises would be evaluated each year, and sized according to a review of the process plant throughput, actual tailings settled densities (TSF ponds are typically sounded to establish the size of the supernatant pond and the density of the deposited tailings in the TSF), and water storage requirements.

Main Water Management Pond

The main WMP is the primary water management structure at the mine site. It would be a fully lined facility, and would be constructed using quarried rockfill materials. The embankment would be approximately 190 feet high, with an overall downstream slope of approximately 2H:1V, and an upstream slope of 3H:1V to accommodate the liner. It would be constructed to its final height during the initial construction period. The main WMP embankment design concept requires that any potential weak foundation conditions encountered in the overburden materials are addressed by excavating that material. Any potential mitigation requirements (including the removal of the overburden if required) would be addressed based on the geotechnical and hydrogeological information collected for the area during site investigations.

Infrastructure

Due to the remote location and the absence of existing infrastructure, the project would be required to provide basic infrastructure, as well as the support facilities typically associated with mining operations. These facilities would require reasonable access from the Pebble deposit, and situated foremost for stability and safety. Supporting infrastructure and facilities include:

- Power generation capacity and distribution infrastructure: a plant with a 270-MW capacity fired by natural gas.
- Shops: a truck shop complex housing a light-vehicle maintenance garage, a heavy-duty shop, a truck wash building, a tire shop, and a fabrication and welding shop. An oil/water separation system would be designed for water collected from the wash facility and floor drains.
- Onsite access roads: several access roads in the mine site area, including a road from the gatehouse to the mine site, and secondary roads linking with the various facilities around the mine.
- Personnel camps: a main construction camp to accommodate 1,700 workers, later refurbished for 850 permanent single-occupancy rooms for the operations phase.
- Potable water supply: a series of groundwater wells north of the mine site to supply potable water and distributed through a pump and piping network.

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- Communications: fiber-optic cable connecting to existing fiber-optic infrastructure in the region, or a dedicated fiber-optic cable laid in conjunction with the gas pipeline.
- Laboratories: Two laboratories, the metallurgical laboratory and assay laboratory, would operate at the mine site during the Production Phase. Each laboratory would be equipped with fume hoods (with exhaust treatment, if required) and drains connected to a central receiving tank. Chemical wastes would be disposed of in accordance with all applicable laws and regulations.
- Fire and emergency response: Freshwater supply tanks for fire suppression distributed via an insulated pipeline system, a fire truck and ambulance, and equipment to response to oil spills would be located at the mine site. Crews would be appropriately trained for such response.

Temporary Facilities

Laydown areas and access roads for construction would be placed within the future footprint of the open pit to minimize impacts. The temporary construction camp at the mine would be situated near the mill laydown area. Construction crews would use this camp and the permanent accommodations complex when it is complete. As construction is completed and crew sizes reduce, they would transition to the temporary camp only. This would enable the accommodations complex to be refurbished to single-room occupancy for the mine operations staff.

All temporary construction facilities would be removed after construction; and the sites, unless being used for permanent facilities, would be reclaimed.

Material Management and Supply

Fuel, lubricants, tires, and blasting agents would be the primary materials used in mining. Reagents would be used in low concentrations throughout the mineral processing plant and are primarily consumed in the process. Table 2-1 lists common mining supplies, processing reagents, and materials, along with typical packaging for transportation.

Table 2-1 Mining Supplies, Processing Reagents, and Materials

Material/Supply/Reagent	Use	Shipping/Preparation
Diesel fuel	Vehicles and blasting	6,350-gallon ISO tank-containers
Lubricants	Vehicles and equipment	Drums and totes in containers
Ammonium nitrate prill	Blasting	Bulk container
Primers, detonators, and detonating cord	Blasting	Specialized packaging as required
Blasting emulsion ingredients	Blasting	Specialized packaging as required
Packaged explosives	Blasting	Specialized packaging as required
Haulage truck and other tires	Vehicles	Bulk containers/break bulk
Ground-engaging tools	Drilling and loading	Bulk containers
Calcium Oxide (quick lime)	pH modifier; depresses pyrite in the copper-molybdenum flotation process.	Calcium oxide pebbles (80 percent) shipped in specially adapted shipping containers. Pebbles would be crushed and mixed with water to form lime slurry at the lime plant.
Sodium Ethyl Xanthate	Copper collector; used in the rougher flotation circuit.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to

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Table 2-1 Mining Supplies, Processing Reagents, and Materials

Material/Supply/Reagent	Use	Shipping/Preparation
		form 20 percent solution and stored in collector storage tank. Mix and storage tanks vented externally with fans.
Fuel Oil (Diesel)	Used in the flotation process.	Shipped in tanker trucks and stored in the main head tank in the copper-molybdenum concentrator area.
Sodium Hydrogen Sulfide (NaHS)	Copper depressant used in the copper-molybdenum separation processes.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to form 20 percent solution and stored in the NaHS storage tank.
Carboxy Methyl Cellulose	Depressant; anionic polymer used to depress clay and related gangue material in the bulk cleaner flotation circuit.	Pelletized reagent shipped in 1-ton bags. Mixed with process water in the agitated dispersant tank to form 20 percent solution and stored in dispersant storage tank.
Methyl Isobutyl Carbinol	Frother; maintains air bubbles in the flotation circuits.	Shipped in 20-foot specialized ISO containers and stored in the frother storage tank.
Depressant (sodium silicate)	Clay or silica gangue mineral depressant used in the copper-molybdenum separation process.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to form 20 percent solution and stored in the sodium silicate storage tank.
Anionic polyacrylamide	Thickener aid.	Pelletized reagent shipped in 1-ton bags. Vendor package preparation system comprised of a bag breaking enclosure to contain dust, dry flocculent metering, and a wet jet system to combine treated water with the powdered flocculent in an agitated tank for maturation. Prepared in small batches and transferred to a flocculent storage tank.
Polyacrilic acid	Anti-scalant for the lime production process.	Liquid shipped in 35-cubic-foot specialized container tanks in protected rectangular framework.
Nitrogen	Nitrogen used in the molybdenum flotation circuit to depress copper sulfides.	Provided by a vendor-supplied pressure swing adsorption nitrogen plant. This equipment separates nitrogen from air for use in the mineral-process plant.

ISO = International Organization for Standardization

General supplies and bulk reagents would typically be stored in, or adjacent to, the areas where they would be used. The location of the explosives storage and emulsion manufacturing plant is based on the need to minimize transfer distances, and to provide a safety buffer between the explosives plant and other facilities. Average annual quantities of fuel, mining, milling, and miscellaneous consumables are listed in Table 2-2.

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Table 2-2 Supplies Quantities

Supply	Average Annual Quantity
Fuel	16 million gallons
Ammonium Nitrate	17,500 tons
Grinding Media, Reagents, and Miscellaneous Supplies	250,000 tons

The main mine site fuel storage area would contain fuel tanks in a dual-lined and -bermed area designed to meet regulatory requirements. Sump and truck pump-out facilities would be installed to handle any spills. There would also be pump systems for delivering fuel to the rest of the mine site. Dispensing lines would have automatic shutoff devices, and spill response supplies would be stored and maintained on site wherever fuel would be dispensed. Fuel would be dispensed to a pump house in a fuel storage area for fueling light vehicles. It would also be dispensed to the fuel tanks in the truck shop complex, which are used for fueling mining equipment. These tanks would also be in a lined and bermed secondary containment area.

Lubricants would be packaged in drums and/or totes and stored on site in a secondary containment area.

As a safety precaution, ammonium nitrate prill would be stored and prepared for use at a location approximately 0.75 mile southeast of the final pit rim. Electrical delay detonators and primers would be stored in the same general area, but in a separate magazine located apart from each other and separate from the prill. All facilities would be constructed and operated to meet mine safety and health regulations as set forth in 30 CFR 77.1301. Small amounts of pre-packaged blasting agents and minor amounts of other explosives may be used for specific purposes.

Reagents would arrive at the mine site by truck in 20-ton containers, depending on the reagent. They would be stored in a secure bulk reagent storage area and segregated according to compatible characteristics. The reagent storage area would be sufficient to maintain a 2-month supply at the mine site. Reagents would be used in very low concentrations throughout the mineral processing plant and are primarily consumed in the process; low residual reagent quantities remain in the tailings stream and would be disposed in the TSF where they would be diluted and decompose. The metallurgical and assay laboratories would also use small amounts of reagents. Any hazardous reagents imported for testing would be transported, handled, stored, reported, and disposed of as required by law, in accordance with manufacturers' instructions, and consistent with industry best practices.

Water Management

About 2 years before process plant startup, the pit area would begin to be dewatered through groundwater withdrawal from approximately 30 groundwater wells installed around the pit perimeter. Dewatering would continue throughout operations as the pit is deepened until collection of flow is more efficient from ditches. During closure, water level in the pit would be managed via pumping of groundwater wells. Extracted water would be pumped into the open-pit WMP (Knight Piésold 2018e).

All runoff water contacting the facilities at the mine site and water pumped from the open pit would be captured to protect the overall downstream water quality. Mine site water management systems would be designed for the entire lifecycle of the project; from initial construction through the pre-production phase, operation, and closure. The project would develop a comprehensive water management plan that strategically discharges surplus treated water to downgradient

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streams in a manner that reduces the effect of stream flow fluctuations, and minimizes impacts to fish habitat.

Water Balance Model

The Pebble Water Balance Model is comprised of three primary modules: the Watershed Module, the Groundwater Module, and the Mine Plan Module. These three modules, which are all numerical water balance models, are very different, yet complementary. They collectively provide the means of quantifying the numerous water flows in the streams, in the ground, and in the various pipes, ponds, and mine structures associated with the mine development. The Watershed Module focuses on water flows throughout the NFK, SFK, and Upper Talarik Creek (UTC) drainages. The Groundwater Module focuses on the detailed simulation and understanding of groundwater flows in those drainages, and serves to inform the watershed module, and vice versa. The Mine Plan Module focuses on mine site water inflows and uses. Complementing the water balance modules is an instream fish habitat-flow model, which was used to assess the effects of changes in water flow to the fish habitat in the adjacent streams. These models are further described in Appendix N.

Pre-production Phase Water Management Plan

The water management and sediment control plan during the pre-production phase would consist of multiple aspects focusing on minimizing contact water volumes. Runoff and associated sediment control measures would be managed with BMPs and adaptive control strategies. Where water cannot be diverted, it would be collected, treated, and discharged. PLP's water management plan is further described in Appendix N.

Pre-production Phase Water Treatment

Minimal water storage would be available on site until initial construction activities are completed. Therefore, prior to completion of the TSF embankments and water management structures, all water that does not meet water quality standards would be treated and released. Water from the following sources and activities are expected to require treatment prior to release:

- Pre-production phase pit dewatering (dewatering of the overburden aquifer near the pit may require treatment).
- Water, primarily from precipitation, accumulating in the open pit during pre-production phase mining.
- Runoff from TSF embankment construction.
- Runoff from excavation for site infrastructure such as the process plant, camps, power plant, or storage areas would be routed to settling ponds prior to release.
- Prior to the operations WTPs being brought on-line, modular WTPs would be used to treat contact water that does not meet discharge requirements.

Production Phase Water Management Plan

The water management and sediment control plan during the production phase focuses on minimizing contact water. Runoff and associated sediment control measures would be managed with BMPs and adaptive control strategies. Where water cannot be diverted, it would be collected for use in the mining process, or treated and discharged. PLP's water management plan is further described in Appendix N.

Water collection, management, and transfer would be accomplished through a system of water management channels, ponds, and pump and pipeline configurations. These systems would be

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designed to handle the large flows that occur during spring freshet and late summer/fall rains. Spare parts for pump systems would be kept on site to maintain continuous and effective water management. Leak detection systems that report to a central control system would be employed, as would monitoring systems to control pump cycling, high and low water-level switches, no-flow (or low-flow) alarms, vibration overheating alarms, and other systems as appropriate to monitor water management systems.

Production Phase Water Treatment

Water collected around the mine area and Amakdedori port site would require treatment prior to discharge to the environment. Treatment methods would include a mixture of settling for sediment removal, chemical additions to precipitate trace elements, filtration, reverse osmosis, and evaporation to meet final discharge criteria.

The mine area would have two WTPs: the open pit WTP (WTP #1), and the main WTP (WTP #2). Both would be constructed with multiple independent treatment trains, which would enable ongoing water treatment during mechanical interruption of any one train.

The main WTP would treat water from the main WMP. The open-pit WTP would treat water from the open-pit WMP. See Figures 2-10 and 2-11 illustrating the main WTP treatment process and open-pit WTP treatment process, respectively. WTP discharge locations are shown on Figure 2-3.

Closure/Post-Closure Phase Water Management Plan

Closure and post-closure water management would address both the immediate physical closure of the site and associated reclamation activities, as well as the long-term post-closure period and associated maintenance and monitoring activities.

The water management plan during the closure and post-closure phases can be summarized as follows:

Years 0-15:

- The open-pit WTP would be reconfigured to treat contact water.
- Excess and seepage water from the bulk TSF would be pumped to the main WMP.
- Seepage water from the pyritic TSF would be pumped to the main WMP.
- Surplus water from the main WMP would be treated at the main WTP, and released to the downstream environment.
- Surplus water from the open pit would be pumped to the open-pit WTP to maintain the placement of the PAG waste rock in the dry.
- Treated water from the open-pit WTP would be released to the downstream environment.
- The open-pit WMP would be reclaimed.

Years 16 until the pit is full (approximately Year 20):

- The main WTP would be decommissioned once it is no longer required.
- The pyritic TSF and associated seepage collection ponds would be reclaimed, and surface water runoff from the area discharged to the downstream environment.
- The main WMP would be reclaimed, and surface water runoff from the area discharged to the downstream environment.
- Bulk TSF and seepage collection pond water would be pumped to the open pit.

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- The open pit fills to the maximum management level.
- The basis for this analysis is that no water would be treated during this phase; however, an adaptive management strategy would be used, and water would be directed to the open-pit WTP for treatment, and released if required to maintain downstream flows.

Year 20 until the bulk TSF consolidation is complete (approximately Year 50):

- Bulk TSF seepage and runoff water would be pumped to the open pit.
- Water levels in the open pit would be maintained below the main management level by treating and releasing surplus water from the open pit.

Post-Closure:

- Runoff water would be directly discharged from the reclaimed bulk TSF to the NFK catchment once it has been demonstrated to meet water quality criteria.
- Bulk TSF seepage water would be pumped to the open pit.
- Water levels in the open pit would be maintained below the main management level by treating and releasing surplus water from the open pit.

Closure/Post-Closure Water Treatment

Water treatment during this phase would use the facilities as outlined above for the Closure/Post-Closure Phase Water Management Plan. Water quality would be closely monitored, and changes and adjustments to the treatment process would be made as needed. The reclamation and closure bond package would include provisions for periodic replacement of water treatment facilities and ongoing operating and monitoring costs over the long-term, post-closure period.

Waste Management and Disposal

A landfill and incinerator would be constructed and operated at the mine site for domestic waste handling (see Figure 2-3). Domestic refuse would be disposed of in the on-site landfill, or shipped off-site to appropriate disposal sites. Wastes suitable for burning, including putrescible wastes, would be incinerated on site.

Scrap steel would be shipped off-site to appropriate disposal sites. Waste oils not suitable for burning, including lubricants, would be collected into drums, sealed, and stored in containers for shipment to be recycled or disposed of off-site at an approved facility. Miscellaneous hazardous wastes that may accumulate on site, such as paint, used solvents, and empty reagent containers with residual chemicals, would be managed and shipped off site to approved facilities according to applicable BMPs and regulations.

Separate sewage treatment plants would be located at the camp and the process plant. Plans for each plant would be reviewed and approved by the Alaska Department of Environmental Conservation (ADEC) prior to construction.

Grey water from camp facilities would be treated in a WTP. The WTP would be designed to remove biological oxygen demand, total suspended solids (TSS), total phosphate, total nitrogen, and ammonia to meet ADEC domestic waste-discharge criteria. Treated water would be discharged to the TSF.

The process plant sewage WTP would receive effluent that may have metallic residues from the workers' change house and associated laundry. This WTP would be designed for metals removal in addition to biological oxygen demand, TSS, total phosphate, total nitrogen, and ammonia to meet ADEC domestic waste-discharge criteria. The treated water would be discharged to the TSF. Sludge from both plants would be stabilized and disposed of on site.

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The disposal plan for closure would be developed in accordance with Alaska Department of Environmental regulations. Inert mine site materials, such as geomembrane material, piping, and pumps, would be drained and cleaned, as appropriate, and placed into a facility that would be permitted within the submerged waste rock dump in the pit or within the footprint of the reclaimed pyritic tailings facility. Material that has residual value or is not suitable for onsite disposal would be hauled offsite for disposal (PLP 2018-RFI 055a).

Closure and Reclamation

Reclamation and closure of the project falls under the jurisdiction of the ADNR Division of Mining, Land, and Water, and the Alaska Department of Environmental Conservation. The Alaska Reclamation Act (Alaska Statute 27.19) is administered by the ADNR; it applies to state, federal, municipal, and private land and water subject to mining operations. Except as provided in an exemption for small operations, a miner may not engage in a mining operation until the ADNR has approved a reclamation plan for the operation. The landowner participates in the planning process with regard to determining and concurring with the designated post-mining land use.

The project has committed to a design-for-closure philosophy that considers closure and post-closure site management requirements during all operating phases. Examples include:

- Segregated storage facilities for bulk and pyritic tailings. Bulk tailings would remain in place at closure.
- A lined pyritic TSF. PAG and ML waste rock would be stored with pyritic tailings in the lined pyritic TSF during operations. At closure, the stored waste rock would be backhauled to the pit and the pyritic tailings pumped to the pit for sub-aqueous storage in the pit lake. Storage of PAG/ML waste rock and pyritic tailings in the pit lake would avoid post-closure management of the pyritic TSF.

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Figure 2-10: Alternative 1 – Main Water Treatment Plan Process Schematic

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Figure 2-11: Alternative 1 – Open Pit Water Treatment Plant Process Schematic

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Physical Reclamation and Closure

The physical site closure work would commence as operations end.

- Active mining and pit dewatering would stop. Pit water levels would be maintained to provide safe access for placement of pyritic tailings and PAG waste rock.
- Pyritic tailings and PAG waste rock would be placed into the pit for long-term storage below water. Once the material has been transferred to the open pit, the water would be allowed to rise to the maximum management level. The mill, pyritic TSF, main WMP, and other infrastructure not required for post-closure would be removed and/or reclaimed.
- The bulk tailings would have a dry closure and be allowed to fully consolidate. Once runoff is demonstrated to meet water quality criteria, it would be directly discharged to the NFK catchment area. Bulk TSF seepage water would be pumped to the open pit.
- The open-pit water level would be maintained at a level to ensure inward flow of surrounding groundwater, and prevent contact water from getting into the groundwater.
- Once physical closure activities are completed, site access infrastructure would be reconfigured to support long-term post-closure activities.

All mill and support facilities not required for post-closure, including the pyritic TSF, main WMP, and open-pit WMP embankments and liners, would be dismantled and removed. Concrete pads and foundations would be broken up so that they do not act as an impermeable impediment to water flows.

Inert materials would be disposed of in an on-site monofill that would be sited within the disturbed footprint, while others would be shipped off site for disposal as appropriate. Disturbed areas would be recontoured, graded, ripped, and scarified. Top soil and growth media would be placed as needed, and sites would be seeded for revegetation. Surface runoff from the disturbed areas would be collected; and either treated in the WTPs, or directed to the pit lake until it is found to be suitable for direct discharge to the downstream drainages.

A spillway would be constructed from the bulk TSF. Late in the operating phase, tails in the bulk TSF would be spigoted to allow for surface drainage toward the closure spillway. As milling operations cease, free water would be pumped from the surface of the bulk tails, and they would be allowed to consolidate until the surface is suitable for equipment traffic on the surface. The tails would be re-graded as needed to facilitate drainage. A capillary break and growth media would be placed over the surface of the tails prior to seeding for revegetation. Growth media would also be placed on the bulk TSF embankments prior to seeding for revegetation.

Seepage water from the bulk TSF embankment seepage collection systems would be collected and directed to the pit lake.

Post Closure Management

The pit lake would fill during the closure period. Surface runoff from the walls would result in leaching of accumulated metals from the walls. Water quality is expected to be acidic, with elevated metals due to overall oxidation of the pit walls. Pit lake water quality would be monitored, and appropriate precautions would be taken to manage wildlife activity on the lake. Once the level of the pit lake has risen to about 890 feet in elevation, water would be pumped from the pit, treated as required, and discharged to the environment.

Long-term discharge from the bulk TSF seepage collection systems would be pumped to the pit lake.

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Financial Assurance

Prior to commencing construction, the project Reclamation and Closure Plan approval and associated financial assurance mechanisms would need to be in place. The Reclamation and Closure Plan and financial assurance obligations would be updated on a 5-year cycle, in accordance with regulatory requirements, to address any changes in closure and post-closure requirements and cost obligations.

A detailed reclamation and closure cost model would be developed to address all costs required for both the physical closure of the Project and the funding of long-term post-closure monitoring, water treatment, and site maintenance. The estimate would include the costs of closure planning and design, and mobilization of third-party equipment to site; detailed estimates of equipment and labor requirements for physical closure; capital, sustaining capital, and operating costs for water treatment and other long-term post-closure operations; and appropriate indirect costs and contingencies developed following ADNR guidance.

2.2.2.2 Transportation Corridor

The transportation corridor, which would connect the mine site to Amakdedori port on Cook Inlet, has three main components (see Figure 2-12):

- Mine access road: A private, unpaved, two-lane road extending approximately 29 miles south from the mine site to a ferry terminal on the northern shore of Iliamna Lake (includes a short spur near the mine site near UTC) (see Figure 2-13);
- Ferry crossing: An ice-breaking ferry to transport materials, equipment, and concentrate 18 miles across Iliamna Lake to a ferry terminal on the southern shore near the village of Kokhanok; and
- Port access road: A private, unpaved, two-lane road extending approximately 37 miles southeast from the south ferry terminal to Amakdedori port on Cook Inlet (see Figure 2-14).

Separate spur roads, approximately 11 miles in total length, would connect the transportation corridor to the villages of Iliamna, Newhalen, and Kokhanok. See Figure 2-15 showing the typical access road cross section. Apart from a small network of local roads near the villages, the transportation corridor area is undeveloped.

Road System

The main access road would be a private 30-foot-wide gravel road, which would enable two-way traffic, and would be capable of supporting anticipated development and operational activities during construction and truck haulage of concentrate from the mine to the port.

A total of 97 streams would be crossed by the Alternative 1 road system. Crossing structures would include nine bridges, six of which would be single-span, two-lane bridges that range in length from approximately 30 to 125 feet. There would be one large (575 feet) multi-span, two-lane bridge across the Newhalen River, and one large (470 feet) multi-span, two-lane bridge across the Gibraltar River. NOTE TO REVIEWERS: CLARIFICATION REQUESTED FROM PLP REGARDING THE NUMBER OF BRIDGES—GIS DATA DOES NOT MATCH WHAT IS SPECIFIED IN THE UPDATED PROJECT DESCRIPTION. Road culverts at stream crossings are divided into categories based on whether the streams are fish-bearing. There would be a total of 88 culverts; of these, 35 are designated as fish passage culverts. Culverts at streams without fish would be designed and sized for drainage only, in accordance with Alaska Department of Transportation and Public Facilities (ADOT&PF) standards. Culverts at streams with fish would be designed and sized for fish passage in accordance with ADOT&PF and Alaska Department of

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Fish and Game (ADF&G) standards. See Figures 2-16 to 2-18 showing typical water body crossing structures.

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Figure 2-12: Alternative 1 – Transportation Facilities Overview

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Figure 2-13: Alternative 1 – Mine Access Road and Iliamna Spur Road

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Figure 2-14: Alternative 1 – Port Access Road and Kokhanok Spur Road

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Figure 2-15: Alternative 1 – Typical Road Section

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Figure 2-16: Alternative 1 – Typical Bridge Crossing

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Figure 2-17: Alternative 1 – Typical Culvert Crossing

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Figure 2-18: Alternative 1 – Typical Fish Passage Culvert Crossing

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Ferry

The location of the mine site is physically separated from the marine terminal location by Iliamna Lake, which is roughly 75 miles long and up to 20 miles across, with no existing roadway networks around it. PLP's Proposed Action includes use of an all-season ice-breaking ferry to cross the lake, which would reduce the miles of roadbed that would be required for construction of a new road around the lake.

A custom-designed ferry would transit Iliamna Lake between the north and south ferry terminals, carrying inbound supplies from Amakdedori port to the mine site, and returning with copper-gold and molybdenum concentrates, backhauled waste, and empty shipping containers. The one-way ferry trip is about 18 miles, and would take approximately 3 hours to complete in ice conditions, or 1.5 hours in open water. On average, one round trip per day across the lake would be required. Figures 2-19, 2-20, and 2-21 present digital simulations of the ferry vessel, the north ferry terminal, and the south ferry terminal, respectively. Figures 2-22 and 2-23 show the north ferry terminal layout and cross sections, respectively. Figures 2-24 and 2-25 show the south ferry terminal layout and cross sections, respectively.

The vessel would be designed to operate year-round, in all ice conditions. Cargo would be carried on the vessel deck. The vessel would be symmetrical forward and aft with two icebreaking bows, allowing operation in open water or ice in either direction without the need to turn the vessel around at each terminal.

The hull would be subdivided by watertight bulkheads so that even if one compartment is damaged and flooded, the vessel would remain afloat, upright and stable, and operational, capable to return to shore facilities for repairs. Fuel and other potential contaminants would be stored in tanks inside the hull and away from the shell to prevent spills, in the unlikely event of damage to any of the hull's compartments.

Bilge water would be pumped through oil/water separation equipment installed on the vessel, and then discharged back to Iliamna Lake. The sludge from the system would be transferred to a shore storage tank, and ultimately transported to the mine site for disposal in the mine site incinerator.

The ferry terminals would initially serve as trans-shipment points for construction barge traffic across Iliamna Lake, using small temporary barges until the ferry is assembled. The south ferry terminal site includes the ferry assembly site. The ferry would be assembled from pre-fabricated components barged to Amakdedori port, and then transported across the road. The assembly site would remain intact to enable regular vessel surveys and maintenance as required.

The permanent facilities at the ferry terminals would include container handling and storage facilities, office and maintenance buildings, and local power supply. Each ferry terminal facility would have space for a minimum of 2 days of storage of the average concentrate container traffic. An access ramp would be built out from shore as a rock and aggregate causeway structure to provide approximately 40 feet of roadway surface for trucks and forklifts to access the ferry.

During normal operations, the ferry would be moored with a pair of lines to bollards at the end of the causeway. When the ferry is parked, it would be moored to a set of buoys outside of the causeway.

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Figure 2-19: Digitation Simulation of Ferry Vessel

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Figure 2-20: Alternative 1 – Digital Simulation of North Ferry Terminal

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Figure 2-21: Alternative 1 – Digital Simulation of South Ferry Terminal

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Figure 2-22: Alternative 1 – North Ferry Terminal

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Figure 2-23: Alternative 1 – North Ferry Terminal Cross Sections

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Figure 2-24: Alternative 1 – South Ferry Terminal

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Figure 2-25: Alternative 1 – South Ferry Terminal Cross Sections

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Material Sites

Construction materials would be excavated from borrow material sites (MS) along the main access road (See Table 2-3). Material from these sites would also be used for construction and maintenance of access and spur roads. Field review has not identified PAG material at any of the proposed sites. If PAG is identified at a site evaluation prior to use, the material site would be moved. The amount of material estimated to be required for the road and pipeline is approximately 7.9 million cubic yards. Final volumes of these gravel materials and specific location of material sites and development plans for these sites would be part of the final project design. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR MATERIAL SITES FOR ALL ACTION ALTERNATIVES.

Table 2-3 Alternative 1 Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
Port Access Road					
MS-A01	600,000	9	Rock & Gravel	Yes	Road, Pipeline
MS-A02	500,000	9	Rock & Gravel	Yes	Road, Pipeline
MS-A03	400,000	20	Rock	Yes	Road, Pipeline
MS-A04	400,000	22	Rock	Yes	Road, Pipeline
MS-A05	700,000	19	Rock	Yes	Road, Pipeline
MS-A06	400,000	19	Rock	Yes	Road, Pipeline
MS-A07	500,000	20	Rock	Yes	Road, Pipeline
MS-A08	1,000,000	22	Rock	Yes	Road, Pipeline, Port
Mine Access Road					
MS-T01	700,000	10	Rock & Gravel	Yes	Road, Pipeline
MS-T02	200,000	13	Gravel	No	Road, Pipeline
MS-T03	200,000	8	Gravel	No	Road, Pipeline
MS-T04	300,000	10	Gravel	No	Road, Pipeline
MS-T05	100,000	9	Rock & Gravel	Yes	Road, Pipeline
MS-T06	500,000	9	Gravel	No	Road, Pipeline
MS-T07	700,000	14	Gravel	No	Road, Pipeline
Iliamna Spur Road					
MS-N01	200,000	10	Gravel	No	Road, Pipeline
MS-N02	300,000	9	Gravel	No	Road, Pipeline
MS-N03	200,000	9	Gravel	No	Road, Pipeline
Total	7,900,000	241			

Source: PLP 2018-RFI 035

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Water Extraction Sites

Potential water extraction sites and quantities to support project construction and operations are provided in Table 2-4. Final estimated quantities for specific uses would be determined during final design (PLP 2018 – RFI 022). Temporary water use authorizations would be applied for by either the appropriate contractor or PLP. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR WATER EXTRACTION SITES FOR ALL ACTION ALTERNATIVES.

Table 2-4 Alternative 1 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
Port Access Road						
WES-01	Yes	stream	Construction	Not specified	1,000	5M
WES-02	Yes	stream	Construction & Testing	Not specified	500	3M
WES-03	Yes	lake	Construction	Not specified	500	1M
WES-04	Yes	stream	Construction	Not specified	500	2M
WES-05	Yes	lake	Construction	Not specified	500	1M
WES-06	Yes	pond	Construction	Not specified	500	1M
WES-07	Yes	stream	Construction	Not specified	500	1M
WES-08	Yes	lake	Construction	Not specified	500	1M
WES-09	Yes	stream	Construction & Testing	Not specified	1,000	1M
WES-10	Yes	lake	Construction & Testing	Not specified	1,000	8M
WES-11	Yes	lake	Construction	Not specified	1,000	8M
Mine Site Access Road						
WES-12	Yes	stream	Construction	Not specified	500	1M
WES-13	Yes	stream	Construction	Not specified	500	1M
WES-14	Yes	stream	Construction	Not specified	500	1M
WES-15	Yes	lake	Construction	Not specified	1,000	5M
WES-16	Yes	stream	Construction & Testing	Not specified	500	1M

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Table 2-4 Alternative 1 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
WES-17	Yes	pond	Construction	Not specified	500	1M
WES-18	Yes	pond	Construction	Not specified	500	1M
Iliamna Spur Road						
WES-19	Yes	lake	Construction	Not specified	500	1M
WES-20	Yes	stream	Construction	Not specified	1,000	5M
WES-21	Yes	stream	Construction	Not Specified	500	1M
LOCATION TBD						
WES-EP35	Yes	lake	Road and pipeline construction	life of mine	1,000	8M

Source: PLP 2018 – RFI 022

Temporary Facilities

A key component of the construction plan is to establish year-round access across Iliamna Lake using the permanent ice-breaking ferry. A temporary road would be constructed within the permanent alignment from the Amakdedori port site to the first material site, approximately 3 miles from the port site, to support construction. Pioneer road construction would extend the road toward the South Ferry Terminal near Kokhanok.

Once access is gained to Iliamna Lake, small barging equipment would be used on the lake to establish beachheads at the two ferry terminal sites. The beachheads at the ferry terminal sites would enable road construction to advance from those points. Temporary bridges would be used at the smaller crossings.

Temporary camps would be established at the ferry landings to support road construction; and at the south ferry landing, assembly of the ferry. These camps would remain in place until the natural gas line construction is complete. The north ferry landing camp would likely be augmented using existing facilities in Iliamna and Newhalen. Until the access road crossing the Newhalen River is complete, the crews would be shuttled to their workplaces by boat or by helicopter.

All temporary construction facilities would be removed after construction; and the sites, unless being used for permanent facilities, would be reclaimed.

Transportation Corridor Operations and Materials Transport

To facilitate efficient cargo movement and optimize ferry space, most material would be transported in shipping containers. At each ferry terminal, a container yard with forklift trucks would be provided to stage empty and loaded containers for loading on/off the ferry, and truck transfer. Some cargo would be handled as break-bulk if it does not fit into containers.

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Inbound project cargo and consumables would be transported using standard International Organization for Standards (ISO) containers for ocean freight (either 20- or 40-foot size). Diesel fuel would be transferred from Amakdedori port to the mine site using ISO tank-container units, which have a capacity of 6,350 gallons. Copper-gold concentrate would be loaded into specialized bulk cargo containers, each containing about 38 tons of concentrate, with removable locking lids. Truck/trailer units would be designed to haul up to three loaded containers per trip.

Daily transportation of concentrate, fuel, reagents, and consumables would require up to 35 round trips per day for each leg of the road, including three loads of fuel per day. The ferry would require one round trip across the lake per day. Figure 2-26 presents a digital simulation of a haul truck on the proposed access road.

Physical Reclamation and Closure

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. As operations end, the Iliamna Lake ferry facilities would be removed, and all supplies would be transported across the lake using a summer barging operation.

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Figure 2–26: Digital Simulation of Haul Truck

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2.2.2.3 Amakdedori Port and Lightering Locations

Port Design

The proposed project includes construction of Amakdedori port, a year-round port near Amakdedori Creek on the western shore of Cook Inlet (see Figure 2-27). The port site area is currently undeveloped, and not served by any transportation or utility infrastructure.

The proposed port site would include shore-based and marine facilities for the shipment of concentrate, freight, and fuel for the project. The shore-based facilities would include separate facilities for the receipt and storage of containers for concentrate and freight. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices. The shore-based complex would be constructed on an engineered fill pad at an elevation sufficient to address tidal surge from major storms and potential tsunamis.

The marine component includes an earthen access causeway extending out to a marine jetty located in 15 feet of natural water depth. One side of the jetty would be occupied by a roll-on/roll-off barge access berth; a separate berth for loading lightering barges would be on the opposite side. The jetty is expected to be constructed as a sheet pile cell structure filled with granular material. A floating dock, on the jetty but separate from the cargo-handling berths, would be provided for ice-breaking tug moorage. Dredging of the port site would not be required. See Figure 2-28 for cross sections of the Amakdedori port.

The natural gas pipeline from the Kenai Peninsula (discussed under Section 2.3.2.4, below) would come ashore at Amakdedori port. An offtake would distribute natural gas to the port power generation facility.

Lightering Locations

Copper-gold concentrate containers would be loaded onto lightering barges at Amakdedori port, and then transported to one of two lightering locations for transfer to bulk carriers. The primary lightering location is approximately 12 miles offshore east of the proposed Amakdedori port; the alternative lightering location is approximately 18 miles east-northeast of the proposed Amakdedori port between Augustine Island and the mainland. Wave heights in this area are reduced by Augustine Island, and it would be used when required by sea conditions. Figure 2-29 presents a digital simulation of concentrate transfer operations at a lightering site.

Figure 2-30 shows the proposed mooring system that would be installed at each lightering location. Vessels would not drop anchor each time they return to the location. Six floating mooring buoys would be used to secure the bulk vessel during loading, and each of these buoys would be attached to permanent anchors set on the sea floor using a pattern similar to that shown on Figure 2-30. On arrival, the bulk carriers would attach mooring lines to the floating buoys, anchoring themselves in place (PLP 2018-RFI 081).

The layout for the permanent anchors (10 to 12) set on the seabed would be finalized in detailed design, but typically consists of a large weight, such as a rock/concrete-filled 40x8x8-foot shipping container that is lowered to the sea floor (see Figure 2-31). Alternatives that might be used if sea floor conditions are not suitable for the use of gravity anchors as outlined include (PLP 2018-RFI 081):

1. Large spade anchors (similar to a conventional boat anchor).
2. Spiral screw anchors that would be twisted into the seabed using a hydraulic drill. This does not work in areas of rock or hard cobbles.

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3. For areas of rock seabed, anchors may be drilled into the seabed.
4. Depending on the ground conditions at the designated mooring area, the anchoring system may involve drilling into the subsurface rock as an alternative to a gravity anchor system. The mooring spread measures approximately 2,300 by 1,700 feet, but the impact footprint on the sea bottom is limited to the ten anchor locations.

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Figure 2-27: Alternative 1 – Amakdedori Port and Lightering Locations

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Figure 2-28: Alternative 1 – Amakdedori Port Cross Sections

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Figure 2-29: Digitation Simulation of Container Transfer at Lightering Site

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Figure 2-30: Offshore Lightering Mooring Arrangement

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Figure 2-31: Typical Anchor Design

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Temporary Facilities

During the initial construction effort at Amakdedori port, a beachhead would be established using small landing craft–style barges for access. It would consist of a temporary camp, environmental protection features, the port site airstrip, and service facilities. Temporary diesel generators would be used for power supply. While this work is under way, crews would be housed on vessels moored near the site.

A temporary construction camp at the port would be located in an area that would be used for port operations, and would not require a separate footprint. The camp would house the crews for the pioneer road construction. Once the road is through to Iliamna Lake, an existing camp at Kokhanok would be used for road crews and for the crew establishing the ferry landings.

All temporary construction facilities would be removed after construction; and the sites, unless being used for permanent facilities, would be reclaimed.

Port Operations and Materials Transport

Incoming supplies such as equipment, reagents, and fuel would be barged to Amakdedori port, and then transported by truck to the mine site. To a lesser extent, some supplies, such as perishable food, may be transported by air to the Iliamna Airport and trucked to the mine site. Figure 2-32 shows a digital simulation of barges at Amakdedori port.

Copper-gold concentrate would be transported from the mine site to Amakdedori port by truck in covered bulk cargo containers, and stored between vessel sailings on a dedicated laydown pad adjacent to the jetty. The concentrate would be lightered by barge from Amakdedori port to Handysize bulk carriers at offshore mooring points. The containers would be lifted by crane into the open hold of the receiving ship. Once inside the hold, the container lid would be opened, and the container turned upside down to unload the concentrate into the ship's hold. The container would be lowered as close as possible to the bottom of the hold to minimize the drop distance and the potential for dust generation during ship loading. About ten trips by the lightering barges would be required to load a bulk carrier, which would be anchored for 4 to 5 days at the lightering location. The bulk carrier ships would transport the concentrate to out of state smelters. This containerized bulk handling system minimizes dust emissions and the risk of spills.

The empty containers would be cleaned of any residue on the outside while at the port, and then returned to the laydown pad. They would then be returned to the mine site and reused for transporting concentrate.

Up to 27 Handysize ships would be required annually to transport concentrate. Up to 33 marine linehaul barge loads of supplies and consumables would be required annually. Two ice-breaking tug boats would be used to support marine facility operations.

The Amakdedori port site would be equipped for fire and emergency response. Water for fire suppression would be stored in freshwater supply tanks at the port and distributed via insulated pipeline system. An ambulance would be located at the port and a pump truck would be used to deliver fire suppression water. Equipment would also be installed to respond to oil spills, and crews would be appropriately trained for such response.

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Figure 2-32: Alternative 1 – Digital Simulation of Barges at Amakdedori Port

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Water Management

The WTP at Amakdedori port would treat surface runoff from the port facilities, including truck-wash bays. The treatment process would include dissolved metal oxidation using potassium permanganate, followed by co-precipitation with ferric chloride. Water from the co-precipitated solids would flow into flocculators/clarifiers to separate out solids. The clarified water would then be treated with sodium hydrogen sulfide, sodium hydroxide, and ferrous sulfate to further co-precipitate remaining metals under reducing conditions. The solids that are removed would be thickened and disposed of appropriately. The treated water would be suitable for discharge.

A potable WTP and a sewage treatment plant would also be sited at Amakdedori port.

A groundwater well for the port site is planned. The precise location for the well would be identified during detailed design. The well would be sited on uplands far enough from the shore so as to avoid any potential for saltwater intrusion, and water would be piped to the site from the wellhead (PLP 2018-RFI 022a).

Physical Reclamation and Closure

Physical site closure work would commence as operations end. At that time, the Amakdedori port facilities would be removed, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies.

2.2.2.4 Natural Gas Pipeline

Natural gas, sourced through the existing natural gas supply infrastructure for the Cook Inlet area, would be the primary energy source for the project.

Natural Gas Pipeline Corridor and Ancillary Facilities

The natural gas would be supplied to Amakdedori port and the mine site by pipeline (Figure 2-33). The pipeline would connect to the existing gas pipeline infrastructure near Anchor Point on the Kenai Peninsula and would be designed to provide a gross flow rate of approximately 50 million standard cubic feet per day. A fiber optic cable would be ploughed in, or buried in a shallow trench, adjacent to the pipeline.

A metering station would be constructed at the offtake point that connects to a compressor station sited on a land parcel on the eastern side of the Sterling Highway. Figure 2-34 shows a digital simulation of the proposed compressor station. The steel pipeline would be designed to meet all required codes, and would be a nominal 12 inches in diameter.

The compressor station would feed a 104-mile subsea pipeline that would be constructed using heavy-wall nominal 12-inch-diameter pipe designed to have negative buoyancy and provide erosion protection against tidal currents. Horizontal directional drilling (HDD) would be used to install pipe segments from the compressor station out into waters that are deep enough to avoid navigation hazards. From this point, the heavy-wall pipe would be laid on the sea floor, and anchored or supported as required.

The pipeline would come ashore at Amakdedori port, where natural gas would be fed to the port site power station and used for site heating. The natural gas corridor from Amakdedori port to the mine site would consist of three sections. The first section would follow the access road to the south ferry terminal. The pipeline would be buried in a trench adjacent to the road. At the south ferry terminal, gas would be fed from the pipeline to the facilities for power supply and facility heat. At this point, the pipeline would enter Iliamna Lake for the next section, an approximate 18-mile lake crossing. The design of this section of the pipe, transitions, and burial would be similar to the

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Cook Inlet crossing. The pipeline would come ashore at the north ferry terminal. Natural gas would be used to provide power and heat at ferry terminal facilities. From this point, the pipeline would follow the road route to the mine site.

The segments of the natural gas pipeline and fiber-optic cable constructed along the access roads would be buried adjacent to the road alignment (see Figure 2-15). For river crossings, the pipeline would either use HDD or be attached to the bridge structures. See Figures 2-35 and 2-36 for the typical open-cut and HDD crossings, respectively.

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Figure 2-33: Alternative 1 - Natural Gas Pipeline Alignment

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Figure 2-34: Digitation Simulation of Compressor Station

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Figure 2–35: Alternative 1 – Typical Pipeline Open Cut Water Body Crossing

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Figure 2-36: Alternative 1 – Typical Pipeline HDD Crossing

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Long-term corrosion protection and control would be provided by an external coating on the pipeline and components, combined with an impressed current and/or galvanic current cathodic protection system. The cathodic protection system would be installed and activated, as soon as is practical, after pipe installation to maximize the effect of corrosion protection. Anode bed and rectifier locations would be determined based on specific local conditions and field observations. Metering stations and pig launching and receiving facilities would be located at the compressor stations and offtake points as appropriate. Mainline sectionalizing valves would be installed as required by code, with a spacing of no more than 20 miles for the onshore sections of the pipeline.

On completion of construction, the natural gas pipeline would be pressure–tested, and all mechanical, civil, structural, and electrical installations would be checked to ensure that they are installed according to design, and can operate safely.

Pipeline test methods would at a minimum include hydrostatic testing and x-raying welds. No chemicals would be added to the water used for hydrostatic testing. Hydrostatic testing would be conducted during the summer construction season. Disposal methods and locations would be developed in accordance with the Alaska Pollutant Discharge Elimination System (APDES) General Permit AKG320000 – Statewide Oil and Gas Pipelines prior to filing a Notice of Intent (NOI) for coverage. Specific BMPs for the test water discharge would be developed, as required by the general permit.

Material sites and water extraction sites for road and pipeline construction are discussed above under Section 2.2.2.2, and listed in Tables 2-3 and 2-4, respectively.

Physical Reclamation and Closure

The natural gas pipeline would be maintained until such time as it is no longer required to provide energy to the project site. If no longer required, the pipeline would be pigged and cleaned and either abandoned in place or removed, subject to regulatory review and approval at the decommissioning stage of the project. Surface utilities associated with the pipeline would be removed and reclaimed.

2.2.2.5 Action Alternative 1 – Summer Only Ferry Operations Variant

This variant considers ferry operations only in the summer when Iliamna Lake is free of ice. Changes to the mine site, transportation corridor, and port components with incorporation of this variant are described below. This variant does not involve changes to the natural gas pipeline component.

Mine Site

Storage of concentrate at the mine site would be needed during the winter months until Iliamna Lake is free of ice to resume the movement of cargo. Storage would be through a container-based system with a laydown area at the mine site (PLP 2018-RFI 065). Storage would occur during the months that Iliamna Lake was iced over, up to 6 months. The sewage tank pad would be relocated to provide space for the additional laydown space in proximity to the mill. See Figure 2-37 for the mine site layout showing the concentrate storage area and relocated sewage tank pad.

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Figure 2-37: Alternative 1 Summer Only Ferry Operations Variant – Mine Site Layout

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Transportation Corridor

The ferry would only operate in the summer. Trucks would only operate when the ferry was running, which would double the number of round trip truck moves to 78 per day each side of the ferry (PLP 2018-RFI 065).

Amakdedori Port

Concentrate would be stored at the port site during the winter months until Iliamna Lake is free of ice to resume the movement of cargo. Storage would be through a container-based system with a laydown area at the port site (PLP 2018-RFI 065). Storage would occur during the months that Iliamna Lake was iced over, up to 6 months. See Figure 2-38 showing the concentrate storage laydown area at Amakdedori port.

2.2.2.6 Action Alternative 1 – Kokhanok East Ferry Terminal Variant

This variant considers an alternate ferry terminal site east of Kokhanok: the Kokhanok east ferry terminal site (See Figure 2-39). Changes to the transportation corridor and natural gas pipeline components with incorporation of this variant are described below. This variant does not involve changes to the mine site and port components.

Transportation Corridor

The ferry would cross to one ferry terminal site variant (PLP 2018-RFI 078), the Kokhanok east ferry terminal site, and a private unpaved access road would extend 27 miles from the Kokhanok east terminal to Amakdedori port. A separate spur road, approximately 5 miles, would connect the transportation corridor to the village of Kokhanok.

The layout of Kokhanok east ferry terminal would be similar to the Kokhanok west ferry terminal (See Figure 2-40). The one-way ferry trip is about 27 miles, and would take approximately 4.5 hours to complete in ice conditions, or 2.25 hours in open water. On average, one round trip per day across the lake would be required.

The port access road would not require a crossing of the Gibraltar River, and would also have less overall stream crossings. A total of 8 waterbodies would be crossed along the access road and spur road under this variant. Crossing structures would include one bridge and seven cross-drainage culverts. Typical bridge and culvert designs would be the same as described above. NOTE TO REVIEWERS: REQUESTED DETAILS ON BRIDGE SPANS FOR THIS VARIANT.

New material sites are proposed along the port access road from the Kokhanok east ferry terminal (Table 2-5). These would replace three material sites identified along the port access road from the Kokhanok west ferry (MS-A##, MS-A##, and MS-A## identified in Table 2-3), which would no longer be required with this variant. The material sites under this variant are larger, resulting in an increase of ### cubic yards and 125 acres. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR MATERIAL SITES FOR ALL ACTION ALTERNATIVES.

Table 2-5 Kokhanok East Variant Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
Port Access Road (Kokhanok East Ferry Terminal)					
MS-K01		80			

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Table 2-5 Kokhanok East Variant Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
Kokhanok Spur Road					
MS-K02		28			
MS-K03		55			
Total		163			

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Figure 2-38: Alternative 1 Summer Only Ferry Operations Variant – Amakdedori Port Layout

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Figure 2-39: Alternative 1 Kokhanok East Ferry Terminal Variant

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Figure 2-40: Alternative 1 Kokhanok East Variant - Ferry Terminal Layout

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New water extraction sites are proposed along the port access road from the Kokhanok east ferry terminal and the Kokhanok spur road (Table 2-6). These would replace ## water extraction sites identified along the port access road from the Kokhanok west ferry (WE-##, WE-##, and WE-## identified in Table 2-4), which would no longer be required with this variant. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR WATER EXTRACTION SITES FOR ALL ACTION ALTERNATIVES.

Table 2-6 Kokhanok East Variant Water Extraction Sites and Quantities

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
Kokhanok Village Spur Road						
WES-KE36	Yes	lake	Road and pipeline construction	life of mine	1,000	8M
Port Access Road (Kokhanok East Ferry Terminal)						
WES-KE37	Yes	lake	Road and pipeline construction	3	500	3M
WES-KE38	Yes	stream	Road and pipeline construction	3	500	3M
WES-KE39	Yes	lake	Road and pipeline construction	3	500	3M

Natural Gas Pipeline

The natural gas pipeline alignment would follow the spur road into Kokhanok, and then follow an existing road alignment to the point where it departs the shoreline to tie into the proposed route from the Kokhanok west ferry terminal site (Figure 2-37). The total pipeline length with this variant would be 185 miles.

2.2.2.7 Action Alternative 1 – Pile-Supported Dock Variant

This variant considers construction of an access trestle and pile-supported dock at Amakedori port, instead of an earthen access causeway and jetty. See Figure 2-41 for the conceptual pile-supported dock layout. The conceptual structure would consist of 76 trestle piles and 177 dock piles, for a total of 253 piles. All piles would be 48 inches in diameter, with a 1.5-inch wall thickness. The piles would be vibrated into place and then driven to refusal with an impact hammer. The total dock area would be approximately 14 acres, and the footprint of pilings would be approximately 3,200 square feet. No fill would be required under this variant.

This variant does not involve changes to the mine site, transportation corridor, or natural gas pipeline components.

2.2.3 Action Alternative 2 – North Road and Ferry

Alternative 2 – North Road and Ferry (Alternative 2) is being considered as an alternative that reduces the total length of road required along a mine access route.

The Alternative 2 access route includes a road alignment from the mine site along the northern shore of Iliamna Lake to Eagle Bay; a ferry from Eagle Bay to Pile Bay; and a road alignment to a port at Diamond Point (Figure 2-42).

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Alternative 2 descriptions will refer to Alternative 1 for components that would not change, and describe components that differ. Variants to the alternative (such as the summer-only ferry option) that were identified during the alternatives development process are incorporated into the project component descriptions.

2.2.3.1 Mine Site

The mine site layout and processes under Alternative 2 (Figure 2-43) would be the same as Alternative 1, with the exception of the construction methods for the north embankment of the bulk TSF. Under Alternative 2, the north bulk TSF embankment would be constructed using the downstream method with buttresses, instead of the centerline method proposed under Alternative 1.

Under this alternative, the overall downstream slope would be 2.6H:1V, and the upstream slope 2H:1V. The north embankment crest would be raised approximately 15 feet to an elevation of 1,745 feet (embankment height approximately 570 feet) to provide equivalent bulk TSF storage capacity. The centerline would shift approximately 40 feet upstream. The embankment fill would increase from 78 million cubic yards (yd^3) to 124 million yd^3, and the impoundment footprint area would increase by 119 acres (PLP 2018-RFI 075a). See Figures 2-44 and 2-45.

2.2.3.2 Transportation Corridor

The transportation corridor under Alternative 2 would connect the mine site to the Diamond Point Port in Iliamna Bay (Figure 2-46). It has three main components:

- Mine access road: A private, unpaved two-lane road extending 36 miles east from the mine site to a ferry terminal on the northern shore of Iliamna Lake at Eagle Bay (see Figure 2-47).
- Ferry crossing: An ice-breaking ferry to transport materials, equipment, and concentrate 29 miles across Iliamna Lake to a ferry terminal on the eastern shore at Pile Bay.
- Port access road: A controlled access, unpaved two-lane road extending 18 miles southeast from the east ferry terminal to the Diamond Point Port site in Iliamna Bay (see Figure 2-48).

This corridor would act as the main access route to and from the mine for the transportation of materials, equipment, and concentrate. The ferry, truck transportation, and the Diamond Point port would operate year-round. The general descriptions for temporary facilities, transportation corridor traffic, and material transport, and physical reclamation and closure, would be the same as Alternative 1, but would occur at the locations described under this alternative. The exception is that it is reasonable to assume that the Diamond Point port would be maintained and operated to transfer freight and boats by another entity at closure instead of being removed, as is proposed for the Amakdedori port under Alternative 1. Freight and boats are currently transferred through nearby Williamsport, but the all-tide Diamond Point port would be an upgrade over the existing high-tide-only Williamsport facility.

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Figure 2-41: Alternative 1 Amakdedori Port Pile Supported Dock Variant

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Figure 2-42: Alternative 2 – General Project Layout

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Figure 2-43: Alternative 2 – Mine Site Layout

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Figure 2-44: Alternative 2 – Bulk TSF Layout

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Figure 2-45: Alternative 2 – Bulk TSF North Embankment Cross Section

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Figure 2-46: Alternative 2 – Transportation Facilities Overview

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Figure 2-47: Alternative 2 – Mine Access Road

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Figure 2-48: Alternative 2 – Port Access Road

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Road System

The main access road design would be the same as Alternative 1; a 30-foot-wide gravel road to enable two-way traffic, and capable of supporting anticipated development and operational activities during construction and truck haulage of concentrate from the mine to the port. The corridor would be north of Iliamna Lake, where it would connect with the existing Williamsport-Pile Bay Road in the vicinity of Pile Bay, and then continue to the Diamond Point port site on Cook Inlet. The road would bypass all but 5 miles of the existing Williamsport-Pile Bay Road.

A total of ## streams would be crossed by the Alternative 2 road system. Crossing structures would include # bridges and ## culverts (# of which would be designed as fish passage culverts). Typical bridge and culvert designs would be the same as described for Alternative 1. NOTE TO REVIEWERS: REQUESTED UPDATED WATER BODY CROSSING DATA SET FOR ALTERNATIVE 2.

Ferry

The ferry vessel would be the same as Alternative 1. It would carry inbound supplies from the lake portion of the route from Diamond Point port to the mine site, returning with copper-gold and molybdenum concentrates, backhauled waste, and empty containers. The one-way ferry trip is about 29 miles, and would take approximately 5 hours to complete in ice conditions, or 2.5 hours in open water. On average, one round trip per day across the lake would be required.

The north shore ferry terminal would be at Eagle Bay, and would have a similar layout, facilities, and operations as Alternative 1. The Pile Bay Ferry Terminal would be south of the start of the Pile Bay-Williamsport Road on the east shore of Iliamna Lake (See Figure 2-49).

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Figure 2-49: Alternative 2 – Pile Bay Ferry Terminal Layout

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Material Sites

Potential material sites for Alternative 2 are shown in Table 2-7. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR MATERIAL SITES FOR ALL ACTION ALTERNATIVES.

Table 2-7 Alternative 2 Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
Port Access Road – Diamond Point Port to Pile Bay					
Mine Access Road – Eagle Bay to Mine Site					
North Access Road to Eagle Bay Spur					

Water Extraction Sites

Potential water extraction sites for Alternative 2 are shown in Table 2-8. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR WATER EXTRACTION SITES FOR ALL ACTION ALTERNATIVES.

Table 2-8 Alternative 2 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
North Access Road to Eagle Bay Spur						
WES-E33	Yes	lake	Road and pipeline construction	life of mine	1,000	8M
WES-E34	Yes	stream	Road and pipeline construction	THREE	500	3M

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Table 2-8 Alternative 2 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
North Access Road – Diamond Point Port to Mine Site						
WES-N05	Yes	stream	Road and pipeline construction	life of mine	500	3M
WES-N06	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N07	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N08	Yes	pond	Road and pipeline construction	life of mine	500	5M
WES-N09	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N10	Yes	river	Road and pipeline construction	life of mine	1,000	8M
WES-N11	No	stream	Road and pipeline construction	THREE	500	3M
WES-N12	Yes	stream	Road and pipeline construction	life of mine	500	3M
WES-N13	Yes	river	Road and pipeline construction	THREE	1,000	8M
WES-N14	Yes	lake	Road and pipeline construction	life of mine	500	3M
WES-N15	No	stream	Road and pipeline construction	THREE	500	3M
WES-N16	No	stream	Road and pipeline construction	THREE	500	3M
WES-N17	No	stream	Road and pipeline construction	THREE	500	3M
WES-N18	No	lake	Road and pipeline construction	THREE	500	3M
WES-N19	No	stream	Road and pipeline construction	THREE	500	3M
WES-N20	Yes	stream	Road and pipeline construction	life of mine	1,000	8M
WES-N21	No	stream	Road and pipeline construction	THREE	500	3M
WES-N22	Yes	stream	Road and pipeline construction	life of mine	1,000	3M
WES-N23	Yes	stream	Road and pipeline construction	THREE	1,000	5M
WES-N24	Yes	stream	Road and pipeline construction	THREE	500	3M

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Table 2-8 Alternative 2 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
WES-N25	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N26	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N27	No	stream	Road and pipeline construction	THREE	500	3M
WES-N28	Yes	lake	Road and pipeline construction	THREE	500	3M
WES-N29	Yes	river	Road and pipeline construction	life of mine	1,000	8M
WES-N30	Yes	river	Road and pipeline construction	THREE	1,000	5M
WES-N31	No	stream	Road and pipeline construction	THREE	500	3M
WES-N32	Yes	pond	Road and pipeline construction	THREE	500	3M
Natural Gas Pipeline – Ursus Cove to Diamond Point Port – TO BE MOVE TO PIPELINE SECTION						
WES-P01	Yes	stream	Pipeline construction and testing	ONE	500	3M
WES-P02	Yes	stream	Pipeline construction	ONE	500	1M
WES-P03	Yes	stream	Pipeline construction and testing	ONE	500	3M
WES-P04	No	stream	Pipeline construction	ONE	500	1M

2.2.3.3 Diamond Point Port and Lightering Locations

Alternative 2 port site and lightering locations are described below. The general descriptions for temporary facilities, water management, and physical reclamation and closure would be the same as Alternative 1, but would occur at the locations described under this alternative. Under Alternative 2 a temporary airstrip would not be constructed at the port site. However, improvements to the existing airstrip near Pile Bay may be necessary for limited use during construction.

Port Site

Alternative 2 includes construction of Diamond Point port, a year-round port at Iliamna Bay (Figure 2-50). Similar to the Proposed Action, the proposed port site would include shore-based and marine facilities for the shipment of concentrate, freight, and fuel for the project. The shore-based facilities would include separate facilities for the receipt and storage of containers for concentrate and freight. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices. The shore-

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based complex would be constructed on an engineered fill pad at an elevation sufficient to address tidal surge from major storms and potential tsunamis.

The marine component would be similar to the Amakdedori port design under Alternative 1; consisting of an earthen access causeway extending out to a marine jetty. The jetty is expected to be constructed as a sheet-pile cell structure filled with granular material. Figure 2-51 shows a digital simulation of the Diamond Point port.

The shallow approach at this port site would require dredging. Initial estimates would be for dredging up to a 20-foot depth because the existing water depth is shallower than at Amakdedori port. Dredged channels are typically more prone to sedimentation, requiring maintenance dredging; therefore, dredging deeper reduces the frequency of maintenance dredging. Dredged material would either be used in construction of the causeway and dock, or disposed of onshore. The total volume of dredged material for the 20-foot channel would be 650,000 cubic yards, of which a minimum of 50 percent is estimated to be used in the barge dock construction, which would require approximately 615,000 cubic yards of fill for construction. Any rocks encountered in the channel would be moved to the side of the channel, or used in the dock construction. Any remaining dredged material and any material from maintenance dredging would be disposed of on-shore in a bermed facility on uplands west of the dock site (PLP 2018-RFI 032 and PLP 2018-RFI 063).

An offtake from the natural gas pipeline (discussed under Section 2.3.3.4, below) would distribute natural gas to the port power generation facility.

Lightering Locations

Two offshore lightering stations would be used to lighter the ore concentrate to moored bulk carriers (Figure 2-50). The primary location in Iniskin Bay would be used unless high winds, waves, ice, or other factors preclude its use. If the primary location is not suitable under given conditions, the alternate location shown on Figure 2-50 could be used if conditions there are more favorable. The lightering location in Iniskin Bay is generally protected from wave action, and heave is not expected to be a problem for loading at this location, except under extreme weather conditions.

The proposed mooring system would be the same as described for Alternative 1.

2.2.3.4 Natural Gas Pipeline Corridor

The Alternative 2 natural gas pipeline corridor is described below. All other components of the pipeline would be the same as described for Alternative 1.

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Figure 2-50: Alternative 2 – Diamond Point Port and Lightering Locations

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Figure 2-51: Alternative 2 – Digital Simulation of Diamond Point Port

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Natural Gas Pipeline Corridor and Ancillary Facilities

Natural gas would be supplied to Diamond Point port and the mine site by pipeline (Figure 2-52). As with Alternative 1, the pipeline would connect to the existing gas pipeline infrastructure near Anchor Point on the Kenai Peninsula, and would be designed to provide a gross flow rate of approximately 50 million standard cubic feet per day. A fiber-optic cable would be ploughed in, or buried in a shallow trench, adjacent to the pipeline. A metering station would be constructed at the offtake point that connects to a compressor station on a land parcel on the eastern side of the Sterling Highway. The steel pipeline would be designed to meet all required codes, and would be a nominal 12 inches in diameter.

The pipeline across Cook Inlet would be constructed as described for Alternative 1, but the alignment would come ashore at Ursus Cove. From Ursus Cove, it would be routed north running overland to Cottonwood Bay. A 150-foot temporary construction ROW would be requested to allow for adjustment of the final route to suit terrain. Access for construction would be by barge landings from each end of the ROW. The ROW would be reduced to a 50-foot permanent operations ROW following completion of pipeline construction. The pipeline would be installed in a trench to cross Cottonwood Bay using a barge mounted excavator in inundated areas, or low ground pressure equipment and mats in tidal areas, to excavate the trench. The pipeline would come ashore at Diamond Point port, where natural gas would be fed to the port site power station and used for site heating.

From Diamond Point port, the pipeline would be buried in a trench that follows the general Alternative 3 north access road alignment with minor (see Section 2.2.4.2 below). For segments that follow the Alternative 2 access road alignment, the pipeline would be buried in a trench adjacent to the road prism (see Figure 2-15). For segments that do not follow the road alignment PLP would secure the ROW easements from land owners. A 150-foot temporary construction ROW would be requested to allow for adjustment of the final route to suit terrain. The ROW would be reduced to a 50-foot permanent operations ROW following completion of pipeline construction. Three construction access points would be required (see Figure 2-52), and would be reclaimed after construction. See Figure 2-53 for typical sections showing summer construction of the pipeline along segments not adjacent to access roads.

The pipeline alignment would be monitored by air (helicopter and/or drone) to check for any ROW issues and/or leaks. The pipeline would also be inspected by pig as part of the regular maintenance and inspection program. Any work that needs to be performed would be supported by air, or by low-pressure ground vehicle access along the ROW and/or from the lake (PLP 2018-RFI 080).

2.2.3.5 Action Alternative 2 – Summer Only Ferry Operations Variant

This variant considers ferry operations only in the summer when Iliamna Lake is free of ice. Changes to the mine site and transportation corridor with incorporation of this variant under Alternative 2 are described below. This variant does not involve changes to the port or natural gas pipeline components.

Mine Site

Storage of concentrate at the mine site would be needed during the winter months until Iliamna Lake is free of ice to resume the movement of cargo. Storage would be through a container-based system with a laydown area at the mine site (PLP 2018-RFI 065). Storage would occur during the months that Iliamna Lake was iced over, up to 6 months. See Figure 2-54 showing the concentrate storage laydown area at the mine site.

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Figure 2-52: Alternative 2 – Natural Gas Pipeline Route

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Figure 2-53: Alternative 2 – Natural Gas Pipeline Typical Section for Pipeline Segment Not Adjacent to Access Road

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Figure 2-54: Alternative 2 Summer Only Ferry Operations Variant – Mine Site Layout

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Transportation Corridor

The ferry would only operate in the summer. Trucks would only operate when the ferry was running, which would double the number of round trip truck moves to 78 per day each side of the ferry (PLP 2018-RFI 065).

With this variant, storage of concentrate would be needed during the winter months until Iliamna Lake is free of ice to resume the movement of cargo. Storage would be through a container-based system with a laydown area along the Pile Bay-Williamsport Road due to limited available space at Diamond Point port (PLP 2018-RFI 065). Storage would occur during the months that Iliamna Lake was iced over, up to 6 months. See Figure 2-55, which shows the concentrate storage laydown area along the Alternative 2 transportation corridor.

2.2.3.6 Action Alternative 2 – Pile-Supported Dock Variant

This variant would construct an access trestle and pile-supported dock at Diamond Point port, instead of an earthen access causeway and jetty. See Figure 2-56 for the conceptual pile-supported dock layout. The conceptual structure would consist of 44 trestle piles and 474 dock piles, for a total of 518 piles. All piles would be 48 inches in diameter, with a 1.5-inch wall thickness. The piles would be vibrated into place and then driven to refusal with an impact hammer. The total dock area would be approximately 102 acres, and the footprint of pilings would be approximately 6,500 square feet. Dredging would similar to what is described for Alternative 2 with an earthen fill dock and jetty.

This variant does not involve changes to the mine site, transportation corridor, or natural gas pipeline components.

2.2.4 Action Alternative 3 – North Road Only

Alternative 3-North Road Only (Alternative 3) is being considered as an alternative that addresses alternative transportation corridor and natural gas pipeline routes that were carried forward from screening, and eliminates the need for ferry transportation across Iliamna Lake.

The Alternative 3 access route includes a north road alignment from the mine site to a port at Diamond Point on Cook Inlet. See Figure 2-57.

Alternative 3 descriptions will refer to Alternative 1 or 2 for components that would not change, and describe components that differ. Variants to the Proposed Action that were identified during the alternatives development process are incorporated into the project component descriptions.

2.2.4.1 Mine Site

The mine site layout and processes under Alternative 3 would be the same as described for Alternative 1.

2.2.4.2 Transportation Corridor

The transportation corridor under Alternative 3 would connect the mine site to Diamond Point port in Iliamna Bay (Figure 2-58). The project transportation corridor would consist of a double-lane road north of Iliamna Lake, the north access road, which would act as the main access route to and from the mine for the transportation of materials, equipment, and concentrate (Figure 2-59). There would be no ferry transportation across Iliamna Lake. The truck transportation and Diamond Point port would operate year-round.

Physical reclamation and closure would be the same as described for Alternative 2.

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Figure 2-55: Alternative 2 Summer Only Ferry Operations Variant – Transportation Corridor Container Storage Yard

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Figure 2-56: Alternative 2 Diamond Point Port Pile Supported Dock Variant

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Figure 2-57: Alternative 3 – General Project Layout

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Figure 2-58: Alternative 3 – Transportation Facilities Overview

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Figure 2-59: Alternative 3 – North Access Road Route

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Road System

The north access road design would be the same as Alternative 1; a private 30-foot-wide gravel road to enable two-way traffic, and capable of supporting anticipated development and operational activities during construction and truck haulage of concentrate from the mine to the port.

A total of 116 waterbodies would be crossed by the Alternative 2 road system. Crossing structures would include 17 bridges and 99 culverts (36 of which would be designed for fish passage). Typical bridge and culvert designs would be similar to those described for Alternative 1. NOTE TO REVIEWERS: REQUESTED DETAILS ON BRIDGE SPANS FOR THIS ALTERNATIVET.

Material Sites

Potential material sites Alternative 2 are shown in Table 2-9. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR MATERIAL SITES FOR ALL ACTION ALTERNATIVES.

Table 2-9 Alternative 3 Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
North Access Road					
MS-06		49			
MS-07		54			
MS-08		26			
MS-09		41			
MS-10		26			
MS-11		39			
MS-12		47			
MS-13		30			
MS-14		32			
MS-15		21			
MS-16		22			
MS-17		38			
MS-18		45			
MS-19		23			
MS-20		36			
MS-21		39			
MS-22		16			
MS-23		8			
MS-24		26			
MS-25		13			
MS-26		12			

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Table 2-9 Alternative 3 Material Site Quantities Estimates

Site	Quantity (cubic yards)	Size (acres)	Type	Blasting Required (Yes/No)	Use
MS-27		13			
MS-28		15			
MS-30		54			
MS-31		46			
MS-32		25			
MS-T01		12			

Water Extraction Sites

Potential water extraction sites for Alternative 2 are shown in Table 2-10. NOTE TO REVIEWERS: REQUESTED AN UPDATED DATA SET FOR WATER EXTRACTION SITES FOR ALL ACTION ALTERNATIVES.

Table 2-10 Alternative 3 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
North Access Road – Diamond Point Port to Mine Site						
WES-N05	Yes	stream	Road and pipeline construction	life of mine	500	3M
WES-N06	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N07	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N08	Yes	pond	Road and pipeline construction	life of mine	500	5M
WES-N09	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N10	Yes	river	Road and pipeline construction	life of mine	1,000	8M
WES-N11	No	stream	Road and pipeline construction	THREE	500	3M
WES-N12	Yes	stream	Road and pipeline construction	life of mine	500	3M
WES-N13	Yes	river	Road and pipeline construction	THREE	1,000	8M
WES-N14	Yes	lake	Road and pipeline construction	life of mine	500	3M

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Table 2-10 Alternative 3 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
WES-N15	No	stream	Road and pipeline construction	THREE	500	3M
WES-N16	No	stream	Road and pipeline construction	THREE	500	3M
WES-N17	No	stream	Road and pipeline construction	THREE	500	3M
WES-N18	No	lake	Road and pipeline construction	THREE	500	3M
WES-N19	No	stream	Road and pipeline construction	THREE	500	3M
WES-N20	Yes	stream	Road and pipeline construction	life of mine	1,000	8M
WES-N21	No	stream	Road and pipeline construction	THREE	500	3M
WES-N22	Yes	stream	Road and pipeline construction	life of mine	1,000	3M
WES-N23	Yes	stream	Road and pipeline construction	THREE	1,000	5M
WES-N24	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N25	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N26	Yes	stream	Road and pipeline construction	THREE	500	3M
WES-N27	No	stream	Road and pipeline construction	THREE	500	3M
WES-N28	Yes	lake	Road and pipeline construction	THREE	500	3M
WES-N29	Yes	river	Road and pipeline construction	life of mine	1,000	8M
WES-N30	Yes	river	Road and pipeline construction	THREE	1,000	5M
WES-N31	No	stream	Road and pipeline construction	THREE	500	3M
WES-N32	Yes	pond	Road and pipeline construction	THREE	500	3M
Natural Gas Pipeline – Ursus Cove to Diamond Point Port MOVE TO PIPELINE SECTION						
WES-P01	Yes	stream	Pipeline construction and testing	ONE	500	3M
WES-P02	Yes	stream	Pipeline construction	ONE	500	1M

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Table 2-10 Alternative 3 Water Extraction Site Quantity Estimates

Water Extraction Site	All-Season (Yes/No)	Water Body Type	Use	Years of Use	Extraction	
					Rate (gpm)	Annual Volume (gal)
WES-P03	Yes	stream	Pipeline construction and testing	ONE	500	3M
WES-P04	No	stream	Pipeline construction	ONE	500	1M

Temporary Facilities

Temporary facilities associated with Alternative 3 are assumed to be the same as described for Alternative 1 for access roads. There would not be a ferry, so temporary facilities associated with ferry terminals would not apply.

Transportation Corridor Traffic and Materials Transport

Trucks, containers, and truck traffic would be the same as Alternative 1. There would be no ferry traffic under Alternative 3.

2.2.4.3 Diamond Point Port and Lightering Locations

Alternative 3 includes construction of Diamond Point port, marine components, and lightering locations, as described for Alternative 2.

2.2.4.4 Natural Gas Pipeline Corridor

The natural gas pipeline component would be similar to Alternative 2. It would be approximately 1 mile longer than the Alternative 2 natural gas pipeline corridor because it would follow the entire North Road access route from Diamond Point to the mine site (see Figure 2-57); buried in a trench adjacent to the road. Additionally, the three construction access points described for Alternative 2 would not apply to Alternative 3.

2.2.4.5 Alternative 3 – Concentrate Pipeline Variant

This variant considers the concept of delivering copper and gold concentrate from the mine site to Diamond Point port using a pipeline instead of trucking along the north access road. Two options are addressed under this variant: one for the concentrate pipeline only, and another for a return water pipeline with the concentrate pipeline concept. Changes to the mine site, transportation corridor, and port with incorporation of this variant under Alternative 3 are described below. This variant does not involve changes to the natural gas pipeline component or the trucking of molybdenum concentrate.

Mine Site

With this variant, an electric pump station would be sited at the mine site, and would use positive displacement pumps in the 1,000-horsepower range. See Figure 2-60, which shows the location of the concentrate pumphouse at the mine site.

With incorporation of a concentrate pipeline only (no return water pipeline) and the corresponding treatment and discharge of the filtrate at the port site (discussed below), the amount of water

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available for release to surrounding drainages at the mine site would be reduced by approximately 1 to 2 percent, on average.

Transportation Corridor

The concentrate pipeline would follow the Alternative 3 access road route, and would be buried in the same trench as the gas pipeline (see Figures 2-61 and 2-62). The molybdenum concentrate, which represents approximately 2.5 percent of the total concentrate production, would still be transported in containers loaded on trucks.

The pipeline would consist of a single, approximately 6.25-inch-diameter API 5L X60 grade (or similar) steel pipeline with an internal high-density polyethylene (HDPE) liner to prevent corrosion. A cathodic protection (zinc ribbon or similar) system would be included for prevention of external corrosion. A pressure-based leak detection system, with pressure transmitters along the pipeline route, would monitor the pipeline for leaks. Two electric pump stations would be required: one at the mine site, and one at an intermediate point. Both pump stations would use positive displacement pumps in the 1,000-horsepower range, and the intermediate one would require appropriate power generation facilities (1 to 2-MW range). Rupture discs at the intermediate and terminal stations and pressure monitoring would be used to protect the pipeline from overpressure events. Aboveground sections of the pipeline would use heavy-wall pipe or casing as needed for additional protection. Manual isolation and drain valves would be spaced at intervals no greater than 20 miles apart (PLP 2018-RFI 066).

The pipeline would transport a mixture of 55 percent concentrate and 45 percent water by mass, which equates to a water consumption rate from the mine site of approximately 0.6 cubic foot per second (cfs). Additional water would be intermittently used for flushing the line during maintenance activities. Storage for water and slurry would be provided at the intermediate and terminal stations. Concentrate handling and dewatering facilities would be required at the port facility (PLP 2018-RFI 066).

During construction, steel pipe lengths would be welded together into segments, and the HDPE liner (smaller-diameter pipe) then pulled through each segment of steel pipe, ensuring a tight fit for the HDPE liner pipe. These lined segments are then bolted together using flange connections that connect both the inner HDPE liner pipe and the steel outer pipe. Lined concentrate pipelines cannot be built as a continuous welded segment over the entire length due to the requirement to pull the tight-fitting HDPE liner through the inside of the steel pipe. Welded segments can be up to 2,000 to 2,500 feet in length, typically allowing for river crossings that do not include flange connections.

The concentrate pipeline would be buried in the same trench as the gas pipeline, with approximately 36 inches of cover, or deeper in areas where needed to prevent freezing. The trench would be adjacent to the access road, facilitating access for construction, inspection, and maintenance. The road corridor width would be increased by less than 10 percent under most construction conditions. At major stream crossings, the pipeline would be attached to the vehicle bridges. Smaller crossings would use HDD, or trenching if appropriate. Decisions on the appropriate methodology for individual crossings would be made in consultation with ADF&G. Major river crossings would have isolation valves and pressure and temperature monitoring instrumentation installed.

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Figure 2-60: Alternative 3 Concentrate Pipeline Variant – Mine Site Layout

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Figure 2-61: Alternative 3 Concentrate Pipeline Variant – Concentrate Pipeline Route

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Figure 2-62: Alternative 3 Concentrate Pipeline Variant – Typical Road Section

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Diamond Point Port

Use of a concentrate pipeline would require concentrate handling, dewatering, and treatment facilities at Diamond Point port (See Figure 2-63). The port facility footprint and activity at the port site would increase due to the requirements of dewatering the concentrate, storing water and concentrate, and treating and discharging the filtrate water. The dewatered concentrate would be stored in bulk in a large storage building, and the concentrate lightering scheme would be revised to accommodate the bulk concentrate. The lightering system would use bulk handling (i.e., conveyers) of concentrate to load the bulk carriers, with appropriate controls to address the potential for concentrate dust emissions associated with storage, loading, and unloading.

The moisture content of the concentrate after dewatering would be 8 percent, resulting in a requirement to treat an average of approximately 220 gallons of filtrate water per minute. Water produced from sources such as pipeline flushing, or process-contacted stormwater, would also require treatment. The port water treatment facility would therefore be designed for a treatment capacity of up to 350 gallons per minute (gpm) (~ 0.8 cfs). The water quality characteristics of the slurry filtrate water and port area stormwater streams are expected to exceed discharge criteria for pH and metals concentrations to marine waters. The treatment of this stream would consist of chemical addition for pH adjustment and metals precipitation, followed by clarifiers for bulk suspended solids removal. Following clarification, additional metals precipitation would be accomplished by addition of sodium hydrogen sulfide, and either multimedia filtration or ultrafiltration. The filtered water would be discharged through an outfall pipeline and diffuser into surrounding marine waters. All discharge water would meet appropriate marine discharge criteria. Solids and/or brine captured in the clarification process and the filtration backwash would be trucked to the mine site, or barged to an offsite disposal facility as appropriate.

Concentrate Pipeline Operations Variant Option with Return Water Pipeline

Changes from the concentrate pipeline variant described above, with incorporation of a return water pipeline, are as follows:

1. The return water pipeline would be placed in the same trench as the slurry and natural gas lines, adjacent to the road, so the trench would be widened by a few feet (see Figure 2-62). This pipeline would need to be sized to accommodate water from flushing operations, resulting in a return water size of approximately 8 inches. This would also be a HDPE-lined steel pipeline with appropriate corrosion protection and other controls, as discussed above.
2. The Diamond Point Port footprint would not change substantially. The WTP would be removed, but other process and storage infrastructure would remain, and a return water pump station and associated generation capacity would be required at the port site. The return water line would not require an intermediate pump station.

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Figure 2–63: Alternative 3 Concentrate Pipeline Variant – Diamond Point Port Layout

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2.2.5 Summary of Differences Between Action Alternatives

Table 2-11 summarizes the primary differences between the action alternatives. The table does not summarize all the components of each alternative, but instead lists the parts of the Proposed Action that would differ in other alternatives. Figure 2-64 illustrates the primary differences between the action alternatives.

NOTE TO REVIEWERS: TABLE 2-11 TO BE PREPARED FOR THE DEIS—PENDING REQUESTED GIS DATA TO COMPLETE.

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Table 2-11 Summary of Differences Between Action Alternatives

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Figure 2-64: Alternatives Comparison

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2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Appendix B describes the options that were considered, provides details on the screening of each option, and explains the rationale for dismissal of options. Over 70 alternative options were evaluated in Appendix B, including alternative mining methods, alternative water treatment, alternative access routes, and alternative locations for project component facilities.

The technical and economic practicability of options was evaluated carefully, and these factors were most often the basis for eliminating options. Environmental impacts were assessed at a screening level; some options were eliminated because they would increase the overall adverse environmental impacts, or would add no environmental benefit when compared with the corresponding components of the proposed project. Others were not carried forward as options because they were more properly characterized as potential mitigating measures. Mitigation measures are addressed in Chapter 5, Mitigation.

The alternative options considered and eliminated from further analysis, based on the screening process outlined above, are presented in Tables 2-12 through 2-23, which are organized by various elements of the proposed project (e.g., mine location and layout, access, tailings, and management). The tables provide a brief description of each option that was considered and dismissed.

Table 2-12: Mine Location and Layout Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Location – Whistler Project	LOC-002	***Description*** – The Whistler mineral property is a gold-copper porphyry deposit located in the Yentna mining district northwest of Anchorage. Molybdenum resources have not been reported at Whistler.
Location – Pyramid Project	LOC-003	***Description*** – Pyramid is a copper-gold-molybdenum porphyry deposit located on the southwestern tip of the Alaska Peninsula southwest of Anchorage. Exploration to date at the Pyramid property has characterized only inferred resources.
Location – Outside of Alaska	LOC-004	***Description*** –This option involves acquisition, development, and operation of a copper-molybdenum massive sulfide deposit located outside of Alaska.
Location – within Alaska	LOC-005	***Description*** –This option involves development and operation of a multi-metals massive sulfide deposit located in Alaska.
Layout – Mine Layout Option 1	LAY-002	***Description*** – This option is based on a mining plan that requires stockpiling capacity for lower-grade ore (LGO) that is processed late in the mine life. A single tailings storage facility (TSF) with separate cells for bulk and pyritic tailings would be constructed in the North Fork Koktuli (NFK) West site, with an internal embankment between the cells. The pyritic TSF would be lined. The bulk TSF would not be lined. Potentially acid generating (PAG) waste and LGO would be stored in a lined facility in the NFK East site. The main water management pond (WMP) would be constructed north of the NFK East site. The bulk TSF would have a dry closure. The pyritic TSF would have a wet closure. The LGO/PAG waste storage facility would be reclaimed.
Layout – Mine Layout Option 2	LAY-003	***Description*** – This option is based on a mining plan that would send all ore directly to the mill. The TSF would be constructed in the NFK West site, and consist of a single cell with an internal area to store the pyritic tailings so that they remain subaqueous. A lined WMP with space to store PAG waste would be constructed in the NFK East site. The tailings would have wet closure, and the WMP would be reclaimed.

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Table 2-12: Mine Location and Layout Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Mine Size – EPA Restricted Mine Size	LAY-004	***Description*** – This option would restrict the size of the mine to what the EPA found appropriate in the 2014 Watershed Assessment.
Mine Size – Smaller Mine Pit Size	LAY-005	***Description*** –This option examines the smallest mine size considered by the EPA in the 2014 Watershed Assessment. Under this option, 0.23 billion metric tons of ore would be mined, with a throughput of 31,100 metric tons per day (tpd).
Mine Size – Larger Mine to Develop More of the Known Deposit	LAY-006	***Description*** –This option would increase the mine site and duration of operations to develop more of the known and inferred resource of the overall deposit.

Table 2-13: Mining Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Mining Type – Underground Mining	MNG-002	***Description*** – This option would develop the resource using underground mining methods.
Mining Type – Surface and Underground Mine	MNG-003	***Description*** – This option would develop the resource using both open-pit and underground mining methods.
Material Handling – In-Pit Crushing and Conveying	MNG-005	***Description*** – This option would use in-pit crushing and conveying methods for material handling that would begin several years into the start of operations, and operate through the end of the mine life.
Truck Fuel – Liquefied Natural Gas	MNG-007	***Description*** – Under this option, liquefied natural gas (LNG) would be produced using an on-site plant and used to power the haul trucks.

Table 2-14: Processing Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Facility Location– Off-site Ore Processing	PRO-002	***Description*** – Off-site ore processing would involve transporting all ore away from the project area for processing. This would involve transportation of 180,000 tons of ore from the mine site to the mill site daily.
Facility Location /Process Type – On-site Ore Processing (Metal Production)	PRO-003	***Description*** – On-site ore processing would construct a smelter and produce metals on site (copper, gold, and molybdenum) instead of a concentrate product.

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Table 2-15: Throughput Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
50,000 tons per day	TPD-002	***Description*** – Mine throughput of 50,000 tons per day (tpd), with a mine life of 71 years.
115,000 tons per day	TPD-002a	***Description*** – Mine throughput of 115,000 tpd, with a mine life of 31 years.
160,000 tons per day	TPD-003	***Description*** – This throughput option of 160,000 tpd would require construction of a large, lined pad for storing PAG waste rock and LGO (PAG waste rock would be returned to the completed pit at closure, and LGO would be processed during the later years of mine operations). This option was replaced by the 180,000-tpd throughput as the Proposed Action.
320,000 tons per day	TPD-004	***Description*** – Mine throughput of 320,000 tpd over an 11-year mine.

Table 2-16: Gold Recovery Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Secondary Gold Recovery	GR-002	***Description*** –This option involves construction of a cyanide leach circuit at the mine site to process the pyritic tails. A cyanide leach circuit could recover additional gold from the process.

Table 2-17: Power Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Power Source – Renewable Energy	POW-002	***Description*** – Under this option, PLP would construct and power the mine using renewable energy resources such as wind turbines and run-of-river hydropower. Also considered under this option is supplementing the natural gas power plant production with renewables.
Power Source – Purchase Power from Existing Grid	POW-003	***Description*** – Under this option, power would be purchased from existing third-party providers and transmitted to the site via a High-Voltage Direct Current transmission. The nearest connection would be on the Kenai Peninsula, 120 miles from the mine site and across Cook Inlet.
Power Source – Use Alternative Fuel Sources/Delivery Methods	POW-004	***Description*** – The most likely alternative energy sources would be diesel fuel and LNG, both of which could be delivered to the proposed Amakdedori port via barge. Transportation from the port to the Mine Site could be by truck or pipeline.
Power Plant Location – Off-site with High-Voltage Transmission Lines	POW-006	***Description*** –This option would require a new power plant to be built at an alternative location such as the Kenai Peninsula or Amakdedori. High-voltage transmission lines would be constructed and used to transmit the power to the mine site.
Gas Source – Pipeline to a Source on the West Side of Cook Inlet	POW-008	***Description*** – This option would follow an alternative route to the north to access existing natural gas supplies such as Beluga on the western side of Cook Inlet.

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Table 2-17: Power Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Gas Source – Connect to Donlin Gold Gas Pipeline	POW-009	***Description*** –Under this option, the pipeline would follow an alternative route to the north, allowing it to connect to the proposed Donlin Gold Mine natural gas supply pipeline.
Gas Source – Northern Gas Pipeline Route to Kenai Peninsula (Direct Route to Iliamna Bay)	POW-011	***Description*** – Under this option, the pipeline route would follow a more direct route to Iliamna Bay and Diamond Point than POW-010.
Gas Source – Other	POW-012	***Description*** – A scoping comment requested evaluation of alternative pipeline routes, but did not suggest specific locations.

Table 2-18: Access Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Access Road – West Access Route	ACC-004	***Description*** – Under this option, the road would go from the mine site around the western end of Iliamna Lake and continue to the Amakdedori port site on Cook Inlet. This option would not require a ferry.
Access Road – Bristol Bay Access Route (Road Only)	ACC-005	***Description*** – This road option is a road-only access route from the mine site to a port site on Bristol Bay. This option would not require a ferry.
Ferry Terminal Location – North Shore East Ferry Terminal	ACC-006a	***Description*** – This ferry terminal site option would include the construction of a ferry terminal on the north shore of Iliamna Lake The site is slightly east of the North Shore Ferry Terminal Site (ACC-006) in the same bay.
Ferry Terminal Location – Iliamna and Kokhanok Ferry Terminals	ACC-007	***Description*** – Under this option, a north shore ferry terminal would be located in or near the communities of Newhalen and Iliamna, but away from the Newhalen River. The Iliamna spur road would therefore be the main mine access road route to connect the mine site to this ferry terminal. A south shore ferry terminal would be located north of the Kokhanok Airport. The road from this ferry terminal to Amakdedori port would avoid crossing the Gibraltar River.
Ferry Terminal Location – Utilize Alternative Ferry Terminal Sites	ACC-012	***Description*** – The suggested option requested consideration of alternative ferry sites and locations compared to the Proposed Action, but did not specify locations.
Port Location – Knoll Head/Iniskin Bay Port Site	ACC-015	***Description*** – This port site would be located at Knoll Head in Iniskin Bay, and is associated with the North Access Routes (ACC-002 and ACC-003).
Port Location – Fortification Bluff/Rocky Point Port Site	ACC-016	***Description*** – Under this option, the port location would be at Fortification Bluff/Rocky Point, which is approximately 15 miles north of Amakdedori, and would require 26 additional road miles from the port access road route to this port site, compared to the Proposed Action.
Port Location – Williamsport Port Site	ACC-017	***Description*** – The port location would be at the existing Williamsport location in Iliamna Bay. This option would require improvements to the existing port facilities.

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Table 2-18: Access Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Port Location – Utilize Alternative Port Sites	ACC-018	***Description*** – A scoping comment requested consideration of alternative port sites and locations compared to the Proposed Action, but did not suggest specific locations.
Port Operations– Shore-Side Loading	ACC-021	***Description*** –Bulk carriers would be loaded directly at the port site (rather than at lightering locations), and would require a deep draft navigation channel and turning basin of approximately 50 feet of water depth.
Other Access Options – Mandatory Bridges at Stream Crossings	ACC-024	***Description*** – This option would make it mandatory for bridges to be built any time the access route crosses a stream or river that supports anadromous fish.
Other Access Options – Revised Project Alignment via Micro-Siting	ACC-025	***Description*** – Use micro-siting practices to avoid local impacts to wetlands, stream crossings, guiding, lodges, wildlife, visual resources, archeological, and historical resources.

Table 2-19: Concentrate Transport Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Concentrate Transport – Rail	CTR-003	***Description*** – This option would require the construction of a railroad from the mine site for the transportation of ore concentrate.

Table 2-20: Reclamation and Closure Access Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Closure – Iliamna Airport and Existing Roads	RCA-002	***Description*** –This option would use existing infrastructure (Iliamna Airport and Pile Bay-Williamsport Road) for all mine reclamation and closure transportation needs after operations. The mine access road would be reclaimed. A variant to maintain the mine road system north of Iliamna Lake and reclaim the road south of the lake was also considered and eliminated.

Table 2-21: Tailings Management Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Storage Method – Slurry Tailings Storage	TSF-002	***Description*** – This option considers slurry tailings for the bulk TSF instead of the thickened tailings method. Slurry tailings were considered for the bulk TSF instead of the thickened tailings method that is proposed. Slurry tailings are a water-like material moved by pipeline. The slurry typically has a solids content of 10 to 40 percent, and can flow downgradient by gravity.
Storage Method – Paste Tailings Storage (for Bulk Tailings only)	TSF-003	***Description*** – This option considers paste tailings for the bulk TSF instead of the thickened tailings method. This option is only applicable to the bulk tailings, and not the pyritic tailings that would need to stay saturated to prevent acid rock drainage (ARD) generation and metal leaching. Paste tailings are essentially thickened tailings, thickened with high-density thickeners, cement, and other additives to a toothpaste-like material. Paste tailings are mostly used as backfill in underground mine workings where

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Table 2-21: Tailings Management Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
		transport and placement of the paste is aided by gravity, and are typically not disposed of in TSFs.
Storage Method – Dry Stack Tailings (for Bulk Tailings only)	TSF-004	***Description*** – This option considers dry stack tailings for the bulk TSF instead of the thickened tailings method. This option of dry-stack tailings is only suited for bulk tailings because the pyritic tailings need to stay saturated to prevent ARD generation and metal leaching. Filtering tailings removes water using mechanical filters, and results in tailings with 75 to 85 percent solids content. This creates a soil-like material or "dry cake" that is transported by conveyor or truck to a "dry stack" TSF. These TSFs do not require dams, unless possibly for perimeter berms. The tailings are placed by bulldozers and compactors, as is done in conventional earthwork construction.
Storage Method – Submarine Disposal Storage	TSF-005	***Description*** – This option would place the tailings and other mine waste in a water body such as a lake to maintain a saturated condition into perpetuity. The concept is to discharge tailings by gravity to a location and depth where they are not likely to oxidize and leach out toxic metals, and where marine life is less abundant.
Storage Method – Remove or Make All Tailings Inert	TSF-006	***Description*** –This option would involve transporting all of the tailings from the project area to another disposal area, or making the tailings inert to eliminate the ARD and metal leaching potential.
Storage Method – Truck Tailings to Canada	TSF-007	***Description*** –This option would involve transporting all of the tailings from the project area to a disposal area in Canada.
Tailings Dam – Upstream Construction	TSF-010	***Description*** – Under this option, use of upstream tailings dam construction is considered. Tailings dams built by the upstream method of construction are raised by using rock, soil, and tailings in various combinations as dam fill. A starter dam is first built in the same manner as a centerline or downstream dam. Trapezoidal-shaped raises are built on top of each other at an offset toe-to-crest design, moving the dam crest and centerline upstream so that the upstream part of the dam is situated over tailings in the TSF.
Storage Method – Emergency Storage for TSF	TSF-011	***Description*** –This option would require an emergency storage/overflow containment area to minimize risk of tailings spills from excessive buildup of water in the TSF.
Tailings Production – Blended Bulk/Pyritic Tails	TSF-013	***Description*** – Under this option, bulk and pyritic tailings streams would be combined into one for the purpose of having a single TSF.
Bulk Tailings Basin – Lined	TSF-015	***Description*** – This option has the bottom of the bulk TSF fully lined so that the bulk tailings would not be in contact with the ground surface.
Pyritic Tailings Basin – Unlined	TSF-017	***Description*** – Under this option, the pyritic TSF would be unlined.
TSF Location – NFK North TSF Location	TSF-019	***Description*** – This option would store pyritic tailings about 2 miles north of the proposed open pit.
Combined TSF and Operating Pond	TSF-021	***Description*** – This option would add the operating pond (part of the main WMP) to the bulk TSF. It would result in additional water stored in the bulk TSF, and would eliminate the need for or reduce the size of the main WMP.

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Table 2-21: Tailings Management Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
		The objective would be to perform all bulk tailings and water management operations at one facility, instead of two facilities.
Cook Inlet Drainage TSF Locations	TSF-022	***Description*** – This option would transport the ore to Cook Inlet drainages where it would be milled. Seven drainages were considered for TSF locations, six above Kamishak Bay and one above Iniskin Bay. Due to the amount of material that would need to be transported it would be necessary to build and operate a railroad between the mine site and the mill.
Store and Release Cover on Bulk TSF	TSF-024	***Description*** – This option considers use of a Store and Release cover (SRC) on the bulk TSF. SRCs are designed to retain precipitated water within inert material overlying the tailings, from where the water is removed by evapotranspiration. SRC systems are typically most effective in warm, semi-arid climates where there is no, or limited, net precipitation (annual evaporation exceeds precipitation), even if there may be elevated levels of precipitation in some seasons (e.g. monsoon areas). Typical SRC systems consist of a layer of soil (usually well graded with significant fines) with dense vegetation coverage on top.

Table 2-22: PAG Waste Rock Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Storage Method – Store PAG in LGO stockpile	PAG-002	***Description*** – This option would store PAG with the LGO stockpile.
Storage Method – Separate WRF Storage	PAG-003	***Description*** – This option would involve the construction of a separate permanent facility for waste rock.

Table 2-23: Water Treatment and Air Options Eliminated from Further Consideration

Option	Option #	Option Origination and Description
Enhanced Water Treatment	WTP-002	***Description*** –This option would require the water quality of all discharged water to be the same as receiving water. Additional water treatment steps would likely be required to achieve this.
Enhanced Water Treatment – Zero Metal Discharge	WTP-003	***Description*** – This option would require there to be zero metal content in discharged water.
Enhanced Water Treatment – Reverse Osmosis	WTP-004	***Description*** –This option would require reverses osmosis processing for water treatment at both water treatment plants (WTPs) (the main WTP and the open-pit WTP).
Airtight Structure for Emissions Collection	AIR-001	***Description*** – This option calls for the development and construction of an airtight structure that covers the mine site. Any fumes, dust, or gasses would be cleaned before the air can be re-released into the atmosphere.

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Message

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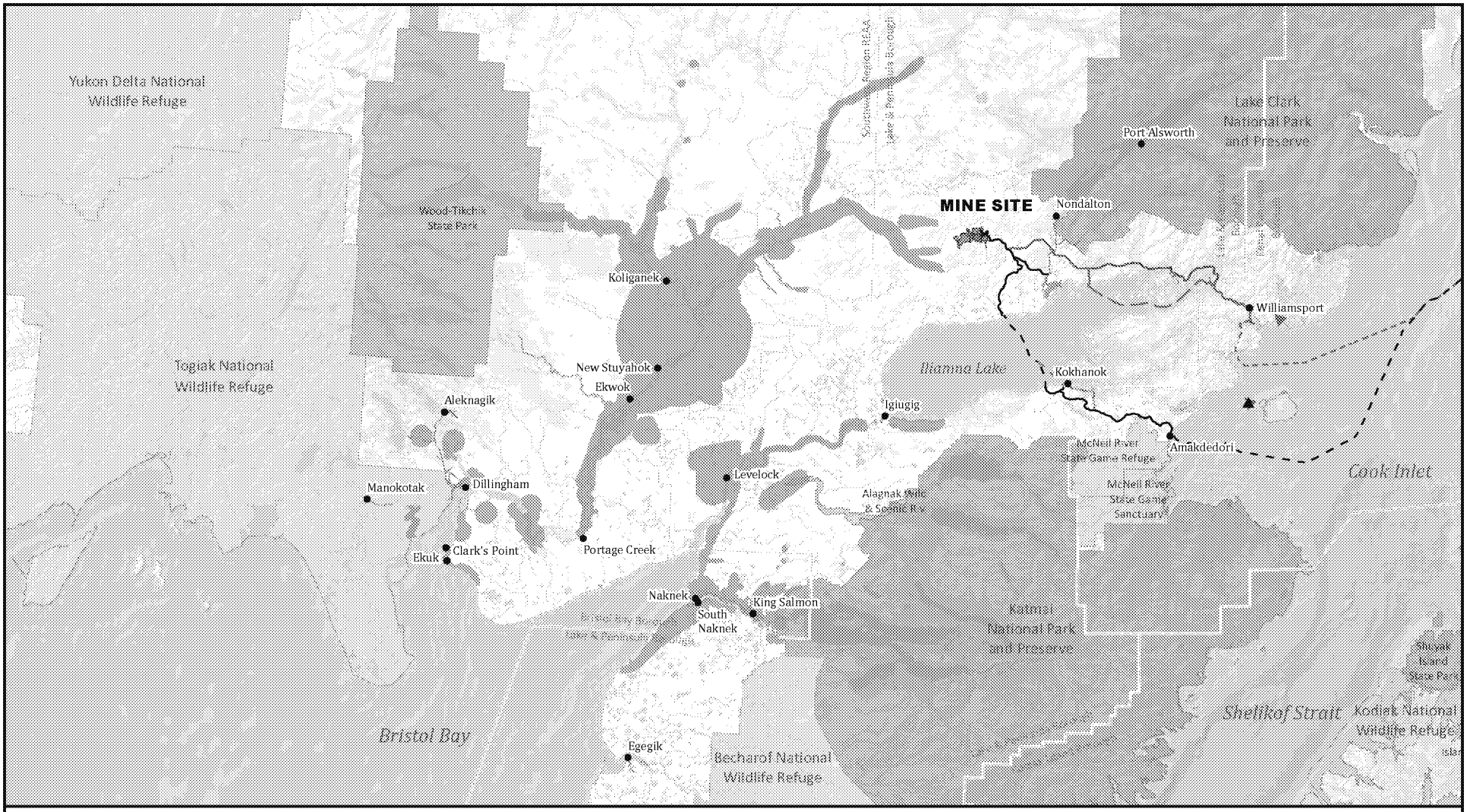

Sources: PLP 2018; Krieg et al. 2009; Holen et al. 2011 (Study years 2005 and 2007)

US Army Corps of Engineers

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Miles

Vegetation Harvest Areas
- Plants, Wood, Berries, and Fungi

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline

Alternative 2
- Transportation Corridor
- Ferry Route

Alternative 2/3
- Lightering Location
- Natural Gas Pipeline

Alternative 3
- Transportation Corridor

Other Features
- Local Roads
- Borough Boundary
- Locality
- National Park
- National Wildlife Refuge
- Alaska State Park
- State Game Refuge/Sanctuary

VEGETATION HARVEST AREAS (PLANTS, WOOD, BERRIES, FUNGI): KOLIGANEK, LEVELOCK, NEW STUYAHOK, KING SALMON, NAKNEK, AND SOUTH NAKNEK

PEBBLE PROJECT EIS

FIGURE K3.9-5

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Note to reader: this reference list is still under development and will be edited further for the Draft EIS.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 4:26:53 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Craig, Bill [bill.m.craig@aecom.com]
Subject: FW: Pebble Review Drafts Transmission (K3.17, K3.18, K4.18, 3.17, 3.18, 4.17, 4.18) please provide comments by 12/11/2018 if requested of your agency. (UNCLASSIFIED)
Attachments: K3.17_Hydrogeology_FINAL.docx; K3.18_WaterQuality_FINAL.docx; Sec3.17_Hydrogeology_FINAL.docx; Sec3.18_WaterQuality_FINAL.docx; Sec4.17_Hydrogeology_FINAL.docx; Sec4.18_WaterSedQual_FINAL.docx; K4.18_WQ_FINAL.docx

CLASSIFICATION: UNCLASSIFIED

Please note requested date of submittal of comments from EPA and State of Alaska is 12/11/2018.

Attached are 7 Word files, the review drafts of:

Hydrogeology (groundwater) and Water Quality (surface water, groundwater, and sediment). There is no technical appendix K4.17. Figures are being prepared and will be provided next week. CAs are EPA, State of Alaska is listed for Hydrogeology but not for Water Quality.

VR

Shane McCoy
Program Manager
(907) 753-2715

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K3.17 HYDROGEOLOGY

This appendix contains additional information regarding baseline studies and technical information on the following topics described in Section 3.17:

- Hydrogeological characterization programs
- Aquifer properties and hydraulic conductivity
- Groundwater flow systems
- Site water balance model
- Mine site groundwater model

K3.17.1 Hydrogeological Characterization Programs

Hydrogeological data were collected during the course of several field programs between 2004 and 2012, which involved logging of borings, installation of pumping wells, piezometers, and monitoring wells, permeability testing, streamflow gauging, monitoring of meteoric inputs and routine monitoring of groundwater levels, and collection of streamflow and groundwater quality data.

Boreholes were advanced using a variety of drilling techniques, including mud rotary, air rotary ODEX, and rotary sonic, with sampling and logging conducted according to standard methods defined by the American Society for Testing and Materials (ASTM), and consistent with best industry practice.

Instrumentation installed prior to 2008 included the following: 39 nested monitoring wells at 21 locations, 240 nested piezometers at 103 locations, 216 single piezometers, one deep multi-level groundwater instrumentation system, nine cross-hole aquifer test wells at eight locations, and 70 piezometers installed as part of the wetlands program. In 2011, an additional 43 boreholes were drilled in the deposit area for geotechnical purposes, and several response tests were conducted to determine bedrock permeability. In 2012, an additional 18 boreholes were drilled to further investigate hydrogeology.

Piezometers were installed to depths of up to 232 feet below ground surface (bgs) to collect information on stratigraphy, hydraulic conductivity, and groundwater levels. Vertical groundwater gradients were also characterized where a cluster of piezometers was installed near the same location. Piezometers were also installed as part of the geotechnical characterization program for the purposes of water level monitoring and permeability testing.

Between 2004 and 2008, nine pumping wells were installed using air rotary drilling techniques and telescopic well screens, targeting the most permeable features encountered during drilling. In 2012, four additional pumping wells were installed using sonic drilling techniques to understand the requirements for pit dewatering, but these wells have not yet been tested.

Single-well response tests were completed by displacing groundwater in the well and monitoring recovery until water levels stabilized. Prior to commencement of each test, static water levels were measured and pressure transducers installed. Falling and rising head slug tests were conducted on monitoring wells and piezometers to determine the hydraulic conductivity of the surrounding overburden or bedrock formations.

In 2006, a multi-level piezometer system (WB-1) was installed in the Pebble deposit area in a borehole drilled to a depth of 4,050 feet bgs for mineral exploration purposes. After flushing the borehole, an assembly of 50 hydraulic head measurement ports and 24 sampling ports were installed to facilitate monthly monitoring of hydraulic head and groundwater quality to significant

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depths below the deposit. Cross-hole testing was also completed to allow for measurement of hydraulic conductivity for a larger volume of rock, as compared to response testing and packer testing.

Larger-scale pumping tests were conducted in three areas, including the area around the Pebble deposit, at four locations downgradient of the Pebble deposit near the South Fork Koktuli (SFK) River and in the North Fork Koktuli (NFK) River drainage area (watershed). Pumping tests were conducted in both overburden and bedrock using air lift pumping techniques for between 6 and 24 hours. Step tests were completed to determine the specific capacity of the pumping wells and a pumping rate for the constant-rate tests. Water levels and pumping well discharge were monitored in both the pumping wells and nearby monitoring wells using pressure transducers and manual water level meters during both pumping and recovery phases to allow for determination of aquifer properties.

In 2010, an additional multi-level piezometer system (WB-3) was installed to a depth of approximately 600 feet to improve characterization of the area between tributaries NK1.190 and SK1.190. The primary objective was to characterize groundwater levels and gradients, and confirm groundwater flow directions. In 2012, a third multi-level system (WB-4) was installed in the pre-Tertiary bedrock in the western portion of the Pebble deposit area to a depth of 2,250 feet. The primary objective was to characterize groundwater levels and gradients in the deposit area.

Monthly water level monitoring was conducted in monitoring wells from 2005 through 2012 using manual water level probes; or calculated based on piezometric pressure measurements by vibrating wire piezometers and at measurement ports in the multi-level piezometer systems.

In support of the characterization of the physical groundwater flow system, a groundwater quality characterization program was also conducted. The program involved sampling of groundwater and seepage quality on a quarterly schedule, and is described in Section 3.18, Water and Sediment Quality. Field chemistry and flow measurements were collected at weirs to support development of the site water balance and water quality modeling.

K3.17.2 Aquifer Properties – Hydraulic Conductivity and Storativity

Table K3.17-1 and Figure K3.17-1 through Figure K3.17-3 provide a summary of hydraulic conductivity testing conducted at the mine site, based on individual testing results presented in Schlumberger (2015).

Table K3.17-1: Summary of Hydraulic Conductivity Testing Results

Hydrostratigraphic Unit	Statistic	Hydraulic Conductivity (m/s)				
		Pebble Deposit Area	Frying Pan Lake Area	South Fork Koktuli Area	North Fork Koktuli Area	Upper Talarik Area
Overburden	Number of Tests	33	6	45	22	4
	Geometric Mean	2.23×10^{-5}	6.40×10^{-5}	1.00×10^{-4}	9.74×10^{-5}	1.05×10^{-5}
	Median	3.00×10^{-5}	3.25×10^{-4}	4.00×10^{-4}	3.00×10^{-4}	1.45×10^{-5}
	Maximum	1.30×10^{-3}	8.70×10^{-4}	1.00×10^{-3}	1.78×10^{-3}	4.24×10^{-5}
	Minimum	5.10×10^{-8}	6.10×10^{-8}	7.00×10^{-8}	7.80×10^{-9}	1.60×10^{-6}
Bedrock	Number of Tests	52	10	20	50	8
	Geometric Mean	1.78×10^{-5}	4.38×10^{-6}	2.00×10^{-5}	9.68×10^{-7}	1.86×10^{-6}

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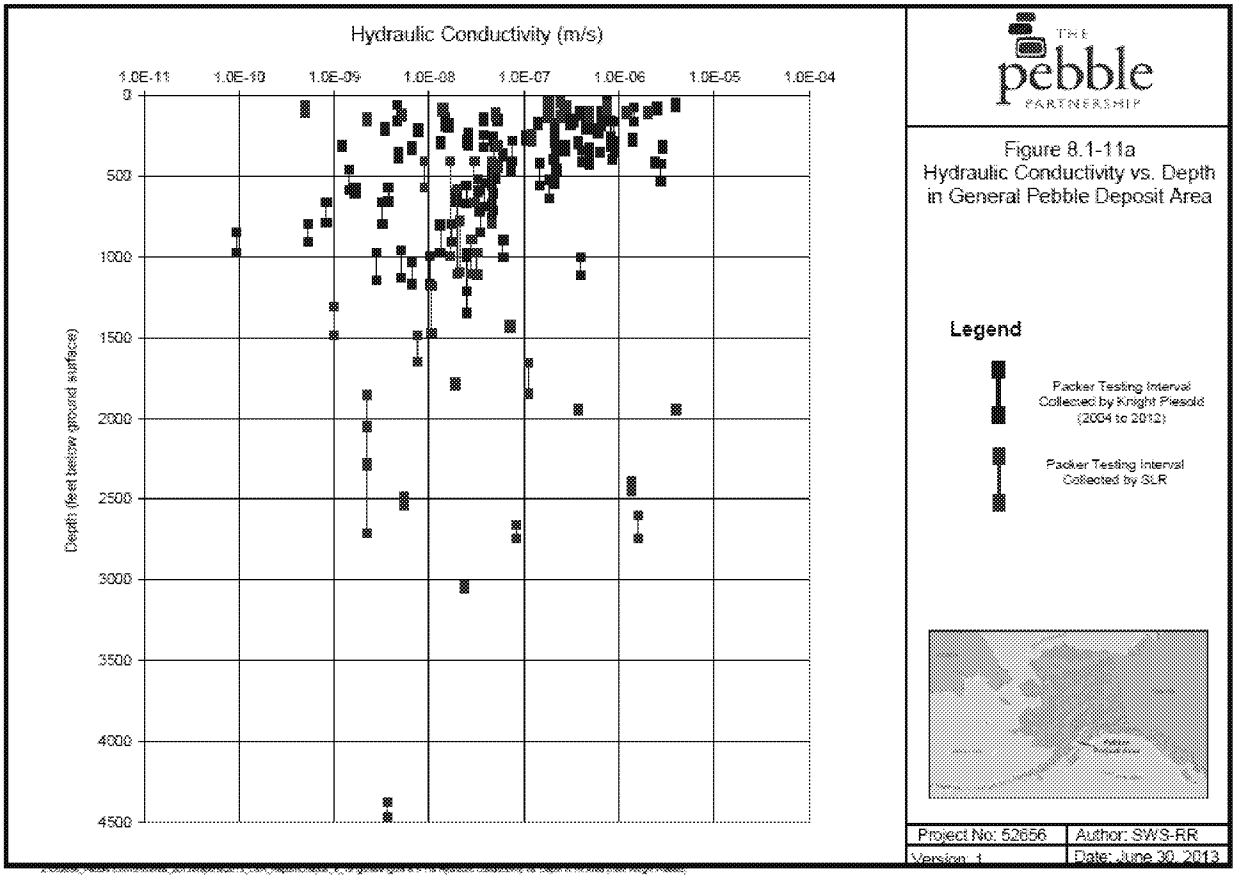
Table K3.17-1: Summary of Hydraulic Conductivity Testing Results

Hydrostratigraphic Unit	Statistic	Hydraulic Conductivity (m/s)				
		Pebble Deposit Area	Frying Pan Lake Area	South Fork Koktuli Area	North Fork Koktuli Area	Upper Talarik Area
	Median	1.65×10^{-5}	8.50×10^{-6}	5.00×10^{-5}	9.15×10^{-7}	4.50×10^{-6}
	Maximum	1.40×10^{-3}	9.13×10^{-5}	3.00×10^{-3}	3.00×10^{-4}	2.00×10^{-5}
	Minimum	3.95×10^{-7}	1.60×10^{-8}	1.00×10^{-8}	9.40×10^{-9}	1.73×10^{-7}

Source: Schlumberger (2015: Tables 8.1-1 through 8.1-5).

Figure K3.17-1: Hydraulic Conductivity vs Depth in Pebble Deposit Area



Source: Schlumberger 2015, Figure 8.1-11a

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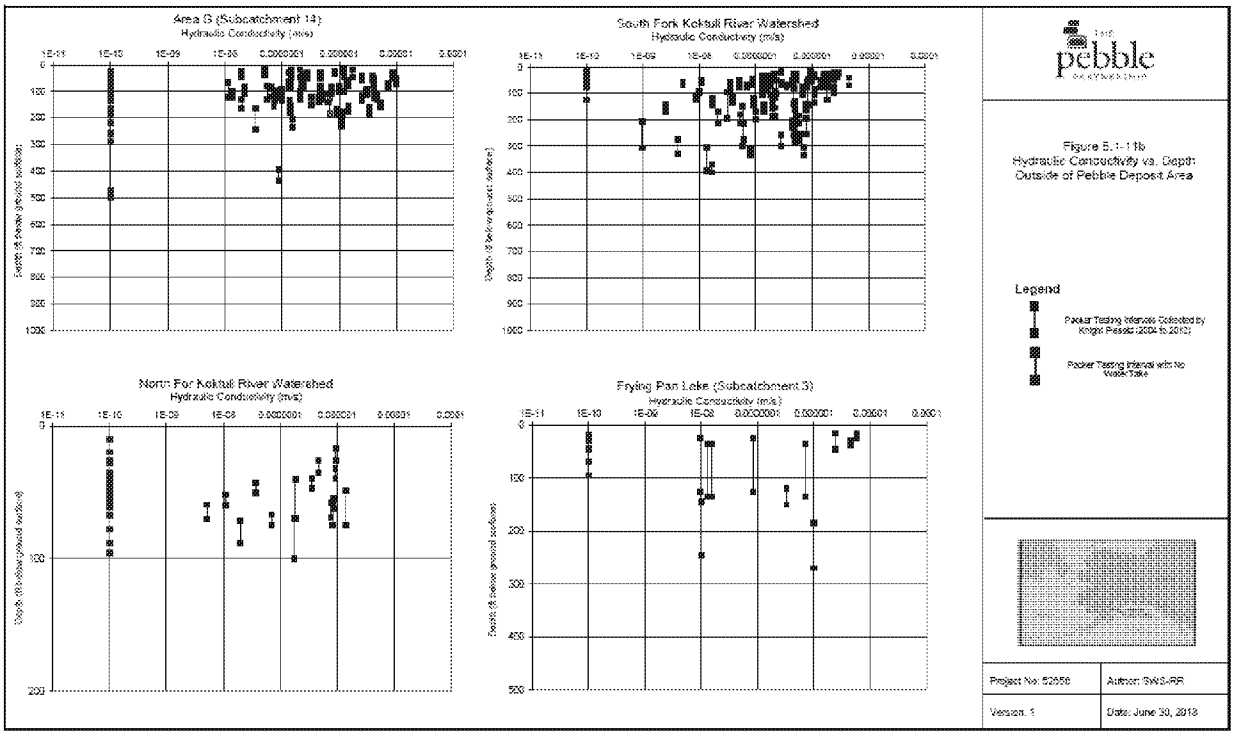
Figure K3.17-2: Hydraulic Conductivity vs. Depth Outside Pebble Deposit Area



Source: Schlumberger 2015, Figure 8.1-b

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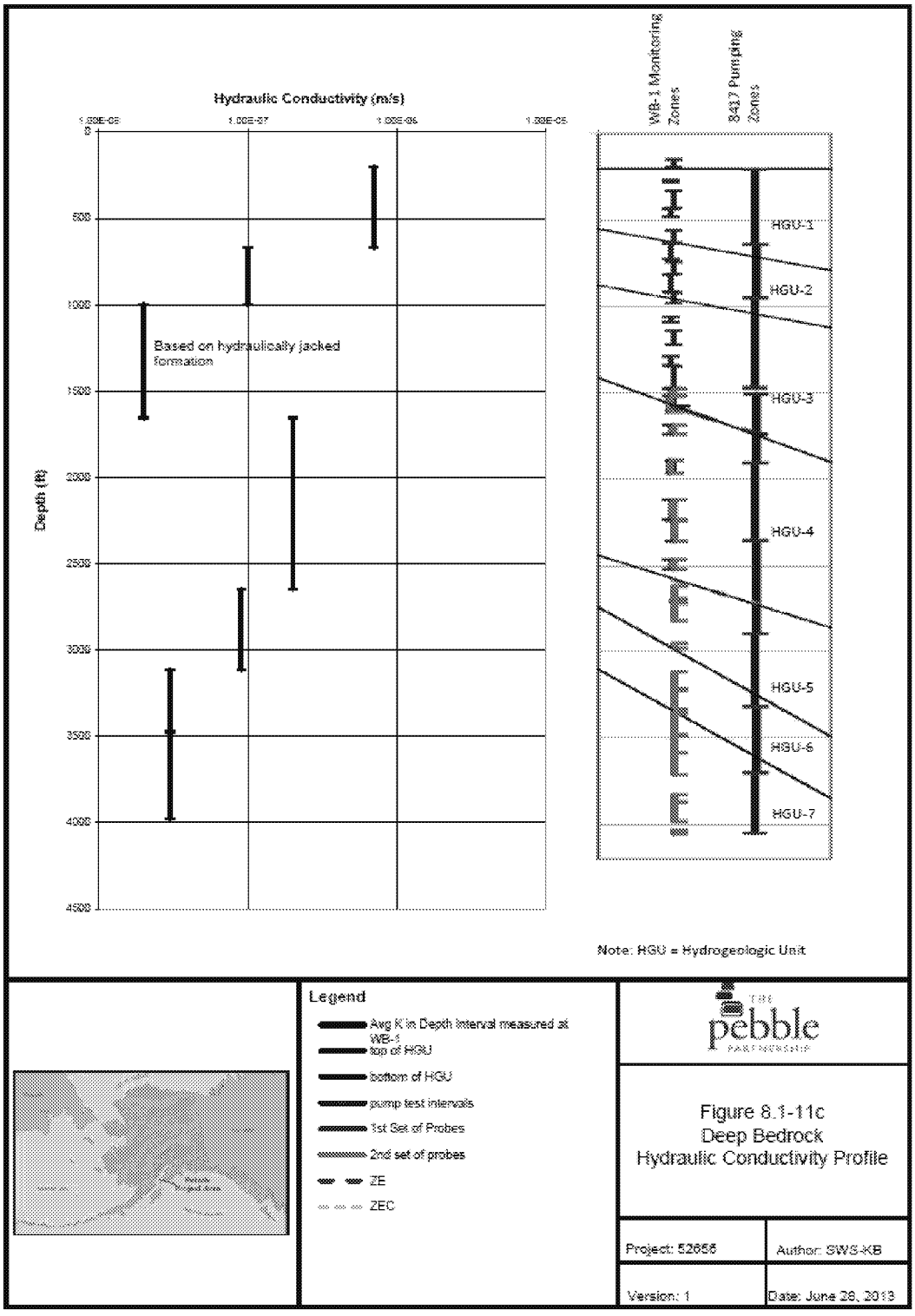
Figure K3.17-3: Hydraulic Conductivity Profile for Deep Bedrock



Source: Schlumberger 2015, Figure 8.11.c

Based on a total of 110 response tests, the hydraulic conductivity of overburden ranges from 7.8×10^{-9} to 1.78×10^{-3} meters per second (m/s) in the mine site. The hydraulic conductivity of overburden is similar throughout the mine site, with geometric mean values between 1.05×10^{-5}

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m/s and $1.0x10^{-4}$ m/s for each area. Hydraulic conductivity values for overburden materials in the Pebble deposit and Upper Talarik Creek (UTC) areas were an order of magnitude lower than those measured in the rest of the mine site based on the median values, likely due to the presence of silty deposits in this area.

Based on a total of 140 response tests, the hydraulic conductivity of bedrock ranges from $9.4x10^{-9}$ to $3.0x10^{-3}$ m/s in the mine site. Similar to overburden, the hydraulic conductivity of the bedrock is about the same throughout the mine site, with geometric mean values between $9.7x10^{-7}$ and $2.0x10^{-5}$ m/s. Hydraulic conductivity values for bedrock in the Pebble deposit and SFK areas are about 1 to 2 orders of magnitude higher than those measured in the NFK and UTC areas, possibly due to the presence of batholith granodiorite in parts of these areas.

Larger-scale hydraulic conductivity values were also assessed by conducting a total of nine pumping tests, and found that the hydraulic conductivity of overburden was almost 10 times higher than values derived from response tests (Schlumberger 2011). Pumping rates ranged from approximately 10 to 356 gallons per minute (gpm), and water level responses were observed at significant distances from the pumping well, allowing for a more robust analysis of transmissivity (hydraulic conductivity) and storativity (specific yield) parameters for individual aquifers than possible using response testing and packer testing alone. Detailed analyses and results are presented in Schlumberger (2011: Table 8.1-6). Calculated transmissivity values ranged from $8.0x10^{-5}$ to $1.1x10^{-1}$ m/s, indicating the aquifers are capable of conveying moderate to large quantities of groundwater. Calculated storativity values ranged from $1x10^{-5}$ to $2.5x10^{-2}$, which indicates the ability of individual aquifers to store water is moderate to high overall, but is limited for some aquifers. This indicates that response testing underestimates the hydraulic conductivity of the aquifer, which may be due to restrictions placed on pumping associated with the well screen, surrounding sand filter pack, and/or borehole damage during drilling. Pumping test results for wells completed in bedrock were similar to those for response tests.

Hydraulic conductivity values were also measured by conducting borehole packer testing and Lugeon tests as part of geotechnical investigations to depths of up to 4,500 feet near the Pebble deposit, and at depths of up to 400 feet outside of the deposit area. The highest values were typically measured in the upper 500 feet, but similar values were also measured at considerable depths. Overall, bedrock hydraulic conductivity values are lower at depth than shallow bedrock in the deposit area.

Deep bedrock was investigated through the installation of three Westbay multi-level groundwater monitoring systems (WB-1, WB-3, and WB-4) at three locations to depths of 4,054 feet, 600 feet and 2,250 feet, respectively.

K3.17.3 Groundwater Flow Systems

Hydrographs of monitoring well (MW) MW-11 (SFK Flats area) and MW-5 (Pebble deposit area) are presented on Figure K3.17-4 and Figure K3.17-5 to illustrate seasonal and vertical groundwater level fluctuations. These examples show groundwater levels from three to four different screened intervals over a 9-year period compared to precipitation and stream flow.

The water table typically lies at the greatest depths below upland areas, and is near the surface in valley bottoms. The lowest groundwater levels were typically recorded in late winter immediately prior to spring freshet, while the highest water levels were typically observed during spring freshet or during fall rains, with water levels fluctuating on the order of 10 feet to 20 feet seasonally. Vertical groundwater gradients were found to be variable in both time and with depth, and generally support the conceptual model of compartmentalized groundwater flow. Similar to groundwater levels, measured discharge from seeps varied by a factor of between 3 and 10 seasonally, with a median flow of 44 gpm.

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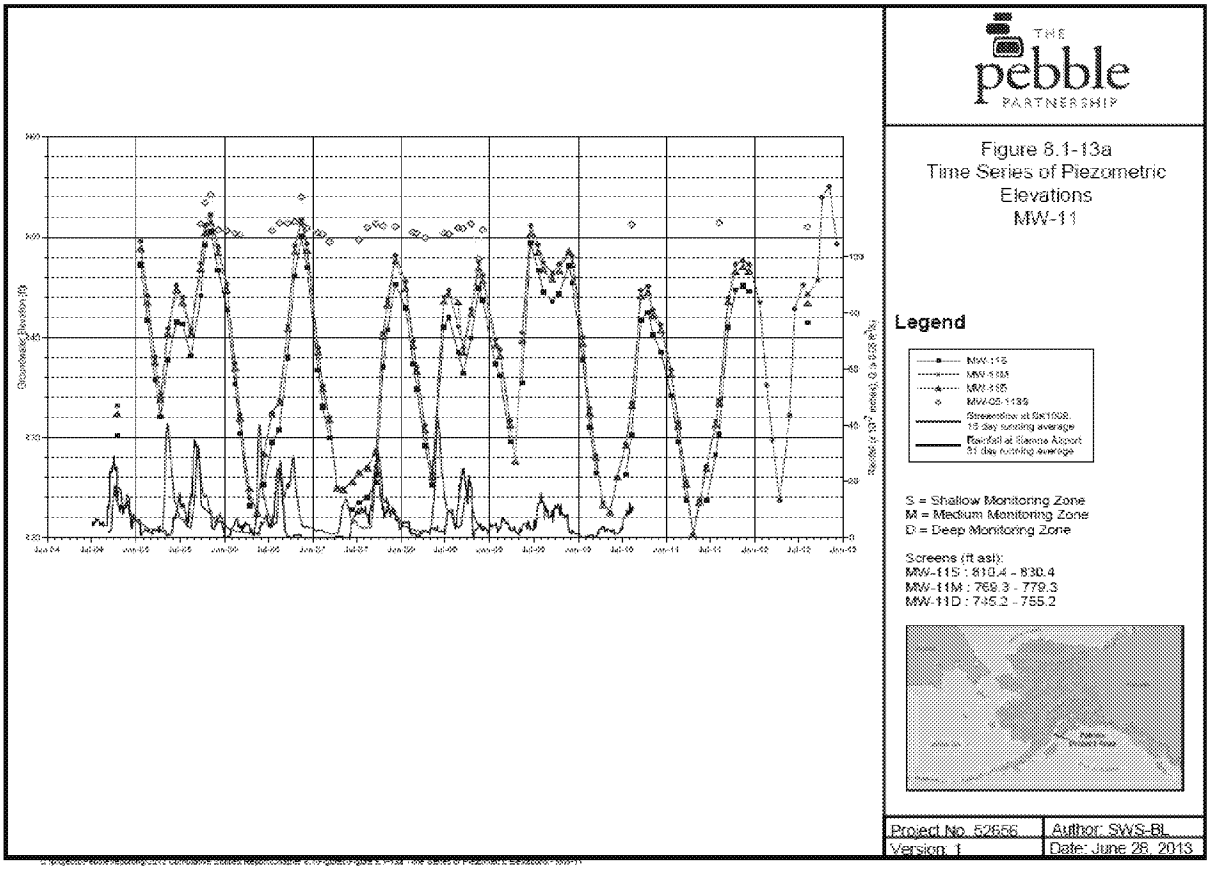
Based on the results of tritium analysis, the majority of the groundwater in mine site aquifers likely recharged after 1972, which indicates that groundwater moves through the aquifers relatively quickly. This interpretation is supported by the measurement of relatively high hydraulic conductivities in overburden and shallow bedrock, and the seasonal behavior of groundwater levels in response to rainfall and snowmelt.

Figure K3.17-4: Time Series of Piezometric Elevations at MW-11, South Fork Koktuli Flats Area



Source: Schlumberger 2015, Figure 8.1-13a

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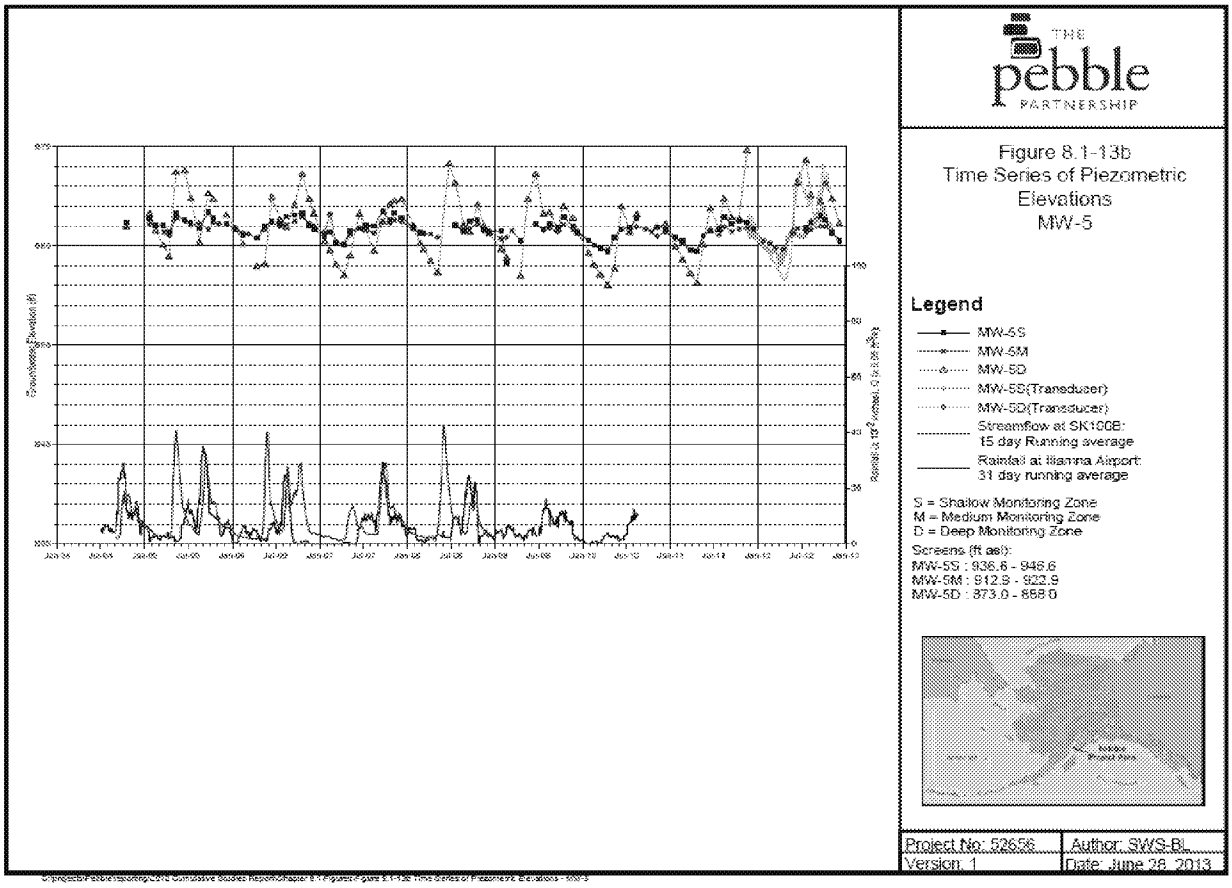
Figure K3.17-5: Time Series of Piezometric Elevations at MW-5, Pebble Deposit Area



Source: Schlumberger 2015, Table 8.1-13b

K3.17.4 Site Water Balance Model

A detailed description of the site baseline Water Balance Model (WBM) is provided in Schlumberger (2011: Appendix 8.1I). The model was also used to validate the meteoric data and the variability in precipitation across the site. Continuous streamflow records from a total of 12 gauging stations were used to calibrate the model from 2004 to 2008. Sub-catchments were delineated and drainage areas calculated for each gauging station. Inputs to the model and calibration are further described in Section 3.16, Surface Water Hydrology.

The results of the WBM indicate that groundwater recharge varies from 11 to 23 inches per year for the NFK River, UTC, and SFK River drainage areas. The majority of groundwater that recharges in each catchment tends to discharge to surface within the same drainage, with the exception of the inter-catchment transfer of approximately 6 inches per year that occurs between the SFK River and UTC drainages.

In 2018, the water balance model has been recalibrated and climate variability was incorporated to a larger degree than earlier baseline efforts with development of a 76-year synthetic record of monthly temperature and precipitation as described in the hydrometeorology report (Knight Piésold 2018g).

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K3.17.5 Mine Site Groundwater Model

The groundwater model domain encompasses the majority of the mine site and sub-catchments that were included in the WBM. The complex site geology was translated into the groundwater model using a five-layer structure, with three layers to represent variably thick overburden units, one layer to represent the uppermost 50 feet of bedrock, and one layer for the underlying bedrock to an elevation of -200 feet amsl.

Because groundwater levels and flow exhibit strong seasonality, the model was developed as a transient model with a simulation period of 37 months, from December 2004 to December 2007, to coincide with the WBM. The primary objective was to simulate the behavior of the groundwater flow system in the upper reaches of the SFK River, the UTC tributary UT1.190, and the upper reaches of the NFK River. The calibration effort was focused on the SFK River area, where data are most abundant.

The calibrated groundwater model produced water table elevations that follow the same general pattern as field measurements, and also reproduced inter-catchment flows between the SFK River catchment and UTC catchment UT1.190. A total of 220 piezometers, with up to 35 measurements prior to 2008 each, were used to calibrate hydraulic heads and calculate hydraulic head residuals to judge the calibration of the model. Focus was placed on calibrating the model to periods of time when the aquifer was stressed during pumping tests.

Simulated groundwater elevations were very similar to measured groundwater elevations, as shown in Schlumberger (2011: Figure 8.1-20), whereby an ideal calibration is represented by equivalent modeled and measured hydraulic heads to produce a straight line. Hydraulic heads in bedrock beneath upland areas are predicted to be slightly lower by the model than measurements. When plotted over time, hydraulic head residuals continually increased in some areas, highlighting opportunities for model refinement; while in other areas, the model produced uniform residuals over the simulation period.

Calculated calibration statistics produced a Root Mean Squared Error (RMSE) of 3 percent, with values ranging between 4 and 12 percent for the focus areas of calibration, suggesting that calibration could be improved in the SFK discharge and tributary UT1.190 areas. RMSE values ranged from 5 to 25 percent for areas in the model domain that were not the focus of calibration. Lower RMSE values generally indicate a good match between the model and actual field data. The largest errors at the mine site typically occurred in the bedrock layers. The model was generally able to reproduce measurements of groundwater elevations over time, but was unable to reproduce the range of measured seasonal hydraulic head fluctuations near Frying Pan Lake, where fine sediments may not be adequately reflected in the numerical groundwater model. Although the average direction of vertical flow between overburden and bedrock was well simulated by the model, the seasonality of vertical hydraulic head differences was not well replicated by the model, and will be the focus of the next phase of calibration.

Recharge and discharge rates estimated by the groundwater model agreed fairly well with estimates calculated in the WBM. However, additional refinements are planned for some areas in the SFK River catchment where the WBM and groundwater model were not in agreement. The groundwater model simulates the exchange of water between streams and groundwater, and model estimates were compared with streamflow measurements during periods of time when flows were low, and primarily groundwater-derived. Overall, the groundwater model was able to reproduce measured hydraulic head calibration targets, and was in general agreement with recharge rates, inter-catchment flows, and local groundwater discharge rates estimated by the WBM with a reasonable degree of accuracy.

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K3.18 WATER AND SEDIMENT QUALITY

This appendix contains supplemental technical information on the following topics related to baseline surface water, groundwater, and substrate/sediment quality discussed in Section 3.18:

- Water and sediment quality criteria used to compare to existing and predicted future conditions.
- Geochemistry sampling program, rationale, data summaries, and time period predictions.
- Surface water data tables and trend analyses for the mine site, north access route, and Iliamna Lake.
- Water quality information for Cook Inlet at Iliamna/Iniskin estuary north of Amakdedori port.
- Groundwater well completions and data summary for the mine site.
- Sediment quality data for the mine site and north access route.

K3.18.1 Criteria

This section provides a description of water and sediment quality criteria used in comparison to baseline and predicted future data to assess where conditions might exceed standards for protection of aquatic resources or human health.

K3.18.1.1 Surface Water Quality Criteria

In Alaska, surface water quality is regulated by Alaska Department of Environmental Conservation (ADEC) under 18 Alaska Administrative Code (AAC) 70, Water Quality Standards (WQS). Table K3.18-1 provides a list of the most stringent applicable WQS.

US Environmental Protection Agency (EPA) provides oversight of WQS selection under the Clean Water Act (CWA) (65 Federal Regulations [FR] 24643). In 2004, EPA partially approved revisions to the WQS, while taking no action on Alaska's proposed acute and chronic freshwater aquatic life criteria for mercury and selenium. Therefore, the new aquatic life criteria for mercury and selenium will not be in effect for CWA purposes until a decision is made by EPA about whether these criteria can be approved. In the interim, the previously approved aquatic life criteria for mercury (2.4 micrograms per liter [µg/l] acute and 0.012 µg/l chronic, both as total recoverable) and selenium (20 µg/l acute and 5 µg/l chronic, both as total recoverable) will remain the applicable CWA standards.

In instances where the Alaska WQS have been approved by EPA, water quality in this section is described in relation to Alaska WQS, which include use classifications, numeric and narrative water quality criteria, and an anti-degradation policy. The usage classification system designates the beneficial uses that each waterbody in the state of Alaska is expected to support. In Alaska, all waterbodies are designated for all protected water use classes unless otherwise stated (18 AAC 70.050). The water quality data presented in this appendix are compared to the most stringent applicable State of Alaska water and sediment quality standards (for all designated water uses) listed in Table K3.18-1.

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Table K3.18-1: Criteria Used for Comparison to Water and Sediment Quality Data

Water Quality[a]				Sediment Quality[b]	
Parameter[c]	Unit	Most Stringent Criteria	Basis	TEL	PEL
Aluminum (total)	µg/L	87	WQBEL-ALC	-	-
Antimony (total)	µg/L	6	WQBEL-DW	-	-
Arsenic (total)	µg/L	10	WQBEL-DW	5900	17000
Barium (total)	µg/L	2000	WQBEL-HH	-	-
Beryllium (total)	µg/L	4	WQBEL-HH	-	-
Boron (total)	µg/L	750	WQBEL-HH	-	-
Cadmium (H) (total)	µg/L	0.08	WQBEL-ALC	596	3530
Chloride	µg/L	230000	WQBEL-ALC	-	-
Total Residual Chlorine	µg/L	11	WQBEL-ALC	-	-
Chromium (total)	µg/L	100	WQBEL-DW	37300	90000
Chromium III (H) (total)	µg/L	19.18	WQBEL-ALC	-	-
Chromium VI (dissolved)	µg/L	11	WQBEL-ALC	-	-
Cobalt (total)	µg/L	50	WQBEL-IR	-	-
Copper (H) (total)	µg/L	2.19	WQBEL-ALC	35700	197000
Cyanide (WAD)[d]	µg/L	5.2	WQBEL-ALC	-	-
Fluoride	µg/L	1000	WQBEL-IR	-	-
Iron (total)	µg/L	1000	WQBEL-ALC	-	-
Lead (H) (total)	µg/L	0.39	WQBEL-ALC	35000	91300
Lithium (total)	µg/L	2500	WQBEL-IR	-	-
Manganese (total)	µg/L	50	WQBEL-HH	-	-
Mercury (total)	µg/L	0.012	WQBEL-ALC	174	486
Molybdenum (total)	µg/L	10	WQBEL-IR	-	-
Nickel (H) (total)	µg/L	12.87	WQBEL-ALC	18000	36000
Nickel (Dissolved)	µg/L	8.2	AWQS		
Nitrate (NO3)	µg/L	10000	WQBEL-DW	-	-
Nitrite (NO2)	µg/L	1000	WQBEL-DW	-	-
Total Nitrate+Nitrite	µg/L	10000	WQBEL-DW	-	-
Selenium (total)	µg/L	5	WQBEL-ALC	-	-
Silver (H) (total)	µg/L	1.1	WQBEL-ALA	-	-
Thallium (total)	µg/L	1.7	WQBEL-HH	-	-
Vanadium (total)	µg/L	100	WQBEL-HH	-	-
Zinc (H) (total)	µg/L	28.95	WQBEL-ALA	123000	315000
TDS	mg/L	500	WQBEL-HH	-	-

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Table K3.18-1: Criteria Used for Comparison to Water and Sediment Quality Data

Water Quality[a]				Sediment Quality[b]	
Parameter[c]	Unit	Most Stringent Criteria	Basis	TEL	PEL
pH	-	6.5 - 8.5	WQS-GP	-	-
TSS	mg/L	20	ELG-MA	-	-
DO	mg/L	> = 7.0	WQS-GP	-	-
Turbidity (NTU)	NTU	<= 5 NTU above natural turbidity	WQS-WS	-	-
Alkalinity	µg/L	> = 20,000	WQBEL-ALC	-	-
Ammonia as N (NH3)	mg/L	4.36	WQBEL-ALC	-	-
Hardness (as CaCO3)	mg/L	~=100		-	-
Sulfate	mg/L	250	WQS	-	-
Alkalinity as CaCO3	mg/L	20	ALC	-	-
Total ammonia as N	mg/L	0.18	ALC	-	-

Notes:

a: Water quality limits are based on the lowest 15th percentile hardness of the three proposed discharge locations.

b: Sediment quality units = parts per billion

c: WQBEL is the most stringent among total and dissolved criteria for all metals, unless otherwise specified.

d: ADEC has determined that the WAD cyanide method is to be used for analysis and the result is to be applied to the free cyanide criterion.

Abbreviations:

WQBEL: Water Quality Based Effluent Limit

ELG: Effluent Limitation Guideline

(H): Hardness dependent criterion

(S): Selenite + Selenate dependent criterion

WQS: Water Quality Standards

HH: Human Health

ALA: Aquatic Life, Acute

ALC: Aquatic Life, Chronic

DW: Drinking Water

MA: Monthly Average

GP: Growth and Propagation of Fish

IR: Irrigation water

WS: Water supply

Source: Knight Piésold 2018a, HDR 2018, Schlumberger et al. 2011a, Buchman 2008

Criteria for some dissolved metals, including cadmium, chromium, copper, lead, nickel, silver, and zinc, are hardness-dependent, meaning that the acceptable concentrations of these metals depend on the hardness of the water. Hardness is a measure of the concentration of polyvalent cations in the water, such as calcium (Ca2+) and magnesium (Mg2+). The polyvalent cations that contribute to water hardness reduce the bioavailability of certain trace metals by competing with the trace metal ions for binding sites within organisms. The extent of this effect varies according to which dissolved metals are present, and their oxidation states. To account for the

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influence of water hardness on the bioavailability and potential toxicity of certain dissolved metals, the numeric water quality criteria for those metals are calculated so that the allowable concentrations of the metals increase in proportion to the hardness of the water (ADEC 2008a). Therefore, the numeric water quality criteria for hardness-dependent parameters vary depending on the measured (or predicted) hardness value for the specific water in question. Hardness parameters are based on the lowest 15th percentile of hardness measured at the three proposed discharge locations for the project, which are located in tributaries to the North Fork Koktuli (NFK), South Fork Koktuli (SFK), and Upper Talarik Creek (UTC) (Figure 2-3).

The ADEC numeric water quality standard for ammonia depends on both the temperature and the pH of the water, but not hardness.

K3.18.1.2 Groundwater Quality Criteria

As specified in 18 AAC 70.050(a)(2), groundwater is protected for all uses in Class (1)(A), including drinking, culinary, and food processing; agriculture, including irrigation and stock watering; aquaculture; and industrial uses. ADEC also regulates discharges to groundwater under 18 AAC 72 (wastewater disposal); releases to groundwater from contaminated sites under 18 AAC 75 (oil and hazardous substances); and discharge of non-domestic wastewater to groundwater, or discharge of groundwater to surface water, under 18 AAC 83 (APDES program).

Drinking water from groundwater sources is regulated by 18 AAC 80 (ADEC 2012c) and by EPA (2013k, 2017c). EPA sets standards for approximately 90 contaminants in drinking water. These standards include National Primary Drinking Water Regulations, which become legally enforceable Maximum Contaminant Levels (MCLs) for public water systems in Alaska once adopted by 18 AAC 80. Primary standards protect public health by limiting the levels of contaminants in drinking water. Secondary Drinking Water Standards are unenforceable federal guidelines regarding taste, odor, color, and certain other effects of drinking water. EPA MCLs for certain constituents (e.g., aluminum, chloride, iron, manganese, pH, sulfate, total dissolved solids [TDS], and zinc) are Secondary Drinking Water Regulations that set non-mandatory water quality standards.

Because groundwater at the mine site is intended to be extracted and discharged to surface waterbodies, or could migrate to surface waterbodies or groundwater drinking water sources, the most stringent of either WQS aquatic life criteria or drinking water standards (Table K3.18-1) are used for the purposes of comparison to existing and future groundwater conditions.

K3.18.1.3 Sediment Quality Criteria

There are no regulations established for chemical concentrations in sediment. Sediment Quality Guidelines (SQGs) recommended by ADEC (2013d) for use at contaminated sites were used for comparison purposes to project area data (Table K3.18-1). These include Threshold Effects Levels (TELs) and Probable Effects Levels (PELs) published in NOAA Screening Quick Reference Tables for both fresh and marine water sediment (Buchman 2008). TELs are concentrations below which adverse effects of benthic organisms are expected to occur rarely, and PELs represent concentrations above which effects are expected to be frequent.

K3.18.2 Geochemistry

This section contains additional technical information on the following topics related to geochemical characterization of the Pebble deposit and its potential for weathering and release of constituents to water and sediment resources:

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- Geochemical data summary
- Waste rock characteristics
- Tailings analyses
- Construction rock fill
- Open pit block model

The geochemical evaluation presented in Section 3.18 primarily relies on data presented in SRK (2011a, 2018a, 2018b, 2018c, and 2018d). These data were developed using representative overburden, rock cores, and metallurgical waste (tailings) samples from the Pebble east and west zones (PEZ and PWZ), and rock core samples from borings drilled in three proposed construction rock quarry areas. Geochemical characterization includes sample mineralogy and static and kinetic tests including acid base accounting (ABA), metal mobility, humidity cell, subaqueous leach columns, stored bag weathering, and field barrel tests.

A total of 1,080 overburden and pre-Tertiary and Tertiary rock core samples from various rock and alteration types within the Pebble deposit, 60 tailings samples from metallurgical process test runs, and 138 rock core samples from boreholes drilled at the proposed construction quarries have been tested to date. Of the 1,080 rock samples tested, 685 were assigned by PLP geologists to a hydrothermal alteration zone within the deposit. A summary of the rock and tailings samples geochemically characterized is provided in Table K3.18-2.

Table K3.18-2: Summary of Rock and Tailings Geochemical Testing Program

Test	Waste Rock Test Count					Tailings Test Count
	Pebble West Zone		Pebble East Zone		Overburden	
	Pre-Tertiary	Tertiary	Pre-Tertiary	Tertiary		
Acid-base Accounting	500	145	202	200	26	103
Mineralogya	19	13	15	13	0	20
Shake-glask Extractions	26	6	8	12	0	0
Net Acid Generation	26	6	0	0	0	0
MWMP	0	27	0	0	9	0
Humidity Cell	38	27	26	30	0	18
Stored Bag	0	0	16	24	0	0
Subaqueous Columns	12	0	0	4	0	0
Aerated Columns	0	0	0	0	0	2
Field (Barrel)	10	10	1	8	0	0

Notes:

a: 9 additional Pre-Tertiary mineralogy sample results pending

Source: SRK 2011a, PLP 2018a

K3.18.2.1 Waste Rock Geochemical Characteristics

The objectives of the geochemical characterization program were to predict the weathering and leaching behavior of rock, tailings, and other materials that would be produced during mining and processing. Data produced from geochemical testing are used to predict the chemistry of waters that contact the rock exposed in the open pit, and the waste rock and tailings stored in the TSFs, and determine their ARD/ML potential.

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Samples for geochemical testing were selected from the numerous exploration cores drilled to outline the deposit. The samples included all the main Pebble deposit rock types, and adjacent rock types that might be removed during mining. As of 2018, the program had included analysis of over 1,000 rock samples from the Pebble deposit, and 26 samples of overburden materials. In addition, almost 60 tailings samples comprised mostly of rougher, cleaner scavenger, pyritic, and gold plant tails, from test processing of ore composites have also been characterized. To date, limited geochemical testing has been performed on the representative concentrate because possible designs for a metallurgical process are still at an investigative stage.

The rock samples were tested for mineral abundance using transmitted and reflected light microscopy, and ARD potential, bulk chemical composition, and constituent mobility. Geochemical tests have included ABA, sequential net acid generation, shake flask extractions, meteoric water mobility, humidity cells, subaqueous (saturated) leach columns, and on-site field weathering (barrel and bag) tests to evaluate rates of oxidation, acid generation, acid neutralization, and element leaching.

In some mineralized deposits, rock type alone can be a good indicator of whether a rock will potentially produce ARD and/or ML. There are two main geological divisions at the proposed mine site. The mineralization is hosted by sedimentary and volcanic rocks of pre-Tertiary age. After the pre-Tertiary occurrence of mineralization, those rocks were partially eroded, then covered by other sedimentary and volcanic rock later in the Tertiary period. The later Tertiary age rocks at the mine site generally do not contain copper, gold, or other metals that would be economically viable to recover at the present time (SRK 2011a and 2011b; SRK 2018a).

For the proposed project, the neutralization potential (NP) and acidification potential (AP) terms were developed through extensive study of the chemistry and mineralogy of the various rock types at the site. This included ABA using the modified Sobek et al. (1978) method on more than 1,000 rock samples collected from drill holes blanketing the proposed mine area. The mineralogical characterization included analysis of samples by thin section, Rietveld X-ray diffraction (XRD), and/or ion microprobe to determine carbonate and sulfide mineral compositions. Based on mineralogical analysis, the NP in the pre-Tertiary rocks was found to be mainly dolomite, with lesser amounts of calcite, ankerite, and magnesite. NP in Tertiary rocks is primarily derived from calcite. Siderite was found in both the pre-Tertiary and Tertiary rocks, but does not contribute to NP. The AP was found to be mainly pyrite and chalcopyrite, and lesser amounts of molybdenite. Pyrite is the predominant source of acidity in both pre-Tertiary and Tertiary rocks.

ABA is a series of laboratory tests designed to estimate a rock's AP and NP. Both AP and NP are expressed in units of tons of calcium carbonate equivalent per 1,000 tons of material (tCaCO3/kt) to allow direct comparisons. Corrections are made when the respective minerals are not all pyrite or calcite. Table K3.18-3 provides a summary of the ABA results for waste rock grouped by lithologic type. ABA determined that the pre-Tertiary mineralized sedimentary and plutonic rocks at the proposed mine site are predominantly potentially acid generating (PAG). The AP of these rocks is relatively high because they contain several percent pyrite, as indicated by the total sulfur content of greater than 1 percent, and they have limited NP. The distribution of pyrite (and consequently acid generating potential) was found to be influenced by the hydrothermal alteration zones overprinted on the deposit.

In contrast, the majority of the Tertiary age and younger rocks that comprise the cover and overburden materials at the proposed mine site are considered non-PAG because they have less than 1 percent pyrite, low total sulfur concentrations less than 0.1 percent, and excess NP because carbonate minerals are abundant. However, a small proportion of the Tertiary volcanic rocks were found to be PAG.

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The most common measure of whether a rock is non-PAG or PAG is its ratio of NP to AP. To develop an understanding of weathering and leaching processes that might affect rocks exposed during mining (e.g., pit walls and stockpiled waste rock and tailings), additional laboratory and field geochemical tests were conducted. Laboratory tests included humidity cell, subaqueous (saturated) column, stored bag, and field barrel tests.

Humidity cell test results were used to confirm ABA criteria for segregating PAG from non-PAG rocks and waste, based on the NP to AP ratio. Analysis of the ABA and humidity cell data indicates that PAG and NAG rocks can be distinguished using an NP/AP ratio of 1.4 (SRK 2018a), and is applicable to pre-Tertiary, Tertiary, and overburden materials. Humidity cell test data obtained for periods up to 8 years allow interpretation of long-term acid generation potential and neutralization rates as the rocks are oxidized and leached during wet and dry cycles. Humidity cell tests also help to estimate the potential lag or delay in the onset of ARD using the sulfide oxidation and release rates and pH profiles. The delay occurs because acid-neutralizing minerals (e.g., calcite, feldspars, and micas) are not depleted instantly as acid is formed, but are consumed at different rates depending on their reactivity and abundance.

Results show that pre-Tertiary rocks with low NP/AP ratios (less than 0.3) have little neutralization potential and are estimated to generate acid within 1 to 6 years (SRK 2018a). Pre-Tertiary rocks with NP/AP ratios of 1 have higher neutralization potential, which delays the estimated onset of acid generation to 8 to 20 years (SRK 2018a). These estimated times to onset of ARD are considered underestimates because they are based on data developed under controlled laboratory conditions. Paste pH results for aged rock cores stored at the site suggest that acidification may be delayed up to 40 years. Given differences in the test conditions, laboratory and field tests suggest that oxidized pre-Tertiary mineralized rock may take up to several decades for acidification to occur.

Element release rates determined from kinetic tests were mainly a function of leachate pH rather than the concentration of elements in the samples. Leaching of copper accelerated as pH decreased; therefore, the potential for metal release is linked to the potential for acid generation, and ABA data can be used to assess the potential for copper leaching. However, for some elements (e.g., arsenic, molybdenum, and selenium), release can be environmentally significant under neutral pH conditions. Tests on some samples of Tertiary rock showed elevated leaching of these elements under non-acidic conditions. These leaching data, along with baseline water quality data, are being used with other inputs to develop geochemical source terms for water quality modeling and water treatment planning (SRK 2018c).

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
Waste Rock (PEZ)											
9	D	7.92	1.11	0.03	1.10	34.31	9.00	12.44	9.45	0.08	0.36
19	G	6.76	3.45	0.06	3.40	106.12		16.14	21.31		0.15
2	G^c	5.36	1.28	0.03	1.26	39.22		2.90			0.07
79	Gp	7.97	0.90	0.06	0.86	26.80	8.36	15.81	11.42	0.09	0.59
5	Gpk	8.54	0.55	0.01	0.54	16.94		29.18	22.27		1.72
62	Gs	5.30	7.76	0.17	7.61	237.96	15.84	4.49	12.52	0.13	0.02
2	Gs/D	8.19	0.31	0.02	0.30	9.22		16.25	15.91		1.76
1	GZ	5.41	0.72	0.07	0.65	20.31		7.40	<4.5		0.36
1	P	9.55	0.12	<0.01	0.12	3.75		7.90	6.82		2.11
45	TA	8.98	0.59	0.02	0.60	18.90	85.34	33.15	55.39	0.95	1.75
1	TA d	8.24	2.58	0.03	2.55	79.69		34.60	34.09		0.43
1	TA/TD	7.98	0.88	0.01	0.87	27.19		17.20	74.09		0.63
2	TA+TB	9.13	0.07	0.02	0.04	1.25		43.70	36.37		34.96
1	Tabt	9.23	<0.01	<0.01	<0.01	<0.3		10.10	9.09		>33.6
3	TAD	8.47	0.20	0.03	0.19	5.84		66.43	56.06		11.38
2	Tap	9.02	0.67	0.02	0.66	20.63	41.80	17.20	23.98	0.52	0.83
1	TAwx	9.18	0.10	<0.01	0.10	3.13		27.50	13.64		8.79
1	TAx	8.99	0.99	0.01	0.98	30.63		20.90	13.64		0.68
46	TB	8.69	0.07	0.01	0.07	2.12		56.47	38.74		26.66
1	TBh	8.82	0.01	<0.01	0.01	0.31		35.30	13.64		113.87
3	TBTBx	8.66	0.16	0.01	0.16	5.00		52.77	43.18		10.55
1	TBv	8.23	<0.01	0.01	0.01	0.31		63.10	31.82		203.55
1	TBx	8.46	0.01	<0.01	0.01	0.31		126.30	111.36		407.42
68	TC	8.91	0.26	0.02	0.26	8.05	87.27	69.80	71.15	1.00	8.67
5	TC/TF	9.20	0.07	0.01	0.08	2.58	84.70	60.30	75.55	0.96	23.37

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
1	TC/TW	7.34	0.72	0.05	0.67	20.94		26.50	20.45		1.27
1	TC/TY	8.99	0.11	0.01	0.10	3.13		125.10	120.45		39.97
6	TD	8.89	0.34	0.02	0.34	10.57	106.80	50.28	75.54	1.26	4.75
1	TDd	8.80	0.04	0.02	0.02	0.63		75.80	9.09		120.32
5	TDm	8.91	0.01	0.01	0.01	0.39		17.83	10.61		45.71
29	TF	8.83	0.22	0.02	0.23	7.13	101.79	59.06	76.32	1.22	8.28
1	TF/TC	8.93	0.33	<0.01	0.33	10.31	100.00		103.41	1.24	0.00
1	TFf	8.90	<0.01	<0.01	<0.01	<0.3		3.00	<0.1		>10
4	TFw	8.75	0.01	0.01	0.01	0.31		57.58	53.41		185.73
5	TMd	8.52	0.06	0.01	0.04	1.37		33.50	27.27		24.38
4	TT	8.80	0.03	0.02	0.04	1.25		60.95	50.00		48.76
1	TTbu	8.78	0.01	<0.01	0.01	0.31		19.20	9.09		61.94
16	TW	8.86	0.26	0.03	0.24	7.58	79.85	60.15	75.77	0.91	7.94
1	TW(TF)	8.78	0.13	0.01	0.12	3.75		81.20	79.55		21.65
3	TW/TC*	8.73	0.17	0.01	0.16	5.00	78.63		88.03	1.06	15.73
2	TW/TF	9.21	0.11	0.02	0.10	2.97	95.65		94.43	1.13	32.21
4	TW/TY	8.86	0.22	0.01	0.22	6.72	69.05		66.31	0.80	10.28
10	TWc	8.92	0.07	0.01	0.06	1.97		47.62	21.14		24.20
1	TWc(TWf)	8.49	0.01	<0.01	0.01	0.31		23.40	4.55		75.48
1	TWcm	9.00	1.05	0.02	1.03	32.19		91.30	63.64		2.84
2	TX	8.77	0.01	0.01	0.01	0.16		26.95	25.00		173.87
4	TXc	8.80	0.05	0.01	0.05	1.67		24.45	18.18		14.67
1	TXH	8.58	0.01	<0.01	0.01	0.31		6.90	<4.5		22.26
17	TY	8.65	0.28	0.02	0.26	8.11	57.75	54.50	63.53	0.66	6.72
7	W	7.85	0.74	0.03	0.71	22.28		11.34	10.46		0.51
52	Y*	7.42	2.24	0.04	2.21	69.00	6.70	9.38	8.45	0.05	0.14

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
1	Y/W	8.07	2.61	0.04	2.57	80.31	5.80		3.86	0.05	0.07
2	Y0	8.74	0.30	0.01	0.29	9.07		18.45	14.77		2.04
8	Y2L	6.23	7.01	0.14	6.87	214.69		14.56	20.46		0.07
7	Z	8.18	1.01	0.04	0.98	30.67	81.90	26.50	25.00		0.86
26	N/A	7.81	0.03	0.01	0.03	0.97		23.25	28.76		23.92
Waste Rock (PWZ)											
1	B	7.29	0.14	0.07		2.19		1.88	0.83	0.01	0.86
44	D	7.46	4.37	0.06	6.42	134.55	40.09	28.38	46.56	0.57	0.21
2	D/D	8.15	5.11	0.10		158.13		34.63	32.92	0.40	0.22
2	D/G	7.28	3.40	0.14		102.04		26.26	58.75	0.71	0.26
2	D/N	6.41	2.75	0.13		81.88		13.25	66.26	0.80	0.16
1	D/N-.#b	8.37	2.00	0.02		61.88		47.00	129.18	1.55	0.76
1	D/R	8.82	3.29	0.11		99.38		49.50	52.50	0.63	0.50
1	D / Dp	8.72	4.88	<0.01		152.50	50.30	41.75	42.50	0.51	0.27
1	Dp	9.00	3.39	0.01		105.63		51.00	54.17	0.65	0.48
1	Dxq/D	6.95	4.16	0.09		127.19		11.38	23.33	0.28	0.09
2	F.F-DY	8.10	2.19	0.02		67.66		8.50	31.26	0.38	0.13
1	F.H(FDY)	8.59	2.77	<0.01		86.56		13.00	33.34	0.40	0.15
2	Fc	7.11	0.12	0.09		1.88		1.57	0.83	0.01	0.83
5	Fh	8.18	2.27	0.02		70.31	36.50	31.58	55.67	0.67	0.45
21	G	7.04	2.47	0.09		74.48	39.60	16.42	20.68	0.27	0.22
4	G/D/N	8.32	3.87	0.08	3.66	114.22		25.23	34.09		0.22
1	G/N	4.69	5.20	0.13		158.44		2.31	6.67	0.08	0.01
6	G^c	8.08	1.36	0.01		42.35	50.00	33.90	27.64	0.33	0.80
2	G^f	5.58	4.27	0.04		132.35		3.03	8.33	0.10	0.02
1	G^fp	8.02	2.36	0.01		73.44		11.50	49.17	0.59	0.16

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
3	G^m	7.76	2.13	0.03		65.52	13.40	4.73	1.11	0.01	0.07
3	G^p	5.71	1.80	0.24		48.55		0.44	0.83	0.01	0.01
11	Gp	6.28	2.98	0.05	2.39	91.59	1.50	8.43	9.17	0.12	0.09
11	G-p	6.85	3.18	0.09		96.53	12.30	8.15	19.92	0.26	0.08
4	Gph	8.28	1.76	0.02		54.93		18.28	31.05	0.37	0.33
1	GpK	7.57	1.95	0.03		60.00		5.13	10.00	0.12	0.09
2	Gp-k	7.98	1.87	0.06		56.72	11.90	14.01	36.67	0.44	0.25
1	Gp-Pl	7.86	3.50	0.03		108.44		6.88	25.84	0.31	0.06
1	G-q	8.43	0.87	0.07		25.00		17.63	10.83	0.13	0.71
9	Gs	7.40	2.33	0.03	2.30	72.01	12.88	3.50	24.43	0.29	0.05
1	Gs?*	5.45	0.38	0.36	0.02	0.63	0.30		1.82	0.02	0.48
1	GxN	8.04	1.45	0.01		45.00		8.00	25.84	0.31	0.18
2	Kgde	6.11	5.23	0.05		161.72		3.16	0.83	0.01	0.02
1	Kqs	7.07	4.16	0.04		128.75		4.38	0.83	0.01	0.03
2	M	8.26	1.55	0.04		47.35		37.75	54.17	0.65	0.80
1	M.ky/X.mk	7.54	1.70	0.08		50.63		6.50	38.34	0.46	0.13
1	M/P	5.11	2.33	0.02		72.19		-1.13	0.83		-0.02
1	M?	9.08	1.32	0.02		40.63	25.00	21.50	40.84	0.49	0.53
1	M-k	7.56	1.29	0.01		40.00		5.19	4.17	0.05	0.13
1	Mk.Y	8.47	1.64	0.03		50.31		20.00	14.17	0.17	0.40
1	Mkp-x	8.41	1.19	0.02		36.56		37.50	109.17	1.31	1.03
2	Mp-k	8.02	0.89	0.02		27.19		26.50	70.01	0.84	0.97
1	Mpk / M-k	7.30	1.87	0.01		58.13		4.38	0.83		0.08
1	MpK-N	7.58	0.76	0.01		23.44		2.75	14.17	0.17	0.12
14	N	6.80	2.61	0.10	2.33	78.17	12.45	13.17	27.91	0.36	0.17
1	N / F.FD	5.98	3.24	0.03		100.31		-0.25	0.83	0.01	0.00

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
1	N or Gp.YD-M	7.63	2.51	0.04		77.19		7.50	34.17	0.41	0.10
1	N or Gp.YM	7.80	1.52	0.05		45.94		9.13	37.50	0.45	0.20
1	N or Gp-p.YM	7.24	1.73	0.02		53.44		6.06	25.00	0.30	0.11
1	N.DyM	7.61	2.25	0.03		69.38		3.88	12.50	0.15	0.06
1	N.FDZ / N/DX	6.13	3.59	0.12		108.44		11.25	12.50	0.15	0.10
4	N.H	7.02	2.46	0.04		75.71		6.36	10.42	0.13	0.08
2	N.M	7.02	1.81	0.11		53.29	5.30	17.82	40.00	0.48	0.33
1	N.MH	7.32	2.52	0.08		76.25		5.94	13.33	0.16	0.08
1	N.MY/ TBd	8.66	0.15	0.01		4.38		67.75	159.18	1.91	15.47
1	N.NM / N.YM	6.65	2.18	0.04		66.88		6.38	7.50	0.09	0.10
1	N.Y	5.43	2.76	0.09		83.44		0.87	0.83	0.01	0.01
1	N-.Y	7.78	1.48	0.03		45.31		10.38	80.84	0.97	0.23
1	N.Y-D	8.87	1.03	0.02		31.56		116.13	150.01	1.80	3.68
1	N.YM	7.48	1.90	0.04		58.13		5.63	37.50	0.45	0.10
1	N/D	8.60	1.08	0.02		33.13		44.25	105.01	1.26	1.34
1	N/D.-YM	6.69	2.99	0.16		88.44		30.75	64.17	0.77	0.35
1	N/F-D.Y	4.50	5.10	0.12		155.63		0.00	0.83	0.01	0.00
2	N/P	8.41	2.33	0.03		71.72		7.32	2.92	0.04	0.10
2	N/P / N	8.04	1.93	0.02		59.69	11.10	4.88	1.67	0.02	0.08
1	Np	6.58	2.51	0.09		75.63		9.31	5.00	0.06	0.12
3	N-p	6.13	1.82	0.02		56.36		5.38	10.28	0.35	0.10
1	Np-.#b D	8.53	2.01	0.03		61.88		26.38	79.17	0.95	0.43
1	N-p-.Y / N-.Y-D	8.14	1.86	0.06		56.25		20.50	34.17	0.41	0.36
1	O/B	5.95	0.66	0.64		0.63		1.75	0.83	0.01	2.78
7	OB	7.40	0.51	0.12		12.63		12.43	6.43	0.09	0.98
4	P	7.82	2.51	0.03		77.58		23.72	42.09	0.51	0.31

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
2	P.DF	8.17	2.46	0.02		76.10		26.07	25.42	0.31	0.34
1	P/N.DN/p	8.27	2.50	0.01		77.81		42.25	45.00	0.54	0.54
2	P-k	7.52	0.78	0.16		39.06		10.13	27.09	0.64	0.26
2	Pp	6.95	1.36	0.30		33.28		2.16	0.83	0.01	0.06
1	Ppk	6.20	1.73	0.04		52.81		10.00	14.17	0.17	0.19
1	Ppk / P-k	6.32	1.62	0.04		49.38		6.25	0.83	0.01	0.13
1	q	4.70	4.20	0.10		128.13		-0.63	0.83	0.01	0.00
9	R	8.56	3.55	0.03		109.93	16.50	31.31	16.30	0.20	0.28
1	R / *qp	7.85	11.65	0.05		362.50		25.75	19.17	0.23	0.07
7	R/Db	6.47	4.88	0.18		146.88		15.16	38.93	0.47	0.10
1	TA pd	8.53	0.40	0.02		11.88		66.25	175.85	2.11	5.58
2	Tad	8.57	0.32	0.01	0.38	9.85	23.10	60.25	31.59	0.38	6.12
2	TB	8.65	0.37	0.01		11.10		81.00	60.84	0.73	7.30
11	TBd	8.24	0.24	0.02		7.53	67.53	73.15	119.40	1.43	9.71
11	TBd-.MY*	7.98	0.74	0.02	0.72	22.64	28.97		28.72	0.34	1.28
1	TBpd	8.41	0.41	0.03		11.88		72.50	160.01	1.92	6.10
1	TC	7.87	0.25	0.05		6.25	86.90	29.00	88.34	1.06	4.64
6	TC - And/Volc cng	8.70	0.04	0.01		1.04	123.80	85.11	118.90	1.43	81.57
1	TC - Arkose	7.41	0.60	0.30		9.38		41.38	81.67	0.98	4.41
1	TC - basalt	8.01	0.09	0.02		2.19		85.31	109.17	1.31	38.95
1	TC-Cng	8.07	0.41	0.08		10.47	152.50	76.94	137.93	1.66	7.35
1	TC - Cng/mdst	8.14	0.36	0.10		8.13		97.00	155.84	1.87	11.93
1	TC - Slst	8.20	0.11	0.04		2.19		56.75	129.18	1.55	25.91
2	TC - Volc cng	8.42	0.04	0.03		0.94		96.63	140.43	1.69	102.79
1	TC- Arkose	7.71	0.37	0.08		9.06	90.00	36.75	62.50	0.75	4.06
1	TC- Oxidized	7.02	0.05	0.01		1.25	15.30	3.00	1.67	0.02	2.40

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
4	TC/TF/TX	9.01	0.34	0.03	0.30	9.38		92.53	142.05		9.87
1	TC^k - Basalt	8.37	0.12	0.01		3.44	141.30	76.25	195.85	2.35	22.17
4	TC^k - Volc Cng	8.80	0.07	0.03		2.08		78.00	79.38	0.95	37.44
1	TD	9.12	0.01	0.01		<0.3		28.38	20.00	0.24	>94.6
1	TF	7.42	3.80	0.06	3.74	116.88		21.90	324.09		0.19
2	W	5.30	3.33	0.09		101.41		2.72	1.25	0.02	0.03
1	WC?	9.16	1.49	0.02		45.94	32.00	30.75	45.84	0.55	0.67
5	WY	6.73	2.59	0.13		76.94	11.80	8.44	13.83	0.17	0.11
2	X	8.45	1.94	0.02		60.16		19.00	42.09	0.51	0.32
1	X.Db GN	7.74	3.67	0.13		110.63		45.00	66.67	0.80	0.41
1	X.DbGY	5.84	1.56	0.06		46.88		2.44	0.83		0.05
1	X.DFxN/P/N/P.DF	7.82	3.76	0.02		116.88		39.38	46.67	0.56	0.34
1	X.DFxN/P\P/N.DF	7.37	1.85	0.02		57.19		6.75	1.67	0.02	0.12
1	X.DPYxN	7.54	3.74	0.09		114.06	20.80	17.13	32.50	0.39	0.15
2	X.FDM/pxn/p^f	7.03	2.71	0.03		83.60		4.50	6.67	0.08	0.05
2	X.H(DNNxY)	8.08	4.56	0.11		138.91	15.30	21.82	25.84	0.31	0.16
1	X.HGDN-YxN/D	5.39	2.11	0.08		63.44	9.30	4.06	3.33	0.04	0.06
1	X.HxN/X.YxN	9.13	2.13	<0.01		66.56		30.00	35.00	0.42	0.45
1	X.HxN^f	8.35	1.47	0.05		44.38	103.80	45.50	50.00	0.60	1.03
1	X.M/Mx	7.67	0.05	0.06		<0.3		1.13	0.83	0.01	>3.8
2	X.MD#b	7.99	1.94	0.03		59.54		9.16	25.42	0.31	0.15
1	X.MDbxN	6.74	2.98	0.05		91.56		5.63	10.00	0.12	0.06
1	X.MDxN	7.42	0.99	0.02		30.31		8.00	19.17	0.23	0.26
5	X.MD-YxN*	6.21	3.84	0.06	3.78	118.07	7.66		15.59	0.19	0.06
1	X.YM-DxN	6.76	2.61	0.03		80.63		2.13	0.83	0.01	0.03
1	X.YMzN(?) / X.YM-	6.41	1.64	0.17		45.94		1.13	0.83	0.01	0.02

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
	DxN										
1	X.YP	8.24	1.89	0.01		58.75		92.50	114.17	1.37	1.57
1	X.YxN	8.62	1.23	0.01		38.13		49.75	59.17	0.71	1.30
9	X2	7.38	2.74	0.08		83.02	20.15	13.37	27.41	0.37	0.16
11	X2.DYF	7.26	3.44	0.05	3.39	105.80	12.62		34.30	0.41	0.00
1	X2xx2qpw	7.87	2.87	0.02		89.06		16.00	36.67	0.44	0.18
108	Y	7.00	2.88	0.07	3.56	90.08	10.19	11.30	16.88	0.22	0.13
1	Y/Gs?*	6.16	0.29	0.31	<0.01	<0.3	0.20		1.36	0.02	>0.67
1	Yb	7.74	3.22	0.06		98.75		15.63	30.00	0.36	0.16
1	YW	4.66	3.61	0.11		109.38		1.38	0.83	0.01	0.01
3	Y-W	8.19	2.73	0.03		84.58		19.98	39.17	0.47	0.24
1	Y-x	7.05	2.26	0.16		65.63		16.13	25.84	0.31	0.25
1	Yxbp(l)	9.06	2.23	0.02		69.06		20.50	22.50	0.27	0.30
1	Y-xk-pd	8.23	2.65	0.02		82.19		6.00	5.83	0.07	0.07
1	YxN/N.Y / YXNYxq	8.29	1.47	0.02		45.31		88.75	115.84	1.39	1.96
1	YxP/M	8.72	1.34	0.01		41.56		21.00	27.50	0.33	0.51
1	YxP\P/M-k / Y-x	8.41	1.93	0.04		59.06		34.75	57.50	0.69	0.59
1	Yxq	8.43	2.57	0.03		79.38		15.00	13.33	0.16	0.19
1	Yxqd	7.24	1.42	0.04		43.13		7.25	31.67	0.38	0.17
1	Yxq-p	7.09	3.09	0.04		95.31	8.50	4.50	1.67	0.02	0.05
1	Yxqp / Yxq-p\	7.56	3.48	0.04		107.50		12.88	23.33	0.28	0.12
3	Z	6.67	4.59	0.08		140.83		37.69	32.50	0.39	0.27
1	Z / Gp	6.99	1.80	0.07		54.06		10.75	25.00	0.30	0.20
1	Z.N	7.34	2.30	0.06		70.00		9.50	55.84	0.67	0.14
1	Z.NPY	7.66	2.83	0.08		85.94		19.00	17.50	0.21	0.22
1	Z.TBd / Z	8.77	1.79	0.01		55.63		83.63	59.17	0.71	1.50

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Table K3.18-3: Summary of ABA Results for Waste Rock

Number of Samples	Litho Code	Mean Paste pH	Mean S(T), %	Mean S(SO4), %	Mean S(S-2), %	Mean AP, kgCaCO3/t	Mean NP (Sobek), kgCaCO3/t	Mean Modified NP, kgCaCO3/t	Mean TIC, kgCaCO3/t	Mean TIC, %	NP/AP[1]
1	Z.Y	7.70	0.89	0.29		18.75		56.50	126.68	1.52	3.01
1	Z.Y / Y	4.40	4.88	0.19		146.56		-2.94	0.83		-0.02
1	No LithoCode	7.19	4.14	0.01	4.13	129.06		14.20			0.11
1	No LithoCode	6.56	6.65	0.03	6.62	206.88		11.60			0.06
Waste Rock (PEZ+PWZ)											
2	TW	9.29	0.24	0.04	0.20	6.10		80.55	103.41		13.15
2	TY	8.64	0.38	0.07	0.31	9.53		57.55	59.09		8.48
2	TD	9.38	0.13	0.02	0.11	3.44		50.45	46.59		19.40
2	No LithoCode	8.2	2.2	0.0	2.2	68.1		21.6			0.3
Waste Rock (Pebble-North)											
1	G/N	7.37	10.10	0.05		314.06		40.13	38.34	0.46	0.13
2	Y	8.2	5.6	0.0		173.3		16.9	13.8	0.2	0.10
1	G	8.07	7.43	0.01		231.88		30	29.17	0.35	0.13
2	Kq	8.36	1.99	0.01		61.875		17.875	9.165	0.11	0.29
Waste Rock (Others)											
1	Gp	7.04	0.08	0.08		<0.3		2.19	0.83	0.01	>7.3
1	Pp	7.1	0.61	0.3		9.69		3.63	0.83	0.01	0.37
3	No LithoCode	5.28	4.25	0.06		130.84		4.09	4.16	0.05	0.03
Ore											
1	No LithoCode	8.09	2.41	0.05	2.36	73.75		6.9	4.55		0.09
Tailings											
94	Tailings	7.88	1.36	0.04	1.13	41.31		12.18	22.23	0.38	0.29

Notes

1. Mean NP (Sobek) was used when mean Modified NP was not available

Source: PLP 2018a

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K3.18.2.2 Tailings and Supernatant Geochemical Characteristics

A total of 59 tailings samples from concurrent metallurgical process test runs have been geochemically characterized. Samples analyzed included rougher tails and rougher tail blends from various hydrothermal alteration zones, blends of rougher and pyritic tails, and first cleaner scavenger, pyrite rougher, combined rougher, and gold plant tails. Most of the tailings samples tested represent rougher tails, which will be the most volumetrically abundant tailings. All of the tailings samples were analyzed using ABA and total metals methods. ABA tests included paste pH, total, sulfate, and sulfide sulfur, AP, Sobek and modified NP, fizz test, total inorganic carbon, and carbon dioxide. Total metals were determined using a four-acid digestion. A subset of samples were analyzed using optical mineralogy and x-ray diffraction methods and humidity cell, subaqueous column leach column, and field barrel tests.

Mineralogy determinations indicate that the rougher tailings are dominated by potassium and plagioclase feldspars (about 67 percent), quartz (about 12 percent), muscovite and biotite (about 13 percent), carbonate minerals (about 4 percent), and trace hematite, pyrite, and rutile. ABA tests indicate that the rougher tails have total sulfur contents ranging between 0.3 and 1.3 percent, primarily as sulfide sulfur. Other tailings products (pyritic tails, blends with pyritic tails, and gold plant tails) had total sulfur contents up to 31.6 percent (gold plant tails), which are also dominated by sulfide sulfur. AP ranged from 0.9 to 980 kilograms $CaCO_3$ per ton ($kgCaCO_3/t$). NP was generally less than 20 $kgCaCO_3/t$, with a maximum NP of 54 $kgCaCO_3/t$.

Figure K3.18-1 provides an AP versus NP graph for the tailings. While some tailings samples are classified as non-PAG, a large number of samples are considered PAG. The sulfide sulfur content of the tailings exerts a strong control on the NP/AP ratio, where NP/AP values below 2 are associated with sulfide sulfur contents greater than 0.2 percent. The rougher tails typically have low to moderate total sulfur and are predicted to be non-PAG, provided the sulfide content remains below 0.2 percent. The pyritic and gold plant tailings have higher sulfide contents and are often classified as PAG.

Tailings supernatant analyses are summarized in Table K3.18-4. Results indicate that the supernatants have a pH of 8, are dominated by major ions (Ca, Mg, Na, K, sulfate, and alkalinity), and generally low trace metal concentrations (Mn, As, Co, Cu, Mo, Ni, Sb, Se, and Zn).

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Figure K3.18-1: NP Plotted as Function of AP for Tailings

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Table K3.18-4: Analytical Results for Representative Tailings Supernatants

Sample ID	Product	pH	SO4	Alkalinity	Thiosalts	Al	Sb	As	Ag	Cd	Ca	Cr	Co	Cu	Fe	Pb
			(mg/L)	(mgCaCO3/L)	(mgS2O3/L)	(all elements in mg/L)										
Batches Tested During Period 2010 to 2012																
2010 set																
LCT-25	Rougher/ pyrite blend	8.0	166	135.1	-	0.020	0.007	0.002	0.00004	-0.0002	52.6	0.0006	0.0002	0.002	-0.03	0.00005
LCT-26	Rougher/ pyrite blend	8.0	117	115.2	-	0.016	0.007	0.003	-0.00001	-0.0001	35.3	-0.0005	0.0002	0.002	-0.03	-0.00005
LCT-27	Rougher/ pyrite blend	8.0	110	113.6	-	0.016	0.002	0.001	0.00024	-0.0001	53.3	-0.0005	-0.0001	-0.002	-0.03	-0.00005
LCT-28	Rougher/ pyrite blend	8.2	199	147.3	-	0.014	0.003	0.002	0.00102	-0.0001	48.5	-0.0005	0.0001	0.021	-0.03	-0.00005
LCT-29	Rougher/ pyrite blend	8.0	134	117.7	-	0.012	0.005	0.002	0.00002	-0.0001	52.1	-0.0005	0.0002	0.001	-0.03	0.00009
LCT-30	Rougher/ pyrite blend	8.0	281	102.0	-	0.003	0.004	0.005	-0.00001	-0.0001	78.5	-0.0005	0.0016	0.002	-0.03	-0.00005
LCT-31	Rougher/ pyrite blend	8.0	153	90.8	-	0.015	0.008	0.001	-0.00001	0.0001	36.8	-0.0005	0.0014	0.003	-0.03	0.00005
LCT-32	Rougher/ pyrite blend	8.0	215	88.7	-	0.010	0.009	0.029	-0.00001	0.0001	67.2	-0.0005	0.0007	0.002	-0.03	-0.00005
LCT-33	Rougher/ pyrite blend	8.0	163	93.7	-	0.010	0.004	0.001	0.00010	0.0005	44.1	-0.0005	0.0018	0.029	-0.03	-0.00005
LCT-34	Rougher/ pyrite blend	7.8	288	81.4	-	0.004	0.003	0.002	-0.00001	0.0025	87.5	-0.0005	0.0033	0.038	-0.03	0.00032
LCT-35	Rougher/ pyrite blend	7.9	155	89.9	-	0.009	0.001	0.002	0.00001	-0.0001	58.1	-0.0005	0.0023	0.037	-0.03	-0.00005
LCT-36	Rougher/ pyrite blend	7.9	182	95.7	-	0.013	0.019	0.015	0.00013	-0.0001	55.9	-0.0005	0.0002	0.003	-0.03	-0.00005
LCT-37	Rougher/ pyrite blend	8.0	153	90.1	-	0.004	0.001	0.001	0.00003	0.0001	48.3	-0.0005	0.0012	0.007	-0.03	-0.00005
LCT-38	Rougher/ pyrite blend	7.9	155	82.8	-	0.059	0.026	0.005	0.00021	0.0001	66.2	-0.0005	0.0002	0.055	-0.03	-0.00005
LCT-39	Rougher/ pyrite blend	8.1	79.9	120.8	-	0.031	0.002	0.001	0.00002	-0.0001	24.6	-0.0005	-0.0001	0.001	-0.03	-0.00005
LCT-40	Rougher/ pyrite blend	7.9	237	69.9	-	0.019	0.005	0.002	0.00016	0.0010	77.9	-0.0005	0.0012	0.060	-0.03	-0.00005
LCT-41	Rougher/ pyrite blend	7.8	180	82.9	-	0.057	0.002	0.003	0.00075	0.0002	82.4	-0.0005	0.0004	0.062	-0.03	-0.00005
LCT-42	Rougher/ pyrite blend	8.0	341	95.4	-	0.006	0.002	0.001	0.00003	0.0015	119	0.0006	0.0027	0.020	-0.03	0.00005
2011 set																
Illite Pyrite Cu Ro Tail	Rougher	8.1	361	118.6	-	0.008	0.002	0.005	-0.00001	0.0005	101	-0.0005	0.0007	0.014	-0.03	-0.00005
K-Silicate Cu Ro Tail	Rougher	8.1	340	97.4	-	0.009	0.002	0.005	-0.00001	-0.0001	95.9	-0.0005	0.0006	0.010	-0.03	-0.00005
Sodic Potassic Cu Ro Tail	Rougher	8.0	516	133.4	-	0.008	0.001	0.005	-0.00001	0.0001	121	-0.0005	0.0006	0.008	-0.03	-0.00005
Supergene Cu Ro Tail	Rougher	8.0	518	104.8	-	0.010	0.002	0.004	-0.00001	0.0007	149	-0.0005	0.0029	0.033	-0.03	0.00006
2012 set																
1st Cleaner Scav Tails	Gold plant tails	9.0	-	51.3	360	0.106	0.003	0.007	0.00541	-0.0001	273	-0.001	-0.0002	0.550	-0.03	0.00063
Pyrite Rougher Tails	Gold plant tails	8.5	-	35.6	250	0.098	0.004	0.005	0.00087	-0.0001	238	-0.001	-0.0002	0.130	-0.03	-0.00010
Combined Rougher Tails	Gold plant tails	8.1	-	173.2	< 2	0.011	0.002	0.001	-0.00001	0.0001	122	-0.0005	0.0006	0.019	-0.03	0.00024
Gold Plant Tails	Gold plant tails	7.6	-	52.7	< 2	0.017	0.005	0.005	-0.00005	-0.0003	382	-0.0025	0.0119	0.011	-0.03	-0.00025
Summary Statistics for Samples 2004 – 2008[a]																
Minimum	-	7.0	35	30	-10	0.01	-0.0001	0.001	-0.00001	-0.00001	36.1	-0.001	-0.0001	-0.001	-0.03	-0.0001
Median	-	8.0	292	77	5	0.05	0.005	0.013	0.000004	0.00005	116	0.0005	0.0001	0.00813	0.015	0.00015
Average	-	7.9	319	75	46.86	0.07	0.006	0.017	0.00004	0.0001	116	0.001	0.000	0.008	0.064	0.0003
Maximum	-	8.3	2436	111	826	0.37	0.040	0.117	0.00170	0.0005	707	0.005	0.001	0.0171	2.15	0.0033

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Table K3.18-4: Analytical Results for Representative Tailings Supernatants – Part 2

Sample ID	Product	Mg	Mn	Hg	Mo	Ni	K	Se	Na	Tl	Zn
		(all elements in mg/L)									
Batches Tested During Period 2010 to 2012											
2010 set											
LCT-25	Rougher/pyrite blend	16.1	0.13	-0.00001	0.07	0.005	33.6	0.005	46.8	-0.0001	0.001
LCT-26	Rougher/pyrite blend	13.7	0.08	-0.00001	0.03	0.002	23.8	0.013	40.7	0.0001	-0.001
LCT-27	Rougher/pyrite blend	11.6	0.05	-0.00001	0.02	0.002	29.0	0.004	28.4	-0.0001	-0.001
LCT-28	Rougher/pyrite blend	11.2	0.04	0.00002	0.03	0.001	26.6	0.008	86.9	-0.0001	-0.001
LCT-29	Rougher/pyrite blend	13.5	0.10	-0.00001	0.02	0.002	21.2	0.006	26.1	-0.0001	0.003
LCT-30	Rougher/pyrite blend	25.4	0.76	-0.00001	0.01	0.005	26.7	0.006	24.9	0.0003	-0.001
LCT-31	Rougher/pyrite blend	15.4	1.53	-0.00001	0.02	0.007	34.0	0.006	26.1	-0.0001	-0.001
LCT-32	Rougher/pyrite blend	6.8	0.26	-0.00001	0.05	0.004	18.3	0.006	30.9	0.0001	0.005
LCT-33	Rougher/pyrite blend	15.8	1.83	0.00002	0.05	0.005	38.4	0.005	29.9	0.0001	0.004
LCT-34	Rougher/pyrite blend	18.2	1.30	-0.00001	0.07	0.003	30.9	0.015	27.1	0.0001	0.055
LCT-35	Rougher/pyrite blend	11	0.85	-0.00001	0.05	0.001	20.5	0.008	27.0	-0.0001	0.028
LCT-36	Rougher/pyrite blend	17.1	0.13	-0.00001	0.04	0.003	31.4	0.007	28.7	0.0001	-0.001
LCT-37	Rougher/pyrite blend	17.4	1.32	-0.00001	0.05	0.002	18.6	0.018	21.9	-0.0001	0.004
LCT-38	Rougher/pyrite blend	5.18	0.27	0.00045	0.02	-0.001	31.3	0.005	18.5	0.0001	0.001
LCT-39	Rougher/pyrite blend	5.25	0.03	-0.00001	0.04	0.001	11.4	0.003	60.1	-0.0001	-0.001
LCT-40	Rougher/pyrite blend	15.6	1.81	0.00004	0.02	0.001	34.1	0.006	20.1	0.0002	0.001
LCT-41	Rougher/pyrite blend	9.85	1.01	-0.00001	0.04	-0.001	13.9	0.006	23.2	0.0001	0.001
LCT-42	Rougher/pyrite blend	22	0.35	-0.00001	0.02	0.005	36.5	0.019	25.6	0.0001	0.008
2011 set											
Illite Pyrite Cu Ro Tail	Rougher	26.4	1.20	-0.00001	0.05	0.002	42.4	0.008	29.6	0.0002	0.003
K-Silicate Cu Ro Tail	Rougher	14	0.17	-0.00001	0.15	0.002	39.6	0.015	47.7	0.0001	0.003
Sodic Potassic Cu Ro Tail	Rougher	40.6	1.07	-0.00001	0.06	0.003	52.3	0.003	49.1	0.0001	0.004
Supergene Cu Ro Tail	Rougher	35.1	2.77	-0.00001	0.08	0.002	42.8	0.028	24.9	0.0002	0.023
2012 set											
1st Cleaner Scav Tails	Gold plant tails	0.149	0.00	0.00008	0.13	-0.001	40.9	0.020	42.9	-0.0001	-0.002
Pyrite Rougher Tails	Gold plant tails	0.248	0.00	-0.00005	0.09	-0.001	31.0	0.013	29.6	-0.0001	-0.002
Combined Rougher Tails	Gold plant tails	33.8	0.56	-0.00001	0.02	0.002	32.4	0.004	29.6	0.0001	0.008
Gold Plant Tails	Gold plant tails	13.9	0.06	-0.00005	0.11	-0.003	21.8	0.019	482.0	-0.0003	-0.005
Summary Statistics for Samples 2004 – 2008[a]											
Minimum	-	0.15	0.002	-0.00001	0.018	-0.0005	4.47	-0.01	7	-0.00001	-0.002
Median	-	6.12	0.060	0.00001	0.06	0.0005	26.5	0.008	16.9	0.000113	0.0027
Average	-	8.0	0.072	0.00002	0.07	0.001	26.0	0.009	43.8	0.0001	0.005
Maximum	-	27.3	0.288	0.00025	0.35	0.005	40.5	0.017	757	0.0005	0.037

Notes:

a = where concentrations were below the method detection limit, average values were calculated using half the method detection limit value

negative values = concentration of the element was below the method detection limit

" - " values in an otherwise empty cell = not measured

Source: SRK 2018a, Table 11-31

L = Liter

S2O3 = thiosulfate

CaCO3 = calcium carbonate

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K3.18.2.3 Construction Rockfill Geochemical Characteristics

Construction rockfill will be obtained from quarries in Cretaceous-age granodiorite located outside of the footprint of the proposed mine. To evaluate the potential needs to manage the rock geochemistry and to estimate contact water quality, PLP tested rock from boreholes in three proposed quarry locations designated A, B, and C. The first phase of testing involved continuous sampling of core by PLP at 10-foot intervals from two boreholes drilled in each quarry, for a total of six boreholes. The core was tested using a multi-element scan (including sulfur) following a four-acid digestion. A total of 138 samples were analyzed: 50 samples from quarry A, 41 samples from quarry B, and 47 samples from quarry C. The results obtained to date are summarized in SRK (2018c) and provided in Table K3.18-5.

The results demonstrate that the quarry rock is dominated by unmineralized granodiorite, which would be geochemically suitable for use as construction fill due to its low metal leaching and ARD potential and is classified as non-PAG. It is expected that weathering of the granodiorite would be expected to yield contact water chemistry comparable to that observed in natural surface water and groundwater. However, hydrothermally altered zones with elevated metal concentrations may have the potential for leaching of metals and possibly ARD potential, and would need to be segregated using an operational monitoring program and not used as construction fill.

Table K3.18-5: Statistical Summary by Quarry for Selected Elements

Quarry	n	Statistic (percentiles)	As (mg/kg)	Cu (mg/kg)	Mo (mg/kg)	S (%)	Se (mg/kg)	Zn (mg/kg)
A	50	Min	1	11	0.89	0.005	0.5	48
		P5	1	12	1	0.005	0.5	54
		P50	1.4	18	1.6	0.01	0.5	64
		P95	3.4	35	2.7	0.01	1	92
		Max	6.4	43	16	0.07	1	300
B	41	Min	0.1	7.7	1.1	0.005	0.5	51
		P5	0.6	10	1.2	0.005	0.5	57
		P50	1.7	15	1.6	0.01	1	61
		P95	2.7	33	2	0.01	1	72
		Max	6.3	140	2.2	0.02	1	160
C	47	Min	0.8	6.3	0.71	0.005	0.5	42
		P5	1.2	15	1.2	0.005	0.5	47
		P50	1.9	23	1.7	0.01	0.5	63
		P95	25	53	3.1	0.26	1	78
		Max	600	75	8.6	4.4	4	94

Source: SRK 2018d

K3.18.2.4 Open Pit Block Model

Because of the geochemical variability in the rocks, assessment of impacts resulting from geochemical processes requires consideration of the disposition and fate of the material that would be mined each year. The annual area mined can be estimated by developing an open pit block model. A block model is a computer model that shows the three-dimensional distribution of rock types and their likely order of excavation within the open pit as mining progresses. The

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mined rock is assessed based on its PAG and non-PAG characteristics, and whether the material would be processed and end up in tailings, or not processed and set aside as waste rock.

[Note: This section will be updated when requested information on the open pit block model is received.]

K3.18.3 Surface Water Quality

K3.18.3.1 Data Tables

This section contains baseline surface water data for parts of the project area that would be most affected by project activities. These include:

- Table K3.18-6 through Table K3.18-9: surface water data for the NFK and SFK watersheds, UTC, and Frying Pan Lake, respectively. These waterbodies would receive discharge from mine site water treatment plants (WTPs).
- Table K3.18-10 and Table K3.18-11: surface water data for the western and eastern parts of the north access route transportation corridor, respectively.
- Table K3.18-12: water quality data for Iliamna Lake, which would be crossed by project ferry traffic.

Baseline data for other mine area surface waterbodies are available in Pebble Environmental Baseline Documents (EBDs) (ERM [2018: Tables 9.1-15 through 9.1-24] and Schlumberger et al. [2011: Tables 9.1-31 through 9.1-36]), and incorporated here by reference.

Table K3.18-6 through Table K3.18-11 provide the range of detected results, along with the mean and standard deviation of each detected analyte. Table K3.18-12 provides a summary of the Iliamna Lake data as a range of mean values for groups of sampling stations in the following locations: north ferry terminal, south ferry terminal, Iliamna village area, and east end of Iliamna Lake. Results exceeding the most stringent criteria listed in Table K3.18-1 are shown in bold on the data tables.

Mine Site

Table K3.18-6 through Table K3.18-9 summarize data used for characterization of surface water quality at the mine site.

Table K3.18-6: Surface Water Data Summary – NFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Field and Physical parameters (mg/L, except where noted)			
Total Dissolved Solids	327	3.10 - 72.5	36.6
pH (Field, Standard Units)	348	**3.31** - 8.36	6.65
Dissolved Oxygen	342	**5.75** - 14.6	9.89
Water Temperature (^{0}C)	347	-0.30 - 19	4.17
Specific Conductivity (Field, uS/cm)	345	7.0 - 710	47.9
Turbidity (NTU)	319	0.10 - **8.8**	1.04
Total Suspended Solids	325	0.15 - 10.8	1.19

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Table K3.18-6: Surface Water Data Summary – NFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
ORP (mv)	343	-248 - 349	137
Major Ions (mg/L)			
Calcium - dissolved	230	1.82 - 10.1	5.16
Calcium - total	235	1.79 - 9.88	5.12
Magnesium - dissolved	231	0.38 - 2.66	1.33
Magnesium - total	235	0.37 - 2.86	1.32
Sodium - dissolved	231	0.99 - 3.41	2.41
Sodium - total	235	1.18 - 3.58	2.39
Potassium - dissolved	226	0.096 - 1.15	0.41
Potassium - total	236	0.081 - 1.10	0.40
Alkalinity, Total	336	**3.10** - 49.1	21.4
Sulfate	234	0.53 - 9.56	2.21
Chloride	237	0.20 - 1.38	0.65
Fluoride	237	0.031 - 0.14	0.039
Hardness as CaCO3	327	5.90 - 36.4	18.1
Nutrients, (mg/L)			
Total Ammonia - N	291	0.031 - 0.17	0.050
Nitrate-Nitrite	229	0.031 - 3.94	0.19
Total Phosphorous	233	0.0031 - 0.17	0.023
Total Orthophosphate (as P)	40	0.031 - 0.10	0.079
Total Metals (mg/L)			
Aluminum	325	0.0036 - **0.42**	0.034
Arsenic	236	0.000099 - 0.00079	0.00034
Barium	287	0.0013 - 0.013	0.0034
Cadmium	323	0.0000062 - **0.000094**	0.000020
Chromium	234	0.000062 - 0.0010	0.00029
Copper	324	0.00015 - **0.0036**	0.00042
Iron	326	0.015 - **1.05**	0.22
Lead	324	0.000022 - **0.0024**	0.00012
Manganese	323	0.00088 - **0.096**	0.013
Molybdenum	235	0.000015 - 0.00055	0.00018
Nickel	308	0.000030 - 0.00093	0.00025
Selenium	154	0.000029 - 0.00031	0.00027
Silver	232	0.0000029 - 0.000020	0.0000064

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Table K3.18-6: Surface Water Data Summary – NFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Zinc	324	0.00044 - 0.015	0.0023
Dissolved Metals (mg/L)			
Aluminum	325	0.002 - 0.063	0.013
Arsenic	233	0.000081 - 0.00067	0.00031
Barium	254	0.0014 - 0.0072	0.0031
Cadmium	325	0.0000062 - 0.000078	0.000020
Chromium	216	0.000062 - 0.00094	0.00028
Copper	237	0.00016 - 0.0017	0.00041
Iron	326	0.0062 - 0.44	0.11
Lead	285	0.000022 - 0.00037	0.000070
Manganese	314	0.00048 - **0.054**	0.0082
Molybdenum	210	0.0000062 - 0.00078	0.00019
Nickel	184	0.000077 - 0.0012	0.00033
Selenium	236	0.000029 - 0.00078	0.00028
Silver	236	0.0000029 - 0.000016	0.0000062
Zinc	230	0.00068 - 0.0075	0.0025
Cyanides (mg/L)			
Cyanide, Total	210	0.0015 - 0.0050	0.0020
Cyanide, Weak Acid Dissociable	327	0.0015 - **0.012**	0.0024
Organic Compounds, (mg/L)			
Dissolved Organic Carbon	201	0.17 - 4.83	1.58

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as a concentration of one-half the reported detection limit (RDL).

Source: ERM 2018a

Table K3.18-7: Surface Water Data Summary – SFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Field and Physical parameters (mg/L, except where noted)			
Total Dissolved Solids	493	3.1 - 96.2	39.4
pH (Field, Standard Units)	603	3.54 - **8.85**	6.63
Dissolved Oxygen	597	**3.53** - 18.2	9.89
Water Temperature (^{0}C)	607	-0.33 - 23.4	4.33

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Table K3.18-7: Surface Water Data Summary – SFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Specific Conductivity (Field, uS/cm)	600	20 - 133	52.3
Turbidity (NTU)	484	0.080 - **23**	1.34
Total Suspended Solids	492	0.15 - 16	1.69
ORP (mV)	587	-259 - 516	128
Major Ions (mg/L)			
Calcium - dissolved	330	2.28 - 13.4	6.18
Calcium - total	333	2.34 - 13.8	6.17
Magnesium - dissolved	329	0.35 - 3.9	1.4
Magnesium - total	333	0.28 - 3.9	1.4
Sodium - dissolved	330	1.09 - 4.67	2.33
Sodium - total	333	1.1 - 5.23	2.32
Potassium - dissolved	326	0.12 - 1.07	0.36
Potassium - total	333	0.11 - 0.96	0.35
Alkalinity, Total	500	**3.1** - 40	**18**
Sulfate	333	0.90 - 28.8	8
Chloride	333	0.14 - 1.45	0.69
Fluoride	334	0.031 - 0.23	0.044
Hardness as CaCO3	493	7.91 - 52.9	20.5
Nutrients, (mg/L)			
Total Ammonia - N	423	0.031 - 0.16	0.052600
Nitrate-Nitrite	322	0.031 - **1.21**	0.17
Total Phosphorous	330	0.0031 - 0.095	0.019
Total Orthophosphate (as P)	68	0.031 - 0.10	0.070
Total Metals (mg/L)			
Aluminum	491	0.0019 - **1.09**	0.039
Arsenic	330	0.00016 - 0.0010	0.00033
Barium	417	0.0013 - 0.016	0.0041
Cadmium	487	0.0000062 - 0.000073	0.000019
Chromium	333	0.000062 - 0.0011	0.00027
Copper	473	0.00011 - **0.0090**	0.0014
Iron	493	0.0062 - **2.41**	0.29
Lead	488	0.000022 - **0.0030**	0.00011
Manganese	493	0.00011 - **0.20**	0.024
Molybdenum	331	0.000015 - 0.0017	0.00051

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Table K3.18-7: Surface Water Data Summary – SFK River, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Nickel	477	0.000062 - 0.0013	0.00033
Selenium	260	0.000058 - 0.00062	0.00029
Silver	327	0.000003 - 0.000031	0.0000064
Zinc	491	0.00031 - 0.022	0.0027
Dissolved Metals (mg/L)			
Aluminum	464	0.0020 - 0.040	0.0098
Arsenic	329	0.00012 - 0.00091	0.00031
Barium	388	0.0010 - 0.0096	0.0039
Cadmium	485	0.0000062 - 0.000074	0.000019
Chromium	306	0.000062 - 0.0010	0.00025
Copper	418	0.00015 - **0.0049**	0.0011
Iron	488	0.0062 - **1**	0.12
Lead	427	0.000022 - **0.00042**	0.000072
Manganese	474	0.000056 - **0.12**	0.019
Molybdenum	313	0.000031 - 0.0017	0.00051
Nickel	292	0.000090 - 0.0012	0.00042
Selenium	334	0.000047 - 0.00062	0.00029
Silver	333	0.000003 - 0.000013	0.0000062
Zinc	366	0.00047 - 0.011	0.0028
Cyanides (mg/L)			
Cyanide	330	0.0015 - 0.016	0.0024
Cyanide, Weak Acid Dissociable	469	0.0015 - **0.0078**	0.0022
Organic Compounds, (mg/L)			
Dissolved Organic Carbon	305	0.15 - 4.76	1.27

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as one-half the RDL.

Source: ERM 2018a

Table K3.18-8: Surface Water Data Summary – UTC, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Field and Physical parameters (mg/L, except where noted)			
Total Dissolved Solids	590	3.75 - 115	52.8
pH (Field, Standard Units)	764	**4.5** - **9.33**	6.9

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Table K3.18-8: Surface Water Data Summary – UTC, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Dissolved Oxygen	757	**2.69** - 18.6	9.7
Water Temperature (^{0}C)	767	-0.93 - 15.7	3.89
Specific Conductivity (Field, uS/cm)	760	10 - 750	77.6
Turbidity (NTU)	570	0.0 - **16.3**	1.39
Total Suspended Solids	584	0.15 - **25.8**	3.21
ORP (mV)	729	-180 - 519	115
Major Ions (mg/L)			
Calcium - dissolved	443	2.37 - 17.3	8.92
Calcium - total	445	2.12 - 16.7	8.95
Magnesium - dissolved	442	0.64 - 4.73	2.1
Magnesium - total	444	0.66 - 5	2.1
Sodium - dissolved	443	1.02 - 6.73	2.77
Sodium - total	444	0.95 - 6.84	2.77
Potassium - dissolved	435	0.11 - 1.2	0.45
Potassium - total	443	0.19 - 1.36	0.45
Alkalinity, Total	601	**3.73** - 74	31.6
Sulfate	444	0.90 - 41.6	6.28
Chloride	443	0.031 - 1.15	0.70
Fluoride	429	0.0060 - 0.16	0.044
Hardness as CaCO3	591	7.25 - 62.2	32
Nutrients, (mg/L)			
Total Ammonia - N	526	0.0050 - **0.25**	0.042
Nitrate-Nitrite	435	0.0050 - 1.74	0.21
Total Phosphorous	442	0.0031 - 0.11	0.019
Total Orthophosphate (as P)	47	0.031 - 0.10	0.068
Total Metals (mg/L)			
Aluminum	584	0.0032 - **0.66**	0.073
Arsenic	445	0.00012 - 0.0028	0.00095
Barium	528	0.0012 - 0.018	0.0053
Cadmium	578	0.0000030 - **0.00010**	0.000017
Chromium	445	0.000062 - 0.0012	0.00036
Copper	590	0.000050 - **0.0054**	0.00061
Iron	588	0.015 - **1.3**	0.24
Lead	586	0.0000050 - **0.0028**	0.000089

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Table K3.18-8: Surface Water Data Summary – UTC, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean[a,b]
Manganese	587	0.00068 - **0.16**	0.026
Molybdenum	427	0.000015 - 0.00053	0.00025
Nickel	575	0.000030 - 0.0040	0.00061
Selenium	441	0.000030 - 0.00040	0.00030
Silver	438	0.0000029 - 0.000032	0.0000076
Zinc	588	0.00020 - 0.016	0.0025
Dissolved Metals (mg/L)			
Aluminum	564	0.0020 - **0.14**	0.013
Arsenic	441	0.000089 - 0.0027	0.00082
Barium	517	0.0011 - 0.013	0.0049
Cadmium	573	0.0000030 - 0.000073	0.000017
Chromium	416	0.000050 - 0.0011	0.00031
Copper	473	0.000030 - **0.0026**	0.00047
Iron	587	0.0034 - 0.43	0.090
Lead	524	0.0000030 - 0.00037	0.000057
Manganese	580	0.00025 - **0.15**	0.020
Molybdenum	403	0.000015 - 0.00057	0.00025
Nickel	436	0.000070 - 0.0038	0.00068
Selenium	445	0.000029 - 0.0010	0.00030
Silver	441	0.0000029 - 0.000044	0.0000068
Zinc	488	0.00020 - 0.0084	0.0025
Cyanides (mg/L)			
Cyanide	433	0.00090 - 0.0081	0.0022
Cyanide, Weak Acid Dissociable	573	0.00090 - **0.021**	0.0022
Organic Compounds, (mg/L)			
Dissolved Organic Carbon	438	0.15 - 9.38	1.52

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as one-half the RDL.

Source: ERM 2018a

Table K3.18-9: Surface Water Data Summary – Frying Pan Lake, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max)	Mean [a,b]

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Table K3.18-9: Surface Water Data Summary – Frying Pan Lake, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max)	Mean [a,b]
Field and Physical Parameters (mg/L, except where noted)			
Total Dissolved Solids	11	20.0 - 68.1	44.3
pH (Field, Standard Units)	10	**4.74** - **8.61**	6.32
Dissolved Oxygen (mg/L)	10	**5.65** - 8.85	7.37
Water Temperature (degC)	10	3.16 - 13.8	9.09
Specific Conductivity (Field, mS/cm)	10	0.017 - 0.064	0.038
Turbidity (NTU)	10	0.25 - **7.44**	1.98
Total Suspended Solids	11	0.40 - 14.8	4.27
ORP (mV)	10	-77.8 - 223	128
Major Ions (mg/L)			
Calcium (dissolved)	11	2.52 - 7.37	4.78
Calcium (total)	11	2.59 - 7.77	5.02
Magnesium (dissolved)	11	0.42 - 1.92	1.05
Magnesium (total)	11	0.43 - 1.96	1.09
Sodium (dissolved)	10	1.74 - 2.98	2.18
Sodium (total)	11	1.67 - 3.17	2.19
Potassium (dissolved)	11	0.073 - 0.46	0.20
Potassium (total)	11	0.079 - 0.48	0.20
Alkalinity, Total	11	**10.0** - 29.9	**19.8**
Sulfate	11	0.36 - 11.2	3.56
Chloride	11	0.39 - 0.76	0.54
Fluoride	11	0.041 - 0.070	0.038
Hardness as CaCO3 (Not Filtered)	11	8.23 - 27.5	17.0
Cations (mg/L, except where noted)			
Nitrogen, Ammonia (as N)	11	0.016 - 0.20	0.071
Nitrogen, Nitrate-Nitrite	11	0.032 - 1.19	0.28
Total Phosphorus	11	0.0070 - 0.059	0.023
Total Orthophosphate (as P)	10	NA - NA	0.043
Total Metals (mg/L)			
Aluminum	11	0.020 - 0.19	0.053
Barium	11	0.0021 - 0.0073	0.0040
Iron	11	0.064 - **1.03**	0.40
Copper	11	0.00018 - **0.0038**	0.0013
Zinc	11	0.0010 - 0.0057	0.0032

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Table K3.18-9: Surface Water Data Summary – Frying Pan Lake, Mine Site

Analyte	Number of Samples	Range of Detects (Min-Max)	Mean [a,b]
Lead	11	0.000042 - **0.00044**	0.00011
Cadmium	11	0 - 0	0.000018
Arsenic	11	0.00049 - 0.0013	0.00048
Nickel	11	0.00024 - 0.00047	0.00022
Molybdenum	11	0.00020 - 0.00073	0.00035
Manganese	11	0.0022 - **0.074**	0.035
Dissolved Metals (mg/L)			
Aluminum	11	0.0025 - 0.025	0.015
Barium	11	0.0010 - 0.0058	0.0033
Iron	11	0.029 - 0.44	0.16
Copper	10	0.00020 - 0.0021	0.00083
Zinc	9	0.0013 - 0.0039	0.0027
Lead	4	0.00010 - 0.00028	0.00016
Cadmium	11	0 - 0	0.000018
Arsenic	11	0.00035 - 0.00091	0.00036
Nickel	2	0.00027 - 0.00046	0.00036
Molybdenum	11	0.00017 - 0.00070	0.00035
Manganese	11	0.00029 - **0.051**	0.017
Cyanides (mg/L)			
Cyanide, Total	11	0 - 0	0.00075
Cyanide, Weak Acid Dissociable	11	0.0016 - 0.0050	0.0013

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as one-half the RDL.

Source: Schlumberger et al. 2011a

Transportation Corridor

Table K3.18-10 and Table K3.18-11 summarize data used for characterization of surface water quality along the upland area of the west and east parts of the northern access route, respectively, which are pertinent to Alternatives 2 and 3. The samples were divided on the basis of geology: samples west of GS-11A (Figure 3.18-4) are located in an area of Quaternary surficial deposits over volcanic and sedimentary rocks, while samples to the east are located in an area of exposed intrusive bedrock (Schlumberger et al. 2011a).

Table K3.18-12 summarizes surface water quality data for Iliamna Lake, which are grouped as follows: near the mouth of UTC (Alternative 1 North ferry terminal area), Iliamna village area (pertinent to Alternatives 1 and 2–Eagle Bay ferry terminal area), Pedro Bay area (pertinent to Alternatives 2 and 3, pipeline and road routes, respectively), and Pile Bay (pertinent to Alternative 2 ferry terminal) (Figure 3.18-5).

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Table K3.18-10: Surface Water Data Summary – Northern Access Route, West Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
Total Metals (mg/L)			
Aluminum	82	0.00486 – **0.925**	**0.095**
Antimony	82	0.0000016 – 0.0019	0.00011
Arsenic	82	0.00002 – 0.0081	0.00084
Barium	82	0.00128 – 0.01100	0.00491
Beryllium	82	0 – NA	0.00001
Bismuth	65	0 – 0.00075	0.00033
Boron	81	0.0013 – 0.005	0.00279
Cadmium	80	0 – **0.0022**	0.00004
Calcium	82	2.34 – 14	7.13915
Chromium	82	0.00003 – 0.0010	0.00027
Cobalt	82	0 – 0.0001	0.00006
Copper	82	0.00011 – 0.0014	0.00063
Iron	82	0.00310 – **2.110**	0.2081
Lead	82	0.00002 – **0.0011**	0.00013
Magnesium	82	0.18000 – 1.27000	0.8786
Manganese	82	0.0005 – **0.1560**	0.0128
Mercury	82	0.00015 – 0.00001	0
Molybdenum	82	0.00016 - 0.00153	0.00064
Nickel	82	0.00005 - 0.00063	0.00029
Potassium	82	0.11300 - 0.8650	0.3142
Selenium	82	0.00001 - 0.00026	0.00011
Silver	82	0 - 0.00003	0
Thallium	82	0 - 0.00001	0.00001
Tin	79	0.00003 - 0.00050	0.00014
Vanadium	82	0.00010 - 0.0032	0.00042
Zinc	82	0.00050 - 0.0129	0.0028
Dissolved Metals (mg/L)			
Aluminum	81	0.00100 - 0.057	0.0151
Antimony	78	0.0000016 - 0.00028	0.00005
Arsenic	81	0.00004 - 0.00585	0.00046
Barium	81	0.00126 - 0.0135	0.0042
Beryllium	81	0 - 0.000040	0.00001
Bismuth	72	0 - 0.00075	0.00033
Boron	76	0.00155 - 0.0119	0.0024

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Table K3.18-10: Surface Water Data Summary – Northern Access Route, West Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
Cadmium	81	0.0000031 - 0.00006	0.00002
Calcium	79	2.34 - 12.9	6.989
Chromium	71	0.00003 - 0.00143	0.0002
Cobalt	76	0 - 0.0004	0.00004
Copper	72	0.00019 - 0.0021	0.00043
Iron	81	0.00400 - 0.215	0.0554
Lead	62	0.00002 - 0.00035	0.00013
Magnesium	81	0.1810 - 1.340	0.8590
Manganese	81	0.00025 - 0.0332	0.0052
Molybdenum	78	0.00016 - 0.00159	0.00065
Nickel	48	0.00005 - 0.00056	0.00035
Potassium	72	0.1120 - 0.855	0.3099
Selenium	81	0.00001 - 0.00021	0.00011
Silicon	81	2.240 - 6.570	4.219
Silver	81	0 - 0.00001	0
Thallium	80	0 - 0.00001	0.00001
Tin	81	0.00003 - 0.00085	0.00011
Vanadium	81	0.00008 - 0.00074	0.00022
Zinc	69	0.00075 - 0.0143	0.00239
Anions (mg/L, except where noted)			
Chloride	82	0.42 - 2.33	0.961
Fluoride	82	0.016 - 0.12	0.041
Cyanide	82	0.0013 - 0.0066	0.002
Cyanide, Weak Acid Dissociable	82	0.0013 - **0.0077**	0.0018
Nitrogen, Nitrate+Nitrite (as N)	81	0.016 - 8.09	0.840
Phosphorus, Total Orthophosphate (as P)	82	0.0017 - 0.445	0.048
Sulfate	82	0.91 - 59.1	6.06
Cations (mg/L, except where noted)			
Nitrogen, Ammonia (as N)	82	0.015 - **0.464**	0.045
Sodium (Dissolved)	77	1.03 - 3.9	1.952
Sodium (Total)	82	0.987 - 4.13	1.968
Miscellaneous Parameters (mg/L, except where noted)			
Acidity, Total	82	0.79 - 9.5	2.6
Alkalinity, Total	82	**1.60** - 33.0	**19**
Hardness as CaCO3 (Not Filtered)		-	

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Table K3.18-10: Surface Water Data Summary – Northern Access Route, West Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
pH (Field, Standard Units)		-	
Specific Conductivity (Field, mS/cm)	82	21.00 - 600	70.00
Total Dissolved Solids	82	10 - 126	4.350
Total Suspended Solids	82	0.075 - **56**	4.2
Water Temperature (degC)	80	0.08 - 22.7	7.42

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as one-half the RDL.

Source: Schlumberger et al. 2011a

Table K3.18-11: Surface Water Data Summary – Northern Access Route, East Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
Total Metals (mg/L)			
Aluminum	50	0.00735 _ **1.36**	**0.1530**
Antimony	50	0.0000016 _ 0.0000630	0.000129
Arsenic	50	0.000020 _ **0.021100**	0.00067
Barium	50	0.00062 _ 0.02130	0.00814
Beryllium	50	0.0000015 _ 0.0000342	0.0000084
Bismuth	50	0.0000016 _ 0.0007500	0.0002730
Boron	50	0.00143 _ 0.01400	0.00427
Cadmium	50	0.0000031 _ 0.0000683	0.0000192
Calcium	50	1.030 _ 9.210	3.290
Chromium	50	0.0000310 _ 0.0006920	0.000210
Cobalt	50	0.0000050 _ 0.0005990	0.0001290
Copper	50	0.000114 _ **0.034600**	0.004310
Iron	50	0.0013 _ 0.8260	0.1080
Lead	50	0.000016 _ **0.0012**	0.000145
Magnesium	50	0.1000 _ 0.6480	0.3010
Manganese	50	0.00025 _ **0.05450**	0.01120
Mercury	50	0.0000001 _ **0.0000320**	0.00000084
Molybdenum	50	0.000017 _ 0.000997	0.000375
Nickel	50	0.000031 _ 0.000678	0.000213
Potassium	50	0.1030 _ 0.5130	0.2510
Selenium	50	0.0000143 _ 0.0001550	0.0000966

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Table K3.18-11: Surface Water Data Summary – Northern Access Route, East Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
Silver	50	0.0000014 _ 0.0000205	0.0000036
Thallium	50	0.0000021 _ 0.0000210	0.0000067
Tin	50	0.000030 _ 0.002290	0.000155
Vanadium	50	0.000052 _ 0.001830	0.000322
Zinc	50	0.00075 _ 0.01850	0.00436
Dissolved Metals (mg/L)			
Aluminum	49	0.0035 _ 0.058	0.0133
Antimony	45	0.0000016 _ 0.0001120	0.000064
Arsenic	48	0.000006 _ 0.007760	0.000406
Barium	50	0.00060 _ 0.01510	0.00662
Beryllium	50	0.0000015 _ 0.0000162	0.0000068
Bismuth	48	0.0000016 _ 0.0007500	0.0002720
Boron	46	0.00134 _ 0.01300	0.00405
Cadmium	49	0.0000031 _ 0.0000754	0.0000179
Calcium	50	1.020 _ 9.760	3.330
Chromium	50	0.0000310 _ 0.0008890	0.000179
Cobalt	48	0.0000050 _ 0.0005810	0.0000947
Copper	45	0.000198 _ 0.001480	**0.002680**
Iron	50	0.0013 _ 0.1230	0.0247
Lead	33	0.000016 _ **0.000414**	0.000131
Magnesium	50	0.968 _ 0.5990	0.2740
Manganese	50	0.00010 _ 0.03150	0.00666
Molybdenum	42	0.000050 _ 0.000881	0.000412
Nickel	28	0.000083 _ 0.000521	0.000286
Potassium	50	0.1000 _ 0.4560	0.2390
Selenium	50	0.0000143 _ 0.0001550	0.0000970
Silicon	50	1.050 _ 4.320	2.510
Silver	50	0.0000014 _ 0.0000158	0.0000035
Thallium	50	0.0000021 _ 0.0000304	0.0000067
Tin	50	0.000030 _ 0.000155	0.000076
Vanadium	49	0.000025 _ 0.000584	0.000174
Zinc	41	0.00000 _ 0.01700	0.00378
Anions (mg/L, except where noted)			
Chloride	50	0.31 _ 1.7	0.861
Fluoride	50	0.016 _ 0.088	0.035

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Table K3.18-11: Surface Water Data Summary – Northern Access Route, East Part

Analyte	Number of Samples	Range of Detects (Min-Max) [a]	Mean [a,b]
Cyanide	50	0.0013 _ 0.0066	0.0016
Cyanide, Weak Acid Dissociable	50	0.0013 _ 0.0037	0.0015
Nitrogen, Nitrate+Nitrite (as N)	49	0.0395 _ **26.4**	1.39
Phosphorus, Total Orthophosphate (as P)	50	0.0 _ 0.60	0.04
Sulfate	49	0.53 _ 33.9	5.39
Cations (mg/L, except where noted)			
Nitrogen, Ammonia (as N)	50	0.020 _ 0.03	0.040
Sodium (Dissolved)	45	0.620 _ 2.36	1.220
Sodium (Total)	50	0.770 _ 2.73	1.250
Miscellaneous Parameters (mg/L, except where noted)			
Acidity, Total	50	0.79 _ 10.0	1.78
Alkalinity, Total	50	**1.55** _ 20.8	**5.9**
Hardness as CaCO3 (Not Filtered)	50	2.98 _ 25.5	9.46
pH (Field, Standard Units)	50	**4.69** _ **8.59**	**6.43**
Specific Conductivity (Field, mS/cm)	50	10.5 _ 270	43
Total Dissolved Solids	50	1.55 _ 110	24.5
Total Suspended Solids	50	0.08 _ **34.8**	3.50
Water Temperature (degC)	50	0.09 _ 22.0	6.84

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: When calculating the mean, non-detects with "U" or "UJ" qualifiers were included as one-half the RDL

Source: Schlumberger 2011a

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Table K3.18-12: Surface Water Data Summary – Iliamna Lake, Transportation Corridor

Parameters	Upper Talarik Creek			Iliamna Village Area			Pedro Bay Area			Pile Bay		
	Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]		
	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]
Total Metals (µg/L)												
Aluminum	2.210	15.60	6.133	3.690	**1260.**	40.05	2.800	**202.0**	15.32	5.550	**850.0**	65.63
Antimony	0.014	0.050	0.028	0.005	0.061	0.026	0.008	0.033	0.022	0.002	0.150	0.028
Arsenic	0.125	0.511	0.189	0.125	0.916	0.228	0.125	0.397	0.157	0.125	0.585	0.187
Barium	4.820	6.280	5.450	0.713	21.70	5.428	4.550	9.280	6.188	4.870	14.300	6.253
Beryllium	0.008	0.013	0.010	0.008	0.013	0.011	0.008	0.013	0.011	0.008	0.013	0.010
Bismuth	0.002	0.022	0.006	0.002	0.039	0.006	0.002	0.013	0.006	0.002	0.008	0.005
Boron	1.550	5.000	3.610	1.250	6.800	3.217	1.250	7.900	2.950	1.550	5.600	3.740
Cadmium	0.008	0.029	0.009	0.008	0.033	0.013	0.008	0.025	0.013	0.008	0.025	0.010
Calcium	5370.	6510.	5950.	2630.	7460.	5689.	3900.	6210.	5302.	4410.	6550.	5497.
Chromium	0.050	0.454	0.197	0.031	0.663	0.219	0.031	0.672	0.330	0.031	0.642	0.216
Cobalt	0.005	0.031	0.015	0.005	0.380	0.028	0.005	0.064	0.020	0.011	0.387	0.057
Copper	0.423	0.700	0.497	0.380	**2.690**	0.580	0.345	1.640	0.578	0.572	**7.870**	1.957
Iron	3.100	25.70	13.13	9.930	**1060.**	84.31	3.100	**1560.**	65.64	6.720	884.0	68.03
Lead	0.016	0.050	0.019	0.016	**0.650**	0.077	0.016	0.350	0.122	0.016	**0.415**	0.060
Magnesium	724.0	942.0	846.0	596.0	1150.	840.8	559.0	833.0	753.0	582.0	985.0	755.0
Manganese	0.674	2.480	1.153	0.694	30.40	3.244	0.100	9.470	3.944	0.352	**81.50**	8.150
Mercury	0.000	0.003	0.000	0.000	0.003	0.001	0.000	0.003	0.001	0.000	0.003	0.001
Molybdenum	0.627	1.110	0.760	0.089	1.160	0.702	0.533	0.894	0.678	0.499	0.923	0.707
Nickel	0.100	0.283	0.203	0.100	2.270	0.237	0.100	0.532	0.194	0.100	1.040	0.254
Potassium	470.0	593.0	538.0	240.0	1860.	533.7	336.0	655.0	520.2	433.0	649.0	511.7
Selenium	0.078	0.250	0.122	0.078	0.250	0.137	0.078	0.250	0.141	0.078	0.250	0.126
Silver	0.003	0.007	0.003	0.003	0.035	0.005	0.003	0.012	0.005	0.003	0.007	0.003

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Table K3.18-12: Surface Water Data Summary – Iliamna Lake, Transportation Corridor

Parameters	Upper Talarik Creek			Iliamna Village Area			Pedro Bay Area			Pile Bay		
	Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]		
	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]
Thallium	0.003	0.005	0.004	0.003	0.014	0.004	0.003	0.005	0.004	0.003	0.022	0.003
Tin	0.031	0.050	0.040	0.031	0.050	0.043	0.031	0.050	0.044	0.031	0.071	0.040
Vanadium	0.100	0.247	0.134	0.100	2.680	0.211	0.100	0.250	0.180	0.100	1.370	0.217
Zinc	0.233	15.20	2.427	0.233	16.40	2.445	0.233	13.70	2.818	0.233	13.40	3.080
Dissolved Metals (µg/L)												
Aluminum	0.310	4.610	2.130	0.310	**114.0**	15.66	1.000	8.890	4.406	2.730	17.60	5.860
Antimony	0.007	0.058	0.030	0.002	0.068	0.028	0.005	0.059	0.021	0.005	0.050	0.027
Arsenic	0.125	0.461	0.170	0.125	0.564	0.246	0.125	0.310	0.160	0.125	0.492	0.166
Barium	3.260	6.900	5.401	0.100	7.550	5.028	4.540	7.640	5.772	4.660	6.330	5.600
Beryllium	0.008	0.013	0.010	0.008	0.034	0.011	0.008	0.013	0.011	0.008	0.013	0.010
Bismuth	0.002	0.008	0.005	0.002	0.017	0.006	0.002	0.008	0.006	0.002	0.008	0.005
Boron	1.550	5.280	3.350	1.250	10.20	3.136	1.250	5.200	2.318	1.550	6.700	3.500
Cadmium	0.008	0.050	0.010	0.008	0.063	0.011	0.008	0.035	0.014	0.008	0.025	0.009
Calcium	3920.	6850.	5803.	7.750	7340.	5586.	4030.	6430.	5232.	3970.	6490.	5470.
Chromium	0.031	0.634	0.180	0.031	0.511	0.173	0.031	0.524	0.284	0.031	0.552	0.199
Cobalt	0.002	0.026	0.014	0.002	0.029	0.016	0.005	0.025	0.017	0.005	0.094	0.024
Copper	0.328	0.590	0.430	0.050	0.714	0.490	0.313	0.707	0.522	0.530	2.690	0.943
Iron	3.100	23.50	10.33	3.100	249.0	41.18	3.100	64.10	20.34	3.100	25.40	11.60
Lead	0.016	**2.180**	0.167	0.016	0.146	0.052	0.016	0.133	0.035	0.016	0.129	0.045
Magnesium	552.0	1050.	858.3	0.775	1010.	834.1	559.0	878.0	751.8	558.0	885.0	759.0
Manganese	0.100	1.290	0.376	0.031	3.340	0.784	0.066	2.770	1.007	0.195	6.190	1.190
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenu	0.395	0.901	0.716	0.003	1.010	0.681	0.480	0.814	0.674	0.536	0.839	0.712

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Table K3.18-12: Surface Water Data Summary – Iliamna Lake, Transportation Corridor

Parameters	Upper Talarik Creek			Iliamna Village Area			Pedro Bay Area			Pile Bay		
	Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]		
	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]
m												
Nickel	0.169	0.424	0.259	0.016	0.432	0.236	0.100	0.442	0.243	0.100	0.731	0.276
Potassium	352.0	612.0	530.7	7.750	686.0	505.3	344.0	579.0	491.2	432.0	613.0	514.0
Selenium	0.078	0.155	0.116	0.078	0.165	0.127	0.078	0.250	0.141	0.078	0.250	0.131
Silicon	797.0	1390.	1040.	75.00	2390.	1155.	831.0	11200	3170.	1040.	1460.	1207.
Silver	0.003	0.009	0.003	0.003	0.014	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Thallium	0.003	0.005	0.004	0.003	0.012	0.004	0.003	0.005	0.004	0.003	0.005	0.004
Tin	0.031	0.123	0.044	0.031	0.106	0.044	0.031	0.112	0.046	0.031	0.050	0.040
Vanadium	0.100	0.262	0.135	0.100	0.479	0.182	0.100	0.250	0.187	0.100	0.243	0.142
Zinc	0.233	14.40	3.203	0.233	19.60	1.666	0.233	14.60	2.478	0.500	15.60	1.897
Anions (mg/L, except where noted)												
Chloride	0.542	1.170	1.037	0.413	5.380	1.050	0.823	1.230	1.044	0.866	1.080	0.987
Fluoride	0.034	0.089	0.050	0.032	0.086	0.051	0.033	0.088	0.050	0.016	0.083	0.044
Total Cyanide	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.002	0.001	0.001	0.003	0.001
Cyanide WAD	0.001	0.004	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.003	0.001
Thiocyanate	0.155	0.500	0.360	0.155	0.500	0.327	0.030	0.500	0.258	0.030	0.500	0.316
Total Nitrate + Nitrite (as N)	0.016	0.910	0.113	0.016	1.930	0.219	0.016	0.218	0.086	0.016	0.259	0.128
Nitrite (as N)	-	-	-	0.016	0.016	0.016	0.016	0.016	0.016	-	-	-
Nitrate (as N)	-	-	-	0.032	1.930	0.981	0.039	0.045	0.042	-	-	-
Total Phosphorus	0.001	0.700	0.035	0.001	0.120	0.009	0.001	0.052	0.008	0.001	0.241	0.020

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Table K3.18-12: Surface Water Data Summary – Iliamna Lake, Transportation Corridor

Parameters	Upper Talarik Creek			Iliamna Village Area			Pedro Bay Area			Pile Bay		
	Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]		
	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]
Ortho-phosphate	-	-	-	0.016	0.040	0.028	0.016	0.016	0.016	-	-	-
Sulfate	2.170	5.740	3.917	0.914	5.930	3.692	3.100	4.740	3.766	3.450	4.380	3.890
Cations (mg/L, except where noted)												
Ammonia (as N)[(3)]	0.016	0.050	0.022	0.016	0.164	0.029	0.016	0.132	0.030	0.016	0.148	0.026
Sodium (Total)	1340.	2090.	1707.	1410.	4100.	1974.	1360.	1990.	1710.	1350.	1850.	1573.
Sodium	1130.	2230.	1720.	15.50	4120.	1969.	1350.	2120.	1724.	1300.	1790.	1587.
Miscellaneous Parameters (mg/L, except where noted)												
Acidity	0.785	1.570	1.180	0.785	2.630	1.370	0.785	2.500	1.416	0.785	5.000	1.403
Alkalinity	**14.00**	**17.00**	**15.67**	**12.00**	**29.60**	**15.58**	**10.00**	**16.00**	**13.26**	**10.50**	**15.00**	**13.57**
Hardness (as CaCO3)	16.40	20.00	18.33	9.030	22.60	17.68	12.400	18.90	16.34	13.40	20.10	16.83
pH (field measurement , pH Units)	**6.010**	7.340	6.857	**6.250**	7.800	7.143	**6.110**	8.170	7.314	**4.500**	7.670	6.657
Conductivity (umhos/cm)												
Total Dissolved Solids	13.80	52.50	26.40	5.000	71.30	28.74	13.80	35.00	27.52	12.50	56.00	27.47
Total Suspended Solids	0.075	1.090	0.353	0.075	**22.70**	0.963	0.075	8.560	0.936	0.075	**77.60**	4.497
Temperature (field measurement	4.000	16.28	8.666	4.570	17.86	10.74	3.810	16.78	10.76	4.000	16.31	8.176

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Table K3.18-12: Surface Water Data Summary – Iliamna Lake, Transportation Corridor

Parameters	Upper Talarik Creek			Iliamna Village Area			Pedro Bay Area			Pile Bay		
	Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]			Range of Detects [a,b]		
	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]	Min	Max	Mean [a,c]
, °C)												
TOC	0.617	1.010	0.840	0.462	0.960	0.740	0.333	0.662	0.516	0.350	0.825	0.611
DOC	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: Range of Detects includes the minimum and maximum measurements from multiple sample locations in the area (1 sample location for Upper Talarik Creek, 4 locations for Iliamna Village Area, 3 sample locations for Pedro Bay Area, and 1 sample location for Pile Bay).

c: Mean values for each area represent the average of mean values for measurements made at each sample location in the respective area

Source: HDR 2011a

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K3.18.3.2 Trend Analysis at Mine Site

Some differences in water quality between watersheds and trends in water quality along streams were noted. Table K3.18-13 through Table K3.18-15 summarize observed spatial trends in the NFK, SFK, and UTC, respectively. Tau values represent the correlation coefficient, or how strongly the data trend. Negative tau values indicate an inverse relationship between constituents and distance downstream, and positive tau values indicate that constituents increase in concentration as distance downstream increases.

Statistical methods were employed to determine whether spatial trends in constituents increase or decrease in a statistically significant way, or remain stable (no significant trend in data). P-values, or probability values, represent the probability that the null hypothesis (i.e., no significant trend in data for a given model) is true. When analyzing data, a p-value of 0.05 is the threshold for statistical significance. Trends with a p-value calculated to be less 0.05 are statistically significant, indicating that observed spatial trends are real. Field and physical parameters with p-values calculated to be greater than 0.05 display trends that are not statistically significant, and indicate a stable spatial distribution of data.

Table K3.18-13: Spatial Regression Analysis, NFK River[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Field and Physical Parameters (mg/L, except where noted)				
Total Dissolved Solids	-0.194	0.0000862	**Decreasing**	**YES**
pH (Field, Standard Units)	-0.013	0.786	Stable	NO
Dissolved Oxygen	0.117	0.0152	**Increasing**	**YES**
Water Temperature (^{0}C)	0.00615	0.899	Stable	NO
Specific Conductivity (Field, uS/cm)	-0.304	3.57E-10	**Decreasing**	**YES**
Turbidity (NTU)	-0.276	2.54E-08	**Decreasing**	**YES**
Total Suspended Solids	-0.233	0.00000224	**Decreasing**	**YES**
ORP (mV)	0.0517	0.281	Stable	NO
Major Ions (mg/L)				
Calcium - total	-0.378	1.11E-10	**Decreasing**	**YES**
Magnesium - total	-0.44	6.34E-14	**Decreasing**	**YES**
Sodium - total	0.0262	0.656	Stable	NO
Potassium - total	-0.456	7.22E-15	**Decreasing**	**YES**
Alkalinity, Total	-0.368	3.31E-14	**Decreasing**	**YES**
Sulfate	0.0625	0.288	Stable	NO
Chloride	0.141	0.0157	**Increasing**	**YES**
Fluoride	-0.0668	0.293	Stable	NO
Hardness as $CaCO_3$	-0.398	4.29E-16	**Decreasing**	**YES**
Nutrients, (mg/L)				
Nitrogen, Nitrate-Nitrite	0.000892	0.989	Stable	NO

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Table K3.18-13: Spatial Regression Analysis, NFK River[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Total Metals (mg/L)				
Aluminum	-0.0594	0.227	Stable	NO
Arsenic	-0.426	1.43E-11	**Decreasing**	**YES**
Barium	0.0522	0.322	Stable	NO
Chromium	-0.166	0.00505	**Decreasing**	**YES**
Copper	0.0286	0.573	Stable	NO
Iron	-0.519	0	**Decreasing**	**YES**
Manganese	-0.255	2.33E-07	**Decreasing**	**YES**
Molybdenum	0.362	0	**Increasing**	**YES**
Nickel	-0.307	2.87E-09	**Decreasing**	**YES**
Zinc	-0.0509	0.319	Stable	NO

Notes:

a: For 4 sample locations along NFK River

Source: ERM 2018a

Table K3.18-14: Spatial Regression Analysis, SFK River[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Field and Physical parameters (mg/L, except where noted)				
Total Dissolved Solids	-0.257	1.05E-11	**Decreasing**	**YES**
pH (Field, Standard Units)	-0.067	0.0523	Stable	No
Dissolved Oxygen	0.182	0.000000119	**Increasing**	**YES**
Water Temperature (^{0}C)	-0.0338	0.325	Stable	No
Specific Conductivity (Field, uS/cm)	-0.268	1.39E-14	**Decreasing**	**YES**
Turbidity (NTU)	-0.406	0	**Decreasing**	**YES**
Total Suspended Solids	-0.194	2.13E-07	**Decreasing**	**YES**
ORP (mV)	0.164	2.62E-06	**Increasing**	**YES**
Major Ions (mg/L)				
Calcium - total	-0.308	2.06E-12	**Decreasing**	**YES**
Magnesium - total	-0.367	6.44E-17	**Decreasing**	**YES**
Sodium - total	-0.312	1.39E-12	**Decreasing**	**YES**
Potassium - total	-0.285	8.51E-11	**Decreasing**	**YES**
Alkalinity, Total	-0.0246	0.508	Stable	No
Sulfate	-0.556	0	**Decreasing**	**YES**

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Table K3.18-14: Spatial Regression Analysis, SFK River[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Chloride	0.157	0.000358	**Increasing**	**YES**
Fluoride	-0.271	6.43E-09	**Decreasing**	**YES**
Hardness as CaCO3	-0.296	2.81E-15	**Decreasing**	**YES**
Nutrients, (mg/L)				
Nitrogen, Nitrate-Nitrite	-0.0383	0.393	Stable	No
Total Metals (mg/L)				
Aluminum	-0.194	2.12E-07	**Decreasing**	**YES**
Arsenic	-0.16	0.0012	**Decreasing**	**YES**
Barium	-0.685	0	**Decreasing**	**YES**
Chromium	-0.0613	0.169	Stable	No
Copper	-0.614	0	**Decreasing**	**YES**
Iron	-0.604	0	**Decreasing**	**YES**
Manganese	-0.624	0	**Decreasing**	**YES**
Molybdenum	-0.558	0	**Decreasing**	**YES**
Nickel	-0.418	0	**Decreasing**	**YES**
Zinc	-0.185	1.32E-06	**Decreasing**	**YES**

Notes:

a: For 10 sample locations along SFK River

Source: ERM 2018a

Table K3.18-15: Spatial Regression Analysis, UTC[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Field and Physical parameters (mg/L, except where noted)				
Total Dissolved Solids	-0.35	2.49E-23	**Decreasing**	**YES**
pH (Field, Standard Units)	-0.0154	0.62	Stable	NO
Dissolved Oxygen	0.00816	0.793	Stable	NO
Water Temperature (^{0}C)	-0.0161	0.604	Stable	NO
Specific Conductivity (Field, uS/cm)	-0.0154	0.62	Stable	NO
Turbidity (NTU)	-0.0174	0.625	Stable	NO
Total Suspended Solids	0.439	0	**Increasing**	**YES**
ORP (mV)	0.0466	0.14	Stable	NO
Major Ions (mg/L)				
Calcium - total	-0.382	3.27E-21	**Decreasing**	**YES**

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Table K3.18-15: Spatial Regression Analysis, UTC[a]

Analyte	tau	p-Value	Spatial Trend	Regression Significantly Different?
Magnesium - total	-0.661	0	**Decreasing**	**YES**
Sodium - total	-0.488	0	**Decreasing**	**YES**
Potassium - total	-0.532	0	**Decreasing**	**YES**
Alkalinity, Total	-0.449	0	**Decreasing**	**YES**
Sulfate	-0.45	0	**Decreasing**	**YES**
Chloride	0.165	5.14E-05	**Increasing**	**YES**
Fluoride	-0.291	2.64E-12	**Decreasing**	**YES**
Hardness as CaCO3	-0.481	0	**Decreasing**	**YES**
Nutrients, (mg/L)				
Nitrogen, Nitrate-Nitrite	-0.215	1.44E-07	**Decreasing**	**YES**
Total Metals (mg/L)				
Aluminum	0.115	0.00112	**Increasing**	**YES**
Arsenic	0.452	0	**Increasing**	**YES**
Barium	-0.41	0	**Decreasing**	**YES**
Chromium	0.101	0.0128	**Increasing**	**YES**
Copper	-0.188	1.29E-07	**Decreasing**	**YES**
Iron	-0.0475	0.175	Stable	NO
Manganese	-0.0473	0.177	Stable	NO
Molybdenum	0.418	0	**Increasing**	**YES**
Nickel	-0.224	5.15E-10	**Decreasing**	**YES**
Zinc	-0.0891	0.0147	**Decreasing**	YES

Notes:

a: For 10 sample locations along UTC

Source: ERM 2018a

K3.18.3.3 Cook Inlet: Iliamna/Iniskin Estuary

This section contains additional water quality information for the portion of Cook Inlet north of Kamishak Bay that pertains to the port area for the north access route under Alternatives 2 and 3.

Salinity Gradient. Water quality in the Iliamna/Iniskin estuary, located about 30 miles north of the Amakdedori port site, was studied in 2004 through 2012 by Pentec et al (2011) and Hart Crowser (2015). Water quality in this area appeared to be dominated by tidal exchange with Cook Inlet and Kamishak Bay, with smaller, localized effects from freshwater inputs and local wind waves. Observed gradients in salinity between the inner (lower salinity) and outer (higher salinity) portions of Iliamna Bay are consistent with this conclusion. Average salinity was observed to decrease from the outer stations of Iliamna Bay to the inner stations. This is likely a result of freshwater inputs at the head of Iliamna Bay. Salinity decreases from spring to late

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summer, and increases again in the fall, thereby providing an additional indicator of the influence of regional water on the bays. A certain amount of stratification was observed during both the spring snowmelt season and during the warmer summer months, particularly during calmer weather and in more sheltered portions of the bays.

Snowmelt or significant rain events create a freshwater surface lens a few inches deep in areas adjacent to freshwater inputs; these lenses rapidly diminish as a result of tidal and wind driven mixing.

Suspended Particulates/Turbidity. Analysis of available data indicates that turbidity is generally moderate, and does not exhibit any obvious trends that indicate point-source inputs. Average turbidity for the Iliamna/Iniskin stations ranged between 3.1 and 75 Nephelometric Turbidity Units (NTU). Monthly mean turbidity was relatively constant over the study period, with occasional high turbidity corresponding to months in which generally windy conditions prevailed.

Organics and Inorganics. Analyses of hydrocarbon concentrations in marine water from the Iliamna/Iniskin estuary in 2004, and of metal and trace element concentrations in 2008 to 2012, showed little to no connection to anthropogenic effects. With the exception of boron and iron, concentrations of inorganic constituents were less than water quality criteria recommended by the EPA and others for marine habitat (Buchanan 2008), many by orders of magnitude. Boron exceeded the chronic marine water quality criterion at all sample stations, and iron was elevated at one of four sample locations in bottom waters only. Organic constituents were similarly at low levels, and appeared to be derived from biologic, petrogenic, and anthropogenic sources.

The data provide some support for a relationship between increased concentrations of inorganic constituents and TSS, but demonstrate no strong patterns with respect to depth in the water column, to geography, or to tidal elevation.

K3.18.4 Groundwater Quality

The following baseline groundwater data tables are provided in this appendix:

- Table K3.18-16 provides a list of wells completed within and outside of the deposit area, along with watershed, screened intervals, and lithologies.
- Table K3.18-17 provides the results of groundwater quality testing summarized as a range of mean values for individual wells within each lithologic group. Results exceeding the most stringent criteria listed in Table K3.18-1 are shown in bold.

Table K3.18-16: Groundwater Well Completions and Sample Numbers

Area	Target Zone	Watershed	Well Nest ID[a]	Well ID (Depth)[b,c]	Lithology[d]	Total Number of Samples Collected
DEPOSIT AREA	Overburden	SFK	P-08-56	S (20)	Clay, Silty Clay	13
				M (97)	Gravel, Gravelly Sand	13
			P-4A	S (50)	Sand, Silty Sand	17
				D (90)	Sand, Silty Sand	14
			SRK-5	S (18)	Sand with Gravel	22
				M (51)	Sand with Gravel	22
			KP-P4	D (54)	Gravel, Gravelly Sand	16
		UT	SRK-2	D (134)	Sand, Silty Sand	19

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Table K3.18-16: Groundwater Well Completions and Sample Numbers

Area	Target Zone	Watershed	Well Nest ID[a]	Well ID (Depth)[b,c]	Lithology[d]	Total Number of Samples Collected
	Bedrock	SFK	PQ-4	D (133)	Bedrock Contact	17
			SRK-3	D (73)	Bedrock Contact	17
			SRK-5	D (78)	Bedrock Contact	8
	Deep Bedrock	UT	DH-8417	B (640-795)	Deep Bedrock	2
				C (950-1,470)	Deep Bedrock	1
				E (1,900-2,350)	Deep Bedrock	1
				F (2,356-2,900)	Deep Bedrock	1
				G (2,900-3,300)	Deep Bedrock	1
				H (3,300-3,700)	Deep Bedrock	1
				I (3,700-4,050)	Deep Bedrock	3
OUTSIDE DEPOSIT AREA	Overburden	NFK	MW-6D	D (91)	Gravel with Sand	22
			MW-8	S (18)	Gravel with Sand	19
				M (47)	Gravelly Sand	23
				D (97)	Gravelly Sand	22
			P-08-69	S (19)	Clay, Silty Clay	2
			P-08-77	S (23)	Gravel, Gravelly Sand	9
				D (89)	Gravel, Gravelly Sand	12
			P-08-79	S (16)	Gravel, Gravelly Sand	6
				M (69)	Sand, Silty Sand	6
				D (150)	Gravel, Gravelly Sand	5
			P-08-81	S (16)	Gravel, Gravelly Sand	11
		SFK	MW-1	S (25)	Gravel with Sand	21
				M (72)	Gravel with Sand	22
			MW-11	S (71)	Sandy Gravel	19
				M (112)	Sandy Gravel	21
				SS (25)	Gravel	8
			MW-12	S (41)	Sand, Silty Sand	29
			MW-13	S (30)	Gravel, Gravelly Sand	29
			MW-14	S (46)	Gravel, Gravelly Sand	16
			MW-3	D (194)	Gravelly Sand	20
			MW-5	M (65)	Gravelly Sand	33
				S (41)	Silty Sand	32
			MW-7	S (30)	Gravel with Sand	16
			MW-9D	D (72)	Sand	11

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Table K3.18-16: Groundwater Well Completions and Sample Numbers

Area	Target Zone	Watershed	Well Nest ID[a]	Well ID (Depth)[b,c]	Lithology[d]	Total Number of Samples Collected
			P-08-54	S (47)	Gravel, Gravelly Sand	8
			P-08-61	S (71)	Gravel, Gravelly Sand	8
			P-08-84	S (32)	Sand, Silty Sand	12
		UT	MW-2	D (135)	Gravel with Sand	22
			P-05-28	S (75)	Gravel, Gravelly Sand	15
				D (160)	Gravel, Gravelly Sand	14
			P-05-33D	D (44)	Sand, Silty Sand	15
			P-05-35D	D (57)	Sand, Silty Sand	15
			P-06-37	S (25)	Gravel with Sand	24
			P-06-40	S (19)	Sand, Silty Sand	6
			P-06-41	S (41)	Sand, Silty Sand	11
			P-08-75	S (41)	Gravel, Gravelly Sand	13
				M (129)	Gravel, Gravelly Sand	13
			P-08-88	S (30)	Sand, Silty Sand	7
	Bedrock	NFK	MW-10	D (40)	Bedrock Contact	21
			P-08-69	D (54)	Bedrock Contact	12
			P-08-70	S (19)	Bedrock Contact	13
				D (54)	Bedrock Contact	13
			P-08-81	D (55)	Weathered Bedrock	11
			P-08-72	D (48)	Bedrock Contact	12
		SFK	MW-1	D (134)	Bedrock Contact	22
			MW-11	D (135)	Bedrock Contact, Sand with Gravel	21
			MW-12	D (122)	Bedrock Contact	28
			MW-13	D (110)	Bedrock Contact	29
			MW-14	D (101)	Bedrock Contact	17
			MW-5	D (105)	Bedrock Contact	27
			MW-7	D (71)	Bedrock Contact	22
			P-08-54	D (114)	Bedrock Contact	8
			P-08-61	D (88)	Bedrock Contact	9
			P-08-84	D (74)	Bedrock Contact	12
		UT	P-06-37	M (90)	Bedrock Contact	24
				D (200)	Bedrock Contact	23
			P-06-38	M (68)	Bedrock Contact	4

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Table K3.18-16: Groundwater Well Completions and Sample Numbers

Area	Target Zone	Watershed	Well Nest ID[a]	Well ID (Depth)[b,c]	Lithology[d]	Total Number of Samples Collected
				D (170)	Bedrock Contact	6
			P-06-40	D (145)	Bedrock Contact	8
			P-06-41	M (63)	Bedrock Contact	11
				D (200)	Bedrock Contact	11
			P-07-45	D (60)	Bedrock Contact	15
			P-08-75	D (173)	Bedrock Contact	13
			P-08-85	S (32)	Bedrock Contact	9
				D (137)	Bedrock Contact	11
			P-08-88	D (106)	Bedrock Contact	12
	Deep Bedrock	NFK	GH 10-220	P14 (210)	Deep Bedrock	7
				P04 (510)	Deep Bedrock	7
				P02 (575)	Deep Bedrock	7

Notes:

a: Nested wells refer to multiple screened wells residing within a single borehole at varying depths.

b: Relative depth: D=deep, M=medium, S=shallow

Source: Schlumberger 2015b

c: Numbers in parentheses represent depth to the bottom of the well in feet. Screen length is typically 10 ft.

d: Bedrock contact refers to the disturbed and weathered region of bedrock which can be up to 50 ft thick. These regions have been documented under the lower slopes and valley bottoms throughout the project area (Knight Piésold 2018a).

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Table K3.18-17: Groundwater Data Summary – Mine Site

Analyte	Outside Deposit Area				Deposit Area					Deposit Area Groundwater Source Terms[b]
	Range of Detects		Overburden	Bedrock Contact	Range of Detects		Overburden	Bedrock Contact	Deep Bedrock	
	Min[a]	Max[a]	Mean[a]	Mean[a]	Min[a]	Max[a]	Mean[a]	Mean[a]	Mean[a]	
Total Metals (µg/L)										
Aluminum	0.31	**74800**	**440**	**2190**	**0.31**	**9590**	**432**	75.1	**258**	3.4
Antimony	0.00155	**19.9**	0.0606	0.168	0.00155	36.7	0.0425	0.0675	4.65	0
Arsenic	0.0518	**101**	1.78	4.11	0	53.2	2.11	1.95	8.01	0.4
Barium	0.125	847	18.2	41.1	0.25	1360	27.1	97.4	98.5	6.4
Beryllium	0.0015	2.47	0.037	0.109	0	0.201	0.0278	0.0156	0.0168	0.02
Bismuth	0.00155	0.819	0.0359	0.0443	0	0.75	0.0274	0.0305	0.0234	0.02
Boron	0.75	83.2	5.63	7.23	0.75	70.7	8.23	2	25.2	1.5
Cadmium	0.0031	**0.917**	0.0193	0.0287	0	1.34	0.0163	0.0631	0.0636	0.02
Calcium	650	90900	13200	17100	1670	317000	21400	15100	102000	13800
Chromium	0.031	71.7	2.03	3.91	0	17.7	2.2	0.363	1.23	0.5
Cobalt	0.00476	43.2	0.45	1.32	0	4.56	0.684	0.877	0.521	0.1
Copper	0.025	**342**	**2.67**	**13.8**	**0.117**	**1180**	**9.9**	**248**	**7.32**	0.4
Iron	1.33	**87600**	713	**2540**	**0**	**33900**	**4460**	226	**2070**	20
Lead	0.011	**48.5**	**0.553**	**1.55**	**0**	**8.4**	0.318	0.188	**0.734**	0.1
Magnesium	88.1	41000	4470	4810	50.1	26700	6910	6020	7490	1070
Manganese	0.025	**3550**	**70.9**	**172**	**0.367**	**1110**	**264**	47.2	**136**	441
Mercury	0.00017	**1.76**	0.0105	0.00573	0	**0.1**	0.0105	0.00437	0.00228	0.001
Molybdenum	0.0031	**24.2**	1.08	2.65	0.0941	**75.4**	1.7	3.09	**34.9**	0.256
Nickel	0.1	**56.6**	1.67	3.06	0.111	12.7	2.25	1.13	2.57	0.647
Potassium	70.9	8470	759	1380	171	11400	1230	665	4090	342
Selenium	0.0143	4.04	0.22	0.354	0	1.9	0.184	0.452	0.389	1.09

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Table K3.18-17: Groundwater Data Summary – Mine Site

Analyte	Outside Deposit Area				Deposit Area					Deposit Area Groundwater Source Terms[b]
	Range of Detects		Overburden	Bedrock Contact	Range of Detects		Overburden	Bedrock Contact	Deep Bedrock	
	Min[a]	Max[a]	Mean[a]	Mean[a]	Min[a]	Max[a]	Mean[a]	Mean[a]	Mean[a]	
Silver	0.00144	0.491	0.00799	0.0178	0	0.841	0.00595	0.0161	0.0866	0.006
Thallium	0.00213	0.661	0.0101	0.0194	0	0.445	0.00711	0.0158	0.0248	0.01
Tin	0.0155	1060	0.282	6.58	0	5.57	0.133	0.0955	0.155	0.1
Vanadium	0.0804	**143**	1.75	5.32	0	15.4	1.6	0.207	1.47	0.55
Zinc	0.155	**4130**	28.7	9.5	0.155	**5360**	3.43	11.2	**120**	1.5
Dissolved Metals (µg/L)										
Aluminum	0.31	**8920**	27.1	**174**	**0.31**	**1990**	**89.6**	47.3	-	-
Antimony	0.00155	1.97	0.0309	0.123	0.00155	0.275	0.0238	0.0647	-	-
Arsenic	0.048	**53**	1.2	3.61	0.02	**11**	1.96	1.96	-	-
Barium	0.125	151	12.8	20.2	0.392	478	23.5	100	-	-
Beryllium	0.0015	0.812	0.0131	0.0223	0.0015	0.0998	0.0164	0.0144	-	-
Bismuth	0.00155	0.75	0.0285	0.02	0.00155	0.75	0.0252	0.0295	-	-
Boron	0.75	90.7	5.64	7.02	0.75	37	8.21	2.01	-	-
Cadmium	0.0031	**0.136**	0.0107	0.0123	0.0031	**0.308**	0.013	0.0649	-	-
Calcium	630	95000	12600	16000	1990	72200	20800	15200	-	-
Chromium	0.031	18.8	0.524	0.672	0.031	2.95	0.689	0.194	-	-
Cobalt	0.00476	7.73	0.0685	0.23	0.00476	3.82	0.448	0.873	-	-
Copper	0.025	**328**	1.1	**10.2**	**0.0645**	**1210**	**7.54**	**248**	-	-
Iron	1.33	**6680**	41.5	246	1.33	**33900**	**4050**	214	-	-
Lead	0.011	**12.7**	0.078	0.157	0.011	**0.912**	0.0702	0.0457	-	-
Magnesium	59.8	37000	4270	4270	355	26300	6690	6120	-	-
Manganese	0.0075	**1310**	44.1	**85.4**	**0.208**	**1120**	**249**	48.4	-	-

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Table K3.18-17: Groundwater Data Summary – Mine Site

Analyte	Outside Deposit Area				Deposit Area					Deposit Area Groundwater Source Terms[b]
	Range of Detects		Overburden	Bedrock Contact	Range of Detects		Overburden	Bedrock Contact	Deep Bedrock	
	Min[a]	Max[a]	Mean[a]	Mean[a]	Min[a]	Max[a]	Mean[a]	Mean[a]	Mean[a]	
Mercury	0.00048	**0.116**	0.00457	0.00294	0.000475	**0.1**	0.00548	0.00587	-	-
Molybdenum	0.0031	**26.9**	1.11	2.77	0.0745	**10.4**	1.78	3.04	-	-
Nickel	0.0755	12.6	0.832	1.09	0.1	6.14	1.55	1.11	-	-
Potassium	72.1	8040	684	1240	208	3190	1190	676	-	-
Selenium	0.0143	4.31	0.212	0.334	0.0143	1.36	0.168	0.448	-	-
Silicon	1060	42200	7120	7470	3050	15000	8250	6430	5040	5880
Silver[(8)]	0.00144	0.101	0.0034	0.00421	0.00144	0.0239	0.00393	0.0042	-	-
Thallium	0.00213	0.171	0.00492	0.0077	0.00213	0.0718	0.00536	0.0161	-	-
Tin	0.0155	81.4	0.0948	1.23	0.0155	1.22	0.0623	0.052	-	-
Vanadium	0.0135	28.7	0.62	1.33	0.0047	4.77	0.849	0.182	-	-
Zinc	0.155	**303**	5.3	2.27	0.155	**43.3**	2.29	11.3	-	-
Anions (mg/L, except where noted)										
Chloride	0.213	32.9	0.769	1.74	0.502	37.3	0.862	0.552	11.8	0.804
Fluoride	0.0155	0.705	0.0741	0.101	0	2.3	0.105	0.0543	0.698	0.072
Total Cyanide	0.00075	0.0067	0.00104	0.00105	0	0.05	0.000993	0.000855	0.00616	-
Cyanide WAD[(5)]	0.00075	**0.006**	0.00102	0.00104	0	**0.01**	0.00104	0.000785	0.00151	-
Thiocyanate	0.0295	5.2	0.195	0.274	0	1.3	0.203	0.156	0.0676	-
Nitrate/ Nitrite	0.0031	**196**	0.156	0.595	0	6.53	0.262	0.0774	0.0473	-
Nitrite	0.0155	0.0885	0.0178	0.0203	0.0155	0.05	0.0155	0.0145	-	-
Nitrate	0.0155	0.568	0.112	0.0913	0.0155	0.697	0.228	0.0301	-	-
Total Phosphorus	0.0011	5.27	0.0617	0.144	0	1.73	0.125	0.0617	0.0271	-
Ortho-phosphate	0.0155	0.37	0.0382	0.081	0.0155	0.17	0.0328	0.0697	-	-

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Table K3.18-17: Groundwater Data Summary – Mine Site

Analyte	Outside Deposit Area				Deposit Area					Deposit Area Groundwater Source Terms[b]
	Range of Detects		Overburden	Bedrock Contact	Range of Detects		Overburden	Bedrock Contact	Deep Bedrock	
	Min[a]	Max[a]	Mean[a]	Mean[a]	Min[a]	Max[a]	Mean[a]	Mean[a]	Mean[a]	
Sulfate	0.371	216	10.5	16.1	0.058	**1330**	48.4	12.7	**428**	4.9
Cations (mg/L, except where noted)										
Ammonia(3)	0.0155	**5.69**	0.0288	0.0965	0	**5.38**	0.0869	0.0244	1.56	-
Sodium (Dissolved)	1030	133000	8410	17600	31	48300	12400	3390	-	-
Sodium	986	139000	8500	17800	0.752	49400	12900	3350	154	2.47
Miscellaneous Parameters (mg/L, except where noted)										
Acidity	0.785	150	5.62	5.78	0	77.3	10.1	8.43	2.93	7.5
Alkalinity	**1.55**	479	59.1	79.9	**1.55**	236	66.1	59.3	68.3	33
Hardness	2	368	51.3	62.4	5.66	882	82	62.1	297	-
Field pH (pH units)	**2.84**	**12**	6.74	7.33	**3.98**	**11.5**	6.82	**4.44**	7.87	6.7
Field Specific Conductivity (µmhos/cm)	7	1500	131	209	15	3020	224	125	1070	-
Lab Conductivity (µmhos/cm)	10.9	1100	136	205	23	900	226	149	-	-
Field Oxidation Reduction Potential (mV)	-369	423	118	66.5	-399	350	78.2	93.5	-	-
Total Dissolved Solids	1.55	**593**	87.3	122	1.55	**2370**	151	86.2	**835**	-
Total Suspended Solids	0.072	**5750**	**34.4**	**105**	0	**281**	**21.4**	0.633	**27.8**	-
Field Water Temperature (°C)	0.12	92	3.59	3.63	0.66	8.04	3.28	2.02	-	-
Field Diss. Oxygen	**-0.37**	73.6	9.1	4.88	**-0.02**	15.9	5.36	2.61	-	-
DOC (Dissolved Organic Carbon)	0.075	51	0.861	1.3	0.075	64.4	1.71	0.28	13.2	-

Notes:

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a: Bold values indicate fields that exceed the most stringent water quality criteria.

b: Groundwater from deposit area used as source terms for WTP design, provided for comparison purposes; based on the median of 103 measured concentrations for samples collected from pit area wells KPP4, MW12D, MW12S, P4S, SRK2, SRK 5D, SRK5M, and SRK5S between 2005 and 2007 (SRK 2018a)

Source: Schlumberger 2015b, Knight Piesold 2018c

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K3.18.5 Sediment Quality

The following baseline groundwater data tables are provided in this appendix:

- Table K3.18-18 provides a summary of the sediment quality data collected at the mine site.
- Table K3.18-19 provides a summary of the sediment quality data collected in Iliamna Lake as a range of mean values for sampling stations in the following areas: Iliamna village area, and Pedro and Pile bays at the east end of the lake (Alternatives 2 and 3).

Table K3.18-18: Sediment Data Summary – Mine Site

Analyte[a]	Number of Samples	Range of Detects (mg/kg) (Min - Max)[b]	Mean (mg/kg)[b]
Trace Elements			
Aluminum	197	1820 - 25200	11218
Antimony	197	0.03 - 2.30	0.23
Arsenic	197	1.23 - **270**	**14.2**
Barium	197	12.3 - 239	74.7
Beryllium	197	0.079 - 0.97	0.35
Bismuth	197	0.063 - 3.10	1.11
Boron	196	0.59 - 11.5	6.78
Cadmium	197	0.068 - 2.60	0.26
Calcium	197	583 - 23400	3773
Chromium	197	0.43 - 105	15.4
Cobalt	197	0.51 - 49.1	7.86
Copper	197	1.3 - **200**	27.3
Iron	197	2670 - 83400	21617
Lead	197	1.46 - **40.3**	6.90
Magnesium	197	410 - 7970	3586
Manganese	197	28.7 - 6970	623
Mercury	197	0.011 - **0.42**	0.040
Molybdenum	197	0.28 - 22.0	2.02
Nickel	197	0.64 - **46.9**	8.95
Potassium	197	75 - 1770	545
Selenium	197	0.018 - 13.1	1.15
Silver	197	0.0341 - 2.54	0.12
Thallium	197	0.0079 - 0.45	0.11
Tin	197	0.16 - 46.2	1.21
Vanadium	197	2.2 - 143	44.9
Zinc	197	9.9 - **313**	61.8
Anions and Cations			
Ammonia (as nitrogen)	196	3.9 - 1730	235
Chloride	184	0.327 - 223	5.31
Cyanide, Total	194	0.03 - 2.10	0.39

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Table K3.18-18: Sediment Data Summary – Mine Site

Analyte[a]	Number of Samples	Range of Detects (mg/kg) (Min - Max)[b]	Mean (mg/kg)[b]
Cyanide, WAD	12	0.13 - 0.96	0.54
Fluoride	183	0.11 - 118	2.24
Sodium	197	18 - 630	194
Sulfate	184	0.499 - 2600	51.8

Notes:

a: All data is presented on a dry weight basis.

b: Bold values indicate fields that exceed the most stringent sediment quality criteria.

Source: SLR 2011a

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Table K3.18-19: Sediment Data Summary – Iliamna Lake, Transportation Corridor

Analyte[a] Unit: mg/kg	Iliamna Village			Pedro Bay			Pile Bay		
	Range of Detects		Mean[b,d]	Range of Detects		Mean[b,d]	Range of Detects		Mean[b,d]
	Min[b,c]	Max[b,c]		Min[b,c]	Max[b,c]		Min[b,c]	Max[b,c]	
Trace Elements									
Aluminum	4800	12600	8020	3380	11200	5940	8360	10700	9530
Antimony	0.0225	0.188	0.0908	0.0228	0.127	0.0812	0.0929	0.107	0.1
Arsenic	4.47	7.28	5.67	0.706	**7.71**	2.99	4.22	5.48	4.85
Barium	64.3	138	94.9	19	59.7	35.1	97.8	123	110
Beryllium	0.12	0.417	0.211	0.0905	0.262	0.151	0.0648	0.111	0.0879
Bismuth	0.0302	0.154	0.0856	0.03	0.253	0.114	0.116	0.156	0.136
Boron	1.14	6.33	3.09	1.07	6.19	3.27	1.54	3.23	2.38
Cadmium	0.0449	**22.3**	**2.94**	0.0653	0.253	0.148	0.157	0.158	0.158
Calcium	2670	5600	3930	1940	5000	3100	3630	4670	4150
Chromium	4.35	10.5	6.53	1.23	6.34	2.61	7.21	9.23	8.22
Cobalt	1.86	4.58	3.41	0.51	2.68	1.74	4.76	6.66	5.71
Copper	4.61	23.6	13.5	6.67	16.1	11.6	56.9	90.6	**73.8**
Iron	8290	15400	10900	1850	26400	10100	17000	24100	20600
Lead	2.09	**79.1**	13.2	1.29	7.76	3.36	5.75	6.01	5.88
Magnesium	1730	4080	2800	483	2400	1070	3860	4510	4190
Manganese	150	292	227	38.6	279	137	307	591	449
Mercury	0.00595	0.0637	0.0234	0.00595	0.0492	0.0258	0.0118	0.0191	0.0155
Molybdenum	0.225	5.02	2.56	0.228	8.47	3.58	2.23	2.93	2.58
Nickel	2.3	6.43	4.62	1.55	5.91	2.85	4.02	6.07	5.05
Potassium	486	1590	768	106	572	338	1150	1580	1370
Selenium	0.13	6.64	2.12	0.0725	12.5	3.39	0.145	0.63	0.388

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Table K3.18-19: Sediment Data Summary – Iliamna Lake, Transportation Corridor

Analyte[a] Unit: mg/kg	Iliamna Village			Pedro Bay			Pile Bay		
	Range of Detects		Mean[b,d]	Range of Detects		Mean[b,d]	Range of Detects		Mean[b,d]
	Min[b,c]	Max[b,c]		Min[b,c]	Max[b,c]		Min[b,c]	Max[b,c]	
Silver	0.0151	0.077	0.0428	0.015	0.127	0.0569	0.0154	0.0807	0.048
Thallium	0.00535	0.0773	0.0334	0.00455	0.0815	0.0367	0.0282	0.0606	0.0444
Tin	0.487	6.78	1.56	0.484	3.42	1.19	0.496	0.965	0.73
Vanadium	20.2	40.8	30.4	3.21	42.3	19.9	37.8	48.8	43.3
Zinc	23.2	88.2	42	12.6	43.7	27.4	45.2	58.3	51.8
Anions and Cations									
Ammonia (as N)	37.2	512	222	58.6	570	345	40.3	86.7	63.5
Chloride	7.32	97.6	47.3	2.37	18.5	11.9	1.53	3.11	2.32
Total Cyanide	0.016	0.4	0.144	0.014	0.43	0.128	0.0135	0.058	0.0358
Fluoride	0.643	13	3.29	0.76	53.7	12.4	0.98	3.99	2.49
Sodium	277	971	477	154	636	416	428	591	510
Sulfate	3.31	146	43	2.66	426	144	19.7	88.8	54.3
Miscellaneous									
Total Solids (%, Wet)	19.2	66.8	38.7	12.1	65.6	26.8	50.8	55.6	53.2
Total Organic Carbon (%)	0.621	10.8	4.72	0.684	13.9	6.28	0.945	1.08	1.01

Notes:

a: Data presented on dry weight basis unless otherwise noted.

b: Bold values indicate fields that exceed the most stringent sediment quality criteria.

c: Range of detects includes minimum and maximum measurements from multiple sample locations in the area (4 locations for Iliamna Village Area, 3 sample locations for Pedro Bay Area, and 1 sample location for Pile Bay)

d: Mean values for each area represent the average of mean values at each sample location within the respective area.

Source: HDR 2011a

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K4.18 WATER AND SEDIMENT QUALITY

This appendix contains additional technical information on the following topics related to mine site impacts to surface water, groundwater, and substrate/sediment quality described in Section 4.18:

- Water quality modeling
- Water treatment plant (WTP) methodologies

K4.18.1 Water Quality Modeling

This section provides a description and analysis of modelling conducted at the mine site to estimate the chemical content of water stored in onsite facilities and provide source information for preliminary design of WTPs.

K4.18.1.1 Operations

A water balance model for the operations period of the mine was developed by Knight Piésold (2018a) using GoldSim® software and is based on the conceptual 20-year life of mine footprint shown on Figure 4.16-1. The water balance model is comprised of three modules, the watershed, groundwater, and mine plan modules. The mine plan module is representative of the movement of water in the mine system and it uses inputs from the watershed and groundwater modules. The mine plan module estimates the amount of water to be managed at the mine site during the operations phase of the mine under a full range of historic climate conditions. Climate variability is incorporated in the model using a 76-year synthetic time series of monthly temperature and precipitation values to simulate the cyclical nature of the climate record. The model generated 76 unique sets of monthly water flow and storage results for each year. Three of these model runs were selected to represent dry, average, and wet climate conditions and illustrate the range of potential flows for the mine site under these varying conditions. Details regarding the water balance model inputs and assumptions are provided in Knight Piésold (2018a). Table K4.18-1 (Knight Piésold 2018a: Table 4.3) summarizes average predicted monthly and annual total release from the WTPs to downstream of the mine site for relatively dry, average, and relatively wet climate conditions. The annual average flows for dry, average, and wet periods range from 20 to 29 to 32 cfs, respectively.

A water quality model for the operations period was also developed in GoldSim® by Knight Piésold (2018a) using a mass balance approach to estimate constituent loading in and out of each of the mine facilities, including the water balance model developed in GoldSim®. The water quality model is used to predict the influent water quality to the water treatment plants and the water quality in the water management ponds (WMPs), under varying climate conditions. The water quality model is coupled with the water balance model to estimate constituent loads under completely mixed, steady-state conditions during operations at the mine site. The model was developed using a mass balance approach considering the inflow, outflow, and storage flow volumes and constituent concentrations in the WMPs to calculate constituent loads. Geochemical source term inputs for the water quality model were developed by SRK Consulting (Canada) Inc. (SRK) (2018a). Table K4.18-2 provides the predicted water quality from various geochemical sources at the mine site that were used as inputs to the water quality model.

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Table K4.18-1: Predicted Water Release Quantity from WTPs

Month	Relatively Dry Conditions (Realization #36)	Average Conditions (Realization #5)	Relatively Wet Conditions (Realization #10)
Jan	22	26	22
Feb	17	17	17
Mar	17	22	17
Apr	22	22	22
May	26	22	22
Jun	27	36	27
Jul	17	36	36
Aug	22	36	45
Sep	22	36	45
Oct	22	36	45
Nov	8	31	45
Dec	12	26	40
Annual Average	20	29	32

Notes:
a: units = cubic feet per second (cfs)
Source: Knight Piésold 2018a, Table 4.3

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Table K4.18-2: Predicted Water Quality from Mine Site Geochemical Sources[a] – Part 1

Parameters	Background				Other Rock				Open Pit				
	Direct Precipitation	Non-Contact Surface Water	Non-Contact Surface Water	Ground Water	Waste Rock	Waste Rock	Quarried Rock Fill (Dams)	Quarried Rock Fill (Dams)	Wall Runoff	Wall Runoff	Wall Runoff	In-Pit Stockpile	In-Pit Stockpile
		NFK (NK119A)	SFK SK100F	Pit Area	Tertiary	Tertiary	Non-Acidic	Non-Acidic	Pre-Tertiary - Non-Acidic	Pre-Tertiary - Acidic	Tertiary - Non-Acidic	Non-Acidic	Non-Acidic
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/t of new rock	mg/L	mg/t of new rock	mg/L	mg/L	mg/L	mg/L	mg/t of new rock
pH	**5.5**[b]	6.5	6.8	6.7	7.7	-	8.4	-	8.1	**3.5**	8.2	8.0	-
TDS	-	31.5	42.6	44.4	**2158.0**	-	**3600.3**	-	286.0	453.0	241.0	**4473.2**	-
Alkalinity	-	**14.6**	**18.0**	33.0	26.4	-	490.0	-	49.3	-	69.0	800.0	-
Acidity	-	2.5	3.8	7.5	5.8	-	-	-	7.1	305.6	0.5	24.9	-
Chloride	-	0.622	0.711	0.804	23.000	-	8.300	-	2.242	6.935	2.260	23.000	-
Fluoride	-	0.032	0.040	0.072	0.863	-	0.870	-	0.316	0.447	0.112	**1.800**	-
Sulfate	-	1.2	7.8	4.9	**1456.2**	-	**2350.1**	-	87.5	**276.8**	29.2	**2350.1**	-
Aluminum	-	0.0363	0.0544	0.0034	0.0487	-	**1.3000**	-	0.0011	**22.9945**	0.0015	**2.6000**	-
Antimony	-	0.0001	0.0001	0.0000	**0.2000**	-	**0.1500**	-	0.0022	0.0010	**0.0183**	**0.2000**	-
Arsenic	-	0.0002	0.0004	0.0004	**0.1898**	-	**0.1900**	-	**0.0196**	**0.0341**	**0.0430**	**0.4000**	-
Barium	-	0.0025	0.0049	0.0064	**6.1823**	-	0.1000	-	0.1391	0.0600	1.0025	0.3600	-
Berylium	-	0.00001	0.00001	0.00002	**0.00500**	-	**0.00500**	-	0.00002	**0.00852**	0.00005	**0.00500**	-
Bismuth	-	0.00013	0.00010	0.00002	0.10811	-	0.10000	-	0.00005	0.00005	0.00005	0.20000	-
Boron	-	0.00158	0.00153	0.00150	0.73000	-	0.50000	-	0.07779	0.15069	0.19222	0.73000	-
Cadmium	-	0.00001	0.00001	0.00002	**0.01097**	-	**0.00550**	-	**0.00202**	**0.02638**	**0.00023**	**0.22000**	-
Calcium	-	3.9	6.1	13.8	538.1	-	760.0	-	30.4	9.9	25.3	940.0	-
Chromium	-	0.0002	0.0003	0.0005	0.0200	-	0.0200	-	0.0008	0.0017	0.0011	0.0200	-
Cobalt	-	0.0001	0.0001	0.0001	0.0219	-	0.0490	-	0.0204	**0.2515**	0.0006	**0.8800**	-
Copper	-	0.0004	0.0021	0.0004	**0.0249**	-	**0.1600**	-	**0.0064**	**6.3730**	**0.0041**	**1.3000**	-
Iron	-	0.1500	0.5480	0.0200	0.0021	-	**1.7000**	-	0.0020	**38.5700**	0.0020	**16.0000**	-
Lead	-	0.0002	0.0003	0.0001	**0.0120**	-	**0.0500**	-	0.0001	**0.0081**	**0.0005**	**0.0620**	-
Magnesium	-	0.7340	1.4800	1.0700	48.8700	-	99.0000	-	10.0300	1.9050	2.5080	120.0000	-
Manganese	-	0.00899	0.0493	**0.441**	**1.492907**	-	**2.4**	-	**1.9484214**	**13.205**	**0.1408455**	**6.2**	-
Mercury	-	0.000001	0.000001	0.000001	**0.002170**	-	**0.000500**	-	0.000004	0.000011	0.000003	**0.006200**	-
Molybednum	-	0.000158	0.000509	0.000256	**0.445513**	-	**9.800000**	-	**0.051323**	0.008362	**0.150278**	**7.800000**	-
Nickel	-	0.000220	0.000354	0.000647	**0.109241**	-	**0.050000**	-	**0.013449**	**0.195004**	0.002342	**0.320000**	-
Potassium	-	0.206	0.373	0.342	50.000	3282.126	36.000	2597.446	4.692	0.000	4.700	-	2597.446
Selenium	-	0.000140	0.000413	0.001090	**0.217050**	-	**0.055000**	-	**0.015695**	**0.125842**	**0.016380**	**0.048000**	-
Silver	-	0.000005	0.000004	0.000006	**0.002210**	-	**0.010000**	-	0.000030	0.000092	0.000042	**0.010000**	-

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Table K4.18-2: Predicted Water Quality from Mine Site Geochemical Sources[a] – Part 1

Parameters	Background				Other Rock				Open Pit				
	Direct Precipitation	Non-Contact Surface Water	Non-Contact Surface Water	Ground Water	Waste Rock	Waste Rock	Quarried Rock Fill (Dams)	Quarried Rock Fill (Dams)	Wall Runoff	Wall Runoff	Wall Runoff	In-Pit Stockpile	In-Pit Stockpile
		NFK (NK119A)	SFK SK100F	Pit Area	Tertiary	Tertiary	Non-Acidic	Non-Acidic	Pre-Tertiary - Non-Acidic	Pre-Tertiary - Acidic	Tertiary - Non-Acidic	Non-Acidic	Non-Acidic
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/t of new rock	mg/L	mg/t of new rock	mg/L	mg/L	mg/L	mg/L	mg/t of new rock
Sodium	-	2.03	2.40	2.47	487.38	45271.20	110.00	3978.95	8.70	0.01	9.75	-	3978.95
Thallium	-	0.00001	0.00001	0.00001	0.00100	-	0.00049	-	0.00080	**0.00216**	0.00046	0.00100	-
Silicon	-	5.43000	4.02000	5.88000	32.64000	-	31.00000	-	-	-	-	47.00000	-
Tin	-	0.00006	0.00006	0.00010	0.02296	-	0.19000	-	0.00017	0.00016	0.00020	0.03000	-
Vanadium	-	0.00033	0.00035	0.00055	0.03000	-	0.03000	-	0.00081	0.00151	0.01000	0.03000	-
Zinc	-	0.00167	0.00317	0.00150	**0.24258**	-	**0.97000**	-	**0.36342**	**2.03400**	0.00780	**8.80000**	-
Nitrate_N	-	-	-	-	-	-	-	4672.5	-	-	-	-	389.4
Nitrate	-	-	-	-	-	-	-	20684.2	-	-	-	-	1723.7
Nitrite	-	-	-	-	-	-	-	413.7	-	-	-	-	34.5
Ammonia	-	-	-	-	-	-	-	467.2	-	-	-	-	38.9

Table K4.18-2: Predicted Water Quality from Mine Site Geochemical Sources[a] – Part 2

Parameters	Tailings						PAG Waste Rock
	Bulk Tailings Water	Fresh Ore Leaching + reagent	Pyritic tailings	Ore	Tailings Pond Adjustment	Pyritic Tailings Sand Wedge	17% of Pyritic TSF Area
	Supernatant		Runoff	Entrained moisture	Pond	Seepage	Total Load
	mg/L	mg/t of ore	mg/m2/week	mg/L	mg/L	mg/L	kg/year
pH	8.0	-	-	6.7	8.0	8.6	-
TDS	198.0	-	378.3	44.4	-	**4136.6**	1285207.1
Alkalinity	97.4	217086.5	216.3	33.0	-	770.0	23403.9
Acidity	-	-	-	7.5	-	7.5	27760.7
Chloride	17.000	2068.840	1.684	0.804	-	9.300	6042.718
Fluoride	0.480	-	0.547	0.072	-	0.900	1931.820
Sulfate	159.5	921809.6	66.6	4.9	2350.1	2350.1	795940.3
Aluminum	0.0109	478.2510	0.3845	0.0034	0.0006	**2.5000**	980.5286
Antimony	0.0025	2.3607	0.0209	0.0000	-	**0.2000**	76.2858
Arsenic	0.0020	3.3020	0.0961	0.0004	-	**0.2600**	66.5914
Barium	0.0226	41.5838	0.0427	0.0064	-	0.1500	374.7911
Berylium	0.00020	33.22308	0.00064	0.00002	-	**0.00500**	2.41709

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Table K4.18-2: Predicted Water Quality from Mine Site Geochemical Sources[a] – Part 2

Parameters	Tailings						PAG Waste Rock
	Bulk Tailings Water	Fresh Ore Leaching + reagent	Pyritic tailings	Ore	Tailings Pond Adjustment	Pyritic Tailings Sand Wedge	17% of Pyritic TSF Area
	Supernatant		Runoff	Entrained moisture	Pond	Seepage	Total Load
	mg/L	mg/t of ore	mg/m2/week	mg/L	mg/L	mg/L	kg/year
Bismuth	0.00050	3.06842	0.00160	0.00002	-	0.10000	6.04272
Boron	0.02200	175.52728	0.03202	0.00150	-	0.52000	209.65366
Cadmium	0.00006	13.57445	0.00017	0.00002	-	**0.01000**	7.16786
Calcium	66.2	153076.1	71.6	13.8	-	770.0	288138.4
Chromium	0.0005	3.0684	0.0016	0.0005	-	0.0200	6.1232
Cobalt	0.0006	31.4835	0.0003	0.0001	-	**0.0500**	55.0902
Copper	**0.0102**	29924.1742	**0.0174**	0.0004	**0.0100**	**0.3700**	1395.2035
Iron	0.0300	10692.5014	0.1011	0.0200	0.0020	**1.8000**	366.3925
Lead	0.0001	20.5394	0.0002	0.0001	-	**0.0500**	3.4251
Magnesium	15.6000	84592.4968	18.1849	1.0700	-	99.0000	92003.8556
Manganese	**0.56**	18431.342	0.213374524	**0.441**	**2.000**	**2.9**	5251.365439
Mercury	0.000010	0.101264	0.000036	0.000001	-	**0.000500**	0.135523
Molybednum	**0.038300**	7.454516	0.068144	0.000256	-	**12.000000**	138.326226
Nickel	0.002120	91.866767	0.001939	0.000647	-	**0.050000**	36.247710
Potassium	31.300	34793.196	21.037	0.342	-	36.000	19793.459
Selenium	**0.006000**	19.801217	0.003438	0.001090	-	**0.055000**	42.301751
Silver	0.000017	0.068625	0.000032	0.000006	-	**0.010000**	0.144415
Sodium	28.40	104093.88	6.89	2.47	-	130.00	30321.02
Thallium	0.00007	0.62473	0.00017	0.00001	-	0.00050	1.07323
Silicon	2.80000	3520.69974	-	5.88000	-	32.00000	-
Tin	0.00010	0.61368	0.00034	0.00010	-	0.20000	32.19700
Vanadium	0.00050	3.46735	0.01000	0.00055	-	0.03000	7.62389
Zinc	0.00290	1828.50054	0.00458	0.00150	-	**1.90000**	1267.43960
Nitrate_N	-	-	-	-	-	-	-
Nitrate	-	-	-	-	-	-	-
Nitrite	-	-	-	-	-	-	-
Ammonia	-	-	-	-	-	-	-

Notes:

a. 95th percentile geochemical source terms

b. b: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1)

Source: Knight Piesold 2018a, Table B1.1; SRK 2018a

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Table K4.18-3 shows the predicted water quality in mine site facility ponds during operations from the Knight Piesold (2018a) water quality model. Values in the table represent the maximum monthly predicted concentrations for the 50th percentile flow values and the 95th percentile source term concentrations for flows going to the WTPs from each facility for the final year of operations. Water quality feeding the WTPs is primarily controlled by the constituent concentrations from open pit WMP for WTP#1 and the main WMP for WTP#2. The water quality predictions for WTP#1 are dominated by loading from open pit dewatering. The maximum predicted concentrations in the open pit WMP occur during the summer months because of the in-pit stockpile loads from the open pit. The influent water quality to WTP #1 is expected to gradually worsen each year of mine activity as more pre-Tertiary age rock is exposed to oxygen and water. Thus, pit wall runoff in early years of mining is expected to be of better quality than at end of mine life (i.e., after 20 years). To be conservative, the water quality estimate for end of mine life was used in all simulations to represent all years of mining.

The main WMP manages surplus water from the mine site. The majority of the loading to the main WMP is primarily from the bulk and pyritic tailings storage facilities (TSFs). The maximum predicted concentrations in the main WMP are, however, less than in the bulk and pyritic TSFs because of the continuous removal of loads from the main WMP via reclaim water that is directed to the process plant and to WTP#2. The bulk tailings slurry water drives the loading in the bulk TSF supernatant pond. Similarly, the pyritic tailings slurry water drives the majority of loading in the pyritic TSF, with both sludge reject and reverse osmosis (RO) reject flows from the WTPs contributing to the loading. The flushing load from potentially acid generating (PAG) waste rock in the pyritic TSF provides loading to the pyritic TSF supernatant pond; however, the load from the PAG waste rock is not as great as that from the tailing slurry water. Water collected at the mine site that does not meet discharge water quality criteria would be treated in the WTPs prior to discharge to the environment. Treated water in excess of process requirements would be released to the environment in the North Fork Koktuli (NFK) and South Fork Koktuli (SFK) rivers and the Upper Talarik Creek (UTC) watersheds at flows protective of the environment to the extent possible given the capacities of the WTPs and need for process water use onsite. Impacts on flows in these watersheds are discussed in Section 4.16, Surface Water Hydrology, and Section 4.24, Fish Values.

K4.18.1.2 Closure and Post-Closure

The closure strategy for the mine site is to decommission and reclaim facilities that leave the mine site in a stable condition that complies with regulations and closure criteria and prevents unnecessary degradation of the land and water resources. To assess closure effectiveness, a water balance and water quality model for the closure and post-closure periods of the mine was developed by Knight Piésold (2018d) using GoldSim® software and is based on a four-phase closure plan as outlined below:

- Phase 1 – reclamation of quarries and bulk TSF, backfilling of open pit by closure year 15.
- Phase2 – bulk TSF and quarries reclaimed, backfilling of open pit complete, reclamation of pyritic TSF and main WMP, no water treatment in closure years 16 through approximately 20.
- Phase 3 – pyritic TSF and main WMP reclaimed, ongoing treatment of surplus water in open pit in closure years 20 through 50.
- Phase 4 – post-closure long-term conditions.

The closure and post-closure water balance model was developed similar to the operations model to estimate water flow volumes for the various facilities during the closure phases under

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varying historical climate conditions. Details regarding the closure and post-closure water balance and quality model inputs and assumptions are provided in Knight Piésold (2018d).

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Table K4.18-3: Predicted Water Quality in Mine Site Storage Ponds and WTP Inflows[a,b]

Parameters	Units	WTP#1 Inflows	WTP#2 Inflows	Open Pit Water Management Pond[c]	Bulk TSF[d]	Main Embankment Seepage Collection Pond	Pyritic TSF[d,e,f]	Main Water Management Pond
		Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly
pH[g]	-	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8
TDS[h]	mg/l	267	**1677**[i]	267	**2493**	**3940**	**2933**	**1677**
Alkalinity	mg/l	56	252	56	395	746	234	252
Acidity	mg/l	7.42	2.53	7.42	2.49	7.11	6.09	2.53
Chloride	mg/l	1.98	9.56	1.98	19.79	8.86	12.02	9.56
Fluoride	mg/l	0.21	0.35	0.21	0.49	0.86	0.65	0.35
Sulfate	mg/l	109	973	109	1415	2250	1873	973
Aluminum	mg/l	**0.0947**	**0.2514**	**0.0947**	0.0006	**2.4350**	0.0006	**0.2514**
Antimony	mg/l	**0.007**	**0.036**	**0.007**	**0.026**	**0.193**	**0.061**	0.036
Arsenic	mg/l	**0.020**	**0.047**	**0.020**	**0.035**	**0.252**	**0.073**	**0.047**
Barium	mg/l	0.070	0.058	0.070	0.080	0.145	0.127	0.058
Beryllium	mg/l	0.0002	**0.0197**	0.0002	**0.0455**	**0.0048**	**0.0250**	**0.0197**
Bismuth	mg/l	0.006	0.019	0.006	0.012	0.096	0.036	0.019
Boron	mg/l	0.05	0.18	0.05	0.26	0.50	0.25	0.18
Cadmium	mg/l	**0.0073**	**0.0099**	**0.0073**	**0.0186**	**0.0097**	**0.0206**	**0.0099**
Calcium	mg/l	45	228	45	275	737	399	228
Chromium	mg/l	0.001	0.005	0.001	0.005	0.019	0.006	0.005
Cobalt	mg/l	0.034	0.029	0.034	0.044	0.048	**0.074**	0.029
Copper	mg/l	**0.042**	**0.042**	**0.042**	**0.010**	**0.362**	**0.010**	**0.042**
Iron	mg/l	0.646	0.212	0.646	0.002	**1.707**	0.002	0.212
Lead	mg/l	**0.002**	**0.018**	**0.002**	**0.028**	**0.048**	**0.022**	**0.018**
Magnesium	mg/l	8.3	68.6	8.3	130.9	94.7	95.3	68.6

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Table K4.18-3: Predicted Water Quality in Mine Site Storage Ponds and WTP Inflows[a,b]

Parameters	Units	WTP#1 Inflows	WTP#2 Inflows	Open Pit Water Management Pond[c]	Bulk TSF[d]	Main Embankment Seepage Collection Pond	Pyritic TSF[d,e,f]	Main Water Management Pond
		Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly	Maximum Monthly
Manganese	mg/l	**1.08**	**1.30**	**1.08**	**2.00**	**2.80**	**2.00**	**1.30**
Mercury	mg/l	**0.00019**	**0.00015**	**0.00019**	**0.00015**	**0.00048**	**0.00041**	**0.00015**
Molybdenum	mg/l	**0.3**	**2.1**	**0.3**	**1.8**	**11.6**	**2.1**	**2.1**
Nickel	mg/l	**0.015**	**0.061**	**0.015**	0.127	**0.048**	**0.090**	**0.061**
Potassium	mg/l	16	45	16	79	17	125	45
Selenium	mg/l	0.008	**0.022**	0.008	**0.033**	**0.053**	**0.032**	**0.022**
Silver	mg/l	0.000	**0.002**	0.000	0.001	**0.010**	**0.002**	**0.002**
Sodium	mg/l	26	92	26	170	65	176	92
Thallium	mg/l	0.00036	0.00047	0.00036	0.00092	0.00048	0.00076	0.00047
Silicon	mg/l	5	9	5	8	21	18	9
Tin	mg/l	0.001	0.037	0.001	0.031	0.192	0.042	0.037
Vanadium	mg/l	0.001	0.009	0.001	0.005	0.029	0.032	0.009
Zinc	mg/l	**0.41**	**1.30**	**0.41**	**2.49**	**1.86**	**1.97**	**1.30**
Nitrate_N	mg/l	2.2	2.4	2.2	2.7	4.9	2.5	2.4
Nitrate (ion)	mg/l	10	9	10	9	**22**	8	9
Nitrite	mg/l	0.19	0.19	0.19	0.18	0.43	0.15	0.19
Ammonia	mg/l	0.2	0.4	0.2	0.4	0.5	1.3	0.4
Hardness as $CaCO_3$[j]	mg/l	146	852	146	1226	2230	1388	852
Flows	**cfs**	14	29	14	100	18	0	29

Notes:

a: End of mine life maximum monthly 50th Percentile results based on 76 realizations of model simulations.

b: Model input concentrations provided by SRK (dated 20 June 2018).

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c: Model assumes loading from in-pit stockpile in the open pit during summer months.

d: Tailings pond adjustment values were applied for Al, SO4, Fe, Cu and Mn in the bulk and pyritic TSFs.

e: Model assumes return of sludge and reject flows from WTP#1 and WTP#2 to the pyritic TSF via the pyritic tailings line. WTP effluent, sludge, and reject concentrations were provided by HDR (dated 4 January 2018).

f: Model assumes loading from PAG waste rock in the pyritic TSF as a flushing term provided by SRK (dated 20 June 2018).

g: pH was not modelled; pH values are based on the range of pH source terms provided by SRK (dated 20 June 2018).

h: TDS values were calculated by summing alkalinity, Cl, F, SO4, Ca, Mg, K, Na, and Si.

i: Bold values indicate exceedances of most stringent water quality parameters (Table K3.18-1).

j: Hardness values were calculated based on the equation, hardness (CaCO3) = calcium concentration (mg/l) x 2.497 + magnesium concentration (mg/L) x 4.118.

Source: Knight Piesold 2018a, Table B2.1; SRK 2018a

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The primary water sources during closure include the main WMP, the WTPs, and the open pit. The results of the closure and post-closure water balance model are summarized in Figure K4.18-1 through Figure K4.18-3. Figure K4.18-1 shows the estimated 10th, 50th, 90th, and 99th percentile open pit water surface elevations during closure. The approximate elevations of the PAG waste rock and pyritic tailings are also shown for reference. Figure K418-1 shows that it will take 19 to 21 years to fill the open pit to the maximum management (MM) level depending on climatic conditions. The MM level is set at 890 ft msl, 10 ft below the not to exceed (NTE) level of 900 ft (Piteau 2018), so that the open pit can store the probable maximum flood (PMF) without encroaching on the NTE level. The NTE level is set below the static groundwater level so that the open pit functions as a hydraulic sink maintaining groundwater flow towards the pit. The average annual water surplus from the open pit is about 3 cfs. Surplus water from the open pit will be pumped and treated to maintain the water surface elevation below the MM level throughout post-closure.

Figure K4.18-2 shows the estimated 10th, 50th, 90th, and 99th percentile pond volumes for the main WMP in early closure. The results depicted on this figure indicate that the main WMP has the capacity to manage the surplus water from the mine site during closure phases 1 and 2, when the bulk and pyritic TSF are being reclaimed. The water in the main WMP is estimated to operate below the maximum operating pond capacity at all times during closure.

Table K4.18-4 and Figure K4.18-3 show the estimated average annual flows and flow volumes from the WTPs during closure. With the exception of phase 2 when no water treatment would be required (pyritic TSF and main WMP are empty and pit lake still rising), these results indicate that the total amount of water treatment required is greatest during the early closure phases when the mine site footprint is larger, and lowest during closure phase 4 once all the mine facilities are reclaimed and the only water being treated is surplus pumped from the open pit to maintain water levels. The total flow releases from the WTPs is estimated to vary from a high of 58 cfs during closure phase 1 to a low of 3 cfs during closure phase 4. The total flow released downstream of the mine site is a combination of freshwater from the diversion channels, surface runoff from reclaimed facilities, and treated water from the water treatment plants. The WTP flows are estimated to vary with historical climatic patterns.

A closure and post-closure water quality model was developed in GoldSim by Knight-Piésold (2018d). It is coupled with the closure and post-closure water balance model to calculate constituent loads in the various mine facilities under completely mixed, steady-state conditions. Details regarding the predicted water quality model inputs and assumptions in closure and post-closure are provided in Knight-Piésold (2018d).

The maximum monthly predicted constituent concentrations within each facility for the four project closure and post-closure phases are provided in Tables K4.18-5 through K4.18-8. The bolded values in these tables indicate where predicted constituent concentrations exceed the discharge water quality criteria, and will therefore require treatment at the water treatment plants. Figure K4.18-4 shows the 50th percentile water quality predictions (based on 95th percentile source terms) for alkalinity, antimony, copper, cadmium, molybdenum, manganese, sulfate, and zinc for the bulk TSF supernatant pond at the end of closure phase 3 and the beginning of closure phase 4. The predicted water quality in closure Year 50 meets discharge water quality criteria for all parameters modeled except for alkalinity which has a minimum criterion of 20 mg/L. The water quality of the supernatant pond will be monitored and surplus water from precipitation events will only be discharged from the bulk TSF to the downstream NFK catchment once it meets discharge water quality criteria.

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Figure K4.18-1: Open Pit Surface Water Elevations

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Figure K4.18-2: Main WMP Volumes in Early Closure

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Figure K4.18-3: Average Annual Flow for WTPs in Closure

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Table K4.18-4: Total WTP Discharge in Closure

Closure Phase 1						Closure Phase 2					
Month	Total Release[a] from WTPs (cfs)					Month	Total Release from WTPs (cfs)				
	1st Percentile[b]	10th Percentile	50th Percentile	90th Percentile	99th Percentile		1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	16	23	46	53	55	Jan	0	0	0	0	0
Feb	15	21	45	51	55	Feb	0	0	0	0	0
Mar	15	21	37	49	55	Mar	0	0	0	0	0
Apr	15	22	40	51	56	Apr	0	0	0	0	0
May	33	51	55	57	57	May	0	0	0	0	0
Jun	24	54	57	57	58	Jun	0	0	0	0	0
Jul	17	51	56	57	57	Jul	0	0	0	0	0
Aug	32	52	56	57	57	Aug	0	0	0	0	0
Sep	34	53	56	57	58	Sep	0	0	0	0	0
Oct	15	49	55	56	57	Oct	0	0	0	0	0
Nov	15	44	53	56	57	Nov	0	0	0	0	0
Dec	15	25	47	55	56	Dec	0	0	0	0	0
Annual Average	21	39	50	55	57	Annual Average	0	0	0	0	0
Closure Phase 3						**Closure Phase 4**					
Month	Total Release from WTPs (cfs)					Month	Total Release from WTPs (cfs)				
	1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile		1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
Jan	19	19	23	29	48	Jan	3	4	7	10	19
Feb	20	20	20	29	48	Feb	3	4	7	9	19
Mar	19	19	19	29	48	Mar	4	4	7	9	18
Apr	21	22	26	29	48	Apr	5	7	11	16	19

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Table K4.18-4: Total WTP Discharge in Closure

Closure Phase 1						Closure Phase 2					
Month	Total Release[a] from WTPs (cfs)					Month	Total Release from WTPs (cfs)				
	1st Percentile[b]	10th Percentile	50th Percentile	90th Percentile	99th Percentile		1st Percentile	10th Percentile	50th Percentile	90th Percentile	99th Percentile
May	29	29	30	41	48	May	13	17	18	19	20
Jun	26	29	40	48	48	Jun	6	14	18	19	20
Jul	22	29	34	48	48	Jul	6	14	18	20	20
Aug	29	29	36	48	48	Aug	11	15	18	20	20
Sep	27	29	39	48	48	Sep	10	14	18	20	20
Oct	24	29	34	48	48	Oct	6	10	17	20	20
Nov	20	27	29	48	48	Nov	5	8	9	20	20
Dec	19	19	29	45	48	Dec	4	5	8	16	17
Annual Average	23	25	30	41	48	Annual Average	6	10	13	16	19

Notes:

a: Total release from WTP is the sum of the flows available for release from WTP #2 and WTP #3 during closure phases.

b. Percentiles represent predicted variations in closure water balance due to modeled climate variability.

Source: Knight Piesold 2018d, Table 5.1

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Table K4.18-5: Predicted Water Quality in Mine Site Ponds and WTP Inflows – Closure Phase 1

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #2 Inflows[a,b]	Pyritic TSF[a,b]	Main Water Management Pond[a,b]
pH (std units)	-	-	-	-	-	-
TDS	484	**2,472**	**2,706**	**669**	**2,708**	**669**
Alkalinity	81	453	145	121	216	121
Chloride	3.93	8.55	5.8	1.96	7.42	1.96
Fluoride	0.11	0.83	0.38	0.15	0.48	0.15
Sulfate	269	1,374	1,744	372	1,687	372
Aluminum	0.0006	**1.47**	0	**0.348**	0.0006	**0.348**
Antimony	**0.0079**	**0.1169**	**0.07**	**0.0292**	**0.0671**	**0.0292**
Arsenic	**0.01**	**0.152**	**0.109**	**0.0385**	**0.1145**	**0.0385**
Barium	0.016	0.088	0.106	0.025	0.108	0.025
Beryllium	**0.00862**	**0.00293**	**0.00684**	0.00171	**0.0083**	0.00171
Bismuth	0.0023	0.0585	0.061	0.0148	0.0598	0.0148
Boron	0.052	0.304	0.21	0.08	0.221	0.08
Cadmium	**0.00352**	**0.00585**	**0.042**	**0.00247**	**0.05362**	**0.00247**
Calcium	54	451	395	118	377	118
Chromium	0.001	0.0117	0.0055	0.003	0.006	0.003
Cobalt	0.0083	0.0292	**0.18**	0.0108	**0.2191**	0.0108
Copper	**0.0022**	**0.2163**	**0.01**	**0.0508**	**0.01**	**0.0508**
Iron	0.002	**1.655**	0	0.28	0.002	0.28
Lead	**0.0054**	**0.0293**	**0.0164**	**0.0077**	**0.0185**	**0.0077**
Magnesium	25	58	38	17	43	17
Manganese	**0.38**	**1.7**	**2**	**0.47**	**2**	**0.47**
Mercury	**0.000029**	**0.000293**	**0.00113**	**0.00009**	**0.001466**	0.00009
Molybdenum	**0.3175**	**7.013**	**2.1**	**1.7**	**2.287**	**1.7**
Nickel	**0.0242**	**0.0293**	**0.086**	0.0107	**0.0952**	0.0107
Potassium	15.2	21.1	133	8.2	127.6	8.2
Selenium	**0.0063**	**0.0322**	**0.0278**	**0.0086**	**0.027**	**0.0086**
Silver	0.000269	**0.005845**	**0.0023**	**0.001429**	**0.002711**	**0.001429**
Sodium	33	76	224	25	229	25
Thallium	0.00018	0.00029	0.00049	0.0001	0.00049	0.0001
Silicon	3	29	22	7	21	7
Tin	0.0069	0.1169	0.0247	0.0282	0.0246	0.0282
Vanadium	0.0012	0.0176	0.0432	0.0049	0.0404	0.0049

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Table K4.18-5: Predicted Water Quality in Mine Site Ponds and WTP Inflows – Closure Phase 1

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #2 Inflows[a,b]	Pyritic TSF[a,b]	Main Water Management Pond[a,b]
Zinc	**0.473**	**1.111**	**2**	**0.341**	**2.368**	**0.341**
Nitrate_N	0	0	0.9	0	1	0
Nitrate (Ion)	1	0	0.9	0	1	0
Nitrite	0.03	0	0.02	0	0.02	0
Ammonia	0.1	0	1.47	0	1.4	0
Hardness as CaCO3	239	1,365	1,141	363	1,117	363

Notes:
a: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
b: Maximum monthly values, 50th percentile
Source: Knight Piesold 2018d

Table K4.18-6: Predicted Water Quality in Mine Site Ponds and WTP Inflows – Closure Phase 2

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #2 Inflows[a,b]
pH (std units)	-	-	-	-
TDS	**2,518**	**3,610**	**1,347**	0
Alkalinity	327	665	153	0
Chloride	8.16	8.05	3.2	0
Fluoride	0.56	0.78	0.27	0
Sulfate	1,491	2,029	814	0
Aluminum	0.0006	2.16	0	0
Antimony	**0.0927**	**0.1727**	0.047	0
Arsenic	**0.1173**	**0.2245**	**0.063**	0
Barium	0.066	0.13	0.049	0
Beryllium	**0.01122**	**0.00432**	0.00269	0
Bismuth	0.0614	0.0863	0.031	0
Boron	0.315	0.449	0.15	0
Cadmium	**0.00634**	**0.00863**	**0.009**	0
Calcium	473	665	234	0
Chromium	0.0124	0.0173	0.0054	0
Cobalt	0.0332	0.0432	**0.05**	0
Copper	**0.01**	**0.3195**	**0.01**	0

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Table K4.18-6: Predicted Water Quality in Mine Site Ponds and WTP Inflows – Closure Phase 2

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #2 Inflows[a,b]
Iron	0.002	**1.559**	0	0
Lead	**0.0316**	**0.0432**	**0.0138**	0
Magnesium	75	85.5	29	0
Manganese	**1.6**	**2.5**	**1.3**	0
Mercury	**0.00031**	**0.000432**	**0.0003**	0
Molybdenum	**6.031**	**10.36**	**2.6**	0
Nickel	**0.0498**	**0.0432**	**0.03**	0
Potassium	33.4	31.1	35	0
Selenium	**0.0349**	**0.0475**	**0.0194**	0
Silver	**0.006144**	**0.008634**	**0.0025**	0
Sodium	89	112	66	0
Thallium	0.00043	0.00043	0.00024	0
Silicon	21	14	12	0
Tin	0.117	0.1727	0.0466	0
Vanadium	0.0186	0.0259	0.0148	0
Zinc	**0.969**	**1.641**	**0.6**	0
Nitrate_N	0	0	0.2	0
Nitrate (Ion)	1	0	0.2	0
Nitrite	0.03	0	0	0
Ammonia	0.1	0	0.31	0
Hardness as CaCO3	1,493	2,012	704	0

Notes:
a: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
b: Maximum monthly values, 50th percentile
Source: Knight Piesold 2018d

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Table K4.18-7: Predicted Water Quality in Mine Site Ponds and WTP Inflows - Closure Phase 3

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #3 Inflows[a,b]
pH (std Units)	-	-	-	-
TDS	204	**1,750**	**1030**	**1107**
Alkalinity	42	322	53	100
Chloride	1.97	3.95	1.5	1.6
Fluoride	0.06	0.38	0.13	0.15
Sulfate	102	978	685	700
Aluminum	0.0006	**1.045**	0	**0.12**
Antimony	0.003	**0.0832**	**0.028**	**0.036**
Arsenic	0.0034	**0.1082**	**0.036**	**0.047**
Barium	0.008	0.063	0.03	0.031
Beryllium	0.00326	0.00208	0.00126	0.00128
Bismuth	0.001	0.0416	0.021	0.024
Boron	0.021	0.217	0.07	0.09
Cadmium	**0.00134**	**0.00416**	**0.007**	**0.007**
Calcium	23	321	155	168
Chromium	0.0005	0.0084	0.0025	0.0033
Cobalt	0.0032	0.0208	0.03	0.03
Copper	**0.001**	**0.154**	**0.01**	**0.03**
Iron	0.002	0.768	0	0.1
Lead	**0.0022**	**0.0208**	**0.006**	**0.0083**
Magnesium	10	41.3	12	16
Manganese	**0.15**	**1.21**	**0.9**	**0.9**
Mercury	**0.000012**	**0.000208**	**0.00021**	**0.00021**
Molybdenum	**0.1218**	**4.994**	**1.1**	**1.8**
Nickel	0.0093	**0.0208**	**0.018**	**0.019**
Potassium	5.8	15	50	49
Selenium	0.0025	**0.0229**	**0.0104**	**0.012**
Silver	0.000107	**0.004162**	**0.001**	**0.0016**
Sodium	14	54	59	59
Thallium	0.00007	0.00021	0.00014	0.00014
Silicon	5	14	13	13
Tin	0.0026	0.0832	0.0188	0.0291
Vanadium	0.0007	0.0125	0.0175	0.0174

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Table K4.18-7: Predicted Water Quality in Mine Site Ponds and WTP Inflows - Closure Phase 3

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #3 Inflows[a,b]
Zinc	**0.18**	**0.791**	**0.4**	**0.4**
Nitrate_N	0	0	0.3	0.3
Nitrate (Ion)	1	0	0.1	0.1
Nitrite	0.01	0	0	0
Ammonia	0	0	0.57	0.55
Hardness as CaCO3	99	971	438	488

Notes:
a: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
b: Maximum monthly values, 50th percentile
Source: Knight Piesold 2018d

Table K4.18-8: Predicted Water Quality in Mine Site Ponds and WTP Inflows - Closure Phase 4

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #3 Inflows[a,b]
pH (std Units)	-	-	-	-
TDS	28	**4,036**	**853**	**1917**
Alkalinity	**14**	741	23	361
Chloride	0.61	8.95	1	3.6
Fluoride	0.03	0.87	0.08	0.34
Sulfate	1	2,260	586	1074
Aluminum	0.0006	**2.405**	0	0.85
Antimony	0.0001	**0.1923**	**0.02**	**0.075**
Arsenic	0.0001	**0.25**	**0.026**	**0.098**
Barium	0.002	0.144	0.024	0.059
beryllium	0.00001	**0.00481**	0.0007	0.0019
Bismuth	0.0001	0.0962	0.017	0.047
Boron	0.002	0.5	0.04	0.2
Cadmium	0.00001	**0.00962**	**0.006**	**0.007**
Calcium	4	741	120	301
Chromium	0.0002	0.0192	0.0015	0.0075
Cobalt	0.0001	0.0481	0.03	0.04
Copper	0.0004	**0.3558**	**0.01**	**0.12**

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Table K4.18-8: Predicted Water Quality in Mine Site Ponds and WTP Inflows - Closure Phase 4

Parameters (mg/L unless otherwise noted)	Bulk TSF[a,b]	Main Embankment Seepage Collection Pond[a,b]	Open Pit Lake[a,b]	WTP #3 Inflows[a,b]
Iron	0.002	**1.733**	0	0.6
Lead	0.0002	**0.0481**	**0.0033**	**0.0188**
Magnesium	1	95.2	7	37
Manganese	0.01	**2.79**	**0.8**	**1.4**
Mercury	0.000001	**0.000481**	**0.00018**	**0.00027**
Molybdenum	0.0002	**11.54**	**0.6**	**5.6**
Nickel	0.0002	**0.0481**	**0.015**	**0.025**
Potassium	0.2	34.6	51	47
Selenium	0.0001	**0.0529**	**0.0076**	**0.0208**
Silver	0.000005	**0.009616**	0.0005	**0.0047**
Sodium	2	125	53	74
Thallium	0.00001	0.00048	0.00011	0.00022
Silicon	5	31	12	18
Tin	0.0001	0.1923	0.0096	0.0751
Vanadium	0.0003	0.0289	0.0168	0.0203
Zinc	0.002	**1.827**	**0.3**	**0.7**
Nitrate_N	0	0	0.3	0.2
Nitrate (Ion)	0	0	0.035	0.029
Nitrite	0	0	0.00071	0.00059
Ammonia	0	0	0.6	0.5
Hardness as CaCO3	12	2,241	328	905

Notes:
a: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
b: Maximum monthly values, 50th percentile
Source: Knight Piesold 2018d

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Figure K4.18-4: Bulk TSF Pond Water Quality Predictions – Closure Phases 3 and 4

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K4.18.1.3 Pit Lake

Once mining ceases, partial dewatering of the open pit would be continued to maintain pit wall stability to allow some PAG waste rock to be moved from the pyritic TSF to the pit until the waste rock buttresses the lower walls of the pit. The pyritic tailings would then be re-slurried and pumped to the open pit for sub-aqueous disposal. The water level in the open pit will be maintained to allow controlled placement and management of the PAG waste rock while keeping a water cover over the pyritic tailings. Backhauling of the PAG waste rock would end approximately 14 years into closure and the pyritic tailings transfer would end about 15 years into closure. Dewatering of the open pit would cease at the end of closure phase 1 once the transfer of these materials is complete. Once dewatering ceases, groundwater behind the pit walls would begin to rise to create a pit lake. The open pit would then be allowed to fill with surface water runoff and groundwater, but would be kept at the designated maximum management level (890 ft msl) so that groundwater continues to flow into the open pit and it remains as a hydraulic sink. The maximum management level also allows sufficient storage for the PMF.

Surface runoff into the pit lake could cause metals to leach from the pit walls. In addition, contaminated groundwater would flow into the pit. As a result, water quality in the pit lake would be expected to be acidic, with elevated concentrations of total dissolved solids (TDS), sulfate, and some metals (Sb, As, Cd, Cu, Pb, Mn, Hg, Mo, Ni, Se, and Zn) released from the oxidation of sulfide minerals in the pit walls and the natural concentrations of metals found in the mineralized rock that exceed water quality standards. The predicted water quality in the pit lake after closure is provided in Table K4.18-5 through Table K4.18-8.

[Note: Additional information on pit lake modeling, lake stratification, and its effects on water quality will be added following completion of response to RFI 021c.]

K4.18.2 Water Treatment Methodologies

This section contains additional technical information on the water treatment methodologies and WTPs that would operate at the mine site during the operations and closure phases. A high-level review of current WTP design was conducted to assess the effectiveness of the planned water treatment approach at meeting water treatment goals. The results of that review are detailed in a memo prepared by AECOM and dated October 18, 2018 (AECOM 2018i), and summarized in the discussion below.

Water treatment during operations: Two WTPs are planned during operations: WTP#1 and WTP#2. WTP#1 would treat water from the open pit WMP and discharge treated water to the environment, and WTP#2 would treat water from the main WMP and discharge most to the environment, and a limited amount would be used as process water for the power plant and mill site.

Variable water treatment rates would be required to manage surplus water from the mine site under differing climate conditions, with higher treatment rates during extended wet periods and lower treatment rates during extended dry periods. The treatment rates for WTP#1 and WTP#2 would be dictated by the volumes of water stored in the open pit WMP and the main WMP, respectively (Knight Piésold 2018a).

Water treatment during closure: Two WTPs are planned for operation at various stages during closure: WTP#2, and WTP#3, which would be converted and re-designated from the open pit WMP (WTP#1). WTP#2 would continue to treat water from the main WMP through phase 1 of closure (years 0 to 15), at which point it would be decommissioned. WTP#3 would treat surplus water from the open pit while PAG waste rock and pyritic tailings are being

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transferred (phase 1), and while the surplus water from the bulk TSF supernatant pond and main seepage collection pond (SCP) are collected within the open pit between years 20 and 50 (phase 3). WTP#3 would also operate as necessary during phase 4 (year 50 and beyond) to maintain the water level in the open pit below the not-to-exceed level, and to manage any additional surplus water from the bulk TSF main SCP. No water treatment would be necessary during phase 2 (years 16 to 20) as no discharge to the environment is planned as the open pit fills (Knight Piésold 2018d).

Specific details of the operation and treatment process that would be employed by each WTP are discussed in the following sections.

The operation of the WTPs would utilize an automated control system using supervisory control and data acquisition (SCADA) to monitor and adjust treatment operations. The SCADA system would also provide information and alarms to the treatment plant operations staff. Specific details of the operational strategy and control system are not available at this time and would typically be completed in a later phase of project engineering.

K4.18.2.1 Main Water Treatment Plant

The main WTP (WTP#2) would operate during the production phase, and through phase 1 of closure, and would treat water from the main WMP which would receive water from the bulk and pyritic TSF ponds and the bulk TSF main embankment SCP (Knight Piésold 2018d, HDR 2018a). WTP#2 would have four treatment trains to meet the influent flow of 29 cfs and enable ongoing water treatment during mechanical interruption of any one train (HDR 2018a). Key treatment steps would occur in the following sequence (HDR 2018a):

1. Dissolved metals would be oxidized with air, ferric sulfate, and potassium permanganate, followed by co-precipitation with lime. Flocculators/clarifiers would be used to separate out co-precipitated solids. Co-precipitation of metals is a common treatment strategy in mining and is currently used in multiple locations. The process can experience upset if the chemical addition processes are not monitored and adjusted.
2. The clarified water would flow into a membrane feed tank, where sodium hydrogen sulfide or an organosulfide would be added to complete the precipitation process. Supplemental lime and sulfuric acid would be added as needed to maintain pH for optimal precipitation and membrane feed. Organosulfide is a process to precipitate trace metals and has been used in similar applications in other industries. The process can be disrupted due to competition if the upstream co-precipitation process is not properly maintained, leading to excessive metal ions that compete for the sulfide reactant.
3. Ultrafiltration membranes would be used to filter precipitated metals and protect downstream high-pressure membranes. Ultrafiltration is a barrier process for solids that has been used in similar applications at other mining and industrial locations. The process can be disrupted by fouling if the membrane system is not properly monitored and maintained, or if the upstream processes are upset in a manner that results in excessive solids in the influent.
4. High-pressure membranes (nanofiltration) would provide removal of metals, calcium, magnesium, and sulfate. Filtrate from the high-pressure membranes may require an alkalinity adjustment before discharge. Nanofiltration is a TDS removal process that has been used in similar applications at other mining and industrial locations. The process can be disrupted if the membrane system is not properly monitored and

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maintained, or if the upstream processes are upset in a manner that results in excessive TDS in the influent.

5. Reject from the high-pressure membranes would have a high concentration of sulfate and other divalent ions. To prevent overloading the mine water balance with sulfate, some sulfate must be removed from the reject before its disposal in the TSF. Sulfate would be removed as calcium sulfate process. Precipitated calcium sulfate solids would be disposed of in the pyritic TSF. Water quality analysis has indicated that the conditions in the pyritic TSF should prevent redissolution of the calcium sulfate solids. Lime softening is common method to reduce calcium and sulfate that has been used at other mining and industrial applications. The process can be upset by high levels of TDS.
6. Decant from the calcium sulfate precipitation process would contain high levels of TDS. It would be necessary to split the decant stream as follows:
   A. Approximately three-quarters of the decant stream would be returned to the beginning of the WTP for reprocessing. This approach is common in lime softening and allows for additional precipitation of calcium and sulfate, but it may also result in significant return of TDS that could negatively impact the process.
   B. The remainder of the decant stream will be concentrated with a reverse osmosis (RO) system. RO filtrate would be blended with nanofiltration permeate for discharge. Concentrated RO reject water would be sent to an evaporator for further concentration of the TDS. The liquid stream of the concentrated TDS will be transferred to the pyritic TSF. The evaporate is condensed and the condensate blended with treated water from the nanofiltration membranes (step 4) for discharge. This methodology is not regularly practiced due to the high cost of evaporation. Further, there may be concern that high TDS water return could increase the TDS of decant from the pyritic TSF.

K4.18.2.2 Open Pit Water Treatment Plant

The open pit WTP (WTP#1) would operate through production to treat water from the open pit WMP, which would receive water primarily from dewatering of the pit. WTP#1 would have two treatment trains to meet the influent flow of 14 cfs and enable ongoing water treatment during mechanical interruption of any one train (HDR 2018a). Water in the open pit WMP is expected to be significantly lower in TDS than the main WMP (Knight Piésold 2018d). Key treatment steps would occur in the following sequence:

1. Dissolved metals would be oxidized with potassium permanganate, followed by co-precipitation with ferric chloride. Sodium hydroxide and hydrochloric acid would be added as needed to maintain pH for optimal precipitation. Flocculators/clarifiers would be used to separate out the co-precipitated solids.
2. Clarified water would then be treated with sodium hydrogen sulfide, sodium hydroxide, and ferrous sulfate to further co-precipitate remaining metals under reducing conditions.
3. Water from the sulfide reaction tanks would be filtered to remove precipitated metals. The sulfide reaction will primarily impact dissolved metals and is not expected to significantly alter the other properties of the water such as pH or alkalinity. The filtered water is expected to be suitable for discharge.
4. Clarifier solids and filter backwash would be thickened and transferred to the TSF.

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5. Water from the sulfide reaction tanks would be filtered with ultrafiltration (UF) membranes to remove precipitated metals. Reject from the UF membranes would be thickened and transferred to the pyritic TSF.
6. A portion of the UF membrane filtered water would be treated by RO to remove selenium, and that treated stream will be recombined with the main effluent to achieve acceptable discharge limits.
7. Reject brine from the RO process, which would be high in selenium, would be further treated with a biologic reactor to separate selenium as a solid precipitate. Selenium solids would be separated in flocculators/clarifiers, thickened with other solids, and transferred to the pyritic TSF.

K4.18.2.3 Closure Water Treatment Plant

During closure, WTP#1 would be reconfigured and re-designated as WTP#3, with the open pit partially backfilled with materials that were temporarily stored in the pyritic TSF during operations (HDR 2018a). WTP#3 would treat surplus water from the open pit while PAG waste rock and pyritic tailings are being transferred during phase 1 of closure (closure years 0 through 15), and while the surplus water from the bulk TSF and main SCP are collected in the open pit to form the pit lake during phase 3 of closure (closure years 20 through 50). WTP#3 would also operate as necessary during phase 4 of closure (closure year 50 and beyond) to maintain the water level in the pit lake and to manage any additional contact water from the bulk TSF or main SCP (Knight Piésold 2018d). Current preliminary design information for WTP#3 does not identify changes in treatment processes.

K4.18.2.4 Water Quality of WTP Discharge

The predicted quality of discharge water from both WTPs in operations is provided in Table K4.18-9, and from the WTP in closure in Table K4.18-10. Based on a comparison of the data to most stringent discharge limits shown in Table K3.18-1, discharge water is currently expected to meet Alaska Department of Environmental Conservation (ADEC) criteria. However, based on the independent review conducted of the water treatment approach (AECOM 2018i), there is some concern that waste products high in selenium and salt placed in the pyritic TSF may, over time, lead to increased TDS concentrations in the main WMP, and thereby affect the inflow conditions to the main WTP (WTP#2). Such a change in condition of the inflow to the WTPs may warrant additional WTP design consideration, or development of adaptive management strategies to ensure that mine site WTPs are capable of and effective at meeting treatment goals over the duration of time that treatment will be required.

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Table K418-9: Predicted Water Quality of WTP Discharge in Operations

Parameter[a]	Main WTP (WTP#2)				WTP #2 Open Pit WTP (WTP#1)		
	Influent Wastewater	Treated Water Discharge	Waste Water to TSF		Influent Wastewater	Treated Water Discharge	Waste Stream to TSF
mg/L			Sludge	Brine			
Flow (gpm)	12791	12690	157	15	6284	6277	9
pH (std units)	7 to 8	7	8	8	7 to 8	7.6	7.5
TDS	**1677**[b]	232	**2856**	**218382**	267	439	438
TSS	**20**	0	**173600**	0	**30**	0	**70000**
Alkalinity	252	72	586	16767	56	60	54
Acidity	3	16	22	0	7.4	50	50
Hardness	853	53	49211	106415	147	147	147
Cl	9.6	49	174	**26832**	1.98	113	102
F	0.3	0.3	0.5	**35.5**	0.21	0.21	0.21
SO4	973	32	105589	93543	109	117	115
Al	**0.25**	0.001	**16.25**	**1.03**	**0.095**	0.015	**56**
Sb	**0.036**	0.001	**2.25**	**0.43**	**0.007**	0.003	**2.8**
As	**0.047**	0.0001	**3.061**	**0.063**	**0.02**	0.004	**11.3**
Ba	0.06	0.001	**3.18**	**5.28**	0.07	0.028	**25.3**
Be	**0.02**	0.0004	**1.248**	**0.091**	0.0002	0.0002	0.0002
B	0.18	0.03	**9.7**	**18**	0.05	0.05	0.05
Cd	**0.00992**	0.00001	**0.64697**	**0.00718**	**0.0073**	0.000005	**5.1**
Ca	228	18	13028	38179	45	45	45
Cr, Total	0.0046	0.00001	**0.3017**	0.0031	0.001	0.0001	**0.6**
Co	0.0292	0.0001	**1.89**	**0.09**	0.034	0.008	**18.2**
Cu	**0.042**	0.000007	**2.72**	**0.0024**	**0.042**	<0.000001	**29.6**
Fe	0.21	0.003	**12.87**	**8.89**	0.65	0.01	**279**
Pb	**0.02**	0.000001	**1.19**	**0.00075**	**0.002**	0.000001	**1.4**
Mg	69	2	4044	2665	8.3	8.3	8.3
Mn	**1.3**	0.0012	**84**	**3.48**	**1.08**	0.003	**2041**
Hg	**0.00015**	1E-08	**0.01**	0.00001	**0.00019**	<0.000001	**0.13**
Mo	**2.1**	0.0012	**139**	**1.05**	**0.3**	0.009	**205**
Ni	**0.0613**	0.0003	**3.93**	**0.41**	**0.015**	0.00005	**10.5**
Se	**0.0217**	0.003	**1.12**	**1.04**	**0.008**	0.004	**2.34**
Ag	**0.00185**	1E-07	**0.12**	0.00008	0.0003	<0.00001	**0.2**
Tl	0.0005	0.00001	**0.0286**	**0.0158**	0.0004	<0.00001	**0.25**
V	0.0085	0.000024	**0.55**	0.0142	0.0014	0.0008	**0.43**
Zn	**1.3**	0.000034	**85**	**0.1**	**0.41**	0.00002	**289**

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Table K418-9: Predicted Water Quality of WTP Discharge in Operations

Parameter[a]	Main WTP (WTP#2)				WTP #2 Open Pit WTP (WTP#1)		
	Influent Wastewater	Treated Water Discharge	Waste Water to TSF		Influent Wastewater	Treated Water Discharge	Waste Stream to TSF
mg/L			Sludge	Brine			
NO3-N	2.42	2.99	2.01	**109**	--	--	--
NO2-N	0.19	0.17	0.17	0	--	--	--
NO3+NO2	2.61	3.16	2.18	**109**	2.39	2.15	2.4
NH3-N	0.4	0.39	0.43	**36.8**	0.2	0.18	0.2

Notes:
a: Units are mg/L unless otherwise noted.
b: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
Source: HDR 2018a

Table K4.18-10: Predicted Water Quality of WTP Discharge in Closure

Parameters (Units: mg/L unless otherwise noted)	WTP Sludge	WTP Reject	WTP Outflows
pH (pH units)	-	-	7
TDS	**15452[a]**	**260000**	467
Alkalinity	0	0	21
Acidity	0	0	0
Chloride	4	0	4.8
Fluoride	0.31	**13.7**	0.4
Sulfate	11520	181744	151
Aluminum	**3**	**5.55**	0.0083
Antimony	**0.572**	**1.332**	0.0034
Arsenic	**0.728**	**1.665**	0.0042
Barium	0.147	**6.464**	0.058
Beryllium	0.002	**0.222**	0.0012
Bismuth	0.54	0	0.000007
Boron	**0.81**	**7.52**	**5.3**
Cadmium	**0.19**	**0.027754**	**0.000049**
Calcium	3232	11698.1	45.7
Chromium	0.029	**0.13**	0.0002
Cobalt	**0.766**	**1.64**	0.0038
Copper	**1.209**	0	1.2E-13
Iron	**557**	0	0.000045
Lead	**0.084**	0	0.000024
Magnesium	113	1070.2	5

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Table K4.18-10: Predicted Water Quality of WTP Discharge in Closure

Parameters (Units: mg/L unless otherwise noted)	WTP Sludge	WTP Reject	WTP Outflows
Manganese	**13.4**	**1.010263**	0.0016
Mercury	**0.0059**	**2.89E-14**	**0.000061**
Molybdenum	**15.7**	**0.55509**	0.005
Nickel	**0.311**	**0.088814**	0.0001
Potassium	71.6	38867	29.4
Selenium	**0.097**	**0.55509**	**0.005**
Silver	**0.015**	0.000000118	1.9E-10
Sodium	440	30235	183
Thallium	**0.0013**	**0.0029**	0.0000045
Silicon	56	4970	22.1
Tin	0.26	0.0082	0.000015
Vanadium	**0.48**	**2.0649**	0.0048
Zinc	**8.2**	**0.1998**	0.00032
Nitrate_N	9.34	3.28	7.3
Nitrate_N	0.61	1.59	1
Nitrite	0.0122	0.0318	0.01
Ammonia	**4.7**	**377.22**	1.1

Notes:
a: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).
Source: Knight Piesold 2018d

K4.18.3 Dust Deposition Methodologies

This section describes the methodology used to calculate potential increases in surface water from both direct deposition to waterbodies and runoff from dust in soil. The methodology for calculating incremental increases in the top inch of soil from dust deposition is provided in Appendix K4.14, Soils.

Potential increases of metal concentration in soil at the mine site were estimated using AERMOD modeling data for airborne metals concentrations (hazardous air pollutants [HAPs]) and dust deposition provided by Pebble Limited Partnership (PLP) (PLP 2018-RFI 009). The Environmental Protection Agency (EPA) defines ambient air as the portion of the atmosphere, external to buildings, to which the general public has access (40 CFR 50.1 (e)). For this reason, airborne metal concentration was modeled along the mine site's ambient air boundary to find the maximum cumulative concentration of metals bordering the ambient environment. Dust deposition was modeled by extrapolating from the upper-bound airborne concentration to calculate deposition values (PLP 2018-RFI 009). The incremental increase metals concentration in mine site soil over the 20 year life of the mine was calculated using the following:

$$Cs = 100 t_D * \left(\frac{D}{Z_S * B_D}\right);$$

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(Equation K4.14-1 [EPA 2005])

where Cs is the average soil concentration of the constituent of potential concern (COPC) over the exposure duration (mg COPC/kg soil), D is the yearly dry deposition rate, tD is the time period over which deposition occurs (years), Zs is the soil mixing zone depth (cm), BD is the soil bulk density (g/cm3), and 100 is a unit conversion factor. By adding this to baseline soil concentrations, the predicted constituent soil concentration was calculated after the 20-year life of the mine due to operational dust fall.

K4.18.3.1 Sediment/Substrate

Baseline sediment quality data are presented in Appendix K3.18. Dust deposition impacts to sediment/substrate quality at the mine site were calculated following the same approach as for soils, outlined in Appendix K4.14, Soils. Baseline dry weight sediment quality data for the mine site (Appendix K3.18) was used for this analysis, as well as the same default parameters for sediment bulk density and mixing zone. Table K4.18-11 provides the results of dust deposition impacts to sediment quality, including the percent increase in metals concentration and total estimated concentration of metals in sediment after the 20-year life of mining operations.

Air deposition represents the primary source of site-related contamination to waterbodies, with metals partitioning to both sediment and surface water. The equation used below conservatively assumes all of the metals from air deposition partition to sediment. Although this modeling does not account for overland runoff, metals' contributions from this pathway to nearby waterbodies are expected to be minor, as most of the site is covered with vegetation (not paved or bare soil), minimizing the potential for overland transport. Furthermore, baseline metals concentrations in soil and sediment are similar; therefore, any soil particles washing off into the waterbody would not likely introduce higher metals concentrations than are already present in the waterbody (i.e., mixing of similar concentrations would result in similar concentrations).

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Table K4.18-11: Predicted Change in Sediment Quality from Dust Deposition

Analyte	Baseline Concentration[a]	Deposition from Dust			Sediment % Increase	Soil/Sediment Criteria[d]		
	Mean[b] (mg/kg)	Yearly Deposition Rate (g/m^2-year)	Incremental Increase over 20 Years[c] (mg/kg)	Baseline + 20 Years Dust Deposition (mg/kg)		ADEC Soil Human Health (mg/kg)	TEL (mg/kg)	PEL (mg/kg)
Antimony	0.23	0.0000113	0.0075	0.24	3.17%	33	--	--
Arsenic	**14.2**[e]	0.0000884	0.059	**14.3**	0.41%	7.2 (inorganic)	5.90	17.0
Beryllium	0.35	0.0000032	0.0021	0.35	0.61%	170	--	--
Cadmium	0.26	0.0000026	0.0017	0.26	0.66%	76 (diet)	0.596	3.53
Chromium	15.4	0.00011	0.073	15.5	0.47%	1.0 x 10^5 (CrIII)	37.3	90
Cobalt	7.86	0.0000293	0.020	7.88	0.25%	--	--	--
Lead	6.9	0.0000307	0.020	6.92	0.30%	400	35	91.3
Manganese	623	0.00104	0.69	624	0.11%	--	--	--
Mercury	0.04	1.92E-07	0.00013	0.040	0.32%	3.1 (elemental)	0.174	0.486
Nickel	8.95	0.0000264	0.018	8.97	0.20%	1,700 (soluble salts)	18	36
Selenium	1.15	0.0000113	0.008	1.16	0.65%	410	--	--

Notes:

a: Source: SLR 2011a.

b: All sediment data is presented on a dry weight basis.

c: Since sediment data presented in dry weight, the same soil equation and default parameters were used for sediment (i.e., bulk density & mixing zone) (EPA 2005).

d: Source: Buchman 2008; ADEC 2017

e: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).

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K4.18.3.2 Surface Water

Table K418-12 provides the results of the estimated increase in metals concentrations in surface water from dust deposition at the mine site. The 20-year total and dissolved concentrations due to dust deposition were calculated as follows:

$$Total\ SW_{20yr} = \frac{SD_{20yr}}{R_{total}};\ Dissolved\ SW_{20yr} = \frac{SD_{20yr}}{R_{dissolved}}$$

(Equation K4.18-1)

where SW_{20yr} is the surface water concentration (total and dissolved respectively) after 20 years of operations, SD_{20yr} is the sediment concentration after 20 years of operations, and R is a site-specific relationship representing the ratio of sediment to surface water. R is defined as follows:

$$R_{total} = \frac{SD_{BL}}{SW_{BL(total)}};\ R_{dissolved} = \frac{SD_{BL}}{SW_{BL(dissolved)}}$$

(Equation K4.18-2)

where SD_{BL} is the baseline sediment concentration and SW_{BL} is the baseline surface water concentration. This approach allows the estimation of impacts to surface water quality for the length of mining operations. This methodology was applied to mine site related surface water sources including the NFK, SFK, UTC, and Frying Pan Lake. Mean values of sediment and surface water metals concentrations were used for this analysis. This approach was developed as a semi-quantitative approach to be analogous to the EPA surface water pathway approach using chemical-specific soil-water partition coefficients (K_d) (e.g., Allison and Allison 2005).

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Table K4.18-12: Predicted Change in Surface Water Quality from Dust Deposition

Location	Analyte	Baseline Concentration			20-Yr Sediment Concentration[c] (mg/kg)	20-Yr Surface Water Concentration[d]			ADEC Most Stringent Water Quality[e] (mg/L)
		Sediment Mean[a] (mg/kg)	Surface Water-Total Mean[b] (mg/L)	Surface Water-Dissolved Mean[b] (mg/L)		Total (mg/L)	Dissolved (mg/L)	% Increase (Total)	
NFK	Antimony	0.23	--	--	0.24	--	--	--	0.006
	Arsenic	**14.2**[f]	0.00034	0.00031	**14.3**	0.00034	0.00031	0.41%	0.01
	Beryllium	0.35	--	--	0.35	--	--	--	0.004
	Cadmium	0.26	0.000020	0.000020	0.26	0.000020	0.000020	0.66%	0.00008
	Chromium	15.4	0.00029	0.00028	15.5	0.00029	0.00028	0.47%	0.1 (total)
	Cobalt	7.86	--	--	7.88	--	--	--	0.05
	Lead	6.9	0.00012	0.000070	6.92	0.00012	0.000070	0.30%	0.00039
	Manganese	623	0.013	0.0082	624	0.013	0.0082	0.11%	0.05
	Mercury	0.04	--	--	0.040	--	--	--	0.000012
	Nickel	8.95	0.00025	0.00033	8.97	0.00025	0.00033	0.20%	0.01287
	Selenium	1.15	0.00027	0.00028	1.16	0.00027	0.00028	0.65%	0.005
SFK	Antimony	0.23	--	--	0.24	--	--		0.006
	Arsenic	**14.2**	0.00033	0.00031	**14.3**	0.00033	0.00031	0.41%	0.01
	Beryllium	0.35	--	--	0.35	--	--		0.004
	Cadmium	0.26	0.000019	0.000019	0.26	0.000019	0.000019	0.66%	0.00008
	Chromium	15.4	0.00027	0.00025	15.5	0.00027	0.00025	0.47%	0.1 (total)
	Cobalt	7.86	--	--	7.88	--	--		0.05
	Lead	6.9	0.00011	0.000072	6.92	0.00011	0.000072	0.30%	0.00039
	Manganese	623	0.024	0.019	624	0.024	0.0189	0.11%	0.05
	Mercury	0.04	--	--	0.040	--	--		0.000012
	Nickel	8.95	0.00033	0.00042	8.97	0.00033	0.00042	0.20%	0.01287
	Selenium	1.15	0.00029	0.00029	1.16	0.00029	0.00030	0.65%	0.005
UTC	Antimony	0.23	--	--	0.24	--	--		0.006
	Arsenic	**14.2**	0.00095	0.00082	**14.3**	0.00096	0.00082	0.41%	0.01

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Table K4.18-12: Predicted Change in Surface Water Quality from Dust Deposition

Location	Analyte	Baseline Concentration			20-Yr Sediment Concentration[c] (mg/kg)	20-Yr Surface Water Concentration[d]			ADEC Most Stringent Water Quality[e] (mg/L)
		Sediment Mean[a] (mg/kg)	Surface Water-Total Mean[b] (mg/L)	Surface Water-Dissolved Mean[b] (mg/L)		Total (mg/L)	Dissolved (mg/L)	% Increase (Total)	
	Beryllium	0.35	--	--	0.35	--	--		0.004
	Cadmium	0.26	0.000017	0.000017	0.26	0.000017	0.000017	0.66%	0.00008
	Chromium	15.4	0.00036	0.00031	15.5	0.00036	0.00031	0.47%	0.1 (total)
	Cobalt	7.86	--	--	7.88	--	--		0.05
	Lead	6.9	0.000089	0.000057	6.92	0.00009	0.000058	0.30%	0.00039
	Manganese	623	0.026	0.020	624	0.026	0.0199	0.11%	0.05
	Mercury	0.04	--	--	0.040	--	--		0.000012
	Nickel	8.95	0.00061	0.00068	8.97	0.00061	0.00068	0.20%	0.01287
	Selenium	1.15	0.00030	0.00030	1.16	0.00030	0.00030	0.65%	0.005
Frying Pan Lake	Antimony	0.23	--	--	0.24	--	--		0.006
	Arsenic	**14.2**	0.00048	0.00036	**14.3**	0.00048	0.00036	0.41%	0.01
	Beryllium	0.35	--	--	0.35	--	--		0.004
	Cadmium	0.26	0.000018	0.000018	0.26	0.000018	0.000018	0.66%	0.00008
	Chromium	15.4	--	--	15.5	--	--	--	0.1 (total)
	Cobalt	7.86	--	--	7.88	--	--		0.05
	Lead	6.9	0.00011	0.00016	6.92	0.00011	0.000165	0.30%	0.00039
	Manganese	623	0.035	0.017	624	0.036	0.0171	0.11%	0.05
	Mercury	0.04	--	--	0.040	--	--		0.000012
	Nickel	8.95	0.00022	0.00036	8.97	0.00022	0.00037	0.20%	0.01287
	Selenium	1.15	--	--	1.16	--	--	--	0.005

Notes:

a: Sediment data (in dry weight) obtained from Table K3.18-18.

b: Surface water data from Tables K3.18-6 through K3.18-9.

c: 20-yr sediment concentration = baseline + incremental increase over 20 years (Table K4.18-11).

d: 20-yr surface water concentration = 20-yr sediment concentration / site-specific baseline sediment-baseline surface water relationship factor.

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e: Surface water quality criteria from Table K3.18-1; most stringent criteria (e.g., of human health, aquatic life, drinking water, etc) for total metals, unless specified as dissolved.
f: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).

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K4.18.3.3 Groundwater

Table K4.18-13 displays baseline and predicted soil concentrations of HAPs metals due to dust compared to ADEC migration to groundwater levels. The ADEC levels represent soil concentrations at which there is potential risk for substances to leach to groundwater and potentially result in a completed human health exposure pathway (ADEC 2017). This approach was used to examine potential impacts to groundwater from dust deposition.

Table K4.18-13: Predicted Change in Groundwater Quality from Dust Deposition

Analyte	Baseline[a]	Soil Concentration Post-Dust Deposition			Comparative Action Levels[d]
	Soil Concentration Mean (mg/kg)	Incremental Increase over 20 Years (mg/kg)[b,c]	Baseline + 20 Years Dust Deposition	% Increase after 20 years	Migration to Groundwater (mg/kg)
Antimony	0.24	0.00753	0.248	3.04%	4.6
Arsenic	**10.2**[e]	0.0589	**10.26**	0.57%	0.2
Beryllium	0.41	0.00213	0.412	0.52%	260
Cadmium	0.24	0.00173	0.242	0.72%	9.1
Chromium	17.7	0.0733	17.8	0.41%	1.0 x 10^5 (Cr^3)
Cobalt	6.55	0.0195	6.57	0.30%	N/A
Lead	8.74	0.0205	8.76	0.23%	N/A
Manganese	388	0.693	389	0.18%	N/A
Mercury	0.12	0.000128	0.120	0.11%	0.36
Nickel	9.16	0.0176	9.18	0.19%	340
Selenium	2.76	0.00753	2.77	0.27%	6.9

Notes:

a: Source: SLR et al. 2011b

b: Based on PLP 2018-RFI 009 total HAPs concentration in dust and EPA 2005

c: Calculation assumes time period of deposition be the operational life of the mine (20 years), a soil mixing zone depth of 2 cm, and soil bulk density of 1.5 g/cm3 (EPA 2005)

d: ADEC 2017

e: Bold values indicate exceedances of the most stringent water quality criteria (Table K3.18-1).

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3.17 HYDROGEOLOGY

This section addresses hydrogeology – the study of distribution and movement of groundwater in soil, sediment, and rock beneath the ground surface. Groundwater is water that is held in the openings (pore space) of soil and sediment and in openings (faults, joints, fissures) in bedrock. Groundwater recharge (input) may occur through precipitation migrating to the groundwater (e.g., snowmelt, rainfall). In addition, surface water features (e.g., streams, ponds) may "leak" water into the ground and then to the groundwater. Groundwater discharge (output) is generally to surface water features (e.g., streams, ponds, seeps). Whether surface water features contribute to groundwater (losing stream) or receive groundwater flow (gaining stream) depends on factors such as precipitation, groundwater and surface water levels, the ability of the subsurface material to transmit water (permeability), and may vary seasonally as water levels fluctuate with seasonal precipitation, or vary because of other influences such as pumping groundwater from nearby wells.

It is important to characterize the existing hydrogeology and define how the local groundwater flow system interacts with the regional (deeper) groundwater flow system, as well as characterize the nature and degree of interactions between groundwater and surface water to inform the understanding and characterization of aquatic, fish resource, and wetlands habitat.

Hydrostratigraphic units, groundwater flow systems, and aquifer properties are discussed in this section for the areas that could be most affected by the project. Section 3.16, Surface Water Hydrology addresses water use–both surface water and groundwater use to avoid redundancy. The mine site baseline and closure/post-closure groundwater models are also addressed in this section. Appendix K3.17 provides additional technical information to support or explain in greater detail the hydrogeological characterization programs (i.e., baseline studies), the methods of technical review, and conclusions presented in the body of the Environmental Impact Statement (EIS). Appendix K3.17 is frequently referenced where applicable. In addition, other sections in the EIS that support development of the hydrogeology discussion are cross-referenced to avoid redundancy.

3.17.1 Mine Site

This section describes existing hydrogeologic conditions in the mine site area (Figure 3.17-1) that are anticipated to be the most affected by project activities. For example, dewatering associated with the open pit would create a zone of influence around the area of the open pit where groundwater levels and groundwater quantity, groundwater/surface water interactions, and surface water flows would be affected. Other influences on groundwater and surface water levels and flow may include: groundwater seepage, and flow pathways away from the tailings storage facility (TSF) and water management ponds.

3.17.1.1 Hydrogeological Characterization Programs

Over the course of several field programs between 2004 and 2012 Schlumberger (2011 and 2015) collected hydrogeologic data (as well as geologic and groundwater quality data) on the mine site using various methods including: geologic mapping and characterization (Section 3.13, Geology), drilling and borehole logging, well and piezometer installation, pumping tests, permeability tests, streamflow measurements at gaging stations (See also Section 3.16, Surface Water Hydrology), monitoring of meteoric inputs (e.g., rainfall, snowfall), and routine measurement of groundwater levels.

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Figure 3.17-1: Mine Site Hydrogeology Study Area

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These studies provide baseline data regarding hydrogeologic conditions at the mine site that form the basis of this EIS. Appendix K3.17 summarizes the data collection programs and methods. Details of these programs and data summaries are provided in Schlumberger (2011, 2015).

Figure 3.17-2 depicts locations of observation (i.e., monitoring) wells and piezometers, Figure 3.17-2 also depicts known groundwater seeps. Seeps occur as groundwater discharge to the surface where natural topography intersects the water table (groundwater surface). A seep can also occur if an excavated slope were to intersect the water table (e.g., at a road cut).

The objective of the previous studies was to determine key aspects of the local and regional groundwater flow systems including:

- Aquifer properties of the overburden and bedrock.
- Groundwater levels and gradients.
- Groundwater flow directions and rates.
- Interaction of local groundwater flow systems and regional flow system.
- Interaction and seasonality of groundwater and surface water systems.

The results of these characterization programs form the basis for a baseline water balance model (Schlumberger 2011, Appendix 8.1I), a baseline groundwater flow model (Schlumberger 2011, Appendix 8.1J), a groundwater model at the end of mining and post-closure (Piteau Associates 2018), and water balance and quality models for operations, closure, and post-closure (Knight Piésold 2018a, 2018b). The hydrogeologic characterization data and model results are used to inform water management planning, processes, and facility design for all phases of the project and provide the basis for this EIS.

3.17.1.2 Hydrostratigraphic Units

Topography is characterized by hills separated by wide valleys with elevations ranging to 2,500 feet amsl in the mine site to 46 feet amsl at Iliamna Lake. Weathered (highly fractured) bedrock is exposed at higher elevations (uplands), and below about 1,400 feet amsl, the valleys are covered with overburden, generally composed of glacial deposits, with some areas overlain by alluvial deposits. Composition of the overburden material varies both laterally and with depth, typical of areas where material has been transported and deposited by both ice and water, with interbedding and gradations between types of material (see Section 3.13, Geology). Figure 3.17-3 shows a schematic representation of the site-wide groundwater flow system and hydrostratigraphic units.

For the overburden, the grain size and size distribution (sorting or grading) of the sand and gravel particles are key characteristics used to define a hydrostratigraphic unit, or aquifer. For bedrock in the project area, aquifer characteristics are controlled by weathering (a high degree of fracturing from repeated freeze/thaw cycles in the upper bedrock), and in deeper bedrock by fault zones. The weathered bedrock is more permeable than the deeper more competent bedrock. The distribution and characteristics of the overburden and bedrock aquifers in the areas that would be most affected by the project are summarized in Table 3.17-1 by South Fork Koktuli (SFK), North Fork Koktuli (NFK), and Upper Talarik Creek (UTC) watersheds.

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Figure 3.17-2: Monitoring Well, Piezometer, and Seep Locations

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Figure 3.17-3: Schematic Representation of Site-Wide Groundwater System

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Geologic cross-sections (based on data obtained from drill holes) were developed to illustrate the subsurface distribution of hydrostratigraphic units in overburden and bedrock at the mine site (Schlumberger 2015: Appendix 8.1B). The cross-sections also show the model layers incorporated into the numerical groundwater flow model. Locations of four representative hydrogeologic cross-sections are shown on Figure 3.17-4. Hydrogeologic cross-sections are provided as Figure 3.17-5 through Figure 3.17-8 as follows:

- Figure 3.17-5: Cross-section E-10 – southwest-northeast section across the area between the Pebble deposit area and Frying Pan Lake.
- Figure 3.17-6: Cross-section L-1 – an approximately 10-mile section from the south side of the Pebble deposit area, along the SFK River through Frying Pan Lake, and across the drainage divide to the headwaters of Tributary UT1.190.
- Figure 3.17-7: Cross-section S-1 – north-south cross-section across the SFK River at the western end of the study area.
- Figure 3.17-8: Cross-section M1 – northwest-southeast cross-section across the NFK River, across the TSF main embankment pond and seepage collection pond to the east end of the TSF main embankment.

The cross-sections illustrate that the surficial geology (overburden) varies both laterally and with depth, which is consistent with regional geologic mapping and borehole logging. Shallow groundwater flow patterns in the overburden at seasonal low levels are illustrated in Figure 3.17-9.

The following narrative describes the hydrogeologic characteristics of areas that would be most affected by the project.

3.17.1.3 Hydrogeologic Characterization of the SFK and NFK River and UTC Drainages

Hydrogeology Overview

The hydrogeology of the mine site is largely comprised of adjacent uplands underlain by permeable weathered and fractured bedrock, talus, rubble, and solifluction deposits. The weathered and fractured bedrock, which is up to 50 feet thick, provides a pathway for elevated rates of groundwater recharge beneath these bedrock ridges. The upland weathered bedrock areas have limited groundwater storage capacity, which results in flashy streamflows and low groundwater baseflows. Below the weathered bedrock, bedrock permeability generally decreases with depth, but includes some higher permeability zones associated with faults. Many of the faults act as flow barriers, while others appear as flow conduits resulting in compartmentalized groundwater flow with the bedrock at depth. The compartments limit regional groundwater flow within the deep bedrock (Knight Piésold 2018a).

The lower upland slopes and valley bottoms are filled primarily with glacial deposits with some overlying alluvium deposits (overburden). The glacial deposits include low and high permeability sediments deposited as end, lateral, and recessional moraines, ground moraines, outwash sands and gravels, and glacio-lacustrine (glacial lake) deposits. The weathered bedrock is also found beneath the lower slopes and valley bottoms. Most of the groundwater storage occurs in the overburden which sustains winter base flow along most of the streams and rivers in the main valleys (Knight Piésold 2018a).

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Figure 3.17-4: Geologic Cross-Section Location Map

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Figure 3.17-5: Geologic Cross-Section E-10

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Figure 3.17-6: Geologic Cross-Section L-1

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Figure 3.17-7: Geologic Cross-Section S-1

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Figure 3.17-8: Geologic Cross-Section M-1

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Figure 3.17-9: Shallow Groundwater Elevations – Seasonal Low Water

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Groundwater flow occurs along local and/or intermediate flow paths. There is limited regional groundwater flow to the surrounding outlying lowlands. The groundwater flow pattern is dominated by flow within the weathered bedrock from the uplands toward the overburden sediments in the valleys. The majority of groundwater flow occurs in the overburden deposits. Groundwater in the valley sediments typically flows downstream along the axis of the valley, predominantly in permeable sands and gravels and the underlying weathered and fractured bedrock. Except for some cross-catchment flow between the SFK River and UTC, most of the recharge water remains within each watershed and is discharged to streams along the valley bottoms. The large differences in overburden and weathered bedrock permeabilities, coupled with the varying topographic gradients in each watershed, result in variable local recharge rates (Knight Piésold 2018a).

Hydrogeologic Characterization across the SFK River Drainage South of the Pebble Deposit

Hydrogeologic cross-section E-10 (Figure 3.17-5), a southwest to northeast trending section, shows the hydrostratigraphy across the SFK River drainage south of the Pebble deposit and north of Frying Pan Lake. The overburden deposits consist of interbedded gravels, sands, silts, and clays that overlie the underlying weathered bedrock. Groundwater recharge rates in the SFK drainage basin (Areas 2 through 5 and 8) calculated using the site-wide water balance model ranged from 11.8 inches per year at the mine site (Area 3) to 46.8 inches per year along the SFK River downstream of Frying Pan Lake (Area 5) and averaged 24.2 inches per year (Schlumberger 2011).

Groundwater in this area flows from the upland recharge areas toward the valley floor where it discharges to the SFK River. Groundwater primarily flows through the overburden aquifers of sands and gravels and the uppermost 10 to 50 feet of weathered (fractured) bedrock before discharging to the SFK River. Groundwater gradients in the vicinity of the Pebble deposit are vertically upward with a minimal horizontal component, indicating that groundwater in the vicinity of the deposit locally discharges to the upper reaches of the SFK River, and is unlikely to flow across groundwater divides or migrate appreciable distances down the valley before discharging to surface water.

The weathered bedrock is highly fractured from physical weathering and is much more permeable than the more competent bedrock below. Deeper bedrock is less weathered and exhibits lower hydraulic conductivity values (a measure of the rate of water flow through the rock) to depths of at least 600 feet. Groundwater is controlled in the deeper bedrock by cross-cutting fractures and faults. Although fractures and faults are widespread in the deep bedrock, the features are often infilled with fine-grained fault gouge (blocking the flow) and are offset relative to one another (cross-cutting). The faults and fractures have resulted in formation of groundwater compartments (compartmentalized flow) in the deeper bedrock, thereby limiting the potential for substantial regional groundwater flow (Knight Piésold 2018l).

Hydrogeologic Characterization along the SFK River Drainage South of the Pebble Deposit

Hydrogeologic cross-section L-1 (Figure 3.17-6), a northeast-southwest trending section, also shows the hydrostratigraphy along the SFK River drainage south of the Pebble deposit and north of Frying Pan Lake. Overburden thickens from the Pebble deposit area toward Frying Pan Lake. Groundwater levels in shallow weathered and fractured bedrock (upper 50 feet of bedrock) exhibit stronger seasonal fluctuations than the overburden of sand and gravel. Groundwater gradients in the upper weathered bedrock are upward following periods of groundwater recharge in the upland areas, and downward during the months prior to seasonal

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recharge events of heavier precipitation. This supports the conceptual model of groundwater flow involving recharge to the exposed weathered and fractured bedrock aquifer in upland areas, with subsequent migration toward valley bottoms, where the groundwater is eventually discharged to overlying surficial deposits or streams. A bedrock high (i.e., an area where the bedrock is higher than the surrounding bedrock surface; similar to a hill in surface topography) acts as a barrier to groundwater flow and the presence of low-permeability sediments at the downstream end of Frying Pan Lake generally limits discharge from Frying Pan Lake to the underlying groundwater flow system.

Hydrogeologic Characterization of the Frying Pan Lake Area and the Upper Reaches of Tributary UT1.190

The hydrogeology of the region from Frying Pan Lake to upper reaches of Tributary UT1.190 is also shown further south on hydrogeologic cross-section L-1 (Figure 3.17-6) Several overburden aquifers have been identified in this area and overburden thickness under Frying Pan Lake is about 150 feet thick. Just upstream of Frying Pan Lake are surficial aquifers of mainly clean sand and gravel. An intermediate aquifer is interpreted to occur in the overburden between silty deposits under most of the valley floor that thins to the east and south. A deeper overburden aquifer of sands and gravels overlies the weathered and fractured bedrock and thickens toward Frying Plan Lake, but is not continuous with the deep overburden aquifer in the Pebble deposit area. The most areal extensive aquifer in this area is the weathered and fractured shallow bedrock aquifer.

South of Frying Pan Lake, silty layers are absent along the SFK River where overburden consists of sand and gravel. Overburden is relatively thin as compared to beneath the lake and is permeable beneath most valley floors, with valley walls dominated by colluvium (coarse material originating from the slopes, such as angular pieces of bedrock) and shallow weathered and fractured shallow bedrock, with the exception of some local thin till deposits (a mixture of many grain size gradations, deposited by glacial ice).

Groundwater recharge in the Frying Pan Lake area is derived locally from the weathered and fractured shallow bedrock on uplands and on valley sides where recharge occurs on local topographic highs with discharge to ponds and streams. The valley floor is likely a groundwater discharge area; however, data indicate that during seasonal dry periods some of the valley floor recharges the lower sand and gravel aquifer and uppermost weathered and fractured shallow bedrock aquifer.

Groundwater at Frying Pan Lake is shallow and exhibits upward groundwater movement (groundwater discharge) toward the lake, while groundwater levels downstream of the lake are up to 60 feet below the stream bottom, indicating strong downward groundwater gradients and losses from the stream.

The results of groundwater level monitoring and a water balance assessment (Schlumberger 2011) suggests that approximately two-thirds of the groundwater flowing through the deep overburden aquifer downstream of Frying Pan Lake remains in the SFK River drainage, while the remaining one-third of the groundwater crosses the surface water drainage divide and contributes to groundwater flow in tributary UT1.190, and discharges to UTC. Figure 3.17-10 depicts the divergent groundwater flow along SFK River to UTC in the deep groundwater aquifer. The divergent groundwater flow pattern occurs during seasonal low and high water periods.

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Hydrogeologic Characterization of the SFK River Discharge Area

Hydrogeologic cross-section S-1 (Figure 3.17-7) shows the hydrostratigraphy along the SK1.190 drainage from north to south across the SFK River. The upper slopes are underlain by weathered and fractured bedrock. The mid slopes are mapped as colluvium and drift of the Pre-Brooks Lake glaciation. A 125 feet thick outwash gravel deposit occurs along the valley axis with adjoining terrace gravels. Response tests and sediment descriptions indicate that the gravels are very permeable ($3x10^{-5}$ to $6x10^{-4}$ meters per second [m/s]) in this area. The main aquifer along this portion of the SFK River is outwash sands and gravels and the terrace deposits and alluvium that infill the valley (Valley Aquifer).

Meteoric recharge is expected along the weathered and fractured bedrock ridges and through the overburden in the valley bottom. A large portion of precipitation falling on the outwash sand and gravels and the terrace deposits along the valley floor is expected to recharge the aquifer. Additional recharge occurs from stream channels as they flow into the valley, particularly from the large catchments, SK1.190 and SK 1.210. Similar but less concentrated recharge of groundwater is expected adjacent to the valley sand and gravel deposits where runoff and shallow groundwater exit the adjacent slopes.

A relatively large groundwater flow enters the SFK discharge area from the SFK River Flats area (Area 5). At times when the groundwater level is high, groundwater might discharge to the streambed near the boundary between Areas 5 and 4. However, during low-flow periods, the SFK River streambed is dry upstream of the confluence with tributary SK1.190. Additional water recharges the groundwater system in this area, both as direct recharge from rainfall and snowmelt and as run-on from adjoining slopes.

Immediately downstream of the confluence with tributary SK 1.190, groundwater discharges into the bottom of the stream channel. This discharge results from a reduction of the aquifer thickness and width in this area, and additional water contributed to the aquifer from SK1.190 and SK1.210. In the dry season, where little to no visible surface water flow is observed upstream of the confluence with tributary SK l.190, surface water flows in the SFK River ranges up to 50 cfs about 2.4 miles downstream of the confluence with SK1.190.

Hydrogeologic Characterization of the NFK River Drainage for Tributary NK1.190 (also known as Area G/ Bulk TSF drainage) Drainage Area 14

Hydrogeologic cross-section M-1 (Figure 3.17-8) shows the hydrostratigraphy from the upland slopes adjacent to the NK1.190 drainage northwest along the lower portion of the NK1.190 drainage and across the NFK River upstream of its confluence with NK1.190. The upland slopes are underlain by weathered and fractured bedrock and covered with a thin mantle of colluvium. Overburden is thin over much of the valley; however, several borings intercepted up to 100 feet of overburden. Response tests indicate that the overburden and the weathered and fractured shallow bedrock are very permeable.

Groundwater recharges on the upper slopes with some discharging to numerous sustained seeps at a range of elevations with the balance of groundwater flowing downward toward the stream channel in the center of the valley. Groundwater likely migrates downstream under the valley floor in the overburden and weathered and fractured shallow bedrock. Because the overburden is expected to be thin along the valley floor, most groundwater likely discharges to the streambed contributing to stream baseflow. Groundwater levels are expected to be near ground surface over much of the catchment and at or above the ground surface near the stream channel.

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Upstream of stream gage NK100C (see Section 3.16, Surface Water Hydrology, Figure 3.16-4), the headwater drainage area for the NFK River is overlain by glacial drift and materials deposited at the bottom of former glacial lakes that have resulted in relatively thin, but laterally continuous aquifers. A terminal glacial moraine is near the confluence of the main stem NFK River and Tributary NK1.190. At this location, the surficial deposits transition to coarser grained glacial outwash materials where the NFK River recharges the underlying aquifer.

The thin overburden limits groundwater recharge in this area. The average groundwater recharge rate calculated using the site-wide Water Balance Model (WBM) is 11 inches per year, the lowest rate of the three watersheds in the project area (groundwater recharge in the SFK watershed is estimated at 24 inches per year and UTC watershed at 16 inches per year).

Hydrogeologic Characterization of the NFK East (also known as Area E, Pyritic TSF)

Two aquifers are identified in this area: overburden aquifer of sand and gravel that underlies glacial till (which is less porous and permeable) and the shallow weathered and fractured bedrock. Groundwater recharge is derived at higher elevations on hillsides and hill tops where weathered and fractured bedrock is close to the surface or exposed. Groundwater flows downslope toward the valley and discharges in seeps in weathered and fractured bedrock and the sands and gravels of the valley floor. Many seeps have been identified along hillsides in this area and are likely caused by high recharge on the upper slopes and the variability of hydraulic conductivity and thickness of the weathered and fractured bedrock.

Hydrogeologic Characterization of the UTC Drainage

The only project features within the UTC drainage are the water treatment plant #1 (WTP#1) discharge and a portion of the mine site access road. Primary aquifers in this area are sands and gravels of glacial outwash upstream of gage UT100E and the shallow weathered and fractured bedrock.

Groundwater recharge is locally recharged on the hilltops and hillsides of weathered bedrock. Upstream of UT100E, UTC and tributaries contribute additional recharge to groundwater (losing streams). Recharge occurs through precipitation infiltrating the upper hillslopes and migrating downslope in the highly fractured shallow bedrock unit. The calculated average groundwater recharge rate is 14 inches per year. Where downslope groundwater movement is restricted by low-permeability sediments or discontinuities in the flow system, groundwater discharges to ground surface as seeps; seeps are abundant in this drainage, and often occur high on the hillslopes. Overburden deposits are variable in this drainage, and include silty sand and gravel to clean sand (low percentage of clay and silt) in the upper portion of the UTC drainage.

In the intermediate reaches of the drainage between UT1.135 and UT1.190, a large area has been filled with deltaic, glacial outwash, ice-contact sands, and sand and gravel. This area is inferred to be a groundwater recharge area. Tributary UT1.190 joins the UTC drainage downstream of the groundwater recharge area, and is inferred to transmit the majority of groundwater that migrates east from the SFK River drainage area across the surface water drainage divide into the UTC drainage area. Most of the groundwater moves downgradient in the sand and gravel units and the weathered upper bedrock. Steep vertical gradients have been observed in some areas, suggesting the presence of fine sediments that restrict downward movement of groundwater.

Upstream of UT 100B, groundwater inflow originating from the SFK drainage discharges into the UTC groundwater system (crossing under the surface watershed divide between SFK and

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UTC). This flow is primarily through the intermediate aquifer in the SFK Flats area described in Table 3.17-1 and depicted on Figure 3.17-10.

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Table 3.17-1: Summary of Hydrostratigraphic Units

Drainage/ Catchment	Area/ Sub-Catchment (*Project Facility*)	Overburden or Bedrock	Aquifers	Description	Hydraulic Conductivity (K)
South Fork Koktuli Drainage	Pebble Deposit Area (*Open Pit*)	Overburden	Surficial Aquifer (multiple)	Clean sand (very little silt or clay) or sand and gravel. Beach, delta, and fan deposits.	K in overburden ranged from $5x10^{-8}$ to $1x10^{-3}$ m/s; geometric mean of $2x10^{-5}$ m/s; median of $3x10^{-5}$ m/s K in weathered bedrock ranged from $4x10^{-7}$ to $1x10^{-3}$ m/s; geometric mean of $2x10^{-5}$ m/s; median of $2x10^{-5}$ m/s
			Intermediate Aquifer	Sand and gravel between silty deposits. Located in two bedrock lows	
			Deep Aquifer	Sands and gravels in bedrock low on east side of deposit to depths of 163 ft. Based on pumping tests at PW-08-9 (Figure 3.17-2).	
		Bedrock	Weathered Bedrock Aquifer	Upper 10 to 50 ft of bedrock. Felsenmeer[1] or rock block field where exposed.	
			Upper Bedrock Aquifer	Below weathered bedrock, from 50 to 600 feet in depth. Considerably less permeable than weathered bedrock aquifer.	
			Fault Zones	Faults function as both conduits and barriers to groundwater flow (i.e., compartmentalized flow).	
	Frying Pan Lake Area (*South WTP Discharge*)	Overburden	Surficial Aquifer (multiple)	Clean sand; sand and gravel. Largest is fan delta upstream of Frying Pan Lake.	K in overburden ranged from $6x10^{-8}$ to $9x10^{-4}$ m/s; geometric mean of $6x10^{-5}$ m/s; median of $3x10^{-4}$ m/s K in weathered bedrock ranged from $2x10^{-8}$ to $9x10^{-5}$ m/s; geometric mean of $4x10^{-6}$ m/s; median of $9x10^{-6}$ m/s
			Intermediate Aquifer	Sand and gravel between silty deposits. Under most of the valley floor. Thins to the east and south.	
			Deep Aquifer	Sand and gravel overlying bedrock, in valley thalweg. Thickens toward Frying Pan Lake. Not continuous with deep aquifer in Pebble deposit area.	
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 30 feet of bedrock. Most consistent aquifer in area.	
	South Fork Koktuli Flats (from Frying Pan Lake, 5.5 miles downstream along SFK River)	Overburden	SFK Valley Aquifer	Clean sand and gravel moraine downstream of Frying Pan Lake. Continuous with outwash, terrace, and alluvium[4] sand and gravel deposits in valley to west.	K in overburden ranged from $7x10^{-8}$ to $1x10^{-3}$ m/s; geometric mean of $1x10^{-4}$ m/s; median of $4x10^{-4}$ m/s K in weathered bedrock ranged from $1x10^{-8}$ to $3x10^{-3}$ m/s; geometric mean of $2x10^{-5}$ m/s;
			SFK Channel Aquifer	Alluvium and terrace gravels along the channel from downstream of Frying Pan Lake to bedrock high to the east.	

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Table 3.17-1: Summary of Hydrostratigraphic Units

Drainage/ Catchment	Area/ Sub-Catchment (*Project Facility*)	Overburden or Bedrock	Aquifers	Description	Hydraulic Conductivity (K)
			MW-11 Aquifer	Sand and gravel near monitoring well MW-11 and south of bedrock high mantled with glacial drift (see above). (Figure 3.17-1).	median of $5x10^{-5}$ m/s
			Surficial Aquifer	Outwash sand and gravel between SFK River and slope of UTC valley.	
			Intermediate Aquifer	Below surficial aquifer. Conveys majority of flow from SFK River Aquifer and MW-11 Aquifer to UTC Tributary UT1.190[2] at seasonal low and high water levels. Surface discharge upstream of gaging station UT100B.	
			Deep Aquifer	Sand and gravel; silty sand (based on logging of drill cuttings. No indication of direction of groundwater flow.	
		Bedrock	Weather Bedrock Aquifer	Possible aquifer within upper 10 to 50 feet of weathered and fractured bedrock. Based on observations during drilling exploration borings.	
	SFK Discharge Area	Overburden	SFK Valley Aquifer	Outwash sand and gravel. Extends from approximately 1 mile upstream of the confluence of the SFK River and Tributary SK1.190 (gaging station SK119A) to approximately 2.4 miles downstream.	
NFK Drainage	Big Wiggly Basin (headwaters of NFK River)	Overburden	Surficial Aquifer	Sand and gravel aquifer underlies glacial till. Limited characterization of lateral and vertical extent.	K in overburden ranged from $8x10^{-9}$ to $2x10^{-3}$ m/s; geometric mean of $1x10^{-4}$ m/s; median of $3x10^{-4}$ m/s K in weathered bedrock ranged from $9x10^{-9}$ to $3x10^{-4}$ m/s; geometric mean of $1x10^{-6}$ m/s; median of $9x10^{-7}$ m/s
	NFK East - Area E (within Area 12) *(PAG/Pyritic TSF)*	Overburden	Intermediate Aquifer	Sand and gravel.	
		Bedrock	Weathered Bedrock Aquifer	Uppermost portion of bedrock.	
	NFK West - Area G (within	Overburden	Surficial Aquifer	Thin aquifer composed of colluvium, drift, undifferentiated gravel, and undifferentiated drift.	

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Table 3.17-1: Summary of Hydrostratigraphic Units

Drainage/ Catchment	Area/ Sub-Catchment (*Project Facility*)	Overburden or Bedrock	Aquifers	Description	Hydraulic Conductivity (K)
	drainage Area 14) (*TSF*)	Bedrock	Weathered Bedrock Aquifer	Uppermost portion of weathered and fractured bedrock.	
	North Fork Glacial Outwash Area [3] (aka Area 15) (*TSF Main Embankment Seepage Collection and Sediment Ponds*)	Overburden	North Fork Outwash Aquifer	Sand and gravel.	
			Terrace and Alluvial Deposits	Sand and gravel downstream of North Fork Outwash Aquifer.	
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of weathered and fractured bedrock.	
UTC Drainage	Upper Talarik Creek (*East WTP Discharge*)	Overburden	Glacial Outwash Aquifer	Sand and gravel upstream of stream gage UT100E (Figure 3.16-4).	K in overburden ranges from $2x10^{-6}$ to $4x10^{-5}$ m/s; geometric mean $1x10^{-5}$ m/s; median $1x10^{-5}$ m/s. K in weathered bedrock ranges from $2x10^{-7}$ to $2x10^{-5}$ m/s; geometric mean $2x10^{-6}$; median $5x10^{-6}$ m/s.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 ft of weathered and fractured bedrock.	
	Talarik Creek Outwash Plain (aka Area 10)	Overburden	Surficial Aquifer	Glacial outwash deposits (sand, gravel), east of UTC. Likely underlain by a low-permeability aquitard.[5]	
			Intermediate Aquifer	Extension of aquifer originating in SFK Flats drainage. Located below surficial aquifer and conveys majority of groundwater flow from SFK River Aquifer and MW-11 Aquifer to UTC Tributary UT1.190. Discharges to surface upstream of stream gage UT100B.	
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of weathered and fractured bedrock.	

Source: Schlumberger (2011, 2015)

[1] Felsenmeer = frost-weathered boulders at the surface.
[2] Numbered tributaries named for stream gaging stations (See Figure 3.16-3).
[3] Outwash – sediments deposited by glacial meltwater
[4] Alluvium – sediments deposited by stream, river, etc.
[5] Aquitard – a low-permeability geologic layer that restricts flow of groundwater from one aquifer to another (e.g., clay layer)
K = hydraulic conductivity

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3.17.1.4 Aquifer Properties – Hydraulic Conductivity and Storativity

Hydraulic conductivity (K) (expressed in meters per second [m/s]) describes the movement of water through pore spaces or fractures in subsurface material and depends on permeability and saturation of the material (e.g. silt, sand, bedrock). Hydraulic conductivities were measured at wells using response and pump tests within areas of the project to characterize groundwater movement and interactions between aquifers (whether overburden or bedrock) and surface waterbodies. A response (or slug) test is conducted by inserting a slug of known volume into a well or piezometer and measuring the rate of rise or fall of the water level as it returns to its original (static) level. These data are used to calculate local hydraulic conductivity at an individual well. A pump test involves pumping water from a well at a steady rate and measuring the drawdown (over time) of the water level at the well being pumped and in other observation wells (wells not being pumped) or piezometers in the area. Drawdown decreases with radial distance from the pumping well and increases as the length of time pumping continues. Packer (or Lugeon) tests measure the hydraulic conductivity of discrete intervals within a boring that are isolated with movable, inflatable packers. The rate of water is injected into the interval between two packers is measured and used to estimate hydraulic conductivity. Storativity (specific yield) is essentially a measure of how well the aquifer stores water (how much water the aquifer will hold or expel with changes in water level, or, technically, a change in hydraulic head). Results of pump tests provide information to estimate storativity of aquifers in the mine site area.

Results of technical review and analysis of previous hydrogeologic data are provided in Appendix K3.17. A summary of aquifer properties is provided below.

Overburden hydraulic conductivity values range from $8x10^{-9}$ to $1x10^{-3}$ m/s, which reflects the heterogeneous nature of the interbedded glaciofluvial sediments. The hydraulic conductivity of overburden is similar throughout the mine site, with median values ranging from $1x10^{-5}$ (UTC) to $4x10^{-4}$ m/s (SFK River Flats). Hydraulic conductivity values for overburden materials in the Pebble deposit ($3x10^{-5}$ m/s) and UTC ($1x10^{-5}$ m/s) areas were an order of magnitude lower than those measured in the SFK River, NFK River, and Frying Pan Lake areas, based on the median values, likely due to the presence of silty glacial deposits in these areas. A summary of the hydraulic conductivity measurements in overburden and bedrock within and outside the Pebble deposit is shown in Figure 3.17-11 and Figure 3.17-12, respectively.

In addition, results of pump tests in overburden indicate hydraulic conductivity was almost 10 times (one order of magnitude) higher than values derived from response tests (Schlumberger 2011, 2015). Pump test results estimate the hydraulic conductivity over a larger area than response tests and are generally assumed to be more reflective of the areal hydraulic conductivity. Results of the pump tests indicate the overburden aquifers are capable of conveying moderate to large quantities of groundwater. Results also indicate the ability of individual overburden aquifers to store water is moderate to high overall, but is limited for some aquifers. Results of pump tests in bedrock were similar to those for response tests.

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Figure 3.17-10: Deep Groundwater Elevations – Seasonal Low Water

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Similar to overburden, the hydraulic conductivity of the bedrock also varies widely throughout the mine site, ranging from $9x10^{-9}$ to $1x10^{-3}$ m/s which reflect varying degrees of weathering and fracturing with depth. Bedrock hydraulic conductivity generally decreases with depth. Median hydraulic conductivity values measured with response tests in bedrock in the Pebble deposit ($2x10^{-5}$ m/s) and SFK River ($5x10^{-5}$ m/s) areas are about 1 to 2 orders of magnitude higher than those measured in the NFK ($9x10^{-7}$ m/s), Frying Pan Lake ($9x10^{-6}$ m/s), and UTC ($5x10^{-6}$ m/s) areas, possibly due to the presence of less weathered and fractured bedrock in these areas (Section 3.13, Geology). A summary of the hydraulic conductivity measurements in bedrock vs depth within and outside the Pebble deposit is shown in Figures 3.17-13 and 3.17-14, respectively.

Packer (or Lugeon) tests were conducted to measure the hydraulic conductivity in the deeper bedrock to depths up to 4,500 feet, but depths generally less than 1,000 feet. In the Pebble deposit, deeper bedrock hydraulic conductivities ranged from $1x10^{-10}$ to $4x10^{-6}$ m/s. The highest hydraulic conductivity measurements were in the upper 500 of bedrock, but are less than those in the shallow weathered bedrock where the response test results ranged from $4x10^{-7}$ to $1x10^{-3}$ m/s. Outside the Pebble deposit, deep bedrock hydraulic conductivities were measured to depths up to 400 feet, but most were at depths less than 200 feet. Deep bedrock hydraulic conductivities in these areas ranged from $1x10^{-9}$ to $1x10^{-5}$ m/s.

3.17.1.5 Groundwater Flow Systems

Hydrogeologic characterization indicates that the majority of water that recharges the groundwater system in each of the three main watersheds generally discharges in that same watershed.

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Figure 3.17-11: Hydraulic Conductivity Measurements within the Pebble Deposit Area

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Figure 3.17-12: Hydraulic Conductivity Measurements Outside the Pebble Deposit Area

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Figure 3.17-13: Hydraulic Conductivity vs. Depth Profile for Bedrock in the Pebble Deposit Area

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Figure 3.17-14: Hydraulic Conductivity vs. Depth Profile for Bedrock Outside the Pebble Deposit Area

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Input to the groundwater flow system includes groundwater recharge (e.g., precipitation) and leakage from surface water features. Precipitation in the vicinity is primarily the result of marine storm systems with the most precipitation occurring from late summer to early winter. Precipitation is greater on upland areas than in lowland areas due to orographic effects. Precipitation data and additional climate data is addressed in Section 3.20, Air Quality.

The primary output from the groundwater flow system at the mine site includes discharge to surface water features, including seeps. In general, the water table reflects the ground surface topography, whereby it is deepest below ridge tops, and nearer ground surface in valley bottoms.

Groundwater generally flows from upland areas typically through the weathered and fractured bedrock to valley bottoms filled with glacial and fluvial sediments comprising the overburden, eventually discharging to surface water (streams, rivers, and lakes). The majority of the groundwater flow is in the most permeable overburden, which includes outwash sands and gravels (glaciolacustrine and glaciofluvial sediments, see Section 3.13, Geology), and the uppermost 50 feet of bedrock that is weathered and highly fractured by physical and chemical weathering. Groundwater seeps are observed in some areas where fine-grained sediments restrict downward groundwater flow causing perched zones that discharge along outcrop faces. Groundwater flow in deep bedrock is limited by lower hydraulic conductivity that occurs in the upper 50 feet. Although permeability in bedrock from faults and fractures has been identified, the flow pathways along the faults are localized and appear to terminate in the study area. Therefore, the faults and fractures in bedrock are not anticipated to function as preferential groundwater flow pathways at the deeper regional scale.

Groundwater level monitoring and interpreted contours (Figure 3.17-9) indicate three groundwater divides in the study area as follows:

1. Between the UTC Creek drainage and the NFK drainage.
2. Near the Pebble deposit between the SFK River drainage and the UTC drainage.
3. Between the SFK River drainage and the tributary UT1.190 drainage.

Although the groundwater divides generally align with surface water drainage divides, there is evidence of some groundwater exchange between drainage basins from the SFK River drainage to the tributary UT1.190 drainage area (Schlumberger 2015).

Data from two monitoring wells were used to characterize general seasonal and vertical groundwater level fluctuations: monitoring well (MW) MW-5 in the Pebble deposit area and MW-11 in the SFK Flats area (Figure 3.17-15 and Figure 3.17-16; Schlumberger 2015). Lowest groundwater levels were recorded in late winter; highest water levels were typically recorded during spring freshet or fall rain events. Groundwater levels seasonally fluctuated approximately 10 to 20 feet. Similar to groundwater levels, measured discharge from seeps seasonally varied by factors between 3 and 10. Vertical hydraulic gradients were variable over the seasons and with depth – which supports the concept of compartmentalized groundwater flow.

A more detailed discussion regarding groundwater flow systems is provided in Appendix K3.17.

3.17.1.6 Site-Wide Water Balance Model

A WBM is essentially a means to calculate inflow, outflow, and water storage and can be used to predict and manage water supply. The site-wide WBM was developed to inform the characterization of mine site hydrology, understand the nature and extent of interactions between groundwater and surface water, and provide estimates of groundwater recharge to support calibration of the mine site groundwater flow model.

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Figure 3.17-15: Time Series Piezometric Elevation at MW-5 in Pebble Deposit Area

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Figure 3.17-16: Time Series of Piezometric Elevation at MW-11, South Fork Koktuli Flats Area

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The WBM is also used to estimate water flows during site operations and during the mine closure and post-closure phases. The WBM was calibrated (adjusted) to 4.5 years of continuous streamflow data at six SFK River, three NFK River, and three UTC gaging stations and a long-term synthetic series of temperature and precipitation data for the period 1942 to 2017 based on data from mine site and regional weather stations.

The site-wide WBM results are briefly summarized below. The site WBM is described in detail in Schlumberger (2011 and 2015) and Knight Piésold (2018a and 2018b). The average annual estimated precipitation for the catchments in the water balance ranged from 40 to 55 inches. Nine of the 14 catchments had estimated annual unit flows that ranged from 1.4 to 6.9 cfs/mi^2, averaging about 2.8 cfs/mi^2. Average annual groundwater recharge varied from 11 to 24 inches per year for the NFK River, UTC, and SFK River drainage areas. Groundwater recharge in individual catchments ranged from 4.7 to 46.8 inches per year. The majority of groundwater tends to discharge to surface water within the same drainage basin, with the exception of groundwater transfer between the SFK Flats Area (Area 5) to the UTC drainage along UT1.190 (Area 7) estimated to be 6 inches per year, or about one-third of the total underflow in the SFK Flats Area.

3.17.1.7 Mine Site Groundwater Flow Model

A three-dimensional numerical groundwater flow model was developed to simulate baseline groundwater conditions as described in detail in Schlumberger (2011, Appendix 8.1J). A numerical model is a computer simulation of local and regional groundwater flow. The model was constructed with three layers to represent flow in the overburden, the shallow weathered and fractured bedrock, and the deeper competent bedrock. Transient (time varying) recharge and discharge estimates from the site-wide water balance model as well as measured groundwater levels and measured hydraulic conductivities were used as model input. Groundwater levels at wells and flows at seeps and along streams were used as calibration targets.

The model was calibrated (adjusted) to total recharge and discharge rates obtained from the site-wide WBM described above. The total groundwater recharge and discharge calculated by the site-wide WBM includes meteoric recharge and losses from streams to the underlying groundwater flow system. The groundwater model was calibrated to observed groundwater elevations, estimated groundwater recharge, and estimated groundwater discharge obtained from the site-wide WBM. The baseline groundwater model is important because it is used to predict potential effects caused by the project by incorporating project specific information (variables) to address activities (such as pit dewatering and recovery). The groundwater model can address the comprehensive effects of the project at various phases. The groundwater model simulates the exchange of water between streams and groundwater, and model estimates were compared with streamflow measurements during periods of time when flows were low, and primarily groundwater-derived.

A subsequent model was developed by Piteau Associates (2018) to assess groundwater flow conditions at the end of mining and during long-term post-closure. The model was used to assess seepage from the bulk and pyritic TSFs and the water management ponds, the effect of dewatering the open pit (including its groundwater inflow rate and zone of influence), and the reduction of groundwater discharge to UTC. The model was also used to assess groundwater flows after mining ceases, including the time to form an open pit lake and the amount water needed to maintain the open pit lake as a hydraulic sink. The model results are presented in Piteau Associates (2018).

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3.17.1.8 Groundwater and Surface Water Interaction

The Pebble mine region is overlain with glacial till, and has significant groundwater-surface water interactions. Groundwater and surface water interaction was characterized based on detailed streamflow surveys and the site-wide WBM. Figure 3.16-4 (see Section 3.16, Surface Water Hydrogeology) depicts stream gage locations.

The surface water flow surveys were conducted during periods of low streamflow, and are described in detail in Knight Piésold (2015) and Section 3.16, Surface Water Hydrogeology. These surveys included eight gages in the NFK River drainage basin, 12 gages in the SFK River drainage basin, and 12 gages in the UTC drainage basin. Based on the results of the streamflow surveys, gaining and losing stream reaches were identified, and possible explanations for the variability in flows between gages were provided. The majority of the stream reaches were found to be receiving groundwater discharge from the underlying aquifer (i.e., gaining); however, the NFK River was found to be losing water to the underlying aquifer between gages NK100B and NK100LF1. The SFK River was found to be losing water to the underlying aquifer(s) from SK100G to SK100F, from SK100F to SK100C, and between SK100B and SK100LF10. Figure 3.17-17 shows the gaining and losing stream segments.

3.17.2 Transportation Corridor and Amakdedori Port

3.17.2.1 Hydrogeological Characterization

The sections below summarize the available baseline hydrogeological data for the transportation corridor, spur roads, and Amakdedori port site. The road corridor spans multiple drainage basins; starting at the southeastern edge of the Nushagak River drainage in the mine site, across the greater Kvichak River drainage (including Iliamna Lake) to the Aleutian Range divide, and then into the greater Cook Inlet drainage east of the divide.

The northernmost segment of the transportation corridor (northern half of the mine access road) is in the well-studied UTC drainage. Limited data are available for the southern segment of the mine access road. No known hydrogeological investigations have been conducted along the south access road or Amakdedori port site.

Climatic factors influencing groundwater across the corridor are the same or similar to those described above for the mine site. There are no glaciers or known permafrost in the transportation corridor or port site.

3.17.2.2 Hydrostratigraphic Units

The transportation corridor begins at the mine site, which straddles the drainage divide between the SFK and UTC drainage basins. Glacial sands and gravels generally host multiple surficial and intermediate aquifers that likely contains most of the groundwater, while the weathered and fractured shallow bedrock aquifer stores significantly less groundwater (Schlumberger 2015, Appendix 8.1B).The northern half of the mine access road is mostly in the UTC drainage, where groundwater occurs in surficial aquifers of glacial sediment and in weathered and fractured shallow bedrock.

The southern half of the mine access road parallels First Creek (west of the road route), a tributary basin that drains southward into the main UTC drainage about 4 miles upgradient of Iliamna Lake. Hydrogeologic data for this area are limited. Bedrock and surficial geology along this stretch of the mine access road are similar to the corridor to the north, with Tertiary volcanic bedrock and thick deposits of surficial glacial sediments (see Section 3.13, Geology). Based on the similar geologic setting and topography across the mine access road, hydrostratigraphic

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units in the transportation corridor are likely similar. Permeable sands and gravels, which make up the abundant glacial till and outwash across this stretch of the mine access road, as well as lake terrace and beach deposits within one to two miles of the north ferry terminal (Detterman and Reed 1973), likely host surficial and/or intermediate aquifers. It is possible that weathered and/or fractured bedrock stores additional groundwater at depth.

No known hydrogeological investigations have been conducted south of Iliamna Lake, and hydrostratigraphic units have not been delineated for this area. Lake terrace and beach deposits that occur in the south ferry terminal area (Detterman and Reed 1973) likely host shallow groundwater. The geologic setting along the rest of the south access road and the Kokhanok spur road is somewhat distinct from that north of Iliamna Lake. Jurassic age intrusive bedrock is commonly exposed at the surface, and glacial sediments are less abundant. The water table approaches the surface in lowland areas, as evidenced by abundant kettle ponds and wetlands. Glacial deposits are significantly thinner along the south access road corridor compared to the mine access road, but likely host shallow aquifers where present (Glass 1999). Shallow groundwater is likely present in surficial alluvium, alluvial fan, marine terrace, and beach deposits near Amakdedori port (Detterman and Reed 1973). The degree of weathering and fracturing in bedrock is not well known along the south access road, and it is unknown if bedrock fractures host significant groundwater. It is also unknown if local fault zones host groundwater, or if they contain fine-grained fault gouge that may impede groundwater flow.

3.17.2.3 Aquifer Properties: Hydraulic Conductivity and Storativity

The northern half of the mine access road is in the UTC drainage, where groundwater occurs in aquifers of surficial glacial sediments and in fractured shallow bedrock. The permeability of the glacial sediments allows groundwater to pass through relatively easily. The hydraulic conductivities are thus moderately high, ranging from $2x10^{-6}$ to $4x10^{-5}$ m/s in this area (Schlumberger 2015). The modest variation of hydraulic conductivity by one order of magnitude is to be expected with the lateral diversity of the glacial deposits, which vary in permeability largely depending on the amount of silt present.

Shallow, weathered, and fractured bedrock along the northern segment of the mine access road has hydraulic conductivities that range from $2x10^{-7}$ to $2x10^{-5}$ m/s (Schlumberger 2015). These hydraulic conductivities are similar to those for silty sands and sand aquifers. Because this bedrock is fractured, groundwater is able to flow through the cracks in the rock relatively easily, at rates similar to those of the overlying glacial sediments. However, deeper, unweathered, and less fractured bedrock does not readily transmit or store groundwater.

To the south, the corridor parallels the First Creek tributary basin, which drains southward into the main UTC drainage above Iliamna Lake. No detailed studies have been conducted on aquifer properties here, but a similar geologic setting suggests that groundwater occurs in both surficial sedimentary aquifers and weathered and fractured shallow bedrock, as it does to the north.

No data on hydraulic conductivity or aquifer storage are available along the transportation corridor south of Iliamna Lake.

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Figure 3.17-17: Gaining and Losing Stream Segments

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3.17.2.4 Groundwater Flow Systems

Groundwater flow systems in the northern portion of the corridor have complex surface water/groundwater interactions (Schlumberger 2015). The UTC drainage has both gaining and losing reaches as groundwater migrates generally southeast across the area. Farther south along the mine access road, the water table remains near the ground surface in lowland areas, and groundwater/surface water interaction likely occurs, as has been demonstrated in and around the mine site. Existing data and regional groundwater trends suggest a generally southerly flow of groundwater along the southern half of the mine access road (Schlumberger 2015, Appendix 8.1B).

There are no known groundwater studies in the transportation corridor south of Iliamna Lake. Groundwater flow along the south access road corridor likely parallels surficial flow, following general hydrologic trends. In the Kvichak drainage, groundwater is expected to flow northwest toward Iliamna Lake. Across the Aleutian Range divide in the Tuxedni-Kamishak drainage, groundwater likely flows southeast towards Kamishak Bay. Near Amakdedori port, shallow groundwater in surficial deposits and bedrock (where present) likely flows from hill slopes towards Amakdedori Creek and swamp deposits near the southern end of the road, then parallels creek flow south and southeast towards Kamishak Bay. Groundwater flow beneath beach deposits at the port site may have a diurnal directional component due to large tidal fluctuations.

3.17.2.5 Groundwater and Surface Water Interaction

Groundwater/surface water interactions have not been studied in the transportation corridor or at Amakdedori port. However, groundwater/surface water is likely to interact similar to the mine site. Studies in the mine site suggest that groundwater discharge to streams or rivers prevails, and that where it is occurring, groundwater base flow is highest in the winter, and lowest (on a volume basis) during the spring and summer runoff events. In general, groundwater/surface water interactions will not have any significant areal effect on road or pipeline construction, other than the possible need to temporarily dewater some stream or lowland crossings as construction proceeds (see Chapter 4.17, Hydrogeology).

3.17.3 Pipeline Corridor

No specific hydrogeologic studies have been conducted in the natural gas pipeline corridor and data are the same as those discussed above for the transportation corridor, with the exception of Kenai Peninsula at the east pipeline shore approach and tie-in. Groundwater beneath Kenai Peninsula is known to occur in multiple aquifers in thick glacial and alluvial deposits above Tertiary sedimentary bedrock (Karlstrom 1964; Nelson and Johnson 1981). Groundwater flow is generally to the west toward Cook Inlet, and seeps commonly occur along Cook Inlet bluff, where fine-grained glacial lake deposits form aquitards and support perched groundwater zones. Private groundwater wells drilled on top of Cook Inlet bluff at elevations of approximately 200 feet produce water at depths between 8 and 30 feet below ground surface (ADNR WELTS 2018). Deeper aquifers are also locally present in glacial deposits and sedimentary bedrock at depths between 50 and 120 feet (USGS 1967; Nelson and Johnson 1981).

3.17.4 Groundwater Use

See Section 3.16 for all discussion of water use, both surface and groundwater.

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3.18 WATER AND SEDIMENT QUALITY

This section describes existing conditions related to surface water, groundwater, and sediment quality of the project components. Geochemistry at the mine site is also described as it relates to the potential for release of chemicals into water from mining activities. Information on water and sediment quality criteria that are used to compare to existing and future conditions are provided in Appendix K3.18.

Evaluation factors to be considered by the US Army Corps of Engineers (USACE) in making determinations under CWA 404(b)(1) Subpart C include the following physical and chemical characteristics of the aquatic ecosystem. These are addressed in this and other sections of the Environmental Impact Statement (EIS) as noted below:

- **Substrate.** Substrate includes sediment at the bottom of waterbodies as well as wetland soils. Baseline characteristics of waterbody substrate (sediment) within the four project components are summarized below and additional details are provided in Appendix K3.18. Baseline information on wetland substrate is provided in Section 3.22, Wetlands/Special Aquatic Sites, and Section 3.14, Soils. Removal and disposal of dredged marine sediment under the northern route is addressed in Section 4.18.
- **Suspended Particulates/Turbidity.** Measurements of total suspended solids (TSS) and turbidity in water are summarized in the surface water quality sections of this chapter and additional details are provided in Appendix K3.18.
- **Water Quality.** Water quality data are summarized in the surface water quality sections of this chapter and additional details are provided in Appendix K3.18.
- **Current Patterns and Water Circulation.** Flow patterns, circulation in open waterbodies, and the interaction between surface water and groundwater flow are addressed in Section 3.16, Surface Water Hydrology, and Section 3.17, Hydrogeology.
- **Normal Water Fluctuations.** Annual and seasonal stream discharge fluctuations and tidal ranges in Cook Inlet are presented in Section 3.16, Surface Water Hydrology.
- **Salinity Gradients.** Salinity trends are described below, and additional details are provided in Appendix K3.18.

3.18.1 Mine Site Area

3.18.1.1 Geochemistry

Rock chemistry typically drives water quality, facility design, and water treatment requirements at hard rock mines (ADNR 2014). The open pit, Bulk tailings storage facility (TSF), pyritic TSF, and water management ponds at the mine site pose the most significant risk to water quality because they expose fresh rock to oxidation and leaching processes that may generate acidic drainage and leach metals that could impact water. The geochemistry of the rock that would be mined and exposed at the Pebble deposit is described in this section, followed by a summary of existing data for surface water, groundwater, and sediment at the mine site.

The Pebble deposit is a copper-gold-molybdenum porphyry deposit formed when older sedimentary and igneous rocks were intruded by a granitic magma laden with hot fluids carrying dissolved copper, gold, molybdenum, and silver, as well as quantities of rhenium and palladium. As the fluids cooled, concentrations of sulfide minerals, chalcopyrite ($CuFeS_2$), molybdenite (MoS_2), and pyrite (FeS_2), hosting the copper, molybdenum, gold, and silver metals, precipitated

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in quartz veins and disseminated throughout the granitic and adjacent sedimentary and igneous rocks.

Geochemical Processes

In the natural environment, rocks are broken down to create soil layers through exposure to air and water in a process called chemical weathering. During weathering, minerals in the rocks react with air (oxidation) and water (dissolving into solution) to release some of their constituents (ions) into the surrounding environment. The ions that go into solution may be transported away by overland runoff, streams, and groundwater. Therefore, weathering processes in rock can have a large influence on water quality. If a mineralized deposit is buried beneath other rocks, sediment, and soil, it naturally weathers very slowly. However, when a mineralized deposit isexposed at the surface, the weathering process can increase substantially due to exposure to rain, snow, and air.

Both ore and non-ore rocks contain minerals that can produce acid during weathering, the most common acid-generating mineral being pyrite (FeS_2), which contains iron and sulfur. The sulfur in pyrite reacts with oxygen and water to form sulfuric acid. The resulting acidic water is known as acid rock drainage (ARD), which in turn accelerates the weathering process further. Metals and other potentially harmful constituents can also be released during weathering in a process called metal leaching (ML). Most metals are released more rapidly in acidic water; however, some other constituents, including metalloids such as arsenic, molybdenum, and selenium, and salts such as sulfate, can be released into the environment even if the water draining the rock has a neutral or basic pH (Smith 2007). Acid generation can be counteracted if there are minerals present that neutralize the acid, such as calcite. The neutralization is generated through a reaction of calcite with the sulfuric acid. In the presence of those minerals, acidification is typically delayed until the neutralizing minerals are exhausted.

The purpose of geochemical characterization at the proposed mine site is to identify the potential of the rocks in and surrounding the mineralized deposit to produce ARD and/or ML that could affect water quality in surface water and/or groundwater. The characterization process involves studies of the mineralogy of the rocks, the quantities of minerals with potential to generate or neutralize acid, the amounts of leachable constituents in the rocks, and the rates of weathering and release of these minerals and constituents expected both during mining and after mining ceases. Geochemical characterization was undertaken as part of environmental baseline studies over a number of years to evaluate the potential for ARD and/or ML for the project (SRK 2011a, 2011b, 2018a, 2018 b, 2018c). A summary of the results of these studies follows, and additional details are provided in Appendix K3.18.

Geochemical Characterization

The objectives of the geochemical characterization program were to predict the weathering and leaching behavior of rock, tailings, and other materials that would be produced during mining and processing. Data produced from geochemical testing are used to predict the chemistry of waters that contact the rock exposed in the open pit, and the waste rock and tailings stored in the TSFs, and determine their ARD/ML potential.

Sampling and Testing Program. Samples for geochemical testing were selected from the numerous exploration cores drilled to outline the deposit. A summary of the geochemical testing program is provided in Table K3.18-2. The samples included all the main Pebble deposit rock types and adjacent rock types that might be removed during mining. As of 2018, the program had included analysis of over 1,000 rock samples from the Pebble deposit, and 26 samples of overburden materials. In addition, almost 60 tailings samples, comprised mostly of angular,

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pyritic, and gold plant tailings, from test processing of ore composites have also been characterized. To date, limited geochemical testing has been performed on the representative concentrate because possible designs for a metallurgical process are still at an investigative stage.

The rock samples were tested for mineral abundance using transmitted and reflected light microscopy, ARD potential, bulk chemical composition, and constituent mobility. Geochemical tests have included acid-base accounting (ABA), sequential net acid generation, shake flask extractions, meteoric water mobility, humidity cells, subaqueous (saturated) leach columns, and on-site field weathering (barrel and bag) tests to evaluate rates of oxidation, acid generation, acid neutralization, and element leaching. Selected geochemical data are summarized in data tables in Appendix K3.18, and described below.

Acid-Generating Potential. In some mineralized deposits, rock type alone can be a good indicator of whether a rock will potentially produce ARD and/or ML. There are two main geological divisions at the proposed mine site. The mineralization is hosted by sedimentary and volcanic rocks of pre-Tertiary age. After the pre-Tertiary occurrence of mineralization, those rocks were partially eroded, then covered by other sedimentary and volcanic rock later in the Tertiary period. The later Tertiary age rocks at the mine site generally do not contain copper, gold, or other metals that would be economically viable to recover at the present time (SRK 2011a and 2011b).

A summary of ABA data is provided in Table K3.18-3. ABA testing has determined that the pre-Tertiary mineralized sedimentary and plutonic rocks at the proposed mine site are predominantly potentially acid generating (PAG). The acid-generating potential (AP) of these rocks is relatively high because they contain several percent pyrite, as indicated by the total sulfur content of >1 percent, and they have limited neutralization potential (NP). The distribution of pyrite (and consequently AP) was found to be influenced by the hydrothermal alteration zones overprinted on the deposit. In contrast, the majority of the Tertiary age rocks that comprise the cover and overburden materials at the proposed mine site are considered non-PAG because they have <1 percent pyrite, low total sulfur concentrations, and excess NP because carbonate minerals are abundant. However, a small proportion of the Tertiary age volcanic rocks were found to be PAG.

Weathering and Leaching Rates. To develop an understanding of weathering and leaching processes that might affect rocks exposed during mining (e.g., pit walls and stockpiled waste rock and tailings), additional laboratory and field geochemical tests were conducted. Laboratory tests included humidity cell, subaqueous (saturated) column, stored bag, and field barrel tests. Humidity cell test data obtained for periods up to 8 years allow interpretation of long-term acid generation potential and neutralization rates as the rocks are oxidized and leached during wet and dry cycles. Humidity cell test results were used to confirm ABA criteria for segregating PAG from non-PAG rocks and waste, based on the NP/AP ratio. The ABA and humidity cell data indicate that PAG and non-PAG rocks can be distinguished using an NP/AP ratio of 1.4 (SRK 2011a), and are applicable to pre-Tertiary, Tertiary, and overburden materials.

Humidity cell tests also help to estimate the potential lag or delay in the onset of ARD using the sulfide oxidation and release rates and pH profiles. The delay occurs because acid-neutralizing minerals (e.g., calcite, feldspars, and micas) are not depleted instantly as acid is formed, but are consumed at different rates depending on their reactivity and abundance. Results show that pre-Tertiary rocks with low NP/AP ratios (less than 0.3) have little neutralization potential and are estimated to generate acid within 1 to 6 years (SRK 2018a). Pre-Tertiary rocks with NP/AP ratios of 1 have higher neutralization potential, which delays the estimated onset of acid generation to 8 to 20 years (SRK 2018a). These estimated times to onset of ARD are

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considered underestimates because they are based on data developed under ideal laboratory conditions. Actual conditions in the field, with colder temperatures, and long winters, are likely to be less conducive to acid formation. Paste pH results for aged rock cores stored at the site suggest that acidification may be delayed up to 40 years. Given differences in the test conditions, laboratory and field tests suggest that oxidized pre-Tertiary mineralized rock may take up to several decades for acidification to occur.

Element release rates determined from kinetic tests were mainly a function of leachate pH rather than the element content of the samples. Leaching of copper accelerated as pH decreased; therefore, the potential for metal release is linked to the potential for acid generation, and ABA data can be used to assess the potential for copper leaching. However, for some elements (e.g., arsenic, molybdenum, and selenium), release can be environmentally significant under neutral pH conditions. Tests on some samples of Tertiary rock showed elevated leaching of these elements under non-acidic conditions. These leaching data, along with baseline water quality data, were used with other inputs to develop geochemical source terms for water quality modeling and water treatment planning (SRK 2018c). Additional information regarding how the data were used in water quality modeling is provided in Section 4.18.

Tailings. Ore processing based on a conventional flotation process to recover chalcopyrite and molybdenite, the primary copper and molybdenum minerals, followed by treatment of pyrite to recover gold, would result in a low sulfide bulk tailing concentrate and a high-sulfide (pyrite-rich) tailing concentrate, respectively. Metallurgical process testing has produced a range of representative tailings products. Geochemical testing of approximately 60 tailings samples indicates that the most volumetrically abundant product, bulk tailings, which would be produced under most of the processing approaches being considered, typically contains low to moderate total sulfur and can be categorized as non-PAG, provided the total sulfur remains below 0.2 percent. The ARD potential for the bulk tailings is lower than that of mineralized rock because most of the sulfur is removed to recover the economic minerals and separate out the pyritic tails while concentrating neutralizing minerals in the bulk tailings. Element leaching from the rougher tailings occurred at low rates, and unfiltered process supernatants were found to contain low levels of potential constituents relative to water quality standards. The pyrite and gold plant tailings have higher sulfide contents are often classified as PAG, and leach metals at higher rates. Appendix K3.18 provides additional information on the geochemical characteristics of the tailings and supernatant.

Pit Block Model. Because of the geochemical variability in the rocks, assessment of impacts resulting from geochemical processes requires consideration of the disposition and fate of the material that would be mined each year. The annual area mined can be estimated by developing a block model (i.e., a computer model that shows the three-dimensional location of each type of rock and the likely order of mining.) Rock material is assessed based on its PAG and non-PAG characteristics and whether the material would be processed and end up in tailings, or not processed and set aside as waste rock, to design waste management strategies.

Based on the results obtained from integrating the geochemical studies with the block model, the majority of the rocks that would be mined from the deposit do not have the potential for acid generation, and could be considered substantially acid neutralizing. However, some rocks do have the potential to leach certain non-acid constituents; mainly arsenic and sulfate. These results, and their influence on the existing baseline water quality at the site of the proposed mine, are discussed in more detail in the next few sections. [Note: This text will be updated when requested information on the open pit block model is received.]

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3.18.1.2 Surface Water Quality

The Pebble deposit is located in the headwaters of the Upper Talarik Creek (UTC) and South Fork Koktuli (SFK) River drainages, and adjacent to the headwaters of the North Fork Koktuli (NFK) River drainage. The NFK River is on the north side of the project area. The Kaskanak Creek (KC) drainage lies south of the SFK River drainage.

Sampling Program. Water quality studies were conducted by Schlumberger et al. (2011) and ERM (2018a) to quantify chemical and physical parameters that describe the quality of the water at the mine site and surrounding areas that would potentially be impacted by the proposed action and alternatives. Water quality data were collected for rivers, lakes, and seeps in the project area, and throughout a 965 square mile area that includes the NFK River, SFK River, and UTC (Figure 3.18-1).

A comprehensive network of sampling stations was established in the project area for sampling surface water from streams, lakes, and seeps. Stream samples were collected from 44 locations during 50 sampling events from April 2004 through December 2008 (Schlumberger et al. 2011). Lake and pond samples were collected from 19 lakes once or twice per year during 2006 and 2007. Seep samples were collected from 11 to 127 sample locations (depending on the year), two to five times per year.

Altogether between 2004 and 2008, over 1,000 samples were collected from streams, more than 600 samples from seeps, and approximately 50 samples from lakes. Additional samples were also collected during the supplementary water quality study period, which occurred from 2008 and 2013 (ERM 2018a).

Several tables are provided in Appendix K3.18 showing a summary of surface water quality data compared to criteria for waterbodies most pertinent to potential future impacts at the mine site. These include data for NFK, SFK, UTC, and Frying Pan Lake (Table K3.18-6 through Table K3.18-9). Additional water quality details on seeps and other lakes and streams in the mine site study area are provided in ERM (2018a: Tables 9.1-15 through 9.1-24) and Schlumberger et al. (2011: Tables 9.1-31 through 9.1-36), and are incorporated by reference into the discussion below.

Overview of Sampling Results. The results of these analyses indicate that the baseline surface water resources can generally be characterized as cool, clear waters with near-neutral pH that are well-oxygenated, low in alkalinity, and generally low in nutrients and other trace elements. Water types ranged from calcium-magnesium-sodium-bicarbonate to calcium-magnesium-sodium-sulfate. Water quality data occasionally exceeded the maximum criteria for concentrations of various trace elements in some individual sample measurements; however, in no instance did the mean concentration of trace elements exceed the most stringent water quality guidelines. Cyanide was occasionally present at detectable concentrations in a limited number of samples. Cyanide detected in those samples is believed to be of natural origin, based on the distribution and lack of anthropogenic sources. Cyanide can occur naturally as a product of anabolism in some plants, bacteria, and fungi (CDC 2013). Additionally, there were consistently detectable concentrations of dissolved organic carbon. No detectable concentrations of petroleum hydrocarbons, polychlorinated biphenyls (PCBs), or pesticides were found.

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Figure 3.18-1: Surface Water Quality Sample Locations, Mine Site Area

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Some differences in water quality between watersheds and trends in water quality along streams were noted. These are summarized below and in tables in Appendix K3.18. Higher concentrations of copper, molybdenum, nickel, zinc, and sulfate were present in SFK than in NFK, consistent with SFK's proximity to the Pebble deposit area. Total dissolved solids (TDS), pH, sodium, alkalinity, hardness, nitrogen (nitrate+nitrite), and nickel concentrations were greatest in the UTC drainage. The uppermost reach of UTC passes through a portion of the general deposit area, and also had significantly higher concentrations of all of these naturally occurring constituents than in NFK. TSS, potassium, chloride, iron, and arsenic concentrations were highest in KC, while cadmium and lead concentrations were highest in the NFK drainage. These characteristics of KC and NFK likely indicate that these parameters are unrelated to the deposit area, and represent water quality signatures that are distinct from the other drainage areas.

The following paragraphs discuss some of the specifics of the sample results and trends observed in the NFK, SFK, and UTC. Data summaries for these streams are provided in Tables K3.18-6 through K3.18-8, and trend analysis data in Table K3.18-13 through Table K3.18-15.

Total Dissolved Solids. The mean levels for TDS in streams, by watershed, ranged from 37 to 51 milligrams per liter (mg/L), which is 10 percent or less of the most stringent Alaska Department of Environmental Conservation (ADEC) water quality maximum criterion. Of the three streams that originate close to the deposit area, UTC and SFK had significantly higher TDS levels than NFK. Furthermore, a decrease in TDS levels with distance along the stream was more pronounced in the SFK and UTC watersheds than in the NFK watershed. Higher TDS in the UTC and SFK watersheds with decreasing trends downstream were expected, because the deposit area lies within their watersheds, and the oxidation of sulfide minerals associated with the deposit would release dissolved solids. The mean levels for TDS in lakes and seeps were similar to those for streams, with values of 49 and 42 mg/L, respectively.

Total Suspended Solids and Turbidity. Mean TSS values ranged from 1.19 mg/L to 3.21 mg/L in the NFK and UTC, respectively. The highest value for TSS was in KC, and the lowest was in the NFK. Mean TSS values did not exceed the most stringent water quality criteria for any rivers in the mine site area; however, at least one exceedance was recorded in a sample collected at the UTC. The mean for TSS in lakes and seeps was similar to that for streams.

pH. The pH values in surface water were close to neutral. The mean pH for streams by watershed ranged from 6.7 to 7.0. The mean pH values for lakes and seeps were 7.2 and 6.5, respectively. Because of the exposed Pebble deposit and seasonally fluctuating groundwater conditions in the area (see Section 3.17, Hydrogeology), it is possible that the oxidation of sulfide minerals release acid in this area; however, based on the mean pH data, carbonate minerals may be providing some pH buffering. Although the mean pH values fell within the range for pH specified in the most stringent ADEC criteria (6.5 to 8.5), 34 percent of all individual water quality samples did not meet the water quality criteria for pH. Recorded pH values ranged from 3.31 to 9.33 with the lowest pH recorded in the NFK and the highest recorded in UTC. The frequency of this trend in seeps was at least double that of streams, depending on the watershed.

Alkalinity. The alkalinity of the surface water samples was low. Mean alkalinity for streams, by watershed, ranged from 17 to 32 mg/L. Mean alkalinity for lakes and seeps was 19 and 23 mg/L, respectively. Alkalinity was the parameter that was most frequently detected outside the range of the most stringent ADEC criterion. In all, 43 percent of all surface water samples were below this value. The frequency with which alkalinity values for lakes and seeps were below the minimum criterion was 10 to 20 percent higher than the frequency for streams.

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Temperature. Mean water temperature in streams ranged from 4.0 to 4.8 degrees Celsius (°C), depending on the watershed. The standard deviation of temperature values measured in each watershed was approximately equal to the mean of the values, indicating a high level of variability. Lakes in the mine site area were considerably warmer, with a mean temperature of 12°C, and seeps slightly cooler, with a mean temperature of 3.4°C.

An example of seasonal stream temperature variability is shown on Figure 3.18-2, which depicts water temperature in NFK at a location about 15 miles downstream of the mine site. Daily water temperatures range from about 6 to 16°C in summer months, and from about 1 to 7°C in spring and fall during breakup and before freeze-up (USGS 2018).

The period of temperature record at the USGS site is from October 2013 to present. While long-term water temperature trends are not available, these may vary as a subdued expression of long-term air temperature trends. Mean annual temperature trends in the region indicate that air temperatures have increased approximately 3°C over the past 50 to 60 years related to large-scale climate oscillation (Knight Piésold 2012, 2018a), trends that are predicted to continue into the next century (SNAP 2018).

Dissolved Oxygen. Dissolved oxygen (DO) concentrations in streams were very similar in all watersheds, with mean concentrations that ranged from 10.2 to 10.5 mg/L. These values are close to the theoretical solubility of oxygen of 12.3 mg/L at 900 feet above mean sea level (amsl) and a water temperature of 4°C. Although most samples indicated high DO, 7 percent of the samples had DO concentrations lower than the most stringent ADEC minimum criterion.

Major Ions. Groundwater type can be characterized by the presence and predominance of specific ions, including anions and cations. The water type of most samples from streams in the mine site area ranged from calcium-magnesium-sodium-bicarbonate to calcium-magnesium-sodium-bicarbonate-sulfate. The cation composition was dominated by calcium and was relatively consistent. The anion composition had a wider range, with most stream samples being dominated by carbonate. The average water type of the lakes and seeps was generally the same as the streams; however, the seeps had a slightly greater range of water types, and the distribution of water types was slightly different. Specifically, the seeps included samples with a higher proportion of sulfate, and the samples also were distributed more evenly across the spectrum of anion composition, rather than being weighted toward the bicarbonate end of the spectrum.

Nutrients. Nutrients, which included total ammonia, total nitrogen (nitrate+nitrite), total phosphorous, and orthophosphate, had generally low concentrations, especially in lakes and seeps. Orthophosphate was generally not present at detectable levels, with one exception in the KC watershed. Total ammonia was detected in 19 to 36 percent of surface water samples, and mean concentrations ranged from 0.03 to 0.05 mg/L, depending on source (streams, lakes, or seeps). Nitrogen and phosphorous were detected in 66 to 98 percent of surface water samples, depending on the sample source. Mean concentrations of nitrogen ranged from 0.1 to 0.3 mg/L, and mean concentrations of total phosphorous ranged from 0.02 to 0.04 mg/L. None of the nutrient concentrations exceeded the most stringent ADEC maximum criterion. The coefficients of variation for nutrients were high compared to most other parameters, often in the range of 1 to 2.

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Figure 3.18-2: Daily Water Temperatures in NFK River

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Trace Elements. The trace elements aluminum, antimony, arsenic, barium, cadmium, copper, iron, lead, manganese, molybdenum, mercury, nickel, and zinc were detected in surface water, although at low concentrations. The frequency of detection depended on the watershed, and on whether the sample was collected from a stream, a lake, or a seep. Total and dissolved aluminum, barium, copper, iron, manganese, and molybdenum were typically the most frequently detected trace elements in the streams and lakes; the frequency of detection generally ranged from 85 to 100 percent, depending on sample source (streams, lakes, or seeps). The most frequently detected elements in the seeps were generally the same as those for the streams and lakes, but the frequency of detection was lower in the seeps (53 to 99 percent, rather than 85 to 100 percent). Exceptions to this general pattern included a frequency of detection for total and dissolved arsenic in KC of more than 98 percent. The trace elements arsenic, lead, nickel, and zinc had an intermediate frequency of detection in most waters sampled, with the exception of zinc, which had a higher frequency of detection (98 percent) in lakes. Cadmium had the lowest frequency of detection.

Some trace element concentrations in stream samples exceeded the most stringent ADEC maximum criteria. These are described below in relationship to watersheds (trend analyses for data within individual watersheds are provided in Appendix K3.18):

- Copper from the SFK watershed exceeded the water quality criterion most frequently, with total and dissolved copper exceeding the criterion in 42 and 34 percent of samples, respectively. In contrast, copper had one of the lowest frequencies of exceedance in other watersheds. The relatively high frequency of exceedance in the SFK watershed is probably related to proximity of the deposit.
- Total aluminum exceeded the most stringent ADEC maximum criterion in 12 to 22 percent of the stream samples from the SFK, UTC, and KC watersheds; and in 6 percent of the samples from the NFK watershed. In contrast, dissolved aluminum exceeded the criterion in only 1 percent of the stream samples, and only in the UTC watershed; therefore, aluminum exceedances seem to be almost exclusively associated with suspended solids.
- Total lead exceeded the most stringent criterion in 8 to 16 percent of the stream samples, and was generally the next most frequently exceeded criterion after total aluminum. Dissolved lead exceeded the criterion in 1 to 6 percent of the stream samples, and was second only to copper for frequency of exceedance for dissolved elements.
- Total manganese exceeded the criterion in 15 percent of stream samples from the SFK and UTC watersheds, in 3 percent of the samples from the NFK watershed, and in none of the samples from the KC watershed. Similar to aluminum, manganese exceedances appear to be associated with suspended solids.
- Concentrations of total antimony, cadmium, iron, mercury, and zinc for the stream samples rarely exceeded the criteria (0.3 to 4 percent).
- In samples from lakes and seeps, exceedances of the most stringent maximum criteria included total and dissolved aluminum, total and dissolved copper, total and dissolved iron, total and dissolved nickel, total and dissolved lead, total and dissolved cadmium, and dissolved manganese.

Cyanide was occasionally detected in the surface water samples. Total cyanide was detected in 2 to 15 percent of all samples, depending on sample source (streams, lakes, or seeps), and weak acid dissociable cyanide was detected in 5 to 13 percent of all samples. Concentrations of weak acid dissociable cyanide in samples were compared with the most stringent ADEC

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maximum criterion, and exceeded this criterion in 1 to 3 percent of the stream samples, depending on the watershed.

Dissolved organic carbon was detected in 93 to 100 percent of the stream samples, and the mean concentrations ranged from 1 to 2 mg/L, depending on the watershed.

Concentrations of petroleum hydrocarbons, volatile and semi-volatile organic compounds, polychlorinated biphenyls, and pesticides were not detected.

3.18.1.3 Groundwater Quality

Mine Site Monitoring Wells. A total of 77 groundwater monitoring wells with depths up to 200 feet below ground surface were installed in the project area. Two additional drill holes (DH-8417 and GH10-220) were used for sampling deep bedrock in the deposit area at depths ranging from 210 to 4,050 feet. Table K3.18-16 provides a list of wells completed within and outside of the deposit area, along with depth and bedrock lithology. The location of the wells is shown on Figure 3.17-2. The results of groundwater quality testing are summarized in Table K3.18-17 and discussed below based on mean values for wells grouped by lithology (ERM 2018a). These data were used in the Knight Piésold (2018a) Operations Water Management Plan to predict the water quality of pit dewatering water going to water management ponds (WMPs) and influent to the water treatment plants (WTPs) (see Section 4.18).

Groundwater samples from depths of 200 feet or less were characterized by mean levels of TDS ranging from less than 90 mg/L to over 150 mg/L (higher in bedrock wells); mean pH values between 4.4 and 7.3; mean DO concentrations ranging from 2.6 to 9.1 mg/L; and mean concentrations of trace elements above the most stringent ADEC water quality maximum criteria for several constituents (aluminum, copper, iron, lead, and manganese).

Concentrations of TDS in groundwater generally decreased with distance from the deposit area, and results from deep drill hole DH-8417 (mean of 835 mg/L) suggest that concentrations of TDS increase with depth (Knight Piésold 2018a). Monitoring wells MW-14D in the SFK watershed and P08-69D in the NFK watershed were the only wells showing a relatively high TDS level that was not consistent with this general pattern. While data from well MW-14D are somewhat anomalous, they could be interpreted to suggest that the deposit has influenced groundwater quality.

Most of the groundwater samples had a composition that ranged from calcium-bicarbonate to calcium-magnesium-bicarbonate and calcium-sodium-bicarbonate. Some samples from relatively close to the deposit area had a higher proportion of sulfate, suggesting that the groundwater in this area is influenced by oxidation of the sulfide minerals that are associated with the deposit. As the sulfide minerals oxidize, iron, sulfuric acid, and probably trace elements are released. The acid is neutralized by carbonate minerals such as calcite and dolomite, which release calcium, magnesium, manganese, carbonate, and usually some trace elements. This series of geochemical reactions increases the concentration of TDS and the proportion of sulfate in the groundwater.

Although sulfides appear to be oxidizing locally in the deposit area, the groundwater is not acidic overall. The lowest mean pH value of 4.4 was recorded at only one well location in shallow bedrock. In the remaining wells, mean pH values ranged from 6.7 to 7.9, indicating broadly that the groundwater is not acidic. Eight wells (six completed in overburden, two in bedrock) had mean pH values greater than 7.0, and three of these wells (all completed in overburden) had the highest mean TDS concentrations observed.

The DO measured in the groundwater was generally high. Twenty-seven wells had mean DO concentrations of 8 mg/L or greater. Wells with relatively high TDS, measured in filtered

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samples, also generally showed relatively high concentrations of arsenic, barium, and molybdenum compared with other wells in the analysis area. All of the wells with more than two trace metals at relatively high concentrations were located closer to the deposit area.

Some systematic differences in concentrations were observed with depth, as indicated by the differences in concentration between wells that were completed in overburden and those completed in bedrock (Table K3.18-17). Specifically, the concentrations of antimony, arsenic, copper, iron, manganese, and molybdenum tended to be higher in wells completed in bedrock than in wells completed in overburden. Conversely, the concentrations of DO and nickel tended to be lower in bedrock wells than in overburden wells.

Drinking Water Wells. There are currently no drinking water wells at the mine site (ADNR-WELTS 2018). During exploration activities, personnel typically stay in Iliamna and utilize local water supplies in that community (described below).

3.18.1.4 Substrate/Sediment Quality

This section describes baseline information on waterbody substrates at the mine site. Baseline information on wetland substrate is provided in Section 3.22, Wetlands, and 3.14.2.3, Soil Chemistry. Baseline physical and chemical data on substrate/sediment from the major drainages and other waterbodies at the mine site were collected between 2004 and 2008 (Knight Piésold 2011; SLR Alaska 2011; R2 et al. 2011; HDR Alaska 2011; SLR Alaska et al. 2011; Three Parameters Plus and HDR 2011). Sample locations are shown on Figure 3.18-3. The National Uranium Resource Evaluation (NURE) program also collected a variety of substrate samples across the region in 1977 (Grossman 1998). NURE data include basic physical substrate descriptions and thorough chemical analyses, as well as reporting of potential contaminant sources, and are included below.

Physical Characteristics. Waterbody substrate data coverage within the mine site includes the SFK, NFK, and UTC drainages. Streambed sediment from these drainages is dominated by medium to coarse gravels, to small cobbles, with boulders present in stretches of rapids. In areas of low water velocity and pools, sands and silts are more common, and organic sediments are present in some areas (Knight Piésold 2011; R2 et al. 2011). The NURE data collected from the region include basic physical substrate descriptions and thorough chemical analyses, as well as reporting evidence for potential local contaminant sources. Twelve samples of pond substrate collected by NURE within approximately 20 miles of the mine site were all reported as mud/fine sediment (Grossman 1998). Limited data from the shores of Frying Pan Lake show a sand, silt, and gravel substrate (R2 et al. 2011).

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Figure 3.18-3: Sediment Quality Sample Locations, Mine Site Area

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Chemical Quality. Between 2004 and 2007, a total of 198 samples of sediment from lakes, ponds, seeps, and major and minor drainages in the analysis area were sampled and analyzed for their content of naturally occurring trace elements, anions, cations, and organics (SLR Alaska 2011). A summary of the data is provided in Table K3.18-18. Samples collected from wetland substrates are included in the summary of soil chemical quality in Section 3.14, Table 3.14-2 and Table 3.14-3.

Of the 26 trace elements for which samples were analyzed, all were present above detection limits in at least some of the samples, with aluminum, iron, calcium, and magnesium present at substantially higher concentrations than the other elements. Mercury content of sediment samples from the mine site was the lowest level detected, at a mean concentration of 0.040 milligrams per kilogram (mg/kg). Comparing sediment from the major drainages, copper was the only element showing significant variation, likely due to the difference in rock composition across drainages. Copper concentrations were particularly high in SFK sediment, likely due to copper-rich bedrock at the headwaters. In comparison to sediment quality guidelines (SQGs) (Table K3.18-1), the highest detected concentrations of four metals (arsenic, chromium, copper, and nickel) exceeded concentrations that may have an adverse effect on benthic organisms [both the threshold effects level (TEL) and higher probable effects level (PEL)]. These samples were from sediment in the SFK drainage (for arsenic and copper) and UTC drainage (for chromium and nickel). The mean concentration of arsenic exceeded the TEL across the study area.

Sediment from ponds and minor drainages in the mine site area showed higher concentrations of anions and cations such as sulfate, ammonia, and sodium than did other waterbodies. Total cyanide concentrations were the lowest of the analyzed anions on average, with a mean concentration of 0.39 mg/kg (SLR Alaska 2011). Of the 12 pond sediment samples analyzed by the NURE within 20 miles of the mine site area, none showed evidence of contamination (Grossman 1998).

Analyses of several organic compounds (GRO, DRO, VOCs, SVOCs, and PAHs) were performed on one mine site pond sample to identify the potential presence of naturally occurring hydrocarbons. Of the compounds analyzed, DRO, RRO, and 12 of 18 PAHs were detected. Because of the remote undeveloped nature of the area, these compounds are likely present due to the biogenic breakdown of aquatic plants, historic wildfires, or volcanic activity (e.g., Abdel-Shafy and Mansour 2015). Total organic carbon (TOC) was detected in all 34 samples tested, with a mean concentration of 6.05 percent.

3.18.2 Transportation Corridor

The 84-mile long proposed access corridor would cross numerous streams within the Bristol Bay and Cook Inlet watersheds, and includes an 18-mile crossing of Iliamna Lake. The corridor originates in the Nushagak watershed at the mine site, and traverses the Kvichak watershed on the north side of the Alaska Peninsula; both are within the greater Bristol Bay watershed (Figure 3.16-1). The south end of the corridor terminates in the Tuxedni-Kamishak bays watershed of the greater Cook Inlet watershed. More detailed descriptions of these watersheds are provided in Section 3.16, Surface Water Hydrology.

3.18.2.1 Surface Water Quality

Mine Access Road. Surface water quality data described above for the UTC drainage at the mine site are pertinent to the upper part of the mine access road. Stream data for UTC is summarized in Table K3.18-8, and spatial trends are presented in Table K3.18-15. Although exceedances were measured in some samples, mean concentrations of all measured

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constituents for the UTC were below the most stringent water quality standards. Additionally, field studies in 2018 included turbidity measurements at stream crossing sites. Field study measurements indicate that all stream crossings along both the mine access road and the Iliamna spur road yield turbidity below the minimum detection level for the instrument used (65 cm turbidity tube; 7-11 Nephelometric Turbidity Units [NTU] detection level) (PLP 2018-RFI 036).

Newhalen River and North Access Route. A total of 16 surface water sampling stations were established and sampled by Schlumberger et al. (2011) along the north access route extending east from the Newhalen River (Figure 3.18-4). About 12 samples were collected at each station over a 2-year period in 2004 and 2005. One of the stations, located on the Newhalen River upstream of the proposed Newhalen Bridge, is pertinent to both the proposed transportation corridor under Alternative 1 and the northern access route under Alternatives 2 and 3. Table K3.18-10 and Table K3.18-11 provide a summary of the surface water quality data for the western and eastern parts of the northern access route, respectively. Data are described below for both the Newhalen River and collectively for all stations along the northern access route.

The surface water was characterized by: low levels of TDS (2 to 126 mg/L for all stations, 18 to 45 mg/L for Newhalen River); mostly near-neutral pH (4.6 to 8.8 for all stations, 6 to 7.8 for Newhalen River); and high DO concentrations (9 to 19 mg/L for all stations, 9 to 17 mg/L for Newhalen River). Additionally, TSS for all stations ranged from 0.2 to 51.6 mg/L and 0.5 to 9.1 mg/L for Newhalen River. During months when surface water samples were collected, temperatures ranged from 0.1 to 23ºC for all stations, and 1 to 16ºC at the Newhalen River station. The full annual range of water temperatures could not be characterized because samples were not collected during some winter months (November, December, or January).

The cation composition of the water samples was dominated by calcium and was consistent between sampling events. The anion composition was typically dominated by bicarbonate, but varied over time. Concentrations of nutrients were low; specifically, most ammonia and phosphorous concentrations were below detection limits. Total nitrogen (nitrate+nitrite) averaged 1 mg/L for all stations and 0.37 mg/L for the Newhalen River. Collectively for all stations, concentrations of the trace elements aluminum, copper, lead, and zinc were above the most stringent ADEC maximum criteria in a few cases. Only aluminum was above the most stringent criterion in about half of the Newhalen River samples.

Iliamna Lake. A total of 176 surface water samples were collected at nine stations in northeast Iliamna Lake (May to October) between 2005 and 2007 (HDR 2011a). Stations located near Alternative 1 include one near the mouth of UTC and four near Iliamna village; four additional sites were located at the east end of the lake. Samples were collected at multiple depths at five of the nine locations (Figure 3.18-5). Ambient water measurements included dissolved oxygen, temperature, specific conductance, oxidation reduction potential, pH, turbidity, and water clarity. Table K3.18-12 provides a summary of the lake water quality data. Samples were collected and analyzed at various locations in four different regions: UTC, Iliamna Village Area, Pedro Bay Area, and at Pile Bay. The UTC drainage and Iliamna Village area sample locations represent water quality information for proposed action, and the Pedro Bay area and Pile Bay area lend relevant water quality insight for transportation alternatives utilizing mine access along the northeast side of Iliamna Lake.

The sample data for all sites suggest that Iliamna Lake has water quality conditions similar to the natural conditions of other regional lakes. Aluminum, copper, iron, lead, manganese, and alkalinity were detected at concentrations that were outside the most stringent ADEC water quality criteria; however, mean concentrations did not exceed water quality criteria. Cation and anion dominance was generally characteristic for temperate lakes. Concentrations of major ions

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did not vary with depth, suggesting that the water at the sampling sites were well mixed. The concentrations of several major ions and TDS were lower earlier in the summer, peaked in September, and declined again in October. These temporary increases are likely associated with the influence of inflow from streams and precipitation.

Regional variations in constituent concentrations were observed for some trace elements including aluminum, cobalt, copper, iron, lead, and manganese. In particular, significant variation was observed in the mean concentration of aluminum. Mean concentrations of total aluminum varied greatly between locations; mean concentrations at Pile Bay were over ten times that of the UTC area. Chromium, cobalt, copper, iron, lead, and manganese also showed some notable variation (about 50 percent change) in mean concentrations. Samples collected at UTC consistently yielded lower concentrations than other locations for these trace metals.

HDR Investigators noted that concentrations of nutrients and major ions found during the 2005 to 2007 study were similar to concentrations from a study conducted at Iliamna Lake nearly 40 years before. The single exception was sodium, which was present at nearly twice the concentration found in the earlier study. However, only a few ions (copper, lead, aluminum, iron, manganese, and alkalinity) had concentrations outside benchmarks established by ADEC for freshwater. The investigators attributed the latter to geological influences, and noted their consistency with previous studies conducted at Iliamna Lake and other area watersheds (HDR 2011a).

Field data collected in 2017 added three additional sample locations assessing the surface water quality near the proposed ferry terminals in Iliamna Lake. Samples were taken near the surface and near the bottom of the lake. These data did not yield any exceedances of the most stringent water quality criteria (Table K3.18-1) for total or dissolved metals, or any conventional parameters tested (GeoEngineers 2018a, Table 6a).

South Access Road. Water quality data are limited along the proposed south access road. Field studies in 2018 recorded turbidity measurements at stream crossings along the south access road at levels below the instrument detection level (7-11 NTU) for all but two stream crossings, at which turbidity levels of 24 and 13 were recorded. Turbidity measurements at the Gibraltar River crossing were also below the instrument detection level (PLP 2018-RFI 036).

Drinking Water Sources. Three communities around Iliamna Lake have community surface water systems as their primary drinking water source, including Nondalton, Kokhanok, and Igiugig (Figure 3.16-1). Nondalton uses infiltration galleries from Six Mile Lake (which drains into the Newhalen River); Kokhanok draws water from Iliamna Lake; and Igiugig has one active intake in the Kvichak River, just downstream of Iliamna Lake. No state data is available on drinking water sources for Pile Bay and Williamsport (ADEC 2018; ADNR-WELTS).

Past water system violations in these communities reported by ADEC (between 1995 and 2018) are mostly monitoring violations that represent failure to collect a sample. Water quality constituent exceedances are rare and have included coliform, iron, manganese, arsenic, lead and copper (ADEC 2018).

3.18.2.2 Groundwater Quality

Drinking Water Wells. The village of Newhalen uses both community and private groundwater wells as drinking water sources, while Iliamna and Pedro Bay rely on private groundwater wells. Drinking water wells were sampled at four locations (Newhalen, Nondalton, Iliamna, and Pedro Bay) in 2004 and 2005 to assess regional water quality across the transportation corridor (Schlumberger et al. 2011a). These wells were similar in quality, with exceedances of drinking water quality standards for total arsenic in Newhalen, Nondalton, and Pedro Bay; and pH

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exceedances in Newhalen and Pedro Bay. Newhalen has had numerous monitoring violations from failure to collect a sample since 1995, but rare exceedance violations have only been registered for coliform (ADEC 2018).

Mine Access and South Access Roads. Groundwater quality beneath the proposed 84-mile transportation corridor can be characterized as similar to that of the mine site and port. Along the northern mine access road in the Nushagak and Kvichak watersheds, the groundwater quality of the transportation corridor is similar to that of the mine site. Trend analysis of the mine site groundwater system (discussed above) suggests that TDS concentrations decrease with distance from the mine site. The northern mine access road traverses a series of shallow intermittent surficial deposits, including glacial, glaciofluvial, and alluvial deposits (Detterman and Reed 1973). The south access road would traverse flat ground and low hills, much of which is bare rock covered with a thin layer of soil (AECOM 2018h). There are few known potentially groundwater-bearing surficial deposits along the south access road, with few intermittent glaciofluvial and alluvial surficial deposits (Detterman and Reed 1973). This terrain suggests that shallow groundwater occurrences along this route would be limited. Groundwater quality beneath the south access road is likely similar to that of the port site.

North Road. The northern access route would cross a variety surficial deposits, all of which have the potential to be groundwater bearing. These are intermittent in the eastern part of the route and thicker in the western part of the route (Detterman and Reed 1973; Schlumberger et al 2011a). Groundwater quality and characteristics can be influenced by these surficial deposits and bedrock geology, which is complex throughout the Cook Inlet basin (Brabets 1999). A single groundwater quality sample was collected in Pedro Bay near the northern access route and was similar in quality to wells sampled at Newhalen, Nondalton, and Iliamna (Schlumberger et al. 2011a).

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Figure 3.18-4: Surface Water Quality Sample Locations, Northern Access Route

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Figure 3.18-5: Surface Water and Sediment Sample Locations, Iliamna Lake

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3.18.2.3 Substrate/Sediment Quality

Physical Characteristics. Stream substrate intersected by the transportation corridor includes a wide range of fine to coarse sediments (Grossman 1998). Stream sediments at the northern end of the road corridor are dominated by sand and silt, with some stretches high in gravel and cobbles, while other stretches are rich in organic matter (PLP 2018-RFI 036). Limited substrate data along the Iliamna spur road shows that some stream crossings are dominated by gravel and cobbles, while others are high in fine-grained sand, silt, and organic matter. Along the mine access road south of the intersection with the Iliamna spur road, substrates are dominantly silt, sand, and gravel (PLP 2018-RFI 036). No substrate data is available for streams along the southern portion of the mine access road.

A small number of nearshore and deeper water sediment samples from Iliamna Lake were collected in 2005 and 2006 (Figure 3.18-5). Substrate offshore of the north ferry terminal near the mouth of UTC was described as consisting of small gravel. Lake sediment analyzed near Iliamna village was described as fine-grained material (HDR Alaska 2011). Sediment samples collected near the proposed ferry terminals in Iliamna Lake in 2017 consist primarily of underdeveloped sand-gravel beaches with intermittent cobble, and larger rocks, and occasional outcrops of bedrock (GeoEngineers 2018a).

Stream substrates along the south access road show similar diversity to those north of Iliamna Lake. Sand and silt are the dominant sediment size, with a high percentage of organic matter present as well. Sampled streams have a higher percentage of boulders and less gravel south of Iliamna Lake. Sediment at the proposed location of the Gibraltar River bridge is dominated by gravel and cobble substrate. Sediments in drainages with proposed crossings by the other four bridges along the south access road tend to be more coarse-grained, with a higher percentage of cobbles and boulders (PLP 2018-RFI 036). Samples of substrate from four ponds within approximately 5 miles of the southern access road were all recorded as mud/fine sediment (Grossman 1998).

Chemical Quality. Sediment in streams intersected by the transportation corridor show little to no known existing contamination (Grossman 1998). Of 12 pond substrate samples analyzed by NURE within approximately 20 miles of the mine access road, none showed evidence of contamination (Grossman 1998).

Table K3.18-19 provides a summary of Iliamna Lake sediment quality data collected in 2005 and 2006. Sediment quality measurements for Iliamna Lake were examined at the Iliamna village area (four sample locations), Pedro Bay area (three sample locations), and at Pile Bay (one sample location). Minor variations in sediment content occur between the three areas; however, mean constituent concentrations only exceeded TELs for cadmium in the Iliamna village area and for copper at the Pile Bay location. In these instances, concentrations did not reach the probable effects level. Sediment samples collected from two locations near Iliamna village (Figure 3.18-5) were analyzed for trace elements and other constituents (HDR Alaska 2011). Sediment data showed levels for copper, lead, aluminum, iron, and manganese that exceed ADEC freshwater sediment criteria (same as SQGs). This is likely due to the highly mineralized nature of the local geology, and is similar to chemistry in other area lakes.

Of four pond substrate samples analyzed by NURE within approximately 5 miles of the south access road, none showed any evidence of contamination (Grossman 1998).

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3.18.3 Marine Ports

3.18.3.1 Surface Water Quality

The discussion of marine water quality below presents regional information, as well as data collected in northern Kamishak Bay (2004 to 2012) and offshore of the Amakdedori port site (2018) that are pertinent to Alternative 1. Additional details of marine water quality in the Iliamna/Iniskin estuary north of Kamishak Bay that are pertinent to the Diamond Point port (Alternatives 2 and 3) are provided in Appendix K3.18.

Suspended Particulates/Turbidity. Cook Inlet basin is an expansive watershed surrounding the 180-mile-long Cook Inlet waterbody. Covering more than 38,000 square miles of southern Alaska, it receives water from six major watersheds and many smaller ones. More than 10 percent of the basin is covered by glaciers, and suspended sediment loading in glacier-fed rivers without lakes is significant, leading to generally high suspended sediment load in some portions of Cook Inlet.

Hart Crowser (2015) provides physical and chemical data from the Ursus Cove area at the north end of Kamishak Bay (about 17 miles northeast of Amakdedori), which are likely similar to the Amakdedori port site because of its exposure to lower Cook Inlet oceanographic conditions. Turbidity in the sampled areas at the north end of Kamishak Bay ranged from near 0 to 13 NTU, probably reflective of varying exposures to wave activity. Turbidity was described as generally moderate, except near the shoreline during windy periods, and did not exhibit any obvious trends that would indicate point-source inputs (Hart Crowser 2015). TSS was 5 mg/L at both surface and bottom, indicating a well-mixed and relatively clear water column.

The amount of suspended solids and accompanying turbidity in waters adjacent to the proposed Amakdedori port site would be a function of seabed composition (e.g., silt, mud, sand). Extrapolation of onshore geophysical survey data (Zonge 2017) and NOAA (2015) nautical chart information for the approach to the port site suggest that the seabed in this area consists of sand and gravel with scattered boulders. This suggests that suspended solids are of naturally low concentrations and that water is relatively clear (i.e., low turbidity). Field studies conducted in 2018 at four offshore locations near the Amakdedori port site (two near-bottom and two near-surface samples) measured no exceedances of the marine screening criteria or the most stringent water quality criteria for TSS with an average of 15.3 mg/L (GeoEngineers 2018a, Table 5). However, under energetic wave conditions, any loose sediment on the seabed would be stirred upward into the water column, thereby temporarily increasing suspended solids and turbidity.

Salinity Gradient and Temperature. The Amakdedori port site is on the open coast of Kamishak Bay. As such, water properties such as salinity and temperature can be expected to be similar to those of lower Cook Inlet (Muench and Schumacher 1980). However, some freshening of surface waters in the immediate vicinity of Amakdedori Creek might occur; while under southerly winds, greater freshening could occur as a result of flows from sources to the south, such as McNeil and Kamishak rivers. The extent of any freshening is dependent on flows from those sources and the persistence of southerly winds. The freshening of surface waters would be manifest as a thin, low-salinity lens overlying saltier water, which would be mixed quickly into the water column by any wave action produced by brisk winds.

Hart Crowser (2015) temperature and salinity data from the Ursus Cove area are likely to be similar to the Amakdedori port site, although they may be influenced by freshening from upland sources through Ursus Lagoon. For the 2012 sampling period (August), mean water temperatures ranged from 12.9 to 14 ^{0}C, while mean salinities ranged from 22.8 to 25.7 parts per thousand. The small range in data for both temperature and salinity suggest a fairly

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homogenous water column. Temperature exhibited seasonal warming up to mid-summer and then subsequent cooling, but was also a function of water depth, indicating the role of insolation as a factor in temperature trends. Salinity decreased from spring to late summer, reflecting the influence of upland sources on coastal waters, and then increased in autumn months.

Organics and Inorganics. The area surrounding Cook Inlet north and east of the port site is a relatively populated and industrialized region of Alaska. Therefore, its waters are influenced to some degree by urban (and a small amount of agricultural) runoff, oil and gas activities (e.g., accidental spills, discharges of drilling muds and cuttings, production waters, and deck drainage), effluent from municipal wastewater treatment facilities, oil and other chemical spills, offal from seafood processing, and other regulated discharges. Waters free from contaminants, however, are considered a principal component of the Cook Inlet beluga whale critical habitat in the Amakdedori port area. Hence, the comparatively low levels of contaminants documented in Cook Inlet beluga whales, as well as in chemical analyses of water and sediment in the area, suggest that contaminant concentrations in lower Cook Inlet are low (NMFS 2016).

Hydrocarbon concentrations sampled in 2004 at the northern end of Kamishak Bay, as well as metal and trace element concentrations collected in 2008, showed little to no effect from anthropogenic sources. The majority of organic constituents tested were not detected (Hart Crowser 2015: Table 34-7). Inorganics analyzed in both surface water and bottom water at a depth of about 50 ft in northern Kamishak Bay (Hart Crowser 2015: Table 34-8, Station MRC20) showed that none exceeded National Recommended Water Quality Criteria (USEPA 2009). In samples collected offshore of the Amakdedori port site, exceedances of marine water screening levels were measured in boron for both total and dissolved metal concentrations at all locations. Additionally, total iron concentrations exceeded the marine screening level for all sample locations (GeoEngineers 2018a, Table 5).

3.18.3.2 Groundwater Quality

Aquifer systems found in small drainages around the Cook Inlet region, such as those in the Amakdedori and Diamond Point port areas, include groundwater occurrences in saturated fractures in bedrock which provide water to streams near the port areas during winter (Glass 1999). Aquifers are primarily situated within glacial and fluvial deposits overlying sedimentary and low-grade metamorphic bedrock. Glacial deposit aquifers have been described as irregular in distribution and highly variable in composition and flow (Brabets et al.1999).

The thickness of surficial deposits in the Amakdedori port area are believed to range from about 50 to 100 ft thick in the port area based on geophysical survey results (Zonge 2017). Potential groundwater-bearing surficial deposits in the Diamond Point area would be limited to alluvium and alluvial fan deposits in the small drainage west of Diamond Point, and morainal deposits in uplands west of the proposed terminal (Detterman and Reed 1973). There are no existing drinking water wells in either port area. Potable water supplies for seasonal work at the Diamond Point quarry come from temporary mobile sources (ADNR 2014).

3.18.3.3 Substrate/Sediment Quality

Physical Characteristics. Studies in upper and lower Cook Inlet provide a general characterization of seafloor substrate and sediment depositional processes in the region. Lower Cook Inlet is a tidal embayment with a substrate of abundant glacial sediments, predominantly cobbles, pebbles and sand, with minor amounts of silt and clay (Sharma and Burrell 1970). Large ice-rafted boulders are also present in some areas (Thurston and Choromanski 1994). Over 40 million tons of sediment is discharged per year into the inlet by surrounding major drainages (Rember and Trefry 2005). Sediment transport in some areas of upper Cook Inlet has

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been shown to be exceptionally high, with 10,000 to over 100,000 cubic yards of sediment moving in and out of the Port of Anchorage area in a matter of days or weeks (USACE 2013). A combination of shallow water, high tidal fluctuations, and strong currents constantly mobilize seafloor sediments in the inlet, keeping sediments in suspension, resulting in highly turbid water, and inhibiting deposition of fine-grained sediments (Rember and Trefry 2005). Fine sediments introduced by major rivers feeding into upper Cook Inlet are carried in suspension, and have been shown to be deposited as far as 150 miles south in lower Cook Inlet (ADL 2001).

The shoreline at Amakdedori is a wave-dominated coastal berm largely composed of weathered cobbles, boulders, and exposed bedrock rising from the intertidal zone. Amakdedori Creek alluvial fan-delta deposits extend about 1,000 feet offshore into Kamishak Bay (PLP 2018-RFI 039). Seafloor sediment at and around the Amakdedori port location is primarily comprised of subtidal gravel and beach complex (GeoEngineers 2018a, Figure 2). Bathymetry in Kamishak Bay around the Amakdedori port location was investigated through a multi-beam survey in 2017, which indicated that the seafloor is relatively smooth with a gentle slope (60 feet over 5.6 miles). Results from three boreholes indicate that sub-bottom sediment consists primarily of fine silty sand with occasional course gravel and shell fragments, and a fines content ranging from 14 to 19 percent. Sediment samples from the estuarine environments of Iliamna and Iniskin bays, about 30 miles northeast of the port site, revealed substrates of fine sediment (SLR Alaska et al. 2011).

Waterbody substrate data from the onshore environment at the Amakdedori port site are limited. Sediment from two ponds, one about 0.5 miles north and the other approximately 3 miles south, was described as mud/fine sediment (Grossman 1998).

Chemical Quality. Data on regional sediment chemical quality in Cook Inlet are sparse. Limited data from dredging operations and sediment sampling suggest that sediments generally have low concentrations of contaminants (USACE 2013; ADL 2001). Low levels of hydrocarbons have been detected at multiple sites in the inlet, potentially connected with offshore oil development, past oil spills, or natural oil seeps within the region. Glacial sediments, which are continually transported into the inlet by the major drainages, may also bring metals and hydrocarbons from upstream sources into Cook Inlet. Municipal discharges and seafood processing also contribute potential contaminants to Cook Inlet substrate. Extreme tidal fluctuations and strong currents constantly disperse and dilute potential pollutants in the inlet (ADL 2001).

Sampling of offshore sediment has been conducted at two locations near the Amakdedori port site. Sediment quality data was analyzed for concentrations of inorganic and organic chemical concentrations. Field results indicate that concentrations of metals fell below the TEL for all measured quantities except for manganese and nickel. An exceedance of nickel in marine sediments was detected in one sample collected from subtidal sands/fines, but mean concentrations did not exceed the marine TEL. Manganese concentrations exceeded the marine TEL for both sampled locations in subtidal sands/fines, and yielded a mean concentration of 380 mg/kg, exceeding the marine TEL (GeoEngineers 2018a, Tables 7a and 7b).

Samples of fine sediment were collected from the offshore estuarine environments of Iliamna and Iniskin bays near Diamond Point. Some of the samples showed arsenic, copper, nickel and zinc levels higher than the threshold of biological effect, and measurable hydrocarbons. There is current development in the Diamond Point area, and minor marine vessel traffic at Williamsport at the head of Iliamna Bay. Estuarine sediments are generally more fine-grained than offshore of Amakdedori, which is more exposed to open water. Fine-grained sediments generally retain

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chemical pollutants more than coarse-grained sediments, due to higher surface area-to-volume ratios.

Chemical substrate data from the onshore environment at the Amakdedori port site are limited. Sediment from two ponds, one within 0.5 miles to the north and one about 3 miles south of the port site, were analyzed by NURE and were reported to have no contamination (Grossman 1998).

3.18.4 Natural Gas Pipeline Corridor

3.18.4.1 Surface Water Quality

Surface water quality data for the onshore part of the natural pipeline corridor are summarized above under Section 3.18.2, Transportation Corridor. Water quality information for Cook Inlet and Kamishak Bay pertinent to the pipeline is summarized above under Section 3.18.3.1, Marine Ports. The pipeline would tie into the existing natural gas supply at a compressor station near Anchor Point. This would result in no additional stream or waterbody crossings on the Kenai Peninsula. The closest stream to the horizontal directional drilling (HDD) part of the corridor is about 200 ft to the north (PLP 2017, Figure G-012).

3.18.4.2 Groundwater Quality

Summary groundwater quality information pertinent to the natural gas pipe corridor can be found above under "Transportation Corridor." The only additional sections of pipeline that do not match the road alternatives would be at the east end of the pipeline on Kenai Peninsula, and the short section from Ursus Cove to Diamond Point under Alternatives 2 and 3.

As described in Section 3.17, Hydrogeology, groundwater beneath Kenai Peninsula is known to occur in thick glacial and alluvial deposits (Karlstrom 1964; Nelson and Johnson 1981). Seven private groundwater wells are currently located a distance of 600 to 1,600 ft away from the HDD part of the pipeline terminus. Groundwater quality data is not publically available on private wells (ADNR WELTS 2018).

There would be limited shallow groundwater occurrence within a narrow strip of alluvial deposits along the short pipeline corridor between Ursus Cove and Diamond Point (Detterman and Reed 1973). No groundwater quality data has been collected in this area.

3.18.4.3 Substrate/Sediment Quality

Physical Characteristics. A description of nearshore Cook Inlet physical substrate characteristics is provided above under "Marine Ports." Field studies indicate that the substrate in the western portion of Kamishak Bay is primarily comprised of subtidal gravel with intermittent reef and sand/fine substrate in the region near the port location (GeoEngineers 2018a, Figure 2). Publicly available information regarding the substrate of Cook Inlet in areas further offshore is sparse. Substrate in the vicinity of mooring facilities could include flows from Augustine Volcano, which have been documented to occur every few 100 years (Section 3.15, Geohazards).

Water depths in the center of Cook Inlet range from about 50 to over 500 feet (NOAA nautical chart #16660). Numerous oil and natural gas pipelines currently span the bottom of Cook Inlet. Pipeline damage has previously been documented from boulders moved on the seafloor by strong tides and currents.

Chemical Quality. Seafloor substrate in lower Cook Inlet generally has low toxicity (Little 2001). Chemical quality of sediment in the nearshore parts of Kamishak Bay and Iliamna/Iniskin

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estuary are summarized above under "Marine Ports." Sediment quality data for the offshore part of the pipeline route are limited as described previously. Sediment sampled from one stream in the Kenai Peninsula area near the east end of the pipeline did not show evidence of contamination (Grossman 1998).

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4.17 HYDROGEOLOGY

4.17.1 No Action Alternative

Under the No Action Alternative, the project would not be undertaken; there would be no mine site, transportation corridor, port development, or natural gas pipeline corridor.

Under the No Action Alternative, PLP would have the same options for exploration activities that currently exist. There are many valid mining claims in the area, and these lands would remain open to mineral entry and exploration. It is possible for permitted exploration to continue under this alternative (PLP 2018-RFI 073).

In the event PLP concludes their exploration program, or in the event of revocation or termination of the associated state permits, PLP would be required to fully restore and remediate the project site as per state regulations. Groundwater along the transportation corridor, pipeline corridor, and at the Amakdedori port would remain in its current state. There would be no effects on existing private wells. In summary, there would no direct or indirect impacts on baseline groundwater conditions from implementation of the No Action Alternative.

4.17.2 Action Alternative 1 – Applicant's Proposed Alternative

4.17.2.1 Mine Site

Groundwater conditions were modeled by Piteau Associates (2018a). The analysis addressed two general areas: 1) the tailings storage areas (bulk and pyritic TSF) and the main WMP; and 2) the pit area. Analysis of groundwater conditions was conducted for the pit capture zone and the zone of influence. The capture zone is the area in which groundwater recharge is captured by a groundwater "sink." The zone of influence is the area in which a hydraulic stress influences groundwater elevations. The zone of influence is often larger than the capture zone because groundwater elevations can be affected outside the groundwater divide that defines the capture zone. Groundwater flow conditions were assessed for operations (at end of mining) and post-closure. The post-closure was defined as the time at which the pit lake reached its maximum closure level.

Piteau Associates (2018a) used the groundwater flow model to simulate the effect of open pit dewatering at the end of mining and the recovery of groundwater level and pit lake formation during closure and post-closure. Piteau Associates (2018a) estimates that the cone of depression at the end of mining would extend approximately 2,500 to 10,000 feet from the crest of the open pit depending on the hydraulic character of the affected aquifers. Once mining ceases, groundwater in the open pit would be allowed to slowly rise, resulting in a permanent pit lake in about 21 years. The groundwater level in the pit would be maintained to create a permanent groundwater sink to prevent pit lake water from discharging to the environment. The presence of a permanent groundwater sink at the pit will continue to locally influence groundwater flow in the immediate vicinity of the pit; however, the influence on groundwater flow would be less than the pit in its fully dewatered state. Piteau Associates (2018a) estimates that the post-closure cone of depression will extend 2,000 to 4,000 feet or less during post-closure. The input parameters and assumptions are described in greater detail in Piteau Associates (2018a) and Knight Piésold (2018n).

Pit Dewatering

Dewatering of the open pit would be required to facilitate mining. Construction of the open pit would require lowering groundwater levels in the pit area through dewatering to establish stable

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pit walls and provide dry working conditions. Although a specific dewatering design has not been developed at this point, the ultimate pit dewatering design would be based on a series of interim pit phases that successively expand and deepen the pit. This phase approach would allow the pit dewatering program to be adjusted, based on the operational performance of each preceding phase.

Dewatering is typically accomplished by placement of dewatering wells around the proposed pit perimeter; wells in the pit bottom as mining progresses; and horizontal drains along the pit walls. Dewatering results in a groundwater "cone of depression" because the water table is lowered in the pit, and extends beyond the pit area into the adjacent bedrock, glacial, and alluvial aquifers (see Section 3.17, Hydrogeology). The cone of depression would deepen and widen as pit excavation progresses and dewatering continues, and would last as long as the dewatering system is operated during construction and operation of the mine. Groundwater levels would ultimately need to be lowered below the base of the final mine pit depth, which is estimated to be up to 2,200 feet below grade.

The initial pre-production dewatering well field is conceptualized to consist of approximately 30 operating wells installed at a depth of 150 feet, and spaced about 200 feet apart around the starter pit perimeter. The wells would initially be pumped at a rate of 50 gallons per minute (gpm), with a total rate of approximately 1,500 gpm. The estimated groundwater inflow to the pit at the end of mining is estimated to be about 2,200 to 2,400 gpm (Piteau Associates 2018), with a maximum of 2,700 gpm (Knight Piésold 2018a). The well field at the end of mining is expected to include approximately 30 wells at 500-foot spacing around the pit perimeter. Sumps in the pit would capture precipitation and/or groundwater not captured by the dewatering system.

Water in the open pit would be managed using a storage pond and runoff controls. Groundwater inflows to the open pit would be pumped to the open pit water management pond (WMP) for storage and treatment prior to discharge. Runoff from areas upslope of active mining would be intercepted, and diverted around the open pit to the extent possible (see Section 4.16, Surface Water Hydrology). Direct rainfall, snowmelt, and runoff from the open pit walls would be collected and pumped using in-pit pumps to the open pit WMP for storage and treatment prior to discharge.

Creation of a cone of depression around the proposed pit would locally change groundwater flow patterns so that groundwater flows radially towards the pit. Groundwater/surface water interactions and surface water flows would also be impacted by pit dewatering. Groundwater discharge to seeps, streams, ponds, or lakes in or adjacent to the proposed pit may cease or be reduced, resulting in lower surface water base flows or pond or lake levels. Some stream segments, ponds, or lakes in the immediate pit area may be eliminated as the water table is lowered in the immediate pit area during construction and mining operation.

The Pebble deposit straddles a watershed and groundwater divide between the headwaters of the Upper Talarik Creek (UTC) and South Fork Koktuli (SFK) River. Groundwater dewatering impacts related to the proposed project are expected to be largely confined in the upper reaches of the SFK watershed, but may locally impact groundwater flow across the divide in the bedrock aquifer from the headwaters of the UTC watershed (Section 3.16, Surface Water Hydrology) (Piteau Associates 2018a), depending on the extent of the cone of depression around the pit. Streamflow reduction during operations and closure is addressed in Section 4.16, Surface Water Hydrology; and water quality is described in Section 4.18, Water and Sediment Quality.

The primary impact to groundwater flow would be in the alluvial, glacial, and bedrock aquifers in the open pit footprint and cone of depression. Groundwater flow in these aquifers would radially flow towards the pit, and be captured by the dewatering system. The groundwater impact would grow as mining proceeds to depth, and the cone of depression surrounding the pit becomes

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wider and extends to depth. Piteau Associates (2018a) estimates that the cone of depression at the end of mining would extend approximately 2,500 to 10,000 feet from the crest of the open pit, depending on the hydraulic character of the affected aquifers.

Once mining ceases, dewatering would be discontinued and groundwater in the open pit would be allowed to rise. Groundwater flow into the pit would initially be fast, but would slow as water level rises. It is estimated it will take 19 to 21 years for the groundwater in the pit to reach the maximum management (MM) level (890 feet above mean sea level [amsl]) (not-to-exceed level would be 900 feet amsl) (Knight Piésold 2018n). Knight Piésold (2018d) estimates an average annual pit water surplus of 3 cfs. This excess water would be managed by pumping and treating groundwater to maintain the MM level in the pit lake and prevent pit lake water from discharging into the environment. This would result in a permanent pit lake. The presence of a permanent groundwater sink at the pit would continue to locally influence groundwater flow in the immediate vicinity of the pit; however, the influence on groundwater flow would be relatively small compared to active mining operations. Piteau Associates (2018a) estimates that the post-closure cone of depression would extend 2,000 to 4,000 feet or less during post-closure.

Potable Well Supply

Potable water would be supplied by a series of groundwater wells north of the mine site, outside of the estimated cone of depression around the proposed open pit. The wells would be pumped at a rate to provide sufficient potable water for mine site personnel living and working at the site. The potable water supply wells would also be used for fire-fighting, if needed. As described in the Project Description (PLP 2018) and Knight Piésold (2018e), a 250-person camp would initially be built to support early site construction activities. This camp would then be supplemented by the main camp, which would accommodate about 1,700 workers during construction. The main camp would be converted at the end of construction into a permanent facility expected to house 850 workers. Assuming an average water requirement of 50 gallons per day (gpd) per person to support the camps (ADNR 2014), and an additional 10 gpd per person for the other facilities, a maximum daily volume of 102,000 gallons is expected to be required. The total average water flow requirement rate during construction for the camps is estimated to be about 80 gpm. This average demand is expected to be met by the installation of a single pumping well with two backup wells to allow for regular downtime and maintenance. During operations, the potable water requirement would be reduced to about 35 gpm. The potable water would be distributed through a pump-and-piping network to supply fresh water to holding tanks at the camps and other facilities. The holding tank capacity would be sufficient for a 24-hour supply. Impacts from pumping at the potable water supply well have not been modeled, but the well is expected to have negligible impact on local groundwater flow, based on expected aquifer conditions.

Water Management Ponds

The main and open pit WMPs would be constructed at the mine site to manage water removed during pit dewatering, manage water from the milling and concentrating operations, and manage surface water runoff collected in the mine site. These ponds would be lined and equipped with underdrains to prevent leakage of water with potentially elevated particulate and constituent concentrations to the underlying groundwater. Water in the WMPs ponds would be treated as needed and used in the milling operations. The water may also be used in tailings disposal operations (to create a tailings slurry). Surplus water would be treated to discharge standards and released downstream of the mine site at specified discharge areas (Figure 4.16-1) to mitigate surface water flow water balances downstream of the mine site (Section 4.16, Surface Water Hydrology). Groundwater flow would be minimally impacted by the construction of the

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WMPs and local reduction in recharge caused by the presence of the liner. The WMPs are expected to have no adverse impact on groundwater quality, because they would be lined to prevent leakage of impacted water to the subsurface (Section 4.18, Water and Sediment Quality). The WMPs may help restore downgradient groundwater flow to maintain existing flow conditions as surplus water is treated and discharged downstream of the mine site.

Tailings Storage Facilities

Bulk TSF

Non-acid generating bulk flotation tailings generated during milling operations would be stored in an unlined bulk tailings storage facility (bulk TSF) at the mine site. The bulk TSF would be constructed in the NFK watershed, with a series of embankments to impound the tailings and entrained and ponded water; and an underdrain system and grout curtain to manage seepage water draining from the tailings. The thickened bulk flotation tailings discharged to the TSF would settle, and water would be collected in a tailings decant pond (i.e., supernatant pond). Seepage water draining from the tailings would be collected by the underdrain system, and routed to a lined seepage control pond. Piteau Associates (2018a) estimates the bulk TSF would discharge approximately 0.7 cfs at the end of mining, which would be collected in the north and south seepage collection ponds (Figure 4.16-1). Water collected in the seepage control pond would be used for tailings dust control, or transferred to the main WMP for subsequent use in ore processing. Surplus water would be treated to discharge standards and released downstream of the mine site. Construction of the bulk TSF would locally impact surface water features at the site, and potentially impact groundwater/surface water interactions; this impact is expected to be small in extent (e.g., near the vicinity of the bulk TSF), but permanent. The underdrain system is expected to minimize vertical seepage into native materials below the bulk TSF. Potential impact to groundwater quality as a result of seepage from the bulk TSF area is described in Section 4.18, Water and Sediment Quality. The grout curtain would locally impact groundwater flow in the overburden and shallow bedrock, but would not affect regional flow patterns. Tailings seepage that is not captured could create a local groundwater mound beneath the TSF that could have a local influence on groundwater flow.

Pyritic TSF

The potentially acid-generating (PAG) pyritic tailings and PAG waste rock would be stored submerged in a separate lined impoundment equipped with underdrains to minimize oxidation and the potential release of acidic contact waters to the environment (pyritic TSF). Groundwater flow would be minimally impacted by the construction of this impoundment through local reduction in recharge cause by presence of the liner. The pyritic tailings would be placed at the bottom of the open pit at the end of mining, and submerged in the pit lake to prevent oxidation. The pyritic TSF liner and embankments would be removed at closure, and the site reclaimed to its approximate pre-mining state (Section 4.16, Surface Water Hydrology describes closure in greater detail) (Knight Piésold 2018d). Therefore, groundwater flow in this tributary drainage is expected to essentially return to pre-mining conditions post-closure (Section 4.16, Surface Water Hydrology).

4.17.2.2 Amakdedori Port

Shallow Groundwater Interception

Excavations across the port footprint may be required during port and dock construction. Due to the apparent high water table in glacial, glaciofluvial, alluvial, and estuarine deposits in the area,

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which is likely hydraulically connected to Amakdedori Creek, some excavations would likely intercept shallow groundwater. Impacts would be limited to within the port footprint or soil borrow areas for dock construction, and would occur only during construction.

Groundwater Use

Based on limited hydrogeologic information at the port site, shallow glacial and fluvial sediments in the area are likely to host groundwater (Glass 1999). A groundwater well is planned to supply potable water for port personnel and/or fresh water for operations. The precise location for the well would be identified during detailed design. The well would be sited on uplands far enough from the shore to avoid any potential for saltwater intrusion, and water would be piped to the site from the wellhead (PLP 2018-RFI 022a). It is anticipated that such a well would have a local impact on groundwater flow and quantity depending on rate and frequency of drawdown caused by pumping. The duration of impacts would be long-term, lasting through the life of the project. Water use is described in more detail for both surface water and groundwater in Sections 3.16 and 4.16, Surface Water Hydrology.

4.17.2.3 Transportation Corridor

Shallow Groundwater Interception

The transportation corridor is designed to avoid wetlands and stream crossings where feasible, and its alignment would be optimized for the most amenable soil and geotechnical conditions. Local groundwater flow impacts may occur along the corridor where the roadway is constructed across wetlands that may be supported by groundwater inflow.

Some road segments would likely require road cuts to maintain proper road grade. These are represented by wide areas of the road footprint on hillslopes (PLP 2017: Figures T-001 through T-046), which are prevalent throughout much of the access and spur road corridors. Due to the likelihood of shallow groundwater being present across the road corridor, it is possible that road cuts could intersect groundwater in some areas and cause a local effect on groundwater flow as drainage controls (construction BMPs) direct potential seepage away from the road.

Surface Water Extraction

Surface water/groundwater interaction is likely along much of the corridor, as demonstrated in the mine site vicinity. Approximately 50 million gallons of surface water would be extracted from 21 water extraction sites along the road corridor, mostly for use in road construction activities (PLP 2018-RFI 022) (Figure 4.16-8). This water would be extracted at specific permitted locations along the road corridor over months to years of construction (see Section 4.16, Surface Water Hydrology). Due to the abundance of groundwater in the region, the extraction of surface water for road construction would not likely have measurable impact on groundwater flow where there is interaction with surface water.

4.17.2.4 Natural Gas Pipeline Corridor

Shallow Groundwater Interception

Although no specific studies have been conducted on hydrogeology along most of the pipeline corridor, the water table is likely close to the surface along most of the corridor, as evidenced by abundant wetlands and kettle ponds and exposed bedrock. Groundwater along the corridor is likely held in shallow aquifers of glacial sediment, as demonstrated in similar geologic terrain at

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the mine site (see Section 3.13, Geology). Therefore, a large percentage of the buried pipeline could intersect shallow groundwater.

Potential impacts to groundwater would likely involve interception of shallow groundwater during trenching activities, which could be captured and locally routed along the trench backfill. Modifications to groundwater flow would occur mostly in the immediate vicinity of the trench. Impacts could extend beyond the life of the project, because the pipeline would be abandoned in place. Low-permeability trench plugs, considered a typical BMP for pipeline installation (e.g., USACE 2018), would be installed to minimize movement of groundwater along the trench, reduce erosion along the trench backfill, and alteration of the natural groundwater flow path.

Potential contamination of shallow groundwater and surface water could occur during pipeline construction from inadvertent spills of fuel and fluids from heavy machinery and trenching equipment operating in close proximity to the water table. Section 4.18, Water and Sediment Quality, describes potential impacts of project activities on groundwater quality, and spills are addressed in Section 4.27, Spill Risks.

Horizontal Directional Drilling

On the Kenai Peninsula, the pipeline would be trenched for a short distance west of the compressor station, then installed by horizontal directional drilling (HDD) at the shoreline and into Cook Inlet from an elevation of about 200 feet to -12 feet mean lower low water (PLP 2018-RFI 011). Groundwater is present in this area in aquifers in thick glacial and alluvial deposits, and Tertiary age (approximately 66 to 2.6 million years ago) sedimentary bedrock. Although the exact depth to groundwater is unknown at the HDD location, nearby wells drilled at similar elevations to the HDD work area encountered shallow water-bearing glacial deposits at depths between 8 and 30 feet below ground surface, as well as deeper aquifers in both glacial deposits and sedimentary bedrock units between 50 and 120 feet deep (USGS 1967; Nelson and Johnson 1981; ADNR 2018). Therefore, the HDD installed pipeline segment would likely intersect these aquifers, which are used near the project footprint by private wells (Figure 3.17-12).

Plans for control of groundwater during HDD drilling are not currently developed. Typical effects might include dewatering during drilling; pressurization of the hole, forcing drilling fluids into aquifers; and discharge of pumped groundwater (e.g., TRCA 2013). Dewatering, if required, could draw down the local water table, potentially changing local flow patterns and affecting other uses. If discharge of dewatering water is necessary, impacts to surface water, wetlands, and soils could occur if discharge water is not treated effectively, or if dissipation methods are not employed to minimize erosion. These effects are expected to be temporary, recovering days or weeks after construction, and localized in the near vicinity of the footprint, depending on drawdown extent and potential discharge location.

Summer-Only Ferry Operations Variant

The expected effects of this alternative are similar to those described under Alternative 1. The main difference between Alternative 1 and this variant relates to the need to construct concentrate and fuel storage facilities at the mine site or at the Amakdedori port site (Ausenco 2018), which would have a short-term impact on shallow groundwater during construction; and longer-term, but minor, impacts on wetlands, surface water/groundwater interactions, and groundwater recharge, which would be disturbed during construction and would continue throughout the life of the project. The local loss of these features would be reasonably restored once mining ends and the site is reclaimed.

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Kokhanok East Ferry Terminal Variant

The expected effects of this alternative are similar to those described under Alternative 1. The main difference between Alternative 1 and this variant is that the Kokhanok East route is approximately 15 percent shorter, which would reduce the potential shallow groundwater and water use impacts (if any) associated with road construction. It is also anticipated that fewer streams and wetlands would be impacted because the Kokhanok East route is shorter, and the primary road and spur are located along ridge tops once they separate from the proposed route in Alternative 1. Temporary shallow groundwater impacts from the construction of the Kokhanok East ferry terminal would be similar to those of the proposed Kokhanok east ferry terminal, and would only occur during construction. Borrow sites up to 125 acres may be required, which would likely impact shallow groundwater, but only during construction.

Pile-Supported Dock Variant

The expected effects of this alternative are similar to those described under Alternative 1 for the mine site, transportation corridor, and natural gas pipeline corridor. The main difference as compared to Alternative 1 relates to the pile versus earthfill supported dock. Borrow material for the proposed earthfill dock would be required, which would likely impact shallow groundwater, but only during construction.

4.17.3 Action Alternative 2 – North Road and Ferry

4.17.3.1 Mine Site

The expected effects of this alternative are similar to those described under Alternative 1 for the mine site.

4.17.3.2 Transportation Corridor

The expected effects of Alternative 2 on shallow groundwater are similar to those described under Alternative 1.

4.17.3.3 Diamond Point Port

The expected effects of Alternative 2 on shallow groundwater are similar to those described under Alternative 1 for Amakdedori port.

4.17.3.4 Natural Gas Pipeline Corridor

The expected effects of Alternative 2 on shallow groundwater along the natural gas pipeline corridor are similar to those described under Alternative 1, because the natural gas pipeline would be mostly buried in a trench along the transportation corridor roadside. This would likely locally affect shallow groundwater flow during construction; however, the trench would be equipped with a plug to reduce the alteration of the natural groundwater flow pattern and minimize erosion along the trench backfill.

Summer-Only Ferry Operations Variant

The expected effects of Action Alternative 2 on shallow groundwater for the summer-only ferry operations variant are similar to those described under Alternative 1.

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Pile-Supported Dock Variant

The expected effects of Action Alternative 2 on shallow groundwater are similar to those described under Alternative 1 for the pile-supported dock variant.

4.17.4 Action Alternative 3 – North Road Only

4.17.4.1 Mine Site

The expected effects of Alternative 3 on shallow groundwater at the mine site are similar to those described under Alternative 1.

4.17.4.2 Transportation Corridor

The expected effects of Alternative 3 on shallow groundwater in the transportation corridor are similar to those described under Alternative 1.

4.17.4.3 Diamond Point Port

The expected effects of Alternative 3 on shallow groundwater at the Diamond Point port are similar to those described under Alternative 1 for Amakdedori port.

4.17.4.4 Natural Gas Pipeline Corridor

The expected effects of Alternative 3 on shallow groundwater along the natural gas pipeline corridor are similar to those described under Alternative 1

Concentrate Pipeline Variant

The expected effects of Alternative 3 on shallow groundwater are similar to those described under Alternative 1, given the concentrate pipeline would be placed in the same excavation as the natural gas pipeline. The primary difference in water use between Alternative 3 and other alternatives is the loss of 1 to 2 percent of the water used to slurry the concentrate that would otherwise be available for discharge at the mine site to drainages affected by construction and water withdrawals. Reduced discharge to surface water would result in decreased groundwater recharge where there is surface water/groundwater interaction.

4.17.5 Summary of Key Issues

See Table 4.17-1 for a summary of key issues.

Table 4.17-1: Summary of Key Issues for Groundwater Hydrology Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Groundwater diversion during construction and operations	Diverted groundwater would be largely captured, treated, and discharged to the affected drainages during construction and operations to restore natural flow conditions.	Same as Alternative 1	Same as Alternative 1

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Table 4.17-1: Summary of Key Issues for Groundwater Hydrology Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Groundwater use during construction and operations (see Section 4.16, Surface Water Hydrology)	Groundwater use would be highest during construction and operations, and is expected to largely recover to pre-mining levels once mining ends and reclamation occurs, except for the Bulk TSF and open pit.	Same as Alternative 1	Same as Alternative 1
Open pit dewatering	Groundwater level change up to 2,200 feet below baseline condition during operations. Groundwater level change up to 50 feet below original level in post-closure. Groundwater flow direction change caused by flow towards open pit, which acts as hydraulic sink and would remain so in perpetuity. The areal extent of the cone of depression surrounding the open pit would increase as mining proceeds and the open pit becomes deeper. The estimated maximum area of the capture zone at end of mining would be about 2,470 acres. The areal extent of the cone of depression would decrease as the pit fills with groundwater to form a pit lake; however, a cone of depression would exist around the pit in perpetuity. The estimated area of the capture zone at post-closure and beyond would be about 2,350 acres.	Same as Alternative 1	Same as Alternative 1
Transportation Corridor			
Groundwater diversion during construction	Groundwater flow systems are maintained; temporary flow interruptions during construction.	Same as Alternative 1; overland route is 8% shorter, so groundwater impacts are slightly less.	Same as Alternative 1; overland route is 16% shorter, so groundwater impacts are less.

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Table 4.17-1: Summary of Key Issues for Groundwater Hydrology Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Groundwater use during construction and operations	Groundwater use at the construction camps would be temporary and minimal; aquifer would return to historical levels once operations end.	Same as Alternative 1	Same as Alternative 1
Port Sites			
Groundwater diversion during construction	Groundwater flow systems are maintained; temporary flow interruptions during construction.	Same as Alternative 1; Diamond Point footprint would be twice as large as Amakdedori port; temporary groundwater impacts are likely greater compared to Amakdedori.	Same as Alternative 2
Groundwater use at port during operations	Changes in groundwater quantity from water supply well would be minimal and within historical seasonal variability.	Same as Alternative 1	Same as Alternative 2
Natural Gas Pipeline			
Groundwater diversion during construction	Groundwater flow systems are maintained; temporary flow interruptions during construction.	Same as Alternative 1; 13% shorter route, so temporary groundwater impacts would be less.	Same as Alternative 1; 12% shorter route, so temporary groundwater impact is less; trench footprint may be 10% larger, slightly increasing temporary groundwater impact.
Groundwater use during construction	Groundwater use at the construction camps would be temporary and minimal; aquifer would return to historical levels once construction ends.	Same as Alternative 1	Same as Alternative 1
Concentrate Pipeline			
Groundwater diversion during construction	Not applicable	Not applicable	Buried in same trench as natural gas pipeline; trench is slightly larger than gas pipeline only installation, and may slightly increase temporary groundwater impacts; groundwater flow systems are maintained; temporary flow interruptions during construction.

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Table 4.17-1: Summary of Key Issues for Groundwater Hydrology Resource

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Groundwater use during operations	Not applicable	Not applicable	Concentrate pipeline would likely result in a diversion of 1 to 2% of groundwater from mine site to slurry concentrate.

4.17.6 Cumulative Effects

4.17.6.1 Alternative 1 and Variants

The geographic area considered in the cumulative effects analysis for groundwater hydrology is the near-project vicinity (i.e., within 0.5 mile to several miles) where project effects on groundwater flow patterns and use could overlap with other present and reasonably foreseeable future surface and groundwater uses. The direct and indirect effects of Alternative 1 and its variants would result in varying intensities of impacts to groundwater hydrology. Construction of the open pit requires lowering the water table in and surrounding the area of the pit to establish stable pit walls and dry working conditions. Placement of tailings in the bulk TSF in an unnamed tributary (gaging station NK 119A) to the NFK River would capture groundwater recharge and discharge and surface water flow for the foreseeable future until the tailings seepage water volumes decrease, and seepage water quality meets applicable standards for discharge.

Mine pit dewatering would cause long-term impacts to the local groundwater flow system and discharge patterns, particularly focused around the headwaters of the SFK River and UTC drainages. The most intense impacts would be experienced during the period of active mining. The plan for discharge of treated water back into the SFK and NFK rivers and UTC drainages and pit lake level recovery during closure and post-closure would serve to partly reduce impacts to shallow groundwater from these activities. However, the pit lake would remain as a hydraulic sink in perpetuity, so the local groundwater flow system around the pit would be permanently altered.

Effects on groundwater hydrology in the transportation corridor, natural gas pipeline, and port components would include small stresses on aquifers tapped by camp and port water supply wells, construction water uses, and temporary disturbances to shallow groundwater flow during road and pipeline construction. The impacted shallow groundwater aquifers are expected to return to pre-construction conditions once construction is completed, except for the port water supply wells, which would be used as long as mining occurs; and possibly used after mining ends, at least during closure.

Past and present activities that have affected groundwater hydrology in the analysis area include water supply wells in communities around Iliamna Lake, and small-scale wells or seeps associated with cabins and camps along the pipeline route, or mining exploration near the project area. Impacts associated with these activities include localized changes in groundwater flow patterns, reductions in groundwater in aquifers, and use of streams that are hydraulically connected with groundwater. These past and present actions are expected to continue throughout the project area, primarily in and around Iliamna Lake villages. Other parts of the project would be located in more remote areas, characterized as having very little development, and would not substantially draw from groundwater resources during mining operations.

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The implementation of Alternative 1 would impact groundwater in the project area during operations; however, these impacts are not expected to be significant beyond the boundaries of the operational mine site. Overall, the incremental contribution of Alternative 1, and impact to groundwater from the project and the past, present, and reasonably foreseeable future actions (RFFAs), would be localized high-intensity changes in the vicinity of the mine site during the life of the project, because the effects of the project on groundwater are limited to a relatively small area, and would be reduced in post-closure as the site is reclaimed and groundwater returns to pre-mining conditions in all areas except the bulk TSF and the open pit where groundwater impacts would remain.

4.17.6.2 Alternative 2 and Variants

Cumulative effects on groundwater hydrology for Alternative 2 and its variants would be similar to those discussed for Alternative 1 and its variants. Overland route of transportation corridor is 8 percent shorter, so temporary groundwater impacts during construction are likely less. The natural gas pipeline is 13 percent shorter, so temporary groundwater impacts during construction are likely less. The footprint of Diamond Point port is twice the size of Amakdedori port, so temporary groundwater impacts during construction would likely be greater under Alternative 2. Impacts of past, present, and reasonably foreseeable future actions would be similar to Alternative 1 and its variants.

4.17.6.3 Alternative 3 and Variants

Cumulative effects on groundwater hydrology for Alternative 3 and its variants would be similar to those discussed for Alternative 1 and its variants. The overland route of the transportation corridor is 16 percent shorter, so temporary groundwater impacts during construction are less. The natural gas pipeline is 12 percent shorter, so temporary groundwater impacts during construction are likely less. The footprint of Diamond Point port is twice the size of Amakdedori port, so temporary groundwater impacts during construction would be greater. Past, present, and reasonably foreseeable future actions would be similar to Alternative 1 and its variants.

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4.18 WATER AND SEDIMENT QUALITY

This section describes the following potential impacts of the project on surface water quality, groundwater quality, and substrate or sediment quality:

- Effects of ground disturbance and potential erosion on surface water and sediment quality.
- Effects of geochemical weathering of mined rock and tailings on the water quality of human-made waterbodies at the mine site.
- Effects of treated water discharge on water and sediment downstream of mine site facilities.
- Effects of dust deposition on water quality.
- Effects of tailings, waste rock, and contact water storage on groundwater quality and downstream resources.
- Effects of groundwater migration adjacent to the pit at closure.
- Effects of fill placement and erosion on substrate and sediment quality.
- Effects of marine construction and dredging on substrate and water quality.
- Effects on drinking water sources.

4.18.1 No Action Alternative

The geologic material at the mine site would continue to weather in place naturally. Background water and sediment quality in the mine site vicinity would not change; certain constituents would still be present in amounts exceeding regulatory levels because of natural mineralization and geochemical weathering processes. Water quality along the transportation and pipeline corridors would continue to reflect the presence of elevated levels of some constituents as described in Section 3.18, Water and Sediment Quality. Natural levels of sediment transport, deposition, and substrate modification would continue, and sediment would continue to contain certain constituents (e.g., metals) at elevated levels. No project-related geochemical processes or impacts on surface water, groundwater, or sediment quality would occur under this alternative. Consequently, under the No Action Alternative, the project would not be constructed and no new effects on water and sediment quality would occur.

4.18.2 Action Alternative 1 – Applicant's Proposed Alternative

This section describes the impacts of the project on surface water, groundwater, and substrate/sediment quality for each of the four project components. Evaluation factors considered by the US Army Corps of Engineers (USACE) in making determinations under Clean Water Act (CWA) Section 404(b)(1), Subpart C, include impacts on the following physical and chemical characteristics of the aquatic ecosystem. Impacts related to these characteristics are addressed in this and other sections of the environmental impact statement (EIS) as noted below:

- **Substrate.** Substrate includes sediment at the bottom of waterbodies as well as wetlands soils. Impacts on waterbody substrate (sediment) are summarized under "Substrate/Sediment Quality" in each of the four project component sections. Impacts on wetlands substrate are addressed in Section 4.22, Wetlands/Special Aquatic Sites.
- **Suspended Particulates/Turbidity.** Effects on turbidity and levels of suspended sediment are summarized under "Surface Water Quality" in each of the four project component sections.

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- **Water.** Direct effects on surface water quality and potential effects on surface water quality from migration of contaminants in groundwater are summarized under "Surface Water Quality" and "Groundwater Quality" in each of the four project component sections. Additional details are provided in Appendix K4.18.
- **Current Patterns and Water Circulation.** Impacts on currents and circulation in open waterbodies, and changes in surface water and groundwater flow patterns, are addressed in Section 4.16, Surface Water Hydrology, and Section 4.17, Hydrogeology.
- **Normal Water Fluctuations.** Impacts on stream discharge and groundwater fluctuations, and tidal effects on the project activities, are presented in Section 4.16, Surface Water Hydrology.
- **Salinity Gradients.** Effects on salinity gradients are described under "Surface Water Quality."

4.18.2.1 Mine Site

Surface Water Quality

The main objective is to manage water originating in the project area in an environmentally responsible manner while providing an adequate water supply for operations. A primary design consideration is to ensure the effective management of all contact water (process and runoff water that has come into direct contact with mining infrastructure) that would require treatment before release to the environment. This includes carefully assessing the layout of project facilities, process requirements, the area's topography, hydrometeorology, aquatic habitat and resources, and regulatory discharge requirements for managing surplus water. Water management strategies at the mine site are discussed in Section 4.16, Surface Water Hydrology. A map of the mine layout showing water storage facilities, diversion channels, collection ponds, and flowlines is provided in Figure 2-3 and Figure 4.16-1. Water balance model schematics showing estimated recycle flows between mine facilities are shown in Figure 4.16-2.

All runoff water contacting the facilities at the mine site and water pumped from the open pit would be captured to protect overall downstream water quality. Non-acid-generating quarry or waste rock would be selected and used in construction of mine site roads and embankments, utilizing techniques commonly used for grade control in open pit mines (PLP 2018-RFI 021c), such as testing for acid rock drainage (ARD) and metals at specified intervals or block sizes. The project design incorporates an analysis of water collection and management, including quantity and quality estimates, water treatment options, design of water management facilities, and strategic discharge of treated water. Implementation of the water management plan would enable the process plant to operate without additional water from off-site sources.

Effects of Ground Disturbance and Erosion. Ground disturbance during construction has the potential to lead to erosion and introduce suspended sediment and increased turbidity into waterbodies downstream of the mine site. Implementation of the water management plan during the construction phase would include the following features to minimize these effects:

- Water diversion, collection, and treatment systems would be installed to address the effects of ground disturbance and erosion on water quality during construction.
- Best management practices (BMPs) for water management and sediment control structures, including temporary settling basins and silt fences, would be installed to accommodate initial construction at the mine site.

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- Among the first permanent facilities to be constructed would be water management structures that would be maintained for use in adaptive management during operations. These structures would include diversion and runoff collection ditches to minimize water contact with disturbed surfaces, and sediment control measures such as settling ponds to prevent sediment from reaching downstream waterbodies.
- Stormwater runoff from facilities that do not come in direct contact with mining infrastructure would be treated for sediment and discharged under general Alaska Pollutant Discharge Elimination System (APDES) stormwater permits (Knight Piésold 2018a).

During the operations phase, implementation of the water management and sediment control plan would focus on minimizing the accumulation of contact water through diversion structures. Runoff and associated sediment control measures would be managed with BMPs and adaptive management control strategies. BMPs are described further in Section 4.14, Soils. Where water could not be diverted, it would be collected for use in the mining process or treated and discharged.

Effects of Dewatering Water Discharge in Construction. The construction phase would involve dewatering of the pit area beginning approximately 1 year before the start of operations. During construction, water collected from pit dewatering wells would be discharged to the open pit water management pond (WMP), which is expected to be in place before preproduction mining commences in Year 1. In the event that the open pit WMP is not available, water from dewatering wells would be treated prior to discharge by water treatment plant (WTP) #1 if it is in place, or by a modular WTP if WTP#1 is not in place. The modular WTP's processes for preproduction wastewater would include modules for the following processes as necessary: a temporary sedimentation pond; a sedimentation tank and/or sand separator; chemical addition and rapid mix module; a filtration module; and associated modules containing water feed/transfer pumps, chemical storage/feed systems, electricity generation, a workshop, and parts storage (PLP 2018-RFI 021b). Under either the WTP#1 scenario or the modular WTP scenario, discharge would require an APDES permit and must meet prescribed discharge limits and monitoring and reporting requirements. Following module WTP processing, water would be discharged to the South Fork Koktuli River (SFK) catchment (PLP 2018-RFI 021b).

Effects of Waste Rock/Tailings Storage and Water Management Ponds. Contact water that accumulates in on-site tailings and waste rock storage facilities and WMPs would be managed through containment and recycling/reuse so that it would not be inadvertently released to surface water downstream of these facilities until intended for treatment and discharge. Water in these containments would not be considered Waters of the State of Alaska or Waters of the US (WOUS) prior to discharge; therefore, such water would not be subject to regulation under the CWA or subject to APDES permitting requirements while retained within on-site water management facilities.

Bulk and pyritic tailings slurries from the mill would be directed to the bulk tailings storage facility (TSF) and the pyritic TSF, respectively. Potentially acid-generating (PAG) waste rock from the pit would also be stored in the pyritic TSF. Section 3.18, Geochemistry, provides a description of these materials. Precipitation and runoff water would also collect in these facilities. The bulk TSF would maintain a small operating (supernatant) pond, while the pyritic tailings would remain fully submerged in the lined pyritic TSF to minimize ARD and ML. The water over the pyritic tailings would be maintained sufficiently deep to minimize aeration of the water column, resuspension of tailings by wind-induced waves, and oxidation of the tailings. Excess water from the pyritic TSF would be pumped to the main WMP (Figure 4.16-2).

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The main embankment at the bulk TSF would operate as an unlined flow-through facility. Water collecting in the bulk TSF would flow through the embankment to the main embankment's seepage collection pond (SCP). From there, water would be directed either to the main WMP for use in the mill, or to the main WTP (WTP#2) for treatment and discharge. Excess surface water in the bulk TSF would be similarly managed. Water treatment byproduct sludge and reject water (water resulting from the treatment process) would be directed to the process plant and added to the pyritic TSF via the pyritic tailings slurry line. A portion of the treated water from the main WTP would be returned for use in the process plant and power plant cooling towers.

The predicted chemistry of geochemical sources contributing to the main and pyritic TSF ponds, the main SCP, and main WMP is discussed in Appendix K4.18 and shown in Table K4.18-2. Table K4.18-3 shows the predicted water quality in the ponds. Water in these ponds is predicted to contain levels of total dissolved solids (TDS), sulfate, and a number of metals in excess of water quality criteria (Table K3.18-1). These data have been used in the development of WTP processes described in Appendix K4.18.

The size of the ponds and the design criteria intended to prevent overtopping of pond water are described in Section 4.16, Surface Water Hydrology. Upset conditions that could lead to unexpected release of pond water to the environment are addressed in Section 4.27, Spill Risk.

A water surplus is anticipated during operations under normal and wetter than normal climatic conditions (Knight Piésold 2018a). Surplus water would be treated and discharged throughout the year. Section 4.16, Surface Water Hydrology, provides further details on the volume of water available for discharge compared to pre-mine flows in surrounding drainages.

Effects from Embankment Rockfill Runoff. Based on the geochemical analysis of source rock, the chemistry of runoff from rockfill in embankment dams is expected to be comparable to that of natural surface water and groundwater, with two possible exceptions (SRK 2018d):

- *Hydrothermally altered, sulfide-bearing PAG rock.* This rock would be managed separately based on PAG classification and would be used only in limited locations on the northern embankment of the pyritic TSF where runoff would be directed to the main WMP. All other dams would be constructed of non-PAG rock (PLP 2018-RFI 021c).
- *Rock containing explosive residues*. Explosives used during mining would consist of ammonium nitrate/fuel oil (ANFO) mixtures manufactured on site (PLP 2018d). This rock would be monitored until explosive residues have been leached (PLP 2018-RFI 021c).

Effects from Small Hydrocarbon Spills. The likelihood of small hydrocarbon spills from mine-related sources (e.g., mine machinery, product or waste storage facilities, or transfer operations) would be reduced through the application of BMPs, including the use of certified containers to transfer and store fuels and lubricants; secondary lined containment around bulk storage facilities; and managed storage, reuse, and/or disposal of used fuel products. Should a small spill occur, effects on the surrounding environment would be minimized by implementing controls, including automatic shutoff devices, and in-place spill response equipment and procedures (PLP 2018d). Section 4.27, Spill Risk, describes the potential for and effects of a large hydrocarbon spill.

Water Treatment during Construction. Potential effects of contact and runoff water during construction on downstream water quality would be minimized through treatment prior to discharge. Minimal water storage capacity would be available at the mine site until the completion of initial construction activities. Therefore, before completion of the bulk TSF embankments and water management structures, all contact water not meeting water quality

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standards would be treated in modular WTPs and released. Contact water from the following sources and activities in construction is expected to require treatment before release:

- Dewatering of the overburden aquifer above and near the pit deposit
- Water, primarily from precipitation, that accumulates in the open pit during construction
- Runoff from construction of TSF embankments.

Non-contact runoff water from excavation for site infrastructure such as the process plant, camps, power plant, or storage areas would be routed to sediment settling ponds before release. Non-contact runoff water that does not come into direct contact with mining infrastructure is considered stormwater, as defined in Code of Federal Regulations Title 40, Section 122.26(b)(13). Some or all of the stormwater discharge may require authorization from the Alaska Department of Environmental Conservation (ADEC) under the APDES Mine Site General Permit for stormwater, and would only require treatment for sediments prior to discharge into the environment.

Water Treatment during Operations. During operations, the mine site would have two WTPs: the open pit WTP (WTP#1) and the main WTP (WTP#2). Both would be constructed with multiple, independent treatment trains, which would enable ongoing water treatment during mechanical interruption of any one train. Details of the WTP systems are provided in Appendix K4.18 and summarized below.

The main WTP (WTP#2) would treat water from the main WMP, which would receive water from the bulk and pyritic TSFs and the TSF main embankment SCP. The open pit WTP (WTP#1) would treat water from the open pit WMP, which would be composed primarily of pit dewatering water. As described in Appendix K4.18, both facilities would utilize treatment plant processes commonly used in mining and other industries around the world. Key treatment steps for both WTPs would include dissolved metals oxidization, co-precipitation, clarification, ultrafiltration, and reverse osmosis (RO; Figure 2-10 and Figure 2-11). The open pit WTP would also include biological selenium removal, and the main WTP would include nanofiltration through high-pressure membranes (expected to remove selenium and other salts) and multiple-stage calcium sulfate precipitation with a lime softening process. Clarifier solids filter backwash from both WTPs would be thickened/evaporated and transferred to the pyritic TSF (HDR 2018a; PLP 2018d; PLP 2018-RFI 021d).

Based on an independent review of the WTP source terms and processes (Appendix K4.18; AECOM 2018i), discharge water from both WTPs is currently expected to meet ADEC criteria. There is some concern, however, that salt and selenium could build up over time in the pyritic TSF, which has the potential to lead to increased TDS concentrations that would require treatment in the main WTP (AECOM 2018i). This may require further investigation as design progresses and/or long-term adaptive management strategies (Chapter 5).

Treated water from the WTPs would be used to supply process needs, and the remainder would be discharged to the environment downstream of the mine site. All WTP#1 treated water and most WTP#2 treated water would be discharged, and a small portion of the WTP#2 treated water would be used for process and power plant needs. Water discharge points would be located in the North Fork Koktuli River (NFK), SFK, and Upper Talarik Creek (UTC) drainages (Figure 4.16-1). Water from both treatment plants would be strategically discharged in a manner that would optimize downstream aquatic habitat, based on modeling and monitoring during discharge (PLP 2018d).

ADEC regulates wastewater discharges from hard-rock mining facilities through various permits:

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- APDES Individual Permit for point source discharge into WOUS
- Integrated Waste Management Permit for solid waste disposal and wastewater discharge not into WOUS
- APDES Multi-sector General Permit for stormwater discharge
- Domestic Wastewater Discharge Permit.

State of Alaska regulations require that the condition of these permits ensure compliance with state water quality standards that are based on the use classification for the waterbody receiving discharge, and on the state's antidegradation policy. Some waterbodies may also have site-specific water quality criterion. For constituents that exceed criteria in background surface water and groundwater (Section 3.18.1, Appendix K3.18), there are currently no plans to incorporate site-specific background levels of constituents into discharge limits (ADEC 2018-RFI 064a).

Effects of Discharge Water Temperature. Modeling of temperature impacts using documented baseline temperatures and flow data, and predicted WTP discharge temperature and flow rates, indicates the magnitude of expected effects on temperature (PLP 2018-RFI 047). Because the modeled temperature effects are based on a limited set of measured water temperatures and flow scenarios collected at specific locations, the calculated discharge impacts reflect those conditions and locations. The calculated temperature effects provide a reasonable estimate of typical temperature effects from operational WTP discharges, summarized as follows:

- Temperature changes in the NFK watershed approximately 0.5 mile downstream of the WTP discharge point would be expected to be in the range of about -0.2 to +0.3°C (average of about +1.2°C) in summer months, and from about +1.7 to +3.6°C (average of about +2.8°C) in winter months.
- Temperature changes in the SFK watershed approximately 1 mile downstream of the WTP discharge point at the outfall of Frying Pan Lake would be expected to be in the range of about -1 to +1°C (average of about -0.15°C) in summer months.
- Temperature changes in the UTC watershed approximately 3 miles downstream of the WTP discharge point would be expected to be in the range of about 0 to +0.3°C (average of about 0.12°C) in summer months, and from about +0.3 to +0.7°C (average of about +0.54°C) in winter months.

Effects of Treated Water Discharge on Spatial Trends. Discharge of treated water from WTPs during operations would also have an effect on water conditions other than temperature within receiving waters (e.g., dissolved oxygen levels, turbidity, nutrient levels). As with temperature, these effects would be expected to be spatially limited to the area at and immediately downstream of discharge points, and would be managed by the planned strategic discharge of treated water between the three planned discharge points (PLP 2018d). Changes in water condition that occur at each discharge point would also be expected to be diluted through natural flow over a relatively short distance, and to return to background or near-background conditions. The effect of discharges on natural stream conditions would vary by location and seasonally, depending on background flow and other variable factors (e.g., fluctuations in water clarity, nutrient levels or dissolved oxygen content). Additionally, installing engineered discharge chambers at discharge points would reduce effects on certain water conditions such as turbidity and dissolved oxygen by baffling the discharge and allowing for more equilibration of water condition at the discharge point (Knight Piésold 2018f). The overall effect on nutrient levels would be expected to be minimal, given the nutrient-rich natural condition of streams in the area (PLP 2018d).

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Effects from Deposition of Fugitive Dust. Fugitive dust from various mine site sources with elevated levels of certain metals would be deposited on soils surrounding the mine site and would have the potential to run off into downgradient waterbodies or be deposited directly on waterbodies. Section 4.14, Soils, presents the incremental concentrations of metals that would be expected in the top inch of soil at the end of operations. Appendix K4.18 provides the methodology used to calculate the incremental increase in surface water and Table K4.18-12 shows the results. The results indicate a small expected increase in the concentration of metals in surface water as a result of dust deposition, ranging from 0.1 to 0.7 percent, which would not result in exceedances of the most stringent water quality criteria (Table K3.18-1). PLP is developing a fugitive dust control plan (FDCP) for mitigation and control of fugitive dust and wind erosion related to project activities. The anticipated plan would utilize BMPs and best available control technology (BACT) (PLP 2018-RFI 071a). Dust suppression water would be used at the mine site and along the transportation corridor as described below (PLP 2018-RFI 021c).

Effects from Dust Suppression Water. During operations, dust suppression at the mine site would use untreated contact water from the open pit WMP. This water source would be applied only to areas of the mine site where runoff is collected and treated. Outside of these areas, dust suppression would use non-contact water from other unaffected water sources outside of the mine site footprint (PLP 2018-RFI 021c).

Effects during Closure/Post-Closure. Water management and treatment during closure and post-closure is expected to minimize effects on water quality during both the physical closure of the site and associated reclamation activities, as well as during long-term post-closure and associated maintenance and monitoring activities.

Once mining ceases, partial dewatering would be maintained to allow the PAG waste rock to be moved from the pyritic TSF to the open pit, and to maintain pit wall stability until the PAG waste rock buttresses the potentially unstable lower walls of the open pit (see Section 4.15, Geohazards, and Appendix K4.15). The pyritic tailings would then be re-slurried using water in the pyritic tails and the tailings pumped to the open pit for subaqueous disposal. The water level in the open pit would be maintained to allow controlled placement and management of the PAG waste rock in dry areas of the pit, while keeping a water cover over the submerged pyritic tailings. Backhauling of the PAG waste rock would end approximately 14 years into closure and the transfer of pyritic tailings would end about 15 years into closure. Dewatering of the open pit would cease at the end of closure Phase 1 once the transfer of these materials is complete. PAG waste rock would be submerged within 2 years of placement as the water level in the pit rises (PLP 2018-RFI 092). Once dewatering ceases, groundwater behind the pit walls would begin to rise to create a pit lake. The open pit would then be allowed to fill with surface water runoff and groundwater, but would be kept at a maximum management level so that groundwater would continue to flow into the open pit from all directions, and it would remain as a hydraulic sink.

Surface runoff from reclaimed areas would be collected and either treated in the WTPs or directed to the open pit lake. Free water on the surface of the bulk TSF would be pumped to the main WMP through approximately year 15 post-closure, then to the open pit through approximately year 50 post-closure. The bulk TSF would be graded and revegetated to direct surface runoff toward the closure spillway at approximately year 10 post-closure. Seepage water from the embankment seepage collection systems would be collected and either treated in the WTPs or directed to the pit lake until determined to be suitable for discharge, anticipated after approximately year 50 post-closure.

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Surface runoff into the pit lake could cause metals to leach from the pit walls. In addition, contaminated groundwater would flow into the pit as described below under "Groundwater Quality." As a result, water quality in the pit lake would be expected to be acidic, with elevated concentrations of TDS, sulfate, and some metals (antimony, arsenic, cadmium, copper, lead, manganese, mercury, molybdenum, nickel, selenium, and zinc) exceeding water quality standards as a result of the oxidation of sulfide minerals in the pit walls and the natural concentrations of metals found in the mineralized rock. Appendix K4.18 describes pit lake water quality modeling further and Tables K4.18-5 through K4.18-8 summarize predicted lake water quality for the four closure phases. Once the level of the pit lake has risen to about 890 feet above mean sea level, anticipated to occur at approximately year 20 post-closure, water would be pumped from the pit to maintain the lake level at the maximum management level, treated as required at WTP#3 (redesigned for post-closure from WTP#1), and discharged to the environment downstream of the mine site in Frying Pan Lake in the SFK drainage.

Water treatment during closure/post-closure would use the operations WTPs #1 and #2 as needed, with WTP#1 upstream of Frying Pan Lake reconfigured and redesignated WTP#3. Treated water would be discharged within the NFK, SFK, and UTC drainages at the locations shown on Figure 4.16-1 (Knight Piésold 2018d). Water quality would be monitored and the treatment process would be adjusted as needed. Table K4.18-5 provides an estimate of treated discharge water quality from the pit lake. The reclamation and closure plan and financial assurance mechanisms required by the State of Alaska would include financial provisions for operating water treatment facilities and conducting ongoing monitoring indefinitely in the post-closure period.

Summary of Mine Site Effects on Surface Water Quality. Process-related (contact) water would not be considered WOUS or subject to APDES permitting while such water is retained in on-site water management facilities and recycled/reused on site. Contact water collected in mine facilities (e.g., bulk TSF, pyritic TSF) is not expected to meet Alaska water quality criteria for discharge (Alaska Administrative Code Title 18, Section 70, ADEC 2018) and would not be released directly to the environment without prior treatment to meet specific discharge requirements. WTP processes are expected to be effective in treating water to meet discharge criteria, although concerns regarding potential long-term increased TDS levels may require further investigation as design progresses and/or adaptive management strategies are implemented during operations (Chapter 5). The discharge limits described in this section and Appendices K3.18 and K4.18 would become part of an APDES permit, which would have monitoring requirements to ensure that discharged water meets applicable water quality criteria. The geographic extent of impacts on surface water chemical quality attributable to contact water would be limited to areas used for on-site storage of contact water before treatment. Temperature effects ranging from about -1 to 3.6°C would occur up to 0.5 to 3 miles downstream of the mine site.

Groundwater Quality

Section 3.17, Hydrogeology, and Section 3.18, Water and Sediment Quality address the affected environment with respect to groundwater flow and quality, respectively. With an effective water management and treatment program, impacts on groundwater quality would be limited to discrete portions of the project area. The principal mechanisms responsible for potential effects on groundwater quality at the mine site are summarized below.

Effects from TSF Seepage. Groundwater that could be affected by vertical seepage from the unlined bulk TSF would flow north down the NFK west drainage and be captured by the main embankment SCP. Groundwater modeling estimates that the bulk TSF would contribute about 0.2 cfs of seepage to the underlying groundwater system during and at the end of mining. The

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seepage rate would decrease over time after closure as the tailings consolidate and porewaters are squeezed out. The main embankment of the bulk TSF would be designed to promote seepage to the SCP, thereby minimizing the volume of water contained within the tailings impoundment and promoting embankment stability (Section 4.15). Hydraulic containment of seepage flow from the bulk TSF would be achieved and maintained using a series of control measures (Appendix K4.15, Table K4.15-1) (PLP 2018d; PLP 2018, RFI 006, 006a, 008f; Knight Piésold 2018a):

- North-flowing underdrains beneath the bulk TSF.
- Tailings beaches that would promote a north-sloping phreatic surface in the bulk tails.
- Upstream liners, low-permeability core zones, and grout cutoff walls at the south embankment of the bulk TSF and the main, south, and east embankments of the SCP.
- Seepage pump-back wells downgradient of the three SCPs.

Groundwater modeling suggests that a sump or pumping wells with an operating elevation of 1,250 ft at the main SCP and a grout curtain with an effective hydraulic conductivity of $1x10^{-5}$ cm/s would be effective in capturing seepage (Piteau 2018). Containment of affected groundwater would be monitored using wells to assess groundwater levels and quality (Knight Piésold 2018a). The predicted concentration of constituents in groundwater beneath the bulk TSF and between the TSF and the main SCP would be similar to those listed in Table K4.18-2 and Table K4.18-3 for the main SCP. Several metals, TDS, and sulfate in the main SCP are predicted to exceed baseline concentrations and regulatory criteria at the end of mining and the end of closure Phase 3, and thus would require continued treatment at WTP#3 in post-closure (Knight Piésold 2018d).

Groundwater beneath the pyritic TSF is less likely to be impacted because this facility would be fully lined. The potential for liner damage (e.g., from ice or placement of waste rock) leading to leakage of tailings porewater was evaluated in the EIS-Phase Failure Modes Effects Analysis (FMEA), and the likelihood of occurrence was considered to be low to moderate (AECOM 2018l). Potential leakage through the liner would be diluted by unimpacted groundwater flowing northward down the NFK east drainage, and would be intercepted by the main WMP and its downgradient seepage pumpback wells.

Based on the proposed seepage collection systems, the TSFs are not expected to result in impacts on downgradient groundwater quality outside of the mine site. The vertical extent of impacts is expected to be limited to shallow groundwater in overburden deposits and the bedrock contact zone between the TSFs and seepage collection facilities (Figure 4.16-1 and Section 4.17, Hydrogeology). However, impacts on local groundwater within the mine site could be sufficient to exceed water quality regulatory criteria, and those effects could persist through the life of the mine and well into post-closure Phase 4. Should monitoring at seepage collection systems in post-closure indicate that water quality meets approved criteria for discharge without treatment, direct discharge would occur. If monitoring were to find that groundwater quality is not improving during the post-closure period, additional remedies would be implemented to capture and/or treat impacted groundwater. It is anticipated that groundwater locally impacted by limited seepage from the TSFs would meet regulatory discharge criteria at approximately year 50 post closure (Knight Piésold 2018d).

Effects from WMP Leakage. Table K4.18-3 shows the predicted concentration of mine-related constituents in water in the main and open pit WMPs. Water in these ponds is anticipated to contain TDS, sulfate, and a number of metals at levels exceeding discharge water quality criteria. Pond water leaking through the pond liners would be intersected by underdrain systems

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included in the design of those facilities, and subsequently pumped back to the respective WMP (PLP 2018-RFI 019a); however, some water could bypass the underdrain system and seep into underlying shallow groundwater. In the case of the open pit WMP, all underlying shallow groundwater would be completely within the capture zone of the dewatered open pit during operations and post-closure; hence, any impacted groundwater would be recycled through the dewatering and treatment process, or contained in the pit lake.

In the case of the main WMP, the estimated maximum leakage rate through the liner of 1 liter per second (Piteau 2018) would yield a daily leakage rate of nearly 23,000 gallons. Without intervention, water not captured by the underdrain system would be expected to mix with shallow groundwater and discharge into the NFK watershed. To prevent this, a line of monitoring/pumpback wells would be installed along the north side and at the northwest corner of the main WMP. Should monitoring of these wells show impacts from liner leakage, the wells would be used to intercept and recycle shallow groundwater back to the main WMP. Based on the current mine plan, it is possible that gaps exist along the main WMP embankment that would allow potentially affected groundwater to flow through areas where wells are limited (e.g., along the southwest side of the embankment, Figure 4.16-1). As discussed in the EIS-Phase Failure Modes Effects Analysis (FMEA), the final location and spacing of pump-back wells would be determined based on additional hydrogeologic investigation as design progresses to minimize the likelihood of this occurrence. Because the main WMP would be removed at the end of mining during post-closure Phase 2 (Knight Piésold 2018 Closure WMP), this potential effect would not occur during subsequent post-closure periods (Piteau 2018).

Effects from Pit Overburden Stockpile Seepage. Seepage from pit overburden materials that would be excavated and stockpiled could affect surface water or groundwater quality. Potential effects would be limited by segregating mineralized overburden from non-mineralized overburden, and stockpiling mineralized materials that exhibit a high potential for leaching in the pyritic TSF. Prior to excavation, overburden materials would be characterized by drilling and sampling, thereby allowing materials to be segregated visually during excavation. This technique is common in open pit mining for grade control (PLP 2018-RFI 021c). As a secondary control to address placement of potential PAG material in the non-mineralized overburden stockpile, multiple lines of monitoring wells would be installed downgradient from the stockpile and monitored for exceedances of applicable water quality standards. If exceedances were observed, the wells would be converted to pumping wells to intercept and redirect impacted water to the open pit WMP for treatment and permitted discharge (PLP 2018-RFI 021c).

Effects on Seeps. The likelihood that impacted groundwater would discharge at previously recognized seeps at the mine site is small, considering that most overburden with seeps overlying the open pit would be removed and that seeps present in the footprints of the TSFs and mine facilities would be covered. Impacted groundwater is expected to be captured by the seepage collection systems or contained within the open pit cone of depression and would not be expected to surface as seeps within the mine site. However, should seeps occur downgradient of mine facilities, surface water runoff controls would be used to capture and route it to the appropriate collection ponds for treatment and subsequent discharge. Monitoring would also be conducted to recognize new seeps that may form, measure their water quality, and ensure that the seepage is captured and routed to the appropriate seepage control pond, or if water quality is satisfactory, discharged to the environment.

Dust Leaching to Groundwater. Fugitive dust deposited on soils surrounding the mine site has the potential to leach into groundwater. Section 4.14, Soils, presents the baseline and incremental concentrations of metals in soil at the end of operations. These results are compared to ADEC migration-to-groundwater levels to estimate the magnitude of this effect on groundwater. Table K4.18-13 presents the metals concentrations in soil after dust deposition,

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as well as ADEC comparative action levels for the migration to groundwater criteria for soils. The predicted percent increase in metals concentration attributable to dust deposition was less than 0.8 percent for all metals with the exception of antimony, which is predicted to increase in concentration by approximately 3 percent. Modeling and calculations of dust deposition do not indicate that any new exceedances of the ADEC levels would result from the dust effects. Arsenic was the only metal that would be expected to exceed these criteria; however, that exceedance would result from baseline soil conditions, and dust deposition would be expected to increase arsenic concentrations in soil by only about 0.6 percent.

Effects from Pit Lake in Closure. Surface water in the pit would continue to be pumped out during the first 15 years of closure while pyritic tailings and PAG waste rock are being placed in it. Pumping of groundwater may initially be maintained in a localized area of the open pit at the end of mining to facilitate safe placement of the waste while maintaining pit wall stability in the lower portion of the pit where faults are present (Section 4.15, Geohazards) (PLP 2018-RFI 023a). Pumping of water from the pit during early closure, and cessation of most groundwater pumping while waste is being placed, is expected to result in the groundwater level adjacent to the pit rising faster than the pit lake level rise, such that contact water in the pit is not likely to extend beyond the pit walls except in the localized area of temporary wall stability depressurization. Hydraulic containment would be maintained during all closure phases because overall flow gradients would be toward the pit lake radially from all directions, thereby limiting the extent of migration and capturing any pit-contaminated groundwater (PLP 2018-RFI 019d).

All pit dewatering would cease once placement of the PAG waste rock and pyritic tailings is complete to allow the pit lake to rise and cover the waste. Inputs of contaminated water into the pit lake from the waste and walls are predicted to exceed regulatory limits for water quality for a number of constituents, including TDS, sulfate, and metals (Table K4.18-5 through Table K4.18-8).

After lake level rise, groundwater gradients toward the pit would be maintained by managing the pit lake level through pumping and treating the lake water in perpetuity. With the pit water level maintained at the maximum management level of 890 ft msl, groundwater flow is expected to be directed radially toward the pit from all directions. The pit water would be retained in the pit and would not contribute (flow out) to affect the quality of groundwater outside of the radius of influence of the pit. Modeling indicates that the open pit hydraulic capture zone would extend 1,000 ft or more from the crest of the pit in post-closure (Piteau 2018). Section 4.17 and Appendix K4.17 provide additional information on the analysis of groundwater flow in closure.

Groundwater monitoring would be conducted at selected wells surrounding the pit lake to confirm that groundwater flow is toward the pit and that impacted groundwater is not migrating outside of the pit. Should the monitoring find that groundwater does not flow toward the pit or that groundwater quality outside the pit is degraded during the post-closure period, the maximum management level (890 ft msl) currently proposed would be reconsidered, and the pit lake level would be lowered to maintain hydraulic containment. Modeling of post-closure pit water quality indicates that the open pit water would need to be treated in perpetuity (Knight Piésold 2018d).

[Placeholder: Additional information on pit lake modeling, lake stratification, and its effects on water quality was received November 1, 2018 (PLP 2018-RFI 021c). This information will be reviewed and incorporated as appropriate in the DEIS.]

Effects on Drinking Water Wells. Groundwater is abundant in the project area and would be used as a source of potable water. The proposed water supply wells would be sited on a groundwater high located upgradient, and on the north (opposite) side of, the NFK east and

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north drainages that contain seepage collection systems for the pyritic TSF and main WMP (Figure 4.16-1). Thus, groundwater that could be potentially affected by mine site facilities would not be expected to affect drinking water sources used by on-site workers.

Effects on Wetlands. Disruption, in-filling, and removal of wetlands could influence groundwater recharge and discharge patterns, which could affect groundwater quality in the vicinity of the mine site. Currently, although sulfides appear to be naturally oxidizing in the deposit area, the groundwater is not acidic (see Section 3.18, Water and Sediment Quality). Reducing conditions are prevalent, partly because of deposition of organic carbon from wetlands and infiltration of organic carbon during spring thaw. The redox state of the overburden may change during mine operations as the water table is lowered and previously saturated soils and sediments are exposed to oxygen. This change in redox conditions could release metals to groundwater as oxidation occurs, and possibly precipitate reduced metals within sediment pores. Concentrations of metals in shallow groundwater may also increase because of the disruption of wetlands and increased sedimentation, resulting in an increase in suspended particulates with adsorbed metals.

Summary of Effects on Mine Site Groundwater Quality. Impacts on groundwater quality from mine site activities under Alternative 1 would likely be limited to effects on local groundwater in the near vicinity of mine facilities, within the footprint of the mine site. These impacts would be such that groundwater would not meet regulatory criteria at certain discrete locations within the mine site (e.g., shallow groundwater beneath the bulk TSF and groundwater in the open pit as the lake level rises). Groundwater entering the pit where it would mix with pit lake water would be pumped and treated in perpetuity to maintain the open pit as a hydraulic sink. Groundwater quality beneath the NFK west and NFK east drainages would likely be impacted during operations, but would be expected to improve in the decades after mine closure. Monitoring would be conducted after the end of mining, during the closure and post-closure periods, to determine whether groundwater quality in these localized areas improves after mining ceases. If monitoring shows that groundwater quality is not improving during the post-closure period, additional remedies would be implemented to capture and/or treat the impacted groundwater as needed.

Substrate/Sediment Quality

This section describes impacts on waterbody substrates. Impacts on wetlands substrates are addressed in Section 4.22, Wetlands.

Effects of Fill Placement on Physical Substrate. Placement of fill for construction of TSFs, WMPs, stockpiles, seepage and sediment ponds, and other facilities at the mine site would bury substrate in a number of streams and ponds. Section 4.22 lists the acreages of fill placement in both waterbodies and wetlands.

Placement of fill would also cause changes in sediment supply to streams downgradient. At mine site locations where streams would be filled, such as at the bulk TSF and associated seepage and sediment ponds, the downstream sediment supply to the NFK River would be cut off, depleting the natural supply of sediment to downstream gravels and potentially affecting aquatic habitats (see Section 4.24, Fish Values). A decrease in water flow from fill placement would also lower the natural level of coarse sediment transport, potentially allowing more fine particles to accumulate within the streambed.

Summer-Only Ferry Operations Variant. Potential operational scenarios under the summer-only ferry operations variant would affect substrate because of the increased operational footprint at the mine site (Ausenco Engineering 2018). Ore concentrates and additional diesel fuel would be stockpiled at the mine site, requiring additional container and fuel storage areas

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that would total approximately 38 acres. These storage areas would be constructed partially or wholly on wetland areas, thereby directly affecting substrate.

Effects of Erosion on Physical Substrate. Sediment release from erosion during construction and operations would be minimized through the use of BMPs (described above under "Surface Water Quality"). Sediment control measures applied during construction would include the use of temporary settling basins and silt fences. Sediment control measures during operations through closure would include a number of diversion channels that would direct surface runoff away from project facilities, and sediment ponds that would allow material to settle out of the water column, thus inhibiting downstream sediment transport. Surface runoff and seepage from stockpiles would be captured by drainage ditches and routed into sedimentation ponds to allow settling before water is released downstream. If these systems were designed properly to allow for adequate capacity and BMPs were followed, sediment releases and impacts on downstream substrate would be minimal. However, the potential exists for erosion during periods of high precipitation and runoff to overwhelm the BMPs, resulting in an influx of fine sediment and increased turbidity into gravel-dominated streambeds. In this event, suspended fine particles could settle and fill in interstitial spaces among the gravel, potentially affecting the streambed's ecosystem (see Section 4.24, Fish Values).

Construction of the mine site facilities would block some streamflow, reducing natural erosion during high-precipitation events; however, increased streamflow where WTP effluent is discharged could increase the sediment eroded and transported downstream that is then redeposited, thus modifying substrate both upstream and downstream. Current designs for WTP discharge indicate that each outfall pipeline would be equipped with a discharge chamber to mitigate the potential for erosion at discharge points. Discharge chambers would be buried at sufficient depth for thermal insulation against freezing. Each outfall pipeline would be designed first to drain into the discharge chambers to reduce the energy of water outflow, then to release the water into the drainage (Knight Piésold 2018f).

Impacts on Sediment Quality during Construction and Operations. Mining and exposing rock to chemical and physical weathering and erosion may increase the natural (pre-mine) rates of these processes and release constituents into surrounding surface water and substrate. Therefore, the evaluation of impacts on sediment quality depends largely on water quality and the other direct sedimentation impacts described above (e.g., erosion, dust). The chemical quality of sediment in some sections of streams at the mine site would be altered by fill placement, sediment accumulation upstream of embankments, and migration of contact water to downstream collection facilities. For example, contact water from the flow-through bulk TSF main embankment could introduce contaminants into native sediment between the TSF and the downstream SCP. Chemical components in water (such as metals and sulfate) could be absorbed by sediment or adsorbed onto sediment surfaces. Conversely, sediment could retain chemical constituents and slowly release them into water.

With containment and implementation of BMPs, impacts on sediment quality from surface disturbances would be limited to localized areas of the project footprint. Adverse effects on sediment quality downstream of treated WTP discharge points are not expected because the water would be treated before discharge and the potentially affected sediment would be contained by seepage and sediment ponds upstream of the discharge points. Likewise, although sediment in fully lined or contained facilities such as the pyritic TSF, WMPs, and pit lake would contain acid and metals from the mining process, these would not affect native sediment in downstream waterbodies.

Impacts on Sediment Quality from Fugitive Dust. Fugitive dust from various mine site sources and activities has the potential to affect concentrations of metals in sediment. Appendix

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K4.18 provides the methodology used to calculate the predicted incremental increase in metals concentrations in sediment, and Table K4.18-11 shows the results. Increases in the metals concentration in sediment due to dust deposition are anticipated to be minimal. Total increases in the concentrations are predicted to be less than 1 percent for all metals except antimony, which would be expected to increase by about 3 percent. Dust deposition would not be expected to result in any exceedances of the most stringent sediment quality criteria (Table K3.18-1).

Effects on Sediment Quality during Closure. During closure and reclamation, soil and sediment beneath the facilities slated for removal (such as the pyritic TSF and WMPs) would be tested for contaminants, and any impacted materials exceeding applicable regulatory levels would be either treated or removed and placed in the open pit (Knight Piésold 2018b). Surface runoff and groundwater that may be hydraulically connected to on-site sediment would be monitored downstream of the TSFs and WMPs at selected locations during post-closure to verify that potentially contaminated sediment is not affecting downstream water quality.

It is possible that contaminants may be held within sediment between the reclaimed pyritic TSF and WMP footprints that are tested at closure. Sediment can retain chemical constituents and release them into overlying water slowly, for decades or longer. Contaminants can be flushed out of coarse sediments such as gravels relatively quickly; by contrast, fine sediments like silts, muds, and clays found in some of the glacial lake deposits at the mine site can retain contaminants in porewater, and can store them for long periods of time because of their higher surface area. Even in areas where downstream water quality is monitored; contaminants held in sediment may continue to be slowly released into waterbodies over the long term, potentially beyond the point that monitoring points would be closed where water meets the discharge criteria. Thus, low-intensity sediment contamination in between the removed facilities could persist at the mine site for decades in post-closure potentially contributing to water quality impacts over time. To address this potential impact, Chapter 5, Mitigation, provides a recommendation for additional testing of sediment quality between facility footprints at closure.

4.18.2.2 Transportation Corridor

Surface Water Quality

Road Corridor. Impacts on surface water quality along the road corridor could result from erosion at construction sites and stream crossings. Erosion and sedimentation would be managed by implementing BMPs as described in Section 4.14, Soils.

Based on a field review of geology at material sites, PAG material has not been identified at any site along the transportation corridor, and the rock types present are not typical of PAG rock. Rock types would be investigated further during site evaluation before construction. If PAG material is identified, it would not be used for construction, and the material site would be relocated to an alternate location with non-PAG rock (PLP 2018-RFI 035).

The potential for small amounts of vehicle- or ferry-related pollutants to affect streams along the transportation corridor is discussed below under "Substrate/Sediment Quality." Section 4.27, Spill Risk, discusses the potential for containers containing concentrate to affect water quality.

Ferry Construction and Operations. Impacts on surface water quality could result if ferry-induced suspended sediment in Iliamna Lake near the terminals were to exceed background levels (Table K3.18-12). However, because the ferry would approach the dock perpendicularly at low power and the propeller base plane would be 4 ft above the keel, the potential for propeller-induced erosion of the lakebed would be limited (PLP 2018-RFI 013). In the unlikely event that fine bottom sediments were resuspended by ferry operations, it is

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expected that TSS concentrations would be expected to return to background levels within a short distance (less than 100 ft) from the ferry.

Stormwater runoff at the ferry terminals would be a potential source of impacts on surface water quality. Releases from ferry terminal facilities (e.g., generators, maintenance shops, or parking areas), if they occurred, would have the potential to affect surface water quality through stormwater runoff. The risk and impact of releases at the ferry terminals would be reduced through implementation of engineering controls (e.g., secondary containment, planned material management, and the presence of spill response equipment). In addition, stormwater treatment systems would be in place at both ferry terminal locations to capture potential contaminants (PLP 2018-RFI 093).

Groundwater Quality

Road construction and ferry operations are not expected to have a measurable effect on groundwater quality. It is possible that a localized increase in turbidity at stream crossings could occur in an exchange with shallow groundwater, but the effects of such an increase on the groundwater's chemical composition are likely to be imperceptible.

Substrate/Sediment Quality

Erosion Effects. Project-induced erosion and increased sedimentation on waterbody substrates is possible during construction activities such as vegetation removal, excavation, and grading. Withdrawal of water from permitted waterbodies during construction and operations also has the potential to disturb fine sediment on streambeds and lakebeds. These effects are expected to be of low intensity with the implementation of BMPs such as dust control and erosion and sedimentation control measures, and compliance with permit stipulations for water extraction methods. Effects during road construction would likely be limited to the close vicinity of stream crossing areas within the construction right-of-way. The potential for erosion and sedimentation is expected to be seasonal (reduced in winter by frozen conditions), and to continue for the life of the unpaved roads, which would be permanent, as they would be needed to support water treatment at the mine site in post-closure.

Should BMPs be inadequate or overwhelmed by high-precipitation events, eroded soils and sediments could be transported by water and wind, potentially causing sedimentation into nearby waterbodies. Section 2.24, Fish Values, describe effects on fish habitat and aquatic resources. Streams intersecting the transportation corridor vary in grain size and substrate composition, with some crossings composed mainly of sand, silt, and organic material and others having a higher concentration of gravel, cobbles, and boulders (Section 3.18, Water and Sediment Quality) (PLP 2018-RFI 036). The Gibraltar river bridge crossing location is largely dominated by gravel and cobbles. Stream crossings in areas where substrate is predominantly fine-grained would likely be subject to greater erosional effects and impacts on substrate than those with predominantly coarser substrates.

Placement of Fill Material. Road construction would include the placement of fill onto waterbody substrates at stream crossings, lakes, and ponds along the transportation corridor. Gravel fill would be placed at certain bridge abutments and at the ends of culverts larger than 3 ft in diameter to protect the bridge structures and substrate from erosion. Fill would also be placed inside larger culverts requiring fish passage to simulate streambed material for aquatic habitat. The areas and lengths of streams affected are quantified in Table 4.22-3 and shown in Figure 3.22-3 and Figure 3.22-4. The direct effect of fill placement would be to permanently bury existing sediment, as the road would remain during post-closure. Fill placement at the ferry landings would extend about 100–150 ft onto the nearshore lake sediment and would

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remain in place at closure. Potential indirect effects under CWA Section 404(b)(1) include temporary localized sediment suspension and redeposition downstream during construction.

Sediment Contamination. Small amounts of vehicle- or ferry-related pollutants such as fuel, oil, and lubricants would be used during the normal course of operations. These pollutants could be released onto the roadbed and run off to stream or pond substrates, or could be released into Iliamna Lake and incorporated into lakebed substrate. These potential impacts related to sediment contamination would likely be of low intensity, and would extend throughout the life of the mine and into post-closure. Section 4.27, Spill Risk, addresses impacts from potential major spills along the transportation corridor.

Summer-Only Ferry Operations Variant. Under the summer-only ferry operations variant, activities at the ferry terminals would be reduced for approximately 6 months per year, during the winter (Ausenco Engineering 2018). As a result, roadway use would also be greatly reduced, particularly on the south side of Iliamna Lake. During the period of no use, the potential for impacts on substrate and sediment quality would also be reduced because of the lower activity levels. However, the potential for impacts would not be eliminated entirely because limited quantities of fuel, lubricants, or other potential contaminants would still be stored at local ferry terminal facilities, and because some roadway use would still be expected. During the periods of ferry operation, the intensity of activity would approximately double to account for the reduced length of the operational season. Overall, the effect of this variant on substrate would be essentially the same as the effect of Alternative 1.

4.18.2.3 Amakdedori Port

Surface Water Quality

Surface Water Runoff and Treatment. Amakdedori port would be the shoreline hub for shipping, receiving, and storage of concentrate containers, fuel, reagents, and other freight for the project. The outside of concentrate containers would be vacuumed or spray-washed at the port site (PLP 2018-RFI 45). A container barrier wall built around the fuel tanks and a perimeter containment curb constructed around the terminal would prevent surface water runoff from these facilities and activities from reaching off-site surface water.

The WTP at Amakdedori port would treat surface runoff from the port facilities, which could potentially contain constituents from the above sources. Runoff water from the port facilities would likely have some similarities to mine contact water in terms of solids, but would not be expected to have the same levels of TDS given the lack of material processing. The treatment process would include dissolved metal oxidation using potassium permanganate, followed by co-precipitation with ferric chloride. Water from the co-precipitated solids would flow into flocculators/clarifiers to separate out the solids. The clarified water would then be treated with sodium hydrogen sulfide, sodium hydroxide, and ferrous sulfate to further co-precipitate the remaining metals under reducing conditions. The solids removed would be thickened and disposed of appropriately. The treated water would be suitable for discharge, with a discharge point in marine waters at the end of the dock structure. A potable WTP and a sewage treatment plant would also be located at the port site.

Dust Impacts on Marine Water Quality. Deposition of dust from concentrate handling at the offshore lightering locations would have minimal potential to result in impacts on water quality in Cook Inlet. Such impacts would be mitigated, and possibly eliminated, by implementing BMPs to prevent the dust from entering the water. The containers would be inverted and opened deep into the cargo hold of the ships below potential crosswinds, and concentrate would not be released until the fall of the material is less than 10 ft and the discharge elevation is 20 ft or

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more below the hatch. The concentrate is expected to still be moist from processing, but a water fog system could be installed to minimize dust if required (PLP 2018c; PLP 2018-RFI 45). Section 4.27, Spill Risk, addresses impacts on water quality under potential upset conditions.

Impacts on Salinity Gradients. Salinity gradients that might occur naturally at the locations of freshwater discharges into the port areas would assimilate quickly into adjacent marine waters due to natural mixing by wind-driven currents and waves, and thus would not likely be affected by port operations.

Suspended Particulates/Turbidity from Causeway Fill. Increased concentrations of suspended sediment and redeposition would occur in Kamishak Bay during the placement of fill material for causeway construction and the installation of sheet pile for the wharf structure. Such conditions could persist for up to several days after the completion of construction. The duration and extent of the increase in suspended sediment concentrations would depend on the amount of fine sediment in the fill material and disturbed seafloor material, as well as weather conditions (i.e., tides and wind-driven currents and waves would disperse suspended sediment even as it settles to the seabed). Fill material would consist of either blasted granitic bedrock trucked along the road from the closest material site, MS-A08, or imported by barge from existing commercial sources (PLP 2018-RFI 005; PLP 2018-RFI 035) such as the granite quarry at Diamond Point (ADNR 2014). The seafloor material consists of silty fine sand with gravel and a fines content of about 14 to 19 percent. The incremental increase in project-induced suspended sediment and redeposition is expected to be small compared to the naturally moderate to high load of suspended sediment and the sediment migration that occurs in Cook Inlet (Section 3.18, Water and Sediment Quality).

Pile-Supported Dock Variant. Compared to the causeway alternative, this dock variant would essentially be transparent to water movements in the port area; that is, a pile-supported dock would not be capable of deflecting alongshore currents away from the shore in the same manner as a solid-fill causeway. Except for very localized wake effects in the immediate vicinity of each pile, which would be limited to a few pile diameters' distance from each pile (on the lee side), no alteration of water movements or sedimentation processes would occur. Vibrations caused by pile driving during construction could affect sediment substrate; however, these effects would be limited to the actual pile driving period, and would not be expected to cause a substantial change in the character of the surrounding substrate.

Groundwater Quality

Impacts on groundwater quality at the port site are expected to be limited. No excavation or placement of fill would occur at depths that intersect the water table. Using groundwater for drinking water supplies at the port would not adversely affect groundwater quality. A single groundwater well is planned for the port site for potable water supply (location to be identified during detailed design). The well would be sited on uplands far enough from shore to mitigate the risk of potential saltwater intrusion, and water would be piped to the port site from the wellhead (PLP 2018-RFI 022a).

Substrate/Sediment Quality

Effects on Freshwater Substrate. Sediment in Amakdedori Creek on the southwest side of the terminal and in ponds to the north has the potential to be affected by erosion and overland runoff, especially during construction. BMPs would be in place to avoid or minimize these effects. The port terminal would be built at an elevation of 35 ft, about 15 ft above the floodplain of Amakdedori Creek. As described above, runoff from the terminal would be contained and treated, minimizing the potential for contaminants to reach Amakdedori Creek. Section 4.14,

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Soils, and Section 4.16, Surface Water Hydrology, provide further descriptions of BMPs and potential flooding effects, respectively.

Summer-Only Ferry Operations Variant. The summer-only ferry operations variant would have an increased operational footprint at the port site, which could cause increased effects on substrate (Ausenco Engineering 2018). The additional concentrate storage under this variant would require placement of fill along the east bank of Amakdedori Creek (PLP 2018-RFI 065). Section 4.22, Wetlands, provides the acreage of wetland substrate coverage under this variant.

Effects on Marine Substrate. The causeway would be approximately 1,200 feet long with an average base width of 250 feet, and the wharf would extend another 700 feet with a width of 120 feet (PLP 2018-RFI093); the footprint on the floor of Kamishak Bay would be approximately 9 acres. Placement of fill and riprap on top of the seabed during causeway construction and installation of sheet pile for wharf construction would result in the burial of substrate beneath the footprint, disturbance of seafloor sediment during fill placement and sheet pile driving, and settling of suspended solids away from the footprint as described above under "Surface Water Quality." Dredging of offshore sediment would not be required at the Amakdedori port site. Section 4.24, Fish Values, discusses impacts on the primarily soft sediment habitat types in this area.

Low levels of marine vessel-related pollutants such as fuel, oil, and lubricants may be released into Kamishak Bay and Cook Inlet waters and become incorporated into seafloor sediment. Strong currents, shallow water, and high tidal exchange in Cook Inlet, however, create an ongoing flushing of seawater in the inlet. Marine vessel activity in Upper Cook Inlet does not appear to have contributed to measurable sediment contamination (USACE 2013). Potential contaminants from marine vessels accessing Amakdedori port would be diluted and flushed into the North Pacific Ocean, and are expected to contribute a negligible amount of contamination to existing low background levels (Section 3.18, Water and Sediment Quality). Section 4.27, Spill Risk, discusses impacts from upset conditions.

4.18.2.4 Natural Gas Pipeline Corridor

Surface Water Quality

Impacts on surface water quality within the natural gas pipeline corridor would be associated with installation of the pipeline at water crossings and the use of local water sources for hydrostatic testing. Impacts at material sites and stream crossings would be the same as those described above for the transportation corridor.

Surface water quality at pipeline stream crossings is expected to be within water quality standards for turbidity during construction. Natural turbidity measurements at stream crossings along the transportation corridor were mostly below the instrument's minimum detection level of 7–11 nephelometric turbidity units (NTU) during 2018 field studies (Section 3.18, Water and Sediment Quality) (PLP 2018-RFI 036). ADEC water quality standards specify that turbidity levels may not exceed 5 NTU above these conditions (when the natural turbidity level is 50 NTU or less). Isolated occurrences of impacts above this standard could occur (e.g., during high-precipitation periods along summer construction segments), but are expected to be reduced within a short time frame because of planned redundancies in BMPs, erosion and sediment control measures, and reclamation/cleanup crew functions.

The extent of potential impacts from hydrostatic testing for pipeline pressure testing would be limited because the water volumes required would be small compared to the volumes of potential sources from rivers and small lakes along the route. Impacts on surface water quality

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would likely be imperceptible. Discharges of hydrostatic test water would meet the requirements of the applicable APDES general permit.

Groundwater Quality

Trenching Effects. The pipeline trench would likely intersect shallow groundwater intermittently along the overland portion of the route, causing potential impacts on groundwater quality similar to those of the transportation corridor. There could be local alterations to shallow groundwater flow patterns (Section 4.17, Hydrogelology) and small changes in the composition of groundwater that would likely not exceed applicable regulatory criteria. The extent of groundwater impacts would be limited to particular areas, primarily in the vicinity of river and stream crossings.

Horizontal Directional Drilling Effects on Drinking Water Wells. Horizontal Directional Drilling (HDD) operations would be required only for the natural gas pipeline at the Kenai shore approach near Anchor Point. Impacts of HDD operations on groundwater and potential drinking water sources would be expected to be minimal and localized relative to baseline groundwater supply wells (Section 3.18, Water and Sediment Quality). Dewatering would not be required for HDD operations, precluding the risk of changes in local groundwater flow patterns (Section 4.17, Hydrogeology). Drilling fluid would likely be composed of bentonite and water. The potential risk exists for drilling fluids, injected under pressure, to propagate away from the borehole and escape into the local aquifer (PLP 2018-RFI 051). Drilling fluid returns would be closely monitored during operations to ensure no excessive fluid loss. Drilling fluid returns would be treated via a separation system, and the cleaned fluid would be reinjected into the borehole for use during drilling, or stored in tanks at the surface for later disposal off site (PLP 2018-RFI 051).

Substrate/Sediment Quality

Potential impacts on waterbody substrate from erosion and sedimentation, fill placement, and contamination would be similar to those described above for the transportation corridor. No waterbody substrates would be crossed by the pipeline segment east of Cook Inlet. West of Cook Inlet, trench excavation and placement of cover material at stream crossings would be within the acreages documented for the road fill prism in Table 4.22-3. BMPs would be in place to control runoff and erosion during trenching, backfilling, and other ground-disturbing activities; therefore, impacts would be avoided or minimized.

Placement of fill at pipeline landfalls in Cook Inlet and Iliamna Lake would entail trenching into the existing bottom sediment and covering the pipeline with at least 3 ft of fill to a water depth of 12 ft (PLP 2018-RFI 013). Section 4.16, Surface Water Hydrology, addresses the potential for sediment suspension, plume transport, and redeposition to occur during construction in the marine environment.

4.18.3 Action Alternative 2 – North Road and Ferry

4.18.3.1 Mine Site

Buttressed Downstream Bulk TSF Main Embankment. Due to similar seepage design and downstream capture under Alternatives 1 and 2, the downstream dam alternative for the bulk TSF main embankment would likely have the same impacts on surface water and groundwater quality as centerline construction. However, construction of the downstream dam alternatives would require a 45–60 percent increase in fill because of the larger embankment footprint (PLP 2018-RFI 075). This would result in a corresponding increase in impacts on substrate in the

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NFK west drainage through permanent burial by fill, and greater potential for erosion and redeposition impacts (described under Alternative 1).

4.18.3.2 Transportation Corridor

Mine Site to Eagle Bay, and Pile Bay to Diamond Point Roads. Water and substrate impacts associated with the mine site to Eagle Bay and Pile Bay to Diamond Point roads would be similar to the road plus pipeline impacts for the north-road-only alternative. Including pipeline construction, these roads would result in the same number of stream crossings as the north-road-only route, and about 20 percent more stream crossings than the Alternative 1 (PLP 2018-RFI 086).

Eagle Bay to Pile Bay Ferry. Ferry operations from Eagle Bay to Pile Bay would have similar impacts on water and substrate quality as ferry operations in Alternative 1.

Summer-Only Ferry Operations Variant. Although the summer-only ferry operations variant would reduce water quality impacts on the lake during the 6-month winter season, ferry operations and activity would be increased during the 6 months of ferry operations and would require the use of either a vessel twice as large or two ferry vessels. Placement of additional fill at the mine site and the port site would be required to support additional storage areas for concentrate and diesel (PLP 2018-RFI 065), resulting in corresponding increases in burial of existing lake substrate and in suspended solids and turbidity during fill placement. Additional concentrate storage at the port site under this variant would also require an increase in fill placement along the west side of Iliamna Bay near Williamsport (see Section 4.22, Wetlands, for the acreage of wetland and waterbody substrate coverage under this variant). The likelihood of small spills and contaminated runoff would increase because of the extra container and fuel storage under this variant, although this is expected to be mitigated by water treatment of runoff as described under Alternative 1 (major spills from extra container and fuel storage are addressed in Section 4.27, Spill Risk).

4.18.3.3 Diamond Point Port

Terminal Runoff and Lightering Locations. Impacts from surface water runoff and treatment at the terminal, and from dust at the lightering locations, would be the same as described for Alternative 1.

Groundwater Quality at Dredge Disposal Area. Because of the differences in the approaches to the proposed dock facilities between Amakdedori port and Diamond Point port, dredging of marine substrate at the Diamond Point location would be required to achieve a 20-foot water depth. This dredging would generate approximately 650,000 cubic yards of material, of which a minimum of 50 percent would be used in dock construction. The remaining dredge spoils would be transported and disposed of onshore in a bermed facility located west and upland of the dock site, about 200 feet from the shoreline (PLP 2018-RFI 063). Most interstitial water (e.g., water contained in the dredged sediment) would be expected to drain back into Cook Inlet during placement of the dredged material onto a barge prior to transport; however, some limited amount of water would remain in the dredge spoils and would be placed in the upland disposal site with the solids. The saline water placed in the bermed containment would be expected to seep into underlying soils, and would mix with any shallow groundwater present. The overall area of the potential groundwater impact would be somewhat limited by the proximity of the disposal site to the shoreline.

Impacts on Salinity Gradients. Salinity gradients that might occur naturally at the locations of freshwater discharges into the port area would assimilate quickly into adjacent marine waters

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due to natural mixing by wind-driven currents and waves, and thus would not likely be affected by port operations.

Proposed Earthen Fill Dock: Suspended Particulates/Turbidity and Substrate Effects. Construction of dock facilities at Diamond Point would have a higher direct impact on marine substrate than construction under Alternative 1, as the footprint of these structures would cover roughly 90 more acres of seabed with fill than the Amakdedori port structures (PLP 2018-RFI 072). Placement of the fill causeway and wharf structure would contribute suspended sediment to the water column, leading to temporary turbidity and redeposition in the vicinity of construction. These effects are expected to be greater than those of the Alternative 1 causeway construction because of the greater amount of fill placement, and because the finer seabed material in Iliamna Bay is expected to travel farther before settling. This would cause an increase in the extent of turbidity effects and redeposition compared to Alternative 1, and an increase compared to the pile-supported dock variant under this alternative.

Some dredging of shallow offshore sediments would be required for construction of a marine vessel channel at the Diamond Point port. Initial dredging and maintenance dredging over two decades of production at the mine would cover an area of approximately 60 acres. These activities would temporarily increase suspended solids in the water column, which would be redeposited on marine substrate, effects that would not occur under Alternative 1. The extent of these effects could range from localized to beyond the mouth of Iliamna Bay, depending on tides and wave conditions.

Pile-Supported Dock Variant: Suspended Particulates/Turbidity and Substrate Effects. Construction of a pile-supported dock at Diamond Point would result in less of a direct impact on substrate than a fill causeway, as the piles would be driven through vibratory and hammer methods and would require no fill (PLP 2018-RFI 072). Effects would be slightly greater than the effects of constructing a pile-supported dock under Alternative 1; however, as the footprint of the piles would be about twice as large as the dock footprint under Alternative 1. Temporary and limited contributions of suspended sediment would be expected to occur during construction of the pile structure.

4.18.3.4 Natural Gas Pipeline Corridor

Impacts on water and sediment quality would be the same as described under Alternative 1 for the portion of the pipeline that would begin on the Kenai Peninsula and cross Cook Inlet to Kamishak Bay. Impacts would be the same as described for the transportation corridor under Alternative 3 for the portion from Diamond Point to the mine site.

Ursus Cove to Diamond Point

Construction along the pipeline corridor through Ursus Cove to Diamond Point could have incremental effects on substrate and water quality. Constructing this segment of pipeline would result in approximately three additional stream crossings, with associated impacts on surface and groundwater quality similar to those described for other sections of the natural gas pipeline corridor. In addition, the pipeline trench has the potential to intersect shallow groundwater in Ursus Cove.

4.18.4 Action Alternative 3 – North Road Only

Under Alternative 3, impacts on the pipeline corridor would be the same as those described for Alternative 2. The following section describes impacts for the mine site, transportation corridor, and port that would be different under Alternative 3.

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4.18.4.1 Mine Site

Under Alternative 3, impacts on the mine site would be the same as for other alternatives, with minor differences in effects under the concentrate pipeline variant. Impacts of this variant are described below.

Concentrate Pipeline Variant. The concentrate pipeline from the mine to the port under this variant would require an electric pump station at the mine site, which would require a small increase in fill placement over stream substrate in a NFK east tributary (PLP 2018-RFI 066). This variant would also reduce the amount of WTP water released at discharge locations at the mine site by approximately 1 to 2 percent (PLP 2018-RFI 066). This could result in slight reductions in temperature effects, impacts on substrate, and turbidity or erosional effects at the locations of treated water discharges. Inclusion of the concentrate pipeline would result in a slight increase in the potential for minor spills at the mine site. Section 4.27 examines major spill scenarios.

4.18.4.2 Transportation Corridor

Alternative 3 would increase the project footprint but would eliminate surface water quality impacts associated with the ferry crossing of Iliamna Lake. The northern access all-road route would result in an increase of about 20 percent in the number of stream crossings relative to Alternative 1, with a corresponding increase in substrate impacts (described under Alternative 1).

Concentrate Pipeline Variant. Inclusion of a concentrate pipeline under this alternative would result in slightly greater impacts on water and substrate/sediment quality than the all-road route alternative without the concentrate pipeline. The concentrate pipeline would be buried during road construction, and the road corridor would be widened by less than 10 percent to accommodate the pipeline, which could result in a marginal increase in turbidity effects on water quality and fill placement over substrate. An electric pump station would be required along the transportation corridor under this variant (PLP 2018-RFI 066), resulting in a small increase in the footprint in an upland area that is unlikely to affect water quality or substrate. Inclusion and operation of the concentrate pipeline would also result in an increased potential for impacts on substrate and surface water quality due to potential minor spills/leaks, although the likelihood of occurrence would be low with the use of a leak-detection system (major spill scenarios for concentrate are discussed in Section 4.27, Spill Risk). Because only the molybdenum concentrate (2.5 percent of the total concentrate production) would be trucked from the mine site to the port, a large reduction in road traffic would be anticipated, thereby reducing some potential impacts from dust, erosion, and runoff.

Concentrate Return Water Pipeline Option. Under this option, the return water pipeline would be buried in the same trench as the slurry and natural gas pipeline, requiring the trench to be widened by a few feet and resulting in an increased footprint of the transportation corridor (PLP 2018-RFI 066). Thus, the return water pipeline would result in a minimal increase in the same water quality and substrate/sediment quality effects as described above. There would be an increase in the likelihood of minor spills of contact water in this pipeline affecting water and sediment quality, that would not exist under the other options.

4.18.4.3 Diamond Point Port

Concentrate Storage and Bulk Handling. Concentrate would be dewatered at the port site and the dewatered concentrate would be stored in a large building until the loading of concentrate onto bulk carriers for transport. The storage building would result in a slight increase in the footprint at the port site beyond that of Alternative 2, with a corresponding slight

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increase in substrate burial at the small tributary to Cottonwood Bay (Chapter 2, Alternatives, Figure 2-64). Bulk handling of the concentrate would utilize controls to reduce dust emissions, such as covered conveyors that are used at Red Dog Mine dock facilities (PLP 2018-RFI 066).

The water removed from the concentrate would be treated in a WTP to meet marine water quality standards and discharged through an outfall pipeline and diffuser to the marine environment. Treatment would consist of adding chemicals for pH adjustment and metals precipitation, followed by use of clarifiers for solids removal and additional metals precipitation with sodium hydrogen sulfide and filtration. Solids and/or brine captured in the clarification and filtration steps would be trucked to the mine site or barged to an off-site disposal facility (PLP 2018-RFI 066).

Concentrate Pipeline Variant. The concentrate pipeline option utilizing a return water pipeline would result in no additional project footprint at Diamond Point, and would preclude the need for the discharge of treated water at the Cook Inlet terminus. This pipeline concentrate variant would eliminate the need for a dewatering WTP at the port, instead requiring a return water pump station of appropriate capacity (PLP 2018-RFI 066). This option would result in a negligible change in the footprint at the port site and likely no changes in impacts on substrate compared to Alternative 2 or Alternative 3 without the return water pipeline.

4.18.5 Impacts Summary Table

Table 4.18-1 summarizes general anticipated impacts on surface water, groundwater, and substrate/sediment quality from construction, operations, and closure of the mine site and associated development and activities.

Table 4.18-1: Summary of Key Issues for Water and Sediment Quality

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Mine Site Construction	**Surface Water**: Ground disturbance and fill placement could result in increased turbidity in local waterbodies and streams, to be mitigated through BMPs. **Groundwater**: Metals concentrations in shallow groundwater may increase as a result of the disruption of wetlands and fill placement. **Substrate**: Ground disturbance and fill placement would result in substrate burial[1] and increased erosion and sedimentation if BMPs are inadequate, and would reduce natural levels of coarse sediment transport to downstream substrates.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1. *Downstream Bulk TSF Variant*: A 45% to 60% increase in fill required; increased substrate burial[1] and ground disturbance potential for increased erosion and surface water turbidity.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1. *Concentrate pipeline variant:* Small increase in substrate burial in NFK-east tributary.[1]

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Table 4.18-1: Summary of Key Issues for Water and Sediment Quality

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Tailings and Contact Water Storage (TSFs and WMPs)	**Surface Water**: Pond water quality in TSFs and WMPs would exceed water quality standards, but would be contained within the mine site footprint and treated prior to discharge to the environment. Runoff of contact water from the TSF and WMP embankments would be monitored and diverted to WMPs or WTPs for treatment as necessary. **Groundwater**: Local impacts on shallow groundwater quality in the NFK west, east, and north drainages are likely from vertical seepage through the bulk TSF, or leakage through the pyritic TSF or WMP liners. This would result in localized exceedances of water quality standards within the mine site footprint, which would be captured and treated prior to discharge to the environment. No mine site effects on drinking water wells are expected. **Substrate**: Burial from fill placement in the NFK west, east, and north drainages.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1. *Downstream Bulk TSF Variant:* Increase in substrate burial as described above.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.
Fugitive Dust Effects	**Surface Water**: Metals concentrations in surface water predicted to increase by 0.1% to 0.7% as a result of fugitive dust deposition, although no exceedances of water quality standards are expected. **Groundwater**: No leaching to groundwater above ADEC migration-to-groundwater levels, except for arsenic, which exceeds in baseline and with a predicted 0.6% dust-related increase. **Substrate**: Metals concentrations in sediment would increase by 0.1% to 3%, but no exceedances of SQGs.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.

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Table 4.18-1: Summary of Key Issues for Water and Sediment Quality

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Treated Water Discharge	**Surface Water:** WTPs would effectively treat metals and other constituents in WMPs and TSF pond water to meet discharge criteria; the potential exists for an increase in TDS during operations, requiring adaptive management of WTP processes. Temperature changes in the range of -1°C to +3.6°C are predicted in the NFK, SFK, and UTC drainages about 0.5 mile to 3 miles downstream of WTP discharges. **Groundwater:** WTPs would effectively treat dewatering water from open pit and potential groundwater contamination from TSFs captured in seepage collection systems. **Substrate:** Potential erosion effects from WTP effluent would be minimal with discharge chambers to dissipate outflow energy.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.	**Surface Water**: Impacts similar to those of Alternative 1. *Concentrate pipeline variant*: Estimated decreased discharge volume by 1% to 2% could result in marginal changes in temperature effects. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.
Mine Site Closure	**Surface Water**: Impacted sediment between the locations of TSFs and SCPs/WMPs locations could continue to release contaminants into surface water over time. Pit lake water quality would exceed water quality standards, but would be pumped to maintain operational levels and treated prior to being discharged to the environment. **Groundwater**: Local groundwater quality in the immediate vicinity of the pit and downstream of TSFs may exceed water quality standards, but would be contained by overall gradient toward pit lake or SCP capture, and treated to meet discharge criteria. **Substrate**: Potentially contaminated sediment between TSFs and SCPs/WMPs would be monitored after closure and remediated if necessary.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1. *Downstream Bulk TSF Variant:* Increased substrate burial beneath the bulk TSF would be permanent.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1.

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Table 4.18-1: Summary of Key Issues for Water and Sediment Quality

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Transportation Corridor			
Road Construction and Operations	**Surface Water**: Localized increase in turbidity at approximately 100 stream crossings. Impacts are expected to be short term and mitigated through BMPs. **Groundwater**: Impacts anticipated to be negligible. **Substrate**: Potential erosion and sedimentation at stream crossings to be mitigated through BMPs. Placement of fill at bridge and culverts would bury existing substrate.[1]	**Surface Water**: Localized increased turbidity at 20% more stream crossings than under Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Potential increase in substrate impacts[1] with additional stream crossings.	**Surface Water**: Impacts similar to those of Alternative 2. *Concentrate pipeline variant*: Marginal increase in turbidity due to wider road corridor. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 2. *Concentrate pipeline variant:* Marginal increase in substrate[1] due to wider road corridor.
Ferry Construction and Operations	**Surface Water**: Potential for ferry-induced increase in nearshore TSS/turbidity; expected to return to background levels within a short distance (less than 100 ft) from ferry. *Summer-Only Ferry Operations Variant:* Reduced TSS/turbidity impacts in winter and increased impacts in summer; overall same as Alternative 1. **Groundwater**: No impacts anticipated. **Substrate**: Fill placement at the ferry would extend 100–150 ft onto the nearshore lake substrate. *Summer-Only Ferry Operations Variant:* Increased fill placement on lake substrate at terminals.[1]	**Surface Water**: Impacts similar to those of Alternative 1. Ferry terminal locations changed to Eagle Bay and Pile Bay. *Summer-Only Ferry Operations Variant:* Impacts similar to those of Alternative 1. **Groundwater**: No impacts anticipated. **Substrate**: Impacts similar to those of Alternative 1. Ferry terminal locations changed to Eagle Bay and Pile Bay. *Summer-Only Ferry Operations Variant:* Impacts similar to those of Alternative 1.	**Surface Water:** No impacts on lake water quality anticipated (no ferry). **Groundwater**: No impacts anticipated. **Surface Water:** No impacts on lake substrate (no ferry terminals).

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Table 4.18-1: Summary of Key Issues for Water and Sediment Quality

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Port Site			
Causeway Fill/ Construction	**Surface Water**: Placement of fill would result in a localized increase in TSS/turbidity in Kamishak Bay for the duration of construction. *Pile-Supported Dock Variant*: Lower TSS/turbidity impacts due to reduced area of disturbance.[1] **Groundwater**: No impacts anticipated. **Substrate**: Placement of fill and causeway construction would result in disturbance of seafloor sediment and burial of substrate beneath the causeway footprint.[1] *Pile-Supported Dock Variant*: Less burial of marine substrate.[1]	**Surface Water**: Greater extent of TSS/turbidity increase due to finer grained sediment and dredging activities; extent would range from the close vicinity of the dock to the mouth of Iliamna Bay, depending on tides and waves. *Pile-Supported Dock Variant*: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1; stockpile of dredged material may have local impacts on shallow groundwater quality. **Substrate**: Area of direct impact on substrate would increase[1] due to a larger causeway and access route. *Pile-Supported Dock Variant*: Impacts similar to those of Alternative 1.	**Surface Water**: Impacts similar to those of Alternative 1. **Groundwater**: Impacts similar to those of Alternative 1. **Substrate**: Impacts similar to those of Alternative 1. *Concentrate Pipeline Variant:* The WTP would effectively treat dewatering water to meet discharge limits prior to marine environment.
Natural Gas Pipeline			
Construction Effects	**Surface Water**: Impacts similar to those for the transportation corridor under Alternative 1. **Groundwater**: Impacts west of Cook Inlet similar to those for the transportation corridor under Alternative 1. The risk of HDD drilling fluid affecting drinking water supply wells on Kenai Peninsula is expected to be localized and minimized through pressure monitoring during drilling; drilling fluid and cuttings would be disposed of offsite. **Substrate**: Impacts similar to those for the transportation corridor under Alternative 1.	**Surface Water**: Impacts similar to those for the transportation corridor under Alternative 2 (road and ferry). **Groundwater**: Impacts west of Cook Inlet similar to those for the transportation corridor under Alternative 2. Impacts east of Cook Inlet same as those for Alternative 1. **Substrate**: Impacts similar to those for the transportation corridor under Alternative 2 (road and ferry).	**Surface Water**: Impacts similar to those for the transportation corridor under Alternative 3 (road construction). **Groundwater**: Impacts west of Cook Inlet similar to those for the transportation corridor under Alternative 3. Impacts east of Cook Inlet same as those for Alternative 1. **Substrate**: Impacts similar to those for the transportation corridor under Alternative 3 (road construction).

Notes:
1. Acreages of waterbody substrate burial provided in Section 4.22, Wetlands.

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4.18.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) within the cumulative impact study area have the potential to contribute cumulatively to impacts on surface water, groundwater, or substrate quality. Section 4.1 details the past, present, and RFFAs considered for evaluation. The limited number of past and present actions considered is not expected to result in lingering effects that would be anticipated to have a timing nexus with the project, and these actions are therefore not considered further as potential contributors to cumulative impacts.

Several RFFAs detailed in Section 4.1 are considered to have no potential for cumulative impacts on surface water, groundwater, or substrate quality in the study area. These include non-industrialized point source activities that are unlikely to result in any appreciable impact beyond a temporary basis (e.g., subsistence, tourism, recreation, hunting and fishing). Other RFFAs removed from further consideration include those sufficiently distant from the study area to eliminate infrastructure co-use by other parties (e.g., Donlin, Copper Joe), or those RFFAs that may occur in the marine environment of Cook Inlet (e.g., lease sales or proposed natural gas pipeline crossings or shoreside facilities). In the marine environment, impacts related to the Pebble project are isolated to the area around the proposed port sites; there is unlikely to be a significant contribution to or by other projects occurring in marine waters in the Cook Inlet region.

RFFAs that could contribute cumulatively to surface water quality or freshwater substrate impacts, and that are therefore considered in this analysis, are limited to those activities that would occur within the Nushagak River or Kvichak River drainages, or in other waterbodies intersected by the transportation corridor in the Cook Inlet drainage. RFFAs that could contribute cumulatively to impacts on groundwater quality are even more limited, consisting only of activities in the mine site area, or immediately within or adjacent to the transportation corridor.

The following specific RFFAs were carried forward in this analysis based on their potential to contribute cumulatively to impacts on surface water, groundwater, or substrate quality in the study area:

- Pebble Project buildout—development of 55 percent of resource over a 78-year period.
- Exploration activities at Pebble South, Big Chunk South, Big Chunk North, Fog Lake, and Groundhog prospects.
- Shotgun prospect exploration and development.
- Diamond Point rock quarry.

The most important potential future actions in this analysis are those that are likely to contribute to impacts on surface water, groundwater, or substrate quality and are regionally common to the project. Because development at remote locations can be financially prohibitive, RFFAs near the project that could potentially minimize costs through co-use of project infrastructure are also considered important to this analysis.

The Pebble Project buildout and commercialization of the Shotgun prospect are the only mineral deposit RFFAs considered for exploration and development. All other mineral deposit RFFAs are considered for exploration only. The Pebble project buildout is the most notable RFFA, and would result in additional development not included under Alternative 1:

- Increased pit footprint
- Increased TSF and waste rock storage capacity
- Additional processing infrastructure

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- Construction of a new port site with diesel fuel and concentrate pipeline(s) extending to the mine site.

The estimated area of disturbance would be greater than under Alternatives 1 and 2 combined, based on infrastructure buildout at the mine site. The buildout would correspond to an increase in the magnitude and local extent of ground disturbance impacts and fill placement on substrate, with a duration increase of up to 98 years. The potential for impacts on surface water, groundwater, and substrate would increase, and would be greater than the combined impacts of Alternatives 1 and 2. Additional design features to capture and treat impacted water and waste streams would be necessary to manage mine site impacts. Also, adding a diesel fuel line would increase the likelihood of hydrocarbon spills along the pipeline and at pipeline terminals, potentially contributing to the cumulative impact of spills.

Development of the Shotgun prospect, while potentially contributing cumulatively to regional impacts on surface water quality within the Nushagak River watershed, would not physically overlap with the Pebble project area. The cumulative impact in the common areas of the lower Nushagak River watershed would be expected to be minimal if the design features applied to the Pebble project were to achieve the anticipated water discharge controls. No cumulative effect on groundwater quality would be expected, given the geographical separation of activities.

Some limited RFFAs associated with mineral exploration activities (e.g., Pebble South, Big Chunk North, Big Chunk South, Fog Lake, and Groundhog) could have some limited impacts on surface water and substrate quality in common watersheds to the Pebble project (e.g., drill pads, camps); however, they would be seasonally sporadic, temporary, and localized based on their remoteness. The potential could also exist for greater impacts on surface water and substrate through co-use of transportation infrastructure with the Pebble project.

The footprint of the Diamond Point rock quarry partially coincides with the Diamond Point port's footprint under Alternatives 2 and 3. Cumulative impacts would be limited to a potential increase in localized impacts on surface water and substrate quality from commonly shared project footprints with the quarry site under Alternatives 2 and 3.

Overall, the magnitude of cumulative impacts on surface water, groundwater, and substrate quality from RFFAs in general would be expected to be minimal, with the exception of activities from the Pebble project buildout RFFA. Cumulative effects would increase within the mine site footprint when expanded to include buildout development and increased fill placement.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 11/10/2018 3:36:01 AM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: FW: Pebble Review Drafts Transmission (3.24, 4.24, K3.24) please provide comments by 12/7/2018 if your agency has been requested to do so. (UNCLASSIFIED)
Attachments: K3.24_FishValues_FINAL.docx; Sec3.24_FishValues_FINAL.docx; Sec4.24_FishValues_FINAL.docx; 3_24_06_Iliamna Lake Alternatives.pdf; 3_24_01_NFK_SFK_UT_Basins.pdf; 3_24_02_NFK_Fish_Distribution.pdf; 3_24_03_SFK_Fish_Distribution.pdf; 3_24_04_UT_Fish_Distribution.pdf; 3_24_05_Fish Stream Crossings Access Corridor.pdf; Figure_4_24_01_Mine Site Fish Impacts.pdf

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec 3.24, 4.24, K3.24 – Fish Values. The only technical appendix is K3.24 (a technical appendix K4.24 was anticipated at one time but was not needed). There are 7 separate figure PDFs. CAs are EPA, State of Alaska, and USFWS.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

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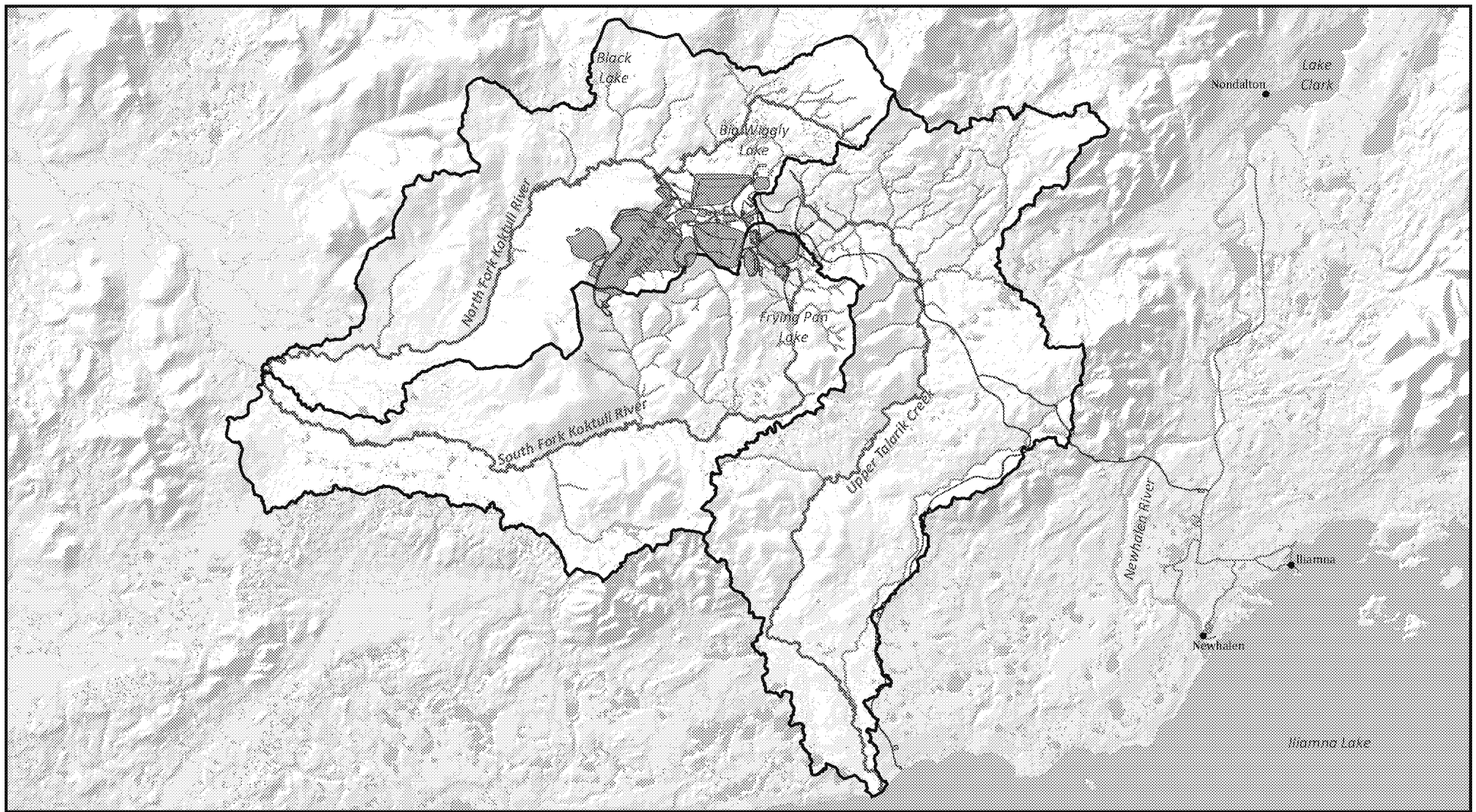


Sources: HDR 2012

US Army Corps of Engineers

1 0 1 2

Miles

Alternative 1 Project features

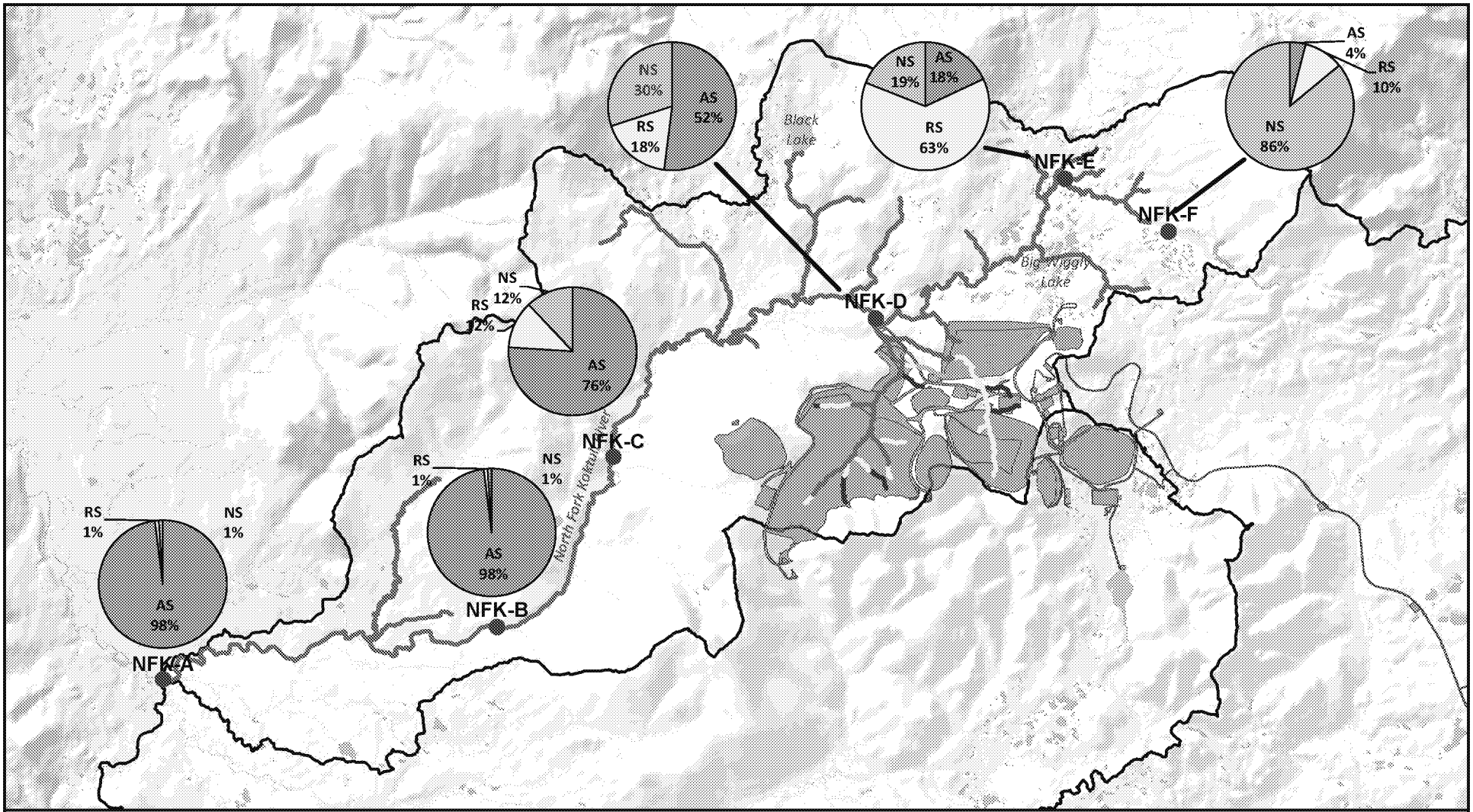
Water Basin

NORTH FORK KOKTULI, SOUTH FORK KOKTULI AND UPPER TALARIK BASINS

PEBBLE PROJECT EIS

FIGURE 3.24-1

AMERICAN OVERSIGHT



Sources: USGS; ADF&G; Pebble (R2 et al. 2011)

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Fish Distribution and Relative Abundance
- Anadromous Salmonids
- Resident (non-anadromous) Salmonids
- Non-Salmonid Fish
- No Fish Present
- Mainstem Reaches

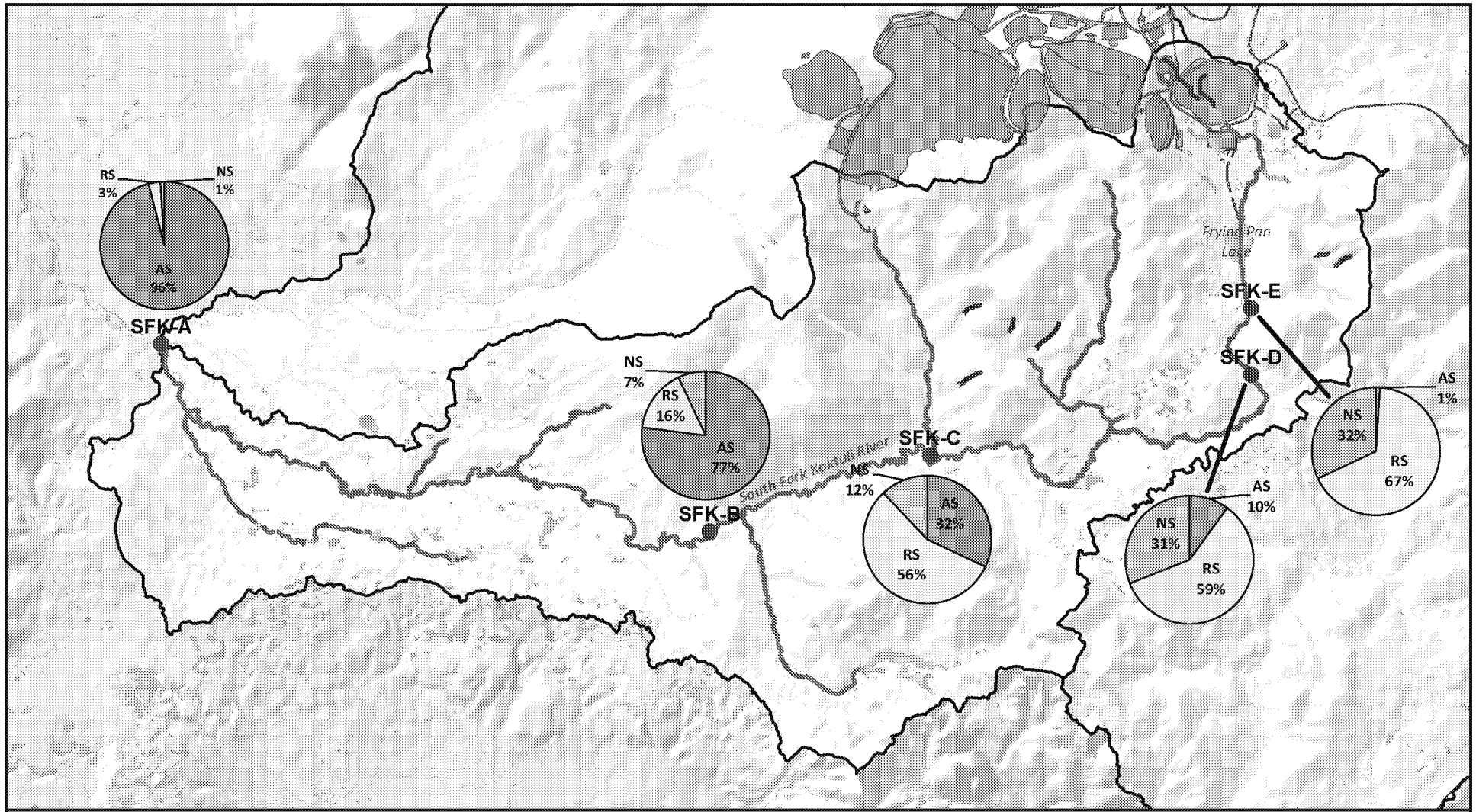
Alternative 1 Project features
Water Basin

NORTH FORK KOKTULI
FISH DISTRIBUTION AND RELATIVE ABUNDANCE

PEBBLE PROJECT EIS

FIGURE 3.24-2

AMERICAN OVERSIGHT



Sources: USGS; ADF&G; Pebble (R2 et al. 2011)

US Army Corps of Engineers

0.5 0 0.5 1
Miles

Fish Distribution and Relative Abundance
- Anadromous Salmonids
- Resident (non-anadromous) Salmonids
- Non-Salmonid Fish
- No Fish Present
- Mainstem Reaches

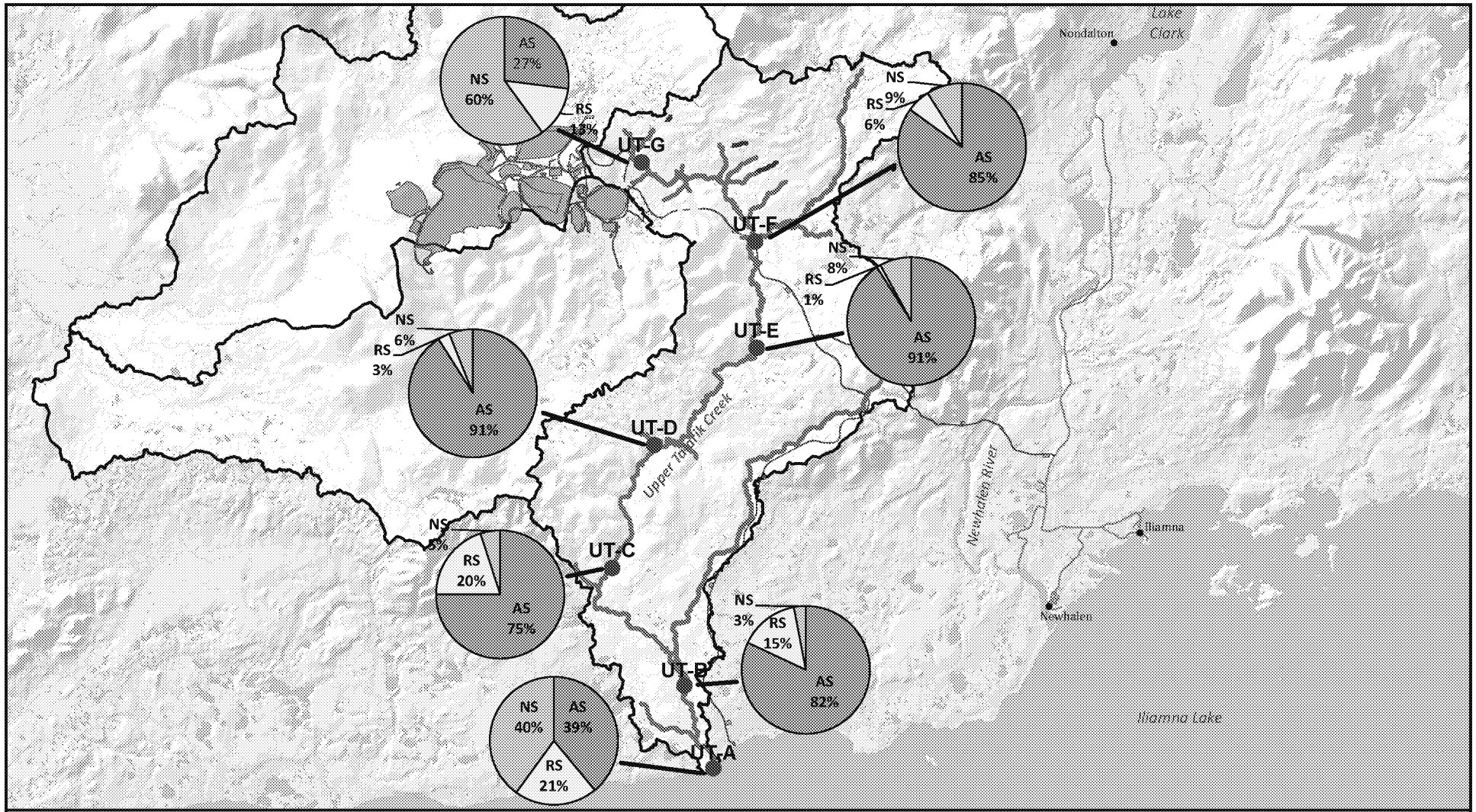
Alternative 1 Project features
Water Basin

SOUTH FORK KOKTULI
FISH DISTRIBUTION AND RELATIVE ABUNDANCE

PEBBLE PROJECT EIS

FIGURE 3.24-3

AMERICAN OVERSIGHT



Sources: USGS; ADF&G; Pebble (R2 et al. 2011)

US Army Corps of Engineers

1 0 1 2
Miles

Fish Distribution and Relative Abundance
- Anadromous Salmonids
- Resident (non-anadromous) Salmonids
- Non-Salmonid Fish
- No Fish Present
- Mainstem Reaches

Alternative 1 Project Features
Water Basin

UPPER TALARIK
FISH DISTRIBUTION AND RELATIVE ABUNDANCE

PEBBLE PROJECT EIS

FIGURE 3.24-4

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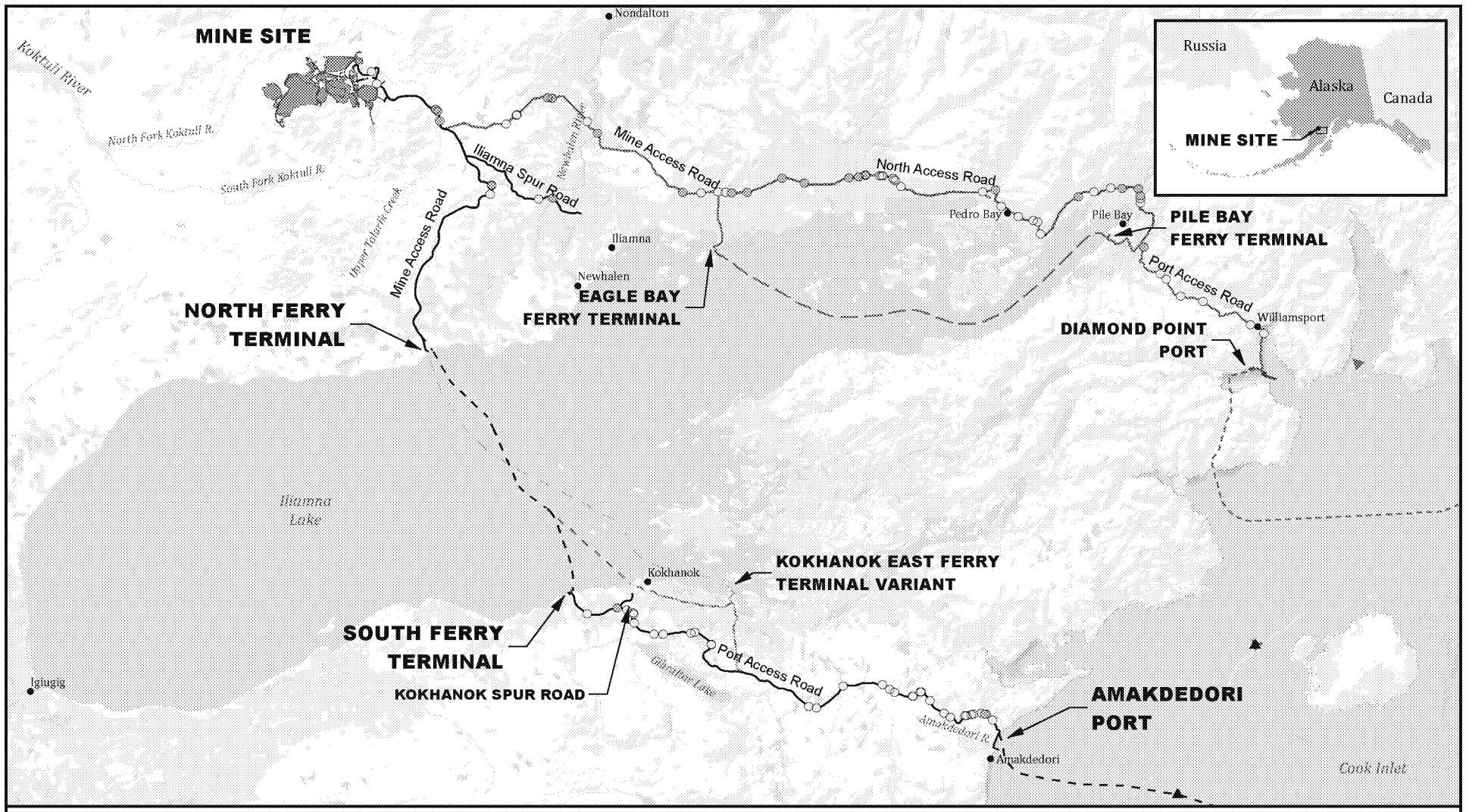


Sources: PLP 2018; ADF&G; ADNR

US Army Corps of Engineers

5 0 5 10
Miles

Stream Crossings
- Anadromous Fish
- Resident Fish

Alternative 1
- Lightering Locations
- Mine Site
- Transportation Corridor
- Natural Gas Pipeline
- Ferry/Port Site

Kokhanok East Ferry Terminal Variant
- Transportation Corridor
- Ferry Route
- Natural Gas Pipeline
- Ferry Terminal

Alternative 2
- Transportation Corridor
- Ferry Route
- Ferry Site

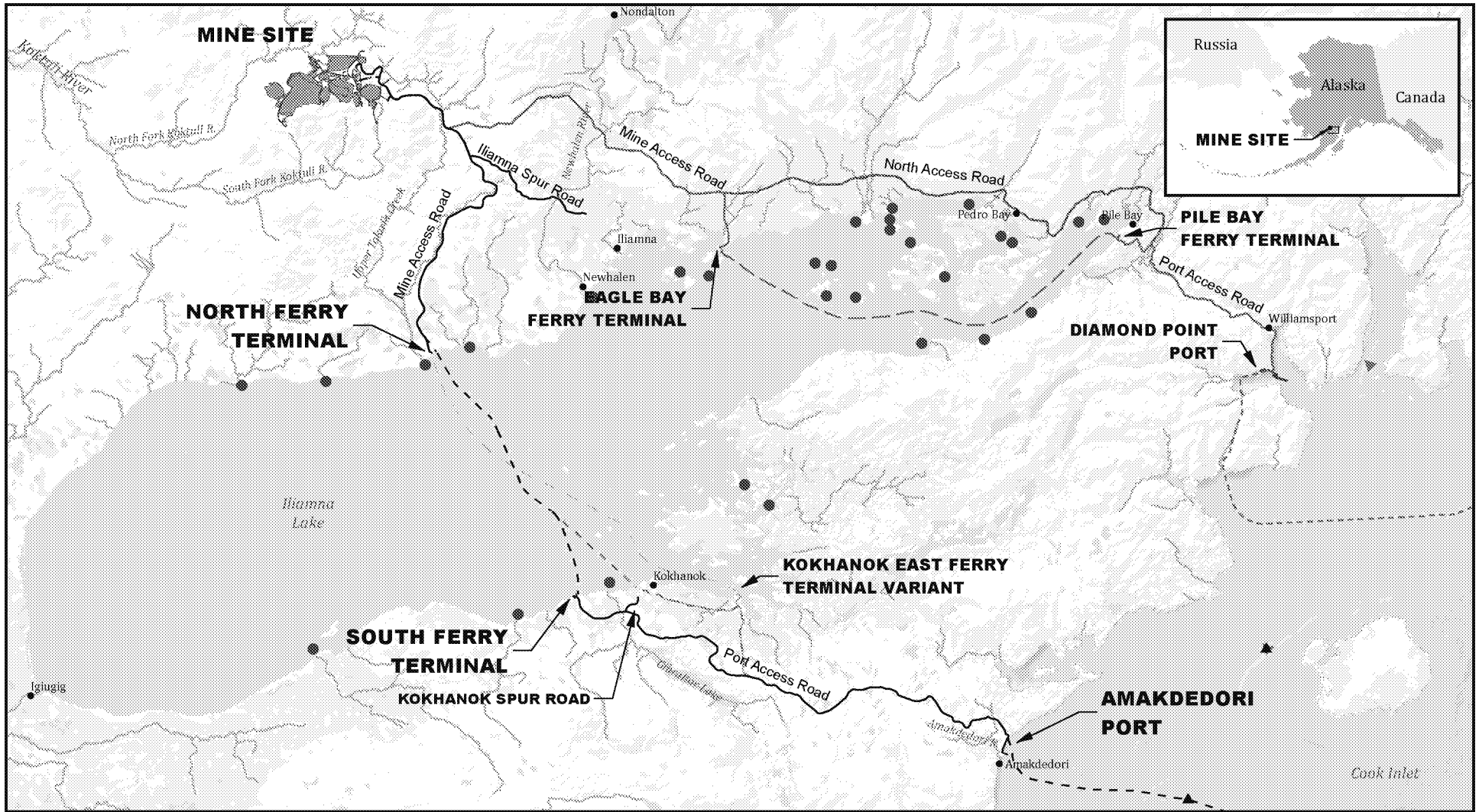
Alternative 2/3
- Lightering Location
- Natural Gas Pipeline
- Port Site

Alternative 3
- Transportation Corridor

TRANSPORTATION CORRIDOR FISH STREAM CROSSINGS

PEBBLE PROJECT EIS **FIGURE 3.24-5**

AMERICAN OVERSIGHT



ILIAMNA LAKE ALTERNATIVES

PEBBLE PROJECT EIS **FIGURE 3.24-6**

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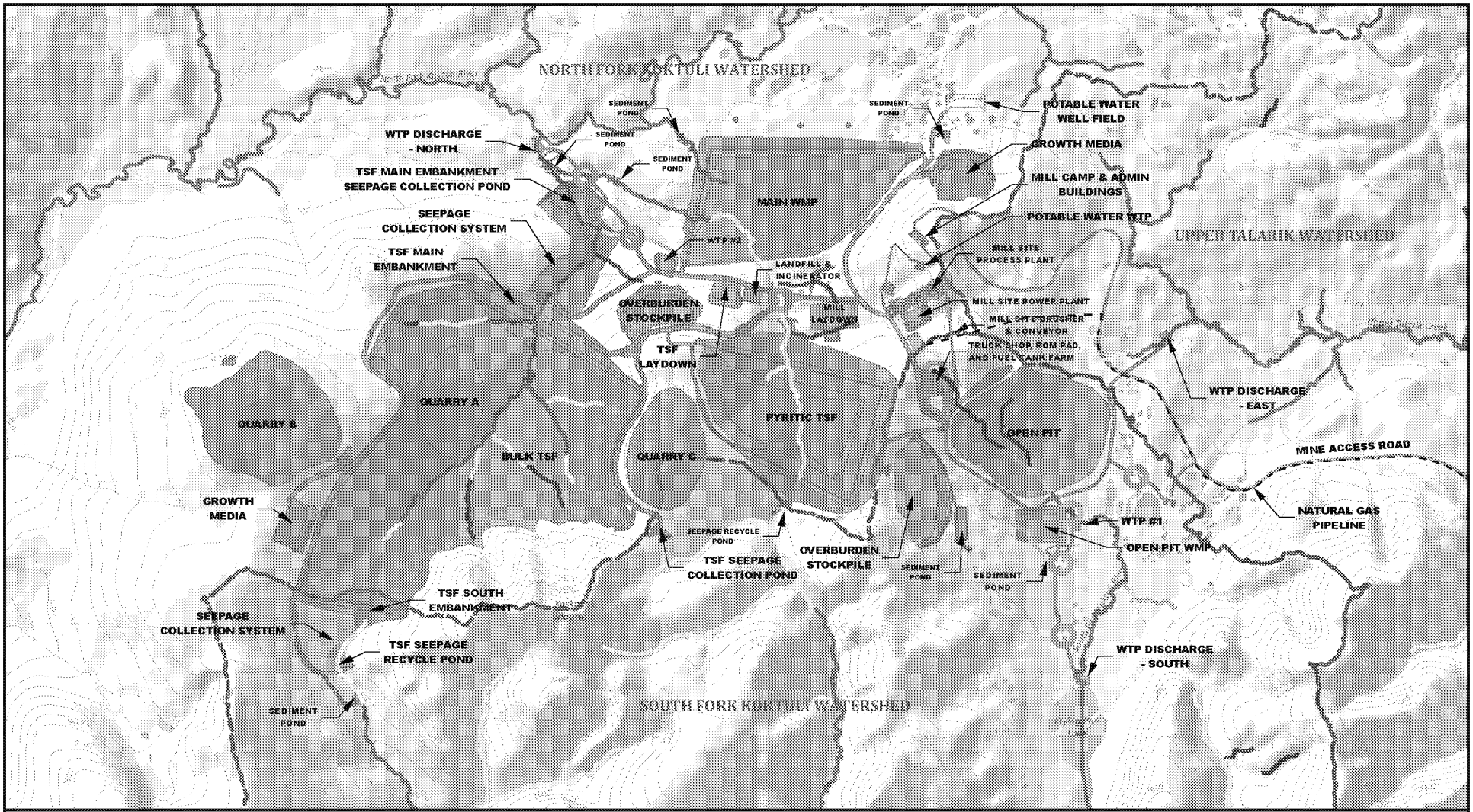

Sources: PLP 2017; HDR 2012

US Army Corps of Engineers

0.5 0 0.5 1

Miles

Fish Distribution and Relative Abundance

- Anadromous Salmonids
- Resident (non-anadromous) Salmonids
- Non-Salmonid Fish Only
- No Fish Present
- Stream Crossing

Alternative 1

- Monitoring Wells
- Natural Gas Pipeline
- Mine Site Footprint

Other Features

- River/Stream
- Lake/Pond
- Watershed
- 100' Contour (Pre-Mine)

FISH AND AQUATICS MINE SITE IMPACTS

PEBBLE PROJECT EIS

FIGURE 4.24-1

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K3.24 FISH VALUES

Table K3.24-1: Master Fish Crossing Table

Crossing ID	Stream Name	CrossingType	Bridge Type	Component	Anadromous	Species[1]
104		CULVERT		Alt. 1 South Access Road	N	Resident
107		CULVERT		Alt. 1 South Access Road	N	Resident
108		BRIDGE	single span	Alt. 1 South Access Road	243-40-10010-2008-3030	COr
109		CULVERT		Alt. 1 South Access Road	N	Resident
110		CULVERT		Alt. 1 South Access Road	N	Resident
111		CULVERT		Alt. 1 South Access Road	N	Resident
112		CULVERT		Alt. 1 South Access Road	N	Resident
114		CULVERT		Alt. 1 South Access Road	N	Resident
117		CULVERT		Alt. 1 South Access Road	N	Resident
118		CULVERT		Alt. 1 South Access Road	N	Resident
122		CULVERT		Alt. 1 South Access Road	N	Resident
126		CULVERT		Alt. 1 South Access Road	N	Resident
127		CULVERT		Alt. 1 South Access Road	N	Resident
128		CULVERT		Alt. 1 South Access Road	N	Resident
130		CULVERT		Alt. 1 South Access Road	N	Resident
133		CULVERT		Alt. 1 South Access Road	N	Resident
134		CULVERT		Alt. 1 South Access Road	N	Resident
135		BRIDGE	single span	Alt. 1 South Access Road	N	Resident
202		BRIDGE	Multi-span	Alt. 1 South Access Road	N	Resident
207		CULVERT		Alt. 1 South Access Road	N	Resident
209		CULVERT		Alt. 1 South Access Road	N	Resident

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Table K3.24-1: Master Fish Crossing Table

Crossing ID	Stream Name	CrossingType	Bridge Type	Component	Anadromous	Species[1]
212		CULVERT		Alt. 1 South Access Road	N	Resident
219		CULVERT		Alt. 1 South Access Road	N	Resident
220		CULVERT-ELLIPTICAL		Alt. 1 South Access Road	N	Resident
221		BRIDGE	single span	Alt. 1 South Access Road	N	Resident
222		CULVERT		Alt. 1 South Access Road	N	Resident
223		CULVERT		Alt. 1 South Access Road	N	Resident
224		CULVERT		Alt. 1 South Access Road	N	Resident
225		BRIDGE	single span	Alt. 1 South Access Road	N	Resident
226		CULVERT		Alt. 1 South Access Road	N	Resident
227		CULVERT		Alt. 1 South Access Road	N	Resident
228	Gibraltar River	BRIDGE	multi-span	Alt. 1 South Access Road	324-10-10150-2196-3008	COr, Ss
229		CULVERT		Alt. 1 South Access Road	N	Resident
301		CULVERT		Alt. 1 North Access Road	N	Resident
408		CULVERT-ELLIPTICAL		Alt. 1 North Access Road	N	Resident
409		CULVERT		Alt. 1 North Access Road	324-10-10150-2183-3010	COr
410		BRIDGE	single span	Alt. 1 North Access Road	324-10-10150-2183-3010	COr
411		CULVERT		Alt. 1 North Access Road	324-10-10150-2183-3050	COr
412		BRIDGE	single span	Alt. 1 North Access Road	324-10-10150-2183-3054	COr, Ss,Kp
413		CULVERT		Alt. 1 North Access Road	324-10-10150-2183-3057	COr

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Table K3.24-1: Master Fish Crossing Table

Crossing ID	Stream Name	CrossingType	Bridge Type	Component	Anadromous	Species[1]
418		CULVERT-ELLIPTICAL		Alt. 1 North Access Road	N	check
419		CULVERT		Alt. 1 North Access Road	N	check
501	Newhalen River	BRIDGE	Multi-span	Alt.1 Iliamna Spur	324-10-10150-2207	COr, Ss,Kp,ACp
502		CULVERT		Alt.1 Iliamna Spur	N	Resident
10		CULVERT		Alternative 2/3	N	Resident
11		CULVERT		Alternative 2/3	N	Resident
12		CULVERT		Alternative 2/3	N	Resident
13		CULVERT-ARCH		Alternative 2/3	324-10-10150-2207-3027-4011	COr
14		CULVERT		Alternative 2/3	324-10-10150-2207-3027-4011-5005	COr
15		CULVERT		Alternative 2/3	N	Resident
16	Newhalen River	BRIDGE		Alternative 2/3	N	COr, Ss,Kp,ACp
22		CULVERT-ARCH		Alternative 2/3	324-10-10150-2235	Ss,ACp
23		CULVERT		Alternative 2/3	N	Resident
26		CULVERT-ARCH		Alternative 2/3	N	Resident
27		CULVERT-ARCH		Alternative 2/3	N	Resident
28		BRIDGE		Alternative 2/3	324-10-10150-2239-3005	Ss,ACp
29	Eagle Bay Creek	CULVERT-ARCH		Alternative 2/3	324-10-10150-2239	COr, Ss
30		BRIDGE		Alternative 2/3	324-10-10150-2261-3203	COp, Sp
32		BRIDGE		Alternative 2/3	324-10-10150-2261-	COr

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Table K3.24-1: Master Fish Crossing Table

Crossing ID	Stream Name	CrossingType	Bridge Type	Component	Anadromous	Species[1]
					3006	
33		CULVERT-ARCH		Alternative 2/3	324-10-10150-2267-3001	Sp
34		BRIDGE		Alternative 2/3	324-10-10150-2267-3001	COr, Ss, ACp
35	Canyon Creek	BRIDGE		Alternative 2/3	324-10-10150-2273	Sr
36	Canyon Creek	CULVERT		Alternative 2/3	324-10-10150-2273	Sr
37		CULVERT		Alternative 2/3	N	Resident
38		CULVERT		Alternative 2/3	N	Resident
39		CULVERT		Alternative 2/3	N	Resident
40		CULVERT		Alternative 2/3	N	Resident
41		CULVERT		Alternative 2/3	N	Resident
42		CULVERT		Alternative 2/3	N	Resident
43		CULVERT		Alternative 2/3	N	Resident
58		CULVERT		Alternative 2/3	N	Resident
59	Knutson Creek	BRIDGE		Alternative 2/3	324-10-10150-2301	Ss, ACp
62		CULVERT		Alternative 2/3	N	Resident
68		CULVERT		Alternative 2/3	N	Resident
74		CULVERT		Alternative 2/3	N	Resident
75		CULVERT		Alternative 2/3	N	Resident
76		CULVERT		Alternative 2/3	N	Resident
92		BRIDGE		Alternative 2/3	324-10-10150-2333	Ss
98		CULVERT-ARCH		Alternative 2/3	N	Resident
99		CULVERT		Alternative 2/3	N	Resident

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Table K3.24-1: Master Fish Crossing Table

Crossing ID	Stream Name	CrossingType	Bridge Type	Component	Anadromous	Species[1]
100	Pile River	BRIDGE		Alternative 2/3	324-10-10150-2341	Ss
101		BRIDGE		Alternative 2/3	324-10-10150-2343	Kr, Sr
102		CULVERT-ARCH		Alternative 2/3	324-10-10150-2343-3006	Ss
103		BRIDGE		Alternative 2/3	check	Resident
104		CULVERT		Alternative 2/3	N	Resident
107	Iliamna River	BRIDGE		Alternative 2/3	324-10-10150-2402	CHp,COp,Kp,Pp,Ss
111		CULVERT		Alternative 2/3	N	Resident
112		BRIDGE		Alternative 2/3	N	Resident
113		CULVERT		Alternative 2/3	N	Resident
115		BRIDGE		Alternative 2/3	N	Resident
117		BRIDGE		Alternative 2/3	N	Resident
119		CULVERT		Alternative 2/3	N	Resident
n/a		Pipeline crossing		Alternative 2/3	248-20-10030	CHp
n/a	Brown Peak Creek	Pipeline crossing		Alternative 2/3	248-10-10040	CHs, Ps,Ss,ACp

1 Species/Life-stage at crossing (from AWC). Species: K=Chinook, S=sockeye, CO=coho, CH=chum, P=pink; AC=arctic char; Life-stage: s=spawning, r=rearing, p=present (life-stage not specified)

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3.24 FISH VALUES

3.24.1 Action Alternative 1 – Applicant's Proposed Action

3.24.1.1 Aquatic Habitat

Mine Site

The mine site would be located in the Koktuli River and Upper Talarik Creek (UTC) watersheds.

The 36-mile North Fork Koktuli (NFK) and 40-mile South Fork Koktuli (SFK) rivers join to form the Koktuli River (KR), which flows 39 miles downstream into the Mulchatna River. The Mulchatna River continues 44 miles before joining the Nushagak River, which then flows another 109 miles into Bristol Bay. UTC flows for approximately 39 miles into Iliamna Lake, which drains into the Kvichak River, which flows 50 miles downstream into Bristol Bay. The two forks of the KR and the UTC subbasins encompass approximately 355 square miles, representing approximately 0.9 percent of the 39,184-square-mile Bristol Bay watershed. The general characteristics and features of the NFK, SFK, and UTC drainage basins are described in Section 3.16, Surface Water.

North Fork Koktuli River

The majority of the mine site facilities would be within the NFK watershed, including the most of the tailings storage facility (TSF), pyritic TSF, water management ponds (main and open pit), mill site/camp, and water treatment plant #2 discharge location – north (Figure 3.24-1). The NFK River watershed extends northeast from the confluence with the SFK River to Groundhog Mountain, approximately 7 miles northeast of the mine site (Figure 3.24-1). The NFK drains 64.7 miles of currently documented anadromous stream channels, with a total basin area of about 113 square miles, which represents 0.3 percent of Bristol Bay's 39,184-square-mile watershed area. Approximately 23 percent of the NFK basin area and 15 miles of mainstem channel are upstream of the mine site footprint. The Alaska Department of Fish and Game (ADF&G) Anadromous Waters Catalog (AWC) (ADF&G 2018) lists 12 anadromous fish-bearing tributaries entering the NFK, including Tributary 1.19, which would contain the majority of the mine site footprint.

Mainstem base flows in the NFK at the mine site (just above the Tributary 1.19 confluence) were typically 15 to 20 cubic feet per second (cfs) in winter, and 40 cfs in summer, with Tributary 1.19 contributing another 4 to 5 cfs and 20 cfs in winter and summer, respectively.

Throughout most of its length, the mainstem NFK is a low-gradient (mostly 0.1 to 0.8 percent), unconfined, meandering, single-thread channel bordered by shrub and dwarf shrub riparian species dominated by willows (R2 et al. 2011). Habitat typing, as listed in Table 3.24-1, shows that the mainstem NFK below the mine site is dominated by riffle habitat with few mainstem pools. Upstream of the mine site, the NFK contains equal proportions of riffle and run/glide habitats, with increasing frequency of beaver-formed pools. The upper 10 miles of the NFK flow through a region with small (less than 3 acres) shallow lakes, dominated by Big Wiggly Lake (Figure 3.24-1).

Beaver ponds and other off-channel habitats are widely distributed throughout most of the NFK (Table 3.24-1). Off-channel habitats, which include side channels, percolation channels, alcoves, isolated ponds, riverine wetlands, and beaver ponds, are hydrologically connected to the NFK via surface flows or groundwater upwelling (for groundwater assessment, see

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Schlumberger 2011). See Section 3.22, Wetlands, for a description of riverine wetlands in the analysis area.

Instream cover for fish rearing is relatively scarce in the mainstem NFK due to the absence of large riparian trees and associated woody debris; but cobble substrates, undercut banks, and overhanging vegetation provide some refugia (R2 et al. 2011). Small woody debris and increased depths associated with beaver dams provide cover in many off-channel locations. Substrate is dominated by gravel with low amounts of fine sediments (less than 10 percent) in reaches below the mine site. The prevalence of non-embedded gravel substrates and dominance of riffle and run/glide habitats provides spawning habitat for salmonids. A summary of anadromous and resident fish habitat for the NFK, SFK, and UT is provided in Table 3.24-1. In contrast to the lower river, substrate in the mainstem above the mine site contained higher amounts of sand and silt.

Chinook salmon spawning habitat occurs throughout the lower 20 miles of the NFK below the mine site, and extends into the upper NFK adjacent to Big Wiggly Lake. The majority of spawning habitat occurs in the first 10 miles of the NFK approximately 20 miles downstream from the mine site (R2 et al. 2011). Juvenile Chinook rearing habitat occurs throughout most of the NFK mainstem (Table 3.24-2), as well as several NFK tributaries, including Tributary 1.40, 5 miles above the SFK confluence; Tributary 1.17 below Black Lake; Tributary 1.19 and its primary sub-tributary at the mine site; and Tributary 1.24, which flows through Big Wiggly Lake. Juvenile Chinook were most commonly observed in riffles and other mainstem habitats, but were also found to occupy low-velocity off-channel habitats.

Coho salmon spawning and rearing habitat is widely distributed in the NFK basin (Table 3.24-2). Preferred coho spawning habitat appears to be in the 10 miles of mainstem immediately downstream of the mine site based on field observations (R2 et al. 2011).

Sockeye salmon spawning habitat primarily occurs in the lower 10 miles of the NFK, but the run extends upstream to the vicinity of Big Wiggly Lake (R2 et al. 2011). Although some spawning habitat has been documented in the upper NFK basin, most juvenile rearing habitat occurs downstream of the mine site based on field observations.

Fixed hydrologic station data and multiple surveys from 2004 to 2008 show that the mainstem NFK remains perennial during base flow levels at all fish-bearing study sites (R2 et al. 2011). The NFK's seasonal hydrograph shows periods of maximum flows during spring snowmelt and late summer/fall rain events, with low flows during mid-summer, and minimum base flows in winter/early spring (Knight Piésold et al. 2011). Mean monthly base flows in the lower reach of the NFK averaged 60 to 90 cfs during winter months (January-March), 700 cfs during spring snowmelt (May), 200 cfs during summer base flow (July), and 350 to 450 cfs during fall rains (September-October). All three tributaries (i.e., NFK, SFK, and UTC) display sequences of losing and gaining reaches due to groundwater percolation and emergence, respectively (Schlumberger 2011, 2015).

Groundwater studies indicate that surface waters percolating into the NFK groundwater remain in the NFK subbasin, and do not transfer to either the SFK or UTC subbasins. Emerging groundwater is important to aquatic species due to its cooling effect on mainstem flows during summer, its warming effect during winter, and its direct relationship with spawning site selection for several salmonid species. Areas of groundwater upwelling are most evident in the mainstem NFK downstream of the mine site, in a reach 15 to 20 miles upstream of its confluence with the SFK. Seasonal hydrographs for several reaches of the mainstem NFK are presented in Section 3.16, Surface Hydrology.

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Figure 3.24-1: North Fork Koktuli, South Fork Koktuli, and Upper Talarik Creek Basin Map

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Table 3.24-1: Proportion of Habitat Types within the NFK, SFK and UTC Mainstem and Off-Channel Areas in the Mine Site Analysis Area[1]

Tributary	Mainstem Reach	Riffle	Run/Glide	Pool	Beaver Pond	Other[2] Off-Channel
NFK	A	0.64	0.35	0.01	0.00	-
	B	0.65	0.34	0.01	0.00	-
	C	0.56	0.42	0.02	0.00	-
	D	0.46	0.45	0.01	0.08	-
	E	0.30	0.28	0.02	0.40	-
	Off-Channel	-	-	-	0.85	0.15
SFK	A	0.65	0.32	0.03	0.00	-
	B	0.44	0.54	0.02	0.00	-
	C	0.27	0.64	0.05	0.04	-
	D	0.55	0.24	0.03	0.18	-
	Off-Channel	-	-	-	0.91	0.09
UTC	A	0.54	0.45	0.01	0.00	-
	B	0.53	0.44	0.03	0.00	-
	C	0.24	0.74	0.02	0.00	-
	D	0.16	0.77	0.07	0.00	-
	E	0.19	0.69	0.12	0.00	-
	F	0.20	0.51	0.22	0.07	-
	G	0.76	0.23	0.01	0.00	-
	Off-Channel	-	-	-	0.93	0.07

[1] Includes mainstem reaches and off-channel habitats outside of the mine site analysis area or in the transportation analysis area

[2] Other off-channel habitats include beaver pond outlets, alcoves, isolated ponds, side channels, and percolation channels

Source: R2 et al. 2011

The observed water temperatures in the NFK ranged from a low of 0.3 to a maximum of 21.9 degrees Celsius (°C) (R2 et al. 2011). Water temperatures in the NFK downstream of the mine site generally remain cool during the summer and cold during winter months, with mean daily temperatures typically between 10°C and 15°C during July and August. However, maximum summer water temperatures did exceed the Alaska Department of Environmental Conservation (ADEC) 15° C criteria for aquatic life and fish life-stages (ADEC 2009) at some locations in the upper basin. For a more detailed description of surface and groundwater baseline conditions, see Section 3.16, Surface Water; Section 3.17, Hydrogeology; and Section 3.18, Water and Sediment Quality.

Tributary 1.19 and Sub-tributaries

Tributary 1.19 and sub-tributaries to the NFK would contain the majority of the mine site footprint. A summary of the aquatic habitat in Tributary 1.19 is provided below.

Tributary 1.19 is incised coarse gravel, cobble, and boulder bed stream flowing through moraine and colluvial deposits with heavily vegetated banks, and a slope of 2 to 3 percent that drains

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approximately 8 square miles. It is a first-order stream characterized by flashy runoffs during snowmelt and rainstorm events due to higher precipitation, steep catchment in the surrounding uplands, full exposure to incoming storms, and lack of surface flow losses to groundwater in the lower reaches. Channel habitat features are dominated by short rapids/riffle reaches and irregularly spaced scour pools. Documented anadromous fish habitat use includes rearing habitat for Chinook salmon (*Oncorhynchus tshawytscha*), and rearing and spawning for coho salmon (O. kisutch). Resident fish species include Arctic grayling (*Thymallus arcticus*), Dolly Varden (*Salvelinus malma*), rainbow trout (O. mykiss) and slimy sculpin (*Cottus cognatus*).

Stream 1.19b is an incised, coarse gravel and cobble bed stream flowing through glacial drift deposits with heavily vegetated banks, and a slope of 1 percent that drains approximately 4 square miles. The channel goes dry during winter and summer low-flow periods due to the small drainage area, steep terrain, and lack of ponds or other storage features. The stream also loses groundwater to the upper mainstem of the NFK, which contributes to dry channel conditions during low-flow periods. Coho salmon have been documented using this stream as rearing habitat.

South Fork Koktuli River

The SFK River extends approximately 40 miles upstream from the confluence with the NFK to the headwaters, including over 60 miles of documented anadromous stream habitat and a 107-square-mile drainage area, representing 0.3 percent of the Bristol Bay watershed (Figure 3.24-1). Approximately 18 percent of the mine site footprint occurs in the headwaters of the SFK basin, including the mine pit, overburden stockpile, pit water management and treatment facilities, and miscellaneous facilities (Figure 3.24-2). These mine site components would occupy approximately 1.9 square miles of the upper watershed, or 1.8 percent of the SFK basin area. The mine pit and associated sediment pond embankment are expected to capture or block approximately 1.4 miles of stream channel known to support resident fish habitat.

Like the NFK, the SFK is a low-gradient (0.03 to 0.6 percent), riffle- and shrub-dominated meandering stream with an abundance of off-channel habitat (R2 et al. 2011), especially in the lower 20 miles downstream of the mine site where the floodplain broadens (Table 3.24-1). Stream gradient increases in the uppermost 1.5 miles, just downstream and into the footprint of the mine pit. Small, shallow lakes are common adjacent to the mainstem channel in the upper 10 miles of the watershed. The low-gradient and gravel-dominated substrate of the mainstem SFK below the mine site provides spawning and rearing habitat for resident and anadromous salmonids. Gravel quality is suitable for spawning and egg incubation, although the proportion of fines in the mainstem substrate is somewhat higher than in the NFK and UTC basins. The lack of large riparian tree species along the SFK mainstem yields little large, woody debris cover; but undercut banks, overhanging vegetation, instream cobbles, and beaver-related small, woody debris is available as cover for rearing fish.

Streamflow patterns in the SFK reflect those in the NFK, with two base-flow periods (summer post-snowmelt and winter) and two high-flow periods (spring snowmelt and fall rain events). Unlike the NFK, the mainstem SFK has a 10-mile intermittent reach from 2 miles below Frying Pan Lake to SFK Tributary 1.19 (R2 et al. 2011). This reach has been observed dry during summer and/or winter low-flow periods from 2004 to 2008 (Knight Piésold et al. 2011). Loss of surface flow in this reach is due to thick, permeable glacial deposits and an average transfer of 22 cfs from the SFK basin into the UTC basin via groundwater exchange. Groundwater remaining in the SFK basin re-emerges at the downstream end of the dry reach 20 miles above the NFK confluence (Knight Piésold et al. 2011).

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Chinook salmon spawning habitat has been documented from the SFK/NFK confluence upstream to Frying Pan Lake (Table 3.24-2), although more recent sampling indicated preferred spawning habitat occurs in the lower 20 miles of the SFK (R2 et al. 2011). As noted above, the mainstem SFK from SFK Tributary 1.19 to the Frying Pan Lake outlet routinely dries up during base-flow periods; consequently, that reach is not considered quality habitat. Chinook habitat does not extend into the upper SFK basin above Frying Pan Lake or in the footprint of the mine site. However, rearing habitat occurs throughout the mainstem below Frying Pan Lake, and in the lower 4 miles of SFK Tributary 1.19, which drains the southern side of Kaskanak Mountain.

Coho spawning habitat in the mainstem SFK extends almost up to the outlet of Frying Pan Lake, although spawning habitat is limited in the middle intermittent reach. Most spawning habitat was observed via aerial surveys in the lower 20 miles of the mainstem, and in two tributaries: SFK 1.13 and SFK 1.19 (R2 et al. 2011). Juvenile coho rearing habitat occurs throughout the SFK basin, including the mainstem, tributaries, and headwaters upstream of Frying Pan Lake. Juvenile coho in the SFK routinely use off-channel habitats, including beaver ponds, side channels, and alcoves. Juvenile coho overwintering habitat has been documented in the reaches SFK-A and SFK-B (Figure 3.24-3).

Sockeye salmon spawning habitat is limited to lower reaches SFK-A, SFK-B and SFK-C, and rearing habitat occurs throughout the SFK (Figure 3.24-3).

Chum spawning habitat is limited to the lower 20 miles of the river, downstream of the seasonally dry channel (Table 3.24-2). Adult chum salmon appear to target areas of rising groundwater during redd site selection; consequently, the highest densities of chum salmon redds occurred in the reach immediately downstream of the dry channel, where accretion of groundwater is most evident (R2 et al. 2011). Rainbow trout habitat occurs in several reaches of the SFK, including upstream of Frying Pan Lake and tributaries, but densities of this species were lower than for other resident salmonids (R2 et al. 2011).

Water temperature in the SFK ranged from an observed low of 0.7°C to a maximum of 24.4°C. Similar to the NFK, water temperatures tended to be warmer in the upper watershed, where lakes are prevalent; and cooler in the lower reaches due to emerging groundwater (R2 et al. 2011). Average daily temperatures during July and August were typically 13°C to 16°C in the upper half of the SFK mainstem, but only 8°C to 12°C below the intermittent reach. Maximum summer water temperatures exceeded the ADEC 15° C criteria for aquatic life and fish life-stages (ADEC 2009) at several water quality stations in the upper SFK.

Upper Talarik Creek

UTC flows south about 39 miles from its headwaters on the eastern edge of the mine site downstream into Iliamna Lake near the town of Iliamna (Figure 3.24-1). The UTC watershed is approximately 135 square miles, representing 0.3 percent of the entire Bristol Bay watershed area. Mine site facilities in the UTC basin would be limited to the mine access road and a water treatment discharge pipe, or less than 0.5 percent of mine site footprint (Figure 3.24-2). However, the eastern edge of the mine pit is at the SFK and UTC watershed boundary; consequently, the mine pit (primarily through pit dewatering) and associated roads and facilities could affect aquatic habitat in the UTC. Stream channel gradient is steeper in the UTC, compared to the NFK and SFK, at less than 1 percent to 2 percent (R2 et al. 2011). Aquatic habitat in the UTC varies from riffle-dominated to run/glide-dominated reaches with relatively few mainstem pools (Table 3.24-1). The upper reach and much of the lower reach of the UTC possess relatively wide floodplain with associated off-channel habitat, but the middle reach is more confined and largely restricted to a single channel. Unlike the NFK and SFK, this middle reach of the UTC is forested, which contributes large, woody debris into the stream channel;

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whereas shrub and dwarf shrub species (including willows [*Salix* spp.]) dominate the upper and lower reaches of the UTC. In addition to large, woody debris, undercut banks, overhanging vegetation, and small woody debris associated with beaver dams also provide instream and overhead cover. The UTC mainstem contains an abundance of gravel substrate relatively free of fine sediments, providing spawning habitat.

Chinook salmon spawning and rearing habitat is interspersed throughout the entire length of the 39-mile mainstem UTC; however, Chinook spawning habitat in UTC tributaries is limited to a very short reach of UTC Tributary 1.41, and in UTC Tributary 1.19, which receives groundwater flow from the SFK. Juvenile Chinook rearing habitat was observed in mainstem habitat features such as run/glide, pool, and riffles in reaches UT-C through UT-E; juvenile Chinook overwintering habitat has been documented in reaches UT-C, UT-D, and UT-E of the UTC (Figure 3.24-4).

Coho salmon spawning habitat extends almost the entire length of the mainstem UTC and into several tributaries (UTC tributaries 1.60, 1.35, 1.31, and 1.41). The distribution of juvenile coho was similar to that for spawning, with the addition of several minor tributaries. Densities of juvenile coho were generally similar in mainstem and off-channel habitat; and maximum densities were observed in UTC Tributary 1.41, which drains the western side of the upper basin immediately proximal to the mine pit. Coho were observed in November, and again the following April, in reaches UT-D through UT-F, suggesting these reaches may provide overwintering habitat (Figure 3.24-4).

Sockeye spawning habitat has been documented in most of the mainstem UTC up to the headwaters bordering the mine site, and also encompassed several tributaries, including 1.60, 1.90, 1.35, 1.39, and 1.41 (Table 3.24-2). Although the spawning habitat is widespread in the UTC, preferred spawning habitat occurs in reaches UTC-A (R2 et al 2011); and in Tributary 1.60, where up to 43 percent of the UTC sockeye run spawned in 2008 (Figure 3.24-4). Sockeye rearing habitat is also widespread in the UTC basin, although field observations indicate habitat is somewhat limited in the mainstem and tributaries, likely due to the early emigration of juveniles into Iliamna Lake. Rainbow trout use multiple habitats, including riffle, glides, pools, and beaver ponds throughout all reaches of the UT.

The annual hydrograph for the UTC shows the two high-flow and two base-flow periods, similar to the NFK and SFK (Knight Piésold et al. 2011). An exception is UTC Tributary 1.19, which receives groundwater accretion from the SFK. Mean monthly streamflows in this tributary were consistently 20 to 30 cfs throughout the year. The groundwater inflow from Tributary 1.19 also reduced water temperatures in the lower mainstem UTC, which generally remained below 10°C. Measured water temperatures in the UTC ranged from a low of 2.5°C to a maximum of 18.8°C. Although summer water temperatures did sometimes exceed the ADEC 15° C criteria for aquatic life and fish life-stages (ADEC 2009), summer water temperatures in the UTC were generally 3°C to 5°C cooler than comparable temperatures in the NFK and SFK, due in part to the abundance of groundwater emergence and the relative lack of inflow from warm, shallow lakes.

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Figure 3.24-2: Map of North Fork Koktuli Watershed

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Figure 3.24-3: Map of South Fork Koktuli Watershed

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Figure 3.24-4: Map of Upper Talarik Creek Watershed

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Table 3.24-2: Estimated Mileage[1] of Habitat for Pacific Salmon and Rainbow Trout in Tributaries Draining the Mine Site

Subbasin	Species	Spawning (mi)[2]	Rearing (mi)[2]	Present (mi)[3]
NFK	Chinook salmon	23	34	8
NFK	Coho salmon	34	50	8
NFK	Sockeye salmon	28	18	2
NFK	Chum salmon	20	5	0
NFK	Pink salmon	0	0	0
NFK	Rainbow trout[4]	-	-	27
SFK	Chinook salmon	28	33	2
SFK	Coho salmon	34	54	6
SFK	Sockeye salmon	20	25	14
SFK	Chum salmon	19	2	4
SFK	Pink salmon	0	0	0
SFK	Rainbow trout[4]	-	-	19
UT	Chinook salmon	31	25	7
UT	Coho salmon	61	63	3
UT	Sockeye salmon	47	31	1
UT	Chum salmon	28	0	2
UT	Pink salmon	-	-	4
UT	Rainbow trout[4]	-	-	42

[1] Includes mileage from mainstem and tributary reaches outside of the mine site analysis area or within the transportation analysis area

[2] Includes AWC (ADF&G 2018) listing as "spawning" or "rearing"; lakes not included

[3] Additional waters listed as species "present," but not specified by life stage

[4] Stream mileage based on highest reported rainbow trout observation in AWC (ADF&G 2018) (life-stages not specified)

Transportation and Natural Gas Pipeline Corridors

The analysis area where effects would occur from road and pipeline construction and operations is defined in Figure 3.24-5. The corridor, including access roads, would cross a total of which 44 rivers and streams documented to support fish. Due to the wide geographic area and numerous waterbody crossings, it is reasonable to assume additional fish habitat occurs than is currently documented. [NOTE: Fish distribution data is pending review of 2018 field data and will be included in the DEIS].

Table 3.24-3 summarizes the length of stream channels occupied by Pacific salmon and rainbow trout of the transportation and natural gas pipeline corridor. Table 3.24-4 lists anadromous streams that would be crossed by the access roads from the mine site to Amakdedori port. A total of seven anadromous streams would be crossed by the transportation corridor.

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Table 3.24-3: Estimated Mileage of Habitat for Pacific Salmon and Rainbow Trout within Streams Crossed by the Transportation and Natural Gas Pipeline Corridor[1]

Transportation Corridor	Species	Spawning (mi)[2]	Rearing (mi)[2]	Present (mi)[3]
South Access Road	Chinook salmon	0	0	0
South Access Road	Coho salmon	2	4	13
South Access Road	Sockeye salmon	41	0	2
South Access Road	Chum salmon	8	0	0
South Access Road	Pink salmon	2	-	0

[1] Mileages associated with the north access road and UTC are shown in Table 3.24-2

[2] Includes AWC (ADF&G 2018) listing as "spawning" or "rearing"; lakes not included

[3] Additional waters listed as species "present," but not specified by life stage

North Access Road

The north access road, including the Iliamna spur road, would cross 32 waterbodies. Of these, nine are documented fish bearing streams, five of which are anadromous fish habitat (Figure 3.24-5). The road would cross the major drainages of UTC and the Newhalen River. As noted in Table 3.24-3 and described above, the UTC and tributaries support spawning, rearing, and migratory habitat for all five species of Pacific salmon and resident fish species. The Newhalen River provides important migratory fish habitat for sockeye and Chinook salmon migrating between Iliamna Lake and Lake Clark. Chinook salmon spawning habitat has been documented 0.75 mile downstream from the proposed Newhalen River crossing. Tributaries of the Newhalen River upstream of the crossing provide spawning and rearing habitat for both resident and anadromous species. Arctic char are also known to inhabit the Newhalen River between Sixmile Lake and Iliamna Lake.

Table 3.24-4. Anadromous Waters Crossed by Access Roads and Pipeline along the Transportation and Natural Gas Pipeline Corridor

Tributary [1]	AWC Code	R.M. [2]	Feature	Species/Life-stage [3]
UTC 1.36	324-10-10150-2183-3057	0.4	culvert	COr
UTC mainstem	324-10-10150-2183	17	bridge	Ks, Kr, Ss, Sr, COs, COr, CHs, Ps
UTC 1.34	324-10-10150-2183-3050	0.1	culvert	COr
UTC 1.60	324-10-10150-2183-3010	14	bridge	COs
Newhalen River	324-10-10150-2207	9	bridge	Kp, Ss, COp
Gibraltar River	324-10-10150-2196	1.2	bridge	Ss, COp, CHs, ACp
n/a	243-40-10010-2008	2.2	bridge	Ss, COs

1 Tributary name from EBD 2011, if available

2 R.M. = river miles at crossing above mouth or confluence of tributary (approx.)

3 Species/Life-stage at crossing (from AWC). Species: K=Chinook, S=sockeye, CO=coho, CH=chum, P=pink; AC=arctic char; Life-stage: s=spawning, r=rearing, p=present (life-stage not specified)

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Iliamna Lake

Iliamna Lake is a large, oligotrophic lake with a surface area of 1,012 square miles. Iliamna Lake and its numerous tributaries provide spawning and rearing habitat for all five species of Pacific salmon and resident salmonid species, including Dolly Varden and rainbow trout. Major tributaries associated with the project area include the Newhalen River, UTC, and the Gibraltar River. The western half of Iliamna Lake is wide, with linear margins and few islands; whereas the eastern half (particularly the far northeastern end) has a contorted shoreline with an abundance of bays, islands, and rocky shoals. The majority of tributaries, including those supporting anadromous species, enter Iliamna Lake on the northern shoreline and surrounding the eastern basin, including Kokhanok Bay; tributaries are relatively uncommon on the western shoreline.

Juveniles and adults of all five salmon species use the lake habitat as a migration corridor between Bristol Bay and Iliamna Lake, via the Kvichak River. Of the anadromous salmonids, sockeye are the most common species in Iliamna Lake, where they are known to use shoreline habitat for spawning (EPA 2014), particularly in the northeastern portion of the lake (Figure 3.24-5). Juveniles also immigrate to the lake from spawning tributaries to use lacustrine rearing habitats, particularly in the eastern half of the lake. Iliamna Lake is also heavily used by adfluvial rainbow trout, which use both littoral and limnetic lake habitats for summer foraging (SEBD 2015; Minard et al. 1992).

The lake margin in the vicinity of the north ferry terminal is gently sloped and dominated by fine sediments, whereas margin habitat at the south ferry terminal is steeper and rocky. Physical characteristics of Iliamna Lake are described in Section 3.16, Surface Water Hydrology.

South Access Road

The south access Road would cross 65 waterbodies. Thirty-three are documented fish-bearing streams, two of which are anadromous fish habitat (Figure 3.24-3). The south access road would extend from the south ferry terminal on the southern shore of Iliamna Lake to Amakdedori port, and includes eight material sites (Figure 3.24-5). The road would cross two anadromous streams, per AWC (Table 3.24-3). The first would be a multi-span bridge over the Gibraltar River approximately 1.2 miles upstream of where it flows into Iliamna Lake. The Gibraltar River and Gibraltar Lake drainage and tributaries provide spawning and rearing habitat for sockeye, coho, chum, arctic char, whitefish, and other resident species, including Dolly Varden and lake trout. The second anadromous crossing would be a bridge over a tributary that meets Amakdedori Creek approximately 2.5 miles above the Cook Inlet. No stream crossings would occur on the 1.4-mile spur road that connects the south access road to the town of Kokhanok.

Kokhanok East Ferry Terminal Variant

[Note: Section will be updated for the Draft EIS].

Cook Inlet Portion of Natural Gas Pipeline Corridor

Cook Inlet is in southcentral Alaska, and extends approximately 180 miles from the Gulf of Alaska to Anchorage. The natural areas of Cook Inlet most likely to be affected by the project are the Lower Cook Inlet central zone and Kamishak Bay (NMFS 1977). The lower central zone is defined as the region north of the Barren Islands between Kamishak and Kachemak bays, and south of a line from Anchor Point to Chinitna Bay. This zone is an area dominated by tidal circulation, with mostly poorly sorted sands as bottom sediments (NMFS 1977). Approximately half of the 95-mile pipeline route would traverse depths of 200 feet or more, with a substrate largely composed of sand, shells, and pebbles.

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Amakdedori Port

The Amakdedori port would be in the central portion of Kamishak Bay, which is a relatively shallow, rocky bay with low-energy tidal circulation (NMFS 1977). The southward net transport of water from upper Cook Inlet along the western shore carries heavy loads of suspended matter into Kamishak Bay. This transportation of water also results in the movement of drift ice, which forms in the shallow tidal flats of upper Cook Inlet, into Kamishak Bay. The drift ice thoroughly scours extensive stretches of the intertidal zone, resulting in relatively poor development of eelgrass beds (NMFS 1977). According to the ShoreZone tool from NOAA-Fisheries (2018), the nearest eelgrass to the Amakdedori port location is in a small cove about 4.4 miles south.

The coastal habitat in the immediate area of Amakdedori port is classified as exposed mobile or partially mobile sediment, or rock and sediment; the environmental sensitivity index is defined as mixed sand and gravel beaches, and the coastal class is sand and gravel flat fan and/or narrow sand and gravel beach (NOAA 2018).

3.24.1.2 Resident and Anadromous Fishes

This section describes fish species that have the potential to occur in the EIS analysis area. Fish life history characteristics are available through the ADF&G fish webpages (ADF&G 2018h). For a description of Bristol Bay and Cook Inlet commercial fisheries, refer to Section 3.6, Commercial and Recreational Fisheries.

Mine Site

North Fork Koktuli River

Chinook salmon, coho salmon, sockeye salmon, and chum salmon have been documented in the NFK watershed (ADF&G 2018). Pink salmon (*Oncorhynchus gorbuscha*) are documented in the mainstem Koktuli River and the UTC, but do not occur in the NFK. Other species found in the NFK watershed include rainbow trout, Dolly Varden, Arctic grayling, lamprey (*Lampetra* spp.), including species such as brook lamprey (*P. planeri*), threespine stickleback (*Gasterosteus aculeatus*), ninespine stickleback (*Pungitius pungitius*), sculpins (including species such as slimy and coast range sculpin [*Cottus aleuticus*]), northern pike (*Esox lucius*), and whitefish (various species, including round whitefish [*Prosopium cylindraceum*], humpback whitefish [*Coregonus pidschian*], and least cisco [*Coregonus sardinella*]). The approximate stream mileage listed in the AWC (ADF&G 2018) for anadromous species and rainbow trout in the NFK by life-stage is given in Table 3.24-5. The relative distribution and abundance of anadromous and resident salmonid species, based on AWC data (ADF&G 2018) and 2004-2008 EBD (R2 et al. 2011), are shown on Figure 3.24-2.

Adult Chinook salmon have been documented entering the NFK as early as July 12, with peak documented spawner counts occurring between July 23 and August 4. Juvenile Chinook salmon are present year-round in the project area, consisting of three age classes, young-of-the-year (0+), yearlings (1+), and 2+. Surveys have shown highest abundance of summer and overwintering juvenile Chinook in the mainstem, 30 miles downstream of the NFK Tributary 1.19 and the mine site.

Adult sockeye have been documented entering the NFK as early as July 5, with peak documented spawner counts occurring in a 1-week window between July 27 and August 4. Juvenile sockeye salmon were observed in April, July, and August; and based on length, frequency distributions were young-of-the year fish. Juvenile densities were low throughout the NFK, suggesting typical downstream migration to lake-rearing habitat soon after emergence.

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Adult coho salmon have been documented entering the NFK as early as August 15, with peak documented spawner counts occurring between September 5 and September 28. Juvenile coho salmon are present year-round in the project area, consisting of four age classes: young-of-the-year (0+), yearlings (1+), 2+, and 3+ age, with the preponderance young–of-the-year overwintering and outmigrating as 1+ fish. Juvenile coho were the most common Pacific salmon inhabiting the NFK basin, where they used most of the mainstem and nearly all of the surveyed tributaries, including the upper headwaters.

Adult chum salmon have been documented entering the NFK as early as July 5, with peak documented spawner counts occurring between July 12 and July 20. In addition to Pacific salmon, rainbow trout were observed at several locations in the mainstem NFK downstream of the mine site, as well as in NFK Tributary 1.19, but their relative abundance was low compared to most other salmonids (R2 et al. 2011). Other resident fish are distributed in low abundance in the lower reaches of the NFK, with Dolly Varden and slimy sculpin being distributed throughout the drainage.

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Figure 3.24-5: Transportation and Natural Gas Pipeline Corridor

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Table 3.24-5: Estimated Life Stage Periodicities of Select Fish Species within NFK, SFK and UTC Waterbodies

Species[1]	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook salmon	Adult Migration												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
	Outmigration												
Coho salmon	Adult Migration												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
	Outmigration												
Sockeye salmon	Adult Migration												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
	Outmigration												
Chum salmon	Adult Migration												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
	Outmigration												
Pink salmon	Adult Migration												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												

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Table 3.24-5: Estimated Life Stage Periodicities of Select Fish Species within NFK, SFK and UTC Waterbodies

Species[1]	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Outmigration												
Rainbow trout	Adult Rearing												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
Dolly Varden	Adult Rearing												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
Arctic grayling	Adult Rearing												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
Whitefish[2]	Adult Rearing												
	Spawning												
	Fry Emergence												
	Juvenile Rearing												
Northern[2] pike	Adult Rearing												
	Spawning												
	Fry Hatching												
	Juvenile Rearing												

[1] Unless otherwise noted, periodicities taken from project baseline data documents

[2] Periodicities estimated from Morrow 1980.

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South Fork Koktuli River

Chinook, coho, sockeye, and chum salmon have been documented in the SFK watershed (ADF&G 2018). Pink salmon have not been documented in the SFK. Other fish species documented in the SFK watershed include rainbow trout, Dolly Varden, arctic grayling, lamprey, threespine and ninespine stickleback, sculpin (may include slimy and/or coastrange sculpin), northern pike, whitefish (round whitefish, humpback whitefish, and/or least cisco), and burbot. Arctic char have also been documented in the SFK; however, fish surveys did not encounter this species (R2 et al. 2011). Overall, the SFK supports more fish species than either the NFK or UTC. The approximate stream mileage listed in the AWC (ADF&G 2018) for anadromous species and rainbow trout in the SFK by life-stage is given in Table 3.24-5. The relative distribution and abundance of anadromous and resident salmonid species, based on AWC (ADFG 2018) and EBD data (R2 et al. 2011), are shown on Figure 3.24-3.

The mine pit and associated sediment pond embankment would be expected to capture or block approximately 1.4 miles of stream channel known to support resident fish (arctic grayling, sculpin, and stickleback) in the upper SFK watershed. No anadromous fish were documented in this reach during sampling in 1991, 2004, or 2008, although coho juveniles were observed in the mainstem SFK immediately downstream of the southern edge of the open pit and associated service road in a 2008 survey (ADF&G 2018).

Adult Chinook salmon have been documented entering the SFK as early as July 5, with peak documented spawner counts occurring between July 20 and August 1. Juvenile Chinook salmon are present year-round in the project area, consisting of 3 age classes: young-of-the-year (0+), yearlings (1+), and 2+. Densities of juvenile Chinook were higher in the mainstem SFK than in off-channel habitats, similar to the distribution seen in the NFK. Adult sockeye have been documented entering the SFK as early as July 5, with peak documented spawner counts occurring between July 23 and August 3. Densities of adult sockeye salmon were highest in the lower 20 miles of the mainstem SFK, as was noted for both Chinook and coho salmon (R2 et al. 2011). Juvenile sockeye salmon were observed in April, July, and August; based on length frequency distributions, two age classes are indicated: young-of-the year, and 1+ age fish. Juvenile densities were low throughout the SFK, suggesting typical downstream migration to lake rearing habitat soon after emergence. Adult coho salmon have been documented entering the SFK as early as August 15, with peak documented spawner counts occurring between September 5 and September 28. Coho salmon are more abundant and widely distributed in the SFK than are the other species of Pacific salmon (Table 3.24-2). Juvenile coho salmon are present year-round in the project area, consisting of 4 age classes: young-of-the-year (0+), yearlings (1+), 2+, and 3+ age, with the preponderance young–of-the-year overwintering and outmigrating as 1+ fish. The known upper limit of juvenile coho above Frying Pan Lake extends to the immediate region of the proposed mine pit; however, juvenile densities are highest in the most downstream reaches. Juvenile coho were observed in the lower reaches of the SFK during overwintering surveys.

Adult chum salmon have been documented entering the NFK as early as July 5, with peak documented spawner counts occurring between July 11 and July 26. Juvenile chum salmon were only observed in the vicinity of high redd densities, likely due to the abbreviated rearing periodicity of this species.

Ten resident fish species, including burbot and lamprey species, are found in low abundance throughout the SFK, with Dolly Varden and Arctic grayling considered the most widely distributed (R2 et al. 2011).

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Upper Talarik Creek

In addition to the four species of Pacific salmon found in the NFK and SFK, the UTC also contains an intermittent run of pink salmon in the lower reaches. The UTC is also known as important habitat for large, adfluvial rainbow trout. Other resident species found in the UTC include Dolly Varden, Arctic grayling, whitefish (may include round whitefish, humpback whitefish, and/or least cisco), sculpin (may include slimy and/or coastrange sculpin) and two species of stickleback (i.e., threespine and ninespine). Arctic char have been documented in the UTC; however, no Arctic char were observed in environmental baseline studies (R2 et al. 2011). The approximate stream mileage listed in the AWC (ADF&G 2018) for anadromous species and rainbow trout in the UTC by life-stage is given in Table 3.24-2. The relative distribution and abundance of anadromous and resident fish species, based on AWC data (ADF&G 2018) and EBD surveys (R2 et al. 2011), are shown on Figure 3.24-4.

Pink salmon have been documented in the lower 4 miles of the UTC, where more than 300 adult pink salmon were observed in 2006, but only 5 in 2007, and zero in 2004-2005 and 2008-2009 (SEBD 2018). It is uncertain if the migrants represented a native run, or if they were strays from other watersheds. No juvenile pink salmon were observed during fish sampling surveys, which is not unexpected, given that particular species' rapid seaward emigration as newly emerged fry.

Adult sockeye salmon were the most abundant salmonid in the UTC basin, which drains directly into Iliamna Lake, a major spawning and rearing area for sockeyes. Abundance of sockeye salmon in the UTC exceeded abundance in both the SFK and the NFK basins combined (R2 et al. 2011). Chum salmon occur in the mainstem UTC up to Tributary 1.35, about 25 miles above the UTC mouth (Table 3.24-2) (ADF&G 2018). Chum salmon were the least-abundant salmonid species in the UTC basin (R2 et al. 2011), with most observations of adult fish made during aerial surveys; terrestrial surveys documented very few juveniles, likely due to this species' early seaward migration.

The distribution of juvenile Chinook in the UTC is similar to the distribution of spawning, although juveniles have been observed higher in the headwater reaches, and also are known to inhabit additional tributaries, including UTC 1.35 and a west-side tributary immediately adjacent to the mine pit (R2 et al. 2011). Chinook are also presumed to use the lower reaches of the UTC's largest tributary—First Creek or UTC 1.60—which flows into UTC 4 miles above Iliamna Lake.

Adult Chinook salmon have been documented entering the UT as early as July 6, with peak documented spawner counts occurring between July 31 and August 8. Juvenile Chinook salmon are present year-round in the project area, consisting of three age classes: young-of-the-year, (0+), yearlings (1+), and 2+. Adult sockeye have been documented entering the UT as early as July 5, with peak documented spawner counts occurring between July 17 and August 3. Juvenile sockeye salmon were observed in April, July, and August; and based on length frequency, distributions indicate two age classes: young-of-the year, and 1+ age fish. Juvenile densities were low throughout the UT, suggesting typical downstream migration to lake-rearing habitat soon after emergence.

Adult coho salmon have been documented entering the UT as early as August 8, with peak documented spawner counts occurring between September 2 and September 5. Juvenile coho salmon are present year-round in the project area, consisting of four age classes: young-of-the-year (0+), yearlings (1+), 2+, and 3+ age, with the preponderance young–of-the-year overwintering and outmigrating as 1+ fish. Juvenile coho were observed in the upper reaches of the UT during overwintering surveys.

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Adult chum salmon have been documented entering the NFK as early as July 15, with peak documented spawner counts occurring between July 31 and August 3. Low numbers of juvenile have been observed in the UT, consistent with the species life history of abbreviated river residence time after emergence.

Dolly Varden, slimy sculpin, and Arctic grayling are the only resident fishes documented in the headwater reaches near the mine site during baseline field surveys. Unlike the NFK and the SFK, rainbow trout were relatively common and widely distributed in the UTC basin, although only juveniles were observed in the headwater reaches near the mine site. Overall, densities of rainbow trout in surveyed reaches were low compared to most of the Pacific salmon species (R2 et al. 2011). Non-migratory stream-resident rainbow trout are thought to occur in all three tributaries, but UTC also supports an adfluvial population of large trout that migrate between UTC, Iliamna Lake, and other lake tributaries. This species was targeted in a radio telemetry study in 2007 and 2008, where 97 adult trout were captured and tagged in UTC; 70 fish were subsequently tracked throughout the western half of Iliamna Lake and many of the lake's western tributaries through spring of 2009 (SEBD Chapter 15 2018). UTC-tagged trout visited 10 tributaries to western Iliamna Lake, with most detections in UTC, Lower Talarik Creek, Pete Andrews Creek, the Newhalen River, and the Kvichak River. Migration patterns included spring immigration into tributaries (presumably for spawning), summer foraging throughout the western half of Iliamna Lake or in several tributaries, followed by fall immigration and overwintering in the lower mainstem reaches or outlet lagoon habitats of the five tributaries listed above (Minard et al. 1992). Only 12 to 13 percent of tagged trout returned to UTC for spring spawning or summer foraging, suggesting that some of the tagged fish were transients from other natal tributaries. Relatively few tag detections in Iliamna Lake occurred east of the line between Gibraltar Creek and the Newhalen River; however, a large proportion of detections occurred in offshore areas of western Iliamna Lake, suggesting a pelagic migratory pattern.

Transportation and Natural Gas Pipeline Corridors

North Access Road

Anadromous fish distributed in the UTC basin include Chinook, coho, sockeye, and pink salmon. Resident salmonid species found in the UTC include Dolly Varden, Arctic grayling, rainbow trout, and whitefish (may include round whitefish, humpback whitefish, and/or least cisco). Resident non-salmonid fishes observed during sampling in the 1990s and 2004-2008 were sculpin (may include slimy and/or coastrange sculpin) and two species of stickleback (threespine and ninespine). The AWC (ADF&G 2018) also lists arctic char in the UTC; however, sampling conducted in the 1990s and in 2004-2008 did not encounter this species (R2 et al. 2011).

As noted in Table 3.24-2, the north access road would cross channels tributary to the UTC that support rearing and/or spawning by coho salmon, and the mainstem UTC at the bridge location is listed for spawning and rearing for Chinook, coho, and sockeye salmon, as well as spawning by chum and pink salmon. The proposed crossing at First Creek (UTC 1.60) has coho-spawning life-stage in the immediate vicinity of the crossing, but there is also sockeye spawning and coho rearing downstream, and Chinook are listed as present. Sockeye spawning is the only life-stage specified at the proposed Newhalen River bridge crossing, but the AWC lists unspecified life-stages for Chinook and coho as present at that location. Arctic char are also known to inhabit the Newhalen River between Sixmile Lake and Iliamna Lake. The Newhalen River serves as an important link between Iliamna Lake and Lake Clark, which supports large populations of sockeye salmon. Resident fish identified at that location include Arctic grayling, humpback and round whitefish, longnose sucker, rainbow trout, and slimy sculpin (Frissel 2014).

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Iliamna Lake

Eleven fish species have been reported from Iliamna Lake, including all five anadromous Pacific salmon (Chinook salmon, coho salmon, chum salmon, pink salmon, and sockeye salmon) and Arctic char, five non-anadromous salmonids (adfluvial populations of rainbow trout, Dolly Varden, lake trout, Arctic grayling, and humpback and/or round whitefish), and several resident species (e.g., northern pike, slimy sculpin, ninespine stickleback). With some exceptions, annual aerial surveys of spawning salmon areas have been conducted since 1920 by ADF&G (Morstad 2003), which have detected shoreline spawning in most areas of Iliamna Lake, with heaviest spawning along island and bay habitats in the eastern lake basin. Input of marine-derived nutrients from carcasses of spawned-out salmon (particularly sockeye) is an important factor in the productivity of Iliamna Lake and its primary spawning tributaries (EPA 2014). The migration of juvenile sockeye leaving Iliamna Lake in late May and early June after lake ice-melt has been estimated at over 200 million fish over a 3-week period. The most common subsistence fishery is for sockeye salmon; but targeted fisheries also include Arctic grayling and whitefish (Holen and Lemons 2012). See Section 3.9, Subsistence, for more information on subsistence use.

Rainbow trout are widely distributed in the Iliamna Lake basin. Seventy of 97 radio-tagged adult trout were tracked throughout the western half of Iliamna Lake and many of the lake's western tributaries through spring of 2009 (SEBD 2018). UTC-tagged trout migrated from 10 tributaries to western Iliamna Lake, with most detections in UTC, Lower Talarik Creek, Pete Andrews Creek, the Newhalen River, and the Kvichak River. Migration patterns included spring immigration into tributaries (presumably for spawning), summer foraging throughout the western half of Iliamna Lake or in several tributaries, followed by fall immigration and overwintering in the lower mainstem reaches or outlet lagoon habitats of the five tributaries listed above (Minard et al. 1992). Relatively few tag detections in Iliamna Lake occurred east of the line between Gibraltar Creek and the Newhalen River; however, a large proportion of detections occurred in offshore areas of western Iliamna Lake, suggesting a pelagic migratory pattern.

South Access Road

Four anadromous species/life-stages are listed in the AWC (ADF&G 2018) for the lower Gibraltar River (Table 3.24-3): coho present, chum spawning, sockeye spawning, and Arctic char present. Whitefish are also distributed throughout the lower Gibraltar River. The Amakdedori Creek tributary is an anadromous stream listed for coho spawning and sockeye spawning life-stages at the proposed crossing location, and chum spawning is listed downstream of the location. Dolly Varden; slimy sculpin are also present in this tributary. Resident fish species also inhabit 32 other stream channels that would be crossed by the south access road.

Kokhanok East Ferry Terminal Variant

[Note: Section will be updated for the Draft EIS].

Cook Inlet Portion of Natural Gas Pipeline Corridor

All 5 species of Pacific salmon, Pacific herring (*Clupea pallasii*) and pond smelt (*Hypomesus olidus*) are found in the Cook Inlet management area (ADF&G 2018h). The Cook Inlet area also supports several important groundfish species, including sablefish (*Anoplopoma fimbria*), Pacific cod (*Gadus macrocephalus*), walleye pollock (*G. chalcogrammus*), lingcod (*Ophiodon elongatus*), and pelagic shelf rockfish species (*Sebastes spp.*). Other fish species includes sculpins, skates (*Rajidae*), sharks, commander squid (*Berryteuthis magister*), giant Pacific octopus (*Enteroctopus dofleini*), shortspine thornyhead (*Sebastolobus alascanus*), and

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numerous other rockfish species (Rumble et al. 2016). Flatfish species known to occur in the Cook Inlet and/or Kamishak Bay include flathead sole (*Hippoglossoides elassodon*), rock sole (*Lepidopsetta bilineata*), arrowtooth flounder (*Atheresthes stomas*), and Pacific halibut (*H. stenolepis*), the latter of which are highly valued in both commercial and recreational fisheries.

Robards et al. (1999) conducted beach seines and mid-water trawls in nearshore habitats of lower Cook Inlet, and found a diverse near-shore fish community of at least 52 species. Spatial differences in species diversity and abundance were observed in Cook Inlet, likely due to local oceanographic conditions and sediment inflow. The study also found significant changes in fish community abundance and diversity between 1976 and 1996, apparently related to large-scale climate changes in the North Pacific.

Clams are abundant along many Cook Inlet beaches. Stocks of razor clams (*Siliqua patula*) are concentrated in the Polly Creek area on the western side of Cook Inlet, and along the eastern side from Anchor Point to Kasilof River. Other clam species include littleneck (*Protothaca staminea*) and butter clams (*Saxidomus giganteus*), which are prolific in Kachemak Bay (Szarzi et al. 2007). Several species of crab are found in the Cook Inlet area, including Tanner (*Chionoecetes bairdi* and *C. opilio*), red king (*Paralithodes camtschaticus*), golden king (*Lithodes aequispinus*), and Dungeness crabs (*Metacarcinus magister* or *Cancer magister*) (ADF&G 2002b). Several species of shrimp are also found in Cook Inlet, including pink (*Pandalus borealis*), sidestripes (*P. dispar*), humpy shrimp (*P. goniurus*), coonstripe shrimp (*P. hypsinotus*), and spot shrimp (*P. platyceros*) (ADF&G 2002b). Other shellfish species include octopus, green urchin, sea cucumber, and scallops. The predominant octopus species in Cook Inlet is the giant Pacific octopus (*Enteroctopus dofleini*).

Amakdedori Port

Sockeye are abundant in several tributaries to Kamishak Bay, including the Kamishak River and in Mikfik and Chenik lakes, and in Amakdedori Creek near the proposed port site. Amakdedori Creek had average annual sockeye salmon runs of 1,200 fish between 1970 and 1980, which increased to 2,700 fish annually from 1981 to 2010 (Hollowell et al. 2016). The estimated escapement of pink salmon in Amakdedori Creek in 2015, measured by aerial survey using area under the curve estimation, was 25,945 fish. Other basins supporting strong runs of pink salmon in Kamishak Bay include the Bruin Bay River, Sunday Creek, and Browns Peak Creek. Principal chum salmon streams entering Kamishak Bay include the Kamishak and Little Kamishak rivers and Cottonwood Creek. Pacific herring may be harvested in the Kamishak Bay district when biomass allows, although this fishery was closed for the 14th consecutive year as of 2015 (Hollowell et al. 2016).

3.24.1.3 Aquatic Invertebrates

Mine Site

Macroinvertebrates and periphyton (freshwater organisms attached to or clinging to plants and other objects projecting above the bottom sediments) community assemblages are an important component of the aquatic food web for salmonids, and effective indicators of habitat and water quality (Barbour et al. 1999). Due to their mobility, long life cycle, and sensitivity to environmental conditions, macroinvertebrates have been frequently used for long-term monitoring, and have demonstrated their sensitivity to changes in ecological conditions (EPA 2002). Macroinvertebrate biological assessment indices have been developed for Cook Inlet Basin Ecoregion streams (Rinella and Bogan 2007), which established important macroinvertebrate community response to disturbance intensity in the region. Metrics such as

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number of taxa, percent EPT genera, and Shannon's Diversity Index (SDI) were found to decrease at sites with increased disturbance intensity, while other metrics such as percent dominant taxa increased with disturbance intensity (Rinella and Bogan 2007).

The Koktuli River watershed supports a rich and diverse macroinvertebrate community (Bogan et al. 2012). Sampling of wadeable streams of the Kvichak and Nushagak watersheds in the Bristol Bay region of Alaska, including the Koktuli and Upper Talarik Creek watersheds, found mean site richness to be similar across four subwatersheds (ranging between 23 and 30 taxa), with Chironomidae family members the most common across all sites (Bogan et al. 2012).

Freshwater macroinvertebrate and periphyton surveys were conducted between 2004 and 2008 in the project area to characterize species diversity, abundance, density, and community structure. Study locations included the NFK River, SFK River, Kaskanak Creek, UTC, Chulitna River, Frying Pan Lake, and Big Wiggly Lake. Study locations correspond with monitoring sites for water quality, hydrology, and fisheries (Figure 3.24-2).

The methodological details for the 2004 to 2008 study period can be found in Chapter 15, Chapter 40, and Appendix F of the Pebble Project EBDs (R2 et al. 2011). The resulting inventories serve as a basis for assessing potential project impacts.

Macroinvertebrates

A total of 132 primary macroinvertebrate samples and duplicates at a minimum frequency of 10 percent were collected from the monitoring sites established in the project area. Macroinvertebrate metrics, as described in the Alaska Stream Condition Index (ASCI) protocol (Major and Barbour 2001), were calculated from macroinvertebrate data collected using the ASCI method and the Surber method (R2 et al. 2011). These metrics are indicators of habitat change (Major and Barbour 2001), and include taxa richness, percent Ephemeroptera, Plecoptera, and Trichoptera genera (together referred to as "EPT genera") taxa; percent Chironomidae family taxa (Chironomidae is within order Diptera); percent other Diptera order taxa; percent dominant taxon; and Community Tolerance Index (CTI).

The overall results for both the Surber method and the ASCI method indicate that Diptera, including the Chironomidae family, is the dominant taxon in the mine site project area; and Ephemeroptera is the majority taxa of EPT. Macroinvertebrate populations with a high proportion of Chironomidae family members in the population can indicate a more stressful aquatic habitat in general (Barbour et al. 1999). The aquatic conditions at the mine site include high numbers of Chironomidae family, which is considered typical for this area (Oswood et al. 1995).

These observations are consistent with aquatic-habitat surveys, which indicate that the analysis locations in the mine site area are composed mainly of riffle/cobble stream habitats with few to no human-caused effects. Measurements of habitat parameters at each location were found to be within ranges considered good to optimal for aquatic habitat (Major and Barbour 2001). Analysis of water quality results indicated good to optimal parameter levels for diverse macroinvertebrate communities, as is generally the case.

CTI reflects aquatic habitat quality, and is based on the relative tolerance of macroinvertebrate taxa to stressful conditions. CTI scores in 2004, 2005, and 2007 ranged from 3.9 through 6.1, 4.9 through 6.0, and 4.5 through 6.6, respectively (possible range of values zero through ten).

Periphyton

A total of 115 periphyton samples and additional duplicate samples were collected at a frequency of approximately 10 percent. The 2004 data indicated relatively uniform taxa richness

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across all seasons. Periphyton metrics were based on the taxa identifications. Taxa richness at all sample locations ranged from 12 to 19. The percent dominant taxon at all sample locations ranged from 21 to 72 percent. The percent dominant taxon in periphyton samples at times totaled more than 50 percent. This result is generally considered a negative indicator for stream health (Wehr and Sheath 2003). However, the stream reaches sampled are considered representative of unimpaired conditions and occur in a region of minimal human effect. Measurements of water-quality parameters consistently fell within ranges considered good to optimal for aquatic habitat health. These results exhibit the natural variability in these environments.

In 2005 and 2007, periphyton samples were analyzed for chlorophyll-a to quantify productivity. In 2005, average chlorophyll-a concentrations ranged from 2.1 milligrams per square meter (mg/m^2) to 17.0 mg/m^2, with variability among the samples. In 2007, average chlorophyll-a concentrations ranged from 2.3 mg/m^2 to 30.2 mg/m^2. No consistent temporal trends were observed in the chlorophyll data between 2005 and 2007, nor was there a trend found between macroinvertebrate taxa richness or percent EPT and chlorophyll-a concentrations. However, Chironomidae often made up a high percentage of the taxa composition; and in many cases, was the dominant taxon, encompassing more than 50 percent of the sample. Some Chironomidae genera feed on periphyton, or prey on taxa that consume periphyton. In 2005, percent Chironomidae was found to be highly correlated with chlorophyll-a concentrations ($R^2 = 0.7908$), but this trend was not as evident in 2007 ($R^2 = 0.1157$).

The survey results show that sample locations were composed largely of riffle/cobble habitat. Riffle/cobble is the preferred habitat of EPT taxa. The sampling results for the mine site indicate low-percent EPT, high-percent Chironomidae, and high-percent dominant taxon, conditions which have been associated with poor stream health in other Alaska-based studies (ADF&G 2007). No statistically significant relationship was found between most water quality results and the macroinvertebrate metrics data. However, taxa richness in ASCI samples was negatively correlated with temperature.

Transportation and Natural Gas Pipeline Corridors

Locations for macroinvertebrate and periphyton studies were selected to characterize conditions in the project area. Sampling was conducted at two sites: Y Valley Creek, and an unnamed creek site (see Figure 3.24-6). Because a relatively small portion of the transportation corridor would be in Cook Inlet drainages, only two locations were established for macroinvertebrate and periphyton sampling. Sample locations in the project area were selected based on undisturbed habitat with few to no human-caused effects. The methodological details for the 2004 to 2008 study period can be found in Chapter 15, Chapter 40, and Appendix F of the Pebble Project EBDs (R2 et al. 2011).

Macroinvertebrate taxa richness was higher in the ASCI samples than in the Surber and the drift samples; and community assemblages were largely driven by Diptera taxa, and in most cases, Chironomidae. Of the Diptera taxa, the Orihocladiinae subfamily (within the Chironomidae family) tended to make up a large percentage of the samples. Of the EPT taxa, the Heptageniidae, Baetidae, Chloroperlidae, and Brachycentridae families were well represented in the Surber samples. The presence of these sensitive species is indicative of the comparatively optimal conditions at the site for macroinvertebrate colonization (Merritt and Cummins 1996).

A range of macroinvertebrate habitats was sampled using the ASCI method, while only riffle/cobble habitat was sampled using Surber samplers. Taxa richness was greater in ASCI samples (15 to 16 taxa) than compared with Surber and drift samples (five and seven taxa, respectively). The difference in taxa richness indicates that most of the macroinvertebrate taxa

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diversity is to be found in habitats other than riffle/cobble habitat. Macroinvertebrate studies in other regions have documented variability in taxa richness among samples (DePauw et al. 2006). However, there are insufficient data from this study area to statistically define trends or relationships with respect to particular sampling method variable, or timing of sampling.

An assessment of parameters related to habitat quality indicates optimal conditions at the unnamed creek and Y Valley Creek locations during all sampling events. Standard water quality parameter results were in the optimum range for aquatic life (Hem 1985). Dissolved oxygen levels at the unnamed creek were slightly supersaturated, indicative of cool stream temperatures and swift water conditions at the location. The locations sampled in this study were in an undisturbed area with few to no human-caused effects.

Periphyton metrics for the 2004 data were based on the taxa identifications. Taxa richness was greater for Y Valley Creek than for the unnamed creek (17 and 8 taxa, respectively). The percent dominant taxon was much higher for the unnamed creek than for Y Valley Creek (79 percent and 35 percent, respectively). The percent dominant taxon in periphyton samples at times totaled more than 50 percent. This result is generally considered a negative indicator for stream health (Wehr and Sheath 2003). However, the stream reaches sampled are considered representative of unimpaired conditions, pristine, and in a region of minimal human effect. Measurements of water-quality parameters consistently fell within ranges considered good to optimal for aquatic habitat health. These results exhibit the natural variability in these environments.

In 2004, one periphyton sample was collected from each of the two sampling locations, and then analyzed for diatom taxa composition. Results of this analysis indicate 19 diatom genera were present in the project area. In 2005, 10 periphyton samples were collected at one location (Y Valley Creek) and analyzed for chlorophyll-a to quantify productivity. In 2005, average chlorophyll concentrations were 2.4 mg/m^2. Diatom analysis signified a diverse set of taxa present. Average chlorophyll-a concentrations for Y Valley Creek were in the normal range, compared to other studies in Alaska.

Cook Inlet Portion of Natural Gas Pipeline Corridor

Coastal assessment studies in lower Cook Inlet have shown the area supports a healthy benthic community with balanced populations of species. Species abundance, richness, and diversity indexes are similar to undisturbed habitats and estuaries (Saupe et al. 2005). Investigations of the entire Cook Inlet area have found the lower Cook Inlet to be exposed to fewer contaminants than other locations in Alaska (Saupe et al 2005). Overall, Shannon-Weaver Diversity (H') for benthic communities (Saupe et al. 2005) ranged from 0.91 to 5.64. Polychaete worms have been found to be the most dominant taxonomic group in benthic communities.

Macroinvertebrates such as crabs, butter clams, little neck clams, shrimp, and octopus are commercially harvested in lower Cook Inlet. Cook Inlet supports a large numbers of razor clams and a popular sport fishery on the western side of Cook Inlet. The eastern side of Cook Inlet has been closed to clamming since 2015, due to low population levels.

Amakdedori Port

Available information is included above in the Cook Inlet Portion of Natural Gas Pipeline section.

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Figure 3.24-6: Cook Inlet Aquatic Invertebrates Sampling Sites

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3.24.1.4 Fish Tissue Trace Element Analysis

Overall, data collected during the 2004-2008 period indicate that the concentrations of trace elements in fish tissue are generally low, and reflective of the natural conditions of the mine site area drainages. Some trace elements were detected at elevated concentrations. However, these concentrations are attributed to natural conditions and are documented as existing or baseline conditions.

Fish samples collected between 2004 and 2008 included 345 whole body, 236 muscle, and 87 liver samples. These samples were collected from the waterbodies (NFK, SFK, and UTC) and several lakes in the mine site area, and represented several species of fish, including northern pike, Dolly Varden, Arctic grayling, coho and Chinook salmon, and whitefish. Most of the 14 target trace elements were detected in the samples, including methylmercury. Copper and zinc were present at the highest concentrations across different waterbodies. A wide variability of elemental concentrations was apparent over time and among waterbodies, fish species, and tissue types.

Differences in tissue copper concentrations appeared to reflect the differences in the underlying geology of the drainages. For example, whole-body copper concentrations in coho and Chinook salmon were higher in SFK than in the other two rivers; Copper-rich bedrock in the headwaters of SFK may explain this observation, because the underlying geology contributes significantly to the elemental concentration in the surface water and sediment substrates, and aquatic organisms and the fish uptake of trace elements occur via these environmental media and the food chain. Elemental concentrations were typically higher in liver than in muscle; substantially for some elements (e.g., zinc).

Overall, the existing baseline data on fish tissue elemental concentrations represent the baseline or existing conditions that are reflective of the natural variabilities in the mine site area that arise due to various factors, such as biogeochemical differences among the major drainages, species- and element-specific differences in uptake, and accumulation of different trace elements by different fish species.

For a detailed report on fish tissue trace metals analysis, refer to EBD Chapter 10, Section 10.3

Alternatives 1 and 2 Summer Only Ferry Operations Variant

The summer only ferry options variant is described in Chapter 2, Alternatives. Aquatic habitat and fish distribution would be the same for this variant as described in Alternative 1.

Alternative 1 Kokhanok East Ferry Terminal Variant

[NOTE: AQUATIC HABITAT AND FISH DISTRIBUTION FOR THIS VARIANT WILL BE UPDATED FOR THE DRAFT EIS.]

The proposed Kokhanok East route crosses eight streams, one of which is classified as anadromous. This stream has been documented to support spawning and rearing habitat for sockeye salmon and arctic char. The shoreline of the proposed ferry terminal location is generally rocky and deepens rapidly, suggesting that it is unlikely to be preferred spawning habitat (RFI 078).

Alternative 1 and 2 Pile Supported Dock Variant

The pile supported dock variant is described in Chapter 2, Alternatives. Aquatic habitat and fish distribution would be the same for this variant as described in Alternative 1.

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3.24.2 Action Alternative 2 – North Road and Ferry

Mine Site

The affected environment as described under Alternative 1 is applicable to Alternative 2.

3.24.2.1 Aquatic Habitat

Transportation Corridor and Natural Gas Pipeline Corridor

The transportation corridor includes the mine site road, two spur roads to ferry terminals on Iliamna Lake, and the natural gas pipeline corridor from the mine site to Diamond Point. The transportation corridor under Alternative 2 would crosses 116 waterbodies, including 23 anadromous fish streams and 28 resident fish streams. The natural gas pipeline from Eagle Bay Creek to Ursus Cove would cross 89 total drainages, including 37 fish streams, of which 13 are anadromous.

The affected environment as described under Alternative 1 for the Cook Inlet portion of the natural gas pipeline is applicable to Alternative 2.

Access Corridor – Mine Site to Ferry Terminal

The access corridor follows the Alternative 1 route from the mine site to 1 mile south of the bridge crossing the mainstem UTC (Figure 3.24-6). Along this route, the road and pipeline would cross 21 stream channels, 8 of which are listed in the AWC as anadromous streams (Table 3.24-6), with another 6 channels inhabited by resident fish species, and 12 channels believed to be fishless (see Appendix K3.24) As noted above, the Newhalen River provides a migratory connection between Iliamna Lake and Lake Clark for large numbers of adult and juvenile sockeye salmon.

Table 3.24-6. Anadromous waters crossed by access roads along the Alternate 2 Transportation and Natural Gas Pipeline Corridor[1]

Tributary [2]	AWC Code	R.M. [3]	Feature	Species/Life-stage [4]
UTC 1.36, 1.34, and mainstem	See Table 3.24-2 for details			
n/a (tributary to Newhalen River)	324-10-10150-2207-3027-4011	1.9	culvert	COp
n/a (tributary to Newhalen River)	324-10-10150-2207-3027-4011-5005	0.6	culvert	COr
Newhalen River	324-10-10150-2207	15.5	bridge	Kp, Ss, COp
n/a (tributary to Eagle Bay)	324-10-10150-2235	5.8	culvert	Ss, ACp
Eagle Bay Creek	324-10-10150-2239	0.8	n/a	COr, Ss, ACp
Iliamna River	324-10-10150-2402	4.1	bridge	CHp, COp, Kp, Pp, Ss
Browns Peak Creek	248-10-10040		n/a	COr
Un-named	248-20-10030		n/a	CHp

1 Channels that would be crossed by the Alternative 2 natural gas pipeline are shown in Table 3.24-3

2 Tributary name from EBD 2011, if available

3 R.M. = river miles at crossing above mouth or confluence of tributary (approx.)

4 Species/Life-stage at crossing (from AWC). Species: K=Chinook, S=sockeye, CO=coho, CH=chum, P=pink; AC=arctic char; Life-stage: s=spawning, r=rearing, p=present (life-stage not specified)

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Iliamna Lake

This alternative includes a ferry terminal site at Eagle Bay, approximately 20 miles east of the terminal for Alternative 1, with the other ferry terminal site in Pile Bay (Figure 3.24-6). The ferry route would pass to the south of the Triangle, Flat, and Porcupine Island clusters. Although the islands contain extensive littoral shoal habitat, the ferry route would remain well offshore, where depths range from 200 to over 900 feet. Physical characteristics of Iliamna Lake are described above in this section. Annual aerial surveys of spawning sockeye salmon in littoral habitats along Iliamna Lake have been conducted by ADF&G since 1920 (Morstad 2003). Spawning surveys have shown heavy use of the northeastern arm of Iliamna Lake, with highest densities associated with the main island archipelagos, Pedro Bay, and the Newhalen shoreline. Lower densities of spawning have been observed near Eagle Bay or along the southern shore of Pile Bay, which possesses minimal littoral habitat. Consequently, the midwater route of the ferry would not intersect known sockeye spawning habitat, except at the ferry terminal site in Eagle Bay. However, Pile Bay serves as a migration route for upstream migrant salmon (and trout) to the Iliamna River, Pile River, and several other anadromous tributaries, as well as an outmigration pathway for ocean-bound juvenile salmon.

Access Corridor – Ferry Terminal to Port

The Pile Bay ferry terminal site would connect to the existing Williamsport-Pile Bay Road via a short spur road. Realignments and improvements would be made to the existing road. From the town of Williamsport, a new spur road would extend south to the Diamond Point port site. No stream crossings are associated with the Pile Bay spur road, and a single crossing of a channel with resident fish species is associated with the Diamond Point spur road. The existing Williamsport-Pile Bay Road between the two spur roads contains 12 stream crossings, including a bridge over the anadromous Iliamna River (Table 3.24-6). Three other bridges and two culverts cross resident fish streams, with six culverts crossing fishless streams.

Diamond Point Port

The proposed port site at Diamond Point is at the intersection of Iliamna and Cottonwood Bays. Both bays are relatively shallow (mostly less than 40 feet in depth), with sand and pebble substrates interspersed by rocky reefs and extensive mud-dominated intertidal flats at the heads of each bay. Scattered eelgrass is present along the shoreline between Diamond Point and Williamsport, as well as west of the point in Cottonwood Bay. More extensive reefs and eelgrass beds are found in the larger Iniskin Bay to the north of Iliamna Bay.

3.24.2.2 Resident and Anadromous Fish

Transportation Corridor and Natural Gas Pipeline Corridor

[NOTE: Fish data for this section is pending review of 2018 field data and will be included in the DEIS].

The affected environment as described under Alternative 1 for the Cook Inlet portion of the natural gas pipeline is applicable to Alternative 2.

Access Corridor – Mine Site to Ferry Terminal

The eight anadromous streams that would be crossed by this portion of the access corridor have been documented to contain Chinook, coho, sockeye salmon, and Arctic char. Resident species include slimy sculpin, rainbow trout, Dolly Varden, longnose suckers (*Catostomus catostomus*), and ninespine stickleback.

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Iliamna Lake

See above sections for general information on fish resources in Iliamna Lake. The ferry route for this alternative traverses the eastern basin of Iliamna Lake, including the vicinity of Eagle Bay and Eagle Islands, as well as the full length of Pile Bay.

Access Corridor – Ferry Terminal to Port

This portion of the access corridor would cross the Iliamna River approximately 4 miles above its mouth. The Iliamna River supports all five species of Pacific salmon, including important spawning habitat for sockeye salmon.

Diamond Point

Marine fish and invertebrates were sampled in the Iniskin-Iliamna Bay Estuary (IIE) by beach seining, otter trawling, and gill or trammel netting in two different time periods (2004-2008, and 2010-2012) to establish baseline conditions and temporal variations in species composition and abundance in the marine habitat (Pentec Environmental and Hart Crowser 2005). Additional sampling occurred in 2012 outside of the IIE, in the adjacent Cottonwood Bay, and immediately south in Rocky and Ursus coves for preliminary characterizations of the fish community. The use of multiple sampling gears provided a better coverage of several habitat types, potential spawning area, nursery areas, species distribution, and use within and outside of embayment in marine and estuarine environments.

Beach seine capture data from the IIE indicate that in the nearshore sandy/cobble habitats, 41 fish species were collected; however, not all species were captured at all stations and months. Overall, Pacific herring, juvenile pink salmon, juvenile chum salmon, Dolly Varden, surf smelt (*Hypomesus pretiosus*), and Pacific sand lance (*Ammodytes hexapterus*) were the most common species captured in beach seines. The fishes captured in otter trawl represented fauna of open water and deeper waters than represented by seine. Some 28 species were captured, dominated by snake prickleback (*Lumpenus sagitta*), yellowfin sole (*Limanda aspera*), starry flounder (*Platichthys stellatus*), Pacific herring, and walleye pollock. In gill nets, Pacific herring (multiple-year classes) dominated the catch, followed by Dolly Varden in both sampling periods. Trammel nets mostly captured spiny dogfish (*Squalus acanthias*), starry flounder, Pacific halibut, and whitespotted greenling (*Hexagrammos stelleri*).

The capture of young Pacific herring and salmonids suggests that these species use these areas for rearing. The Pacific herring supported a strong commercial fishery (for roe) until 1998; it was closed for fishing in 1999 due to low abundance. However, biomass of Pacific herring has not improved to historical level (ADF&G 2009). Young salmonids also use the bays for rearing, as do the adults for migration into nearby tributaries. Adult salmonids provide commercial, subsistence, and recreational fishery. Seining in three tidal lagoons in Iliamna and Cottonwood Bays indicated that threespine stickleback was the most abundant species, followed by juvenile chum salmon and pink salmon.

3.24.2.3 Aquatic Invertebrates

Locations for macroinvertebrate and periphyton sampling were selected to characterize diversity, abundance, and density in freshwater habitats in the transportation and natural gas pipeline corridor study area. The sampling locations are representative of streams in the Bristol Bay drainage. The study area for macroinvertebrates and periphyton consists of three stream-sampling sites. These sites consisted of unnamed streams that were named Bear Den Creek, Red Creek, and Ursa 100B for reporting purposes. The transportation corridor study area extends eastward beyond the Bristol Bay drainages into the Cook Inlet drainages. Section 15.4

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in Chapter 15 (EBD) describes the macroinvertebrate and periphyton studies in the Bristol Bay drainages study area.

Aquatic habitat surveys indicate that the sample sites consisted largely of riffle/cobble habitat, which is the highest-quality habitat for EPT taxa. At sites sampled in 2005, the proportion of riffle/cobble habitat in each stream reach ranged from 70 to 85 percent.

A range of macroinvertebrate and periphyton sample-collection methods was employed during the field sampling. Slightly more taxa per site were collected using the ASCI method in 2004 than in 2005, indicating possible inter-annual variability. The number of taxa collected in 2005 from riffle/cobble areas by Surber sampler was generally less than the in ASCI samples, which were collected in more diverse habitats. Macroinvertebrate studies in other regions have documented variability in taxa richness among samples (DePauw et al. 2006). However, there are insufficient data from this study area to statistically define trends or relationships with respect to particular sampling method variable, or timing of sampling.

There were 235 macroinvertebrate taxa, including 64 Chironomidae taxa, identified in the Bristol Bay drainages study area (which includes both the mine and the transportation corridor study areas). Three of the non-Chironomidae macroinvertebrate taxa and three of the Chironomidae taxa were identified only in transportation corridor study area samples. The differences in numbers of taxa collected between the two sampling years is attributed to changes in the sampling program.

Dipteran taxa were not dominant at sampling sites in the transportation corridor study area. In 2005, Diptera composed a higher percentage than EPT in ASCI samples from all the sites, while EPT taxa composed a higher percentage than Diptera in Surber samples from all the sites. This may indicate that there were more Dipteran taxa in the varied habitats sampled using ASCI methods. Periphyton taxa richness and chlorophyll-a concentrations were both higher at Bear Den Creek than at the other two sites.

In 2005, Diptera comprised a higher percentage than EPT in ASCI samples from all the sites, while EPT taxa comprised a higher percentage than Diptera in Surber samples from all the sites.

Measurements of water-quality and habitat-quality parameters at each site fall within ranges considered good to optimal for aquatic and riparian habitat (Major and Barbour 2001). The concentration of dissolved oxygen (DO) was consistently high at all sites, and supersaturation (DO higher than 100 percent) was found at some sites. Water temperature ranged from 5.5°C to 13.2°C, and was much lower in 2005 than in 2004, except at Ursa I00B. No statistical analyses were performed on water quality and macroinvertebrate metric data because of limited data, and no trends were noted.

3.24.3 Action Alternative 3 – North Road Only

Mine Site

The affected environment as described under Alternative 1 is applicable to Alternative 3.

3.24.3.1 Aquatic Habitat

Transportation and Natural Gas Pipeline Corridors

The access route would include an 82.3-mile-long north road corridor and natural gas pipeline that would skirt the eastern edge of Iliamna Lake, thereby avoiding a crossing of Iliamna Lake (Figure 3.24-5). The natural gas pipeline would be buried adjacent to the road alignment to

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Diamond Point, then would follow the route into Cook Inlet to the Kenai Peninsula, as described above.

The affected environment as described under Alternative 1 for the Cook Inlet portion of the natural gas pipeline is applicable to Alternative 3.

Along this corridor, there are numerous watersheds ranging in size from large rivers to very small seasonally flowing channels containing anadromous and resident fish species. As part of the environmental baseline documentation, multiple sites were surveyed along the Alternative 3 transportation and natural gas pipeline corridor from 2004 to 2008 for fish and aquatic habit. Primary survey sites were directly on or near the representative road and pipeline alignment. In addition, support survey sites were upstream or downstream of the primary sites or on nearby tributaries. There were 61 primary survey sites and 44 support sites surveyed during this period. The survey sites were grouped into the watershed groups: Upper Talarik, Newhalen, Isolated watersheds, Roadhouse/Northeast Bay/Eagle Bay, Youngs/Chekok/Canyon, Knutson Bay/Pedro Bay, Pile Bay/Lonesome Bay, and Iliamna River; and Williams Creek. All groups except the Williams Creek group are in the Bristol Bay drainage. Overall, this alternative would involve 118 stream crossings, with 23 listed as anadromous waters (Table 3.24-7), 28 containing resident fish species only, and 67 small channels designated as fishless (K3.24). Nine of the anadromous streams that would be crossed by the Alternative 3 transportation and natural gas pipeline corridor are listed in Table 3.24-6.

Table 3.24-7. Anadromous Waters Crossed by Access Road and Pipeline Along the Alternate 3 Transportation and Natural Gas Pipeline Corridor[1]

Tributary [2]	AWC Code	R.M. [3]	Feature	Species/Life-stage [4]
n/a (tributary to Eagle Bay Creek)	324-10-10150-2239-3005	2.4	bridge	Ss, ACp
n/a (tributary to Chekok Bay)	324-10-10150-2261	5.6	bridge	COp, Ss, ACp
n/a (tributary to Chekok Bay)	324-10-10150-2261-3006	1.0	bridge	COp, Ss, ACp
n/a (tributary to Chekok Bay)	324-10-10150-2267-3001	2.7	culvert	COp, Ss, ACp
Chekok Creek	324-10-10150-2267	3.3	bridge	COp, Ss, ACp
Knutson Creek	324-10-10150-2301	1.6	bridge	Ss, ACp
n/a (tributary to Lonesome Bay)	324-10-10150-2333	0.9	bridge	Ss
Pile River	324-10-10150-2341	1.6	bridge	Ss, ACp
Long Lake outlet	324-10-10150-2343	1.8	bridge	Kp, Sp
n/a (3 crossings)	324-10-10150-2343-3006	0.4, 0.7, 0.9	Culvert, bridge, culvert	Sp

1 Not including 9 anadromous streams that would be crossed by this alternative listed in Table 3.24-2. Note this alternative would cross Eagle Bay Creek approximately 4 miles above its mouth.

2 Tributary name from EBD 2011, if available

3 R.M. = river miles at crossing above mouth or confluence of tributary (approx.)

4 Species/Life-stage at crossing (from AWC). Species: K=Chinook, S=sockeye, CO=coho, CH=chum, P=pink; AC=Arctic char; Life-stage: s=spawning, r=rearing, p=present (life-stage not specified)

The Isolated Watershed Group includes two watersheds that drain the southwestern flanks of Roadhouse Mountain; however, these isolated watersheds did not appear to have any surface

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connection to the Newhalen River or Iliamna Lake. The Roadhouse/Northeast Bay/Eagle Bay Watershed Group includes three watersheds that drain into Iliamna Lake: Roadhouse Creek, an unnamed Tributary to Eagle Bay, and Eagle Bay Creek. The Youngs/Chekok/Canyon Watershed Group includes three watersheds that drain into the northern edge of Iliamna Lake: Youngs Creek, Chekok Creek, and Canyon Creek. The Knutson Bay/Pedro Bay Watershed Group consists of Knutson Creek and eleven unnamed tributaries that drain the western and southern sides of Knutson Mountain into Pedro Bay. The Pile Bay/Lonesome Bay Watershed Group includes the Pile River and two unnamed tributaries that flow into Lonesome Bay. The Iliamna River Watershed Group originates on the western side of the Chigmit Mountains and flows southwest into Pile Bay. Williams Creek is the only stream associated with the northern access corridor that drains into Cook Inlet.

Diamond Point Port

The affected environment as described under Alternative 2 is applicable to Alternative 3.

3.24.3.2 Resident and Anadromous Fish

Transportation Natural Gas Pipeline Corridors

As described above, the transportation and natural gas pipeline corridors would cross several rivers, lakes, streams and lake outlets within several different watersheds. Most of these watersheds drain into Iliamna Lake with the exception of the Isolated Watershed Group where precipitation, evaporation and groundwater exchange appear to be the dominant hydrologic process.

See Table 3.24-2 for a description of fish species found in the UTC and Newhalen watershed groups.

Isolated Watershed Group. No fish were found in these survey sites during the October 2007 sampling.

Roadhouse/Northeast Bay/Eagle Bay Watershed Group. Four fish species were documented at the primary survey sites: slimy sculpin, Dolly Varden, rainbow trout, and ninespine stickleback. Coho salmon, sockeye salmon, and Arctic char are also known to occur in this watershed group.

Youngs/Chekok/Canyon Watershed Group. Sockeye salmon, rainbow trout, Dolly Varden, and slimy sculpin were found at sites in this watershed group. Other fish known in this group include coho salmon and Arctic char.

Knutson Bay/Pedro Bay Watershed Group. Sockeye salmon, Dolly Varden, and slimy sculpin were documented at sites in this watershed group, but Arctic char are also known to be present in this watershed.

Pile Bay/Lonesome Bay Watershed Group. Slimy sculpin and threespine stickleback were documented in primary and support survey sites. Although no salmon were observed during the fish surveys, sockeye salmon and Arctic char are known to be present.

Iliamna River Watershed Group. Sockeye salmon, Dolly Varden, and slimy sculpin were observed in this watershed group. Approximately 3,000 adult sockeye salmon were observed at two support survey sites in August 2004.

Williams Creek Watershed. Williams Creek, which drains into the Cook Inlet at Williamsport, contained Dolly Varden when sampled in 2004.

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Diamond Point Port

See description of fish resources at Diamond Point under Alternative 2.

3.24.3.3 Aquatic Invertebrates

Epibiota

Epibiota surveys were conducted in intertidal zones representing a wide range of habitats (Figure 3.24-6). Diverse intertidal habitat types provide feeding areas for numerous pelagic fish (which live in the open ocean) and demersal fish (which live close to the ocean floor), and invertebrates in lower Cook Inlet. In the rocky intertidal habitats, the distribution of vegetation and invertebrates is determined by elevation, substrate, season, and exposure to physical stressors, such as waves, sun, and ice scour. Diversity of both plants and animals among the rocky stations tend to increase with declining wave exposure and salinity and increasing sediment load. Ice is another major stressor of the biologic communities, because winter ice can severely reduce or completely remove sessile epibiota (immobile organisms that live on the surface of other organisms) each winter.

Baseline sampling results indicated several trends in the data. Fewer species of algae less tolerant of saline and variable light (i.e., more estuarine) conditions were present; and areas with high wave exposure had the greatest potential for high macroalgal diversity due to the high levels of disturbance and greatest exposure to a larger recruiting stock, particularly at Cook Inlet waters.

Subtidal sampling for epifauna had limited visibility and detected relative sparse epifaunal abundance. Kelp was prevalent closest to shore. Rocky substrate dominated most diver transects; therefore, invertebrate fauna was dominated by mobile organisms. Common attached invertebrates included sponges, hydroids, sea anemones, the rock jingle, and bryozoans. Common mobile invertebrates included snails, chitons, nudibranchs, crabs, and sea stars. Few demersal fish were observed. Bottom-oriented fish like whitespotted greenling, starry flounder, and other flatfishes were common.

Infauna

Intertidal infauna (animals that live in ocean floor sediments) studies were conducted at multiple intertidal stations between 2004 and 2008 (Figure 3.24-6).

Intertidal infauna study results indicate that all animals identified at the genus level are abundant in marine assemblages elsewhere in Alaska (Blanchard et al. 2003). Between 2004 and 2008, differences in abundance, biomass, and diversity were found in the infauna sampling results. These differences reflect small-scale spatial and temporal occurrences and illustrate the constantly shifting baseline conditions in the intertidal infauna assemblage.

Intertidal studies found that the average number of infaunal taxa observed ranged from 1.6 to 8.0 in 2004, and ranged from 1.6 to 14.2 in 2008.

Subtidal study results indicate stability in subtidal ecology through time. The variability of the results of subtidal faunal measures was considerable, but is comparable to the results of studies of similar marine assemblages elsewhere (Feder et al. 2005). Communities are dominated by a few taxa with high abundance, and there is a moderately diverse assemblage of taxa within sites.

Subtidal infauna was, overall, more abundant and more diverse than intertidal infauna. Greater stability and lower stress in subtidal environments lead to more abundance and diversity.

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Intertidal environments experience increased wave action, large temperature and salinity shifts, and seasonal ice-gouging, which exert more stressful influences not experienced in subtidal habitats. Despite the physical stresses, some areas of the intertidal environment exhibited substantial biomass of large infauna that far exceeded the subtidal biomass. In addition, the infauna at subtidal stations exhibited a higher degree of within-station similarity than did the infauna at intertidal stations—a reflection of the greater diversity of intertidal substrates; again, likely a consequence of the harsher nature of the intertidal environment.

Subtidal studies found that coarse substrates dominated the area, and the biota therefore reflected this habitat type. Attached and burrowing animals, rather than burrowing infauna, dominated the diverse transects. The average abundance of all taxa observed ranged from 2,210 to 5,150 per square meter. Biomass ranged from 25.9 to 298 grams per square meter. The number of taxa observed ranged from 26 to 40 among sites sampled.

Alternative 3 Concentrate Pipeline Variant

The concentrate pipeline variant is described in Chapter 2, Alternatives. Aquatic habitat and fish distribution would be the same as described under Alternative 3- Transportation Corridor.

3.24.3.4 Alternatives Fish Stream Summary Table

A comparison of number of stream crossings, fish streams, anadromous streams, and resident fish is given in Table 3.24-8.

Table 3.24-8: Fish Stream Summary Table

Alternative	Stream Crossings	Fish Streams	Anadromous*	Resident**
Alternative 1 North Access Corridor	32	11	6	5
Alternative 1 South Access Corridor	65	33	2	31
Alternative 2 Road Sections	21	14	8	6
Alternative 2 Pipeline Sections	118	51	23	28
Alternative 3 Road and Pipeline Sections	116	51	23	28

*Data from AWC catalog

** Resident fish stream data from EBD, RFI 85 2018 fish survey [will be updated for DEIS]

3.24.3.5 Climate Change

There are likely to be hydrological impacts associated with projected changes in temperature, precipitation, and evapotranspiration in the Bristol Bay watershed, including changes in the magnitude and timing of streamflow that are likely to affect salmon habitat and populations. Changes in hydrology are likely to affect existing habitat via changes in water volume and velocity along with channel forms, which may lead to declines in habitat availability for spawning and rearing salmon populations.

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Both hydrology and water temperature of freshwater systems affect critical life stages of salmonid species. These hydrological changes are likely to have different effects on salmon populations depending on the amount of time they spend rearing in freshwater habitats, their life stage, and their ability to adapt to changes in environmental conditions.

Populations of Pacific salmon species are likely to adapt to changes in temperature, precipitation, and hydrology in different ways; the geographic location of populations is likely to affect their ability to adapt to these changes. The genetic and life history diversity within and among the Bristol Bay Pacific salmon populations will likely be crucial for maintaining the resiliency of the regions salmon stocks under a future environment characterized by climate change and increased anthropogenic stressors (Hilborn et al. 2003, Schindler et al. 2010, Rogers and Schindler 2011).

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4.24 FISH VALUES

The Environmental Impact Statement (EIS) analysis area includes watersheds and downgradient aquatic habitats affected by project components from headwater streams to marine waters. Potential direct and indirect impacts to fish and aquatic habitat and aquatic invertebrates include:

- Physical loss of stream, lake, and marine habitat
- Blockage of stream channels preventing fish or other aquatic species passage
- Aquatic habitat effects due to instream flow reductions from mine water withdrawal or capture and redirection of groundwater
- Sedimentation of aquatic habitat due to surface erosion of mine roads, stockpiles, or other activities
- Erosion from vegetation removal; shoreline erosion associated with ship or ferry wakes; benthos disturbance/mortality from docks and pipelines
- Changes in instream water quality such as temperature, turbidity, pH, dissolved oxygen, and metal or chemical contaminants
- Injury or mortality of fish or other aquatic species.

Permit compliance requirements, including standard and special terms and conditions, best management practices (BMPs), and environmental monitoring would be established by regulatory agencies and landowners with permitting authority. These requirements would be implemented as part of construction management and facility operations to avoid, minimize, and control risks to fish and aquatic habitat in the project area.

4.24.1 No Action Alternative

Under the No Action Alternative, the Pebble Project would not be constructed, and no new impacts to aquatic resources would occur.

4.24.2 Action Alternative 1

4.24.2.1 Habitat Loss

Mine Site

North Fork Koktuli

As described in Section 3.1, Introduction to Affected Environment, approximately 82 percent of the 10.7-square-mile (mi^2) mine site footprint would occur in the North Fork Koktuli (NFK) River basin (Figure 4.24-1). Tributary 1.19 would be blocked to anadromous and resident fish by the tailings storage facility (TSF) sedimentation pond and dam immediately above the tributary's confluence with the NFK. This anadromous tributary and its sub-tributaries provide 6.2 miles of spawning and rearing habitat for coho salmon, 2.9 miles of rearing habitat for Chinook salmon, and 12.7 miles of spawning and rearing habitat for resident fish species, including rainbow trout, Dolly Varden, Arctic grayling, and sculpin (Table 4.24-1). This direct loss of habitat would occur during project construction, and would be permanent, although a sub-tributary of Tributary 1.19 would remain free–flowing, and may provide habitat for resident species.

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Table 4.24-1: Miles of Stream Channel Impacted Due to Fill, Excavation, Inundation, or Blockage to Upstream Migrant Fishes and Resident Fishes

Tributary	Channel Function	Miles
NFK Tributary 1.19	Chinook Salmon Rearing	2.9
	Coho Salmon Rearing	6.2
	Coho Salmon Spawning	3.9
	Resident Salmonid Presence	12.1
	Resident Non-Salmonid Presence	12.7
	Fishless	8.1
SFK Mainstem	Resident Non-Salmonid Presence	0.5
	Fishless	1.0
Tributaries to upper SFK	Resident Non-Salmonid Presence	0.8
	Fishless	2.2

When compared to the total mileage of currently documented anadromous waters in the three tributaries associated with the mine site (i.e., the NFK, South Fork Koktuli River [SFK], and the Upper Talarik Creek [UTC]), the loss of Tributary 1.19 habitat represents 4 percent and 3 percent of spawning and rearing habitat for coho salmon, respectively; and 3 percent of Chinook salmon rearing habitat. In the context of the entire Bristol Bay drainage, with its 9,816 miles of currently documented anadromous waters, the loss of Tributary 1.19 represents a 0.002 percent reduction in miles of anadromous stream habitat, or a 0.03 percent decrease in accessible drainage area.

Documented anadromous waters only represent waters where salmon have been observed, and are not considered representative of all anadromous waters in the Bristol Bay drainage. The total estimated mileage of anadromous waters in Bristol Bay drainage is likely much higher than currently documented. The mine site area is one of the few areas in the Bristol Bay drainage where numerous small channels and tributaries have been surveyed for salmon.

Within the mine site footprint, approximately 2.3 miles of Tributary 1.19 mainstem and sub-tributary stream channels would remain free-flowing. This habitat would not be accessible to anadromous fish due to blockage by downstream dams, but may continue to provide spawning and rearing habitat for resident species. In addition to the remaining free-flowing channels, approximately 1.4 miles of stream channel would be converted to reservoir habitat.

Approximately 276 acres of riparian wetland would be directly and permanently impacted by the mine site footprint; predominately in the NFK watershed. These impacts would include reduced surface water infiltration, retention, and groundwater flow; increased surface water runoff; and reduced water quality functions. Surface water BMPs would be implemented during construction, operations, and closure; and changes in riparian wetlands would likely not be detectable downstream from the mine site.

South Fork Koktuli River

The open pit and related mine facilities are expected to directly and permanently impact approximately 2.0 miles of fish habitat in the upper mainstem SFK and a headwater tributary (Table 4.24-1). The affected stream channels are not classified as anadromous, but provide habitat for populations of resident fish, including sculpin, Arctic grayling, and stickleback

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(Buell 1991). The extent of these impacts would be limited to waters in the footprint of the mine site footprint.

Upper Talarik Creek

The open mine pit and perimeter road are expected to extend to the western edge of the UTC drainage; the only mine site components that would occur in the UTC drainage are the transportation corridor road, the buried natural gas pipeline, and the eastern water treatment plant discharge pipe and facility (Figure 4.24-1). No aquatic habitat would be directly lost in the UTC due to mine construction, operations, or closure.

Transportation Corridor

Road/Pipeline

The road and pipeline would cross nine anadromous and 35 resident fish streams. Bridge and culvert crossings would be designed and installed in accordance with established Alaska Department of Transportation & Public Facilities (ADOT&PF) and Alaska Department of Fish and Game (ADF&G) standards to provide fish passage for all life stages resulting in minimal loss of aquatic habitat, except for the permanent loss of streambed habitat within the footprint of bridge piers on the Newhalen and Gibraltar rivers. Single-span bridge crossings would be designed to maintain a riparian buffer between the bridge abutments and the active channel. The road/pipeline footprint and associated crossing structures would impact approximately 13.5 acres of riparian vegetation, and interrupt floodplain connectivity in certain locations. The impact to riparian vegetation would be permanent for the life of the project. BMPs such as road fill drain culverts may be considered during design and permitting to maintain floodplain connectivity and to maintain riparian habitat function.

Ferry Terminal/Iliamna Lake Pipeline

Docking facilities for the ice-breaking ferry at the north and south ferry terminals are expected to include rock and gravel ramps extending approximately 40 feet into Iliamna Lake. Consequently, there would be permanent, direct impacts due to loss of approximately 1 acre of benthic habitat under the ramp footprints.

Horizontal directional drilling (HDD) and trenching from lay barges would be used to install the pipeline segments from the lakeshore into waters deep enough to avoid navigational hazards. There would be temporary impacts to near-shore benthic habitats during construction, and permanent impacts to benthic habitat beneath the footprint of the pipeline in deeper waters.

Amakdedori Port

Amakdedori port would be a gravel causeway with a footprint of 14 acres. Placement of gravel in the nearshore environment would have permanent impacts on marine benthos habitat.

Natural Gas Pipeline

The construction phase would include installation of a 104-mile-long, 12-inch diameter gas pipeline on the floor of Cook Inlet from between the Kenai Peninsula and Amakdedori port. HDD would be used to install the pipeline segments from the shoreline into waters deep enough to avoid navigational hazards. These activities may involve displacement of some substrate material along with the associated organisms. There would be a permanent, direct loss of benthic habitat beneath the pipeline footprint on the bottom of Cook Inlet. Habitat alteration would be limited over time, and would not have quantifiable effects to populations of fish and shellfish.

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4.24.2.2 Fish Displacement, Injury, and Mortality

Mine Site

North Fork Koktuli and South Fork Koktuli

Direct displacement, injury, and mortality of fish would occur during project construction in the NFK and SFK. Timing (May 15 to July 15) of construction in anadromous fish streams according to the ADF&G Fish Habitat Permit would minimize impacts to out-migrating juveniles and avoid the presence of spawning adults. Fish capture and relocation would be implemented according to ADF&G Aquatic Resource Permit (ARP) requirements to reduce impacts to resident fish. Stipulations contained in the ARP would determine timing, capture methods, and relocation protocols. Regardless of the scope of the capture and relocation effort, some fish would be displaced and experience injury or mortality. The extent or scope of these impacts would likely be limited to waters in the vicinity of the mine site footprint, and may not be measurable or detectable downstream from the affected stream channel.

Upper Talarik

No fish displacement or mortality would be expected in the UTC due to mine construction, operations, or closure.

Transportation Corridor

Bridge, Culvert, and Natural Gas Pipeline Installation

Direct and localized mortality of fish from construction activities at stream crossings and the ferry terminals may occur, although with limited impact. Temporary water diversions or dewatering of stream reaches during construction could result in direct mortality due to fish stranding and desiccation. Fish entrainment or impingement at screens during pumping may also result in direct mortality or injury.

As stated above, timing and capture/relocation would be conducted according to established ADF&G practices and permit conditions to reduce impacts. Water pump intake screens used for dewatering and water withdrawal would be designed, constructed, and certified according to ADF&G standards to prevent fish impingement to reduce impacts.

Iliamna Lake Pipeline

The construction phase would include installation of an 18-mile-long gas pipeline on the floor of Iliamna Lake between the north and south ferry terminals. HDD and extended-reach backhoes would be used to install the pipeline segments from the lakeshore into waters deep enough to avoid navigational hazards. These activities may involve displacement of some substrate material along with the associated organisms. There would be permanent, direct mortality of benthic organisms beneath the pipeline footprint on the bottom of Iliamna Lake.

Sockeye salmon are known to use shoreline habitat for spawning, and therefore could be potentially affected; however, documented spawning areas are more than 0.5 mile from the ferry terminals and primary entry points of the pipeline into the lake (EPA 2014).

Ferry Terminals

Docking facilities for the ice-breaking ferry at the north and south ferry terminals are expected to include rock and gravel ramps extending approximately 40 feet into Iliamna Lake. There would be permanent, direct mortality to benthic organisms within the approximately 1-acre total ramp footprints.

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Ferry Operations

Propeller Entrainment or Injury

Direct impacts of propeller-induced injury or mortality to anadromous or resident fishes by motorboat propellers are not frequently assessed, and are limited to a few studies (Holland 1986; Killgore et al. 2011; Whitfield and Becker 2014). These primarily involved non-salmonid species; the paucity of field studies has been largely due to physical constraints imposed by sampling behind towboats (Killgore et al. 2011). A review of these publications indicated a number of biotic factors may affect fish strike rates by ferry propellers at Iliamna Lake, including:

- Life history traits of a species (pelagic versus nest or redd builders)
- Coincidence in timing of emigration and migration /movement of specific life stages with the path of a moving ferry
- Distribution of fish size/ species in the water column relative to ferry draft
- Spawning behavior
- Fish avoidance behavioral responses to ferry noise/turbulence
- Number, speed, and configuration of propeller blades (horizontal versus vertical)
- Fish size.

Table 3.24-2 in Chapter 3 shows the estimated seasonal presence and activity of life stages of common species that may be exposed to ferry/boat transiting between the north and south ferry terminals. Documented sockeye lake spawning is concentrated towards the northeastern portion of the lake (see Section 3.24, Fish Values); likely due to numerous islands and abundant sheltered habitats. As discussed below under wake stranding, the ferry terminals are on exposed, high-energy beaches with no documented beach spawning habitat in the immediate vicinity; therefore, ferry operations impacting adult sockeyes is unlikely. Juvenile sockeye have the highest potential to interact with the ferry operations due to their relative abundance and wide distribution throughout the Iliamna Lake system.

The potential exists for chronic, direct adverse interaction of ferry propeller blades and various life stages of migratory and non-migratory fish species throughout the 20-year operations phase of the project. The ferry has the potential to entrain fish into the turbulent zone created by propeller blades, although benthic species or midwater species larger than 10 millimeters are less susceptible to entrainment, and are expected to detect and avoid propeller-related impacts. Although unlikely, propeller strikes or shear forces could result in fish injury or mortality. Impacts are expected to be at the individual level.

Wake Impacts

Analysis of juvenile salmon stranding data from the lower Columbia River by Pearson et al. (2006) identified the following factors in affecting stranding:

- Fish availability in the shallow nearshore zone along the beach
- Nearshore ship-wake properties and wave run-up characteristics (wave height and period), as well as direction and extent of wave draw-down and run-up on the beach
- River elevation (river stage and tidal height)
- Beach characteristics (slope, distance to navigation channel).

Pearson et al. (2006) also noted that fish stranding occurred primarily during nighttime vessel passages, and no stranding occurred at the same locations during daytime passages. A radio telemetry study by Otter Tail (2010) on the Kuskokwim River reported no evidence of stranding

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of seaward-emigrating salmon when the prevailing wake height was less than 1.5 inches along the gravel bars surveyed; however, these fish did not occupy confined segments of the river.

The ferry terminal locations are relatively exposed, short beaches unprotected from wave energy. Numerous small storm berms are present on the beach faces, indicative of changing seasonal water levels. In contrast to studies conducted on rivers, stranding of fry from ferry wakes is not expected to be a detectable source of mortality in Iliamna Lake due to the perpendicular route of travel in relation to the shoreline. The Iliamna Lake ferry is expected to produce a 4-inch wake at its 6-knot approach speed; however, the wake would dissipate within 30 feet of the hull. Consequently, any impacts on juvenile and adult fish due to boat wake would be extremely limited in scale—both spatially and temporally.

Amakdedori Port

Short-term effects on both migratory and non-migratory marine fish species may occur during construction of the port. Fish are susceptible to injury and mortality from sound waves generated by pile-driving during construction of the proposed dock (Caltrans 2015). Mortality from sheet-pile installation is possible, but unlikely, due to the fish moving into existing available habitat in Cook Inlet.

Propeller Entrainment or Injury

Various propeller-driven tugs and other ships would be accessing Amakdedori port to transport equipment and personnel during project construction, operations, and closure. The impacts are similar to the above description of the Iliamna Lake ferry operations. This disturbance is expected to be chronic, but infrequent in duration, and localized in geographic extent.

Wake Impacts

During mine operations, marine barges or lightering vessels are expected to make up to 33 trips per year between the port and the offshore anchored bulk carriers. The barge's low transit speeds (5 to 7 knots), minimal draft (3 to 8 feet), distance from shoreline to jetty mooring locations (approximately 1,500 feet), and the presence of naturally occurring waves in Kamishak Bay, are all expected to limit wake-induced impacts on fish.

Natural Gas Pipeline

There would be permanent, direct mortality of benthic organisms beneath the pipeline footprint on the bottom of Cook Inlet during pipeline installation. The effect is expected to be of short duration and local to construction activities.

4.24.2.3 Stream Flow

Mine Site

Operation of the mine site is expected to result in an overall net reduction in available water for release into downstream channels. Reductions of instream flows in the mainstem and select tributary reaches of the NFK, SFK, and the UTC, due to filling of stream channels by the TSF or other stockpiles, excavation of channels and capture of groundwater at the mine pit, or the retention of surface runoff from mine facilities, would result in direct and long-term impacts to aquatic habitat and fish species. Streamflow reductions would begin during project construction, and would continue through operations and post-closure.

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During project construction and operations, a network of seepage and sedimentation ponds would collect runoff and seepage from stockpiles, the mine pit, and other mine components (e.g., roads, embankments, and construction sites). Runoff and seepage water would be routed into the mill for ore processing and reuse, or routed to one of two water treatment plants for use in dust control or power plant cooling. Water would also be treated and released into stream channels at three locations: 1) NFK Tributary 1.19 immediately upstream of the NFK confluence; 2) the SFK at its confluence with Frying Pan Lake; and 3) a tributary to the UTC approximately 2 miles below its headwaters (Figure 4.24-1). The water would be treated before discharge in compliance with water quality standards to protect aquatic life, as specified in an Alaska Pollutant Discharge Elimination System (APDES) permit. Treated water would be discharged to groundwater via buried infiltration chambers designed to provide energy dissipation, erosion control, and freeze protection.

Reduction in streamflows could directly impact the quantity and quality of instream habitat for upstream migration of adult salmonids, spawning, and egg incubation, and rearing habitat for juvenile fish. Reductions in flows could also directly impact available habitat for benthic macroinvertebrate (BMI) production, which is critical for fish growth and survival. The magnitude and extent of impact would vary among the three principal tributaries, according to the degree of surface water and groundwater capture, the location of impacts in the basin, the proximity and size of downstream tributaries, and the magnitude of flow augmentation at the water release facilities.

Fish Habitat Changes Associated with Stream Flow

Downstream of the project footprint, habitat changes—as measured by weighted usable area—vary by species and life stage; drainage basin and reach; and for wet, average, and dry years (R2 Consultants 2018). Treated water releases from mine site facilities would be optimized to benefit priority species and life stages for each month and stream.

In general, most species would have larger-percentage reductions in usable spawning habitat in reaches just below the mine site than further downstream during project operations and post-closure. The percentage reductions in habitat would generally decrease in a downstream direction until reaching the confluence of the NFK and the SFK (with a few exceptions). Rainbow trout, chum, sockeye, Dolly Varden, and Arctic grayling would have habitat decreases only in the headwater tributaries. Chinook and coho spawning habitat would decrease throughout the NFK and SFK drainages. Once the mainstem Koktuli is reached, flow changes would not be detectable. Therefore, the downstream extent of habitat impacts associated with flow reductions would be downstream of the confluence of the NFK and the SFK, and upstream of the mainstem Koktuli River confluence with the Swan River (the end of the model domain).

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Table 4.24-2: Priority species and life stages used to determine habitat flow needs in the Mine Site Area

Month	Priority Species/Life Stages		
	SFK	NFK	UTC
Jan	Chinook Juvenile Rearing	Chinook Juvenile Rearing	Coho Juvenile Rearing
Feb			
Mar			
Apr	Arctic Grayling Spawning	Arctic Grayling Spawning	Arctic Grayling Spawning
May			
Jun	Rainbow Spawning	Rainbow Spawning	Rainbow Spawning
Jul	Chinook Spawning	Chinook Spawning	Sockeye Spawning
Aug			
Sep	Coho Spawning	Coho Spawning	Coho Spawning
Oct			
Nov			
Dec	Chinook Juvenile Rearing	Chinook Juvenile Rearing	Coho Juvenile Rearing

Spawning Habitat

Throughout the mine site area in average precipitation years, Chinook and coho spawning habitat would be reduced; while chum, sockeye, rainbow, Dolly Varden, and Arctic grayling spawning habitat generally would be increased (Table 4.24.3). In wet years, the decreases in habitat would be lower, and the increases greater; in dry years, the habitat decreases would be greater and the increases would be lower. Post-closure, flow reductions would be lower than during mining, resulting in smaller reductions and increases in habitat.

Table 4.24-3 Average precipitation year spawning habitat for all streams and species in the mine site area pre-mine, during operations, and post-closure

	Habitat Available			Change in Available Habitat			
	Pre-Mine	During Operations	Post Closure	During Operations		Post Closure	
Species	(acres)	(acres)	(acres)	(acres)	(% diff)	(acres)	(% diff)
Chinook	*82.54*	*79.51*	*81.14*	*-3.02*	*-3.7%*	*-1.40*	*-1.7%*
Coho	*105.56*	*102.87*	*104.21*	*-2.69*	*-2.6%*	*-1.34*	*-1.3%*
Chum	*180.10*	*181.07*	*180.84*	*0.97*	*0.5%*	*0.74*	*0.4%*
Sockeye	*133.00*	*133.73*	*133.65*	*0.73*	*0.5%*	*0.65*	*0.5%*
Rainbow	*98.46*	*101.40*	*100.01*	*2.94*	*3.0%*	*1.55*	*1.6%*
Dolly Varden	*203.58*	*204.02*	*203.90*	*0.44*	*0.2%*	*0.32*	*0.2%*
Arctic Grayling	*132.24*	*135.59*	*133.10*	*3.34*	*2.5%*	*0.86*	*0.7%*

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North Fork Koktuli

The trends in habitat change modeled in the entire mine area are shown in the changes in NFK spawning habitat. In average precipitation years during mine operations, salmonid habitat availability would decrease by 2.01 acres (8.1 percent) for spawning Chinook, and 1.86 acres (5.5 percent) for coho, while it would increase by 2.12 acres (5.8 percent) for spawning rainbow trout, 1.42 acres (4.4 percent) for sockeye, and 1.95 acres (5.5 percent) for Arctic grayling. Post-closure, habitat changes are predicted to be reduced to a 2.7 percent loss in Chinook, and 2.1 percent loss for coho. Habitat gains for the other species follow the same trend.

South Fork Koktuli

The trends in habitat change modeled indicate there would be a reduction in sockeye spawning habitat in the SFK. In average precipitation years, salmonid habitat availability would decrease by 1.02 acres (2.8 percent) for spawning Chinook, 0.82 acre (2.4 percent) for coho, and 0.69 acre (1.3 percent) for sockeye. Habitat would increase by 0.80 acre (2.4 percent) for spawning rainbow trout, and 1.18 acres (2.6 percent) for Arctic grayling. Habitat changes for Dolly Varden and chum salmon are less than 1 percent.

Upper Talarik Creek

Due to low-magnitude flow changes in the UTC basin, spawning habitat changes for all species would be less than 1 percent during both mining operations, and post-closure.

Juvenile Habitat

Juvenile salmonid habitat would be affected by the reduced flows associated with both mining and post-closure operations. In general, Chinook and rainbow trout juvenile habitat would be reduced, while sockeye juveniles (and the other salmonid species, to a lesser extent) would generally benefit from reduced flows associated with the mining operations. Sockeye juvenile habitat increases would generally be associated with the SFK-C reach, where habitat would be increased by 0.76 acre (44 percent) during mining operations; while rainbow habitat losses would be greatest in SFK-190, where habitat would decrease by 0.15 acre (13.3 percent) during operations.

Changes in habitat for juveniles would be reach-specific. The changes in habitat availability would be less associated with upstream or downstream reach locations, and more dependent on reach-specific habitat features. For example, beginning at the mine site in the NFK drainage, moving downstream in average years, juvenile coho habitat would alternate between increases and decreases in habitat in each reach (NKF-190, NFK-C, NFK-B, NFK-A).

Table 4.24-4 Average precipitation year juvenile habitat for all streams and species in the mine site area pre-mine, during operations, and post-closure

	Habitat Available			Change in Habitat Available			
	Pre-Mine	During Operations	Post Closure	During Operations		Post Closure	
Species	(acres)	(acres)	(acres)	(acres)	(% diff)	(acres)	(% diff)
Chinook	*57.44*	*57.40*	*57.23*	*-0.05*	*-0.1%*	*-0.22*	*-0.4%*
Coho	*55.47*	*55.58*	*55.43*	*0.11*	*0.2%*	*-0.03*	*-0.1%*
Chum	--	--	--	--	--	--	--

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Table 4.24-4 Average precipitation year juvenile habitat for all streams and species in the mine site area pre-mine, during operations, and post-closure

	Habitat Available			Change in Habitat Available			
	Pre-Mine	During Operations	Post Closure	During Operations		Post Closure	
Sockeye	*41.11*	*41.85*	*41.20*	*0.75*	*1.8%*	*0.09*	*0.2%*
Rainbow	*56.01*	*55.70*	*55.59*	*-0.31*	*-0.6%*	*-0.42*	*-0.8%*
Dolly Varden	*62.97*	*63.25*	*63.06*	*0.27*	*0.4%*	*0.09*	*0.1%*
Arctic Grayling	*101.06*	*101.91*	*101.39*	*0.85*	*0.8%*	*0.33*	*0.3%*

North Fork Koktuli

In average precipitation years, juvenile salmonid habitat availability would increase for all species by between 0.03 acre, or 0.2 percent (sockeye) and 0.96 acre or 2.9 percent (Arctic grayling), except for a decrease in rainbow trout habitat of 0.02 acre (0.2 percent). Post-closure, habitat changes would be reduced to less than 1 percent for all species. As mentioned above, the habitat changes would vary based on reach-specific conditions, with the largest percentage of changes occurring in small tributary NFK-190. However, in a downstream direction, reaches would alternate between habitat gains and losses for several species.

South Fork Koktuli

In average precipitation years, juvenile salmonid habitat availability would decrease for all species by between 0.07 acre, or 0.2 percent (Arctic grayling), and 0.31 acre, or 1.5 percent (rainbow trout), except for an increase in sockeye juvenile habitat of 0.73 acre (7.1 percent). Post-closure, habitat changes would be less than 1 percent for all species, except for a decrease in rainbow trout habitat of 0.27 acre (1.3 percent), and an increase in sockeye habitat of 0.14 acre (1.3 percent). The largest changes in habitat in the SFK area are associated with rainbow trout habitat, which increased in the SFK-C reach.

Upper Talarik Creek

Due to low-magnitude flow changes in the UTC basin, juvenile habitat changes for all species would be less than 1 percent during both mining operations and post-closure.

Transportation Corridor

Road Construction

Except temporarily during construction, potential impacts on stream flows are not expected to occur at bridge and culvert crossings. All work in fish-bearing streams would be subject to design considerations, restoration requirements, and timing windows, as specified by ADF&G Title 16 Fish Habitat Permits (AS 16.05.841-871). In accordance with ADF&G criteria, bridge and culvert construction activities in anadromous waters would occur from May 15 to June 15, to avoid impacts to migrating salmon. Infrequent barriers to fish passage could occur at stream crossings using culverts due to temporary blockage. The impact is expected to be localized and temporary. Routine inspection and maintenance of culverts, bridges, and roads would be regularly conducted in compliance with right-of-way (ROW) and ADF&G permit conditions, to ensure that culvert-related erosion, wash-out, or debris blockage do not result in permanent

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impacts to fish passage or downstream habitat. More stringent monitoring and maintenance standards may be required by ROW lease stipulations from respective land owners.

Water withdrawals would occur at lakes, ponds, and streams along the road corridor, according to ADNR and ADF&G permit conditions for dust control and hydrostatic testing during the summer construction seasons; and would not be expected to impact overwintering fish or habitat. Withdrawals from fish-bearing waters would use pump screens certified by ADF&G to prevent fish impingement. Disposal methods for hydrostatic test water would be developed in accordance with APDES General Permit AKG320000 for energy dissipation and sediment control. No chemicals would be added to the hydrostatic test waters.

Natural Gas Pipeline

The final configuration of the natural gas pipeline would generally be within the prism of the access road. Stream crossings would be open cut or HDD at culvert crossings, and attached to bridges at major river crossings. This configuration would reduce the risk of ponding, interception of surface water flows, and sedimentation, as related to the pipeline ditch.

Potential impacts to groundwater and surface water during pipeline construction would likely involve interception of shallow groundwater and surface water during trenching activities, which would be captured and locally flow along the trench backfill. Impacts could extend beyond the life of the project, because the pipeline would be abandoned in place. Ditch plugs are typically installed to intercept shallow groundwater flows. Typical BMPs for surface water management could include maintaining natural surface water patterns; crowning of ditch backfill to allow for settlement to original ground level; contouring of surrounding terrain; construction of settlement infiltration basins; and prompt revegetation of riparian and wetlands and a robust monitoring and maintenance program. Ditch dewatering and hydrotest water would be discharged to approved sites as per Alaska Department of Environmental Conservation (ADEC) requirements. All work in fish-bearing streams would be subject to design considerations, restoration requirements, and timing windows, as specified by ADF&G Title 16 Fish Habitat Permits (AS 16.05.841-871).

4.24.2.4 Stream Productivity

Mine Site

The loss of connection between Tributary 1.19 and the mainstem NFK due to stockpile embankments and pond dams could result in permanent, direct effects on the quantity of spawning habitat by interrupting gravel transport into the mainstem NFK. Geomorphic studies conducted as part of the environmental baseline effort concluded that most instream gravel is recruited from local streambank erosion, rather than transported from upstream reaches, EBD Chapter 3, Geology and Mineralization); however, a source like Tributary 1.19 would also be expected to contribute gravel into mainstem reaches. Two other sizeable tributaries (NFK Tributaries 1.17 and 1.12) meet the mainstem NFK within 5 miles below the mine site, so the effects of reduced gravel recruitment would likely be limited in area. Spawning surveys conducted from 2004 to 2008 indicated the heaviest spawning by coho and chum salmon was concentrated in the mainstem NFK in the 9-mile reach immediately below the mine site and Tributary 1.19. In contrast, Chinook and sockeye salmon spawning areas were concentrated in the mainstem NFK 10 to 20 miles downstream of the mine site, where potential impacts of upstream gravel interruptions are less likely.

Baseline concentrations of dissolved organic carbon in the surface waters in the project area ranged from 1 milligram per liter (mg/L) to 2 mg/L; concentrations of nitrate+nitrite ranged from 0.1 to 0.3 mg/L; and mean concentrations of total phosphorous ranged from 0.02 to 0.04 mg/L,

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indicative of oligotrophic nutrient status in the aquatic ecosystem. This is consistent with the characteristics of headwater stream orders 1, 2, and 3; with existing riparian vegetation providing low inputs of organic matter. The lack of a mature deciduous overstory likely contributes to the oligotrophic conditions, and is unique to headwater streams in the project area; specifically, the NFK and SFK. The extent or scope of the loss of riparian productivity would likely be limited to waters in the vicinity of the mine site footprint, and may not be measurable or detectible downstream from the affected stream channel.

The importance of marine-derived nutrients in Bristol Bay watershed lakes from returning salmon is well documented, as noted in Chapter 3, Affected Environment. As shown in the baseline data above, marine-derived nutrients does not appear to have a measureable influence on the nutrient availability in the Koktuli or uppermost reaches of the Upper Talarik watersheds in the project area. This may be due to the comparatively small numbers of spawning fish, high flushing flows in the fall after spawning has occurred and the lack of large woody debris for carcass retention. The extent or scope of these impacts would likely be limited to waters in the vicinity of the mine site footprint, and may not be measurable or detectible downstream from the affected stream channel.

Transportation Corridor

Road and Pipeline

The road and pipeline would cross 9 anadromous and 35 resident fish streams (Appendix K3.24). In some locations, such as culvert crossings, the road/pipeline footprint would impact riparian and floodplain connectivity in the 100-year floodplain. This could reduce allochthonous inputs and downstream productivity, and would be permanent for the life of the project. Culverts would be designed and installed in accordance with ADOT&PF and ADF&G standards to provide fish passage for all life stages. Other BMPs, such as road fill drain culverts, may be considered to maintain floodplain connectivity. Because of the available riparian habitat that would not be impacted throughout the watersheds, the impacts from the transportation corridor would be expected to be of short duration.

Iliamna Lake Pipeline

HDD would be used to install the pipeline segments from the lakeshore into waters deep enough to avoid navigational hazards, then laid and secured on the lake bottom. Approximately 2.18 acres of the approximately 647,000 acres of available benthic habitat in Iliamna Lake would be permanently impacted.

Ferry Terminal and Operation

Docking facilities for the ice-breaking ferry at the north and south ferry terminals are expected to include rock and gravel ramps extending approximately 40 feet into Iliamna Lake. Consequently, there would be short-term, indirect disturbance effects from ramp construction along the shoreline; and permanent, direct impacts due to loss of approximately 1 acre of benthic habitat under the terminal's footprint. Because of the quantity of available benthic habitat (approximately 234 miles of shoreline/647,000 acres), there would be no anticipated impacts to the overall productivity of Iliamna Lake.

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Amakdedori Port

The port site would permanently impact 14 acres of benthic habitat. Because of the existing 30 million acres of available benthic habitat in Cook Inlet, there would be no anticipated impacts to the overall benthic productivity in Cook Inlet.

4.24.2.5 Stream Sedimentation and Turbidity

The effects of stream sedimentation on fish could occur during all three phases of the project: construction, operations, and closure/post-closure. Mine site activities have the potential to release particulates and sediment into drainages and tributaries from a range of activities and sources, including:

- Soil disturbance, compaction, and vegetation removal;
- Wetland in-filling that reduces sediment retention and exposes soils to erosive forces of wind and/or water;
- Stream erosion from increased flows released as a result of inter-basin diversions and transfers;
- Rock fracturing/processing activities; and
- Runoff from constructed roads, pipeline, and materials sites.

Sedimentation is known to affect the quality and quantity of aquatic habitat. Fine sediments in streams are associated with degradation of salmonid spawning habitat quality, and can affect the survival of incubating eggs; inhibit fry emergence; reduce instream cover and overwintering refuge for juvenile fish; reduce overall fish-carrying capacity; and decrease fish food (BMI) availability (Limpinsel et al. 2017). Although sediment transport and deposition are natural stream processes, major disruptions of the stream system and its functions could occur when sediment delivery is substantially changed, or when the ability or capacity of the stream to transport sediment is altered due to natural events or human activities. Erosion and sedimentation also may elevate turbidity, which can adversely affect fish feeding, growth, and survival (Lloyd 1987).

Elevated turbidity in streams from suspended sediments can have adverse impacts on fish and other aquatic organisms through several mechanisms, such as reduced foraging efficiency of drift-feeding fish, elevated water temperature through increased light absorption, reduced primary production, and damage to gill membranes under conditions of severe turbidity (Bash et al. 2001; Newcombe and Jensen 1996).

The mine site construction would disturb 8,130 acres of surface soil. Components of the mine site that could release sediment into waterways include the 13 embankments for various stockpiles (TSF, overburden, etc.) and ponds (seepage, sedimentation, and water management); parking, laydown and construction sites; materials sites; and haul, access, and service roads. During construction and operation of the mine, surface runoff would be captured by drainage ditches that would route runoff into ponds for treatment at one of two water treatment facilities before discharge into downstream waters. Likewise, seepage from stockpiles would drain into ponds for subsequent treatment and discharge.

The magnitude of stream sedimentation that could result from such disturbance would depend on the effectiveness of required state-of-the-process BMPs under stormwater pollution prevention regulations implemented, monitored, and maintained during all phases of the project. BMPs are designed to mitigate the intensity of surface runoff, erosion, and sediment loads in stream channels. A range of BMPs, including silt fences, bale check dams, sediment retention basins, cross bars and ditches, runoff interception and diversions, gabions and sediment traps,

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mulching of disturbed surfaces and stockpiles, and other measures, would be implemented and monitored along the mine site road corridors and at all bridge and culvert crossings to ensure minimization of potential impacts from erosion and sedimentation. BMPs would also be employed to minimize impacts of surface runoff and erosion at materials sites.

Measurable changes in the quality and character of aquatic habitat from sedimentation would be likely, although impacts are expected to be limited to the mine site and road corridor footprint and immediate downstream areas in the NFK, SFK, and UTC drainages. The duration of sedimentation impacts is likely to be temporary and of short duration. Permit-required monitoring of fine sediments deposited in spawning gravel would identify any degradation in spawning habitat quality and sources of potential impact.

Mine Site

Development and operation of the mine site and its associated facilities (e.g., roads, embankments, and housing) are expected to result in increased surface runoff, which—if not captured and re-routed to treatment facilities—can lead to elevated turbidity in adjacent stream channels. Increased turbidity of discharge effluent may result if treatment of captured water in sediment and seepage ponds is not successful in removing all suspended sediments. Turbidity may also occur due to dissolved solids, which can alter color in treated discharge water. BMPs would be implemented and maintained during construction and maintenance of all mine facilities to minimize surface runoff. All effluent discharged from water treatment plants would be subject to water quality criteria dictated by discharge permits. Treated water would be discharged through buried infiltration chambers designed to provide energy dissipation, erosion control, and freeze protection. Sampling at water discharge locations at all three principal tributaries would monitor any changes in turbidity over background levels, and would identify any out-of-permit conditions and initiate remediation procedures. Impacts to turbidity would most likely be within the mine site footprint; particularly when extreme weather events coincide with ground-disturbance activities.

Transportation Corridor

Road construction, maintenance, and use can result in short- and long-term impacts to streams and drainages from increased surface erosion and deposition of fine sediments; alteration of water temperature; delays or barriers to fish migration at culverts; changes in streamflow and hydrologic processes; and introduction of invasive plant species (Limpinsel et al. 2017). Surface erosion can also result from clearing and grading activities and from poorly surfaced or maintained roads with steep grades, high traffic volume, and insufficient stormwater management facilities. Accumulations of fine sediments in streams have been associated with decreased fry emergence, reductions in winter carrying capacity and benthic production, and changes in species composition in benthic invertebrate communities (NMFS 2011a).

The proposed road would be constructed through existing bedrock and glacial fluvial surface geology using locally processed materials with low erosion potential. Therefore, the indirect effects of erosion and sedimentation are expected to be limited to bridge or culvert crossings. Construction-related sedimentation is expected to be temporary in nature due to permit stipulations and timing windows. Additional monitoring, BMPs, and maintenance standards may be required by ROW lease stipulations from the respective landowners.

The proposed design of the natural gas pipeline would be within the prism of the access road, and attached to bridges at river crossings. This configuration would reduce the risk of ponding, interception of surface water flows, and sedimentation, as related to the pipeline ditch.

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Operations are expected to require 35 truck round trips per day, which would result in dust impacts in proximity to roads, including at stream crossings. Implementation of dust suppression and enforcement of slow speed limits at all stream crossings would minimize dust-related impacts to aquatic ecosystems. Impacts are expected to extend through the life of the project.

Road and Pipeline

Potential impacts on stream turbidity are not expected to occur at bridge or culvert crossings, except temporarily during construction. The impact is expected to be localized to the immediate location of the drainage structure. Bridge and culvert construction activities in anadromous waters would occur from May 15 to June 15 to avoid impact to migrating salmon, according to ADF&G criteria. As stated above, routine inspection and maintenance of culverts, bridges, and roads would be regularly conducted, in compliance with permit conditions to ensure that drainage-structure–related erosion, wash-out, or debris blockage do not result in impacts to water quality or downstream habitat.

Ferry Terminals

Docking facilities for the ice-breaking ferry at the north and south ferry terminals are expected to include rock and gravel ramps extending approximately 40 feet into Iliamna Lake. Consequently, there would be localized, short-duration turbidity effects on fish and benthic organisms during construction.

Amakdedori Port

Temporary increases in turbidity would occur during construction of the Amakdedori Port. Turbidity and deposition of suspended sediments in the nearshore environment at the port site could impact marine benthos. Temporary effects on both migratory and non-migratory marine fish species may also occur, particularly for benthic fish species expected to inhabit the immediate area. Sediment deposition on aquatic vegetation could also reduce potential spawning habitat for species such as Pacific herring. Any impacts from port construction are expected to be of short duration, and localized to the area of disturbance.

4.24.2.6 Fish Migration

Mine Site

The mine site service and haul roads would cross seven fish-bearing streams, not including road crossings where channels enter stockpile embankments or the open pit (Figure 4.24-1). Two of the stream crossings involve anadromous streams, four cross non-resident salmonid streams, and one crosses a sculpin-bearing stream. The anadromous crossing in the NFK drainage is over a branch of Tributary 1.19 that would be permanently blocked to anadromous fish during project construction and operations. The second anadromous crossing is in the headwaters of the mainstem SFK, approximately 1,000 feet below the southern edge of the mine pit. Implementation of BMPs that would minimize the magnitude of impact on fish migration resulting from such disturbances would depend on the effectiveness of BMPs. The seven culverts would be designed and sized for fish passage according to ADF&G standards.

Transportation Corridor

Road and Pipeline

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Potential impacts on fish passage are not expected to occur at bridge crossings, except temporarily during bridge construction. Bridge, pipeline, and culvert construction activities in anadromous waters would occur from May 15 to June 15 to avoid impact to migrating salmon, according to ADF&G criteria. Infrequent barriers to fish passage could occur at culverts due to temporary blockage. The impact is expected to be localized, and temporary in nature. Routine inspection and maintenance of culverts, bridges, and roads would be regularly conducted and reported, in compliance with permit conditions, to ensure that culvert-related erosion, wash-out, or debris blockage do not result in acute or chronic impacts to fish passage or downstream habitat.

Ferry Terminal

As stated above, docking facilities for the ice-breaking ferry at the north and south ferry terminals are expected to include rock and gravel ramps extending approximately 40 feet into Iliamna Lake. There are no anticipated impacts to fish migration associated with these structures due to existing migratory habitat available in Iliamna Lake.

Amakdedori Port

There are no anticipated impacts to fish migration associated with the port structure due to existing migratory habitat available along the shores of Cook Inlet.

Natural Gas Pipeline

The pipeline has the potential to hinder migrations of marine invertebrates (e.g., crabs) but impacts are expected to be minimal and occur at the individual level.

4.24.2.7 Water Temperature

Construction and operations of the mine site may lead to changes in several water quality parameters in area streams that have the potential to impact fish. The ADEC (2009) standards for water temperature criteria associated with growth and propagation of fish, shellfish, and other aquatic life and wildlife in freshwater state that at no time should maximum water temperatures exceed 20 degrees Celsius (°C), with the following life-stage specific maxima: 15°C for migration and rearing, and 13°C for spawning and egg incubation. Ambient water temperatures monitored from 2004 to 2009 frequently exceeded the ADEC 15°C criteria in many stream reaches (ADEC 2009). In each year of study, the daily maximum water temperature in the NFK immediately upstream of the mine site exceeded the 20°C criteria on about 28 percent of all instantaneous readings during the summer months. The lower temperature thresholds for migration and rearing (15°C) were exceeded on 78 percent of summer readings; and the spawning and egg incubation criteria (13°C) were exceeded on 89 percent of summer readings.

Summer baseline water temperatures also exceeded ADEC thresholds in several reaches of the SFK, and to a lesser degree in the UTC. Maximum daily water temperatures exceeded the general 20°C criteria in 17 percent of measurements at multiple stations in the SFK, but daily maxima remained below the threshold in the UTC. Exceedance percentages for the 15°C migration and rearing thresholds for the SFK and UTC were 76 percent and 44 percent, respectively; whereas comparable exceedance values for the 13°C spawning and egg incubation criteria were 93 percent of summer readings in the SFK, and 59 percent of readings in the UTC.

Although the water temperature regimes in the project area frequently exceeded the ADEC criteria during the 2004-2009 sampling period, adult and juvenile salmon and resident trout

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remained abundant. However, any reduction in streamflows during the summer base-flow period may have a direct impact on salmonids through increased water temperatures; and potentially, through decreased temperatures during the winter base-flow period. Direct impacts could affect egg/fry incubation and availability of prey species during low-flow events. Although the water temperature regimes in the project area frequently exceeded the ADEC criteria during the 2004-2009 sampling period, adult and juvenile salmon and resident trout remained abundant. Impacts associated with changes in water temperature are discussed below by drainage area.

North Fork Koktuli River

Average changes in water temperature are expected to increase approximately 1.2 degrees Celsius (°C) during summer, and 2.8°C during winter within 0.5 mile downstream of the water discharge location. As described in Chapter 3, Affected Environment, Chinook and other salmon species have been observed spawning in this reach of the NFK. Modeled discharges indicate that water temperatures would not exceed ADEC's temperature threshold for spawning fish of 13°C for the summer months during mine operations and closure. Baseline winter water temperatures in this reach are just above 0°C. A 2.8°C increase in surface water temperature would be well below the ADEC threshold, and would not be expected to adversely impact incubating eggs, juveniles, or other overwintering resident fish.

South Fork Koktuli River

Average changes in water temperature are expected to decrease approximately 0.15°C during summer, with no change in winter water temperatures 1 mile downstream of the water discharge location. Sockeye and coho salmon have been documented using this reach of the SFK and Frying Pan Lake as rearing habitat. A decrease of 0.15°C in water temperature would not be expected to adversely impact rearing fish.

Upper Talarik Creek

Average changes in water temperature are expected to increase approximately 0.12°C during summer and 0.54°C in winter 3 miles downstream of the water discharge location. As described in Chapter 3, Affected Environment, Chinook, sockeye, and coho salmon use this reach of the UTC for spawning and rearing. Modeled discharges indicate that water temperatures would not exceed ADEC's temperature threshold for spawning fish of 13°C for the summer months during mine operations and closure (2018 PLP-RFI 047). Baseline winter water temperatures in this reach are just above 0°C. A 0.54°C increase in surface water temperature would be well below the ADEC threshold, and would not be expected to adversely impact incubating eggs, juveniles, or other overwintering resident fish.

Water Chemistry

Baseline natural water quality conditions have been documented throughout the project area, and can be referenced in the EBD Section 4.18, Water and Sediment Quality. Water would be treated prior to discharge into NFK, SKF, and UTC in compliance with applicable water quality standards established to protect aquatic life, as specified in the APDES permit described in Section 4.18, Water and Sediment Quality. Treated water would be discharged to buried infiltration chambers designed to provide energy dissipation, erosion control, and freeze protection. Compliance monitoring during construction, operations, and closure would assure water quality standards are maintained to protect fisheries resources. Any water chemistry impacts to fish and other aquatic life would not be measurable.

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Metals concentrations in surface water would be expected to increase 0.11 – 0.66% due to fugitive dust deposition. Surface water quality at the open pit and main Water Management Ponds (WMPs) would exceed water quality standards. As described in Appendix K4.18, both WTP#1 and WTP#2 would utilize treatment plant processes commonly used in the mining and other industries around the world. Key treatment steps for both WTPs would include dissolved metals oxidization, co-precipitation, clarification, ultrafiltration, and reverse osmosis (RO) (Figures 2-10 and 2-11). The open pit WTP would also include biological selenium removal, and the main WTP would also include nanofiltration through high-pressure membranes (expected to remove selenium and other salts) and multi-stage calcium sulfate precipitation with a lime softening process. Clarifier solids filter backwash from both WTPs would be thickened/evaporated and transferred to the pyritic TSF (HDR 2018a; PLP 2018d, 2018-RFI 021d).

The ADEC regulates wastewater discharges from hard-rock mining facilities through various permits, including:

- Alaska Pollutant Discharge Elimination System (APDES) Individual Permit for point source discharge into WOTUS
- Integrated Waste Management Permit for solid waste disposal and wastewater discharge not into WOTUS
- APDES Multi-Sector General Permit for storm water discharge
- Domestic Wastewater Discharge Permit.

State of Alaska regulations require that the condition of these permits ensure compliance with the state water quality standards that are based on the use classification for the water body receiving discharge, and the state's anti-degradation policy. Some water bodies may also have site-specific water quality criterion. For constituents that exceed criteria in background surface water and groundwater (Section 3.18.1, Appendix K3.18), there are currently no plans to incorporate site-specific background levels of constituents into discharge limits (ADEC 2018-RFI 064a).

4.24.2.8 Essential Fish Habitat

[NOTE: EFH ASSESSMENT CURRENTLY UNDER WAY. EFH WILL BE INCLUDED IN THE DRAFT EIS].

Summer Only Ferry Operations Variant

The summer only ferry options variant is described in Chapter 2, Alternatives. Potential impacts associated with this variant would be similar to those described under Alternative 1.

Kokhanok East Ferry Terminal Variant

The route into Kokhanok East avoids the requirement for a bridge across the Gibraltar River, a major river crossing under Alternative 1. Potential impacts to fish and aquatic habitat in the Gibraltar River would be reduced under this variant. Potential impacts to fish and aquatic habitat for the eight streams crossed by this route would be similar to impacts described under Alternative 1, transportation corridor. Potential impacts associated with the ferry terminal location on Illiamna Lake would be similar to those described under Alternative 1.

Pile Supported Dock Variant

The pile supported dock variant is described in Chapter 2, Alternatives. Under this variant, less benthic habitat would be potentially impacted in Cook Inlet due to the smaller port footprint.

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4.24.3 Action Alternative 2 – North Road and Ferry

4.24.3.1 Mine Site

Impacts would be similar to those described in Alternative 1.

4.24.3.2 Transportation Corridor

The Alternative 2 road alignment crosses the same number of anadromous fish streams, but 28 fewer resident fish streams than Alternative 1; consequently, there would be less permanent impacts to fish habitat. Short-duration, localized impacts to habitat and water quality during construction would be similar to Alternative 1. Ferry operations from Eagle Bay to Pile Bay would have similar impacts to fish and fish habitat as ferry operations described under Alternative 1.

Summer-Only Ferry Variant

Ferry operations from Eagle Bay to Pile Bay would have similar impacts to fish and fish habitat as ferry operations described under Alternative 1.

4.24.3.3 Diamond Point Port

Construction of dock facilities at Diamond Point would have a greater spatial and temporal direct impact on marine fisheries and benthic invertebrates than Alternative 1, because the footprint of these structures would cover roughly 90 more acres of benthic habitat than the Amakdedori port (PLP 2018-RFI 072). Dredging of the approximately 650,000-cubic-yard marine substrate at the Diamond Point location would be required to achieve a 20-foot depth of water required for operations. Benthic organisms within the footprint of the dock facilities and dredge channel would experience direct impacts and mortality for the life of the project. Short-term turbidity and sedimentation could impact fish migration and spawning substrates during construction. Noise impacts from sheet-pile installation during construction could cause injury or mortality to fish and benthic organisms.

Maintenance dredging over 2 decades of the mine life would impact an area of approximately 60 acres. These activities would impact benthic organisms, and temporarily increase turbidity and suspended sediment in the water column, which would be redeposited on marine substrate, effects that would not occur under Alternative 1. The extent of these effects could range from localized, to beyond the mouth of Iliamna Bay, depending on tides and wave conditions.

Pile-Supported Dock Variant

Construction of a pile-supported dock at Diamond Point would result in less direct impact to benthic habitat and organisms than a fill causeway, because piles would be driven through vibratory and hammer methods, and require no fill (PLP 2018-RFI 072). Noise impacts from pile installation during construction could cause injury or mortality to fish and benthic organisms. Short-duration and limited suspended sediment impacts would be expected to occur during construction of the pile structure.

4.24.3.4 Natural Gas Pipeline Corridor

Impacts to fish habitat and water quality would be the same as described under Alternative 1 for the portion of the pipeline beginning on the Kenai Peninsula and crossing Cook Inlet to Kamishak Bay. Impacts would be the same as described under Alternative 3–transportation Corridor for the portion from Diamond Point to the mine site.

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The pipeline corridor through Ursus Cove to Diamond Point would cross two additional anadromous fish stream crossings with associated impacts to fish and fish habitat similar to other sections of the natural gas pipeline corridor. Additionally, the pipeline trench has the potential to impact benthic and intertidal habitats in Ursus Cove during construction.

4.24.4 Action Alternative 3 – North Road Only

Under Alternative 3, impacts to the pipeline corridor would be the same as those described under Alternative 2. The following section describes impacts for the mine, transportation corridor, and port that would be different under Alternative 3.

4.24.4.1 Mine Site

Under Alternative 3, impacts to the mine site would be the same as described under Alternative 1.

Concentrate Pipeline Variant. The concentrate pipeline from the mine to the port under this alternative would require an electric pump station at the mine site, which would require a small increase in fill placement over stream substrate in an NFK east tributary (PLP 2018-RFI 066). This alternative would also reduce the amount water treatment plant water released at discharge locations at the mine site by approximately 1 to 2 percent (PLP 2018-RFI 066), which could result in slight reductions of temperature effects, aquatic habitat availability, and turbidity or erosional effects at treated water discharge locations.

4.24.4.2 Transportation Corridor

While Alternative 3 would increase the project footprint, fisheries impacts associated with the ferry crossing of Iliamna Lake would be eliminated. The North Road Only route would result in an increase of 15 anadromous stream crossings, and a reduction of four resident stream crossings relative to Alternative 1, with a corresponding increase in fish habitat and riparian wetlands impacts (described under Alternative 1).

4.24.4.3 Diamond Point Port

Under Alternative 3, impacts to the port site would be the same as described under Alternative 2.

4.24.4.4 Natural Gas Pipeline

Impacts to fish habitat and water quality would be the same as described under Alternative 1 for the portion of the pipeline beginning on the Kenai Peninsula and crossing Cook Inlet to Kamishak Bay. Impacts would be the same as described under Alternative 3 – transportation corridor for the natural gas pipeline portion from Diamond Point to the mine site.

Concentrate Pipeline Variant. Inclusion of a concentrate pipeline under this alternative would result in a slightly greater impact to fish and fish habitat than Alternative 3 without the concentrate pipeline. The concentrate pipeline would be buried at the same time as road construction, and the road corridor widened by less than 10 percent for inclusion of the pipeline, which could result in a marginal increase in water quality impacts during construction and fill placement over riparian wetlands. Because only the molybdenum concentrate (2.5 percent of the total concentrate production) would be trucked from the mine site to the port, a large reduction in road traffic would be anticipated, thereby reducing some potential impacts from dust, erosion, and runoff.

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4.24.5 Summary of Key Issues

Table 4.24-5: Summary of Key Issues for Fish and Aquatics

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
Mine Site			
Mine Site Construction and Operations	**Aquatic Habitat:** **NFK**: Permanent loss of 6.2 miles of anadromous fish stream habitat and 12.7 miles of resident fish stream habitat. **SFK**: Permanent loss of 1.1 miles of resident fish stream habitat Permanent effects to instream habitat downstream of mine site during operations and closure due to reduced stream flows. Permanent loss of 276 acres of riparian habitat functions within mine site footprint. **NFK**: Average temperature changes due to water discharge would be expected to be approximately 1.2 C (summer) and 2.8 C (winter) ½ mile downstream of discharge point. **SFK**: Average temperature changes due to water discharge would be expected to be approximately -0.15 C (summer) 1 mile downstream of discharge point. **UTC:** Average temperature changes due to water discharge would be expected to be approximately 0.12 C (summer) and 0.54 C (winter) 3 miles downstream of discharge point. Metals concentrations in surface water would be	Impacts similar to those of Alternative 1. 45 to 60% increase in fill required, increasing impacts associated with larger fill volume/footprints, including potential for increased erosion and surface water turbidity impacting aquatic habitat and organisms.	Impacts similar to those of Alternative 1. **Concentrate Pipeline Variant** – mine site footprint increased by 0.7 acre with potential impact on aquatic habitat. Concentrate pipeline variant – estimated decreased discharge volume by 1-2% at discharge locations. Potential reduction in effects on aquatic habitat and organisms.

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Table 4.24-5: Summary of Key Issues for Fish and Aquatics

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	expected to increase 0.11 – 0.66% due to fugitive dust deposition. Surface water quality at the open pit and main Water Management Ponds (WMPs) would exceed water quality standards. Water would be contained within the mine site and treated to meet water quality standards prior to discharge to the environment. Metals concentrations in sediment would be expected to increase 0.11 – 3.17% due to fugitive dust deposition. Local fish disturbance and mortality would occur during construction would be expected.		
Transportation Corridor			
Transportation Corridor Construction and Operations	**Aquatic Habitat:** Permanent loss of approximately 13.5 acres of riparian habitat within corridor footprint at fish stream crossings. Disturbance of instream habitat at culvert and bridge crossings during construction would be expected. Temporary and localized impacts to water quality including increases in sedimentation and turbidity during culvert and bridge construction would be expected. Temporary and localized impacts to shallow groundwater during pipeline installation would be expected, **Aquatic Organisms** Fish disturbance and	Impacts would be similar to those described in Alternative 1 although greater in geographic extent due to the increased number of waterbodies crossed by the road corridor. **Road Stream Crossings** Total: 21 Resident: 8 Anadromous: 6	Impacts similar to those of Alternative 1. Increase of 15 anadromous stream crossings, and a reduction of four resident stream crossings relative to Alternative 1. **Concentrate Pipeline Variant** – increased area of disturbance as the road corridor would be widened for pipeline inclusion,

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Table 4.24-5: Summary of Key Issues for Fish and Aquatics

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	mortality during culvert and bridge construction Temporary and localized impacts to fish migration during culvert and bridge construction would be expected. Stream Crossings Total: 97 Anadromous: 8 Resident: 36		
Ferry Construction and Operations	**Aquatic Habitat:** Permanent loss of approximately 1 acre benthic habitat below OHW beneath footprint of Ferry terminal. Temporary and localized increase in sedimentation and turbidity during construction would be expected. **Aquatic Organisms:** Temporary disturbance and mortality of benthic organisms within the terminal footprint would be expected. Temporary and localized impacts to fish migration during construction would be expected. Temporary and localized impacts of propeller and wake disturbances during operation would be expected.	Impacts similar to Alternative 1.	No ferry under Alternative 3.
Port Site			
Port Site - causeway fill/construction	**Aquatic Habitat:** Permanent loss of 14 acres of benthic habitat beneath footprint of causeway and jetty. Temporary and localized increase in sedimentation and turbidity during construction would be expected. **Aquatic Organisms:**	**Aquatic Habitat:** Permanent loss of 15 acres of benthic habitat beneath dock footprint and 61 acres associated with channel dredging. **Pile-Supported Dock Variant** Reduction from 15 acres aquatic habitat loss beneath dock footprint to	Impacts similar to Alternative 2.

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Table 4.24-5: Summary of Key Issues for Fish and Aquatics

Impact Causing Project Component	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variants
	Disturbance and mortality of benthic organisms within the port footprint below OHW. Potential for disturbance and mortality during installation of sheet pile would be expected. Temporary and localized impacts to fish migration during construction would be expected. Temporary and localized impacts of propeller and wake during operation would be expected. **Pile-Supported Dock Variant** Foot print reduced to 0.1 acre of benthic habitat impact compared to 14 acres compared to Alternative 1. Reduced mortality due to smaller footprint. Potential for increased noise induced mortality during installation of piles.	0.1 acres. Other impacts similar to Alternative 1.	
Natural Gas Pipeline			
Construction and Installation of Natural Gas Pipeline	**Aquatic Habitat:** Permanent loss of 2.1 acres benthic habitat beneath footprint in Iliamna Lake and 22.79 acres of benthic habitat in Cook Inlet. Localized increase in sedimentation and turbidity during construction. Temporary and localized disturbance of aquatic organisms during construction.	Impacts similar to Alternative 1. Additional area of disturbance three additional stream crossings. **Pipeline Stream Crossings:** Total: 116 Resident: 28 Anadromous: 23	Impacts similar to Alternative 1. **Pipeline Stream Crossings:** Total: 116 Resident: 28 Anadromous: 23

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4.24.6 Cumulative Effects

Past, present, and reasonably foreseeable future actions (RFFAs) in the cumulative impact study area have the potential to contribute cumulatively to aquatic resource impacts. Section 4.1, Impact Assessment Framework, details the past, present, and RFFAs considered for evaluation. Several of the RFFAs detailed in Section 4.1 are considered to have no potential for cumulatively impacting aquatic resources in the study area. These would include non-industrialized point source activities that are unlikely to result in any appreciable impact beyond a temporary basis (e.g., tourism, recreation, and hunting). Other RFFAs removed from further consideration include those sufficiently distant from the study area to eliminate infrastructure co-use by other parties (e.g., Donlin, Copper Joe).

RFFAs that could contribute cumulatively to aquatic resource impacts, and are therefore considered in this analysis, are those activities that would occur in the Nushagak River or Kvichak River drainages, or in other waterbodies intersected by the transportation corridor in the Cook Inlet drainage. RFFAs, combined with natural events, have the potential to contribute to adverse effects on aquatic resources by altering flow regimes and drainage patterns; direct habitat loss; diminishing water quality from riverbank erosion, turbidity, and sedimentation; changes in water chemistry; and degrading the extent of productive habitat conditions.

The following RFFAs identified in Section 4.1, Impact Assessment Framework, were carried forward in this analysis based on their potential to impact aquatic resources in the analysis area:

- Pebble project buildout – develop 55 percent of the resource over a 78-year period
- Pebble South/PEB*
- Big Chunk South*
- Big Chunk North*
- Fog Lake*
- Groundhog*
- Shotgun
- Alaska Stand Alone Pipeline
- Alaska LNG Project
- Drift River Oil Facility Demobilization
- Cook Inlet Oil and Gas Sales
- Lake and Pen Borough Transportation and Renewable Energy Initiatives
- Nushagak Electric CO-OP Village Intertie Project
- Diamond Point Rock Quarry

**Indicates exploration activities only.*

The most important potential future actions included in this analysis are those that are likely to contribute to aquatic resource conditions, and are regionally common to the project. Because development at remote locations can be financially prohibitive, RFFAs in proximity to the project that could potentially minimize costs through co-use of project infrastructure are also considered important in this analysis.

The Pebble Project buildout and commercialization of the Shotgun prospect are the only mineral deposit RFFAs considered for exploration and development. All other mineral deposit RFFAs are considered for exploration only. The Pebble Project buildout is the most notable RFFA, and would result in additional development not included under Alternative 1:

- Increased pit footprint
- Increased TSF and waste rock storage capacity
- Additional processing infrastructure

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- Construction of a new port site with diesel fuel and concentrate pipeline(s) extending to the mine site.

The additional acreage of disturbance at the mine site would be greater than Alternatives 1 and 2 combined, based on infrastructure build-out at the mine site. The build-out would correspond to an increase in magnitude and local extent of disturbance impacts and potential for aquatic resource impacts would increase, and would be greater than Alternatives 1 and 2 combined. Additional design features to capture and treat impacted water and waste streams would be necessary to manage mine site impacts. Also, the addition of a diesel fuel line would increase the likelihood of hydrocarbon spills along and at the terminals of the pipeline, potentially contributing to the cumulative impact of spills on aquatic resources.

Development of the Shotgun prospect could reduce fish habitat. The Shotgun prospect would not physically overlap with the Pebble project area, and the cumulative impact in the common areas of the lower Nushagak watershed would be expected to be minimal if BMPs are applied, and engineering design features achieve the anticipated water quality controls.

Some limited RFFAs associated with mineral exploration activities (e.g., Pebble South, Big Chunk North, Big Chunk South, Fog Lake, and Groundhog) could have some limited aquatic resource impacts, primarily water quality, in watersheds common to the project (e.g., drill pads, camps); however, they would be seasonally sporadic, temporary, and localized, based on remoteness. Although exploration activities are considered to have minimal cumulative impacts to soil resources, there could be potential for greater surface water and substrate impacts from future development through transportation infrastructure co-use with the project.

The footprint of the Diamond Point rock quarry coincides with the Diamond Point port footprint under Alternatives 2 and 3. Cumulative impacts would be limited to a potential increase in localized aquatic resource impacts from commonly shared project footprints with the quarry site under Alternatives 2 and 3.

Cook Inlet RFFAs, including Alaska Stand Alone Project, Alaska LNG, and Cook Inlet lease sales, would increase shipping traffic, and result in temporary disturbance to aquatic resources. Loss of fish habitat associated with new ports and drill rigs would be minimal in the context of Cook Inlet. Construction and operations of these projects would increase the likelihood of a spill; however, this is considered unlikely. Temporary effects from sedimentation during construction are likely, but expected to be minimal.

Overall, the magnitude of cumulative impacts to aquatic resources from RFFAs in general would be expected to be minimal, with the exception of RFFA activities in the immediate mine site (e.g., Pebble Project buildout). The cumulative effects in the mine site footprint, expanded to include buildout development, would increase; but it is expected that controls would be in place to manage those impacts to mitigate adverse effects on aquatic resources.

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Message

From: POA Special Projects [poaspecialprojects@usace.army.mil]
Sent: 10/22/2018 6:55:41 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: stand-alone project description from the applicant (UNCLASSIFIED)
Attachments: 10_10_2018_Updated_ProjectDescription.pdf

CLASSIFICATION: UNCLASSIFIED

It has come to my attention that the revised PD from the applicant was difficult to open and view, as I had it embedded in the pdf of the email. Attached is the stand alone version of the project description from 10/10/2018. My apologies and if anyone has difficulty or questions, please give me a call.

VR

Shane McCoy
Program Manager
907-753-2715
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

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Message

From: John Eddins [jeddins@achp.gov]
Sent: 8/31/2018 10:21:58 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; Katherine A. McCafferty [katherine.a.mccafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: ACHP's comments on the pre-draft Chapters 4.1 and 4.7 of the EIS.
Attachments: ak.coe-r.achp comments on EIS pre-draft chap 4.1-4.7.jl.con.31aug18.pdf; ACHP comments 20180726 Sec4.7_CulturalRes_FINAL.pdf

All
Attached are ACHP's comments on the pre-draft Chapters 4.1 and 4.7 of the EIS.
Also, please remove Charlene Vaughn from the email address list. She has retired.
John

John T. Eddins
ACHP
202-517-0211
https://www.achp.gov/
e106-online section 106 documentation submittal system
now available to all federal agencies
on the web at: https://www.achp.gov/e106-email-form
ACHP offers NEW free and low-cost e-learning courses
for the public, applicants, and NEPA-106 practitioners.
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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.7 CULTURAL RESOURCES

4.7.1 No Action Alternative

Under the No Action Alternative, the Pebble Project would not be developed at the Mine Site, and construction of Amakdedori Port, the Transportation and Natural Gas Pipeline corridors, and associated infrastructure would not be approved or permitted. The Programmatic Agreement (PA) for the project would not be executed, but the regular process for complying with Section 106 of the National Historic Preservation Act (NHPA) would apply to any other projects in the area that require federal authorization. No direct, indirect, or cumulative impacts on cultural resources would result from implementation of the No Action Alternative.

4.7.2 Action Alternative 1 – Applicant's Proposed Alternative

This section discusses the environmental consequences of construction, operation, and closure of the mine on cultural resources. Cultural resource types discussed in this section are defined broadly as described in the affected environment section (Section 3.7, Cultural Resources). Cultural resources may include prehistoric and historic period ~~archaeology~~ archaeological sites, Traditional Cultural Properties (TCPs), locations or sites associated with place names in the oral history or cosmology of Indian tribes, including Alaska Native Villages and Regional or Village Corporations, as those terms are defined in the Alaska Native Claims Settlement Act, and of other ethnic and cultural groups, traditional resource collecting areas (subsistence), sacred or religious sites, and historic-era sites such as cabins or shipwrecks.

None of the identified cultural resource sites have been evaluated to determine whether they are eligible for listing in the National Register of Historic Places (NRHP); therefore, for purposes of this analysis, all known sites have been assumed to be eligible for the NRHP. Potential effects on cultural resources were evaluated primarily by using geographical information system (GIS) spatial analysis to compare the locations of cultural resources to the proposed locations of project facilities. When cultural resources are identified within the project footprint, the type of activity proposed for the specific location of the cultural resources is assessed to consider the potential direct, indirect, and cumulative effects.

Not all project components have been inventoried for cultural resources during the baseline studies completed by Pebble Limited Partnership (PLP) between 2004 and 2012; to date, only the Mine Site has been subjected to cultural resource field investigations. The completed

Comment [ACHP-JTE1]: To reiterate the distinction between cultural resources and Historic Properties, best to reiterate Definition of Historic Properties here. Best to refer to the definition in the Section 106 regulations at 36 CFR §800.16(l) or to any clarification provided in Chapter 3.7.

Comment [ACHP-JTE2]: Does this mean Corps intends to treat them as eligible for the purposes of Section 106? If so, has SHPO concurred with this?

Comment [ACHP-JTE3]: APE may appropriately extend beyond the project footprint.

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investigations, however, do include background literature and file reviews for a broader regional area. Based on those documents, the baseline studies suggest that no additional cultural resource investigations have occurred in the project area beyond those completed by PLP. The absence of surveys for some project components necessarily limits the analysis of environmental consequences and the ability to forecast indirect and cumulative effects on cultural resources.

[Note: More information is pending additional cultural surveys, as requested in RFI 25.]

The lack of cultural resource survey data in certain areas is one reason for completing a PA for the project. PLP will develop a PA in consultation with the Alaska State Historic Preservation Office (SHPO), federally recognized tribal governments (Tribes), and other consulting parties. The PA will outline ongoing consultation efforts and establish the requirements and process for an additional field inventory, NRHP evaluations, and subsequent mitigation measures (including site avoidance if possible).

For sites with unresolved eligibility status, further work is required to determine significance levels and develop NRHP eligibility recommendations for review and concurrence by the SHPO. The process for completing ongoing evaluations would be captured in the PA.

In summary, new construction and associated ground-disturbing activities in all four project component areas (the Mine Site, Amakdedori Port, the Transportation Corridor, and the Natural Gas Pipeline Corridor) could result in direct and indirect effects under the National Environmental Policy Act (NEPA) and adverse effects to historic properties under Section 106 (to use NHPA terms). Direct effects on cultural resources ~~are considered to be~~can include the destruction or burial of, or other damage to or alteration of, cultural resources resulting from ground-disturbing actions or construction and operation of mine facilities. Development of the mine would result in the physical destruction of or damage to cultural resources and would irreversibly alter the characteristics that ~~qualify~~ might qualify these ~~sites~~ cultural resources for inclusion in the NRHP. Indirect effects are those that occur later in time or are further removed in distance from the action, such as a change in setting or context or the increased access to archaeological sites that would result from constructing the mine access road.

The project would also introduce new visual, atmospheric, and audible elements that might diminish the significance of cultural resources. Sites would be subject to increased public use (including use by mine personnel) and potential damage. Some effects may be both direct and indirect. For example, the introduction of visual, atmospheric, or audible elements could immediately diminish the qualities of a cultural resource site that contribute to its significance, and could diminish the use or function of the site in the future.

The EIS analysis area for cultural resources is larger than the area of expected ground disturbance, to account for both potential direct and indirect effects of the project. The EIS analysis area and the Area of Potential Effect (APE) would be defined to account for both direct and indirect effects. Once defined, the APE will distinguish between areas of direct impacts and surrounding areas that likely would be subject only to indirect effects. Given the size of the area where indirect effects will be considered, more cultural resource sites in that area that are not currently discussed in Section 3.7, Cultural Resources, may be added. No formal consultation has occurred between PLP and the SHPO or other interested parties regarding the definition and delineation of the project's APE, but consultation would take place before PLP could proceed with the project.

Both NEPA and the NHPA offer methods for identifying measures to avoid or minimize impacts on cultural resources. For example, PLP may choose to redesign the project to avoid impacts on sites in the project footprint. If impacts are not avoidable, mitigation would be required and

Comment [ACHP-JTE4]: This chapter should also characterize identification effort that still needs to be carried out and status/timing of such efforts, or reference the characterization that should be added to Chapter 3.

Comment [ACHP-JTE5]: What is the anticipated timing for development of a PA. When will it start? What is the status of the Section 106 review?

Comment [ACHP-JTE6]: Even if a PA will be developed to do this, a general outline of what the federal agencies think is needed should be provided in this chapter, or in chapter 3.

Comment [ACHP-JTE7]: Why assume all known sites are eligible, as referenced on p. 4.7.1 if evaluations will be ongoing? What is the purpose of stating that all known sites have been assumed to be eligible?

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Comment [ACHP-JTE8]: According to the timing requirements in the Section 106 regulations, a federal agency must complete Section 106 prior to approving an undertaking and allowing it to begin. Executing a PA can conclude the Section 106 review as long as it contains protocols to complete the steps in the Section 106 review that have not been finalized. A PA can't really be executed before the APE is delineated. The APE can change as the review proceeds.

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the PA would define specific stipulations that would govern appropriate mitigation outcomes. Mitigation may include data recovery. In that case, the PA would define specific stipulations for crafting a research design and data recovery plans involving review and consultation with the SHPO, Tribes, and other signatory parties. Archaeological monitoring may also be involved, which would entail the development of an archaeological monitoring plan approved by the SHPO and other consulting parties. Consultation with Tribes under Section 106 of the NHPA has also not been initiated with the specific objective of investigating the presence or absence of TCPs, sacred sites, place names, and other areas of importance to Tribes.

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[Note: The GIS data set for place names and subsistence use areas has not yet been integrated into this analysis. An RFI is being developed to get this data from PLP consultants.]

The data available and methods used for the cultural resource inventory in the Mine Site area are adequate to reasonably evaluate foreseeable significant and adverse effects on cultural resources. However, the data are insufficient at this time to derive reasonable evaluations of impacts on cultural resources at Amakdedori Port and in the Transportation and Natural Gas Pipeline corridors. Further work is needed to better frame a reasonable assessment of environmental consequences for these components.

Comment [ACHP-JTE9]: How do we know? Has the work been done to identify indirect effects from construction and operation of the mine site?.

[Note: More information is pending additional cultural surveys, as requested in RFI 25.]

4.7.2.1 Mine Site

Only one previously recorded archaeological resource exists within the footprint of the mine study area footprint. Site ILI-00251 would be within the main embankment of the seepage collection pond at the tailings storage facility. An additional site, ILI-00218, would be located within 0.5 mile of the mine facility footprint.

Site ILI-00251 would be directly affected by the project. Construction of the main embankment of the seepage collection pond at the tailings storage facility would result in the destruction of this site. Site ILI-000218 would be subject to indirect effects, including increased access to the area during mine construction. This site is an isolated lithic. Because ILI-00218 is a single prehistoric artifact, indirect effects would likely be minimal. Neither resource at the Mine Site is likely eligible for listing in the NRHP, although no determination has been completed.

Comment [ACHP-JTE10]: Are isolates considered archaeological sites in Alaska???? Is this site considered eligible for the NRHP???

4.7.2.2 Amakdedori Port

No cultural resource sites have been identified within the footprint of the Amakdedori Port project component, largely because of the lack of in-depth background research or field inventories at this location. Two sites are present in the vicinity: ILI-00044 and ILI-00291.

Comment [ACHP-JTE11]: It would be more accurate and clear for readers if this started out by clearly stating that no surveys have yet been carried out! It's important to avoid the confusion that can develop as a result of lack of clarity.

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Site ILI-00044, Amakdedori Village, has not been fully surveyed and distinct site boundaries have not been established. This site would be subject to indirect project effects, including increased site access and visual effects caused by an alteration of the site's viewshed. If a site survey defined boundaries that extend within the project area, there may result in direct impacts on the site.

Site ILI-00291, a historic shipwreck, has not been identified in the field. If underwater archaeological investigations locate the site within the project area, it could result in direct impacts. However, depending on the location of this site, indirect effects may result from increased sedimentation or subsurface wave action caused by placement of pilings for the causeway and shipping channel.

[Note: More information is pending additional cultural surveys, as requested in RFI 25.]

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4.7.2.3 Transportation Corridor

No cultural resources have been identified in the Transportation Corridor, although two sites exist in the vicinity of Amakdedori Port as discussed above. Approximately 10 more sites would be present within 1 mile of the Transportation Corridor. These include a cluster of sites near Kokhanok and proximal to the south shore of Iliamna Lake, and isolated sites near the north end of the mine access road at its entrance to the Mine Site. These sites include a mix of historic-era buildings and prehistoric archaeology sites.

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If sites are identified in the road construction corridor (including the ferry terminal locations) they may be damaged or destroyed by ground-disturbing activities and subject to significant direct effects.

The 10 cultural resource sites within roughly 1 mile of the Transportation Corridor would be subject to indirect effects resulting from road construction. These effects include increased access that would raise the potential for site damage by dispersed human activity and visual effects caused by alteration of the viewshed from construction of a new road and ferry terminals. Indirect effects on these sites would be minimal. There are historic structures in Kokhanok that would be susceptible to indirect visual effects. Further analysis is required to assess whether setting and feeling are character-defining qualities that make these historic-era buildings significant and whether introducing new visual elements in the vicinity would have an adverse effect (to use NHPA terms) on these qualities. The potential for indirect effects is greater for the historic built environment than for surficial or buried archaeological sites.

Comment [ACHP-JTE12]: Visual effects are not usually considered adverse effects for archaeological sites, unless the site is eligible under criteria other than d and the context and setting are characteristics of the property that contribute to its significance and eligibility for inclusion on the NRHP.

4.7.2.4 Natural Gas Pipeline Corridor

For the purpose of the impact analysis, the Natural Gas Pipeline Corridor consists of three distinct segments: the land-based site of the compressor station on the east side of Cook Inlet; the Cook Inlet crossing, where the proposed pipeline would be submerged; and the pipeline from Amakdedori Port to the Mine Site.

No cultural resource sites have been identified in the corridor of the land-based segment on the east side of Cook Inlet; however, analysis is still underway to determine whether this area has been fully surveyed. If an additional survey or research identifies any cultural resource sites at the location of the compressor station, such sites may be subject to direct effects, and the neighboring sites would be subject to indirect effects. However, it is anticipated that indirect effects would be temporary and minimal because construction would not result in appreciable changes to viewsheds.

No underwater archaeological investigations have been conducted for the alignment of the submerged pipeline beneath Cook Inlet. Project construction would directly affect any shipwrecks or other cultural resource sites within the alignment. Sites situated adjacent to the pipeline route beneath Cook Inlet may be subject to indirect effects from subsurface wave action and sediment disturbance, but these types of indirect effects would be anticipated to be minimal and unlikely.

The segment of the Natural Gas Pipeline Corridor from Amakdedori Port to the Mine Site would be co-located with the Transportation Corridor; thus, the preceding effects discussion also applies here. However, development of this project component is less likely than development of the Transportation Corridor to result in indirect effects, because the pipeline would be buried. Indirect effects along the Transportation Corridor would be attributable to road construction, not to the pipeline component.

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4.7.2.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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Preserving America's Heritage

August 31, 2018

Ms. Sheila Newman
Program Manager-Large Projects
USACE-Regional Regulatory Division
Alaska District, U.S. Army Corps of Engineers
P.O. Box 6898
JBER, AK 99506-0898

Ref: ACHP comments on pre-draft sub-Chapter 4.1 and sub-Chapter 4.7, Pebbles Mine Project EIS
DA permit application POA-2017-271
Lake and Peninsula Borough, Kenai Peninsula Borough, Alaska

Dear Ms. Newman:

The Advisory Council on Historic Preservation (ACHP) is providing initial comments on the pre-draft versions of sub-Chapter 4.1: *Approach To Environmental Analysis* and sub-Chapter 4.7: *Cultural Resources* of Chapter 4: *Environmental Consequences* for the Environmental Impact Statement (EIS) being developed by the Corps of Engineers, Alaska District (Corps) for the Pebbles Mine Project in Alaska. The ACHP has made comments and edits in red-line strike-out in the text (enclosed). We also provide a summary of our comments in this letter. Overall, it is our opinion that the pre-drafts of sub-Chapters 4.1 and 4.7 are preliminary and need significant revisions and additions.

As characterized in the draft itself, sub-Chapter 4.1 is an "early stage preliminary draft." Based on our review, ACHP has no specific comments at this time. As noted in our previous comments on sub-Chapter 3.7, the current version of sub-Chapter 4.7 appears to conflate cultural resources, as defined in the National Environmental Policy Act (NEPA), and historic properties, as defined in Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.) and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800). The ACHP reiterates the importance of making the distinction between cultural resources and historic properties in this chapter. This sub-Chapter should either include reference to the definition in the Section 106 regulations at 36 C.F.R. §800.16(l) or to any clarification that will be included in sub-Chapter 3.7. The definition of cultural resources should be clarified to include: prehistoric and historic period archaeological sites, Traditional Cultural Properties (TCPs) including landscapes, locations or sites associated with place names in the oral history or cosmology of Indian tribes and of other ethnic and cultural groups, traditional resource collecting areas (subsistence), sacred or religious sites, and historic-era sites such as cabins or shipwrecks.

In this sub-Chapter, the Corps should characterize the identification effort for historic properties that may be affected in the Area of Potential Effects (APE) that still needs to be implemented and the status and timing of such efforts. Alternatively, the Corps may reference the characterization that we recommended be added to sub-Chapter 3. It is important to remember that the APE may appropriately extend beyond the project footprint. While a Programmatic Agreement (PA) may provide for a phased identification effort, a general outline of what the federal agencies think is appropriate to identify and evaluate historic

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properties should be included in this sub-chapter, or in sub-Chapter 3, and referenced here. That general outline should include the current status of the Section 106 review and the anticipated timing for development of a PA. It should also clarify when the federal agencies will begin consultation with tribes under Section 106 for the identification of properties of religious and cultural significance to them.

At the outset of each section covering the four project component areas of the undertaking, the Corps should clearly indicate whether sufficient background research and any surveys to identify historic properties have been carried out. We also note references to potential visual effects to archaeological sites. The Corps should keep in mind that visual effects are not usually considered adverse effects for archaeological sites, unless the site is eligible under criteria other than Criterion d and the context and setting are characteristics of the property that contribute to its significance and eligibility for inclusion on the National Register of Historic Places. Once properties are evaluated for eligibility, it is important for the Corps to clearly state the significance and elements of integrity for any identified historic properties. That will allow the Corps and the consulting parties to better apply the criteria of adverse effect in accordance with 36 C.F.R. § 800.5(a), and consider appropriate avoidance, minimization and mitigation strategies.

Finally, ACHP recommends again that the federal agencies and their contractors developing the drafts of the EIS should refer to *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106* issued by the ACHP and the Council on Environmental Quality (CEQ) in March 2013 for guidance regarding how to better integrate the requirements of Section 106 and the NEPA review process. It is available at: https://www.achp.gov/digital-library-section-106-landing/nepa-and-nhpa-handbook-integrating-nepa-and-section-106.

The ACHP provides these comments to assist the Corps, other federal agencies, the Alaska SHPO, Indian tribes, and other consulting parties in the development of the EIS and compliance with Section 106 for the Pebbles Mine project. Should you have any questions or wish to discuss the comments we have provided, please contact John T. Eddins, PhD at 202-517-0211, or by e-mail at jeddins@achp.gov.

Sincerely,

Jaime Loichinger

Jaime Loichinger
Acting Assistant Director
Federal Permitting, Licensing, and Assistance Section
Office of Federal Agency Programs

Enclosure

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Message

From: Wesley Furlong [wfurlong@narf.org]
Sent: 9/6/2018 11:56:03 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com
CC: Craig, Bill [bill.m.craig@aecom.com]
Subject: RE: Project website changes

Shane.

The website function described below does not work. The Native American Rights Fund and the Nondalton Tribal Council are unable to register for updates from the project website. Please fix this issue as soon as possible.

Thank you.

Wesley James Furlong
Staff Attorney
Native American Rights Fund
745 West 4th Avenue, Suite 502
Anchorage, AK 99501
(907) 276-0680 w.
(907) 276-2466 f.
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Alaska Bar Association No. 1611108
State Bar of Montana No. 42771409

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-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, September 6, 2018 1:37 PM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Project website changes

This email is to inform you of a recent change in the Pebble project website: pebbleprojecteis.com. I had received a request to add a function to the site that would allow notification when the information is added to the site. As of Tuesday, that option has been created. You may add an email address and begin receiving weekly updates regarding the site, as appropriate. You will find the registration site at: https://www.pebbleprojecteis.com/emailnotifications

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I hope this feature is helpful.

VR

Shane McCoy
Program Manager

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Message

From: Kluwe, Joan [joan_kluwe@nps.gov]
Sent: 8/17/2018 9:20:49 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; cvaughn@achp.gov; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; Hobbie, David S CIV USARMY CEPOA (US) [David.S.Hobbie@usace.army.mil]; Newman, Sheila M CIV USARMY CEPOA (US) [Sheila.M.Newman@usace.army.mil]
Subject: Re: [EXTERNAL] Revised comment date for Chapter 3 and 4 sections to 31 August 2018
Attachments: 20180817 NPS Comments Pebble Ch4PreDraft.pdf

Shane,
Please see attached for a letter summarizing NPS comments on the sections assigned for review. Please contact me if you have any questions or need additional information regarding our comments. Thank you!

Joan Kluwe, Ph.D.
Regional Environmental Coordinator
National Park Service, Alaska Regional Office
240 West 5th Avenue
Anchorage, AK 99501

(907) 644-3535
joan_kluwe@nps.gov

On Thu, Jul 26, 2018 at 8:45 AM, POA Special Projects <poaspecialprojects@usace.army.mil> wrote:

> Cooperating Agencies,
>
> Last week it came to my attention that I inadvertently omitted to distribute some sections of draft Chapters 3 and 4 to some cooperators. I had originally asked that cooperators submit comments on these draft chapters by 31 July for Chapter 4 and July 5 for comments for Chapter 3.
>
> Given my oversight, I am now asking that the review for both Chapters 3 and 4 sections be submitted by August 31, 2018. This will also mean that the robust technical discussions will occur in October.
>
> I would like to remind everyone, that at this stage of the development of the analysis, I am asking that your review be at a high level; meaning that we are asking your teams to identify gaps (did we miss something?). The team developing the sections will review the comments and may be reaching out to you for clarity. A more in detail review will be expected in October when the team has incorporated additional information based on your input and data gathered by the teams.
>
> As we are all aware, there are many moving parts to any EIS and it is difficult to keep all things on track. I would greatly appreciate any issues being brought directly to my attention as soon as you identify them. Please email me or call me directly if you have concerns or questions about the flow of information so we can collaboratively ensure that errors are caught and corrected as soon as possible.

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VR

Shane McCoy
Program Manager
907-753-2715

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United States Department of the Interior

NATIONAL PARK SERVICE
Alaska Region
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501

IN REPLY REFER TO:
9.B (AKRO-EPC) 20180809

AUG 17 2018

Shane McCoy
Regulatory Division
U.S. Army Corps of Engineers
P.O. Box 6898, 2204 3rd Street
JBER, Alaska 99506-0898

Sent via email

Dear Mr. McCoy,

The National Park Service appreciates the opportunity to provide review comments on the Chapter 4 Pre-Draft Sections of the Pebble Project Environmental Impact Statement. As requested, we reviewed Section 4.5 Recreation, Section 4.9 Food and Fiber Production – Subsistence, and Section 4.11 Aesthetics and Visual Resources. The early review of these sections was very useful; we understand that the chapters are under development. Our comments largely focus on clarifications, corrections, and suggestions for incorporating additional references. We have provided a substantial list of additional references related to fisheries and aquatic resources, as our comments on the recreation and subsistence sections are dependent on analysis in the fisheries section.

Regarding Section 4.5 Recreation, data on recreation use associated with commercial use authorizations (e.g. guided fishing and bear viewing) has not been incorporated. In particular, in Section 4.5.2.2 consider potential impacts to bear viewing and other commercial recreation uses in the southern part of the Lake Clark National Park and Preserve coast and the visual impact on those activities from construction and operation of the Amakdedori port. Recreation activities from Homer across to Katmai National Park and Preserve could be affected.

The description of the affected environment in Section 3.5 identifies numerous management areas (federal, state, and local lands) lands and many types of recreation activities. The analysis in Section 4.5 does not clearly summarize impacts by management area and recreation type.

Regarding Section 4.11 Aesthetics and Visual Resources, views from the air are mentioned for the port and transportation components of the proposed action; aerial views of the mine site should also be included in the analysis (Section 4.11.3.1). The analysis should also consider visual impacts of Amakdedori Port on the Kamishak Bay coastline of Katmai National Park and Preserve (Section 4.11.3.2).

As was the case in Chapter 3, the bulk of our comments are related to Section 4.9 Food and Fiber Production. The title to this section is misleading. As stated in our previous

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comments, the title of the section should be changed to Subsistence. Subsistence is more than food and fiber production; it includes a strong cultural component. The NPS recognizes that subsistence is a way of life:

> The term, "subsistence," encompasses more than just food on the table. It involves the fundamentals of identity and culture, including the customs, traditions, values and beliefs that make Alaska Native peoples and rural communities unique. The subsistence way of life is rooted in a strong sense of place that extends back through the generations. It involves the social and economic ties that bind families and communities together. And, most importantly, it endures over time through the passing of traditional knowledge from one generation to the next (NPS 2017).

Similarly, the concluding sentence of Section 4.9.1 should be changed to: "There would be no additional direct or indirect effects on subsistence production."

In Section 4.9.1, is it possible that subsistence resource availability could increase under this alternative? If local employment would not continue, would the extensive exploration activities (including drilling, blasting, helicopter transport, etc.) also cease? Under this alternative, noise levels would decline and wildlife used for subsistence may frequent the exploration areas.

In Section 4.9.2.1 Resource Availability, please analyze potential increases in fishing and hunting pressure in areas less affected by mining activities. Subsistence users displaced from the proposed project areas would have to compete with traditional users of other areas. This pattern may also affect resource abundance. An overall decrease in available subsistence resource habitat could affect overall resource capacity and availability of resources.

The analysis should also look at the impact of construction of the underwater gas line and port to salmon and clam species in Cook Inlet and the subsistence setnetting and clamming that occurs on the western side of the inlet. The analysis mentions the traditional use of many species around the mine site and transportation corridor, but it should also look at the migratory patterns for the key subsistence species to understand how both the mine and transportation corridor could affect breeding and migration.

Other very important subsistence resources in the area include humpback whitefish, berries (high and low bush cranberries, cloudberries), swans, mallards, and other waterfowl species. In addition to a broader discussion of fugitive dust from construction, roadways, and mining activities, the analysis should also focus on windblown contaminants from tailings facilities.

Without review of Section 4.23, Wildlife Values, the conclusion that during the closure phase the pit lake would pose low risk to birds and other wildlife is an unsupported broad generalization. What will be the likely chemical composition of the pit water? What evidence indicates there will not be leakage to local water sources, including salmon spawning and rearing systems?

In Section 4.9.2.2 Changes in Access to Resources, more detailed analysis is needed to weigh the negative effects of restricted access for subsistence users and the positive

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effects of access roads and travel by ferry for the subsistence users. The analysis must also consider the increased pressure on subsistence resources by increasing access in certain areas.

Section 4.9.2.3 Changes in Competition for Resources does not consider subsistence users displaced from the proposed project area travelling outside their traditional use areas to harvest resources. Increased competition for resources with other subsistence users may occur due to displacement and reduction in overall area available for subsistence.

Section 4.9.2.4 Changes in Sociocultural Conditions does not acknowledge potential sociocultural changes due to the year-round employment effects and the close connection between commercial fishing and subsistence fishing. Commercial fishing is a major employer in the affected communities. For many families, subsistence fishing is closely coordinated with commercial fishing as the same boats and gear are often used for both commercial and subsistence fishing. If local residents move from seasonal commercial fishing to year-round project employment, they may lose access to boats and gear for subsistence fishing.

In Section 4.9.2.5 Cumulative Effects, what would be the cumulative impact on subsistence as a way of life embedded in culture, or what is the effect of the loss of traditional knowledge, traditions, or sharing? The proposed action would occur for more than a generation.

The analysis of long-term effects can benefit from past studies of the potential impacts of oil development in Alaska. In the 1980s, the Bureau of Energy Management (then Minerals Management Service) conducted several studies concerning the potential impacts of offshore oil development in coastal Alaska, including communities on the Alaska Peninsula, Cook Inlet, and Bristol Bay, which are in the study area for the proposed Pebble Mine project. Some of the studies of the impacts on subsistence uses following the 1989 Exxon Valdez Oil Spill may also be helpful in analysis of long-term impacts. This document summarizes a number of impact assessment projects:

> Braund, Stephen R. and Jack Cruse. 2009 Synthesis: Three Decades of Research on Socioeconomic Impacts Related to Offshore Petroleum Development in Coastal Alaska. U.S. Department of Interior, Minerals Management Service, Alaska OCS Region (Contract No. 143S-01-98-CT-30914).

References particularly relevant to the study area include:

> Braund, Stephen R & Associates, Institute of Social and Economic Research, and University of Michigan Institute for Social Research. 1985. A Social Indicators System for OCS Impact Monitoring. U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region Social and Economic Studies. Technical Report No. 116. (A11/PB 87-209227) (MMS 85-0079) (Contract No. 30179.
>
> Earl R. Combs, Inc. and S. Langdon. 1982. Alaska Peninsula Socioeconomic and Sociocultural Systems Analysis. U.S. Department of the Interior, Bureau of Land

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Management, Alaska OCS Region Social and Economic Studies Technical Report No. 71. (A18/PB 83-189019).

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Fall, J.A. and C.J. Utermohle, editors. 1995. An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska. Six Volumes. U.S. Department of the Interior, Minerals Management Service Technical Report No. 160. Submitted by the Alaska Department of Fish and Game, Division of Subsistence. Anchorage, Alaska.

Volume 1. Introduction. (MMS 95-0010)

Volume II. Prince William Sound. (MMS 95-0011)

Volume III. Lower Cook Inlet. (MMS 95-0012)

Volume IV. Kodiak Island. (MMS 95-0013)

Volume V. Alaska Peninsula and Arctic. (MMS 95-0014)

Volume VI. Summary and Conclusions

Vol. VI. Development in Alaska (MMS 95-0015)

We have also identified additional literature and data for your consideration to support a robust impact analysis. Please see the enclosure for a description of available data sets and list of references. We will contact you directly for the best method to transfer the associated files.

Thank you again for the opportunity for collaboration on these early sections. If you have any questions or need additional detail regarding any of our comments, please contact Joan Kluwe, Environmental Protection Specialist, at joan_kluwe@nps.gov or 907-644-3535.

Sincerely,

Debora Cooper
Associate Regional Director, Alaska Region

Enclosure

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DATA

U.S. Department of Interior (Fisheries Resource Monitoring Program). 2000- present. Salmon monitoring on the Newhalen River for escapement to Lake Clark watershed. Unpublished raw data.

Cook Inlet Historic Database: NPS data compilation of work on the western coast of Cook Inlet for historical intertidal research including bivalves and algae.

Cook Inlet Historic Database References: Associated set of references (PDFs) for the historic bivalve and algae research.

Katmai Seabirds – NPS-compiled database of known and existing seabird colonies along Katmai coast, including Kamishak Bay area.

Lake Clark National Park and Preserve. Federal subsistence permits issued within Game Management Unit 9 for brown bear and Dall sheep hunts by community and year.

Note: NOAA has a data set of high-resolution aerial imagery for the western coast of Cook Inlet.

*Studies and Reports in Progress

- In summer 2018, NPS flew an aerial mission to acquire color and color infrared imagery of the western Cook Inlet coastline during low tide. The images will be processed this fall with concurrent survey-grade GPS data to create infrared and color orthoimages at about 10-20cm pixel resolution. A digital surface model will also be generated from this effort.
- Determining the run strength and timing, spawning distribution, and spawn timing of least cisco in the Chulitna River (on-going)
- Telaquana Trail Cultural Landscape Report. In progress. Lake Clark National Park and Preserve, Alaska. U.S. Department of the Interior, National Park Service, Alaska Regional Office Cultural Landscapes Program.

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Mcintyre, J.K., D.H. Baldwin, D.A. Beauchamp, and N.L. Scholz. 2012. Low-level copper exposures increase visibility and vulnerability of juvenile coho salmon to cutthroat trout predators. Ecological Applications, 22 (5), pp. 1460-1471.

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*PDF/data not included in reference files available for transfer.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/5/2018 10:29:57 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: EPA Comments on Preliminary Draft Chapter 3 Sections
Attachments: EPA Comments Pebble Pre-draft Ch 3 070518.docx

Hello Shane,
Please find EPA's comments on Preliminary Draft Chapter 3 Sections 3.1 Introduction, 3.5 Recreation, 3.11 Aesthetics and Visual Resources, 3.14 Soils, 3.17 Hydrogeology, 3.18 Water Quality and Geochemistry, and 3.22 Wetlands / Special Aquatic Sites and Waterbodies attached. Please let me know if you have any questions on these comments.
We will provide comments on Sections 3.16 Surface Water Resources and 3.26 Vegetation, which we received after the other sections, as soon as we are able, but no later than July 27.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
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907-271-1215
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EPA Cooperating Agency Review Comments
Pebble Project EIS Preliminary Draft Chapter 3
Sections 3.1, 3.5, 3.11, 3.14, 3.16, 3.17, 3.18, 3.22, 3.26
7/5/18

Thank you for the opportunity to review early versions of Sections 3.1 Introduction, 3.5 Recreation, 3.11 Aesthetics and Visual Resources, 3.14 Soils, 3.16 Surface Water Resources, 3.17 Hydrogeology, 3.18 Water Quality and Geochemistry, 3.22 Wetlands / Special Aquatic Sites and Waterbodies, and 3.26 Vegetation of the Preliminary Draft Chapter 3, in accordance with our defined role as a Cooperating Agency for the Pebble Project EIS. Our comments are provided for each section below. Because we did not receive the text for Sections 3.16 and 3.26 until June 27, we have not completed our review of these sections. We will send you comments on the two remaining sections no later than July 27.

If you have any questions regarding the EPA's comments below, please contact Molly Vaughan at 907-271-1215 or vaughan.molly@epa.gov, and she can provide clarity or put you in touch with the appropriate technical expert for that comment as needed.

We look forward to working with you on updates to Chapter 3.

3.1 Introduction

Page 3.1-5, Section 3.1.2.3: We recommend revising the last paragraph so that it is clear that the project would result in copper concentrates, molybdenum concentrate, and gravity-recovered gold. As written, it implies that primary copper and gold would be produced.

3.5 Recreation

Page 3.5-1, Section 3.5.1 Recreation Management: We recommend including maps showing the location of each of the recreation areas relative to the proposed project.

Page 3.5-4 to 3.5-5, Section 3.5.2 Regional Recreation: We recommend that text in paragraphs 2-11 of this section, generally describing the location of each of the managed recreation areas, be moved to the beginning of the recreation section and integrated with section 3.5.1. This would provide the reader with a better orientation to the various managed recreation areas in the region.

3.11 Aesthetics and Visual Resources

No Comments

3.14 Soils

No Comments

3.16 Surface Water Resources

EPA received the text for this section on 6/27, and will provide our comments on or before 7/27.

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3.17 Hydrogeology

Note: Page numbers in the comments below refer to the .pdf page numbers since there appeared to be errors in the written page numbers.

General: Reviewing individual resource sections in isolation (without other referenced EIS sections or reference materials) was challenging, particularly when trying to assess the descriptions and outputs of Water Balance and Groundwater Models (3.17.1.3 and 3.17.1.4). Our review found some of the sub-sections difficult to follow since the document referenced other sections (e.g., Section 3.16 was not initially provided) and documents not provided for more detailed information. We recommend that it would be helpful to provide all sections of the document to cooperating agencies as reference during review of designated sections where there are cross-references within the document. In addition, please provide the list of resources and references cited, as this would enable reviewers to capture the overall aspects of the study and provide more meaningful comments.

General: We recommend providing summary results (and model descriptions) in appropriate sub-sections as tables, which would provide the information in the Groundwater Hydrogeology section more clearly and easily understood.

General: We recommend that the document describe how the monitoring locations were selected and the adequacy of the groundwater monitoring locations, data collection, and subsequent assessment as a basis for evaluating environmental impacts of the project and alternatives.

Pages 1 - 2, Sections 3.17.1.1 Groundwater Flow Processes and 3.17.1.2 Hydrogeological Characterization: We recommend that the EIS include a Conceptual Hydrogeologic Model illustration, including flow patterns and areas of surface water/groundwater interaction, where known. The document also discusses a conceptual model of compartmentalized groundwater flow, which we recommend be illustrated in a Figure. Such figures will enable the reader to better visualize and understand the text descriptions of the system and model. We also recommend that this section include or reference a summary table of baseline monitoring wells details that could be specific to each area/aquifer system.

Page 2, Section 3.17.1.2: We recommend that the EIS include the official classifications of underlying aquifers (designated by the State) including identifying underground sources of drinking water, as well as disclose the nearest drinking water protection areas/drinking water wells/surface water intakes. (see also comment on Section 3.17.4).

Page 2, Section 3.17.1.2: It is unclear whether the baseline groundwater flow, water balance and water quality models referenced here are stand-alone documents. We recommend that you clarify for the reader and explain where the documents can be viewed. We also request an opportunity to review these documents during EIS development, pursuant to our role as a cooperating agency. In addition, please clarify whether these models have been updated with more recently available data, as the data sets described in this section are from 2004-2012.

Page 4, Section 3.17.1.2. The document refers to pumping tests conducted in the area around the Pebble Deposit and locations downgradient. We recommend that the EIS include the simulated drawdowns from pumping tests and/or dewatering.

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Page 4, Section 3.17.1.2. Please provide WB-1, WB-3 and WB-4 locations, well details and data summaries (pumping test observations/results, sampling results).

Pages 6-9, Figures 3.17-2 through 3.17-5: We recommend that the cross section figures distinguish the weathered bedrock, fractured bedrock and competent bedrock layers, where known. We also recommend that the figures include a location map relevant to the cross section's line of travel. Please also clarify what is meant by "Model Layer Surfaces," which appears in the figure legend box but is not defined.

Page 10, Figure 3.17-6: We recommend including the individual monitoring points/elevations used to develop the Shallow Groundwater Contours in this figure. Also, please explain if these contours include surface water elevations/interactions.

Page 11, Table 3-17.1: We recommend including additional information in this table, such as the existing aquifer systems' relevant hydrogeologic parameters. We also recommend that the extent of the individual hydrostratigraphic units identified in this table could be illustrated on aerial view figures, and could be identified on the cross-sections in Figures 3.17-2 through 3.17-5.

Page 13, Section 3.17.1.2. Regarding: "The results of groundwater level monitoring and a water balance assessment indicate that approximately two-thirds of the groundwater flowing through the aquifer downstream of Frying Pan Lake remains in the South Fork Koktuli River drainage, while the remaining one-third of the groundwater crosses the surface water divide and contributes to groundwater flow in UT1.190, and discharges to Upper Talarik Creek." We recommend that this be illustrated on a figure for clarity. In addition, please explain whether seasonal variations were taken into consideration.

Page 13, Section 3.17.1.2. This section discusses average groundwater recharge rates in different drainages. We recommend that the document also disclose the range of groundwater recharge rates.

Page 18, Section 3.17.1.2 Aquifer Properties, ¶ 3: The section notes that hydraulic conductivities range across 14 orders of magnitude in nature and that differences of 1 to 2 orders of magnitude are not considered large. It appears that this would indicate that the overburden and bedrock are relatively heterogeneous overall across the Mine Site, rather than homogeneous as stated. Please clarify.

Page 18, Section 3.17.1.2, Aquifer Properties ¶ 4: Please clarify whether the aquifer parameters as presented in Schlumberger 2011 (Table 8.1-6) have been determined adequate for use in the EIS, and summarize any uncertainties. Please also discuss what was done with the testing purge waters.

Page 19, Section 3.17.1.2, Groundwater Flow Systems ¶ 1: Regarding: "There is evidence of some inter-basin groundwater exchange from the North Fork Koktuli drainage to the Upper Talarik Creek drainage, and from the South Fork Koktuli drainage to the UT1.190 basin." Please provide detail on the source and nature of this evidence.

Figures 3.17-7, 3.17-9, 3.17-10 and 3.17-11: We recommend that the document include additional data (locations, well details) relevant to the wells used to develop the hydraulic conductivity measurements depicted on Figures 3.17-7 and 3.17-9. We also recommend including a well location map relevant to level measurements in Figures 3.17-10 and 3.17-11. Please clarify whether well WB-1 was the only measurement point used to assess conductivity in deep bedrock.

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Page 19, Section 3.17.1.2, Groundwater Flow Systems: It appears that discharge was measured from numerous seeps. Please provide the details of the discharge measurements (i.e. locations, summary of measurements, field observations).

Page 19, Section 3.17.1.2, Groundwater Flow Systems Seasonal variability of groundwater is discussed in this section. Please describe how this seasonal variability was determined and how it will be accounted for in predictive modeling.

Page 23, Section 3.17.1.3/4 Site Water Balance Model/Mine Site Groundwater Model: Please discuss whether a detailed analysis of the site Water Balance Model (WBM), provided in Schlumberger 2011 (Appendix 8.1I) and numerical groundwater model (Schlumberger 2011: Appendix 8.1J), has occurred in order to determine the adequacy of the models for characterization of baseline conditions and use in assessing impacts. In addition, please explain whether the calibration period between 2004 and 2008 is considered sufficient to represent current climate conditions. Please see the "Predictive Modeling" section of our EIS scoping comments submitted to the Corps on June 29, 2018 which included recommendations related to environmental and predictive modeling. Our scoping comments referred to EPA's Council for Regulatory Environmental Modeling *Guidance on the Development, Evaluation, and Application of Environmental Models* (2009). This guidance provides recommendations on model analysis and documentation. We recommend that the EIS provide or reference documentation of model analysis consistent with this guidance, including discussion of the extent to which models met objectives and any limitations and uncertainties associated with model input parameters, assumptions, and outcomes.

Page 23, Section 3.17.1.4: Regarding: "Focus was placed on calibrating the model to periods of time when the aquifer was stressed during pumping tests." We recommend that the document provide details regarding the calibration of the model, so that model adequacy can be understood.

Page 23, Section 3.17.1.5: Regarding: "Based on results of the streamflow surveys, gaining and losing stream reaches were identified, and possible explanations for the variability in flows between gauges were provided. The majority of the stream reaches were found to be receiving groundwater discharge from the underlying aquifer (i.e., gaining)." Please provide more specificity on the location of the gaining and losing reaches. A figure may be helpful. If this information is provided in Section 3.16, then we recommend adding a reference to where it can be found in that section.

Page 24, 3.17.2 Transportation Corridor and Amakdedori Port: Please provide a figure showing the hydrostratigraphic units of this area. In addition, the document notes that no known hydrogeological investigations have been conducted along the South Access Road or Amakdedori Port. We recommend that the hydrostratigraphic units south of Iliamna Lake be characterized and the information disclosed and evaluated in the EIS.

Page 26, 3.17.4 Groundwater Use: The document notes that most Bristol Bay communities rely on groundwater wells for their drinking water supply. We recommend that the EIS discuss the number of private domestic and/or public water supply wells and their proximity to the project. We also recommend identifying any source water protection zones designated by the State of Alaska, or noting if there are none in the project area. Inclusion of a map showing the locations of drinking water wells within and around the project area would be helpful.

Page 26, 3.17.4 Groundwater Use: According to the document, PLP has tested the groundwater quality at the mine site, with results showing that minimal water treatment would be required to develop the

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wells for a drinking water source (PLP 2017). Please provide a reference to the tables that we recommend be added to Section 3.18.4.4 (Groundwater Quality) that support the conclusion that minimal treatment would be required. We also recommend that the description of any drinking water treatment that is required be included in the project description.

3.18 Water Quality and Geochemistry

General: We recommend including information on how baseline data, including the baseline water quality data and results from the humidity cell tests, are being incorporated in predictive water quality models. We recommend that the outputs from the water quality models will need to provide results on a time-step that is applicable to existing water quality criteria. Uncertainty and sensitivity analysis will both need to be performed as part of water quality model predictions. It may help to see our earlier recommendations related to environmental and predictive modeling (sections 3.17.3/3.17.4).

General: We recommend that this section would benefit from the addition of data summary tables, including those for site specific baseline conditions. Data compilation tables are typically included in EISs in order to disclose the baseline data collected which supports data adequacy determinations and the summary discussions and statistics in the text.

Page 1, 3.18.1 ¶ 3: We recommend providing additional explanation to support the statement that "for most parameters, the most stringent criteria are the aquatic life criteria for fresh water." We also recommend adding a table that provides the surface water quality criteria for all parameters assessed.

Page 1, 3.18.1 ¶¶ 4 and 5: We note that the document uses the undefined term "matrix water," for example, in the following sentences: "Therefore, the numeric water quality criteria for hardness-dependent parameters vary depending on the measured (or predicted) hardness value for the matrix water" and "The Alaska Department of Environmental Conservation (ADEC) numeric water quality standard for ammonia depends on both the temperature and the pH of the matrix water, but not hardness." We recommend adding the definition of the term "matrix water," as it is currently difficult to determine whether these statements are true in all circumstances. If the discussion is about determining whether the receiving water is meeting water quality standards (WQS), then it may be true, although adding a point-source discharge to those receiving waters and calling the mixed water the "matrix" may also make these statements inaccurate. When ADEC determines whether an effluent meets the WQS for a hardness based parameter, the 15th percentile hardness of the receiving water is used to determine the WQS that must be achieved – not any mixed matrix. For ammonia, the values used are the 85th percentile of the receiving water values for pH and temperature. Therefore, we recommend that the EIS define "matrix water" or include additional explanation. For further information, see Section 2.2. of the *Alaska Pollutant Discharge Elimination System (APDES) Permits Reasonable Potential Analysis and Effluent Limits Development Guide,* June 30, 2014.

Page 1, 3.18.2: We recommend including a table that provides the groundwater quality standards for all parameters assessed.

Page 1, 3.18.2 ¶ 1: The document includes the statement that "Although ADEC does not regulate groundwater directly. . ." We note that ADEC does regulate discharges to groundwater under 18 AAC 72. In particular, 18 AAC 72.500(a) requires that "In addition to the plan approval required by 18 AAC 72.600, a person who disposes of nondomestic wastewater into or onto land, surface water, or groundwater in this state must have a permit issued by the Department under this chapter or under 18

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AAC 83 for that disposal." A similar statement is made for the disposal of domestic wastewater in 18 AAC 72.010(a). We recommend that this section be revised to properly characterize the applicability of 18 AAC 72 for discharges to groundwater.

Page 2, 3.18.2 ¶ 2: The document states, "These standards include National Primary Drinking Water Regulations, which set legally enforceable Maximum Contaminant Levels (MCLs) that apply to public water systems." We note that the national drinking water MCLs are not applicable to Alaska until they are adopted into 18 AAC 80, so therefore we recommend revising the chapter to characterize the applicable state standards.

Page 4, 3.18.4.1 Geochemical Processes: This section primarily relies upon geochemical results from Chapter 11 (Geochemical Characterization, Bristol Bay Drainages) of the Pebble Mine Environmental Baseline Document (SRK 2011). We recommend that the EIS disclose the results of the Corps' data gap analysis and determination regarding whether this report is sufficient for establishing the geochemical baseline for the EIS.

Page 5, Section 3.18.4.2: Regarding: "Samples for geochemical testing were selected from the numerous exploration cores drilled to outline the deposit." Understanding the representativeness of the samples used for geochemical testing is a critical aspect of the evaluation. We recommend that describing the sample representativeness can be accomplished by providing a summary table that shows the major rock types that occur in the ore deposit, their percent abundance, the number of samples of that rock types tested, and the percent of the total samples analyzed per rock type. We also note that deviations between the occurrence of rock types and the geochemical testing may be acceptable if the additional focus/characterization is on rock types that are expected to disproportionately contribute to Acid Rock Drainage /Metals Leaching.

Page 5, Section 3.18.4.2. Regarding: "The NP/AP [neutralization potential / acid-generating potential] ratio that distinguishes PAG [potentially acid generating] and NAG [non-potentially acid generating] is 1.6." We recommend that the document provide a rationale for the 1.6 value. We note that other contemporary mine projects have used values of 3 or even 4 in distinguishing PAG and NAG. We recommend, given the importance of distinguishing PAG from NAG, including a clear rationale for the selection of the ratio value used in the EIS.

Page 5, Section 3.18.4.2. Regarding: "Results show that rocks with low NP/AP ratios (less than 0.1) have little neutralization potential and are likely to generate acid within a few years. Rocks with NP/AP ratios of 1 have higher neutralization potential, which delays the onset of acid generation to more than 20 years." These are important statements and would benefit from additional information provided. For example, we recommend clarifying how the time periods of "a few years" to >20 years were determined; whether this is based on the results of geochemical modeling; what percentage of the material fell into the two categories of <0.1 and 1 NP/AP; and how acid generation is being defined for these purposes. We also recommend that the EIS provide information on ML in addition to the ARD information.

Page 5, Section 3.18.4.2. Regarding: "Paste pH results for aged rock cores stored at the site suggest that acidification may be delayed up to 40 years." We recommend that the EIS include information on the specific rock types that these cores represent and how the value of 40 years was determined.

Page 6, Section 3.18.4.2. Regarding: "Element release rates indicated by kinetic tests were mainly a function of leachate pH rather than the element content of the samples." We recommend that the EIS

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clarify whether this statement applies to all elements and provide information on the analysis used to determine the role of pH in element release rates.

Page 6, Section 3.18.4.2. Regarding: "Leaching of copper accelerated as pH decreased; therefore, the potential for metal release is linked to the potential for acid generation, and ABA data can be used to assess the potential for copper leaching." We note that while the rate of leaching increased with decreasing pH, there may still be environmental concerns with the levels of copper release under neutral pH conditions. We recommend that additional information be provided on how copper leach rates change as a function of pH. Furthermore, we recommend that the EIS clarify whether copper behaves similarly regardless of the rock type, or whether leaching is different among rock types. In general, we recommend providing more information on the representativeness of the above statement.

Page 6, Section 3.18.4.2. Regarding: "Ore processing based on a conventional flotation process to recover chalcopyrite and molybdenite, the primary copper and molybdenum minerals, followed by treatment of pyrite to recover gold, will result in a low sulfide bulk tailing concentrate and a high-sulfide (pyrite-rich) tailing concentrate, respectively. Low sulfide tailings are expected to have low potential to generate ARD, provided the sulfide mineral content is less than about 0.2 percent." On page 5, the draft chapter states that "To date, limited testing has been performed on the representative concentrate, because possible designs for a metallurgical process are still at an investigative stage." Since the processing designs are still in the investigative stage, we recommend that the EIS describe whether the tailings that were used for ARD testing are representative of the current project processing flowsheet and any data limitations or uncertainties associated with the tailings ARD testing.

Page 6, Section 3.18.4.2. Regarding: "However, for some elements (e.g., arsenic, molybdenum, and selenium), release is significant under neutral pH conditions." Please clarify whether arsenic, molybdenum and selenium are the only elements to which significant release applies or whether there are other minerals/elements with similar properties under neutral pH conditions.

Page 6, Section 3.18.4.2. Regarding: "Element leaching from the low sulfide tailings occurred at low rates, and process supernatants were found to contain low levels of potential constituents relative to water quality standards." Please clarify whether the analytical testing occurred on supernatant water samples that were filtered or unfiltered whole water.

Page 6, Section 3.18.4.2. Regarding: "Rock material is assessed based on whether the material would take a long time to react – developing acid or losing neutralizing potential." We recommend that the EIS provide numerical estimates of the terms "long time" and "acid development" for clarity.

Page 6, Section 3.18.4.2. Regarding: "Based on the results obtained from integrating the geochemical studies with the block model, the majority of the rocks that would be mined from the deposit do not have the potential for acid generation, and could be considered substantially acid neutralizing." We recommend that the EIS explain whether the block model is representative of the current project description mine design.

Page 6, Section 3.18.4.3. Regarding: "A comprehensive network of sampling stations was established in the project area for sampling surface water from streams, lakes, and seeps." We recommend including a figure of these locations. We also recommend the addition of tables that provide summary information for the water quality data collected for each surface water including, for each parameter, range of concentrations, mean, and measure of dispersion etc., and comparison to applicable water quality criteria. These tables could be included along with the text of the section or in a supporting appendix.

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Page 6, 3.18.4.3 Surface Water Quality: The document references water quality studies conducted from 2004–2008, and a supplemental study period from 2008–2013. If the data from these studies are compiled in a separate document or documents, we recommend that the EIS provide the reference(s) for ease in reviewing the water quality study data.

Page 7, Section 3.18.4.2: Regarding the statement that "water quality occasionally exceeded the maximum criteria for concentrations of various trace elements." We recommend providing specific information in the EIS for which elements and under what conditions (i.e., baseflow or stormflow) the criteria maximum concentrations are exceeded.

Page 7, Section 3.18.4.3: Regarding: "Additionally, cyanide was occasionally present in detectable concentrations." We recommend providing information in the EIS on the presumed source of the cyanide, since cyanide is not expected to occur in the natural environment.

Page 7, Section 3.18.4.3: Regarding: "Sulfate, copper, zinc, nickel, and molybdenum concentrations were greatest in the SFK, consistent with the headwaters of this river passing through the deposit area, and multiple sample locations present in this area." We recommend that, throughout the document when comparisons between samples are made and one is determined to be larger than the other, the EIS provide the p-value and sample size associated with the analysis that was used to determine differences.

Page 7, Section 3.18.4.3: Regarding: "Significantly higher concentrations of copper, molybdenum, nickel, zinc, and sulfate were present in the SFK than in the NFK." As mentioned above, please provide p-values and sample sizes to support this statement for each element/anion. This recommendation also applies to the rest of the text in this paragraph.

Page 7, Section 3.18.4.3: Regarding: "Furthermore, a decrease in the TDS levels with distance along the stream was more pronounced in the SFK and UTC watersheds than in the NFK watershed. We recommend that the EIS provide information on how the spatial trends between the two watersheds were compared and determined to be significantly different. This recommendation applies to similar text/analysis elsewhere in the document.

Page 7, Section 3.18.4.3: Regarding: "The mean pH for streams, by watershed, ranged from 6.7 to 7.0." Here, as well as elsewhere in the document, we recommend that the EIS provide a measure of the dispersion (e.g. standard deviation, error, etc.) around the mean whenever mean values are presented.

Page 7, Section 3.18.4.3. Regarding: "The pH values in surface water were close to neutral. The mean pH for streams, by watershed, ranged by 6.7 to 7.0. Therefore, even though the oxidation of sulfide minerals was expected to be releasing acid in the deposit area, carbonate minerals appear to provide effective pH buffering." Under current conditions, please clarify whether the sulfide minerals present are exposed to the atmosphere and/or experiencing water level fluctuations. Without additional information, it is reasonable to assume that they are not exposed to the air or experiencing large water level fluctuations and therefore would not necessarily be expected to release ARD. In addition, grain/rock size has a very large influence on ARD generation, therefore the existing orebody/overburden would not be expected to have much ARD, whereas after the material is crushed the increase in surface area may increase ARD potential. As such, the observation of neutral pH conditions under existing conditions does not necessarily provide sufficient information on the effectiveness of the pH buffering capacity of the streams. We recommend that the statement regarding pH buffering capacity be clarified or revised.

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Pages 7-8, 3.18.4.3 ¶ 10: Regarding: "Although the mean pH values fell within the range for pH specified in the most stringent ADEC criterion, 34 percent of all individual water quality samples did not meet the water quality criteria for pH." We note that the State of Alaska Water Quality Standard for pH is a range from 6.5 to 8.5. It is not clear from the text whether samples were lower or higher than the range, or some combination. We recommend that the EIS include information on the sample values in relation to the WQS range for pH.

Page 8, Section 3.18.4.3: Temperature data for streams are based on 2013-2014. We recommend that the EIS discuss whether more recent water temperature data will be collected and analyzed to assess potential climate considerations and necessary adaptation measures.

Page 9, Section 3.18.4.3: Regarding: "The trace elements aluminum, antimony, arsenic, barium, cadmium, copper, iron, lead, manganese, molybdenum, mercury, nickel, and zinc were detected in surface water, although at low concentrations." As recommended above, please provide summary information on the concentrations detected in a table.

Page 9, Section 3.18.4.3: Regarding: "Some trace element concentrations in stream samples exceeded the most stringent ADEC maximum criteria." We recommend including information on the hydrologic conditions during which the exceedances occurred and specifically noting if there are any emergent trends.

Page 10, 3.18.4.4 Groundwater: We recommend adding tables that provide summary information for the baseline groundwater quality and geochemistry data collected, including each sample location, each parameter sampled, the range of concentrations, mean, and measure of dispersion around the mean. The tables could be in the text of the section or in a supporting appendix. Please also describe how the baseline data will be incorporated into various prediction models.

Page 10, 3,18.4.4 Groundwater: We recommend that the EIS provide baseline water quality information for existing drinking water wells (public or private) near the project area. This same comment applies throughout the project area (See sections 3.18.5, 3.18.6, 3.18.7). See also our comments regarding drinking water in 3.17.1.2 and 3.17.4.

Page 10, 3.18.4.4 Groundwater: We recommend that the EIS provide explanations regarding the relatively high TDS level in MW-14D, as well as regarding the lowest median pH values of 4.9 – 5.3.

Page 11, 3.18.4.4: Regarding: "Although sulfides appear to be oxidizing in the deposit area, the groundwater is not acidic. The lowest median pH values were 4.9 and 5.3. All other median pH values were greater than 5.8." Based on the information provided, it does not appear that a clear conclusion can be drawn that the groundwater is not acidic. Please revise or expand upon the explanation in the EIS to clarify the current conclusion that even with the low median pH, the groundwater is not acidic.

Page 11, 3.18.4.4 Groundwater: Regarding: "The wells with relatively high TDS also generally had relatively high concentrations of arsenic, barium, and molybdenum compared with other wells in the analysis area." Please clarify whether the high concentrations are based on dissolved (filtered samples) vs. total (unfiltered) analyses.

Page 11, 3.18.4.5 Sediment Quality: We recommend adding tables that provide summary information for the sediment data collected for each surface waterbody, including the range of concentrations, mean,

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and measure of dispersion around the mean for each parameter. We recommend that the table could be in the text of the section or in a supporting appendix.

Page 11, Section 3.18.4.5: Regarding: "Between 2004 and 2007, 198 samples of sediment from lakes, ponds, seeps, and major and minor drainages in the analysis area were sampled and analyzed for their content of naturally occurring trace elements, anions, and cations." We recommend that a map showing the sample locations and a table summarizing the concentrations would be helpful to the reader in interpreting the results.

Page 13, 3.18.5.2 Groundwater Quality (Amakdedori Port): We recommend that the EIS discuss whether the large aquifer system under the Amakdedori Port area has been characterized and/or describe any plans to assess baseline aquifer conditions. In addition, please discuss how the data will be incorporated into various prediction models.

Page 14, 3.18.6 Transportation Corridor: See comment above. We recommend that the EIS discuss whether the aquifer system under the transportation corridor area has been characterized and/or describe any plans to assess baseline aquifer conditions. In addition, please discuss how the data will be incorporated into various prediction models.

Page 15, 3.18.6.1: Regarding: "Sixteen surface water sampling stations were established and sampled in the Transportation Corridor analysis area during 2004 and 2005." We note that the transportation corridor envisioned in 2004 (along the north shore of the Lake) is not the same as the currently proposed transportation corridor (crossing the Lake and having roads south of the Lake). We recommend providing an explanation and map that shows the location of the sampling stations in comparison to the proposed transportation corridor. In addition, as recommended for the mine site, please provide tables that summarize the results of the surface water quality monitoring (locations, ranges, seasonality, measure of dispersion, comparison to criteria) and discuss the adequacy of the data collected to represent baseline conditions along the proposed transportation corridor.

Page 15, 3.18.6.1, Iliamna Lake: As recommended above, please provide a table that summarizes the results of the surface water quality samples collected in the Lake.

Page 17, 3.18.7.1 ¶ 1 Regarding: "Additional discussion of deeper offshore sediments in Cook Inlet will be included here if data become available." If the data are necessary to evaluate the structural requirements and environmental impacts of constructing a natural gas pipeline along the bottom of Cook Inlet, we recommend that this data be collected and made available in this section of the EIS.

3.22 Wetlands / Special Aquatic Sites and Waterbodies

General: We note that throughout Section 3.22 there is no discussion of any ephemeral streams present in the study area, although there are discussions of perennial and intermittent streams. We recommend that, if there are ephemeral streams located within the study area, the EIS discuss their functions and values in the relevant subsections. If no ephemeral streams are present, we recommend including a statement to that effect for clarity.

Page 3.22-2, Section 3.22.1, first full paragraph: The section refers to "lower perennial" and "upper perennial" streams for characterization of flow regimes. We recommend that the EIS include a definition or description of the difference between these stream categories.

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Page 3.22-6, Section 3.22.2.3, ¶1, first sentence: Please identify the document cited as USACE 2016 for the benefit of the reader.

Page 3.22-6, Section 3.22.2.3, ¶1: The document notes that a wetlands functional assessment will be prepared as part of the permitting process for the project, although the section provides a general qualitative overview of wetland functions. We recommend that the functional analysis be completed prior to the DEIS, so that it may be summarized in the body of the document and attached as an appendix. In addition, we recommend that this paragraph be updated to reflect the recently signed memorandum of agreement between the EPA and the USACE regarding compensatory mitigation in Alaska.

3.26 VEGETATION

EPA received the text for this section on 6/27, and will provide our comments on or before 7/27.

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Message

From: John Eddins [jeddins@achp.gov]
Sent: 7/5/2018 8:35:52 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; Katherine A. McCafferty [katherine.a.mccafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
CC: Jaime Loichinger [jloichinger@achp.gov]
Subject: ACHP comments on Chapters 3.7 and 3.8 of predraft EIS
Attachments: ak coe-r ACHP comments pre-draft chap 3- 7 3-8 pebbles mine eis final jl 05july2018.pdf; ACHP comments 05_16_2018_PreDRaft_Sec3.7_CulturalRes.pdf; ACHP comments 05_16_2018_PreDraft_Sec3.8_HistoricProperties.pdf

All
Attached are ACHP's initial comments on the pre-draft versions of sub-Chapters 3.7 and 3.8 of the EIS.
John

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3.0 AFFECTED ENVIRONMENT

3.7 CULTURAL RESOURCES

The purpose of this section is to describe cultural resources within the affected environment. NEPA requires that project impacts to cultural resources, considered a subset of the "human environment," be evaluated and disclosed (40 CFR 1508.4). Cultural resources under the National Environmental Policy Act (NEPA) is a broadly defined term that includes all buildings, sites, structures, objects, districts, and landscapes that are considered to have historical or cultural value. A wide range of cultural resource types and related laws and regulations can include, but are not limited to:

- **Historic properties** are defined by the implementing regulations (36 CFR Part 800) for Section 106 (54 U.S.C. § 306108) of the National Historic Preservation Act (NHPA) (54 U.S.C. 300101 et seq.) as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties; and properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria" (36 C.F.R. § 800.16 [(l)][(1)]). It is important to note that under NEPA, federal agencies must consider impacts to all types of cultural resources, including those that do not meet the definition of historic properties ~~are considered even if they are not NRHP eligible (i.e., designated as "historic properties" per the NHPA).~~ as set forth in the NHPA and its implementing regulations.
- Permitting, construction, operations, and closure of the project will require federal agency compliance with Section 106 of the NHPA (54 U.S.C. § 306108)~~(16 USC Section 470)~~, and its implementing regulations (36 CFR 800), and for the U.S. Army Corps of Engineers' ~~NHPA Section 106~~ also its Procedures for the Protection of Historic Properties~~procedures~~ (33 CFR 325, Appendix C). The Section 106 regulations require federal agencies to make a reasonable and good faith effort to identify historic properties that may be affected by the undertaking within the Area of Potential Effects (APE), determine if an the undertaking will ~~constitute~~ have an adverse effect ~~to identified~~on historic properties, and develop steps to resolve the adverse effect of the undertaking. The federal agencies must carry out all the steps of the Section 106 review in consultation with the State Historic Preservation Officer (SHPO)/Tribal Historic Preservation Officers (THPOs), as appropriate, and other consulting parties, including Indian tribes, which, for purposes of Section 106, includes Alaska Native Villages and Regional or Village Corporations, as those terms are defined in the Alaska Native Claims Settlement Act.~~seek to resolve any adverse effects~~. Consultation with Indian tribes must be carried out in a manner that acknowledges the government to government relationship between federal agencies and Indian tribes. The scope of the identification effort, determinations of eligibility and effect, and steps to resolve adverse effects must be informed by the traditional knowledge of tribes who ascribe significance to such properties, as gathered from ethnohistoric data, oral history, and other types of research. The Corps, other federal agencies, the project proponent, and its consultants must be sensitive to concerns of the tribes regarding the confidentiality of information they share about properties of religious and cultural significance.
-

Comment [ACHP-JTE1]: Consider changing as much of the text as possible to active voice.

Comment [ACHP-JTE2]: Seems to be confusion that conflates cultural resources for the purposes of NEPA and historic properties for the purposes of Section 106. This chapter needs to be reworked to clearly differentiate. It should also be reworked to more clearly differentiate among the requirements of federal statutes and regulations and the requirements of state statutes and regulations.

Comment [ACHP-JTE3]: The first time you reference this citation, use Part. Thereafter, you can leave "Part" out of the citation.

Comment [ACHP-JTE4]: Use parentheses, not brackets.

Comment [ACHP-JTE5]: Permitting is the ***federal action*** that makes the ***construction, operation, and closure*** of the project an ***undertaking*** subject to Section 106 for the federal agency.

Comment [ACHP-JTE6]: There are likely a range of federal actions for the range of federal agencies involved, not limited to the Corps CWA permits, that should be referenced.

Comment [ACHP-JTE7]: The citations only need to be made once in any particular section.

Comment [ACHP-JTE8]: The Corps may also follow Appendix C, but BSEE and USCG do not.

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- Cultural resources are evaluated for inclusion in the NRHP based upon established criteria listed in 36 CFR 60. Cultural resources can be determined eligible for inclusion in the NRHP if they possess integrity, the capacity to convey their significant historic associations, and meet one or more of the four criteria for eligibility listed in Title 36, CFR 60:
- The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and:
  - are associated with events that have made a significant contribution to the broad patterns of our history (Criterion A); or
  - are associated with the lives or persons significant in our past (Criterion B); or
  - embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
  - have yielded, or may be likely to yield, information important in prehistory and history (Criterion D).

If significant (i.e., NRHP-eligible) resources are identified, then federal agencies are directed to take prudent and feasible measures to avoid or reduce adverse impacts. It should be noted that the terms "impacts," and "effects," for the purposes of the analysis in this EIS, are used interchangeably.

Comment [ACHP-JTE9]: Significant cultural resources for the purposes of NEPA are not always necessarily eligible for inclusion on the NRHP. They are not the same as "historic properties" as defined by NHPA and the Section 106 regulations. Don't confuse. There can/could be "significant cultural resources" for the purposed of NEPA that are not eligible for listing on or listed on the NRHP.

The NRHP describes historic resources as standing or collapsed buildings, unique engineering designs, mines, ranches, and railroad grades that are at least 50 years old, or have achieved significance within the past 50 years. Archaeological resources are prehistoric or historic remains of human lifeways or activities that are at least 50 years old, and include artifact concentrations or scatters, whole or fragmentary tools, rock carvings or paintings, and buildings or structures. Resources types that include broader geographic areas may include cultural landscapes and Traditional Cultural Properties (TCPs).

Comment [ACHP-JTE10]: Re-work to clarify that these are just examples of types or classes of properties that have been included, but it is not an exhaustive listing.

- **A TCP** is defined as a place that is "eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1992). TCPs often represent the location where important traditional events, activities, or cultural observances have taken place in the past, yet remain active in the community's or tribe's cultural practices.

Comment [ACHP-JTE11]: Remember that federal agencies are required to consult with tribes who may ascribe religious and cultural significance to historic properties that may be affected. Some of these properties may fit the definition of TCP and others may not.

- **Native Alaskan cultural items** include human remains, funerary items, sacred objects, and objects of cultural patrimony. The discovery of human remains is subject to Alaska Statutes (AS). For example, AS 11.46.482(a)(3) makes the "intentional and unauthorized destruction or removal of any human remains or the intentional disturbance of a grave," a class C felony; AS 41.35.200, which applies only to State lands, makes the disturbance of "historic, prehistoric and archaeological resources" (including graves, per definition) a class A misdemeanor; and AS 18.50.250, which applies to all lands in Alaska, requires permits for the transport, disinterment, and reinternment of human remains. The project does not currently involve federal lands, so the provisions of the Native American Graves Protection and Repatriation Act are not applicable. However, state level statutes and sensitivity about grave sites warrant

Comment [ACHP-JTE12]: Are human remains characterized as a "cultural item"? Perhaps deal with human remains in a separate section.

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the development of Inadvertent Discovery Plans to ensure appropriate treatment of these resources.

- **Archaeological resources** include precontact (i.e., dating to the period in North America predating the arrival of Euroamericans) and historic archaeological sites that may or may not be historic properties. The Alaska Historic Preservation Act (AS 41.35) states that the policy of the State is to preserve and protect the historic, prehistoric, and archaeological resources of Alaska and asserts the State's title to all historic, prehistoric, and archaeological resources situated on land owned or controlled by the State, including tideland and submerged land.
- **Cultural uses of the natural environment** include subsistence, ceremonial, or other religious use of places, plants, animals, and minerals. This may include locales in the project vicinity identified through place names and subsistence research. Types of resources can include Native Alaskan sacred sites that may or may not be considered as TCPs, cultural landscapes, ethnographic landscapes, rural historic landscapes including trails and transportation routes, and historic mining landscapes. The American Indian Religious Freedom Act of 1978 (42 USC Section 1996) requires that federal agencies consider the effects of their actions on cultural resources that are of religious significance to Alaska Natives.
- **Numerous other laws, regulations, and Executive Orders protect cultural resources. Executive Order 13007** – Indian Sacred Sites directs federal agencies to allow Native Americans to worship at sacred sites located on federal property and to avoid adversely affecting such sites to the extent practicable. The Antiquities Act of 1906 (16 USC Section 431) establishes penalties for damage and destruction of antiquities and allows for designation of historic landmarks on federal lands. The Archaeological Resources Protection Act of 1979 (16 USC Section 470) establishes a permit process on public and Native American lands, and provides penalties for violations and damages to archaeological sites. Executive Order 13287 – Preserve America directs federal agencies to build partnerships with local governments, Indian tribes, and the private sector to preserve cultural resources, and improve the stewardship of cultural resources.

Information presented herein is based on a review of data on file at the Alaska Heritage Resources Survey (AHRS) and the series of cultural resources survey reports prepared for the Pebble Limited Partnership (PLP) between 2004 and 2013 by Stephen R. Braund and Associates (SRB&A).

[Note: GIS data from surveys conducted at the mine site were received as part of RFI 26 and will be incorporated into the next draft of this section.]

3.7.1 Area of Potential Effect

Section 106 of the NHPA defines a process for the consideration of effects on historic properties within a project's APE, defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR § 800.16(d)). The lead federal agency determines the APE for the undertaking in is determined through consultation among with other federal and state agencies, the AK SHPO, and other interested parties, including tribes who may ascribe religious and cultural significance to properties that may be affected. An APE has not yet been defined for the project. Agency consultation under Section 106 and cultural resource surveys to-date have focused on specific locations of proposed ground disturbing actions associated with mine exploration (e.g., drill pads, placement of communication and meteorological stations) and annually reviewing the cultural field survey methodology.

Comment [ACHP-JTE13]: This does not fit grammatically

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In complying with Section 106 of the NHPA, federal agencies are required to make a reasonable and good faith effort to identify historic properties that may be affected by the undertaking. The scope of the identification effort, including the APE, will be developed in consultation with the Alaska State Historic Preservation Officer (SHPO), Indian tribes, which, for purposes of Section 106, includes Alaska Native Villages and Regional or Village Corporations, as those terms are defined in the Alaska Native Claims Settlement Act, the proponent, and other consulting parties.

~~In the absence of formal consultation associated with a Programmatic Agreement and a project-wide, defined APE,~~ this section reviews sites identified within the project component boundaries (Mine Site, Transportation Corridor, Natural Gas Pipeline, and Amakdedori Port). These components present the geographic area of analysis which will facilitate consultation among agencies, consulting parties in the Section 106 review, and other interested parties in defining the project's APE and assessing impacts on cultural resources. This geographic extent and the analysis of indirect and cumulative effects of the project on cultural resources will be revisited once the APE is finalized.

Typically, indirect effects occur to cultural resources through increased use or visual effects on resources that are valued for their context, setting, association, or similar aspects of integrity. The final APE will be determined through consultation and may result in variations to the number and type of cultural resources discussed herein.

While the previous field surveys cover the majority of the Mine Site, most all of the other project components remain unsurveyed, including lands in the Transportation Corridor and at Amakdedori Port. Background research for cultural resources was previously completed for the entire Expanded Cook Inlet Baseline Study Area (ECIBSA) which encompassed the proposed port and part of the Transportation Corridor. Field investigations primarily involved survey of select locations in the vicinity of Y Valley and Sunday Creek, well north of the current Amakdedori Port location. Two areas were surveyed near Amakdedori for the siting of communications towers. The previous investigations reviewed the potential for near-shore shipwrecks, though a comprehensive marine archaeological review has not been completed for the natural gas pipeline route or for the off-shore components of the port facilities. Additional field surveys and consultation between the agencies and tribes could identify additional resources that have not yet been documented for the project. This section, therefore, discusses cultural resources known to be present based on the previous studies completed by SRB&A. It should also be noted that Section 3.9, Food and Fiber Production – Subsistence, presents a discussion of traditional subsistence practices within the region.

[Note: RFI 26 notes that cultural resource surveys will be completed for the Amakdedori Port site and a desktop investigation will be done for the Transportation Corridor in summer 2018. Results of that work will be included in a future draft of this section.]

3.7.2 Cultural Context

The area of analysis for cultural context covers a broad and complex range of prehistoric traditions, ethnographic regions, and historic periods. The cultural context is presented in two summary archaeology survey summary reports prepared by SRB&A (SRB&A 2011; 2015), and is not repeated here. These two reports offer the most current version of the cultural context for the project area, including references and titles. There were minor changes and updates to the ethnographic and prehistoric context statements between 2011 and 2015. They detail prehistoric traditions, ethnographic data of the Dena'ina, Yup'ik, and Alutiiq peoples that occupied the region, and a chronology of the regional history from contact through the Russian, and then American, periods.

Comment [ACHP-JTE14]: When??

Comment [ACHP-JTE15]: Is this stating that the Corps and other federal agencies have yet to initiate Section 106 consultation? Determining the scope of the identification effort, including the APE, is at the beginning of the Section 106 review. In providing a summary of status, this section should be clear about where we are in the Section 106 review process, and when steps that have not been carried out will be completed.

Comment [ACHP-JTE16]: Not sure what this means

Comment [ACHP-JTE17]: There may be interested parties and stakeholders under NEPA, but we need to be clear about formal identification of and consultation with "consulting parties" for the purposes of Section 106.

Comment [ACHP-JTE18]: Not necessarily "valued for" context, setting, and association, per se, but those characteristics are important in facilitating the experience of the significance that is ascribed to the property

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3.7.2.1 Place Names

SRB&A also collected and investigated Dena'ina place name data for the Bristol Bay and Cook Inlet drainages via a number of sources published over the last several decades. The 2011 SRB&A report offers details on research methods and sources consulted for identifying place name data (SRB&A 2011). A place name database and corresponding map of known place names in the mine analysis area and ECIBSA were also developed and are included in the SRB&A reports. Place name data will be valuable when the project completes NRHP eligibility evaluations and assesses the cultural (and socioeconomic significance) of subsistence resources and use locations within the project area under the NHPA.

Comment [ACHP-JTE19]: Make active voice. Who will use place name data… This section should also specify how the federal agencies will consult with the tribes to utilize and supplement as needed the place name data and subsistence data, etc., that appears to have been gleaned from studies carried out in the past, but not necessarily focused on thisundertaking.

3.7.2.2 Previous Archaeological Research

Prior to SRB&A's surveys, the only cultural resource surveys within the PLP claim boundary occurred in the late 1980s and early 1990s. The Bureau of Land Management (BLM) conducted surveys for Cominco drill sites and proposed airstrips and campsites in 1988, within the boundaries of what would later become the PLP claim. The University of Alaska, Fairbanks (UAF) performed additional field surveys for Cominco's proposed airstrips and campsite. None of the surveys identified any cultural resource sites within the claim boundary. In addition to BLM and UAF's work, the nearest cultural resources surveys to the claim boundary were located 20 miles to the east along the Newhalen River between Newhalen, Iliamna, and Nondalton and within the communities themselves.

SRB&A's annual survey work commenced in 2004 and involved annual surveys until 2012. Initial work focused on the mine analysis area and was limited to locations within PLP's claim boundary with a few exceptions including several surveys in adjoining claim boundaries and a brief survey along a section of the Newhalen. SRB&A's first surveys within the ECIBSA occurred in 2005 and focused on proposed port site locations. SRB&A returned in 2007 to survey a revised port site location and has conducted surveys within the ECIBSA every year through 2013. However, aside from the small surveys near Amakdedori Port, the proposed port site and the Transportation Corridor have not been surveyed. Details of previous research are provided in SRBA 2011 and 2015 and include references and a narrative of previous studies throughout the region. The SRB&A reports primarily discuss archaeological compliance surveys, but also offer a discussion of historic and ethnographic sources including historic documents, ethnographic and linguistic studies, and oral interviews that help characterize the affected environment. Coupled with place name data, each area of inquiry informs archaeological and historic research and helps archaeologists form more robust interpretations and explanations of cultural resources.

[Note: RFI 26 notes that cultural resource surveys will be completed for the Amakdedori Port site and a desktop investigation will be done for the transportation corridor in summer 2018. Results of that work will be included in the next draft of this section.]

A number of these studies informed SRB&A's cultural resource studies undertaken during the 2004 through 2013 field seasons. Ethnographic works about the Dena'ina contributed models of normative behavior, subsistence food storage practices, land use traditions, place names, and many other points of data with bearing on the interpretation of the local Dena'ina's past. Other works provide information about Yup'ik practices including land use, material culture, and behavior through time. Analyses of oral history interviews, when available, are informative as they are told from the perspective of those who actually lived according to the practices being studied.

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3.7.3 Mine Site

The Mine Site has been the primary focus of the cultural resource investigations completed by SRB&A on behalf of PLP to date, and details regarding research, survey, and site recordation methodology are available in SBRA 2011 and 2015. The areas investigated for the reports include lands within the "claim block boundary" which was defined as mining claims owned or leased by PLP and Kaskanak, Inc. and represents a larger area than the current Mine Site location. The previous mine analysis area covered lands from Iliamna Lake in the south to the Nikabuna Lakes in the north and west from the Newhalen River towards the Mulchatna River. Background and place names research covered the entirety of this area, whereas fieldwork was targeted to where PLP had proposed ground disturbing areas.

Prior to SRB&A's archaeological surveys for PLP, the AHRS database listed only three sites in the mine analysis area: ILI-00013, ILI-00031, and ILI-00106. The first two are prehistoric sites near the Newhalen River, and ILI-00106 is a number reserved for use by the National Park Service and may not be associated with an actual site.

Since 2004, SRB&A documented an additional 52 sites (30 since 2009) in the claim block area and added them to the AHRS database. In 2011, SRB&A revisited six AHRS sites (ILI-00201, ILI-00202, ILI-00205, ILI-00219, ILI-00220, and ILI-00252) that SRB&A originally identified in 2007, 2008, and 2010. Subsequently, SRB&A recommended ILI-00201, ILI-00202, ILI-00205, ILI-00219, and ILI-00220 should not retain their AHRS designation because four of the sites were based on naturally modified stones and one site was modern in age. After site revisits in 2012, SRB&A recommended that an additional seven AHRS sites (ILI-00203, ILI-00204, ILI-00207, ILI-00208, ILI-00213, ILI-00229, and ILI-00233) that SRB&A identified in 2006, 2007 and 2009 should be removed from the AHRS because the sites are likely modern or are based on naturally modified stones. In total, 12 AHRS sites were removed from the AHRS database.

In summary there are currently 43 cultural resources sites with an AHRS designation in PLP's larger mine study area as defined in SBR&A 2011 and 2015. None of the 43 AHRS sites in the claim block area have been evaluated for NHRP eligibility. As of 2012, SRB&A has surveyed 14,912 acres within the larger mine study area and excavated 1,103 subsurface tests.

[Note: GIS data from surveys conducted at the mine site were received as part of RFI 26 and will be incorporated into the next draft of this section.]

SRB&A research also resulted in the identification of known place names in the Bristol Bay and Cook Inlet areas. However, limited work has occurred to field verify place name locales or to confirm the presence of sites identified through oral history interviews. There has not been any effort to specifically identify TCPs or other sites of religious or ceremonial importance.

Comment [ACHP-JTE20]: This should spell out what research will be done, and when

Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00013	Newhalen Upper Rapids	Townsend observed this site, from a plane, in a grassy area with apparently no secondary growth. It seems to be situated on several terraces and is about 100 yards long.	Prehistoric
ILI-00031	Newhalen Middle Rapids	This site was observed by Townsend, form a plan, at the top of a single terrace. Four or five house pits were noted.	Prehistoric
ILI-00106	NPS Using	No Description in AHRS database	Unknown

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Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00193	ILI-00193*	119 surface artifacts were collected and a 50cm x 50cm test unit on the margin of the blowout was excavated. This test unit contained 13 flakes, one used flake fragment and one possible blade in the top 10cm. Collected surface artifacts include bifaces, blade fragments, and debitage. There is cultural material in a soil context and there may be charcoal or other datable material in stratified context in the area.	Prehistoric
ILI-00194*	South Fork Koktuli River Site 4	The site consists of lithic artifacts from the surface and subsurface context. Lithic artifacts include three biface fragments and debitage.	Prehistoric
ILI-00196	ILI-00196	Site consists of an isolated artifact. Testing of the surrounding area failed to locate further cultural material.	Prehistoric
ILI-00209	Isolated Find	A possible bifacially reduced cobble was discovered on the surface. The biface was not collected and no other tools were located in the vicinity.	Prehistoric
ILI-00212	Rock Stand and Circle Site	A one meter diameter circle of cobbles with a very large cobble in the center. The rocks appear to be larger and rounder than the rocks in the surrounding area, which are fractured and heavily covered with black lichen. Nearby (50m) is a collapsed stack of similar stones.	Prehistoric / Protohistoric
ILI-00214	Wiggly Lake Camp 2	This site consists of two rock features, a deposit of rifle cartridges of two different calibers, and some antler and bone pieces. The fire ring is a circle nearly a meter in diameter with a line of rocks bisecting the circle down the center. Some burned material was visible beneath the rocks. Nearby to the southeast was an area with numerous cartridges including .223, .338 and 7mm magnum rounds and a tent ring about 12ft in diameter consisting of 5–8 cobbles resting on the surface of the tundra. Possible stakes made from antler and bone fragments are also nearby. In 2012, SRB&A conducted subsurface testing at the site and did not locate any subsurface cultural material.	Historic
ILI-00215	Wiggly Lake Camp 3	SRB&A recorded this site in 2008 as a ring of cobbles that measured approximately 12ft in diameter. When SRB&A revisited the site in 2012, the field crew mapped in the identified faunal remains, a hearth, and rifle cartridges and mapped these features using a Trimble GPS, and conducted multiple subsurface tests in the area. The field crew did not relocate the ring of cobbles. None of the subsurface tests in 2012 produced any cultural material.	Unknown
ILI-00217	Wiggly Lake Camp 5	This site is a relatively large camp that includes a tent ring approximately 20ft in diameter consisting of large cobbles. A plastic water container with bear bite marks, a kerosene can, a firewood stockpile and a stacked pile of caribou antlers were found below the esker on a flat area of tussock tundra. Nearby on the tussock flats a horseshoe pitch with horseshoes and rebar pins were found. A few fire pits were on the flats toward the lake in tussock tundra. SRB&A relocated the site in 2012 and mapped it with a Trimble GPS. Multiple subsurface tests were conducted, all of which were negative for cultural materials. However, personal communication with the makers of the horseshoes, Regent Sports Corporation, allowed SRB&A to determine that the set of horseshoes identified were made during the 1960's.	Historic / Modern
ILI-00218	Isolated Lithic Find	This site consisted of one used flake. The used flake was found on the surface of the tundra. No other artifacts were found on the surface or in test pits excavated nearby.	Prehistoric / Protohistoric

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Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00221	ILI-00221	Site consists of three cultural surface depressions and intact subsurface cultural strata. The cultural surface depressions are in the SW part of the site and consist of two rectangular features measuring 3.5–4m x 2.5–3m x 0.3–0.4m and one circular feature measuring 4.5m in diameter and 50cm deep. One rectangular feature has a narrow depression off the NW corner, possible an entry tunnel. Thirty-six positive shovel tests yielded 607 flakes, five shatter, six biface fragments, one grooved stone, two used flakes, one small unidentified faunal fragment, and charcoal. Cultural material was from between 0–25cm below surface.	Prehistoric
ILI-00222	ILI-00222	Surface lithic scatter on a lag deposit. Pedestrian walkover identified less than 20 flakes, a bluish green chert scraper with some polish, and at least one incomplete biface. There is potential for buried cultural material in vegetated areas adjacent to the lag deposit. Artifacts were not collected. No tests were excavated at the site.	Prehistoric
ILI-00223	ILI-00223	Site consists of an isolated straight stemmed biface with rounded shoulders found on the surface of an exposed lag deposit. The biface is made of an opaque black cryptocrystalline material with white vein inclusions and broken transversely through the midsection. A circle of large stones, about 2m in diameter (ILI-00232), was found approx. 20m S of the biface. The broken point was collected; no tests were excavated at the site.	Prehistoric
ILI-00224	ILI-00224	Site is a lithic reduction site measuring approx.. 6.5m x 5m and consisting of at least 85 lithic artifacts. Artifacts consist of a large cobble core and flake core, one microblade fragment, one retouched flake, one used pebble, one hammerstone, and 79 pieces of debitage. Debitage consisted of 26 complete flakes, 25 broken flakes, and 28 shatter. Both cores and the debitage are of basalt. Two tests were excavated and both were negative. No artifacts were collected.	Prehistoric
ILI-00225	ILI-00225	The site consists of lithic debitage and a tool from both on and below the surface. One positive shovel test was excavated and yielded 10 flakes from 0-5cm below surface. SRB&A also identified a large biface preform and one piece of chalcedony shatter on the surface, about 20m S of the positive test. When field crews revisited the site in 2012, they mapped it with the Trimble GPS and conducted several subsurface tests, none of which located additional cultural materials.	Prehistoric
ILI-00226	ILI-00226	Site consists of lithic debitage recovered from a subsurface context. Two shovel tests yielded 13 flakes; cultural material was 0–20cm below surface. SRB&A has begun processing a bulk hearth sample collected from the 2009 testing. Processing of the bulk sample has yielded small bone fragments, one flake, and burned botanical remains.	Prehistoric
ILI-00227	ILI-00227	Site consists of lithic debitage recovered from a subsurface context. One positive shovel test yielded one flake. Cultural material was 5–10cm below surface. This site is considered an isolated find. SRB&A collected a charcoal sample from a negative test near the positive test.	Prehistoric
ILI-00228	ILI-00228	Site consists of an isolated used flake (broken into two fragments that refit) found on the surface. The used flake was identified on an exposed surface on a tussock tundra floodplain. One negative shovel test was excavated near the surface-find. The used flake was collected.	Prehistoric

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Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00230	Tent Ring	ILI-00230 is a campsite which included numerous pieces of cut wood and discarded sawn antlers, possibly indicating hunting for food rather than sport. The site characterized by a large glacial erratic boulder with at least three tent rings, a fire ring, several antler piles and a caribou skull pointed towards Newhalen. A local elder, mentioned having used this particular camp site with other local Native hunters as recently as last winter, mentioning the boulder as a wind block and cover that allowed hunters to shoot caribou grazing on exposed moss on the opposite side of the lake.	Historic / Modern
ILI-00231	ILI-00231	The site consists of about eight cobbles in a vegetated, relatively flat area next to the lakeshore. ILI-00231 appears to be a deconstructed tent ring or linear array of rounded cobbles well-seated in the tundra vegetation. The linear formation may reflect the use of a tarp, rather than a tent proper, or could also represent a single event of tents being weighted against a direction of wind with the lee sides allowed to flap.	Historic
ILI-00232	ILI-00232	Site includes two separated tent rings. One tent ring consists of approx.. 8 lichen-covered rocks embedded into the tundra it also included a metal tent peg and polypropylene twine as well as a circle of rounded cobbles. SRB&A returned to the site during 2012 cultural resource fieldwork to map it in using the Trimble GPS. The field crew was not able to relocate the tent ring that was embedded into the tundra. Due to the lack of sediment, no subsurface tests were conducted in the area, although additional ground survey was conducted in an attempt to identify previously unidentified cultural materials. No new cultural materials were identified.	Historic / Modern
ILI-00234	ILI-00234	There are at least two tent rings, several pieces of cut wood and an adjacent patch of cut willow and alder stumps, and one fire ring. The fire ring, which contains carbon staining and dead vegetation, also served as a midden for cans, plastic wrappers and bottles.	Historic / Modern
ILI-00235	ILI-00235	Cobbles arranged in two circles and are well-incorporated into the surface vegetation. SRB&A tentatively interpreted the cobble circle as two tent rings and a camp stove use area, where cobbles were like used to shield and support a camp stove. SRB&A revisited the site at the end of the 2012 field season to map the site boundary with the Trimble GPS. The field crew was not able to relocate the second tent ring. No subsurface tests were conducted at this site due to the density of cobbles directly underneath the vegetated surface. Additional ground survey of the area was conducted to ensure that all cultural materials had been identified and recorded during the 2009 field season.	Historic
ILI-00236	ILI-00236	Midden of cut antler, bone, and wood was discovered in a swale. All the wood and bone showed evidence of having been cut with a saw and was well incorporated into the surface vegetation. A tent ring on the raised ground is likely connected to the midden in the swale below, although it is difficult to determine if it represents one long episode of camp supported hunting and processing of caribou or a series of events over time with the site reused for more than one harvest episode. The presence of the antlers indicates that the purpose of the hunt was meat, rather than trophies.	Historic
ILI-00237	ILI-00237	Site includes up to two tent rings located in low-lying tussock tundra. This area was likely well-sheltered from winds, but would have been a damp and uneven place to camp. No fire rings, middens, or wood caches were located near the site.	Historic
ILI-00238	ILI-00238	Site consists of about six cobbles in a circle, measuring 6m in diameter. The cobbles are small, around 10cm diameter, with one larger boulder.	Historic

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Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00239	ILI-00239	This site consists of two large flat boulders, near a caribou skull, with smaller rocks lying on top of the vegetation. This configuration of rocks suggests that the rocks were purposefully stacked by humans.	Historic
ILI-00240	ILI-00240	Site consists of a knoll with exposed bedrock with fracture zones filled with clear quartz crystal to opaque or milky white material, and chalcedony geodes. SRB&A found no manufactured tools or debitage on the surface or in three subsurface tests, the site has good potential as a raw material source and as such the distribution of unused materials on the surface may reflect the selective use of the materials made by prehistoric users. One fragment resembled a possible tool in form but was left in situ.	Unknown
ILI-00241	ILI-00241	Site is a prominent knoll with bedrock outcroppings with veins of quartz and chalcedony. This site is smaller than the similar site ILI-00240, with two outcrop mounds surrounded by an area of bare bedrock. The knoll is surrounded by a litter of quartz fragments including clear, milky, and fractured pieces. This distribution of material may indicate that the site had been used by prehistoric toolmakers, with the fragments examined and the unusable ones discarded.	Unknown
ILI-00242	ILI-00242	Pile of intentionally stacked rocks of unknown purpose. The stack consists of boulder-sized rocks measuring approx. 1m in diameter and 0.5m high. The stack was not likely a "pretend person" but could have been a rock cache or claim mark. No indications of the reason for its construction were found.	Unknown
ILI-00249	ILI-00249	Site is a lithic scatter. The surface is un-vegetated rounded pebbles to cobbles with patches of tundra vegetation. Twenty large flakes and one unifacially worked piece were located on the deflated surface of the terrace and slumping down the stream bank.	Prehistoric
ILI-00250	ILI-00250	ILI-00250 is a lithic scatter. The site consists of three artifacts found on the un-vegetated cobble to pebble surface in the interstices between hummocks and patches of vegetation. The artifacts consist of two flakes and one core.	Prehistoric
ILI-00251	ILI-00251	Site consists of two flakes of green silicified mudstone on an eroded blowout surface. One flake is blade-like. The location is an excellent hunting area with game trails below the site.	Prehistoric
ILI-00252	ILI-00252	Site includes artifacts consisting of numerous small fragments of charcoal and debitage likely resulting from pressure flaking of larger pieces. The area of the cultural deposit is relatively small and consists of a distinctly colored soil deposit beneath the root mat. There was no surface indication of cultural resources deposits.	Prehistoric
ILI-00253	ILI-00253	The site consists of a single dark gray igneous flake recovered from a subsurface test, but there is potential for the recovery of further subsurface artifacts. Viewshed is excellent to the south and west. Most of the northeast tributary valley is visible from the site area. A portion of the Upper Talarik Creek valley is visible to the southwest as well.	Historic
ILI-00260	ILI-00260	SRB&A originally identified this site in 2011 based one test that yielded over 50 lithic debitage and charcoal from between 0 and 5cm. Three other subsurface tests on the landform did not reveal additional cultural materials. The position of the site suggests the site was used as a hunting lookout. In 2012, SRB&A identified two possible stone tent rings within the AHRS site boundary. Vegetation obscures more than 90 percent of both possible tent rings. The field crew mapped in the two potential features but did not conduct any testing in or near either of the possible tent rings because they are located within the site boundary.	Prehistoric

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Table 3.7-1. Known Archaeology Sites near the Mine Study Area

AHRS No.	Site Name	Summarized Description	Period
ILI-00261	ILI-00261	The ground surface is up to 50% percent exposed till and gravel. The cultural materials at the site consist of one piece of lithic debitage observed on the surface among the gravel. Pedestrian survey and two subsurface tests yielded no other artifacts.	Prehistoric
ILI-00268	ILI-00268	The site consists of SRB&A identified the site based on artifacts from two test that yielded 11 lithic flakes, one piece of lithic shatter, one lithic core and charcoal. The area is sparsely vegetated on the terrace with increasing vegetation near the river. The subsurface lithic materials and the charcoal were collected.	Prehistoric
ILI-00269	ILI-00269	This site consists of one stone feature. This feature consists of a collection of cobbles. These cobbles are stacked in a semi-circular pattern with the opening facing down-slope to the N. The view shed is comprised of the valley with one of the Talarik's tributaries. The stones appear to have been settling into the ground for at least 20 years.	Unknown

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

m = meter(s)

cm = centimeter(s)

GPS = global positioning system

Source: SBR&A 2011 and 2015, AHRS 2018

3.7.4 Amakdedori Port

SRB&A based the extent of the ECIBSA on information provided by PLP to characterize cultural resources in broader areas of interest in the lower Cook Inlet region. The ECIBSA spans a large section of western lower Cook Inlet and extends from Kamishak Bay area in the south to the Chinitna Bay area in the north. Background research completed by SRB&A covered the extent of the ECIBSA, with a focus on two particular areas: the Knoll Head Offshore Area and Diamond Point Area, both of which are not in the Amekdedori Port area. Specifically related to offshore cultural resources, SRB&A reviewed two online databases of shipwrecks including the National Oceanographic and Atmospheric Administration (NOAA 2011) Automated Wreck and Obstruction Information System database and the Bureau of Ocean Energy Management (2011) Alaskan Shipwreck Database, and provided data regarding the history of the S.S. Farallon shipwreck.

SRB&A's review of the AHRS database identified 58 previously documented AHRS sites within the entirety of the ECIBSA, two of which (ILI-00185 and ILI-00186) were documented by SRB&A during the 2005 field season. The 58 AHRS sites identified prior to SRB&A's 2012 surveys in the ECIBSA, as well as the three sites identified by SRB&A in 2012 total 61 documented sites across the ECIBSA.

Importantly, there are only two known sites reported in the vicinity of the Amakdedori Port facility, and only limited cultural resource surveys and place name research have occurred here. SRB&A investigated two locations for a proposed weather monitoring station near Amakdedori, and for a repeater tower on a mountain approximately seven miles inland west from the station (SBR&A 2015). One of the two sites is a historic-era shipwreck (ILI-00291) which suggests the need for additional research for the potential of marine archaeology sites that may be encountered during construction of the offshore components of the port facility, and in routing

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the natural gas pipeline across Cook Inlet. The site descriptions provided in Table 3.7-2 are from the AHRS database (AHRS 2018).

Additional surveys would likely result in the identification of more cultural resources. The geographic information system (GIS) analysis demarks the coastline near Amakdedori as favorable beach lands for the harvest of subsistence resources, which suggests a higher potential for site location. The place names research also focused on the northern portion of the ECIBSA, and does not extend to the port facility or the beginning of the Transportation Corridor.

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Table 3.7-2. Known Archaeology Sites near the Amakdedori Port

AHRS No.	Site Name	Summarized Description	Period
ILI-00044	Amakdedori Village Site	Village site consisting of five house pits of two rooms each, with connecting passages and five smaller square pits. All are located on the second and third vegetated beach ridges, which are being eroded by the creek. Testing of two house features by Reger (1980) identified historic artifacts and floor deposits dating to AD 1889-1912.	Prehistoric/ Historic
ILI-00291	AGRAM Shipwreck	Site Description: On October 12, 1923 at 8:45 am the wooden gas screw cannery tender AGRAM was washed ashore and became a total wreck on a beach between Chinik Bay and Amakdedori Native Village. The vessel was en route from Seldovia to Iniskin Bay with her captain, A. K. Thompson of Tacoma and two other crewmen aboard when they ran into a very high sea running together with the worst wind and storm ever witnessed in Cook Inlet. The accident report filed at Juneau on February 15, 1924 described the accident: Wind, high seas, rain and sleet. Constant sounding all night, anchored in 10 fathoms of water, line broke, put second anchor out (250#) also broke away and drifted on beach. This storm seems to be the worst that any living natives in Alaska know anything about. The native village of Amukadorey (sic) was entirely wiped out of existence, and the oldest residents say that nothing like this was ever heard of before, and that they think that there is not a gas boat in Alaska that would have withstood this storm. The vessel was valued at $8,000 at the time of the wreck, but only insured for $4,000. There was no cargo. The crew and passengers reached shore with nothing except the clothing they wore and subsisted on clams and porcupines until the halibut boat Jugo-Slav rescued them. The AGRAM was rated at 22 Gross and 18 Net tons. The ship was built in 1913. At the time of wrecking the vessel was owned by the Cook Inlet Packing Company and registered in Juneau. According to Doug Reger, who surveyed this stretch of the coast in 1980, no shipwreck remains were visible beyond the large amount of debris on Amakdedori beach, which is known for drift debris. The ships remains may still be present below the waterline, although the high energy environment has likely compromised the wrecks structural integrity. References: U S Customs Wreck Report; The H W McCurdy Marine History of the Pacific Northwest (1966), p. 344; Wrecked tars live on weird edibles , The Helena Daily Independent, November 24, 1923, p.2.	Historic

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

AGRAM =

ft = feet

Source: AHRS 2018

3.7.5 Transportation Corridor

There are no previously identified cultural resources in the Transportation Corridor, largely due to the lack of any background research or field survey. The current corridor is south of the Transportation Corridor study area delineated and investigated for the EBD reports (SRB&A 2011 and 2015). SRB&A did limited field work in the previously defined Transportation Corridor study area, which involved examinations of land along the west side of the Newhalen River between Nondalton and Iliamna and of a drilling-core storage area in Iliamna, both visited in October 2006. These studies are not applicable to the South Access Road.

[Note: Analysis is underway to determine if previously surveyed areas overlap with any of the transportation corridor north of Iliamna Lake, particularly for the Iliamna Spur Road and north end of the Mine Access Road as it enters the Mine Site footprint.]

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A review of the AHRS resulted in the identification of ten cultural resource sites within roughly one mile of Transportation Corridor, but no sites within the corridor. Two of these sites are discussed in Section 3.7.4 for sites near Amakdedori Port. The remaining six sites are described below in Table 3.7-3. The remaining sites include a cluster of sites in and around Kokhanok Village near the South Ferry Terminal and along the south shore of Iliamna Lake. The other sites are more isolated.

Table 3.7-3. Known Archaeology Sites near the Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00008	Old Kakhonak	Eskimo village, with a population of 28, listed in the 1890 census. The site was apparently abandoned as residents moved to the present village during the 1940–1950s. Yarborough, in two surveys, noted two or three graves, upright poles from an apparent cache, the remains of a 4m x 5m log cabin, a 2m x 1.1m x .6m deep depression, and a shallow 2m x 5m rectangular feature. Site is near south ferry terminal.	Historic
ILI-00009	Napaimute	Former Eskimo village or camp reported in the 1890 Census as "Napaimiut," with a population of 11. Sue Woods, who owns an allotment on the S side of Lake Illiamna, reported graves at this locality. Graves would tend to confirm this as the location of a village. Site is near south ferry terminal.	Historic
ILI-00025	Saints Peter and Paul Chapel, Kakhonak	Russian Orthodox church built about 1940. Consists of a 25'-6" x 15' nave and sanctuary and an attached 8'-1" x 9'-2" vestibule. The exterior is shingle and corrugated metal. A 2011 survey by THRC stated that the condition of the church was "dilapidated" and a new church has been built (1984) to the SE. [NATREG] Russian Orthodox Church built about 1940. Consists of a 25'6"x 15' nave and sanctuary and an attached 8'1"x 9'2" vestibule. The exterior is shingle and corrugated metal. Site is in Kakhonak Village near south ferry terminal.	Historic
ILI-00056	Gibraltar Lake Village	BIA investigators noted some 12–15 house pits within a 70m x 120m site area on the north bank of the outlet of Gibraltar Lake. The pits, which are poorly defined, appear to cluster on two adjacent mounds, separated by about 45m. A shovel test in the westernmost loci revealed cultural material (beneath the sod and a thin layer of Katmai Ash) consisting of burnt bone, charcoal, and fire cracked rock in a sandy silt matrix, to a depth of about 75cm. A single basalt flake was noted and a C14 date of BP 860+/-60 was obtained. On the north end of Gibraltar Lake, near the south access road.	Prehistoric
ILI-00128	Stone Tools, Possible AsST	No Description	N/A
ILI-00218	Isolated Lithic Find	This site consisted of one possible microblade or blade core. The core was found on the surface of the tundra. No other lithics were found on the surface or in test pits excavated nearby. Near mine access road.	Prehistoric/ Protohistoric
ILI-00241	ILI-00241	Site is a prominent knoll with bedrock outcroppings of flysch material, with veins of quartz and chalcedony interbedded with the host material. This site is smaller than the similar site ILI-240, with two outcrop mounds surrounded by an area of bare bedrock in the form of fractured slate material. The knoll is surrounded by a litter of quarts fragments including clear, milky, and fractured pieces. This distribution of material may indicate that the site had been used by prehistoric tool makers, with the fragments examined and the unusable ones discarded.	N/A

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Table 3.7-3. Known Archaeology Sites near the Transportation Corridor

AHRS No.	Site Name	Summarized Description	Period
ILI-00261	ILI-00261	Site is on a glacial ridge. The ground surface is up to 50 percent exposed till and gravel. The cultural materials at the site consist of one piece of lithic debitage observed on the surface among the gravel. Two subsurface tests conducted on the ridge did not result in the identification of a subsurface component at the site. Site is east of the mine access road.	Prehistoric
ILI-00262	Kokhanok BIA School	The building is currently a single-story frame building measuring 68ft x 18ft in plan, a ridgeline at 11ft and a very low-slope roof, with a satellite dish abutting the W facade. Built ca. 1957 the Kokhanok BIA building served as a school from the late 1950s into at least the 1980s. The building contains basic attributes found in some period BIA schools in Alaska, but has undergone substantial alterations since 1973. Comparison of the 1973 building with the current makes evident an addition built on to the original N end as well as the removal of some of the original fenestration and removal of the original siding. The building currently houses administrative offices.	Historic
ILI-00269	PGCO4 2012-3	On the slope of a small ridge, this feature consists of a collection of cobbles. These cobbles are stacked in a semi-circular pattern with the opening facing down-slope to the N. The view shed is comprised of the valley with one of the Talarik's tributaries. The stones appear to have been settled for at least 20 years.	N/A

Note: Descriptions of known sites as provided are verbatim from the AHRS database and have not been edited.

BIA = Bureau of Indian Affairs

ft = feet

m = meter(s)

THRC =

Source: AHRS 2018

3.7.6 Natural Gas Pipeline Corridor

While the natural gas pipeline represents a distinct project component, the proposed route from Amakdedori Port to the Mine Site falls within the Transportation Corridor. The affected environment discussion for the Transportation Corridor applies to this portion of the Natural Gas Pipeline Corridor. However, no work has been done regarding marine archaeology or historic maritime archaeology for the Iliamna Lake crossing, so there is currently no information regarding the affected environment for this portion of the Natural Gas Pipeline route. The onshore gas line project area on the east side of Cook Inlet will rely on existing infrastructure, and not part of the construction plans for this project. There are no sites currently listed in the AHRS within the pipeline corridor between Happy Valley and near Anchor point where the route crosses Cook Inlet.

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3.8 HISTORIC PROPERTIES

Comment [ACHP-JTE1]: Change this section to active voice to make it clear who is responsible to carry out the identification effort.

As noted in Section 3.7, Cultural Resources, Historic Properties is specifically defined in 36 CFR 800.16 (l)(1) as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the secretary of the interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria."

There are no previously identified historic properties in the Mine Site, Transportation Corridor, Amakdedori Port, or Natural Gas Pipeline components of the project. The studies completed by SRB&A for the Pebble Limited Partnership Environmental Baseline Documents were scoped and completed as "Identification Phase" surveys per the standards and guidelines issued by the Office of History and Archaeology, which summarily aim to determine the presence or absence of sites, but do not involve completing significance evaluations. Further National Register of Historic Places evaluations would be required to advance the project's permitting process in accordance with the requirements of Section 106 of the National Historic Preservation Act and to fully assess direct and indirect impacts under the National Environmental Policy Act. Even though there are currently no known historic properties in the project footprint, indirect effects on historic properties within the Area of Potential Effect (APE) will need to be considered, and the APE may include lands surrounding the footprint where known sites have been identified. Consultation among the State Historic Preservation Office, the U.S. Army Corps of Engineers, and other consulting and interested parties, will finalize the APE and offer direction for completing NRHP eligibility recommendations.

Comment [ACHP-JTE2]: As the APE and the scope of the identification effort have yet to be delineated in consultation with SHPO and other consulting parties, including tribes, and informed by the information that other stakeholders can provide, the identification effort is barely begun.

Comment [ACHP-JTE3]: If TCPs, cultural landscapes, etc., encompass portions of the footprint of the project, then, potential effects to such properties might also be direct.

Comment [ACHP-JTE4]: This chapter should clarify the IDENTIFICATION efforts that still need to be carried out in the APE in consultation with SHPO, Tribes, and other consulting parties. Eligibility recommendations are not the only steps lacking. What about ethnographic studies/ TCP studies, etc.

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Preserving America's Heritage

July 5, 2018

Ms. Sheila Newman
Program Manager-Large Projects
USACE-Regional Regulatory Division
Alaska District, U.S. Army Corps of Engineers
P.O. Box 6898
JBER, AK 99506-0898

Ref: ACHP comments on pre-draft sub-Chapter 3.7 and sub-Chapter 3.8, Pebbles Mine Project EIS
DA permit application POA-2017-271
Lake and Peninsula Borough, Kenai Peninsula Borough, Alaska

Dear Ms. Newman:

The Advisory Council on Historic Preservation (ACHP) is providing initial comments on the pre-draft versions of sub-Chapter 3.7: *Cultural Resources* and sub-Chapter 3.8: *Historic Properties* of Chapter 3: *Affected Environment* for the Environmental Impact Statement (EIS) being developed by the Corps of Engineers, Alaska District (Corps) for the Pebbles Mine Project in Alaska. The ACHP has made comments and edits in red-line strike-out in the text (enclosed). We also provide a summary of our comments in this letter. Overall, it is our opinion that the pre-drafts of sub-Chapters 3.7 and 3.8 are preliminary and need significant revisions and additions.

General comments

The Corps should convert most of the text to utilize an active voice, which will clarify what agency or entity has completed or will carry out aspects of the identification and evaluation of effects to cultural resources and historic properties. The current version of sub-Chapter 3.7 appears to conflate cultural resources as defined in the National Environmental Policy Act (NEPA) and historic properties as defined in Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.) and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800). This chapter should more clearly differentiate historic properties under Section 106 from cultural resources under NEPA. It should also clearly articulate the requirements of federal and state statutes and regulations. Sub-Chapter 3.8 has minimal content. This chapter should clarify the identification efforts that still need to be carried out in the broader Area of Potential Effects (APE) once it is delineated in consultation with SHPO, tribes, and other consulting parties, as well as the sufficiency of the identification effort already carried out in the footprint of specific project components. The Corps should also outline how it will determine the eligibility of identified properties and assess effects on eligible properties in consultation with consulting parties.

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Section 106

In referencing the requirements of Section 106, the Corps should clearly describe the four-step Section 106 review process that is set forth in the Section 106 regulations. As noted above, the chapters should clearly differentiate between NEPA's cultural resources and NHPA's historic properties, as the latter is defined in the Section 106 implementing regulations.

The Corps needs to clearly state the current status of the Section 106 review process and provide a timeline for when the various steps in the Section 106 review will be initiated or completed. The Corps needs to specify when and how the federal agencies will delineate the APE and the scope of identification effort for the undertaking in consultation with the Alaska SHPO and other consulting parties including tribes who may ascribe significance to properties that may be affected.

The Corps should also accurately describe the consultation process that federal agencies must carry out with SHPOs, Tribal Historic Preservation Officers (THPOs), tribes, and other consulting parties that will inform all the steps of the Section 106 review. It should clarify when and how the federal agencies have or will identify and invite consulting parties into the Section 106 review and specify the process by which federal agencies will engage in the necessary consultation.

Tribal Consultation

As defined in 36 CFR §800.16(m), the term Indian tribes and tribes include Alaska Native Villages and Regional or Village Corporations, as those terms are defined in the Alaska Native Claims Settlement Act. Federal agencies are obligated to consult with tribes for all the steps of the Section 106 review process. Further, consultation with Indian tribes must be carried out in a manner that acknowledges the government to government relationship between federal agencies and Indian tribes.

The scope of the identification effort, determinations of eligibility and effect, and steps to resolve adverse effects must all be informed by the traditional knowledge of tribes who ascribe significance to such properties, as gathered from ethnohistoric data, oral history, and other types of research. This chapter should reference the process the federal agencies will use to insure they have actively sought the information necessary to meet the reasonable and good faith standard for the identification effort in the Section 106 regulations. This chapter should also specify how the federal agencies will consult with the tribes to utilize and supplement as needed the place name data and subsistence data, etc., that appears to have been gleaned from studies carried out in the past, but not necessarily focused on this undertaking.

This chapter should also reference the responsibility of federal agencies to address tribal concerns about confidentiality. The Corps, other federal agencies, the project proponent, and its consultants must be sensitive to concerns of the tribes regarding the confidentiality of information they share about properties of religious and cultural significance.

Conclusion

The federal agencies and their contractors developing the drafts of the EIS should refer to *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106* issued by the ACHP and CEQ in March

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2013 for guidance regarding how to better integrate the requirements of Section 106 and the NEPA review process. It is available at: http://www.achp.gov/nepa106.html.

The ACHP provides these comments to assist the Corps, other federal agencies, the Alaska SHPO, Indian tribes, and other consulting parties in the development of the EIS and compliance with Section 106 for the Pebbles Mine project. Should you have any questions or wish to discuss the comments we have provided, please contact John T. Eddins, PhD at 202-517-0211, or by e-mail at jeddins@achp.gov.

Sincerely,



Charlene Dwin Vaughn, AICP
Assistant Director
Federal Permitting, Licensing, and Assistance Section
Office of Federal Agency Programs

Enclosure

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Message

From: Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]
Sent: 7/30/2018 11:55:23 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: RE: Site visit August 28; please respond by July 30

Hi Shane,
Yes, I would like to send state representative(s) on this trip. I've had some internal discussions about who would be best to send. If there are two seats available, we would like to send one representative from our Lands Section and one from our Mining Section. If more seats are available we may have one other person to send. Can you confirm the per person cost estimates and the number of seats that might be available for state representatives on this trip?

Also, Would you be able to confirm with me which transportation corridors you would be looking at on this trip? I assume you would be flying the route proposed by PLP in their application and the Pedro Bay route, but if my assumption is incorrect, or if you are possibly looking at more than those two routes, it would be helpful to know that ahead of time. Thanks for inviting us on the trip and I look forward to working out the details with you.

Take care,
Kyle Moselle
Associate Director
Alaska Department of Natural Resources
Office of Project Management and Permitting
907-465-6849
Kyle.moselle@alaska.gov

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Wednesday, July 25, 2018 11:26 AM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; 'Mcgrath.patricia@epa.gov' <Mcgrath.patricia@epa.gov>; Molly Vaughan <Vaughan.molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Subject: Site visit August 28; please respond by July 30

All,
We contacted Maritime and they are available the week of the August 26; the 28th is best for the Corps and are proposing to fly that day. Low tide is approximately 10:30, and I would like to see the coast as de watered as possible. We will be landing at the Amakdadori site and flying at least two transportation corridors. That being said, we will need confirmation that representative(s) from your agency will want to participate soon. Please respond by July30, so that we can start coordinating.

Approximate cost will be $1300 / hour, plus fuel at cost Approximately 38 gallons/ hour at $4-$5/gallon

[A four hour flight would cost approx. $2060, an 8 hour flight would cost approx.. $2820.]

VR

Shane McCoy

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Message

From: Forland, Sasha [sasha.forland@aecom.com]
Sent: 8/22/2018 10:46:04 PM
To: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects (poaspecialprojects@usace.army.mil) [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]
CC: John Eddins [jeddins@achp.gov]; Douglass Cooper [douglass_cooper@fws.gov]; joan_kluwe@nps.gov; courtenay@curyungtribe.com; john.mccall@bsee.gov; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Charlene Vaughn [cvaughn@achp.gov]; kevin.pendergast@bsee.gov
Subject: RE: Pebble EIS: Agency Meeting on Alternatives
Attachments: 08_08_2018_RFI__062_Scenario_For_Expanded_Development.docx

Sasha Forland
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-----Original Appointment-----
From: Craig, Bill
Sent: Monday, August 20, 2018 9:27 AM
To: Craig, Bill; POA Special Projects (poaspecialprojects@usace.army.mil); Bella, Elizabeth; Isaacs, Jon
Cc: John Eddins; Douglass Cooper; joan_kluwe@nps.gov; courtenay@curyungtribe.com; john.mccall@bsee.gov; Vaughan, Molly; McGrath, Patricia; Hassell, David (PHMSA); bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US); Moselle, Kyle W (DNR); Forland, Sasha; Charlene Vaughn; kevin.pendergast@bsee.gov
Subject: Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Agenda is attached.
<< File: CA Meeting Agenda 080222018.docx >>
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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/21/2018 7:25:44 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: EPA Comments on Pebble Draft Chapter 2
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx

Hello Shane,
Thank you for the opportunity to review the preliminary drafts of Chapters 1 and 2 of the Pebble EIS. Our comments are provided in the attached document. Please let us know if you have any questions.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
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Message

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 8/22/2018 8:36:49 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]
CC: John Eddins [jeddins@achp.gov]; Douglass Cooper [douglass_cooper@fws.gov]; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn [cvaughn@achp.gov]; john.mccall@bsee.gov; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Forland, Sasha [sasha.forland@aecom.com]
Subject: RE: Pebble EIS: Agency Meeting on Alternatives
Attachments: Figure1_AccessOptions.pdf

Attached is an updated access options figure for our meeting this afternoon. We will have wall maps in the conference room and the attached map will help people calling in.
-----Original Appointment-----
From: Craig, Bill
Sent: Tuesday, July 24, 2018 10:10 AM
To: Craig, Bill; POA Special Projects; Bella, Elizabeth; Isaacs, Jon
Cc: John Eddins; Douglass Cooper; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn; john.mccall@bsee.gov; Vaughan, Molly; McGrath, Patricia; Hassell, David (PHMSA); kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US); Moselle, Kyle W (DNR); Forland, Sasha (sasha.forland@aecom.com)
Subject: Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Agenda is attached.
<< File: CA Meeting Agenda 080222018.docx >>
-- Do not delete or change any of the following text. --

Join Webex meeting
Meeting number (access code: Conference Line/Code / Ex. 6

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IMPORTANT NOTICE: Please note that this Webex service allows audio and other information sent during the session to be recorded, which may be discoverable in

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a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

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Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 8/22/2018 5:05:29 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]
CC: John Eddins [jeddins@achp.gov]; Douglass Cooper [douglass_cooper@fws.gov]; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn [cvaughn@achp.gov]; john.mccall@bsee.gov; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Forland, Sasha [sasha.forland@aecom.com]

Subject: Pebble EIS: Agency Meeting on Alternatives
Attachments: CA Meeting Agenda 080222018.docx
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Tentative

Recurrence: (none)

Agenda is attached.

-- Do not delete or change any of the following text. --

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Message

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 8/22/2018 5:05:11 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]
CC: John Eddins [jeddins@achp.gov]; Douglass Cooper [douglass_cooper@fws.gov]; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn [cvaughn@achp.gov]; john.mccall@bsee.gov; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Forland, Sasha [sasha.forland@aecom.com]
Subject: RE: Pebble EIS: Agency Meeting on Alternatives
Attachments: CA Meeting Agenda 080222018.docx

Good morning everyone – attached is the agenda for today's cooperating agency meeting.

-----Original Appointment-----
From: Craig, Bill
Sent: Tuesday, July 24, 2018 10:10 AM
To: Craig, Bill; POA Special Projects (poaspecialprojects@usace.army.mil); Bella, Elizabeth; Isaacs, Jon (jon.isaacs@aecom.com)
Cc: John Eddins; Douglass Cooper; joan_kluwe@nps.gov; courtenay@curyungtribe.com; Charlene Vaughn; john.mccall@bsee.gov; Vaughan, Molly; McGrath, Patricia; Hassell, David (PHMSA); kevin.pendergast@bsee.gov; bobl@jadenorth.com; McCoy, Shane M CIV USARMY CEPOA (US); Moselle, Kyle W (DNR); Forland, Sasha (sasha.forland@aecom.com)
Subject: Pebble EIS: Agency Meeting on Alternatives
When: Wednesday, August 22, 2018 1:00 PM-3:00 PM (UTC-09:00) Alaska.
Where: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Agenda is attached.
<< File: CA Meeting Agenda 080222018.docx >> -- Do not delete or change any of the following text. --

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Meeting number (access code): Conference Line/Code / Ex. 6

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a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

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Message

From: John Eddins [jeddins@achp.gov]
Sent: 6/30/2018 1:09:29 AM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; Katherine A. McCafferty [katherine.a.mccafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: ACHP Coop Agency Scoping Comments and Comments on Preliminar Scoping Issues Report
Attachments: ACHP Scoping Comments for Pebble Mine 20180629 rjn vh rev03.docx

All
Attached are ACHP's general scoping comments and also comments on the Preliminary Scoping Issues Report.
John

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The Advisory Council on Historic Preservation (ACHP) is providing comments on the Preliminary Scoping Issues Report (PSR) which summarizes stakeholder comments submitted to the Corps of Engineers, Alaska District (Corps) between April 1, 2018 and May 15, 2018, during the Corps' scoping for the review of Department of the Army permit application POA-2017-271, submitted by Pebble Limited Partnership (83 FR 13483; pages 13483-13484). The Corps is lead agency for development of a Draft Environmental Impact Statement (EIS) for the proposed Pebble Mine Project for compliance with the National Environmental Policy Act (NEPA). In this submission, we also provide, as a cooperating agency in the NEPA process, our general Agency Scoping Comments regarding the proposed undertaking.

The Undertaking is development of the Pebble copper-gold-molybdenum-porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The Corps is carrying out scoping to assist in determining the scope of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS in compliance with the requirements of the NEPA. ACHP provides its comments here, with an emphasis on the obligation of federal agencies to comply with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108), and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. part 800). In this submission, we also provide, as a cooperating agency in the NEPA process, our general Agency Scoping Comments regarding the proposed undertaking.

Comments on the Preliminary Scoping Issues Report (PSR)

In reviewing the PSR, the ACHP notes that stakeholders have submitted a range of comments regarding different types of resources that can also relate to historic properties. The Corps should keep these comments in mind as the Corps carries out compliance with Section 106 of the NHPA.

Stakeholder comments focus on socioeconomics, subsistence activities, traditional lifeways, archaeological and cultural resources, visual resources, and areas with wilderness qualities. In their comments, stakeholders have specifically referenced the Corps' responsibility to consider effects to traditional native or cultural sites, burial grounds, camp sites, rock art sites, and other cultural resources within the mine and utility corridors. Stakeholders have indicated concerns about the development process, the operation of the mine, the subsequent closure and cleanup, the associated increase in noise, people, heavy equipment, traffic, contamination from spills and run-off, and the potential for effects on ancestral hunting and fishing areas, and other traditional land use areas, as well as effects on subsistence activities, and resultant effects on traditional culture and ways of life.

Stakeholders have stressed the need for the Corps to:

1) study and be informed by traditional ecological knowledge;
2) consider the pristine and wilderness quality of many areas that may be impacted by the project, including: the Koktuli, Nushagak and its tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake;
3) consider effects to the setting and visual resources and the experience of visitors and residents in the areas affected;
4) carefully consider long term and cumulative effects, keeping in mind the potential long duration of the project and the potential that this project may facilitate and encourage 20 other large-scale active mining claims in the Bristol Bay watershed by providing transportation and power infrastructure that they can utilize.

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ACHP General Cooperating Agency Scoping Comments

In complying with Section 106 of the NHPA, the Corps is required to make a reasonable and good faith effort to identify historic properties that may be affected by the undertaking. The scope of the identification effort should be developed in consultation with the Alaska State Historic Preservation Officer (SHPO), Indian tribes, which, for purposes of Section 106, includes Alaska Native Villages, Regional or Village Corporations, as those terms are defined in the Alaska Native Claims Settlement Act, the proponent, and other consulting parties. Consultation with Indian tribes must be carried out in a manner that acknowledges the government to government relationship between federal agencies and Indian tribes.

The Corps should require appropriate inventory surveys for the broad range of historic property types that may be present within the APE, including:

1) Archaeological sites and archaeological districts;
2) Properties of cultural and religious significance to Indian tribes;
3) Traditional cultural properties, including landscapes;
4) Standing structures;
5) Historic Districts.

It is important that the Corps identify and consult with any Indian tribes that ascribe cultural and religious significance to historic properties that may be affected by the undertaking, and work with them to determine an appropriate scope for the identification effort. Determinations of eligibility and effect, and appropriate steps to resolve adverse effects must be informed by the traditional knowledge of Indian tribes who ascribe significance to such properties, as gathered from ethnohistoric data, oral history, and other types of research.

The Corps, other federal agencies, the project proponent, and its consultants must be sensitive to concerns of the Indian tribes regarding the confidentiality of information they share about properties of religious and cultural significance. Further, as noted in our comments on the PSR, the scope of the Corps identification effort should be informed by many of the concerns expressed in the stakeholder scoping comments, even if they don't specifically reference Section 106.

ACHP looks forward to assisting the Corps, other federal agencies, SHPO, Indian tribes, and other consulting parties in review of the Pebbles Mine project under NEPA and Section 106 of the NHPA. Should you have any questions or wish to discuss this matter further, please contact John T. Eddins, PhD at 202-517-0211, or by e-mail at jeddins@achp.gov.

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Message

From: Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]
Sent: 9/11/2018 8:12:06 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]; McGrath, Patricia [mcgrath.patricia@epa.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]
Subject: RE: August 22 Cooperating Agency meeting notes and future agency meeting notes

Shane,
I don't see the notes on the EIS website Patty is referring to in her email. Did you take them down? I would like to review any meeting notes that attempt to summarize information that I have provided to the USACE, including the notes from our Aug. 22 CA meeting. Thanks.

Take care,
Kyle Moselle
Associate Director
Alaska Department of Natural Resources
Office of Project Management and Permitting
907-465-6849
Kyle.moselle@alaska.gov

From: McGrath, Patricia <mcgrath.patricia@epa.gov>
Sent: Monday, September 10, 2018 2:47 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Cc: Craig, Bill (bill.m.craig@aecom.com) <bill.m.craig@aecom.com>; Vaughan, Molly <Vaughan.Molly@epa.gov>; bobl@jadenorth.com; Brooke Merrell (brooke_merrell@nps.gov) <brooke_merrell@nps.gov>; Curyung Tribal (courtenay@curyungtribe.com) <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) (linda.daugherty@dot.gov) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Cooper, Douglass <douglass_cooper@fws.gov>; Hassell, David (PHMSA) (david.hassell@dot.gov) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe (joan_kluwe@nps.gov) <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast (kevin.pendergast@bsee.gov) <kevin.pendergast@bsee.gov>; mary_colligan (mary_colligan@fws.gov) <mary_colligan@fws.gov>; McCall, John (John.mccall@bsee.gov) <John.mccall@bsee.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong (wfurlong@narf.org) <wfurlong@narf.org>
Subject: August 22 Cooperating Agency meeting notes and future agency meeting notes

Dear Shane –

We were surprised to see that notes from the August 22, 2018 Cooperating Agency Meeting on Alternatives Screening were posted to the Corps' Pebble EIS public website. It was our understanding that the Corps would not be making notes from Cooperating Agency meetings publicly available. This understanding came from the January 18, 2018 Cooperating Agency meeting, where Sheila Newman indicated that the Corps did not plan to record interagency conversations unless they are part of a specific decision-making meeting. We were not informed that the August 22nd meeting was a "decision-making meeting," and did not view it as such. Rather we saw it as our first opportunity to hear from the Corps and AECOM how they were specifically conducting alternatives screening and as a brainstorming and Q&A meeting to discuss the alternatives process and preliminary rationale for alternatives considered or dismissed.

In addition, we note that the Cooperating Agency Coordination Plan (6/1/18 version) states "*CAs are encouraged to engage in robust discussion and debate during CA meetings and topical discussions on affected resources. These meetings ensure that all cooperating voices are heard throughout the EIS process and that multiple views can be*

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thoroughly discussed. The USACE will not use the exchange that occurs within these meetings as a substitute for agency position or comments." By posting the meeting notes on the public website under the heading "Cooperating Agency Scoping Documents," the discussion from the meeting is being presented as agency comments. While the meeting discussion entailed questions and observations from us, it was not reflective of formal agency comments on alternatives. In fact, before submitting written comments, we specifically requested more details related to the rationale for how certain alternatives were developed (or not) and for some alternatives that were dismissed.

We are also concerned that the notes were finalized and made public without an opportunity for Cooperating Agencies to review a draft version of the notes. It is standard practice for NEPA Cooperating Agency meeting notes to be circulated in draft form to meeting participants, and for corrections to be made prior to finalization for the file. For example, we note several omissions from and edits to the meeting notes posted to the website, which we would have provided if given the chance to review. These include:

- A robust discussion from the early part of the meeting regarding how the Corps determined a threshold for economic practicability in the absence of an economic feasibility study, as well as how environmental impact trade-offs were considered, was not included in the notes.
- Regarding Mine Locations and Layout Options, we have the following edits:
    - LOC-001 through LOC-003: Patty McGrath suggested a figure to illustrate and additional discussion to explain why these options have been selected. Patty also asked why the alternatives considered do not include mining of Pebble East, the high-grade underground deposit. Bill noted that the analysis does not include a larger mine as an alternative, but does analyze it as a cumulative effect.
    - Patty also recommended a figure to illustrate the mine layout options and location options for waste and tailings storage (as was done for the access options) and additional discussion explaining why these particular locations and layouts were identified and dismissed.
    - Patty asked what happens with pyritic tails in the full build-out scenario. Bill noted that an RFAI is pending with Pebble on this question, and they are also looking at EPA's BBWA.
- Regarding Throughput Options, we have the following edits:
    - Patty suggested need for more information backing-up statements about financial return, including for example why 50,000 tpd does not provide "positive financial return".
- Regarding Concentrate Transport, we have the following addition:
    - There was also a request to look at the NPDES New Source Performance Standards no discharge of process waste water requirements and exemptions which would limit the ability to discharge filtered concentrate water.
- Regarding Tailings, we have the following edit:
    - Patty suggested reviewing the ongoing EIS process for the Resolution copper/molybdenum mine in Arizona regarding tailings management techniques and alternatives.

In the future, we respectfully request that the Corps:

(1) inform Cooperating Agencies in advance when meetings are being regarded as "decision-making" and notes will be recorded and made publicly available on the project website; and,
(2) provide the Cooperating Agencies with an opportunity to review and comment on a draft version of the notes, prior to finalization, any time "official" Cooperating Agency meeting notes are recorded for the file, regardless of whether or not they will be posted to the website.

We are committed to accomplishing a review of draft meeting notes quickly. We think that these steps will ensure a common understanding of meeting purposes and the most accurate representation of our statements in the meeting notes.

Please feel free to call if you wish to discuss.

Best regards-
Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: John Eddins [jeddins@achp.gov]
Sent: 8/8/2018 8:53:03 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]; bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; Katherine A. McCafferty [katherine.a.mccafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; manager@lakeandpen.com; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]
Subject: ACHP's comments on the Draft Scoping Report for Pebble Mine
Attachments: ACHP comments Pebble Project draft scoping report.20180808.pdf

All
Attached are ACHP's comments on the Draft Scoping Report.
John

John T. Eddins
ACHP
202-517-0211
https://www.achp.gov/
e106-online section 106 documentation submittal system
now available to all federal agencies
on the web at: **https://www.achp.gov/e106-email-form**
ACHP offers NEW free and low-cost e-learning courses
for the public, applicants, and NEPA-106 practitioners.
Learn more at https://www.achp.gov/training/elearning

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The Advisory Council on Historic Preservation (ACHP) has reviewed the Draft Scoping Report (dated July 25, 2018) summarizing stakeholder comments submitted to the Corps of Engineers, Alaska District (Corps) between April 1, 2018, and May 15, 2018, during the Corps' scoping for the review of Department of the Army permit application POA-2017-271, submitted by Pebble Limited Partnership (83 FR 13483; pages 13483-13484). The Corps is lead agency for development of a Draft Environmental Impact Statement (DEIS) for the proposed Pebble Mine Project for compliance with the National Environmental Policy Act (NEPA). On July 5, 2018, ACHP commented on the Preliminary Scoping Issues Report (PSR). As before, the ACHP provides its comments here, with an emphasis on the obligation of federal agencies to comply with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108), and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. part 800).

In reviewing the Draft Scoping Report, the ACHP wishes to reiterate its comments on the PSR. As noted, stakeholders have submitted a range of comments regarding different types of resources that can also relate to historic properties. We again advise that the Corps should keep these comments in mind as the Corps carries out compliance with Section 106 of the NHPA.

Stakeholders have stressed the need for the Corps to:

1) study and be informed by traditional ecological knowledge;
2) consider the pristine and wilderness quality of many areas that may be impacted by the project;
3) consider effects to the setting and visual resources and the experience of visitors and residents in the areas affected;
4) carefully consider long term and cumulative effects, keeping in mind the potential long duration of the project, potential expansions of the project beyond what is currently proposed for permit review, and the potential that this project may facilitate and encourage a number of other large-scale active mining claims in the Bristol Bay watershed by providing transportation and power infrastructure that they can utilize.

The Corps should require appropriate inventory surveys for the broad range of historic property types that may be present within the APE. The Corps should also clarify in the DEIS where it is in the Section 106 review and when the proponent will be carrying out the needed inventory surveys for identification of historic properties that may be affected by the undertaking. As noted in our comments on the PSR, determinations of eligibility and effect, and appropriate steps to resolve adverse effects must be informed by the traditional knowledge of Indian tribes who ascribe significance to such properties, as gathered from ethnohistoric data, oral history, and other types of research. Finally, as we noted in our comments on the PSR, the Corps, other federal agencies, and the proponent must be sensitive to concerns of the Indian tribes regarding the confidentiality of information they share about properties of religious and cultural significance.

ACHP looks forward to assisting the Corps, other federal agencies, SHPO, Indian tribes, and other consulting parties in review of the Pebbles Mine project under NEPA and Section 106 of the NHPA. Should you have any questions or wish to discuss this matter further, please contact John T. Eddins, PhD at 202-517-0211, or by e-mail at jeddins@achp.gov.

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Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/19/2018 7:22:16 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Pebble Scoping letter round 2
Location: Conference Line/Code / Ex. 6 -Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/8/2018 12:02:05 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: pebble eis draft scoping report
Attachments: PebbleEIS draft scoping report EPA comments MV.docx

Hi Patty – thanks so much for your review. I made some minor edits to the comments, and added a few of my own. I know you said you didn't need to review my revisions before sending to the Corps, but if you do have time to take a look at what I've added (in track changes) please do, and let me know if you have any questions/concerns on my comments. I'll plan to send this to Shane by Wednesday afternoon. Jill has said she does not need to review.
Thanks,
Molly

From: McGrath, Patricia
Sent: Monday, August 06, 2018 4:44 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: pebble eis draft scoping report

Hi Molly –
Attached are my comments on the draft scoping report.
I prioritized this review over chapter 4 reviews, due to the upcoming deadline.
Please let me know if you have questions.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: Butler, Barbara [Butler.Barbara@epa.gov]
Sent: 10/22/2018 1:32:26 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Godsey, Cindi [Godsey.Cindi@epa.gov]
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)
Attachments: Comments on Dry Stack memo_BAB.docx

Hi Patty and Molly,

Deliberative Process / Ex. 5

I hope these comments are helpful and please let me know if you have any questions.

Thanks,
Barb

Ps. So you're aware, I will be out of the office the 24th through the 31st.

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, October 17, 2018 6:35 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Barb and Cindi-
I have not had an opportunity to review this memo yet, but plan to do so tomorrow. If you have time, can you also review and send Molly and I any comments that you have by COB 10/22? If you do not have time, please let me know. I have reviewed dry stack analyses for other EISs so I am pretty comfortable with this, but would also appreciate a second (or third!) set of eyes.
This memo will be discussed at a meeting with the Corps and other agencies on October 24. We have not decided whether to submit written comments - that will depend on our review.
Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, October 11, 2018 12:00 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,

AMERICAN OVERSIGHT

Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/14/2018 11:20:50 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Scoping Letter - for ORC Review
Attachments: Pebble Project Scoping 051418 draft.docx

Hello Ashley,
The draft scoping letter is now ready for your review. This is actually a little early compared to the original schedule. I understand that at the BB Check-in meeting last week, which I missed, David asked us to try to compress the review schedule if possible. I don't know if this is ultimately going to be possible overall, but we are a few days ahead at this point at least!

So, if possible, please send me your edits by COB Friday (the 18th). (If this won't work and we need to revert to the original deadline of the 23rd, please let me know.)

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/5/2018 5:17:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Pebble scoping letter heads-up

Hi Patty – Two things on scoping.

First – I have shown my lack of technical savvy by forgetting to use the Sharepoint site to coordinate drafting and review of the scoping letter. I've moved the draft to the sharepoint site, so if you didn't already begin editing and want to do so on sharepoint, here it is (I am also fine with combining multiple versions, I've been doing it that way for years!):

Internal website / Ex. 6

Second – Per Chris Eckley's email below – if you think there will be a need for his input, I recommend sending him the current draft so he can review before leaving on vacation. Please let me know your recommendation.

Thanks,
Molly

From: Eckley, Chris
Sent: Thursday, April 05, 2018 8:58 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble scoping letter heads-up

Hi Molly,

Personal Matters / Ex. 6

However, I will have my computer with me, so if there is something critical that you want my input on then send me a text **Personal Phone / Ex. 6** and I'll review and provide comments on the letter in the evening.
Thanks,
Chris

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 9:39 AM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble scoping letter heads-up

Good morning Cindi, Chris and Tim,
I wanted to give you an update and heads-up regarding the scoping comments for Pebble. As you know, we have a short time window for preparation of the comments, and a large percentage of that will be allotted for the internal review process. Patty and I are currently working on the comments, and plan to have a completed draft by Monday (4/9). At that point I would like to send it to you for your review and input. If Patty and I identify specific areas where more site-specific detail is needed in the scoping letter, I will flag that for you. Otherwise the request will just be to review the portions of the letter related to your area of expertise, and make sure you are okay with the content.

In order to stay on schedule, I will need your input by the 11th. I apologize in advance for the very short turnaround. Please let me know if you will have availability early next week to look over the letter.

AMERICAN OVERSIGHT

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/14/2018 7:53:52 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble scoping letter

<!--[if lte mso 15 || CheckWebRef]-->
Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Project Scoping 051418 draft.docx

<!--[endif]-->
Link to current version, for discussion

From: McGrath, Patricia
Sent: Saturday, May 12, 2018 1:26 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble scoping letter

Hi Molly –
Attached are my comments on the pebble scoping letter – this also includes comments from Chris and Justine.
Let me know if you have questions.
Please give me a call on Monday morning if you have a minute.
Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 4/5/2018 4:46:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble scoping letter heads-up

Good morning –

I am available Monday to help with the review. However, I will be out-of-the-office Tues-Thurs (Apr 10-12) helping with a Public Meeting in Idaho on another project. Back in the office Friday April 13th.

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Thursday, April 5, 2018 9:39 AM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble scoping letter heads-up

Good morning Cindi, Chris and Tim,
I wanted to give you an update and heads-up regarding the scoping comments for Pebble. As you know, we have a short time window for preparation of the comments, and a large percentage of that will be allotted for the internal review process. Patty and I are currently working on the comments, and plan to have a completed draft by Monday (4/9). At that point I would like to send it to you for your review and input. If Patty and I identify specific areas where more site-specific detail is needed in the scoping letter, I will flag that for you. Otherwise the request will just be to review the portions of the letter related to your area of expertise, and make sure you are okay with the content.

In order to stay on schedule, I will need your input by the 11th. I apologize in advance for the very short turnaround. Please let me know if you will have availability early next week to look over the letter.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/5/2018 4:39:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Pebble Scoping Comments - Please review/edit

FYI regarding air comments – I realize I forgot to cc you on my email to Jay and Karl.

From: McAlpine, Jerrold
Sent: Thursday, April 05, 2018 8:13 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Comments - Please review/edit

Affirmative, I'll have a review and comments to you by the 10th; I'll be out at an all-day meeting on the 11th, but I would vouch for the 10th for a short call.

Jay

Jay McAlpine, PhD
Atmospheric Scientist, Regional Modeling Contact
Office of Air and Waste
U.S. Environmental Protection Agency, Region 10
1200 6th Ave., OAW-150
Seattle, WA 98101
206.553.0094
McAlpine.Jay@epa.gov

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 8:56 AM
To: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: Pebble Scoping Comments - Please review/edit

Good Morning Jay and Karl,
As you know, we are in the process of drafting scoping comments for the Pebble Project, with a short comment window. I have a very aggressive schedule to get the letter ready for management review. I have completed a first draft of the letter, but would like your input on the air quality scoping comments. I believe you are also aware that the Corps has declined our repeated requests to extend our areas of "special expertise" for cooperating agency involvement beyond the 404 nexus. This means that we only have three opportunities for input on AQ issues – Scoping, DEIS and FEIS. Consequently, I want to make sure the AQ comments are as thorough as we can be at this stage, given what we know about the project.

I've attached the current draft of the comment letter. For easy reference I've also provided a link below to the project description on the sharepoint site. The final attachment is the scoping comments on Donlin gold – this letter overall used a much longer format than we are using for this scoping letter, but may provide some ideas of other things to include, if appropriate/necessary.

In order to stick to the letter writing schedule, I will need any comments/edits/additions you have by COB 4/11. If a conference call to discuss would be helpful, please let me know and I will set one up.

Internal website / Ex. 6

AMERICAN OVERSIGHT

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 5/10/2018 9:11:14 PM
To: Meade, Christopher [Meade.Chris@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Project Scoping 050818 draft.docx

Thank you for providing your input to the scoping letter, Chris! We appreciate it. Thanks for your review today as well, Patty. Yes, Chris will be missed around the Region for sure. Hopefully, he'll swing through the Seattle office from time to time when he's in town!
Jill

AMERICAN OVERSIGHT

Message

From: Meade, Christopher [Meade.Chris@epa.gov]
Sent: 5/10/2018 6:30:20 PM
To: Barton, Justine [Barton.Justine@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Project Scoping 050818 draft.docx
Attachments: Pebble Project Scoping 050818 draft w JB+CM.docx

From: Barton, Justine
Sent: Thursday, May 10, 2018 8:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

I discussed my input with Chris yesterday afternoon, and he has it covered. JB ☺ And yes, we will all miss him very much!

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: McGrath, Patricia
Sent: Thursday, May 10, 2018 7:43 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

All –
I talked to Chris late yesterday, it sounds like he will be sending me the revised letter with his comments this morning. I need the letter by 9:30 am so that I can spend the day reviewing and get my changes to Molly in time.
Please let me know if that will be a problem.

Personal Matters / Ex. 6 He was invaluable to the region and the mining team on Kensington and other projects (including some of the Canadian mines and transboundary reviews). I personally learned a lot about the 404 program from working with him and was looking forward to working with him on Pebble.

Patty

From: Nogi, Jill
Sent: Wednesday, May 9, 2018 9:07 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Project Scoping 050818 draft.docx

I found it, Justine – here's the current draft as of yesterday. Thank you!
Jill

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/13/2018 7:23:01 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter
Attachments: Pebble Project Scoping 060518 draft HQ Review 061318.docx

Current version with edits from HQ.

-----Original Appointment-----
From: Vaughan, Molly
Sent: Wednesday, June 13, 2018 9:07 AM
To: Vaughan, Molly; McGrath, Patricia; Palomaki, Ashley; Nogi, Jill
Subject: Pebble scoping letter
When: Wednesday, June 13, 2018 10:30 AM-11:30 AM (UTC-09:00) Alaska.
Where: R10AOO[redacted]/AOO-Meet-Me-Ln/R10-AOO-Eqpt

Conference Line/Code / Ex. 6

Conference Line/Code /

Ashley and Patty, I understand that this time works for both of you to discuss today. Jill, your schedule looks busy, but I've included you in case.
Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 7/20/2018 7:56:49 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: Comment spreadsheet Chapter 4 cg.docx

Molly,

Deliberative Process / Ex. 5

Have a great weekend - the weather looks like it will be gorgeous so summer has returned!

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:
- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal website / Ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

AMERICAN OVERSIGHT

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/4/2018 10:59:18 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Scoping - First Draft
Attachments: 18-0002-COE Pebble Project Scoping 040418 draft.docx

Hi Patty,
Here is a first draft of the Pebble letter, for your review and for our conversation in a few minutes. I've attached it as a Word doc rather than OneDrive, because there have been some issues with OneDrive links lately.
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 3/30/2018 12:14:42 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Wake, Neverley [wake.neverley@epa.gov]
Subject: RE: Final Scoping_meeting_schedule.docx

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Scoping_meeting_schedule.docx

<!--[endif]-->

Hi Patty,

Personal Matters / Ex. 6

When you have time, would you please follow up with Shane regarding whether a conference line will in fact be available for the scoping meetings in the smaller communities? If the answer is yes, I've attached a document where you, Neverley and I can pick which days we are available to call in.

Personal Matters / Ex. 6

Thanks,
Molly

From: McGrath, Patricia
Sent: Friday, March 23, 2018 9:41 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Fwd: Final Scoping_meeting_schedule.docx

Sent from my iPhone

Begin forwarded message:

> **From:** POA Special Projects <poaspecialprojects@usace.army.mil>
> **Date:** March 23, 2018 at 10:34:46 AM PDT
> **To:** Bob Loeffler <bobl@jadenorth.com>, "'cvaughn@achp.gov'" <cvaughn@achp.gov>, "Daugherty, Linda (PHMSA)" <linda.daugherty@dot.gov>, "David Seris (David.M.Seris@uscg.mil)" <David.M.Seris@uscg.mil>, "Hassell, David (PHMSA)" <david.hassell@dot.gov>, Kevin Pendergast <kpendergast@rmconsult.com>, "'mary_colligan@fws.gov'" <mary_colligan@fws.gov>, "McCall, John" <john.mccall@bsee.gov>, "'Mcgrath.patricia@epa.gov'" <Mcgrath.patricia@epa.gov>, "Moselle, Kyle W (DNR)" <kyle.moselle@alaska.gov>, Nathan Hill <manager@lakeandpen.com>, "POA Special Projects" <poaspecialprojects@usace.army.mil>
> **Cc:** "Craig, Bill" <bill.m.craig@aecom.com>
> **Subject: Final Scoping_meeting_schedule.docx**
>
> All,
> Here is the planned schedule for the scoping meeting coming up in April. I will send logistics when AECOM provides them to me.

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 5:03:28 PM
To: Wake, Neverley [wake.neverley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Final Scoping_meeting_schedule.docx

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Scoping_meeting_schedule.docx

<!--[endif]-->

Hi Patty and Neverley,
Since the Corps has confirmed that a phone line will be available, I am resending this OneDrive link so that we can organize our own participation in the meetings.
Thanks,
Molly

From: Vaughan, Molly
Sent: Thursday, March 29, 2018 4:14 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Wake, Neverley <wake.neverley@epa.gov>
Subject: RE: Final Scoping_meeting_schedule.docx

Hi Patty,

Personal Matters / Ex. 6

When you have time, would you please follow up with Shane regarding whether a conference line will in fact be available for the scoping meetings in the smaller communities? If the answer is yes, I've attached a document where you, Neverley and I can pick which days we are available to call in.

Personal Matters / Ex. 6

Thanks,
Molly

From: McGrath, Patricia
Sent: Friday, March 23, 2018 9:41 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Fwd: Final Scoping_meeting_schedule.docx

Sent from my iPhone

Begin forwarded message:

> **From:** POA Special Projects <poaspecialprojects@usace.army.mil>
> **Date:** March 23, 2018 at 10:34:46 AM PDT
> **To:** Bob Loeffler <bobl@jadenorth.com>, "'cvaughn@achp.gov'" <cvaughn@achp.gov>, "Daugherty, Linda (PHMSA)" <linda.daugherty@dot.gov>, "David Seris

AMERICAN OVERSIGHT

(David.M.Seris@uscg.mil)" <David.M.Seris@uscg.mil>, "Hassell, David (PHMSA)" <david.hassell@dot.gov>, Kevin Pendergast <kpendergast@rmconsult.com>, "'mary_colligan@fws.gov'" <mary_colligan@fws.gov>, "McCall, John" <john.mccall@bsee.gov>, "'Mcgrath.patricia@epa.gov'" <Mcgrath.patricia@epa.gov>, "Moselle, Kyle W (DNR)" <kyle.moselle@alaska.gov>, Nathan Hill <manager@lakeandpen.com>, "POA Special Projects" <poaspecialprojects@usace.army.mil>
Cc: "Craig, Bill" <bill.m.craig@aecom.com>
Subject: Final Scoping_meeting_schedule.docx

All,
Here is the planned schedule for the scoping meeting coming up in April. I will send logistics when AECOM provides them to me.

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 4:34:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Hot Topic - Pebble Scoping

Okay, thanks, I'll stop worrying about it then.

From: McGrath, Patricia
Sent: Tuesday, April 03, 2018 8:32 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Hot Topic - Pebble Scoping

I already sent up a hot topic on this to David. Sorry, I should have cced you and Jill.
Patty

From: Vaughan, Molly
Sent: Tuesday, April 3, 2018 8:54 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Hot Topic - Pebble Scoping

Hi Patty – Jill asked me to write up a Hot Topic on Pebble for OERA, and I know AOO management will want one as well. But, I thought I'd better check in with you before sending it up. Here's what I've got so far – please let me know if you have any edits, or if you've already sent up a Hot Topic for the scoping.

The U.S. Army Corps of Engineers has announced a 30-day public scoping period for the Pebble Project, to run April 1-30, 2018. The Pebble Limited Partnership proposes to mine a large copper-gold-molybdenum deposit located 200 miles southwest of Anchorage on State land. The project includes a large open-pit mine, processing facility, and tailings disposal facilities at the mine site as well as access roads, natural gas pipeline, and port sites on Lake Iliamna and Cook Inlet. EPA is a cooperating agency for development of the EIS. (Contact Patty McGrath 3-6113)

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/25/2018 9:15:43 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: TM PreDraft Ch4 Sec4.18 WQ Sed comments 7-25-18.docx

Attached are my review comments for PreDraft Ch 4 Section 4.18 (Water and Sediment Quality).

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:
- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal website / Ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

AMERICAN OVERSIGHT

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/9/2018 10:19:23 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Pebble scoping meeting talking points

Hi Patty – I meant to cc you on this email, so that you too would have the clean version ready for next week's meetings.

From: Vaughan, Molly
Sent: Monday, April 09, 2018 2:18 PM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble scoping meeting talking points

Hi Neverley,
Here are the talking points I received from Patty, with input from Ashley Palomaki.

Introductory Talking Points:

- EPA is a cooperating agency in assisting the Corps in developing the EIS.
- The Corps has specifically requested that we provide input into issues related to the CWA 404(b)(1) guidelines.
- EPA has put together a technical team to provide this assistance and review EIS documents.

If asked how the Proposed Determination or Bristol Bay Watershed Assessment influences the EIS process:

- The BBWA is a three-year, twice peer-reviewed study that provides technical and scientific information about the watershed and the impacts of mining the Pebble deposit. We will use the Assessment, along with other available information, to inform our input into the EIS.

- The Proposed Determination, which has not been finalized, contains proposed restrictions for mining the Pebble deposit. It is not a veto of all mining. Pursuant to the terms of a settlement agreement with the Pebble Limited Partnership, EPA cannot move forward with its Section 404(c) process, should such a decision be made, until a Final EIS is noticed for the project or until May of 2021, whichever is sooner.

I'll be teleworking tomorrow, but will give you a call sometime before the meeting to share anything relevant that I learn in participating in the meeting tonight.

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
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222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/6/2018 10:57:14 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: talking points for Pebble scoping meetings

Hi Patty –

In general, this looks consistent with what we've said previously (in response to the settlement agreement, we got reporter questions on how the BBWA would be used going forward). Just a couple suggestions. I might leave out the

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Your answer doesn't address the PD? Do you want something on that?

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Friday, April 06, 2018 8:14 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: talking points for Pebble scoping meetings

Hi Ashley-
Assuming that the Corps establishes a conference line, Molly, Neverly, and I will be calling into the Pebble EIS scoping meetings.
It is not clear if we will be introduced or be asked to speak and I don't expect that there will be Q&A.

However, in preparation we are preparing talking points. I would appreciate your review of these, particularly what we say (only if asked) about the BBWA.
Feel free to give me a call if you want to discuss.
Thanks –
Patty

Introductory Talking Points

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EPA is a cooperating agency in assisting the Corps in developing the EIS.
The Corps has specifically requested that we provide input into issues related to the CWA 404(b)(1) guidelines.
EPA has put together a technical team to provide this assistance and review EIS documents.

If asked how the PD or BBWA influences the EIS process –

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [douglas.mark@epa.gov]
Sent: 8/22/2018 8:02:10 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Automatic reply: Please Review: Pebble EIS: Preliminary Alternatives Screening

I will be away from the office the afternoon of 8/22 through 8/24. I will have phone access.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/5/2018 5:41:42 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
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vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 5/9/2018 4:07:03 PM
To: Barton, Justine [Barton.Justine@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Project Scoping 050818 draft.docx
Attachments: Pebble Project Scoping 050818 draft.docx

I found it, Justine – here's the current draft as of yesterday. Thank you!
Jill

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 5/9/2018 3:04:25 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble scoping letter

Hi Molly,
I talked with Justine this morning and she will hear from Chris about what he's thinking we want to say in the letter. Neither Justine or I have access to the draft on your One Drive at the moment, but maybe Patty can email it to Justine today? She can work on it today and then she'll be out. She can work on it Monday morning as well if needed. Thanks - Jill

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 9/27/2018 9:09:40 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Alternatives comments

Hi Patty – here are Mark's comments on the new Alternatives document

From: Douglas, Mark
Sent: Wednesday, September 26, 2018 4:24 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Alternatives comments

Molly,

Below are my comments, beyond what was initially offered, for the alternatives development process document.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/21/2018 8:44:07 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Automatic reply: revised climate language for Pebble scoping

I am out of the office for work travel on June 21st and will not have access to email. If you need to reach me, please call 206-553-8582. I will be checking messages periodically.

Best,

Ashley

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 8/14/2018 6:04:45 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments
Attachments: Pebble Preliminary Ch. 4 DRAFT 081418-JN suggestions.docx

Molly,
Thank you for sharing the draft comments on preliminary chapter 4 sections that we reviewed in our role as a cooperating agency for EIS development. I appreciate the work that you, Patty, and associate reviewers have put into making recommendations for bolstering the chapter and the EIS. I'm attaching the version on which I have made some suggested edits/wording changes. I also have a few questions about things we might want to add/recommend – although if we have a chance to talk before this is sent out, it could help me to understand whether those points are covered elsewhere or not needed. If any time opens up on my calendar for tomorrow, I will let you know. I could talk on Thursday morning before 9am Pacific time, or if next week would be better, we could schedule time to talk while I'm in DC. If there's not a good time to talk about it, I would appreciate seeing our table of comments again briefly before it goes out, to know which suggestions were incorporated.

Thanks! Jill

From: Vaughan, Molly
Sent: Thursday, August 09, 2018 4:33 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Preliminary Ch 4 comments

Hi Jill,
As we discussed earlier, here are the draft comments on the preliminary chapter 4 sections of the Pebble EIS we received for review. Comments are not officially due until August 31, but Patty and I would prefer to send these to the Corps as expediently as reasonable. Please let me know if you have any comments or edits – you can make your edits directly on this OneDrive version or a separate copy, whichever you prefer.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

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vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/8/2018 11:30:00 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Scoping Comments for your Review
Attachments: Pebble Project Scoping 050818 draft.docx

Hi Patty,
The (almost) completed draft scoping letter is attached for your review. Although today was my deadline to get it to you, I had hoped to get it to you sooner. However, I have been held up waiting for associate reviewer input on the section on Marine Environment impact (especially dredging and disposal). Unfortunately, as of the time I need to leave today, I still have not received any comments from Chris Meade on that section. I have been in contact with Jill Nogi, and if Chris is not able to devote time to this today, she will ask someone else in the unit to take a look (though Justine won't have the local/project-specific knowledge that Chris has). I have asked for feedback from ERSMU by Monday **Personal Matters / Personal Matters** and I can incorporate it into the letter at the same time I address your edits – and will also share that section with you again at that time to make sure you don't have any further edits.

Please respond with your edits/comments by Monday morning, so that I can make the needed changes and get the letter to ORC before the Mining Team retreat.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/21/2018 8:34:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: revised climate language for Pebble scoping

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

 pebble scoping climate text 062118.docx

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Hi Patty,
To avoid any further delays next week, I shared the revised text for the climate section back with HQ for OFA/OGC review, to make sure we were hitting the mark, and received the edits/comments below. The attached version contains my clarifying edits in response. I wanted to check if you have anything further to add before I send this back to Megan? She plans next to share it with Joel Scheraga, the Senior Advisor for Climate Adaptation and in the Office of Policy.
Thanks,
Molly

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 11:49 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: revised climate language for Pebble scoping

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

AMERICAN OVERSIGHT

Megan

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time **Personal Matters / Ex. 6** went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
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222 W. 7th Avenue #19
Anchorage, AK 99513-7588

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vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 8:16:51 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Missed conference with Nogi, Jill, Palomaki, Ashley, Vaughan, Molly-Pebble Scoping letter round 2

Vaughan, Molly 1:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/25/2018 4:10:47 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble Scoping Letter - ready for your review

Hi Jill – When you send a version to David, can you send to me as well? I'm still working on some of the cites and want to ensure that I have the correct version.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Thursday, May 24, 2018 3:26 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Scoping Letter - ready for your review

Hi Jill-

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 1:02 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter - ready for your review

Hi Jill,
The Pebble letter is ready for your review. I will be working until approximately 2:30 or 3pm Alaska time today. If you complete your review before then, I can accept edits and send to David and Tami for their review. If it is not completed in time, please send to them directly as we have discussed.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 8/10/2018 9:59:19 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments

Thank you, Molly. My plan is to review and provide any recommendations I may have for your consideration by the end of the day on Tuesday, 8/14. I'll be teleworking on Tuesday; please feel free to call towards the end of the day if you haven't heard from me.
Jill

From: Vaughan, Molly
Sent: Thursday, August 09, 2018 4:33 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Preliminary Ch 4 comments

Hi Jill,
As we discussed earlier, here are the draft comments on the preliminary chapter 4 sections of the Pebble EIS we received for review. Comments are not officially due until August 31, but Patty and I would prefer to send these to the Corps as expediently as reasonable. Please let me know if you have any comments or edits – you can make your edits directly on this OneDrive version or a separate copy, whichever you prefer.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/20/2018 9:07:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble scoping letter - responses to OFA and OW edits

Jill – My recommendation is that this edit (accepting the changes to the text on pg. 19, but simply keeping in the footnote with the citation) would not need to go back through OFA. If you disagree, please let me know and I will circle back with Megan on that edit.
Thanks,
Molly

From: McGrath, Patricia
Sent: Wednesday, June 20, 2018 12:18 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Pebble scoping letter - responses to OFA and OW edits

Hi Molly-
I reviewed and had 2 comments for your consideration that I included in the letter (**Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Patty

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 10:23 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble scoping letter - responses to OFA and OW edits

Hi All,
I had a chance to talk through the OFA edits with Megan Barnhart yesterday afternoon, and have responded to all of the edits received from OFA and OW staff – in the linked document version. **Personal Matters / Ex. 6**
Personal so feel free to call if you want to discuss. I'll accept the edits and clean it up after hearing back from you with concurrence or any additional changes. There was one new comment on Climate which I realize may need to change again after we get final OGC edits back, but I've attempted to address it for now, based on direction from Megan yesterday.
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
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Anchorage, AK 99513-7588

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vaughan.molly@epa.gov

AMERICAN OVERSIGHT
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/20/2018 5:22:35 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble scoping letter - responses to OFA and OW edits

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Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Project Scoping 062018 draft redline.docx

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Hi All,

I had a chance to talk through the OFA edits with Megan Barnhart yesterday afternoon, and have responded to all of the edits received from OFA and OW staff – in the linked document version. I am not **Personal Matters / Ex. 6 Personal** so feel free to call if you want to discuss. I'll accept the edits and clean it up after hearing back from you with concurrence or any additional changes. There was one new comment on Climate which I realize may need to change again after we get final OGC edits back, but I've attempted to address it for now, based on direction from Megan yesterday.

Thanks,

Molly

Molly Vaughan
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AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 6/26/2018 8:14:27 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has shared 'Pebble Project Scoping 062618 draft'

Hi Patty and Ashley, here is the link to the current draft of the letter.

Open Pebble Project Scoping 062618 draft.docx

See more related to Vaughan, Molly in Delve.

 Get the SharePoint mobile app!

  

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/17/2018 11:05:18 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Pebble Scoping Letter - for ORC Review

Hi Ashley. At OFA the review will start at the staff level, as we haven't shared the draft letter with them yet.
Heidi – whichever timing makes most sense to you or works better with your schedule is fine, I was just noting the option of the later review time.
Thanks,
Molly

From: Palomaki, Ashley
Sent: Thursday, May 17, 2018 2:55 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble Scoping Letter - for ORC Review

Thanks, Molly. To clarify – Heidi and I had thought that when things go to HQ for review that will be management level? Heidi was planning on coordinating with management in OGC from 6/4-12.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Thursday, May 17, 2018 3:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble Scoping Letter - for ORC Review

Hi Ashley and Heidi. I think if I receive the edits by Tuesday afternoon, I can still make things work. Thanks so much for being willing to work with the revised schedule.
Heidi, if it helps, I also wanted to note that after we complete R10 review, we will be sending the letter to OFA/OWOW for review 6/4-6/12, and OGC could also review at that time.
Thanks,
Molly

From: Palomaki, Ashley
Sent: Wednesday, May 16, 2018 6:11 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble Scoping Letter - for ORC Review

Hi Molly –

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Thanks for getting this to me early. I sent the letter to Heidi as well (cc'd here). Unfortunately, I am out for the mining retreat today, have a couple other documents that I need to review for OERA tomorrow, and **Personal Matters / Ex. 6** **Personal Matters / Ex. 6**

We'll try to complete review early, but I don't think I can do much better than COB Tuesday if that works for Heidi. Sorry.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Monday, May 14, 2018 4:21 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping Letter - for ORC Review

Hello Ashley,
The draft scoping letter is now ready for your review. This is actually a little early compared to the original schedule. I understand that at the BB Check-in meeting last week, which I missed, David asked us to try to compress the review schedule if possible. I don't know if this is ultimately going to be possible overall, but we are a few days ahead at this point at least!

So, if possible, please send me your edits by COB Friday (the 18th). (If this won't work and we need to revert to the original deadline of the 23rd, please let me know.)

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 6/29/2018 11:07:21 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Automatic reply: Pebble EIS - EPA scoping comments

I am out of the office, returning Thursday, July 5th. Please call 907-271-5083 if you need immediate assistance.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/2/2018 10:05:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble scoping - revised cover letter

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

 Pebble Project Scoping 050218 Cover Letter Draft.docx

<!--[endif]-->

Hi Patty,

As I had previously committed, I have rewritten the cover letter to, I think, better (but briefly) highlight the key issues of concern for EPA. I have attached it here in case you want to get an early start on reviewing this portion of the letter. I will begin consolidating revisions to the detailed comments from the associate reviewers tomorrow, and will have the complete revised letter to you for review early next week.

Thanks,

Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

~~~~~~

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/9/2018 11:32:48 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Please Review - Pebble Preliminary Ch 4 comments

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

 EPA Comment spreadsheet Pebble Preliminary Ch. 4 DRAFT 080918.docx

<!--[endif]-->

Hi Jill,

As we discussed earlier, here are the draft comments on the preliminary chapter 4 sections of the Pebble EIS we received for review. Comments are not officially due until August 31, but Patty and I would prefer to send these to the Corps as expediently as reasonable. Please let me know if you have any comments or edits – you can make your edits directly on this OneDrive version or a separate copy, whichever you prefer.

Thank you,

Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/24/2018 8:01:38 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Pebble Scoping Letter - ready for your review
Attachments: Pebble Project Scoping 052418 draft.docx

Hi Jill,
The Pebble letter is ready for your review. I will be working until approximately 2:30 or 3pm Alaska time today. If you complete your review before then, I can accept edits and send to David and Tami for their review. If it is not completed in time, please send to them directly as we have discussed.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/23/2018 11:17:12 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Pebble Scoping Letter - for ORC Review
Attachments: Pebble Project Scoping 051418 draft_ACP.docx

Hi Molly –

Edits and comments are attached. Let me know if you have any questions or want to talk any of this through. Thanks for your patience with me.

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Monday, May 14, 2018 4:21 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping Letter - for ORC Review

Hello Ashley,
The draft scoping letter is now ready for your review. This is actually a little early compared to the original schedule. I understand that at the BB Check-in meeting last week, which I missed, David asked us to try to compress the review schedule if possible. I don't know if this is ultimately going to be possible overall, but we are a few days ahead at this point at least!

So, if possible, please send me your edits by COB Friday (the 18th). (If this won't work and we need to revert to the original deadline of the 23rd, please let me know.)

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/19/2018 7:25:42 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping letter
Location: Conference Line/Code / Ex. 6 leet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 10:00:00 PM
End: 6/26/2018 11:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Ashley and Patty – this is the earliest time I could find that the three of us are available on Tuesday (but please propose an earlier time if there is an additional time you are free that currently appears blocked off).

Jill – I have included you just in case your sediment team workload meeting wraps up early

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/13/2018 5:09:33 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble scoping letter
Location: Conference Line/Code / Ex. 6 Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Ashley and Patty, I understand that this time works for both of you to discuss today. Jill, your schedule looks busy, but I've included you in case.
Thanks,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/10/2018 8:00:31 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble scoping - indirect/cumulative impacts
Location: Conference Line/Code / Ex. 6 t-Me-Ln/R10-AOO-Eqpt

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Tentative

Given the extra time for preparing scoping comments, and following an excellent suggestion from Ashley, I propose a strategy conversation regarding how to address potential indirect/cumulative effects of a future expanded mine or opening up the area to other developers in the scoping letter.

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/8/2018 3:38:52 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: pebble eis draft scoping report
Attachments: PebbleEIS draft scoping report EPA comments MV_pm.docx

Hi Molly-
I reviewed the document and liked your additions. I had a few edits which are in track changes, attached.
Thanks-
Patty

From: Vaughan, Molly
Sent: Tuesday, August 7, 2018 5:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: pebble eis draft scoping report

Hi Patty – thanks so much for your review. I made some minor edits to the comments, and added a few of my own. I know you said you didn't need to review my revisions before sending to the Corps, but if you do have time to take a look at what I've added (in track changes) please do, and let me know if you have any questions/concerns on my comments. I'll plan to send this to Shane by Wednesday afternoon. Jill has said she does not need to review.
Thanks,
Molly

From: McGrath, Patricia
Sent: Monday, August 06, 2018 4:44 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: pebble eis draft scoping report

Hi Molly –
Attached are my comments on the draft scoping report.
I prioritized this review over chapter 4 reviews, due to the upcoming deadline.
Please let me know if you have questions.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/5/2018 7:18:48 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble scoping

Hi Molly-
An additional scoping meeting has been added on 4/13.
https://pebbleprojecteis.com/meetings

I can't call in on that day.
Can you or Neverly cover?
I could also ask Cindi Godsey for assistance in covering some of the meetings.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/24/2018 8:39:37 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/14/2018 9:04:29 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble scoping letter

Hi Molly –
Here are a few sentences as discussed.

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Monday, May 14, 2018 12:54 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Pebble scoping letter

Link to current version, for discussion

From: McGrath, Patricia
Sent: Saturday, May 12, 2018 1:26 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble scoping letter

Hi Molly –
Attached are my comments on the pebble scoping letter – this also includes comments from Chris and Justine.
Let me know if you have questions.
Please give me a call on Monday morning if you have a minute.
Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/27/2018 11:51:58 PM
To: Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]
Subject: pebble alternatives

Hi Cindi
I reserved room 14C for the pebble alternatives meeting if you want to join me there.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/7/2018 12:44:08 AM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: pebble eis draft scoping report
Attachments: PebbleEIS draft scoping report EPA comments.docx

Hi Molly –
Attached are my comments on the draft scoping report.
I prioritized this review over chapter 4 reviews, due to the upcoming deadline.
Please let me know if you have questions.
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/7/2018 4:58:23 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: USACE pebble scoping released last week

Yes. That is correct.

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, September 5, 2018 6:37 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: USACE pebble scoping released last week

Thanks. If my memory is right, we reviewed just to see whether our scoping comments were incorporated, correct?

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, September 05, 2018 10:12 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: USACE pebble scoping released last week

Hi Ashley -
The Corps did send us, and other cooperating agencies, an early version of the draft scoping report. We submitted comments to the Corps on the draft scoping report. I have not reviewed the final to see if/how our comments were incorporated.
Please let Molly or I know if there are further questions.
Patty

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, September 5, 2018 8:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: USACE pebble scoping released last week

Just FYI - I'll let you know if anything comes of this...

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, September 05, 2018 8:05 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: USACE pebble scoping released last week

Hi Heidi -

All that the Corps released on Friday was the scoping report, which summarizes the comments that the Corps received during the public comment period for scoping. Patty let everyone know that this was coming, but I have not heard any questions about it from her/others. The report is meant to inform what the Corps puts in the EIS - and, as you know, we have very limited involvement in that. Not sure there's anything to discuss.

Here's a copy of the report:

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https://s3.amazonaws.com/arc-wordpress-client-uploads/adn/wp-content/uploads/2018/08/31043446/Scoping-Report_20180831-1.pdf

It's pretty high level and there has been some critical press as a result. I have not reviewed aside from a quick scan.

I am about to head to a mediation but we can chat more tomorrow if that's helpful.

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Nalven, Heidi
Sent: Wednesday, September 05, 2018 7:58 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: USACE pebble scoping released last week

FYI. Should we connect?

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

-----Original Message-----
From: Schwab, Justin
Sent: Tuesday, September 04, 2018 6:01 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: USACE pebble scoping released last week

Anything we should discuss at this stage?

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/11/2018 11:28:03 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]
Subject: Pebble site visit

Hello Shane-

Per our last conversation, I just want to remind you that four of us from EPA will be visiting the Pebble project site on July 31. Our hydrogeologist, geochemist, and myself will be traveling from Seattle and will be available the afternoon of July 30 and the morning of August 1 and could meet with the Corps and AECOM's technical folks during those times. I know that you are planning technical meetings for later in August, but wanted you to be aware of this opportunity as well in case it makes sense to meet sooner in person. Please let me know if you would like to do that.

Thanks –
Patty

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/27/2018 11:50:41 PM
BCC: R10Sea-Room-14C-OEA/R10-Rooms-Restricted [R10Sea-Room-14C-OEA@epa.gov]

Subject: Pebble alternatives meeting
Location: R10Sea-Room-14C-OEA/R10-Rooms-Restricted

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/12/2018 9:26:05 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble scoping letter
Attachments: Pebble Project Scoping 050818 draft w JB+CM_pm.docx

Hi Molly –
Attached are my comments on the pebble scoping letter – this also includes comments from Chris and Justine.
Let me know if you have questions.
Please give me a call on Monday morning if you have a minute.
Thanks-
Patty

Patty McGrath | Mining Advisor
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M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/13/2018 11:50:46 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble EIS - EPA subject matter points of contact

Hi Shane-
At the cooperating agency meeting last week you requested that we identify leads for the resource sections where the Corps has requested our review. Below is that list.

- 3.1 Intro – Molly Vaughan
- 3.5 Recreation – Molly Vaughan
- 3.11 Aesthetics – Molly Vaughan
- 3.14 Soils – Mark Douglas
- 3.16 Surface Water Hydrology – Tim Maley
- 3.17 Groundwater Hydrology – Tim Maley
- 3.18 Water and Sediment Quality – Cindi Godsey
- 3.22 Wetlands/ Special Aquatic Sites – Mark Douglas
- 3.26 Vegetation – Mark Douglas

Contact Information for technical leads:
Mark Douglas, Douglas.mark@epa.gov, 907-271-1217
Cindi Godsey, Godsey.cindi@epa.gov, 206-553-1676
Tim Maley, Maley.timothy@epa.gov, 206-553-1210
Molly Vaughan, Vaughan.molly@epa.gov, 907-271-1215

Please cc Molly and I on communications to our resource leads from the Corps or AECOM. There are other EPA folks involved in providing input to the resource sections and we need to be aware of communications to efficiently coordinate. For example, our hydrology and water quality reviewers includes a geochemist and modeler in addition to the identified resource leads. Molly and I will be the points of contact for alternatives.

As I mentioned during the meeting last week, we also have a fisheries biologist with applicable expertise if the Corps would like our assistance in that area.

Best regards-

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/27/2018 11:02:29 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: Pebble EIS Alternatives
Location: AECOM - 700 G Street Suite 500, Anchorage/Teleconference

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/28/2018 3:11:04 PM
To: Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]
Subject: FW: Pebble preliminary alternatives review

From: Vaughan, Molly
Sent: Monday, August 27, 2018 4:05 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble preliminary alternatives review

Hi All,
The Corps has provided an updated schedule regarding the alternatives, that I wanted to share for your workload planning purposes. They now intend to share the revised alternatives table on September 7 for a short one-week review.
Thank you,
Molly

From: McGrath, Patricia
Sent: Wednesday, August 22, 2018 3:42 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble preliminary alternatives review

Hi Palmer, Barb, and Kate –

Based on the alternatives discussion at todays cooperating agency (CA) meeting, the Corps and AECOM will be developing a revised version of the 8/17 preliminary alternatives memo. The Corps said that CAs do not need to send written comments on the memo, but could wait and send comments on the revised version (expected around 9/1). Therefore, you do not need to send Molly written comments on the 8/17 version by the end of this week. We will send you the revised version for comment when it is available.

Thanks for your reviews to-date and the discussion today. Most of the points were discussed during the CA meeting. Stay tuned for the next version of the memo and in the meantime, feel free to call if you have questions.

Best regards-
Patty

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/5/2018 12:08:41 AM
To: Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
CC: Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Pebble - Wetlands Scoping Comments
Attachments: Aquatic Resources Scoping_pfh.docx

Hi Mary Anne-
You had asked about the Pebble EIS scoping comments.
Matt and Palmer are leads on developing the comments from the 404 program. We assumed that they would reach out to others in the 404 program, as needed. Attached is the latest email from Palmer.
If you want to add or revise comments, please work from this draft and send revisions to Molly (see Molly's original email below).

I will be out of the office next week, Monday – Thursday, so please contact Molly with questions.

Thanks - Patty

From: Hough, Palmer
Sent: Tuesday, April 3, 2018 2:00 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Thanks for sending the file. I integrated my earlier comments into it. I welcome additional edits from others.

-Palmer

From: Vaughan, Molly
Sent: Tuesday, April 03, 2018 4:01 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Hi Palmer,
Thank you so much for your work on the scoping comments, and sorry the OneDrive link is not working correctly. (There have seemed to be a lot of issues OneDrive lately). I've attached the "standard" language here as a Word doc in case that is helpful for you or others on this email chain.
Thanks,
Molly

AMERICAN OVERSIGHT

From: Hough, Palmer
Sent: Tuesday, April 03, 2018 11:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble - Wetlands Scoping Comments

Molly

Yesterday I was able to access and read your "standard" NEPA scoping language for aquatic resources in the sharepoint file you sent and I think it is a good starting point.

I tried to log in and edit it today but am unable to access the file. I think it needs to be supplemented to reflect some of the specific areas of focus from our previous work on this case. I've taken a first cut at what needs to be added to your standard text in the attached. It has three sections: direct and secondary effects, cumulative effects, and accidents and failures.

I will be out of the office on annual leave April 4-9. I look forward to continuing to work with you on this letter when I return.

I'm cc'ing Ashley and Heidi as they will likely recognize some of this language from the PD.

Please let me know if you have any questions regarding my suggestions.

Thanks, Palmer

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 3:13 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble - Wetlands Scoping Comments

Hello Matt and Palmer,
As I know you are very aware, our timeline for preparing scoping comments is very tight. Because there are a lot of project-specific concerns with regard to what would constitute an appropriate wetland impact analysis in the Draft EIS, I want to give you as much time as possible to help develop the wetland scoping comments. I have attached some "standard" NEPA scoping language for aquatic resources as a starting point. Please edit, expand, etc. as appropriate to convey the needed information for Pebble.

In order to meet the April 30th deadline, we have to meet a very aggressive letter writing schedule. Please provide your edits/additions to this scoping language **by COB April 9.**

I will begin working simultaneously on the remainder of the letter, so apologize that I don't have that for you to see now for context. My schedule for preparing the scoping comments is to have a first draft of the rest of the letter by COB on the 5th, and I'll share it with you at that time.

If you have any questions or concerns about the scoping comments or the timeline, please let me know.

Thank you,
Molly

Molly Vaughan

AMERICAN OVERSIGHT

U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/17/2018 7:23:31 PM
To: Craig, Bill [bill.m.craig@aecom.com]; POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]; Wright, Cara [cara.wright@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]
Subject: RE: Pebble site visit

We can meet at the AECOM office at 2 on that date.
Thanks -Patty

-----Original Message-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Monday, July 16, 2018 1:37 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Wright, Cara <cara.wright@aecom.com>; Darigo, Nancy <nancy.darigo@aecom.com>
Subject: RE: Pebble site visit

Hi Patty and Shane - Thanks Patty and your shop is fine or we can host here from 2:00 to 4:00 if that is convenient for everyone.

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Monday, July 16, 2018 11:36 AM
To: POA Special Projects
Cc: Vaughan, Molly; Craig, Bill
Subject: RE: Pebble site visit

Hi Shane and Bill-
Tim Maley (hydrogeologist), Chris Eckley (geochemist), Molly, and I are available on the afternoon of July 30 (after 2 pm) to meet with AECOM in person. That day works better for us than Aug 1.
Please let me know time and location if you like to meet. We could reserve a meeting room at the EPA office if needed..
Best Regards-
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Sunday, July 15, 2018 3:00 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Craig, Bill <bill.m.craig@aecom.com>
Subject: FW: Pebble site visit

Patty,
Please plan on meetings with AECOM's SMEs; I will let them arrange the times and places.

Shane

-----Original Message-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Friday, July 13, 2018 2:24 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] RE: Pebble site visit

Shane - we do believe it would be useful to establish contact and update them on progress. Cara Wright, Nancy Darigo and myself at a minimum will be available and we are checking with SMEs to see if they can be available by phone. Thanks

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 12, 2018 4:14 PM
To: Craig, Bill
Subject: FW: Pebble site visit

FYSA;
If your technical team believe it to be useful, the meeting can be arranged.

AMERICAN OVERSIGHT

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Wednesday, July 11, 2018 3:28 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: [Non-DoD Source] Pebble site visit

Hello Shane-

Per our last conversation, I just want to remind you that four of us from EPA will be visiting the Pebble project site on July 31. Our hydrogeologist, geochemist, and myself will be traveling from Seattle and will be available the afternoon of July 30 and the morning of August 1 and could meet with the Corps and AECOM's technical folks during those times. I know that you are planning technical meetings for later in August, but wanted you to be aware of this opportunity as well in case it makes sense to meet sooner in person. Please let me know if you would like to do that.

Thanks -

Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/27/2018 12:08:42 AM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble PDEIS chapter 6
Attachments: Comment spreadsheet_Ch6_pm.docx

Hi Molly-
Attached are comments that I have on chapter 6 (Consultation and Coordination). It is not clear whether we were asked to submit comments. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Feel free to edit and call if you want to discuss.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/14/2018 8:53:27 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments
Attachments: Pebble Preliminary Ch. 4 DRAFT 081418-JN suggestions_pm.docx

All-
Some suggested edits to the comments per our conversation. Also see the couple sentences that I added to the intro.
Patty

From: Nogi, Jill
Sent: Tuesday, August 14, 2018 11:05 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments

Molly,
Thank you for sharing the draft comments on preliminary chapter 4 sections that we reviewed in our role as a cooperating agency for EIS development. I appreciate the work that you, Patty, and associate reviewers have put into making recommendations for bolstering the chapter and the EIS. I'm attaching the version on which I have made some suggested edits/wording changes. I also have a few questions about things we might want to add/recommend – although if we have a chance to talk before this is sent out, it could help me to understand whether those points are covered elsewhere or not needed. If any time opens up on my calendar for tomorrow, I will let you know. I could talk on Thursday morning before 9am Pacific time, or if next week would be better, we could schedule time to talk while I'm in DC. If there's not a good time to talk about it, I would appreciate seeing our table of comments again briefly before it goes out, to know which suggestions were incorporated.

Thanks! Jill

From: Vaughan, Molly
Sent: Thursday, August 09, 2018 4:33 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Preliminary Ch 4 comments

Hi Jill,
As we discussed earlier, here are the draft comments on the preliminary chapter 4 sections of the Pebble EIS we received for review. Comments are not officially due until August 31, but Patty and I would prefer to send these to the Corps as expediently as reasonable. Please let me know if you have any comments or edits – you can make your edits directly on this OneDrive version or a separate copy, whichever you prefer.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19

AMERICAN OVERSIGHT

Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/3/2018 8:26:27 PM
To: Linda Storm (Storm.Linda@epa.gov) [Storm.Linda@epa.gov]
Subject: Pebble scoping letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

Hi Linda—
Attached is the Pebble letter.
Best-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/17/2018 10:04:04 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: Pebble Cooperating Agency Meeting
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: 10/24/2018 8:30:00 PM
End: 10/25/2018 12:30:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/2/2018 11:22:25 PM
To: Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]
Subject: RE: Pebble: CA letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

Kyle-
Attached is EPA's scoping letter.
Please let me know if you have questions.
Best regards-
Patty

From: Moselle, Kyle W (DNR) [mailto:kyle.moselle@alaska.gov]
Sent: Monday, July 2, 2018 4:17 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble: CA letter

Hi Patty,
Per your request, I've attached a copy of the CA acceptance letter that Commissioner Mack sent to the USACE back in March. This letter summarizes the current direction I'm operating under.

Take care,
Kyle Moselle
Associate Director
Alaska Department of Natural Resources
Office of Project Management and Permitting
907-465-6849
Kyle.moselle@alaska.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/25/2018 6:56:54 PM
To: Wright, Cara [cara.wright@aecom.com]

Subject: Meeting Forward Notification: Meeting before EPA Pebble site visit

Start: 7/25/2018 7:00:00 PM
End: 7/25/2018 7:30:00 PM
Show Time As: Busy

Your meeting was forwarded

McGrath, Patricia has forwarded your meeting request to additional people.

Meeting

Meeting before EPA Pebble site visit

Meeting Time

Monday, July 30, 2018 3:00 PM - Monday, July 30, 2018 5:00 PM

Recipients

Timothy Maley (maley.timothy@epa.gov),Chris Eckley (Eckley.Chris@epa.gov)

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/21/2018 7:19:02 PM
To: Newman, Sheila M CIV USARMY CEPOA (US) (Sheila.M.Newman@usace.army.mil) [Sheila.M.Newman@usace.army.mil]
Subject: Pebble PDEIS sections extension request

Hi Sheila-

Thanks for the conversation this morning.
Our schedule extension request is for sections of chapter 3, chapter 4, and appendix K and chapter 5 in areas of our assigned special expertise (soils, surface water hydrology, hydrogeology, water & sediment quality, vegetation) and we are requesting until December 31 to submit comments. We think this request is reasonable due to the late submittal of some of the section figures, the content of the sections, and the reliance of these sections on a significant volume of reference documents that we are also reviewing.
Please let me know if you have further questions.

Best regards-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/6/2018 9:31:05 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Scoping - First Draft
Attachments: 18-0002-COE Pebble Project Scoping 040418 draft-pm.docx

Hi Molly-
Here are my comments on most of the letter. I did not have time to review the cover letter or the last two sections. Now that we have more time to work on the letter, I would like to add another review cycle for me to look at the letter after all the technical input is received.
Thanks-
Patty

From: Vaughan, Molly
Sent: Wednesday, April 4, 2018 3:59 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping - First Draft

Hi Patty,
Here is a first draft of the Pebble letter, for your review and for our conversation in a few minutes. I've attached it as a Word doc rather than OneDrive, because there have been some issues with OneDrive links lately.
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
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AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/6/2018 7:43:58 PM
To: Tami Fordham (Fordham.Tami@epa.gov) [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]
Subject: FW: POA-2017-271, Special Public Notice scoping extension

Sorry. Meant to include you.

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, April 6, 2018 12:10 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Ashley Palomaki (Palomaki.Ashley@epa.gov) <Palomaki.Ashley@epa.gov>; David Allnutt (Allnutt.David@epa.gov) <Allnutt.David@epa.gov>; Jill Nogi (nogi.jill@epa.gov) <nogi.jill@epa.gov>; Matthew LaCroix (LaCroix.Matthew@epa.gov) <LaCroix.Matthew@epa.gov>; Christopher Meade (Meade.Chris@epa.gov) <Meade.Chris@epa.gov>; Cindi Godsey (Godsey.Cindi@epa.gov) <Godsey.Cindi@epa.gov>; Karl Pepple (Pepple.Karl@epa.gov) <Pepple.Karl@epa.gov>; Jay McAlpine (McAlpine.Jay@epa.gov) <McAlpine.Jay@epa.gov>; Neverley Shoemake (shoemake.neverley@epa.gov) <shoemake.neverley@epa.gov>; Palmer Hough (Hough.Palmer@epa.gov) <Hough.Palmer@epa.gov>; Timothy Maley (maley.timothy@epa.gov) <maley.timothy@epa.gov>; Chris Eckley (Eckley.Chris@epa.gov) <Eckley.Chris@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Erik Peterson (Peterson.Erik@epa.gov) <Peterson.Erik@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Mary Thiesing (Thiesing.Mary@epa.gov) <Thiesing.Mary@epa.gov>
Subject: FW: POA-2017-271, Special Public Notice scoping extension

All-

The Corps has issued a special public notice extending the Pebble EIS scoping period an additional 60 days to end on June 29, 2018 (see link in the email below).
Molly had developed a schedule for our scoping letter based on the original 30 day comment period and was working with many of you on drafting an initial letter. A revised schedule will be developed based on the extended time period. This will give us all more time to provide technical, legal, and management input into our scoping letter.

Also, the Corps has added an additional public scoping meeting in New Stuyahok on April 13. This information can be found on the Corps' Pebble EIS website.

Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, April 6, 2018 11:52 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: POA-2017-271, Special Public Notice scoping extension

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: April 6, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

CONTACT: For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:

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http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/6/2018 7:10:39 PM
To: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Subject: RE: call today

Great.
thanks

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Friday, April 6, 2018 11:51 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: call today

Patty,

Nonresponsive Discussion of ill call at noon AST

Shane

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US)
Sent: Friday, April 06, 2018 7:23 AM
To: 'McGrath, Patricia' <mcgrath.patricia@epa.gov>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: RE: call today

I will call around 10

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Friday, April 06, 2018 7:20 AM
To: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: [Non-DoD Source] call today

Hi Shane and Sheila-

Could one of you give me a call today?

I have a couple questions about scoping.

Also, I want to let you know that we added a brief announcement on our Bristol Bay webpage directing folks to the Corps webpage for questions about the EIS. See below.

Blockedhttps://www.epa.gov/bristolbay

I am open anytime today except 9 - 9:30 and 10:30 - 11:30 AK times.

Thanks -

Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/28/2018 7:30:48 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Pebble scoping letter

Can you send out call in # for everyone in davids email below? Ashely and I have a meeting from 1 – 3, so better talk now.

From: Allnutt, David
Sent: Thursday, June 28, 2018 12:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: RE: Pebble scoping letter

Quick call?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 11:21 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 11:14 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>

AMERICAN OVERSIGHT

Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

Attorney Client /Deliberative Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Email / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,

AMERICAN OVERSIGHT

Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client /Deliberative/ Ex. 5

AMERICAN OVERSIGHT

Attorney Client /Deliberative/ Ex. 5

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/2/2018 11:14:30 PM
To: Geselbracht, Jeanne [Geselbracht.Jeanne@epa.gov]
Subject: RE: scoping letter?
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

From: Geselbracht, Jeanne
Sent: Monday, July 2, 2018 3:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: scoping letter?

Did you guys send out a mining scoping letter in the last couple of days? We'd be interested in seeing a copy

Jeanne Geselbracht
Environmental Review Section (ENF-4-2)
U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Phone: (415) 972-3853

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/6/2018 3:29:13 PM
To: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
Subject: RE: call today

thanks

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Friday, April 6, 2018 8:23 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: RE: call today

I will call around 10

Shane

-----Original Message-----
From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Friday, April 06, 2018 7:20 AM
To: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: [Non-DoD Source] call today

Hi Shane and Sheila-

Could one of you give me a call today?

I have a couple questions about scoping.

Also, I want to let you know that we added a brief announcement on our Bristol Bay webpage directing folks to the Corps webpage for questions about the EIS. See below.

Blockedhttps://www.epa.gov/bristolbay

I am open anytime today except 9 – 9:30 and 10:30 – 11:30 AK times.

Thanks –

Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov <mailto:mcgrath.patricia@epa.gov>

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/2/2018 8:35:27 PM
To: Elaine Suriano (Suriano.Elaine@epa.gov) [Suriano.Elaine@epa.gov]
Subject: FW: Final Pebble Scoping Letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

From: Vaughan, Molly
Sent: Monday, July 2, 2018 9:57 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: Final Pebble Scoping Letter

Hello NEPA/PO Team,
A huge thank you to all of you for your assistance with putting together the scoping letter. It was a big effort, and your input helped make it a thorough and technically sound comment letter. From David Allnutt: "Please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here."
The final letter is attached for your reference.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/14/2018 6:10:36 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments

Can we discuss today so that we can get these comments out to the Corps?
I am available until 2:30 pm. Then I am out for the rest of this week.
Patty

From: Nogi, Jill
Sent: Tuesday, August 14, 2018 11:05 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Pebble Preliminary Ch 4 comments

Molly,
Thank you for sharing the draft comments on preliminary chapter 4 sections that we reviewed in our role as a cooperating agency for EIS development. I appreciate the work that you, Patty, and associate reviewers have put into making recommendations for bolstering the chapter and the EIS. I'm attaching the version on which I have made some suggested edits/wording changes. I also have a few questions about things we might want to add/recommend – although if we have a chance to talk before this is sent out, it could help me to understand whether those points are covered elsewhere or not needed. If any time opens up on my calendar for tomorrow, I will let you know. I could talk on Thursday morning before 9am Pacific time, or if next week would be better, we could schedule time to talk while I'm in DC. If there's not a good time to talk about it, I would appreciate seeing our table of comments again briefly before it goes out, to know which suggestions were incorporated.

Thanks! Jill

From: Vaughan, Molly
Sent: Thursday, August 09, 2018 4:33 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Preliminary Ch 4 comments

Hi Jill,
As we discussed earlier, here are the draft comments on the preliminary chapter 4 sections of the Pebble EIS we received for review. Comments are not officially due until August 31, but Patty and I would prefer to send these to the Corps as expediently as reasonable. Please let me know if you have any comments or edits – you can make your edits directly on this OneDrive version or a separate copy, whichever you prefer.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

AMERICAN OVERSIGHT

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/6/2018 3:20:12 PM
To: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]; Newman, Sheila M CIV USARMY CEPOA (US) (Sheila.M.Newman@usace.army.mil) [Sheila.M.Newman@usace.army.mil]
Subject: call today

Hi Shane and Sheila-
Could one of you give me a call today?
I have a couple questions about scoping.

Also, I want to let you know that we added a brief announcement on our Bristol Bay webpage directing folks to the Corps webpage for questions about the EIS. See below.

https://www.epa.gov/bristolbay

I am open anytime today except 9 – 9:30 and 10:30 – 11:30 AK times.

Thanks –
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/21/2018 8:44:06 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: revised climate language for Pebble scoping

Hi Molly-
I have nothing further to add.
Patty

From: Vaughan, Molly
Sent: Thursday, June 21, 2018 1:35 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Hi Patty,
To avoid any further delays next week, I shared the revised text for the climate section back with HQ for OFA/OGC review, to make sure we were hitting the mark, and received the edits/comments below. The attached version contains my clarifying edits in response. I wanted to check if you have anything further to add before I send this back to Megan? She plans next to share it with Joel Scheraga, the Senior Advisor for Climate Adaptation and in the Office of Policy.
Thanks,
Molly

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 11:49 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: revised climate language for Pebble scoping

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

AMERICAN OVERSIGHT

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

Megan

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time **Personal Matters / Ex. 6** I went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/26/2018 6:02:00 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: pebble eis alternatives

Hello Shane-
I appreciate the information shared at the cooperating agency meeting regarding the alternatives that would be analyzed in the draft EIS. We still have some outstanding questions about the TSF liner and dry stack options. Would it be possible to have an in-person focused meeting the week of Nov 5 with you and the appropriate AECOM technical folks to discuss the tailings alternatives? I will be in Anchorage that week and have some open times.
Thanks –
Patty

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 6:53:54 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]
Subject: RE: beginning of dissemination of info for 06/06/18 CA

Hello Shane-
Thanks for sharing this information.
I have a request for the upcoming cooperating agency meeting. Would it be possible to have an overview presentation of the updates to the project described in the May 11 memo from Pebble?
Have these changes been reflected in the DA application on the website?
Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, May 14, 2018 5:14 PM
To: Bob Loeffler <bobl@jadenorth.com>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Kevin Pendergast <kpendergast@rmconsult.com>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; mnewman@narf.org; Rob Rosenfeld <robrosey@gmail.com>
Subject: beginning of dissemination of info for 06/06/18 CA

All,
Attached are some of the documents for your agencies review. I will continue forwarding information including an agenda and location, draft scoping report, draft Chapter 2 and draft chapter and other materials, so your team has a chance to review and provide you with items to bring up at the managers meeting. Please also note the project website will have this info on it as soon as possible.

I will send all of the information received to date, not requesting comments, but rather for visibility for all. It will be in several emails.

VR,

Shane

Shane

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/2/2018 5:01:04 PM
To: Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Final scoping letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf; ATT77667; ATT06782; ATT86037; ATT64058

All-
See message from David below and the final EIS scoping letter sent to the Corps.
Thanks for all your work on this.
Patty

From: Allnutt, David
Sent: Friday, June 29, 2018 3:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

Cc's – thanks for your support on this.

Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.



Pebble.062918.S...
Letter FINAL.pdf

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10

AMERICAN OVERSIGHT

1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/24/2018 7:48:21 PM
To: Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
BCC: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center [R10Sea-Room-14WallaWalla@epa.gov]

Subject: meeting room for Pebble scoping indirect/cumulative impacts call
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Tentative

This invite is for a Seattle conference room for the Pebble scoping comments indirect/cumulative impacts call

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/20/2018 9:49:12 PM
To: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble EIS outline - EPA input

Hi Shane –

Based on discussions at our last agency meeting and our understanding of EPA's cooperating agency role, we looked at the Pebble EIS outline and request that we be involved in early review as a cooperating agency of the following EIS sections:

Chapter 2 – Alternatives
Chapter 3 – Existing Environment
- Sec 3.1 – Introduction
- Sec 3.6 Recreational and Commercial Fisheries
- Sec 3.9 – Food and Fiber Production (Subsistence)
- Sec 3.11 – Aesthetics
- Sec. 3.14 – Soils
- Sec 3.16 – Surface Water Hydrology
- Sec 3.17 - Groundwater Hydrology
- Sec 3.18 - Water and Sediment Quality
- Sec 3.21 – Spill Risk
- Sec 3.22 – Wetlands/Special Aquatic Sites
- Sec 3.24 – Fish Values
- Sec 3.26 – Vegetation

Chapter 4 – Environmental Consequences
- Same subsections as noted for Chapter 3

Appendix F – Draft CWA 404(b)(1) analysis
Appendix J - PJC

We are willing to provide early input into development of other sections of the EIS as well, but feel that those noted above are consistent with the Corps request that EPA be involved in providing support on 404(b)(1) related issues. Please feel free to give me a call if you would like to discuss.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/29/2018 11:07:17 PM
To: Tami Fordham (Fordham.Tami@epa.gov) [Fordham.Tami@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Subject: FW: Pebble EIS - EPA scoping comments
Attachments: Pebble.062918..pdf

Tami and Sue –
You should be aware that we submitted our Pebble scoping letter this afternoon.
Patty

From: McGrath, Patricia
Sent: Friday, June 29, 2018 3:51 PM
To: David Allnutt (Allnutt.David@epa.gov) <Allnutt.David@epa.gov>; Jill Nogi (nogi.jill@epa.gov) <nogi.jill@epa.gov>; Ashley Palomaki (Palomaki.Ashley@epa.gov) <Palomaki.Ashley@epa.gov>
Cc: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
Subject: FW: Pebble EIS - EPA scoping comments

FYI. Scoping comment submittal to the Corps.
Patty

From: McGrath, Patricia
Sent: Friday, June 29, 2018 3:46 PM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
Subject: Pebble EIS - EPA scoping comments

Hello Shane-

Attached are EPA's scoping comments on the Pebble EIS.
We appreciate the opportunity to provide comment and look forward to working through these issues with the Corps.
Please let me know if you have questions.

Best Regards-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/24/2018 10:26:09 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: FW: Pebble EIS - Cooperating Agency Meeting
Location: AECOM - 5th Floor, Large Conference Room

Start: 6/6/2018 4:00:00 PM
End: 6/7/2018 1:00:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/24/2018 8:53:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Pebble Scoping Letter - ready for your review

Jill and Molly –
I am available through next Wednesday to help with the scoping letter while Molly is out. Next Thursday and Friday I am in Juneau for the transboundary mining meetings, but can still be checking in.
Patty

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 1:02 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter - ready for your review

Hi Jill,
The Pebble letter is ready for your review. I will be working until approximately 2:30 or 3pm Alaska time today. If you complete your review before then, I can accept edits and send to David and Tami for their review. If it is not completed in time, please send to them directly as we have discussed.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/22/2018 6:42:22 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: RE: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

Hi Shane-
We were unable to open the attachment.
However, we did find a revised project description, dated 10/4/2018 on the website. Are these the same documents?
Thanks-
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, October 19, 2018 3:08 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the updated Project Description produced by the applicant associated with the May 11, 2018 Memo.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/3/2018 4:20:47 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]

Subject: Pebble Scoping
Location: Call Molly at 271-1215

Start: 4/3/2018 9:30:00 PM
End: 4/3/2018 10:00:00 PM
Show Time As: Tentative

Hi Chris – I thought it might be helpful to discuss the rough scoping comments I sent you, and what more should be added? It this time is not needed and you are already working on revisions, that is fine too, just let me know.
Thanks,
Molly

AMERICAN OVERSIGHT

Appointment

From: Meade, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C70E5264633A4B6C81DF859F211876D3-MEADE, CHRIS]
Sent: 4/3/2018 9:40:37 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Declined: Pebble Scoping
Location: Call Molly at 271-1215

Start: 4/3/2018 9:30:00 PM
End: 4/3/2018 10:00:00 PM
Show Time As: Busy

I will send you my comments tomorrow. Thanks.

AMERICAN OVERSIGHT

Message

From: Meade, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C70E5264633A4B6C81DF859F211876D3-MEADE, CHRIS]
Sent: 4/6/2018 8:03:24 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]
Subject: FW: POA-2017-271, Special Public Notice scoping extension

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, April 06, 2018 11:10 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: POA-2017-271, Special Public Notice scoping extension

All-

The Corps has issued a special public notice extending the Pebble EIS scoping period an additional 60 days to end on June 29, 2018 (see link in the email below).
Molly had developed a schedule for our scoping letter based on the original 30 day comment period and was working with many of you on drafting an initial letter. A revised schedule will be developed based on the extended time period. This will give us all more time to provide technical, legal, and management input into our scoping letter.

Also, the Corps has added an additional public scoping meeting in New Stuyahok on April 13. This information can be found on the Corps' Pebble EIS website.

Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, April 6, 2018 11:52 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: POA-2017-271, Special Public Notice scoping extension

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: April 6, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

CONTACT: For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

AMERICAN OVERSIGHT

**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

AMERICAN OVERSIGHT

Message

From: Meade, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C70E5264633A4B6C81DF859F211876D3-MEADE, CHRIS]
Sent: 5/16/2018 1:48:50 AM
To: Barton, Justine [Barton.Justine@epa.gov]
Subject: RE: Pebble Project Scoping 050818 draft.docx

Thank you for helping me. I hope you don't draw the short straw on this one, but if you do, I will sleep well knowing it is good hands.

From: Barton, Justine
Sent: Tuesday, May 15, 2018 3:26 PM
To: Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

Good work, Chris! Thanks! ☺ JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Meade, Christopher
Sent: Thursday, May 10, 2018 11:30 AM
To: Barton, Justine <Barton.Justine@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

From: Barton, Justine
Sent: Thursday, May 10, 2018 8:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

I discussed my input with Chris yesterday afternoon, and he has it covered. JB ☺ And yes, we will all miss him very much!

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: McGrath, Patricia
Sent: Thursday, May 10, 2018 7:43 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

AMERICAN OVERSIGHT

All –
I talked to Chris late yesterday, it sounds like he will be sending me the revised letter with his comments this morning. I need the letter by 9:30 am so that I can spend the day reviewing and get my changes to Molly in time.
Please let me know if that will be a problem.

Personal Matters / Ex. 6 He was invaluable to the region and the mining team on Kensington and other projects (including some of the Canadian mines and transboundary reviews). I personally learned a lot about the 404 program from working with him and was looking forward to working with him on Pebble.

Patty

From: Nogi, Jill
Sent: Wednesday, May 9, 2018 9:07 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Project Scoping 050818 draft.docx

I found it, Justine – here's the current draft as of yesterday. Thank you!
Jill

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/10/2018 6:30:22 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
Subject: Automatic reply: Pebble Project Scoping 050818 draft.docx

I am out of the office on leave May 9th-11th. I will respond to your message as soon as possible when I return to the office Monday the 14th.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 4:20:47 PM
To: Meade, Christopher [Meade.Chris@epa.gov]

Subject: Pebble Scoping
Location: Call Molly at 271-1215

Start: 4/3/2018 9:30:00 PM
End: 4/3/2018 10:00:00 PM
Show Time As: Tentative

Hi Chris – I thought it might be helpful to discuss the rough scoping comments I sent you, and what more should be added? It this time is not needed and you are already working on revisions, that is fine too, just let me know.
Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/5/2018 4:42:13 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
Subject: RE: Pebble Scoping

Good morning, Chris. I am just checking in regarding the scoping comments. Do you think you will be able to send them to me by noon today? This is my last day to coordinate with Patty on the letter before she is gone on vacation for a week, so it would be very helpful.
Thanks so much! (and sorry again about the short turnaround time)
--Molly

-----Original Appointment-----
From: Meade, Christopher
Sent: Tuesday, April 03, 2018 1:41 PM
To: Vaughan, Molly
Subject: Declined: Pebble Scoping
When: Tuesday, April 03, 2018 1:30 PM-2:00 PM (UTC-09:00) Alaska.
Where: Call Molly at 271-1215

I will send you my comments tomorrow. Thanks.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/3/2018 3:22:38 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
Subject: URGENT Please Review Pebble Scoping Comments

Importance: High

Good Morning, Chris. I still have not received any comments from you on the Pebble scoping letter. I do specifically need your expertise with reviewing the draft comments, to make sure they are accurate with regard to the impacts of dredging and disposal. The deadline for associate reviewers was yesterday, and I need to turn the letter around quickly and get it to Patty to keep on schedule with all of the internal reviews. Can you review and send me your comments as soon as possible today? Here again is the link to the letter on the sharepoint site:

Internal Website / Ex. 6

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 4:20:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]

Subject: Pebble Scoping
Location: Call Molly at 271-1215

Start: 4/3/2018 9:30:00 PM
End: 4/3/2018 10:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: Meade, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C70E5264633A4B6C81DF859F211876D3-MEADE, CHRIS]
Sent: 4/3/2018 9:40:37 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Declined: Pebble Scoping
Location: Call Molly at 271-1215

Start: 4/3/2018 9:30:00 PM
End: 4/3/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/2/2018 8:27:52 PM

Subject: pebble PDEIS table

Start: 11/7/2018 1:30:00 PM
End: 11/7/2018 2:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/19/2018 7:26:22 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping
Location: Call Molly at 907-271-1215

Start: 6/26/2018 11:00:00 PM
End: 6/26/2018 11:30:00 PM
Show Time As: Busy

In case you don't make it to the conversation with Ashley and Patty, call me when you are available.

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/24/2018 7:48:23 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: meeting room for Pebble scoping indirect/cumulative impacts call
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Tentative

This invite is for a Seattle conference room for the Pebble scoping comments indirect/cumulative impacts call

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/31/2018 8:47:48 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/8/2018 6:14:21 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Draft scoping report; please submit comments by 8/8/2018
Attachments: EPA Comments Pebble EIS draft scoping report 080818.docx

Hi Jill - here are our comments on the scoping report for your information.

-----Original Message-----
From: Vaughan, Molly
Sent: Wednesday, August 08, 2018 10:13 AM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Draft scoping report; please submit comments by 8/8/2018

Good morning, Shane.
Thank you for the opportunity to review the Draft Scoping Report. Please find EPA's comments attached.
Please let us know if you have any questions regarding these comments.
Regards,
Molly

~~~~~~
Molly Vaughan
U.S. Environmental Protection Agency Region 10 Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 26, 2018 1:09 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>
Subject: Draft scoping report; please submit comments by 8/8/2018

All,
Attached is the draft Scoping Report, out much earlier than I had anticipated. Please review and provide agency comments by COB 8/8/2018.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/15/2018 10:47:12 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: EPA Comments on Pebble Preliminary Ch. 4 Sections
Attachments: Pebble Preliminary Ch. 4 EPA Comments 081518.docx

Hi Jill - FYI

From: Vaughan, Molly
Sent: Wednesday, August 15, 2018 2:32 PM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: EPA Comments on Pebble Preliminary Ch. 4 Sections

Hello Shane,
Please find EPA's comments on Preliminary Draft Chapter 4 Sections 4.1 Introduction, 4.5 Recreation, 4.11 Aesthetics and Visual Resources, 4.14 Soils, 4.16 Surface Water Resources, 4.17 Hydrogeology, 4.18 Water Quality and Geochemistry, 4.22 Wetlands / Special Aquatic Sites and Waterbodies and 4.26 Vegetation attached. Please let me know if you have any questions on these comments.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 7/17/2018 4:08:07 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hi Molly --

Deliberative Process / Ex. 5

Just a couple of thoughts...not sure if that's what you wanted from me at this point? Give a call when you have a minute. I'm in today until 3:15 pm, working flexiplace tomorrow for a few hours, and then in the office on Thursday. JB ☺

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Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal Website / Ex. 6

Thank you,

AMERICAN OVERSIGHT

Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/1/2018 10:47:34 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Please Review - Pebble Alternatives Comments

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Pre-Draft Alternatives EPA Comments 100118DRAFT.docx

<!--[endif]-->

Hi Jill – My apologies for not getting this to you until the end of the day, but our draft comments on the Preliminary Alternatives are now ready for your review. Comments are due to the Corps by Wednesday 10/3. Patty and I are both available tomorrow if you have any questions or would like to get together to discuss. (note, there are a couple comment bubbles flagging a few comments I want to follow up on, which I will take care of first thing tomorrow.)
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/1/2018 8:13:04 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Nogi, Jill has shared 'Pebble Project Scoping 052418 draft'

Hi Jill – Thanks! I added the citations to this version. Best, Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nogi, Jill [mailto:no-reply@sharepointonline.com]
Sent: Friday, May 25, 2018 10:24 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Nogi, Jill has shared 'Pebble Project Scoping 052418 draft'

Ashley, Here's what I've shared with David, Tami, and Molly. I let David and Tami know that Molly will pick it back up on 6/4, so to please include their comments and suggestions on this version so that Molly has everything in one place. Thanks!

Open Pebble Project Scoping 052418 draft.docx

See more related to Nogi, Jill in Delve.

Get the SharePoint mobile app!

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 6/19/2018 10:58:19 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Declined: Pebble Scoping letter
Location: Conference Line/Code / Ex. 6 et-Me-Ln/R10-AOO-Eqpt
Start: 6/26/2018 7:30:00 PM
End: 6/26/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/24/2018 7:11:51 PM
To: Butler, Barbara [Butler.Barbara@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Dry Stack Alternative - no do outs (UNCLASSIFIED)
Attachments: EPA Comments on Dry Stack memo 102418.docx

Hi Barb - thank you so much for your review of the Dry Stack memo. Here are the compiled comments that were just sent to the Corps.
(Jill, I am copying you here as well, as an FYI)
Regards,
Molly

-----Original Message-----
From: Vaughan, Molly
Sent: Wednesday, October 24, 2018 11:09 AM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: 'bill.m.craig@aecom.com' <bill.m.craig@aecom.com>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hello Shane,
EPA has reviewed the memo on the Dry Stack option, and we are providing our comments, attached. We look forward to discussing at the meeting this afternoon.
Regards,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, October 11, 2018 11:00 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 11:13:41 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble Scoping letter round 2

Vaughan, Molly 1:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 11:08:00 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble Scoping letter round 2

Vaughan, Molly 1:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 9:04:40 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble Scoping letter round 2

Vaughan, Molly 1:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/13/2018 11:12:08 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: EPA Comments on Pebble Pre-Draft EIS Sections 3.1, 3.5, 4.1, 4.5
Attachments: EPA Comments Pebble Pre-Draft EIS Sections 3.1_3.5_4.1_4.5 110918.docx

Flag: Follow up

Hi Jill – here are the comments sent last Friday to the Corps, FYI.

From: Vaughan, Molly
Sent: Friday, November 09, 2018 9:32 AM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: EPA Comments on Pebble Pre-Draft EIS Sections 3.1, 3.5, 4.1, 4.5

Hello Shane,
Attached please find EPA's comments on the subject draft sections of the Pebble EIS, which were distributed for cooperating agency review on October 17. Thank you for the opportunity to review. Please let us know if you have any questions regarding our comments.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/17/2018 11:16:27 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble Scoping Letter - for ORC Review
Attachments: Pebble Project Scoping 051418 draft.docx

Hi Jill,
In case it is helpful, I've attached the current version of the letter. I thought perhaps you might want to start looking at it now, and then you would only have to look through to see what ORC changed next week? If this option sounds like it would help, it will not be a problem for me to address your edits and ORCs together.
Thanks,
Molly

From: Nogi, Jill
Sent: Thursday, May 17, 2018 3:10 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Re: Pebble Scoping Letter - for ORC Review

The 23rds looking really booked. 22nd is my best bet. I'll block time that afternoon. Thank you!

Sent from my iPhone

On May 17, 2018, at 3:53 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:

> Thanks Jill. I have blocked time off on my calendar as well for quick turnarounds, and sent a note to Ashley and Heidi regarding the timing of HQ review.
> --Molly
>
> **From:** Nogi, Jill
> **Sent:** Thursday, May 17, 2018 2:31 PM
> **To:** Vaughan, Molly <Vaughan.Molly@epa.gov>
> **Subject:** Re: Pebble Scoping Letter - for ORC Review
>
> Molly let's try to make it work. I'll make a note on my calendar to block time between the 22nd-24th to look at the scoping letter. On the 24th, I'll likely be working with Mark to finalize the Donlin letter, so to the extent that I can do my scoping letter review beforehand, I will focus on that. Thanks for working with Ashley. If it would help to reiterate that OGC can also be looking the following week along with OFA and OW, I can do that (or you can!)
> Thanks!
>
> Sent from my iPhone
>
> On May 17, 2018, at 1:36 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:
>
> > Hi Jill – Unfortunately, it doesn't look like ORC will be able to get their comments to me by the end of this week as hoped. In order to stick with the accelerated review plan, I would need to receive your edits by next Thursday afternoon, to be able to address them and send the letter to David/Tam **Personal Matters / Ex. 6** If they send me the letter COB Tuesday, that would mean just 1.5 days for your review. Do you think this is doable, or should I work on alternate solutions?
> > Thank you,

AMERICAN OVERSIGHT

Molly

From: Palomaki, Ashley
Sent: Wednesday, May 16, 2018 6:11 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Pebble Scoping Letter - for ORC Review

Hi Molly –

Thanks for getting this to me early. I sent the letter to Heidi as well (cc'd here). Unfortunately, I am out for the mining retreat today, have a couple other documents that I need to review for OERA tomorrow, and then **Personal Matters / Ex. 6**

We'll try to complete review early, but I don't think I can do much better than COB Tuesday if that works for Heidi. Sorry.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Monday, May 14, 2018 4:21 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping Letter - for ORC Review

Hello Ashley,
The draft scoping letter is now ready for your review. This is actually a little early compared to the original schedule. I understand that at the BB Check-in meeting last week, which I missed, David asked us to try to compress the review schedule if possible. I don't know if this is ultimately going to be possible overall, but we are a few days ahead at this point at least!

So, if possible, please send me your edits by COB Friday (the 18th). (If this won't work and we need to revert to the original deadline of the 23rd, please let me know.)

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT
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AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/15/2018 11:25:34 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Pebble Project Scoping 050818 draft.docx
Attachments: Pebble Project Scoping 050818 draft w JB+CM.docx

Hi Jill – Could I please get a copy of the final signed letter when it goes out. Thanks! JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Meade, Christopher
Sent: Thursday, May 10, 2018 11:30 AM
To: Barton, Justine <Barton.Justine@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

From: Barton, Justine
Sent: Thursday, May 10, 2018 8:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

I discussed my input with Chris yesterday afternoon, and he has it covered. JB ☺ And yes, we will all miss him very much!

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: McGrath, Patricia
Sent: Thursday, May 10, 2018 7:43 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>
Subject: RE: Pebble Project Scoping 050818 draft.docx

All –
I talked to Chris late yesterday, it sounds like he will be sending me the revised letter with his comments this morning. I need the letter by 9:30 am so that I can spend the day reviewing and get my changes to Molly in time.
Please let me know if that will be a problem.

AMERICAN OVERSIGHT

Personal Matters / Ex. 6 He was invaluable to the region and the mining team on Kensington and other projects (including some of the Canadian mines and transboundary reviews). I personally learned a lot about the 404 program from working with him and was looking forward to working with him on Pebble.

Patty

From: Nogi, Jill
Sent: Wednesday, May 9, 2018 9:07 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Project Scoping 050818 draft.docx

I found it, Justine – here's the current draft as of yesterday. Thank you!
Jill

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/15/2018 10:15:26 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Revised Pebble Scoping Schedule

Possible revision:

Ashley review by 5/17. Molly to incorporate
Jill review by 5/24 (morning) and Molly to incorporate by COB 5/24.
David and Tami concurrently review by 6/1 COB.
Molly to incorporate and HQ (Megan) receives by 6/4.
HQ has 6/4 -6/12 then Final R10 review 6/14-6/15?? (2 weeks in advance)

If we need to brief OFA/OP, do it between 6/4-6/12 … get the request in right away

From: Vaughan, Molly
Sent: Tuesday, May 15, 2018 3:10 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Revised Pebble Scoping Schedule

From: Vaughan, Molly
Sent: Monday, April 09, 2018 3:38 PM
To: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Revised Pebble Scoping Schedule

Hi Patty and Jill,
I have revised the schedule for completing the scoping comments, giving additional time to each step along the way, and allowing days in-between for me to review comments and make revisions before sending along to the next reviewer. Here is my revised schedule. Please let me know if you recommend any changes.

Associate Reviewers: 4/12-5/2
Patty: 5/9-5/14
ORC: 5/16-5/23
Jill: 5/25-6/1
David: 6/5-6/8
HQ: 6/12-6/20
Final R10 Review and signature: 6/21-6/29

Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

AMERICAN OVERSIGHT

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/9/2018 3:04:26 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Automatic reply: Pebble scoping letter

I am out of the office on leave May 9th-11th. I will respond to your message as soon as possible when I return to the office Monday the 14th.

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 9/11/2018 7:21:09 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: USACE pebble scoping released last week

Just FYI -

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Nalven, Heidi
Sent: Tuesday, September 11, 2018 11:01 AM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: USACE pebble scoping released last week

Hi Justin,

Sorry for the delayed response. I don't think there's much to discuss at this point. The Corps' scoping report summarizes the comments it received during the public comment period. I checked in the Region and I don't think there's an immediate to do at this point but we will let you know if anything changes.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

-----Original Message-----
From: Schwab, Justin
Sent: Tuesday, September 04, 2018 6:01 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: USACE pebble scoping released last week

Anything we should discuss at this stage?

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 4/3/2018 4:51:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Hot Topic - Pebble Scoping

Thanks Molly for checking and letting me know. One hot topic on this should be good. David should be back in the office today, so if he is interested in anything else he'll mention it to me.
Jill

From: Vaughan, Molly
Sent: Tuesday, April 03, 2018 9:33 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Hot Topic - Pebble Scoping

Hi Jill – it appears Patty has already submitted a Hot Topic on this, so I assume we don't need to submit another one?
--Molly

From: McGrath, Patricia
Sent: Tuesday, April 03, 2018 8:32 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Hot Topic - Pebble Scoping

I already sent up a hot topic on this to David. Sorry, I should have cced you and Jill.
Patty

From: Vaughan, Molly
Sent: Tuesday, April 3, 2018 8:54 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Hot Topic - Pebble Scoping

Hi Patty – Jill asked me to write up a Hot Topic on Pebble for OERA, and I know AOO management will want one as well. But, I thought I'd better check in with you before sending it up. Here's what I've got so far – please let me know if you have any edits, or if you've already sent up a Hot Topic for the scoping.

The U.S. Army Corps of Engineers has announced a 30-day public scoping period for the Pebble Project, to run April 1-30, 2018. The Pebble Limited Partnership proposes to mine a large copper-gold-molybdenum deposit located 200 miles southwest of Anchorage on State land. The project includes a large open-pit mine, processing facility, and tailings disposal facilities at the mine site as well as access roads, natural gas pipeline, and port sites on Lake Iliamna and Cook Inlet. EPA is a cooperating agency for development of the EIS. (Contact Patty McGrath 3-6113)

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

AMERICAN OVERSIGHT

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 10/3/2018 5:06:39 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Pebble Alternatives Comments

Molly,
Thanks for sharing this with me. I took a quick look and don't anything to add – happy to discuss once you send it out as it will help me in understanding what's happening. Please feel free to work with Patty to get answers to any bubbles in the margins that you haven't already addressed and finalize/send it out today.

Thanks again!
Jill

From: Vaughan, Molly
Sent: Monday, October 01, 2018 3:48 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Alternatives Comments

Hi Jill – My apologies for not getting this to you until the end of the day, but our draft comments on the Preliminary Alternatives are now ready for your review. Comments are due to the Corps by Wednesday 10/3. Patty and I are both available tomorrow if you have any questions or would like to get together to discuss. (note, there are a couple comment bubbles flagging a few comments I want to follow up on, which I will take care of first thing tomorrow.)
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 9/12/2018 3:42:45 AM
To: Schwab, Justin [Schwab.Justin@epa.gov]
Subject: Automatic reply: USACE pebble scoping released last week

I am out of the office until Tuesday, September 18th. If you have an urgent matter please contact Lee Schroer or Carrie Wehling.

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 9/4/2018 10:01:10 PM
To: Schwab, Justin [Schwab.Justin@epa.gov]
Subject: Automatic reply: USACE pebble scoping released last week

I am out of the office until Wednesday, September 5th. If you have an urgent matter please contact Lee Schroer or Carrie Wehling.

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/29/2018 12:46:59 AM
To: Schwab, Justin [Schwab.Justin@epa.gov]
Subject: Automatic reply: Pebble scoping letter

I'm out of the office until Monday, 7/9. For urgent matters, please contact Tod Siegal. Thanks.

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/29/2018 12:20:45 AM
To: Schwab, Justin [Schwab.Justin@epa.gov]
Subject: RE: Quick Q and I'd like to hit send shortly. nm RE: Pebble scoping letter

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

From: Marshall, Tom
Sent: Thursday, June 28, 2018 8:10 PM
To: Schwab, Justin <schwab.justin@epa.gov>
Cc: Fotouhi, David <fotouhi.david@epa.gov>
Subject: Quick Q and I'd like to hit send shortly. nm RE: Pebble scoping letter

I proposed to delete the comment bubbles/back and forth and send to Region, given the timing. Sound ok? Thanks.

202.564.5549

From: Feeley, Drew (Robert)
Sent: Thursday, June 28, 2018 6:41 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: RE: Pebble scoping letter

Attached is an updated draft. Pending any other suggestions, we are okay with it being sent to the region.

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/27/2018 6:48:10 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx; EPA Comments Pebble Pre-Draft EIS Sections 3.1_3.5_4.1_4.5 110918.docx

We have only sent two sets so far, and they are attached.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Tuesday, November 27, 2018 7:15 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Follow-up from reg review re: Pebble preliminary draft EIS

Please see request from David below.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, November 27, 2018 10:13 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Follow-up from reg review re: Pebble preliminary draft EIS

Thanks, Heidi. Could you please ask the Region for the three most-recent sets of comments provided to the Corps so I can get a sense of what is being sent?

David Fotouhi

Principal Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Tuesday, November 27, 2018 9:55 AM
To: Fotouhi, David <fotouhi.david@epa.gov>

AMERICAN OVERSIGHT

Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Follow-up from reg review re: Pebble preliminary draft EIS

Hi David,

We wanted to follow-up on your questions from reg review last week regarding comments Region 10 is providing to the Corps on the preliminary draft EIS chapters. I talked with Carrie, Allison (CCILO) and ORC (Ashley and Cara). The

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please let us know if you need any further information.
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/22/2018 12:38:08 AM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Pebble PDEIS conversation with Sheila Newman

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Wednesday, November 21, 2018 11:39 AM
To: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble PDEIS conversation with Sheila Newman

Hi All-

Sheila Newman called this morning in response to a message that I had left with Shane and that David had left for Dave Hobbie.
We had a long discussion about how things are going on the EIS. Below is a summary:

Deliberative Process / Ex. 5

Molly or I will let you know what we hear from the Corps regarding the actual date of the extension.

Best regards-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202

AMERICAN OVERSIGHT

Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/28/2018 5:21:30 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]
Subject: RE: Pebble scoping letter

Hi Heidi –

We heard back from David. On the following:

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

I have a meeting at 10:30 but I'll step out if you want to talk about this.

Thank you!

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 9:32 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

Hi Heidi –

Thanks. I need to get feedback from David Allnutt on the following:

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

In the interim, thanks for consolidating this.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

I don't have any other edits.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 8:11 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble scoping letter

I, of course, welcome any additional edits/comments anyone else may have on the draft responses too.

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 11:09 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Once I hear back that you are okay with the proposed response, I will send this on to Justin.

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/28/2018 3:10:37 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]
Subject: RE: Pebble scoping letter

I, of course, welcome any additional edits/comments anyone else may have on the draft responses too.

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 11:09 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: FW: Pebble scoping letter

Ashley – Thanks for your note. Justin is usually very responsive by email, so I suggest we send him an email to close this out instead of trying to find time on the calendar. See draft responses in blue below that I put together based on your email.

ust

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Once I hear back that you are okay with the proposed response, I will send this on to Justin.

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

<marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/14/2018 5:35:49 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: Re: Pebble Scoping Letter for HQ Review by COB June 12th

This email says that the letter needs to go to Byron Brown.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

On Jun 13, 2018, at 5:42 AM, Palomaki, Ashley <Palomaki.Ashley@epa.gov> wrote:

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 5:36 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please advise R10 that the draft should be raised to OW (Lee) and OA (Byron) if R10 has not already done so.

AMERICAN OVERSIGHT

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

<DF edits to Pebble Project Scoping 060518 draft.docx>

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Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 6/25/2018 9:16:00 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Scoping letter

Attorney Client / Ex. 5

Thanks for looking into this and thinking it thru.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Monday, June 25, 2018 3:25 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: Scoping letter

Carrie/Cara –

Attorney Client / Ex. 5

We wanted to close the loop with you and make sure you are okay with where we are landing or if you think we need to do more thinking about this.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

From: Shamet, Stefania
Sent: Thursday, June 21, 2018 2:59 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Re: Scoping letter

DELIBERATIVE

ATTORNEY WORK PRODUCT

Hi Heidi, Ashley, *et al.*:

Sorry for the slight delay in responding. Found myself carried along in some fire drills this week. Some quick thoughts:

Attorney Client / Ex. 5

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Attorney Client / Ex. 5

Hope some of this is helpful. I'm around Friday if you feel like you want to discuss. I'm out on Monday and Tuesday, but driving Tuesday after 2pm and could talk then. My cell is Personal Phone / Ex. 6

From: Nalven, Heidi
Sent: Monday, June 18, 2018 12:06 PM
To: Shamet, Stefania
Cc: Palomaki, Ashley; Wehling, Carrie; Steiner-Riley, Cara
Subject: RE: Scoping letter

Thanks Stef. We appreciate any thoughts you may have. This version is still in flux but will give you a general sense of the Region's approach. Just let us know if it's easier to discuss by phone. Attorney Client / Ex. 5

Attorney Client / Ex. 5

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Attorney Client / Ex. 5

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Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Shamet, Stefania
Sent: Monday, June 18, 2018 10:06 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Scoping letter

Feel free to send my way!
(Btw – GREAT presentation last week Ashley – perfect balance of big picture and detail!!!)

Deliberative Process / Ex. 5

From: Nalven, Heidi
Sent: Monday, June 18, 2018 9:42 AM
To: Shamet, Stefania <Shamet.Stefania@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Scoping letter

Hi Stef,

I wanted check in to see if you have any time Tues-Thurs this week to get any thoughts you may have on the Pebble scoping letter given your experience with Spruce. I checked calendars and you looked to be tied up

AMERICAN OVERSIGHT

most of this week and next week. The letter is due on the 29th. I can send it your way today but if you don't think you have time, I was going to spare you the email ☺.

Thanks!
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/25/2018 6:52:22 PM
To: Shamet, Stefania [Shamet.Stefania@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Scoping letter

Stef – Thank you for the incredibly helpful email. You raise great points. We really appreciate you (and Karyn) taking the time to impart the wisdom you gained from the Spruce experience.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Shamet, Stefania
Sent: Thursday, June 21, 2018 2:59 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Re: Scoping letter

DELIBERATIVE

ATTORNEY WORK PRODUCT

Hi Heidi, Ashley, *et al.*:

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Attorney Client / Ex. 5

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Attorney Client / Ex. 5

Hope some of this is helpful. I'm around Friday if you feel like you want to discuss. I'm out on Monday and Tuesday, but driving Tuesday after 2pm and could talk then. My cell is Personal Phone / Ex. 6

AMERICAN OVERSIGHT

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Sent: Monday, June 18, 2018 12:06 PM
To: Shamet, Stefania
Cc: Palomaki, Ashley; Wehling, Carrie; Steiner-Riley, Cara
Subject: RE: Scoping letter

Thanks Stef. We appreciate any thoughts you may have. This version is still in flux but will give you a general sense of the Region's approach. Just let us know if it's easier to discuss by phone. **Attorney Client / Ex. 5**

Attorney Client / Ex. 5

Attorney Client / Ex. 5

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Attorney Client / Ex. 5

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Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Shamet, Stefania
Sent: Monday, June 18, 2018 10:06 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Scoping letter

Feel free to send my way!
(Btw – GREAT presentation last week Ashley – perfect balance of big picture and detail!!!)
Our process was a little different. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

From: Nalven, Heidi
Sent: Monday, June 18, 2018 9:42 AM
To: Shamet, Stefania <Shamet.Stefania@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Scoping letter

Hi Stef,

I wanted check in to see if you have any time Tues-Thurs this week to get any thoughts you may have on the Pebble scoping letter given your experience with Spruce. I checked calendars and you looked to be tied up most of this week and next week. The letter is due on the 29th. I can send it your way today but if you don't think you have time, I was going to spare you the email ☺.

Thanks!
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/6/2018 7:16:57 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: FW: POA-2017-271, Special Public Notice scoping extension

Good news. The Corps extended the scoping period. It now ends on 6/29/18. We don' t have a revised schedule yet for comments, but I'm hoping that the group has a kickoff meeting so that we can most efficiently work through this.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, April 06, 2018 12:10 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: POA-2017-271, Special Public Notice scoping extension

All-

The Corps has issued a special public notice extending the Pebble EIS scoping period an additional 60 days to end on June 29, 2018 (see link in the email below).
Molly had developed a schedule for our scoping letter based on the original 30 day comment period and was working with many of you on drafting an initial letter. A revised schedule will be developed based on the extended time period. This will give us all more time to provide technical, legal, and management input into our scoping letter.

Also, the Corps has added an additional public scoping meeting in New Stuyahok on April 13. This information can be found on the Corps' Pebble EIS website.

Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, April 6, 2018 11:52 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: POA-2017-271, Special Public Notice scoping extension

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: April 6, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

CONTACT: For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

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Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

_____

**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

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Message

From: Palomaki, Ashley [no-reply@sharepointonline.com]
Sent: 5/22/2018 12:55:56 AM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Palomaki, Ashley has shared 'Pebble Project Scoping 051418 draft_ACP'

Here's the document that Palomaki, Ashley shared with you.

Open Pebble Project Scoping 051418 draft_ACP.docx

See more related to Palomaki, Ashley in Delve.



Get the SharePoint mobile app!





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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/12/2018 8:42:19 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review

Hi Allyn,

Yes – have been talking with Heidi and I will see her tomorrow. I'm a bit out of the loop on her comments because I was travelling yesterday for NCAC and couldn't join a call that she had with some NEPA folks. **Attorney Client / Ex. 5**

Attorney Client / Ex. 5

Carrie Wehling didn't have any comments. Heidi never heard back from David F. so no comments from him either.

Hope that's helpful. Will be able to touch base with Heidi more tomorrow.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Stern, Allyn
Sent: Tuesday, June 12, 2018 1:33 PM
To: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

I haven't been involved. Have either of you heard from OGC?

Allyn L. Stern
Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue, Seattle, WA 98101
206-553-1223

From: Allnutt, David
Sent: Tuesday, June 12, 2018 1:30 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>
Cc: Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Chris – at Michelle's request, I'm sending you the latest version of the Pebble scoping letter that I have access to. This version has already undergone legal and management review here in R10 and was sent to HQ (OW, OP, and OGC) for their consolidated review one week ago. We expect to get written comments back today or tomorrow. Based on conversations I've had with HQ staff, I don't anticipate that the HQ comments will be very extensive or substantive.

In response to some of the questions that Michelle asked me, I can report that Lee has asked to see a near-final version of the letter before it's sent; he has declined the offer of a briefing. I'm not certain whether he's seen a draft yet. This draft was shared with Drew Feeley (a political appointee in OP); he has not requested a briefing. I'm not as certain of

AMERICAN OVERSIGHT

the status within OGC (many of our ORC and OGC attorneys are out of the office this week – Allyn may have heard something).

Overall, I feel quite good about this letter – it's thorough without being overbearing and should help the Corps and its contractors appropriately scope their environmental review.



R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Tuesday, June 05, 2018 1:34 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 10:42 AM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.

AMERICAN OVERSIGHT

--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/12/2018 8:32:56 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

I haven't been involved. Have either of you heard from OGC?

Allyn L. Stern
Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue, Seattle, WA 98101
206-553-1223

From: Allnutt, David
Sent: Tuesday, June 12, 2018 1:30 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>
Cc: Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review

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(b) (5)
[redacted]

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

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AMERICAN OVERSIGHT

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 10:42 AM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
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Please let me know if you have any questions, and thank you for your review.
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/5/2018 6:46:06 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 10:42 AM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/5/2018 5:00:39 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Pebble Scoping Letter Schedule

They've agreed to add OGC management (through Carrie) to the HQ management review.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Thursday, April 05, 2018 8:33 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

My understanding is that the HQ review is management review. Jill mentioned OW and OFA specifically. I (of course ☺) brought up OGC. I'm working on an email to Jill now (she's the manager of the NEPA unit in the Region) – I'll ask that they include OGC management in the "HQ Review: 4/19 – 4/25."

Fingers crossed that the Corps extends this scoping period…

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Thursday, April 05, 2018 8:17 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Do you have any info about who will be included in HQ review? I assume that will be management review? I know Carrie wanted to flag this for David Fotouhi when we had clarity on the exact timing.

From: Palomaki, Ashley
Sent: Thursday, April 05, 2018 11:14 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

AMERICAN OVERSIGHT

That's the current 404 section – I'll let you know if I see a different version that's a lot longer. Attorney Client Privil

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

I'll add another placeholder for the 16th as well so we can discuss feedback.

Also – based on a discussion with our NEPA attorney in the Region, I'm going to request that the attorneys get the letter back as part of the "final tweaks and signature" that's currently scheduled from 4/25-4/30, but we'll only be able to review for accuracy after edits.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Thursday, April 05, 2018 7:56 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Thanks for the heads up Ashley. (Personal Matters / Ex. 6 I will be back in the office on the 16th and will block off time on my calendar to review. And perhaps we should set up a placeholder call that day to discuss as well. The last version I saw (from Palmer) was three pages. That seems doable in a day. Can you let me know if it expands significantly?

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Palomaki, Ashley
Sent: Wednesday, April 04, 2018 7:05 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: FW: Pebble Scoping Letter Schedule

Hi Heidi – Just FYI – I wasn't aware of this schedule. I've told Jill and David that you will review at the same time as Cara and I – 4/12-4/16 (it's very quick b/c that's over a weekend).

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Nogi, Jill
Sent: Wednesday, April 04, 2018 3:55 PM

AMERICAN OVERSIGHT

To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter Schedule

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 4:12 PM
To: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping Letter Schedule

Hi Jill and Patty,
I have put together a schedule for preparing the Pebble scoping letter that accommodates a need for HQ review and follows the basic plan Patty and I developed last week. When you back out how much time that leaves for actually drafting the comments, it seems almost impossible, but I'll make it work! For your planning purposes, here is what I propose:

Molly draft initial letter: now – 4/5
Patty review and letter revision: 4/5 – 4/9
Reach out to associate reviewers as needed for additional project-specific language: 4/9 - 4/11 (with the exception of Matt, Palmer and Chris who I am already coordinating with)
ORC Review: 4/12-4/16
R10 Management Review: 4/16-4/18
HQ Review: 4/19 – 4/25
Final tweaks and signature: 4/25-4/30

Please let me know if you would like me to make any revisions to this schedule.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Shamet, Stefania [Shamet.Stefania@epa.gov]
Sent: 6/21/2018 6:59:29 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: Re: Scoping letter
Attachments: appellate brief -- US.pdf; James City County v. EPA_ 12 F.3d 1330.pdf; Bersani v. Robichaud_ 850 F.2d 36.pdf

DELIBERATIVE
ATTORNEY WORK PRODUCT

Hi Heidi, Ashley, *et al.*:

Sorry for the slight delay in responding. Found myself carried along in some fire drills this week. Some quick thoughts:

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Hope some of this is helpful. I'm around Friday if you feel like you want to discuss. I'm out on Monday and Tuesday, but driving Tuesday after 2pm and could talk then. My cell is Personal Phone / Ex. 6

From: Nalven, Heidi
Sent: Monday, June 18, 2018 12:06 PM
To: Shamet, Stefania
Cc: Palomaki, Ashley; Wehling, Carrie; Steiner-Riley, Cara
Subject: RE: Scoping letter

Thanks Stef. We appreciate any thoughts you may have. This version is still in flux but will give you a general sense of the Region's approach. Just let us know if it's easier to discuss by phone Attorney Client Privilege/Deliberative

Attorney Client / Ex. 5

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Shamet, Stefania
Sent: Monday, June 18, 2018 10:06 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Scoping letter

Feel free to send my way!
(Btw – GREAT presentation last week Ashley – perfect balance of big picture and detail!!!)
Our process was a little different. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Nalven, Heidi
Sent: Monday, June 18, 2018 9:42 AM
To: Shamet, Stefania <Shamet.Stefania@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Scoping letter

Hi Stef,

I wanted check in to see if you have any time Tues-Thurs this week to get any thoughts you may have on the Pebble scoping letter given your experience with Spruce. I checked calendars and you looked to be tied up most of this week and next week. The letter is due on the 29th. I can send it your way today but if you don't think you have time, I was going to spare you the email ☺.

Thanks!
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 3/29/2018 3:45:51 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]

Subject: Bristol Bay Scoping

Start: 3/29/2018 5:30:00 PM
End: 3/29/2018 6:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/18/2018 4:06:40 PM
To: Shamet, Stefania [Shamet.Stefania@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Scoping letter
Attachments: Pebble Project Scoping 060518 draft HQ Review.docx

Thanks Stef. We appreciate any thoughts you may have. This version is still in flux but will give you a general sense of the Region's approach. Just let us know if it's easier to discuss by phone. Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Shamet, Stefania
Sent: Monday, June 18, 2018 10:06 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Scoping letter

Feel free to send my way!
(Btw – GREAT presentation last week Ashley – perfect balance of big picture and detail!!!)
Our process was a little different. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

From: Nalven, Heidi
Sent: Monday, June 18, 2018 9:42 AM
To: Shamet, Stefania <Shamet.Stefania@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Scoping letter

Hi Stef,

I wanted check in to see if you have any time Tues-Thurs this week to get any thoughts you may have on the Pebble scoping letter given your experience with Spruce. I checked calendars and you looked to be tied up most of this week and next week. The letter is due on the 29th. I can send it your way today but if you don't think you have time, I was going to spare you the email ☺.

Thanks!
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Steiner-Riley, Cara [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0BEF7D04F2E64E4B8B90235A30CC7109-STEINER-RILEY, CARA]
Sent: 6/13/2018 10:03:21 PM
To: Allnutt, David [Allnutt.David@epa.gov]

Subject: FW: Prep for Pebble scoping letter meeting
Location: DCRoomARN7500/DC-Ariel-Rios-OGC

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 5:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 9:08 AM
To: Nalven, Heidi; Neugeboren, Steven; Wehling, Carrie; Koslow, Karin; Marshall, Tom; Hoppe, Allison; Palomaki, Ashley; Steiner-Riley, Cara; Stern, Allyn; Hough, Palmer
Subject: Prep for Pebble scoping letter meeting
When: Thursday, June 14, 2018 12:00 PM-1:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomARN7500/DC-Ariel-Rios-OGC

I thought it would be helpful for folks to talk through David's comments. Sorry for the lunch time meeting. I couldn't find any other time to get a critical mass and I know not everyone is available. If there are critical folks that can't make this time, just let me know. Also, let me know if you think there are others that should be added.

AMERICAN OVERSIGHT

Appointment

From: Shaffer, Patricia [Shaffer.Patricia@epa.gov]
Sent: 6/14/2018 7:56:06 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Pebble Scoping Letter - Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/28/2018 12:24:06 AM
To: Stern, Allyn [Stern.Allyn@epa.gov]
CC: Koslow, Karin [Koslow.Karin@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Re: Pebble scoping letter

I haven't really focused on this. Assume Justin's issues are likely Nepa so suggest you and Karin plan next steps (calendar pretty full tomorrow).

Sent from my iPhone

Steven Neugeboren
Associate General Counsel for Water
U.S. EPA
202-564-5488

On Jun 27, 2018, at 7:00 PM, Stern, Allyn <Stern.Allyn@epa.gov> wrote:

> Should we set up some time to talk with Justin about the areas of confusion?
>
> Allyn Stern
> Regional Counsel
> US EPA Region 10
> 206-553-1223
> stern.allyn@epa.gov
>
> On Jun 27, 2018, at 3:50 PM, Neugeboren, Steven <Neugeboren.Steven@epa.gov> wrote:
>
> > Sent from my iPhone
> >
> > Steven Neugeboren
> > Associate General Counsel for Water
> > U.S. EPA
> > 202-564-5488
> >
> > Begin forwarded message:
> >
> > **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> > **Date:** June 27, 2018 at 6:18:51 PM EDT
> > **To:** "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> > **Subject: FW: Pebble scoping letter**
> >
> > Please see below from Justin
> >
> > **David Fotouhi**
> >
> > Deputy General Counsel

AMERICAN OVERSIGHT

Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

<EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx>

AMERICAN OVERSIGHT

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/27/2018 10:50:29 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]
Subject: Fwd: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx; ATT00001.htm

Sent from my iPhone

Steven Neugeboren
Associate General Counsel for Water
U.S. EPA
202-564-5488

Begin forwarded message:

From: "Fotouhi, David" <Fotouhi.David@epa.gov>
Date: June 27, 2018 at 6:18:51 PM EDT
To: "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
Subject: FW: Pebble scoping letter

Please see below from Justin

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/28/2018 9:58:38 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Fwd: Pebble Scoping - current compiled version
Attachments: image001.png; ATT00001.htm; image005.png; ATT00002.htm; image006.png; ATT00003.htm; image007.png; ATT00004.htm; Pebble Project Scoping 062818 compiled draft.docx; ATT00005.htm

Thoughts? Do you want to have a conversation with Molly and Dave? Or I can also be included.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

From: "Allnutt, David" <Allnutt.David@epa.gov>
Date: June 28, 2018 at 2:53:36 PM PDT
To: "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
Subject: FW: Pebble Scoping - current compiled version

Deliberative Process / Ex. 5

How should I go about doing that?

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AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

R. David Allnutt, Director

Office of Environmental Review and Assessment

U.S. EPA, Region 10

1200 Sixth Avenue, Suite 155

Seattle, Washington 98101-3140

(206) 553-2581

From: Vaughan, Molly
Sent: Thursday, June 28, 2018 2:22 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping - current compiled version

Hi David,

I have completed a resolution/compilation of the edits received to date. There are a very limited number of places where I did not accept edits yet, and have left for your consideration (with explanatory comments). I do not think any of the remaining edits are intolerable, but felt they were ones that warranted bringing to your attention. Please let me know if there is anything else I can do to assist with finalizing this letter.

Regards,

Molly

Molly Vaughan

U.S. Environmental Protection Agency Region 10

Alaska Operations Office

222 W. 7th Avenue #19

Anchorage, AK 99513-7588

907-271-1215

vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/13/2018 4:26:12 PM
To: Young, Teresa [Young.Teresa@epa.gov]
Subject: Fwd: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx; ATT00001.htm

Can you print the attachment for me? Thanks.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> **Date:** June 13, 2018 at 6:56:34 AM PDT
> **To:** "Hladick, Christopher" <hladick.christopher@epa.gov>
> **Cc:** "Pirzadeh, Michelle" <Pirzadeh.Michelle@epa.gov>, "Stern, Allyn" <Stern.Allyn@epa.gov>
> **Subject: Fwd: Pebble Scoping Letter for HQ Review by COB June 12th**

(b) (5) deliberative

[redacted]

> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> > **Date:** June 13, 2018 at 5:42:21 AM PDT
> > **To:** "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>
> > **Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th**
> >
> > **Ashley Palomaki**
> > Assistant Regional Counsel
> > U.S. EPA Region 10 Office of Regional Counsel
> > 1200 Sixth Avenue, Suite 155, ORC-113
> > Seattle, WA 98101
> > 206-553-8582
> >
> > **From:** Nalven, Heidi
> > **Sent:** Wednesday, June 13, 2018 5:36 AM
> > **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>

AMERICAN OVERSIGHT

Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th

FYI.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please advise R10 that the draft should be raised to OW (Lee) and OA (Byron) if R10 has not already done so.

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

AMERICAN OVERSIGHT

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/28/2018 3:23:45 PM
To: Koslow, Karin [Koslow.Karin@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Re: Update - Pebble scoping letter

Terrific. Thanks. I saw a message from Heidi. Looks like they will send Justin an email. I just wanted to avoid a lot of written back and forth if we could save time and just have a conversation - but if his calendar is booked and an email will work, that is fine with me.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

On Jun 28, 2018, at 8:09 AM, Koslow, Karin <Koslow.Karin@epa.gov> wrote:

> Allyn – I've checked in with my team, and they've also coordinated with WLO staff this morning. It sounds like we are on track for resolving any remaining questions today and ensuring you have the complete set of OGC comments today.
>
> Thanks,
> Karin
>
> Karin Koslow
> Deputy Associate General Counsel
> Cross-Cutting Issues Law Office
> Office of General Counsel
> U.S. Environmental Protection Agency
> (202) 564-0171
> WJC North Room 7358

From: Koslow, Karin
Sent: Wednesday, June 27, 2018 10:06 PM
To: Stern, Allyn <Stern.Allyn@epa.gov>
Subject: Re: Pebble scoping letter

Thanks Allyn - I'll see what we can do as soon as I get in tomorrow morning.

-Karin

Karin Koslow
Deputy Associate General Counsel
Cross Cutting Issues Law Office, OGC

AMERICAN OVERSIGHT

202-564-0171

On Jun 27, 2018, at 9:28 PM, Stern, Allyn <Stern.Allyn@epa.gov> wrote:

Hi Karin -

See Ashley's analysis of Justin's issues below. I know calendars might be full but we have a hard deadline of Friday. I was told Rob Tomiak contacted the Corps inquiring about an extension and got an earful. I'm hoping we can quickly resolve Justin's issues if we can get an opportunity to talk with him - even briefly.

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

From: "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
Date: June 27, 2018 at 5:57:32 PM PDT
To: "Allnutt, David" <Allnutt.David@epa.gov>, "Stern, Allyn" <Stern.Allyn@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Wednesday, June 27, 2018 5:57 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: FW: Pebble scoping letter

Hi Heidi –

I think the only ones that I can help with are 2 and 8 (highlighted below).

Allyn suggested that we have a call with Justin to go through this.

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Here is what I would propose as a response:

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

I have to run, but that's my two cents with the time I have. I'm happy to be on a call with Justin about this tomorrow if that's helpful.

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Stern, Allyn
Sent: Wednesday, June 27, 2018 4:01 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Fwd: Pebble scoping letter

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> **Date:** June 27, 2018 at 3:50:29 PM PDT
> **To:** "Stern, Allyn" <Stern.Allyn@epa.gov>
> **Subject: Fwd: Pebble scoping letter**
>
> Sent from my iPhone
>
> Steven Neugeboren
> Associate General Counsel for Water
> U.S. EPA
> 202-564-5488
>
> Begin forwarded message:
>
> > **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> > **Date:** June 27, 2018 at 6:18:51 PM EDT
> > **To:** "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin" <Koslow.Karin@epa.gov>, "Neugeboren, Steven"

AMERICAN OVERSIGHT

<Neugeboren.Steven@epa.gov>
Subject: FW: Pebble scoping letter

Please see below from Justin

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 8:14:27 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]
BCC: Conference Line/Code / Ex. 6 [R10AOO-Conference Line/Code / Ex. 6@epa.gov]; R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO [R10AOO-Room-Raven-25-VTC@epa.gov]; R10Sea-Room-20Chinook/R10-Rooms-Service-Center [R10Sea-Room-20Chinook@epa.gov]

Subject: Pebble Scoping - Wetland comments strategy meeting
Location: Conference Line/Code / Ex. 6 R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Busy

Hello,
The extension of the comment period now provides some time for strategy discussion on what to include in the scoping comments. T Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

→ Join by Phone

Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

I have also reserved the Raven Room in AOO and the Chinook Room in Seattle.

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 8:00:12 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO-Conference Line/Code / Ex. 6 Conference Line/Code / Ex. 6
Subject: Pebble scoping - indirect/cumulative impacts
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

Given the extra time for preparing scoping comments, and following an excellent suggestion from Ashley, I propose a strategy conversation regarding how to address potential indirect/cumulative effects of a future expanded mine or opening up the area to other developers in the scoping letter.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/5/2018 4:58:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]
BCC: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6 Conference Line/Code / Ex. 6 @epa.gov]
Subject: Pebble AQ Scoping check-in
Location: R10AOO- Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 4/23/2018 6:00:00 PM
End: 4/23/2018 7:00:00 PM
Show Time As: Busy

Per Jay's recommendation, I am setting up a short time to chat. However, it appears Karl is fully booked on the 10th so I found a time slot the afternoon of the 9th. Hope this is still helpful.

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/4/2018 3:31:46 PM

Subject: Pebble Scoping Meeting

Start: 4/20/2018 1:00:00 AM
End: 4/20/2018 3:30:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 11/27/2018 7:15:21 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]; Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

Subject: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

Meeting to brief David on the highlights of the comments from our pre-DEIS review, prior to finalizing and sending to the Corps.

Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 10/31/2018 8:47:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 8/20/2018 9:17:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Busy

Hello All,
Per my previous email, Patty and I would like to meet with you all to discuss the preliminary alternatives document shared by the Corps.

Join by Phone

Conference Line/Code / Ex. 6

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 7:25:35 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: R10AOO Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO Conference Line/Code / Ex. 6 epa.gov]

Subject: Pebble Scoping letter
Location: R10AOO Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 7:30:00 PM
End: 6/26/2018 8:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

Ashley and Patty – this is the earliest time I could find that the three of us are available on Tuesday (but please propose an earlier time if there is an additional time you are free that currently appears blocked off).

Jill – I have included you just in case your sediment team workload meeting wraps up early

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 7:22:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
BCC: R10AOO-Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO Conference Line/Code / Ex. 6 @epa.gov]
Subject: Pebble Scoping letter round 2
Location: R10AOO Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/13/2018 5:07:23 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: R10AOO Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO Conference Line/Code / Ex. 6 @epa.gov]

Subject: Pebble scoping letter
Location: R10AOO-Co Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

Ashley and Patty, I understand that this time works for both of you to discuss today. Jill, your schedule looks busy, but I've included you in case.
Thanks,
Molly

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 5/24/2018 9:36:29 PM
To: Craig, Bill [bill.m.craig@aecom.com]; Bob Loeffler [bobl@jadenorth.com]; Curyung Tribal [courtenay@curyungtribe.com]; 'cvaughn@achp.gov' [cvaughn@achp.gov]; Daugherty, Linda (PHMSA) [linda.daugherty@dot.gov]; David Seris (David.M.Seris@uscg.mil) [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA) [david.hassell@dot.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; 'mary_colligan@fws.gov' [mary_colligan@fws.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR) [kyle.moselle@alaska.gov]; Nathan Hill [manager@lakeandpen.com]; POA Special Projects [poaspecialprojects@usace.army.mil]; Pres William Evanoff [nondaltontribe@yahoo.com]; Wesley Furlong [wfurlong@narf.org]

Subject: FW: Pebble EIS - Cooperating Agency Meeting
Location: AECOM - 5th Floor, Large Conference Room

Start: 6/6/2018 4:00:00 PM
End: 6/7/2018 1:00:00 AM
Show Time As: Busy

Recurrence: (none)

-----Original Appointment-----
From: Craig, Bill [mailto:bill.m.craig@aecom.com]
Sent: Thursday, May 24, 2018 11:34 AM
To: Craig, Bill; POA Special Projects; Isaacs, Jon; Evans, Jessica; Bella, Elizabeth; Cornelison, Wes; Wright, Cara; Darigo, Nancy
Subject: [Non-DoD Source] Pebble EIS - Cooperating Agency Meeting
When: Wednesday, June 06, 2018 8:00 AM-5:00 PM (UTC-09:00) Alaska.
Where: AECOM - 5th Floor, Large Conference Room

-- Do not delete or change any of the following text. --

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US Toll Free

Global call-in numbers | Toll-free calling restrictions

AMERICAN OVERSIGHT

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Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/23/2018 11:31:59 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: pebble scoping
Location: Molly will call Ashley

Start: 5/24/2018 7:00:00 PM
End: 5/24/2018 7:30:00 PM
Show Time As: Busy

Hi Ashley. Thanks so much for your review of the scoping letter. I only had time for a quick glance at the letter before needing to head home, but will get started on addressing your edits first thing in the morning. It does seem like you posed some questions/ideas for consideration, so I thought I'd go ahead and get some time on our calendars to discuss.
Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 6/27/2018 8:15:58 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; R10AOO-Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO-Conference Line/Code / Ex. 6 @epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Scoping letter round 2

Vaughan, Molly 12:14 PM:

Jill - please let us know when you are off the phone, if you think it is worth dialing back in to the MML. I am free now.

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 11/27/2018 10:14:26 PM
To: POA Special Projects (poaspecialprojects@usace.army.mil) [poaspecialprojects@usace.army.mil]; Urlich, Cecil [cecil.urlich@aecom.com]; Darigo, Nancy [nancy.darigo@aecom.com]; Bella, Elizabeth [elizabeth.bella@aecom.com]; Forland, Sasha [sasha.forland@aecom.com]; Fueg, James (jfueg@DonlinGold.com) [jfueg@DonlinGold.com]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Moselle, Kyle W (DNR) (kyle.moselle@alaska.gov) [kyle.moselle@alaska.gov]; eli.ward@alaska.gov

Subject: Pebble EIS Alternatives
Location: AECOM - 700 G Street Suite 500, Anchorage/Teleconference

Start: 11/28/2018 5:00:00 PM
End: 11/28/2018 7:00:00 PM
Show Time As: Tentative

Recurrence: (none)

Draft Agenda –

1. Overview by PLP of proposed Bulk TSF design with permeable embankment and no liner
2. Overview by PLP of Dry Stack option
3. Agency discussion (PLP attendance to be determined)

a. 35 alternative TSF locations
b. Dry Stack option
c. Liner under Bulk TSF
d. Effluent outfall locations
e. Throughput scenarios

-- Do not delete or change any of the following text. --

Join Webex meeting
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Join from a video system or application
Dial Conference Line/Code / @aecom.webex.com
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AMERICAN OVERSIGHT

Message

Sent: 11/21/2018 8:39:25 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Please Review - Pebble Pre-DEIS Sections

Hi Jill, Patty and Ashley,
Given the extension of the deadline for comments, here is a proposed new schedule for your review of the draft comments. If this schedule will not work for you, please let me know.

Patty:
Ashley:
Jill:

Thank you,
Molly

From: Vaughan, Molly
Sent: Wednesday, November 21, 2018 11:34 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hello All,
We just received word from the Corps that they are extending the deadline for cooperating agency comments on these sections. For all of the sections below, I would now appreciate if you can complete your review and send me any comments you have by COB Monday Dec. 10.
Thank you and Happy Thanksgiving!
--Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

AMERICAN OVERSIGHT

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 11/21/2018 8:33:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review - Pebble Pre-DEIS Sections

Hello,
I am out of the office from 11/20 to 11/26. I will have limited access to email or phone during that time.
Thanks
--Chris

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 11/21/2018 8:33:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review - Pebble Pre-DEIS Sections

I am out of the office, returning Monday, November 26th.

If you need immediate assistance, please contact my unit manager, Jill Nogi, at nogi.jill@epa.gov or 206-553-1841.

Justine Barton
US EPA Region 10
1200 Sixth Ave. ms OERA-140
Seattle, WA 98101
206-553-6051
barton.justine@epa.gov

AMERICAN OVERSIGHT

Message

Sent: 11/16/2018 8:15:42 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

Hi Shane. Thank you very much for your quick response. However, I did not receive an email Figure 4.16-4 in the distribution. Can you send that one as well

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 16, 2018 10:11 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Thanks Molly,
It appears I missed it for all CAs. I will send in a few minutes.

VR

Shane McCoy
Program Manager
(907) 753-2715

-----Original Message-----
From: Vaughan, Molly [mailto:Vaughan.Molly@epa.gov]
Sent: Friday, November 16, 2018 9:53 AM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

Hello Shane,
We did not receive the figures for Chapter 4.16 (7 pdf files noted below). Can you please resend those?
Thank you,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 09, 2018 5:42 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: FW: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.16, K3.16, 4.16 - Surface Water Hydrology. The only technical appendix is K3.16. There are 2 separate figure PDFs for K3.16; 10 separate PDF files for 3.16; and 7 separate PDF files for 4.16 which are being sent separately. CAs are EPA, State of Alaska

VR

Shane McCoy
Program Manager
(907) 753-2715

AMERICAN OVERSIGHT

CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/14/2018 11:47:18 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Thanks, Molly. I'm in meetings all morning tomorrow morning so I won't have time to start till the afternoon. Not a problem.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Wednesday, November 14, 2018 3:25 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hi Ashley,
I believe that the Wetlands will be the last section. There aren't any others assigned to us in the Cooperating Agency Workplan that we haven't received yet.

As an update regarding Chapter 2… I apologize that I will not get those comments to you by this afternoon as I had hoped, but will definitely send them before noon tomorrow. I believe you said you were blocking time Thursday afternoon to review, so I hope that won't be a problem!

Thanks,
Molly

From: Palomaki, Ashley
Sent: Wednesday, November 14, 2018 8:57 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hi Molly –

Thank you!! I really appreciate the schedule.

You noted below in the email to the team that we haven't received the wetlands section yet. Is that the only additional section we are anticipating reviewing? Or are there others as well? Just curious for my schedule in December.

Thanks again,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel

AMERICAN OVERSIGHT

1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 3:23 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hi Jill, Patty and Ashley,
Here is a schedule for your reviews of the Pebble sections received for review, as I've talked about with each of you. Thanks to each of you for your understanding regarding the short timeframe available for review.

Chapter 2 Alternatives:
- Ashley 11/15-11/16
- Jill and Patty 11/19-11/20

Soils, Surface Water and Vegetation:
- Patty 11/29-11/30
- Ashley 12/3-12/4
- Jill 12/6-12/7

Hydrogeology and water and sediment quality:
- Patty 12/3-12/4
- Ashley 12/5-12/6
- Jill 12/10-12/11

Thanks,
Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

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Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/14/2018 11:04:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hello. I am out of the office on work travel, returning on November 16. I will be checking and responding to emails when I can.
- Patty

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 11/14/2018 11:04:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

I am out of the office the week of November 13-16 and will respond to your message as quickly as I can.

Thank you, in advance, for your patience.

Neverley
(907) 271-3206

AMERICAN OVERSIGHT

Appointment

From: Craig, Bill [bill.m.craig@aecom.com]
Sent: 10/17/2018 9:40:20 PM
To: bobl@jadenorth.com; Brooke Merrell [brooke_merrell@nps.gov]; Curyung Tribal [courtenay@curyungtribe.com]; Daugherty, Linda (PHMSA [linda.daugherty@dot.gov]; David Seris [David.M.Seris@uscg.mil]; Douglass Cooper [douglass_cooper@fws.gov]; Hassell, David (PHMSA [david.hassell@dot.gov]; J. Loichinger [jloichinger@achp.gov]; Joan Kluwe [joan_kluwe@nps.gov]; John Eddins [jeddins@achp.gov]; Kevin Pendegast [kevin.pendergast@bsee.gov]; mary_colligan@fws.gov; McCafferty, Katherine A CIV USARMY CEPOA (US [Katherine.A.McCafferty2@usace.army.mil]; McCall, John [john.mccall@bsee.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Moselle, Kyle W (DNR [kyle.moselle@alaska.gov]; manager@lakeandpen.com; POA Special Projects [poaspecialprojects@usace.army.mil]; nondaltontribe@yahoo.com; Wesley Furlong [wfurlong@narf.org]; Forland, Sasha [sasha.forland@aecom.com]; Isaacs, Jon [jon.isaacs@aecom.com]; Urlich, Cecil [cecil.urlich@aecom.com]; Frownfelter, Jennifer [jennifer.frownfelter@aecom.com]

Subject: Pebble Cooperating Agency Meeting
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: 10/24/2018 8:30:00 PM
End: 10/25/2018 12:30:00 AM
Show Time As: Tentative

Recurrence: (none)

Shane will be providing additional information on the meeting next week but asked that I send the teleconference and WebEx information. Additional materials/handouts will be distributed before the meeting for those calling in.

Draft Agenda:
1. Review of alternatives to be analyzed in detail
2. Format and level of detail for Chapter 2
3. Update on Appendix B (addressing USACE/CA comments, next version will be Draft EIS)
4. Review of select alternatives:

a. Filtered tailings (dry stack)
c. Other mine locations
d. Underground mining

-- Do not delete or change any of the following text. --

Join Webex meeting
Meeting number (access code): Conference Line/Code / Ex. 6

Join from a video system or application
Dial Conference Line/Code / @aecom.webex.com
You can also dial Conference and enter your meeting number.

Join by phone
Conference Line/Code / Ex. 6 US Toll
US Toll Free

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Global call-in numbers | Toll-free calling restrictions

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IMPORTANT NOTICE: Please note that this Webex service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/29/2018 10:28:44 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

I am out of the office, returning Monday, November 5th.

If you need immediate assistance, please contact my unit manager, Jill Nogi, at nogi.jill@epa.gov or 206-553-1841.

Justine Barton
US EPA Region 10
1200 Sixth Ave. ms OERA-140
Seattle, WA 98101
206-553-6051
barton.justine@epa.gov

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 11/16/2018 8:24:38 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

I am out of the office, returning Monday, November 19th.

If you need immediate assistance, please contact my unit manager, Jill Nogi, at nogi.jill@epa.gov or 206-553-1841.

Justine Barton
US EPA Region 10
1200 Sixth Ave. ms OERA-140
Seattle, WA 98101
206-553-6051
barton.justine@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 9/4/2018 7:19:35 PM

Subject: Pebble Alternatives Meeting

Start: 10/24/2018 8:00:00 PM
End: 10/24/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 11/2/2018 9:01:58 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review -- Pebble Ch 2 Alternatives

I will be out of the office on Friday, November 2nd returning Monday, November 5th. I will not be checking emails so will reply when I return.

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 11/2/2018 9:01:58 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Please Review -- Pebble Ch 2 Alternatives

I will be out of the office until 11/6. Please contact Brian Topping, topping.brian@epa.gov if you have an issue that cannot wait until my return.

AMERICAN OVERSIGHT

Message

From: Butler, Barbara [Butler.Barbara@epa.gov]
Sent: 11/2/2018 7:30:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

That was what I needed to do – I have access.

Thanks and have a great weekend,
Barb

From: Butler, Barbara
Sent: Friday, November 02, 2018 3:27 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hi Molly,

I'm working from home on Monday, so thought I'd spend that day reading up on these. But, I just tried to access the folder and the following screen came up:



When I clicked on the Sharepoint Icon, it said I don't have access. So, I have clicked on request access. I'm not sure though if that's access to the folder, or something else so wanted to email you in case there's something different I should do.

Thanks!
Barb

From: Vaughan, Molly
Sent: Monday, October 29, 2018 6:29 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hello All,
I have created a new folder on the Sharepoint Site where I will begin storing all of the sections of the preliminary Draft EIS as we receive them: "Preliminary Draft EIS Sections Oct-Nov 2018"

AMERICAN OVERSIGHT

In addition to the documents previously shared (the Revised Project Description and powerpoint presentation on Alternatives), this folder now contains the draft text of Chapter 1 and Chapter 2 (with additional folder containing figures). Comments are not requested on these sections, however, they have been provided for our review as context for review of the analysis in Chapter 3 and 4, so I do recommend reading when you get a chance.

As previously mentioned, we will be receiving the sections of Ch. 3 and 4 on a rolling basis between now and the first week of November. A few sections (the intros to 3 and 4 as well as Recreation sections) have already been received and are also available in the new folder.

Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/22/2018 6:42:22 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

Hi Shane-
We were unable to open the attachment.
However, we did find a revised project description, dated 10/4/2018 on the website. Are these the same documents?
Thanks-
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, October 19, 2018 3:08 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the updated Project Description produced by the applicant associated with the May 11, 2018 Memo.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 7/16/2018 7:03:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello,
I am out of the office from 7/16 to 7/23 and will not have access to email or phone during that time.
Thanks
--Chris

AMERICAN OVERSIGHT

Message

From: Pepple, Karl [Pepple.Karl@epa.gov]
Sent: 7/16/2018 7:03:31 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Good day,

Thank you for your email. I am out of the office, returning Monday July 23rd. I will respond to your email as soon as I can.

Have a great day!

KP

Karl Pepple, Ph.D., Q.E.P.
Region X
U. S. EPA
206.553.1778
pepple.karl@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/11/2018 11:28:03 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]; McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]
Subject: Pebble site visit

Hello Shane-

Per our last conversation, I just want to remind you that four of us from EPA will be visiting the Pebble project site on July 31. Our hydrogeologist, geochemist, and myself will be traveling from Seattle and will be available the afternoon of July 30 and the morning of August 1 and could meet with the Corps and AECOM's technical folks during those times. I know that you are planning technical meetings for later in August, but wanted you to be aware of this opportunity as well in case it makes sense to meet sooner in person. Please let me know if you would like to do that.

Thanks –
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 7/2/2018 4:56:54 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Final Pebble Scoping Letter

I am out of the office, returning Monday, July 9th.

If you need immediate assistance, please contact my unit manager Jill Nogi at nogi.jill@epa.gov or 206-553-1841.

Justine Barton
US EPA Region 10
1200 Sixth Ave. ms OERA-140
Seattle, WA 98101
206-553-6051
barton.justine@epa.gov

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 10/22/2018 2:38:46 PM
To: Butler, Barbara [Butler.Barbara@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Barb hit on all my comments and then some!

-----Original Message-----
From: Butler, Barbara
Sent: Monday, October 22, 2018 6:32 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Patty and Molly,

Deliberative Process / Ex. 5

I've attached some specific comments.

Deliberative Process / Ex. 5

I hope these comments are helpful and please let me know if you have any questions.

Thanks,
Barb

Ps. So you're aware, I will be out of the office the 24th through the 31st.

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, October 17, 2018 6:35 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hi Barb and Cindi-
I have not had an opportunity to review this memo yet, but plan to do so tomorrow. If you have time, can you also review and send Molly and I any comments that you have by COB 10/22? If you do not have time, please let me know. I have reviewed dry stack analyses for other EISs so I am pretty comfortable with this, but would also appreciate a second (or third!) set of eyes.
This memo will be discussed at a meeting with the Corps and other agencies on October 24. We have not decided whether to submit written comments - that will depend on our review.
Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, October 11, 2018 12:00 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>

AMERICAN OVERSIGHT

Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

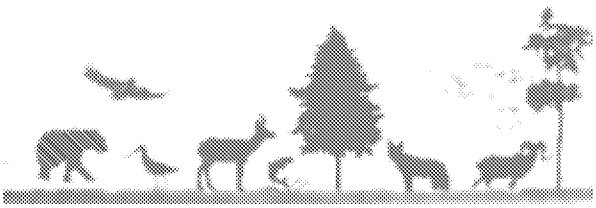
From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 9/20/2018 3:44:29 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble concentrate pipeline alternative

Patty,

I am reviewing the Pebble Alternatives document and want to clarify a point that we have talked with the company before. And I know you aren't in but want to get it down and let Molly know that this may be a last minute tweak to the comments.

Deliberative Process / Ex. 5

Cindi



AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/28/2018 7:30:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble scoping letter

Can you send out call in # for everyone in davids email below? Ashely and I have a meeting from 1 – 3, so better talk now.

From: Allnutt, David
Sent: Thursday, June 28, 2018 12:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: RE: Pebble scoping letter

Quick call?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 28, 2018 11:21 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Subject: FW: Pebble scoping letter

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hoppe, Allison
Sent: Thursday, June 28, 2018 11:14 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>

AMERICAN OVERSIGHT

Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Apologies for the multiple versions, but we also just closed a loop on a separate question from Drew Feeley about the air quality section starting on page 15 and ARLO gave us some incredibly speedy feedback. The version attached here

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

Personal Matters / Ex. 6

From: Nalven, Heidi
Sent: Thursday, June 28, 2018 1:51 PM
To: Marshall, Tom <marshall.tom@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble scoping letter

Hi Justin – Below are responses in blue from me and Ashley. Please let us know if you are okay with the responses and whether you have anything further before we provide OGC's final edits to the Region.

Thanks,

AMERICAN OVERSIGHT

Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 8:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Scheraga, Joel <Scheraga.Joel@epa.gov>
Subject: RE: Pebble scoping letter

Thanks very much Justin. My quick thoughts below in bold, though Allison may have other thoughts and Heidi will, of course, handle the 404 angles. Copying Joel to alert him to some legal angles that may be pertinent to his discussions with Brittany. (Joel is the Agency's senior resilience expert and is in OP.)

202.564.5549

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/21/2018 10:54:47 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: revised climate language for Pebble scoping
Attachments: pebble scoping climate text 062118_2.docx

Hi to you both. I think Molly's edits are stellar.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Bravo, and fingers crossed.

202.564.5549

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 5:14 PM
To: Marshall, Tom <marshall.tom@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Tom,

Molly provided a quick response to address your questions and comments. Do these respond to your concerns?

The temperature and precipitation reports for the two sites can be found at the following links:

https://www.snap.uaf.edu/sites/default/files/lakeclark.pdf

https://www.snap.uaf.edu/sites/default/files/katmai.pdf

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

AMERICAN OVERSIGHT

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

Megan

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time (b) (6) went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/21/2018 9:14:06 PM
To: Marshall, Tom [marshall.tom@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: revised climate language for Pebble scoping
Attachments: pebble scoping climate text 062118.docx

Tom,

Molly provided a quick response to address your questions and comments. Do these respond to your concerns?

The temperature and precipitation reports for the two sites can be found at the following links:

https://www.snap.uaf.edu/sites/default/files/lakeclark.pdf

https://www.snap.uaf.edu/sites/default/files/katmai.pdf

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

Megan

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

AMERICAN OVERSIGHT

Hi Megan,
In the interest of time (b) (6) I went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19

[1] See http://nca2014.globalchange.gov/
[2] See https://www.snap.uaf.edu/

AMERICAN OVERSIGHT

Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/7/2018 12:44:08 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: pebble eis draft scoping report
Attachments: PebbleEIS draft scoping report EPA comments.docx

Hi Molly –
Attached are my comments on the draft scoping report.
I prioritized this review over chapter 4 reviews, due to the upcoming deadline.
Please let me know if you have questions.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/21/2018 2:49:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: revised climate language for Pebble scoping

Molly,

Thank you so much for being so on top of everything. I called OGC twice yesterday and sent emails and still waiting for the comments. I will keep trying and keep you in the loop. I also spoke with Joel Scheraga, who is the Senior Advisor for Climate Adaptation and in the Office of Policy. He agreed to do a quick review (one day) of the comments to make sure we have coverage.

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time ([redacted] I went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/13/2018 11:50:46 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble EIS - EPA subject matter points of contact

Hi Shane-
At the cooperating agency meeting last week you requested that we identify leads for the resource sections where the Corps has requested our review. Below is that list.

- 3.1 Intro – Molly Vaughan
- 3.5 Recreation – Molly Vaughan
- 3.11 Aesthetics – Molly Vaughan
- 3.14 Soils – Mark Douglas
- 3.16 Surface Water Hydrology – Tim Maley
- 3.17 Groundwater Hydrology – Tim Maley
- 3.18 Water and Sediment Quality – Cindi Godsey
- 3.22 Wetlands/ Special Aquatic Sites – Mark Douglas
- 3.26 Vegetation – Mark Douglas

Contact Information for technical leads:
Mark Douglas, Douglas.mark@epa.gov, 907-271-1217
Cindi Godsey, Godsey.cindi@epa.gov, 206-553-1676
Tim Maley, Maley.timothy@epa.gov, 206-553-1210
Molly Vaughan, Vaughan.molly@epa.gov, 907-271-1215

Please cc Molly and I on communications to our resource leads from the Corps or AECOM. There are other EPA folks involved in providing input to the resource sections and we need to be aware of communications to efficiently coordinate. For example, our hydrology and water quality reviewers includes a geochemist and modeler in addition to the identified resource leads. Molly and I will be the points of contact for alternatives.

As I mentioned during the meeting last week, we also have a fisheries biologist with applicable expertise if the Corps would like our assistance in that area.

Best regards-

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/27/2018 11:15:52 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble scoping letter
Attachments: EDIT 06272018 Pebble Project Scoping 060518 draft_pm.docx; ATT00001.htm

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Stern, Allyn
Sent: Wednesday, June 27, 2018 4:01 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Fwd: Pebble scoping letter

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
> **Date:** June 27, 2018 at 3:50:29 PM PDT
> **To:** "Stern, Allyn" <Stern.Allyn@epa.gov>
> **Subject: Fwd: Pebble scoping letter**
>
> Sent from my iPhone
>
> Steven Neugeboren
> Associate General Counsel for Water
> U.S. EPA
> 202-564-5488
>
> Begin forwarded message:
>
> > **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> > **Date:** June 27, 2018 at 6:18:51 PM EDT
> > **To:** "Wehling, Carrie" <Wehling.Carrie@epa.gov>, "Koslow, Karin"

AMERICAN OVERSIGHT

<Koslow.Karin@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
Subject: FW: Pebble scoping letter

Please see below from Justin

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Schwab, Justin
Sent: Wednesday, June 27, 2018 6:16 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: Pebble scoping letter

Please find attached. David and I have reviewed with Drew.

If anyone else's review is necessary in OGC/ORC, please circulate accordingly.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/26/2018 10:50:55 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Pre-Draft Ch 3 materials

I will be out of the office on work travel through Friday 6/29. I will be checking email and will respond to you as soon as possible.

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/18/2018 6:53:54 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: McCafferty, Katherine A CIV USARMY CEPOA (US) [Katherine.A.McCafferty2@usace.army.mil]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]
Subject: RE: beginning of dissemination of info for 06/06/18 CA

Hello Shane-
Thanks for sharing this information.
I have a request for the upcoming cooperating agency meeting. Would it be possible to have an overview presentation of the updates to the project described in the May 11 memo from Pebble?
Have these changes been reflected in the DA application on the website?
Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, May 14, 2018 5:14 PM
To: Bob Loeffler <bobl@jadenorth.com>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Kevin Pendergast <kpendergast@rmconsult.com>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; mnewman@narf.org; Rob Rosenfeld <Personal Email / .com>
Subject: beginning of dissemination of info for 06/06/18 CA

All,
Attached are some of the documents for your agencies review. I will continue forwarding information including an agenda and location, draft scoping report, draft Chapter 2 and draft chapter and other materials, so your team has a chance to review and provide you with items to bring up at the managers meeting. Please also note the project website will have this info on it as soon as possible.

I will send all of the information received to date, not requesting comments, but rather for visibility for all. It will be in several emails.

VR,

Shane

Shane

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [no-reply@sharepointonline.com]
Sent: 5/3/2018 4:59:25 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Wake, Neverley [wake.neverley@epa.gov]
Subject: Wake, Neverley has shared 'Pebble Project Scoping 041118 draft'

Hi, Molly.

My apologies, I was traveling yesterday. Here is the link to the document that I asked JR, Michelle, and Tami to view and provide comments on directly. I'm scanning my email and will forward anything that was emailed directly to me.

Respectuflly,
Neverley

Open Pebble Project Scoping 041118 draft.docx

See more related to Wake, Neverley in Delve.


Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 5/3/2018 3:49:13 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping Comments

I'm out of the office until May 7th and will respond to your message as quickly as I can.

Thank you, in advance, for your patience.

Neverley
(907) 271-3206

AMERICAN OVERSIGHT

Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 5/3/2018 3:30:59 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Revised Scoping Letter Text

<!--[if lte mso 15 || CheckWebRef]-->

Thiesing, Mary has shared a OneDrive for Business file with you. To view it, click the link below.

Aquatic Resources Comment Letter Text MAT.docx

<!--[endif]-->

Matt,

This reads well and I had only one (tiny) edit. Molly, you have an enormous job ahead in editing all the parts but the letter is well-documented and thorough, and you have my sincere admiration for how you have pulled everyone together thus far. Please let me know how I can help.

Mary Anne

From: LaCroix, Matthew
Sent: Wednesday, May 02, 2018 9:29 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: Revised Scoping Letter Text

Molly,

I excerpted and revised text from the first part of the scoping comment letter. I tried to make things flow a little more smoothly and reduce duplication in these sections. I may have partly succeeded, but will allow you to be the judge. Where I inserted or edited text within the General Components of NEPA Analysis section, I highlighted the text. I didn't highlight the text in the Aquatic Resources section because I re-worked most of this text. If you have any questions, I will be in the office tomorrow.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/20/2018 9:49:12 PM
To: McCoy, Shane M CIV USARMY CEPOA (US) [Shane.M.Mccoy@usace.army.mil]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble EIS outline - EPA input

Hi Shane –

Based on discussions at our last agency meeting and our understanding of EPA's cooperating agency role, we looked at the Pebble EIS outline and request that we be involved in early review as a cooperating agency of the following EIS sections:

Chapter 2 – Alternatives
Chapter 3 – Existing Environment
- Sec 3.1 – Introduction
- Sec 3.6 Recreational and Commercial Fisheries
- Sec 3.9 – Food and Fiber Production (Subsistence)
- Sec 3.11 – Aesthetics
- Sec. 3.14 – Soils
- Sec 3.16 – Surface Water Hydrology
- Sec 3.17 - Groundwater Hydrology
- Sec 3.18 - Water and Sediment Quality
- Sec 3.21 – Spill Risk
- Sec 3.22 – Wetlands/Special Aquatic Sites
- Sec 3.24 – Fish Values
- Sec 3.26 – Vegetation

Chapter 4 – Environmental Consequences
- Same subsections as noted for Chapter 3

Appendix F – Draft CWA 404(b)(1) analysis
Appendix J - PJC

We are willing to provide early input into development of other sections of the EIS as well, but feel that those noted above are consistent with the Corps request that EPA be involved in providing support on 404(b)(1) related issues. Please feel free to give me a call if you would like to discuss.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 5/3/2018 4:28:49 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Thiesing, Mary [Thiesing.Mary@epa.gov]
Subject: Revised Scoping Letter Text
Attachments: Aquatic Resources Comment Letter Text.docx

Molly,

I excerpted and revised text from the first part of the scoping comment letter. I tried to make things flow a little more smoothly and reduce duplication in these sections. I may have partly succeeded, but will allow you to be the judge. Where I inserted or edited text within the General Components of NEPA Analysis section, I highlighted the text. I didn't highlight the text in the Aquatic Resources section because I re-worked most of this text. If you have any questions, I will be in the office tomorrow.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 4/6/2018 9:13:25 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble scoping letter heads-up

<!--[if lte mso 15 || CheckWebRef]-->

Eckley, Chris has shared a OneDrive for Business file with you. To view it, click the link below.



18-0002-COE Pebble Project Scoping 040418 draft_CE.docx

<!--[endif]-->
Forgot attachment….

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 11:53 AM
To: Eckley, Chris <Eckley.Chris@epa.gov>
Subject: RE: Pebble scoping letter heads-up

Hi Chris – thank you for your reply, and sorry the timing does not work out with your schedule. Personal Matters / Ex. 6 Personal Matters / Ex. 6
If you have time today or tomorrow and would like to review my current draft, here is a link to the document on Sharepoint. The caveat is that this is a pretty rough first take, and Patty may have some additions by the end of the week. But, if you have edits or recommended additions to what I've got here, I can work to consolidate those with what I receive from Patty. Personal Matters / Ex. 6 so will do that next week.

Internal website/ ex. 6

Thanks so much,
Molly

From: Eckley, Chris
Sent: Thursday, April 05, 2018 8:58 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble scoping letter heads-up

Hi Molly,
Personal Matters / Ex. 6 However, I will have my computer with me, so if there is something critical that you want my input on then send me a text Personal Phone / Ex. 6 and I'll review and provide comments on the letter in the evening.
Thanks,
Chris

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 9:39 AM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy

AMERICAN OVERSIGHT

<maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble scoping letter heads-up

Good morning Cindi, Chris and Tim,
I wanted to give you an update and heads-up regarding the scoping comments for Pebble. As you know, we have a short time window for preparation of the comments, and a large percentage of that will be allotted for the internal review process. Patty and I are currently working on the comments, and plan to have a completed draft by Monday (4/9). At that point I would like to send it to you for your review and input. If Patty and I identify specific areas where more site-specific detail is needed in the scoping letter, I will flag that for you. Otherwise the request will just be to review the portions of the letter related to your area of expertise, and make sure you are okay with the content.

In order to stay on schedule, I will need your input by the 11th. I apologize in advance for the very short turnaround. Please let me know if you will have availability early next week to look over the letter.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 4/6/2018 9:13:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble scoping letter heads-up

Hi Molly,
A bit of a rushed review, but here you go. I can follow up more on this when I get back in the office.
--Chris

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 11:53 AM
To: Eckley, Chris <Eckley.Chris@epa.gov>
Subject: RE: Pebble scoping letter heads-up

Hi Chris – thank you for your reply, and sorry the timing does not work out with your schedule. **Personal Matters / Ex. 6**
Personal Matters / Ex. 6
If you have time today or tomorrow and would like to review my current draft, here is a link to the document on Sharepoint. The caveat is that this is a pretty rough first take, and Patty may have some additions by the end of the week. But, if you have edits or recommended additions to what I've got here, I can work to consolidate those with what I receive from Patty. **Personal Matters / Ex. 6** so will do that next week.

Internal website/ ex. 6

Thanks so much,
Molly

From: Eckley, Chris
Sent: Thursday, April 05, 2018 8:58 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble scoping letter heads-up

Hi Molly,
Personal Matters / Ex. 6 However, I will have my computer with me, so if there is something critical that you want my input on then send me a text **Personal Phone / Ex. 6** and I'll review and provide comments on the letter in the evening.
Thanks,
Chris

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 9:39 AM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble scoping letter heads-up

Good morning Cindi, Chris and Tim,

AMERICAN OVERSIGHT

I wanted to give you an update and heads-up regarding the scoping comments for Pebble. As you know, we have a short time window for preparation of the comments, and a large percentage of that will be allotted for the internal review process. Patty and I are currently working on the comments, and plan to have a completed draft by Monday (4/9). At that point I would like to send it to you for your review and input. If Patty and I identify specific areas where more site-specific detail is needed in the scoping letter, I will flag that for you. Otherwise the request will just be to review the portions of the letter related to your area of expertise, and make sure you are okay with the content.

In order to stay on schedule, I will need your input by the 11th. I apologize in advance for the very short turnaround. Please let me know if you will have availability early next week to look over the letter.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/25/2018 4:51:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Preliminary Ch. 4 Sections

Ok. I have a meeting at 11am (PDT) this morning. Following lunch, is it ok if I take the rest of the day to complete my revisions and get to you COB?

tm

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Wednesday, July 25, 2018 9:45 AM
To: Maley, Timothy <maley.timothy@epa.gov>
Subject: RE: Pebble Preliminary Ch. 4 Sections

Hi Tim – if it's not too much trouble, that would be super helpful. But if you don't have the time this morning (I would still need them by midday), I can work on revising the comments, and follow up with you on anything that I am uncertain on. Just let me know, so I don't duplicate effort!
Thanks,
Molly

From: Maley, Timothy
Sent: Tuesday, July 24, 2018 3:09 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble Preliminary Ch. 4 Sections

Molly –

I see Chris E sent his review comments in that spreadsheet table format, and I failed to do so.

Shall I revise my review comments in this format?

tm

Timothy J Maley PG
Hydrogeologist
USEPA - Region 10
Risk Evaluation Unit
1200 W. 6th Ave.
Seattle, WA. 98101
O: 206-553-1210
maley.timothy@EPA.Gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/24/2018 2:50:35 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Aok
I figured as much.

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Message-----
From: Vaughan, Molly
Sent: Tuesday, July 24, 2018 7:49 AM
To: Maley, Timothy <maley.timothy@epa.gov>
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Good morning, Tim. I've double checked my emails to see if I missed any RFIs, but it looks like those ones have not yet been shared with cooperators.
--Molly

-----Original Message-----
From: Maley, Timothy
Sent: Monday, July 23, 2018 12:28 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

The section I'm reviewing (namely 4.16 and 4.17) references related responses RFI 021, RFI 019 and RFI 036, but these are not in the sharepoint RFI list?

Anywhere I can find these, for my clarification related the review of these preliminary drafts?

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro - Molly
- 4.5 Recreation - Molly
- 4.11 Aesthetics - Molly
- 4.14 Soils - Mark/Palmer
- 4.16 Surface Water Hydrology - Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology - Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality - Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites - Mark/Palmer

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· 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal website/ ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 4/11/2018 8:58:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping Letter - Review Requested

I will be traveling to/from Soda Springs, ID to attend a Public Meeting on April 11th. If you need to reach me feel free to call **Personal Phone / Ex. 6**

Personal Phone / Ex. 6

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 4/10/2018 8:14:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping - Wetland comments strategy meeting

I will be at an off-site meeting on Tuesday, April 10. Please call 202-564-3189 if you have an emergency. Otherwise, I will respond when I return to the office on Wednesday, April 11th.

AMERICAN OVERSIGHT

Message

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 7/19/2018 9:47:53 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Final scoping letter
Attachments: Pebble Project Scoping 062818 compiled draft-rda.docx



Pebble Project Scoping 062818 ...

Yes. Here it is.

Christine Kelly
EPA- Region 10
206-553-2770

From: Vaughan, Molly
Sent: Thursday, July 19, 2018 2:44 PM
To: Kelly, Christine M <kelly.christinem@epa.gov>
Subject: FW: Final scoping letter

Hello Christine,
I was wondering if by chance you have the Word version of the final Pebble scoping letter signed by David? (see below for date). If so, can you send it to me?
Thank you,
Molly

From: Allnutt, David
Sent: Friday, June 29, 2018 2:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

Cc's – thanks for your support on this.

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Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.

<< File: Pebble.062918.Scoping Letter FINAL.pdf >>

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R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/10/2018 4:45:24 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Scoping Letter Schedule

Hi Molly – Thanks for chatting with me. That schedule works for me. I'll also let OGC know so that Heidi can reserve time on her calendar then as well. Thanks.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Monday, April 09, 2018 4:56 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Hi Ashley,
I have revised the schedule for preparing the scoping letter, to account for the extension of the deadline. I now have ORC review scheduled for 5/16-5/23. There will also be a final Region 10 review after we receive comments from HQ, and we will work with ORC again during that time range of 6/21-6/29. Please let me know if this timing will work for your schedule.
Thank you,
Molly

From: Palomaki, Ashley
Sent: Thursday, April 05, 2018 9:00 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Hi Jill,

Thanks. I think we're on the same page.

Fingers crossed that the Corps extends this…

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101

AMERICAN OVERSIGHT

206-553-8582

From: Nogi, Jill
Sent: Thursday, April 05, 2018 9:07 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Thanks, Ashley. When David and I are looking at the letter, according to this schedule, we have 2 days between 4/16-4/18. Then HQ has it from 4/19-4/25. I believe that Molly is going to be tracking the letter and managing version control, and I think that OGC management could be reviewing it at the same time as OFA and OW managers at HQ. We will have to let all 3 offices at HQ know that we anticipate receiving suggestions from everyone involved by COB 4/25. That gives the Region 3 days to finalize once we get it back. If ORC can work with OERA over those last 3 days, that would be helpful. I do not anticipate including OGC at that time. I currently anticipate signing the scoping letter on the 30th and OERA will get it out prior to the end of the day, unless we hear that an extension has been granted.
Thanks,
Jill

From: Palomaki, Ashley
Sent: Thursday, April 05, 2018 8:36 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: Pebble Scoping Letter Schedule

Thanks, Jill. I appreciate knowing ahead of time so Heidi (OGC staff attorney) and I can block time off on our calendars for review. We've both done that now.

I think that the attorneys should also get the document back during the "Final tweaks and signature: 4/25-4/30"? We'd only be reviewing for accuracy after edits but we generally help with that. Do you agree?

Also – I know that OGC management are going to be interested in seeing this letter as well. Carrie Wehling (manager in the WLO was going to flag for David Fotouhi). Can you include Carrie in the HQ management review and then she can forward on as appropriate?

Thanks.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Nogi, Jill
Sent: Wednesday, April 04, 2018 3:55 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Pebble Scoping Letter Schedule

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Wednesday, March 28, 2018 4:12 PM
To: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Scoping Letter Schedule

Hi Jill and Patty,
I have put together a schedule for preparing the Pebble scoping letter that accommodates a need for HQ review and follows the basic plan Patty and I developed last week. When you back out how much time that leaves for actually drafting the comments, it seems almost impossible, but I'll make it work! For your planning purposes, here is what I propose:

Molly draft initial letter: now – 4/5
Patty review and letter revision: 4/5 – 4/9
Reach out to associate reviewers as needed for additional project-specific language: 4/9 - 4/11 (with the exception of Matt, Palmer and Chris who I am already coordinating with)
ORC Review: 4/12-4/16
R10 Management Review: 4/16-4/18
HQ Review: 4/19 – 4/25
Final tweaks and signature: 4/25-4/30

Please let me know if you would like me to make any revisions to this schedule.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 4/9/2018 11:55:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping Letter Schedule

I am out of the office until Friday, April 13th. Alex Fidis is acting for me. He can be reached at 206-553-4710. Thanks.

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 4/9/2018 10:26:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble scoping meeting talking points

Sounds good, Molly.

Thank you,
Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Monday, April 09, 2018 2:18 PM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble scoping meeting talking points

Hi Neverley,
Here are the talking points I received from Patty, with input from Ashley Palomaki.

Introductory Talking Points:

- EPA is a cooperating agency in assisting the Corps in developing the EIS.
- The Corps has specifically requested that we provide input into issues related to the CWA 404(b)(1) guidelines.
- EPA has put together a technical team to provide this assistance and review EIS documents.

If asked how the Proposed Determination or Bristol Bay Watershed Assessment influences the EIS process:

- The BBWA is a three-year, twice peer-reviewed study that provides technical and scientific information about the watershed and the impacts of mining the Pebble deposit. We will use the Assessment, along with other available information, to inform our input into the EIS.

- The Proposed Determination, which has not been finalized, contains proposed restrictions for mining the Pebble deposit. It is not a veto of all mining. Pursuant to the terms of a settlement agreement with the Pebble Limited Partnership, EPA cannot move forward with its Section 404(c) process, should such a decision be made, until a Final EIS is noticed for the project or until May of 2021, whichever is sooner.

I'll be teleworking tomorrow, but will give you a call sometime before the meeting to share anything relevant that I learn in participating in the meeting tonight.

Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19

AMERICAN OVERSIGHT
~~~~~~

Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/9/2018 10:19:23 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble scoping meeting talking points

Hello. I am out of the office until friday, April 13. I will respond to your email when I return.
- Patty

AMERICAN OVERSIGHT

Message

From: Bray, Dave [Bray.Dave@epa.gov]
Sent: 5/1/2018 7:31:49 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]
CC: McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Bonifacino, Gina [Bonifacino.Gina@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

This looks great. I only have one small edit Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Dave

From: Vaughan, Molly
Sent: Monday, April 30, 2018 11:03 AM
To: Pepple, Karl <Pepple.Karl@epa.gov>; Bray, Dave <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Bonifacino, Gina <Bonifacino.Gina@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hello Dave,
Please use the following link, which should take you directly to the draft letter, and should provide editing privileges as well. I would appreciate any additional comments by COB May 2. Thank you for your assistance.

Internal website/ ex. 6

Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

From: Pepple, Karl
Sent: Friday, April 27, 2018 2:31 PM
To: Bray, Dave <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Bonifacino, Gina <Bonifacino.Gina@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Apologies – I meant to copy GB on here too.

KP

From: Pepple, Karl
Sent: Friday, April 27, 2018 2:48 PM
To: Dave Bray (Bray.Dave@epa.gov) <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hello Dave,

As we mentioned earlier this week, the Pebble letter is ready for your review. I think that Molly and Jay did a great job. I would really appreciate your review to make sure Jay and I are not missing anything.

The link to the site with the letter is below here in Molly's April 11 email.

At your earliest opportunity, please let us know if you think any changes need to be made to the letter.

Thank you

KP

From: McAlpine, Jerrold
Sent: Friday, April 27, 2018 10:55 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Thank you Molly! I have made one last edit **Deliberative Process / Ex. 5** have finished my edits on the air quality section, cheers

From: Vaughan, Molly
Sent: Thursday, April 26, 2018 4:13 PM
To: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Thanks, Jay! The one other piece I have in my notes **Deliberative Process / Ex. 5**

From: McAlpine, Jerrold
Sent: Thursday, April 26, 2018 2:49 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly and Karl,

AMERICAN OVERSIGHT

In response to our call earlier this week I have made some edits to the Pebble scoping letter air quality section, namely:

Deliberative Process / Ex. 5

I believe I have covered the main points we discussed in the call, but I failed to keep adequate notes and my memory is failing me. I'll sleep on it and may have further edits/additions tomorrow. But, if you can recall any other main points we discussed on the call, I would appreciate if you could please refresh my memory!

Thank you,
Jay

Jay McAlpine, PhD
Atmospheric Scientist, Regional Modeling Contact
Office of Air and Waste
U.S. Environmental Protection Agency, Region 10
1200 6th Ave., OAW-150
Seattle, WA 98101
206.553.0094
McAlpine.Jay@epa.gov

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 1:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate

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versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Pepple, Karl [Pepple.Karl@epa.gov]
Sent: 4/30/2018 6:03:07 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping Letter - Review Requested

Good day,

Thank you for your email. I am out of the office, but will respond to your email as soon as I can.

Have a great day!

KP

Karl Pepple, Ph.D., Q.E.P.
Region X
U. S. EPA
206.553.1778
pepple.karl@epa.gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 4/30/2018 5:53:38 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Automatic reply: Pebble Scoping Letter - Review Requested

I'll be out-of-the-office Monday - April 30th. If you need to reach me feel free to call my cell: Personal Phone / Ex. 6

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 4/24/2018 3:23:11 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Thanks, Molly.

I just wasn't sure how to treat this documentation and whether it is ok to share outside the team to solicit feedback.

Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Monday, April 23, 2018 8:48 AM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Neverley,
I don't believe anyone not on the Pebble Project NEPA Team will be able to open the link below, since they don't have access to the Sharepoint site. However, here is a new link to the draft scoping letter, which I believe will work for anyone with an EPA account to be able to view and edit the document:

Internal website/ ex. 6

Alternatively, you can just collect all of the edits from those you are coordinating with in a Word doc and email it to me, and I'll consolidate with other edits.

Thank you,
Molly

From: Wake, Neverley
Sent: Friday, April 20, 2018 11:07 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hello, Molly.

I've reviewed the document and have a couple of thoughts I would like to coordinate with others on, specifically Michelle Davis for the references on addressing Climate Change; Tami Fordham for her perspective on the TEK section; and JR Herbst and/or Michael Ortiz on the Tribal Consultation section. What is the appropriate way to do that? Can your email be forwarded to facilitate collaboration?

Thank you,
Neverley
(907) 271-3206

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 12:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

Internal website/ ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

~~~~~~

AMERICAN OVERSIGHT

Message

From: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Sent: 4/23/2018 6:21:34 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Holsman, Marianne [Holsman.Marianne@epa.gov]
Subject: RE: Media contact for Pebble Anchorage public scoping meeting tonight

Thank you very much, Molly!

Hope the public meeting went well.

Please let me know if you need anything from me.

Suzanne Skadowski
Public Affairs | Media Relations Specialist
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Twitter: @EPAnorthwest
Facebook: @eparegion10

From: Vaughan, Molly
Sent: Thursday, April 19, 2018 12:30 PM
To: Holsman, Marianne <Holsman.Marianne@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: RE: Media contact for Pebble Anchorage public scoping meeting tonight

Hello again, Marianne. As we just discussed, here are the talking points that were put together by Patty McGrath and Ashley Palomaki for use if we get any questions by members of the public at the scoping meetings. I will be prepared with your phone number and Suzanne's in the case of any inquiries from the press.
Thanks,
Molly

From: Vaughan, Molly
Sent: Thursday, April 19, 2018 11:03 AM
To: Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: Media contact for Pebble Anchorage public scoping meeting tonight

Hello Marianne,
I will be attending the USACE public scoping meeting here in Anchorage for the Pebble Project this evening, beginning at 5pm. EPA does not have a speaking role, and I expect to be solely observing the proceedings as a member of the public. However, in the event that I receive any press inquiries, who shall I direct them to? I realize that this will be very late Seattle time, though the Corps is not offering a public speaking format (attendees can provide their input on computers or one-on-one to a court reporter) so I don't expect to stay very long into the evening.
Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10

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Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/5/2018 7:18:48 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble scoping

Hi Molly-
An additional scoping meeting has been added on 4/13.
https://pebbleprojecteis.com/meetings

I can't call in on that day.
Can you or Neverly cover?
I could also ask Cindi Godsey for assistance in covering some of the meetings.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 8/28/2018 7:42:07 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble preliminary alternatives review

Patty forwarded it to me already. I won't be in on the 7th but will set aside the 10th for my review!

From: Vaughan, Molly
Sent: Tuesday, August 28, 2018 12:38 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: FW: Pebble preliminary alternatives review

Hi Cindi. I understand from Patty that you have offered to assist with review of the preliminary alternatives. Thank you! I'm forwarding the email I sent yesterday before hearing you would be helping, with the upcoming review dates.
Thank you,
Molly

From: Vaughan, Molly
Sent: Monday, August 27, 2018 3:05 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble preliminary alternatives review

Hi All,
The Corps has provided an updated schedule regarding the alternatives, that I wanted to share for your workload planning purposes. They now intend to share the revised alternatives table on September 7 for a short one-week review.
Thank you,
Molly

From: McGrath, Patricia
Sent: Wednesday, August 22, 2018 3:42 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble preliminary alternatives review

Hi Palmer, Barb, and Kate –

Based on the alternatives discussion at todays cooperating agency (CA) meeting, the Corps and AECOM will be developing a revised version of the 8/17 preliminary alternatives memo. The Corps said that CAs do not need to send written comments on the memo, but could wait and send comments on the revised version (expected around 9/1). Therefore, you do not need to send Molly written comments on the 8/17 version by the end of this week. We will send you the revised version for comment when it is available.

Thanks for your reviews to-date and the discussion today. Most of the points were discussed during the CA meeting. Stay tuned for the next version of the memo and in the meantime, feel free to call if you have questions.

AMERICAN OVERSIGHT

Best regards-
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Bellion, Tara [tara.bellion@aecom.com]
Sent: 10/9/2018 11:09:35 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble: List of Preparers Chapter information request

Received, Thank you.

Tara

From: Vaughan, Molly [mailto:Vaughan.Molly@epa.gov]
Sent: Tuesday, October 09, 2018 1:59 PM
To: McGrath, Patricia; Bellion, Tara
Cc: POA Special Projects
Subject: RE: Pebble: List of Preparers Chapter information request

Hello Tara,
Here is my contact info:

Molly Vaughan, NEPA Reviewer
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

Thanks,
Molly

From: McGrath, Patricia
Sent: Tuesday, October 09, 2018 1:03 PM
To: Bellion, Tara <tara.bellion@aecom.com>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble: List of Preparers Chapter information request

Identifying us as points of contact is fine.
Below is my contact info.
Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
Office: (206) 553-6113
mcgrath.patricia@epa.gov

From: Bellion, Tara [mailto:tara.bellion@aecom.com]
Sent: Tuesday, October 9, 2018 11:53 AM

AMERICAN OVERSIGHT

To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble: List of Preparers Chapter information request

Hi Patty,

Several cooperating agencies have replied that they would prefer to be listed by their agency address and points of contact instead of preparers. If this is how your agency would prefer to be listed please provide that information instead.

I am free most of this afternoon if a call is necessary.

Thanks, Tara

From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, October 09, 2018 10:45 AM
To: Bellion, Tara
Cc: POA Special Projects; Vaughan, Molly
Subject: RE: Pebble: List of Preparers Chapter information request

Hi Tara –
Molly and I would like to discuss with you and Shane the intent of including us in the list of preparers.
Would it be possible to set up a quick call to discuss?
thanks
Patty

From: Bellion, Tara [mailto:tara.bellion@aecom.com]
Sent: Tuesday, October 9, 2018 11:02 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: RE: Pebble: List of Preparers Chapter information request

Hello Patty,

Please see email below and provide information requested.

Regards,

Tara Bellion

From: Bellion, Tara
Sent: Wednesday, September 26, 2018 11:19 AM
To: Mcgrath.patricia@epa.gov
Cc: POA Special Projects <poaspecialprojects@usace.army.mil> (poaspecialprojects@usace.army.mil)
Subject: Pebble: List of Preparers Chapter information request

Good Morning,

AECOM is compiling the List of Preparers Chapter for the Pebble EIS. Please provide your full name, project Role, education/background and years of experience. If you can please reply by October 1 this would be most appreciated.

Regards,

AMERICAN OVERSIGHT

Tara Bellion
Environmental Planner and Project Manager

AECOM
3504 Industrial Avenue, Suite 125
Fairbanks, Alaska 99701
T 1-907-374-0303 ext 101

AMERICAN OVERSIGHT

Message

From: Bellion, Tara [tara.bellion@aecom.com]
Sent: 10/9/2018 11:07:07 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble: List of Preparers Chapter information request

Thank you, Tara

From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, October 09, 2018 1:03 PM
To: Bellion, Tara
Cc: POA Special Projects; Vaughan, Molly
Subject: RE: Pebble: List of Preparers Chapter information request

Identifying us as points of contact is fine.
Below is my contact info.
Thanks - Patty

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
Office: (206) 553-6113
mcgrath.patricia@epa.gov

From: Bellion, Tara [mailto:tara.bellion@aecom.com]
Sent: Tuesday, October 9, 2018 11:53 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble: List of Preparers Chapter information request

Hi Patty,

Several cooperating agencies have replied that they would prefer to be listed by their agency address and points of contact instead of preparers. If this is how your agency would prefer to be listed please provide that information instead.

I am free most of this afternoon if a call is necessary.

Thanks, Tara

From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, October 09, 2018 10:45 AM
To: Bellion, Tara
Cc: POA Special Projects; Vaughan, Molly
Subject: RE: Pebble: List of Preparers Chapter information request

Hi Tara –

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Molly and I would like to discuss with you and Shane the intent of including us in the list of preparers.
Would it be possible to set up a quick call to discuss?
thanks
Patty

From: Bellion, Tara [mailto:tara.bellion@aecom.com]
Sent: Tuesday, October 9, 2018 11:02 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: RE: Pebble: List of Preparers Chapter information request

Hello Patty,

Please see email below and provide information requested.

Regards,

Tara Bellion

From: Bellion, Tara
Sent: Wednesday, September 26, 2018 11:19 AM
To: Mcgrath.patricia@epa.gov
Cc: POA Special Projects <poaspecialprojects@usace.army.mil> (poaspecialprojects@usace.army.mil)
Subject: Pebble: List of Preparers Chapter information request

Good Morning,

AECOM is compiling the List of Preparers Chapter for the Pebble EIS. Please provide your full name, project Role, education/background and years of experience. If you can please reply by October 1 this would be most appreciated.

Regards,

Tara Bellion
Environmental Planner and Project Manager

AECOM
3504 Industrial Avenue, Suite 125
Fairbanks, Alaska 99701
T 1-907-374-0303 ext 101

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 4/5/2018 4:41:39 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble scoping letter heads-up

Molly,

I will be c Personal Matters / Ex. 6 ack in the office on the 10th. It took me all of 45 minutes to read the scoping document so that is out of the way. I should be able to provide comments by COB on the 11th.

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 9:39 AM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble scoping letter heads-up

Good morning Cindi, Chris and Tim,
I wanted to give you an update and heads-up regarding the scoping comments for Pebble. As you know, we have a short time window for preparation of the comments, and a large percentage of that will be allotted for the internal review process. Patty and I are currently working on the comments, and plan to have a completed draft by Monday (4/9). At that point I would like to send it to you for your review and input. If Patty and I identify specific areas where more site-specific detail is needed in the scoping letter, I will flag that for you. Otherwise the request will just be to review the portions of the letter related to your area of expertise, and make sure you are okay with the content.

In order to stay on schedule, I will need your input by the 11th. I apologize in advance for the very short turnaround. Please let me know if you will have availability early next week to look over the letter.

Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
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AMERICAN OVERSIGHT

Message

From: Bellion, Tara [tara.bellion@aecom.com]
Sent: 10/9/2018 6:02:49 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: POA Special Projects <poaspecialprojects@usace.army.mil> (poaspecialprojects@usace.army.mil) [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble: List of Preparers Chapter information request

Hello,

Please see email below and provide information requested.

Regards,

Tara Bellion

From: Bellion, Tara
Sent: Wednesday, September 26, 2018 11:20 AM
To: 'Vaughan.molly@epa.gov'
Cc: POA Special Projects <poaspecialprojects@usace.army.mil> (poaspecialprojects@usace.army.mil)
Subject: Pebble: List of Preparers Chapter information request

Good Morning,

AECOM is compiling the List of Preparers Chapter for the Pebble EIS. Please provide your full name, project Role, education/background and years of experience. If you can please reply by October 1 this would be most appreciated.

Regards,

Tara Bellion
Environmental Planner and Project Manager

AECOM
3504 Industrial Avenue, Suite 125
Fairbanks, Alaska 99701
T 1-907-374-0303 ext 101

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/26/2018 6:02:00 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
CC: Craig, Bill (bill.m.craig@aecom.com) [bill.m.craig@aecom.com]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: pebble eis alternatives

Hello Shane-
I appreciate the information shared at the cooperating agency meeting regarding the alternatives that would be analyzed in the draft EIS. We still have some outstanding questions about the TSF liner and dry stack options. Would it be possible to have an in-person focused meeting the week of Nov 5 with you and the appropriate AECOM technical folks to discuss the tailings alternatives? I will be in Anchorage that week and have some open times.
Thanks –
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/5/2018 5:44:11 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review

Thank you Molly!

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 1:42 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble Scoping Letter for HQ Review

Hello Megan,
Attached please find Region 10's draft Scoping letter for the Pebble Project. This letter has already undergone legal and management review here in the Region, and is now ready for headquarters review. We would appreciate your identification of any major issues or concerns with the comments. In addition to OFA/NCD review, please also coordinate with OGC and OWOW. Heidi Nalven and Palmer Hough are the contacts and are standing by to coordinate review within their offices.

We would appreciate receiving any comments by COB on June 12. We would also appreciate if you could compile all HQ comments in a single track changes version of the document. We do have a Sharepoint site for this project, so please let me know if it would be helpful to save the document there so each reviewer can add their comments to the same document.

Please let me know if you have any questions, and thank you for your review.
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
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AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/5/2018 3:39:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble - scoping letter schedule

Hi Molly – Thanks! I really appreciate the heads up.

Jill and David actually flagged this for me yesterday and I've already reached out to my OGC counterpart (Heidi Nalven). We'll review together and send back consolidated comments, and we've blocked time off on our calendars to review and discuss.

Personal Matters / Ex. 6 and so it's tight, but doable.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 8:17 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble - scoping letter schedule

Good morning Ashley,
As I know you are aware, I have a very aggressive schedule for drafting the Pebble scoping letter, to allow adequate time for all of the internal R10 and HQ reviews that will need to occur. I have time allotted for an ORC review from 4/12 (I'll get you the letter by COB on that day, hopefully earlier) to 4/16 COB. I realize this really only gives you 2 business days, but it's the best I could figure out. Will this plan work with your schedule?
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/12/2018 9:26:05 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble scoping letter
Attachments: Pebble Project Scoping 050818 draft w JB+CM_pm.docx

Hi Molly –
Attached are my comments on the pebble scoping letter – this also includes comments from Chris and Justine.
Let me know if you have questions.
Please give me a call on Monday morning if you have a minute.
Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/1/2018 8:12:24 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project Scoping 052418 draft.docx
Attachments: Pebble Project Scoping 052418 draft.docx

Hi – I added cites to the section on the b1 guidelines starting on page 7, with a focus on fisheries. Let me know if I've missed anything. Thanks!

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Message

From: Davis, Michelle V. [Davis.MichelleV@epa.gov]
Sent: 5/4/2018 7:13:53 PM
To: Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Herbst, John [herbst.john@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble Scoping Comments

Flag: Follow up

Hello; I used the link and entered my comments. My comments are in blue. Overall, a very clear and well laid out document.

Thanks for the opportunity.

Best,

Michelle V. Davis
US EPA Tribal Coordinator
(907) 271-3434
https://www.epa.gov/tribal/region-10-tribal-programs

Weave for me a garment of brightness, that I may walk at peace among the birds.
Weave for me a garment of brightness, that I may walk at peace among the grass.
M. Scott Momaday

From: Wake, Neverley
Sent: Thursday, May 3, 2018 9:02 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Herbst, John <herbst.john@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble Scoping Comments

Hi, Molly.

Again, apologies for getting back to you past your May 2nd deadline.

I've sent you the link to the One Drive document that I shared with the others since they couldn't access the one for the team. Other than any comments on that shared document, I have not received any emails directly.

Respectfully,
Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Thursday, May 03, 2018 7:49 AM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble Scoping Comments

Good morning, Neverley. I have not received any comments back on the sections of the letter related to potential impacts to tribes and government-to-government consultation. Since the deadline was yesterday and I now need to

AMERICAN OVERSIGHT

quickly turn this around and get it to Patty, I am wondering if I should be expecting any comments? I see that you are out of the office, so I will reach out directly to Michelle, JR and Tami, since I believe those are the people you indicated you would be coordinating with. However, please do reply if you get this message, so I know the status and whether to expect any comments from you directly.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/6/2018 11:07:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Looks good to me, Molly. Thanks again to both of you for talking this through – it was helpful.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, November 06, 2018 2:31 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Ashley –
Thank you for your review. The attached version reflects our discussion today. Please make any additional edits needed. If possible, I would like to send this to Jill by the time I leave here today (2:45 AK time)
Thanks,
Molly

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 4:24 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Molly –

Thanks for the opportunity to review. My calendar was full on Thursday and I was at a conference on Friday so I started to review yesterday.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Wednesday, October 31, 2018 1:58 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Ashley,
As we discussed, here are our draft comments on the first round of Pre-DEIS sections distributed by the Corps for our review. I would appreciate if you can review and send me any comments or edits by Tuesday 11/6. Please also feel free to call with any questions about these comments.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/6/2018 6:17:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Re: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Patty - I think that a meeting would be helpful. I added something to the calendar but not sure if it will work. Just let me know. I'm in an all day training on Thursday but can step out for a meeting. Ashley

---

From: McGrath, Patricia
Sent: Monday, November 5, 2018 6:37:09 PM
To: Palomaki, Ashley
Cc: Vaughan, Molly
Subject: Re: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Sent from my iPhone

On Nov 5, 2018, at 4:23 PM, Palomaki, Ashley <Palomaki.Ashley@epa.gov> wrote:

> Hi Molly –
>
> Thanks for the opportunity to review. My calendar was full on Thursday and I was at a conference on Friday so I started to review yesterday.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Wednesday, October 31, 2018 1:58 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Ashley,
As we discussed, here are our draft comments on the first round of Pre-DEIS sections distributed by the Corps for our review. I would appreciate if you can review and send me any comments or edits by Tuesday 11/6. Please also feel free to call with any questions about these comments.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

<Comments Sections 3.1_3.5_4.1_4.5 Draft 103118_ACP.docx>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/27/2018 12:08:42 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble PDEIS chapter 6
Attachments: Comment spreadsheet_Ch6_pm.docx

Flag: Follow up

Hi Molly-
Attached are comments that I have on chapter 6 (Consultation and Coordination). It is not clear whether we were asked to submit comments, Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Feel free to edit and call if you want to discuss.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 8/20/2018 9:17:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Tentative

Hello All,
Per my previous email, Patty and I would like to meet with you all to discuss the preliminary alternatives document shared by the Corps.

Join by Phone

Conference Line/Code / Ex. 6

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 11/27/2018 7:15:26 PM
To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]; R10AOO- Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

Subject: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Tentative

Meeting to brief David on the highlights of the comments from our pre-DEIS review, prior to finalizing and sending to the Corps.

Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/27/2018 6:28:14 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble PDEIS chapter 6

Hi Patty – thank you for reviewing Chapter 6 and for these comments. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Thanks,
Molly

From: McGrath, Patricia
Sent: Monday, November 26, 2018 3:09 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble PDEIS chapter 6

Hi Molly-
Attached are comments that I have on chapter 6 (Consultation and Coordination). It is not clear whether we were asked to submit comments, I Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Feel free to edit and call if you want to discuss.
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 7/17/2018 4:34:23 PM
To: Barton, Justine [Barton.Justine@epa.gov]
Subject: Pebble Preliminary Chapter 3.16
Attachments: 05_16_2018_PreDraft_Sec3.16_SurfaceWater.docx

Hi Justine. The section is attached, with my comments. Please read section 3.16.2 Amakdedori Port, beginning on page 20. Thanks so much for your help!
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 7/16/2018 7:03:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: Sec4.18_Water&SedQual_FINAL.docx; Sec4.22_Wetlands_FINAL.docx; Sec4.26_Vegetation_FINAL.docx; Sec4.1_Intro_FINAL.docx; Sec4.5_Recreation_FINAL.docx; Sec4.11_Aesthetics_FINAL.docx; Sec4.14_Soils_FINAL.docx; Sec4.16_SurfaceWater_FINAL.docx; Sec4.17 Hydrogeology_FINAL.docx; Comment spreadsheet.docx

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Ex. 6 -- Internal Website

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/24/2018 7:11:51 PM
To: Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Dry Stack Alternative - no do outs (UNCLASSIFIED)
Attachments: EPA Comments on Dry Stack memo 102418.docx

Hi Barb - thank you so much for your review of the Dry Stack memo. Here are the compiled comments that were just sent to the Corps.
(Jill, I am copying you here as well, as an FYI)
Regards,
Molly

-----Original Message-----
From: Vaughan, Molly
Sent: Wednesday, October 24, 2018 11:09 AM
To: 'POA Special Projects' <poaspecialprojects@usace.army.mil>
Cc: 'bill.m.craig@aecom.com' <bill.m.craig@aecom.com>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Dry Stack Alternative - no do outs (UNCLASSIFIED)

Hello Shane,
EPA has reviewed the memo on the Dry Stack option, and we are providing our comments, attached. We look forward to discussing at the meeting this afternoon.
Regards,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, October 11, 2018 11:00 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/26/2018 6:45:52 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Meeting Forward Notification: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives

Start: 7/26/2018 7:00:00 PM
End: 7/26/2018 7:30:00 PM
Show Time As: Busy

Your meeting was forwarded

Vaughan, Molly has forwarded your meeting request to additional people.

Meeting

FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives

Meeting Time

Wednesday, August 22, 2018 1:00 PM - Wednesday, August 22, 2018 3:00 PM

Recipients

Douglas, Mark

All times listed are in the following time zone: (UTC-09:00) Alaska

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 7/2/2018 4:57:35 PM
To: Davis, Michelle V. [Davis.MichelleV@epa.gov]
Subject: FW: Final Pebble Scoping Letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

FYI

From: Vaughan, Molly
Sent: Monday, July 02, 2018 8:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: Final Pebble Scoping Letter

Hello NEPA/PO Team,
A huge thank you to all of you for your assistance with putting together the scoping letter. It was a big effort, and your input helped make it a thorough and technically sound comment letter. From David Allnutt: “Please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There’s a lot to feel good about in here.”
The final letter is attached for your reference.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/21/2018 11:30:19 PM
To: Marshall, Tom [marshall.tom@epa.gov]; Barnhart, Megan [Barnhart.Megan@epa.gov]
Subject: RE: revised climate language for Pebble scoping
Attachments: pebble scoping climate text 062118_2clean.docx

Thank you, Tom. Your additional suggestions below made sense to me, and I made the changes to the text.
Megan, I've cleaned up the text in the attached version, for you to share with Joel.
Thank you both for your help.
--Molly

From: Marshall, Tom
Sent: Thursday, June 21, 2018 2:55 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Hi to you both. I think Molly's edits are stellar.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Bravo, and fingers crossed.

202.564.5549

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 5:14 PM
To: Marshall, Tom <marshall.tom@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Tom,

Molly provided a quick response to address your questions and comments. Do these respond to your concerns?

The temperature and precipitation reports for the two sites can be found at the following links:

https://www.snap.uaf.edu/sites/default/files/lakeclark.pdf

AMERICAN OVERSIGHT

https://www.snap.uaf.edu/sites/default/files/katmai.pdf

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

Megan

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time **Personal Matters / Ex. 6** I went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/21/2018 8:46:35 PM
To: Barnhart, Megan [Barnhart.Megan@epa.gov]
Subject: RE: revised climate language for Pebble scoping

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.



pebble scoping climate text 062118.docx

<!--[endif]-->

Hi Megan,
The attached version contains my responses. If this addresses the concerns, I am happy to provide a "clean" version for you to share with Joel.
--Molly

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 11:49 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: revised climate language for Pebble scoping

From: Marshall, Tom
Sent: Thursday, June 21, 2018 3:11 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: revised climate language for Pebble scoping

Will get it to you as soon as we hear back. My hasty thoughts in redline below in terms of considerations/questions to try to help you process the new language or provide something for Joel. Mostly technical or policy, but I'd think we want to be sensitive to how clear the examples are in terms of providing useful information to decisionmakers. Happy to discuss, as always.

From: Barnhart, Megan
Sent: Thursday, June 21, 2018 10:28 AM
To: Marshall, Tom <marshall.tom@epa.gov>
Subject: FW: revised climate language for Pebble scoping

Tom,

See below. I am hoping to see the changes from your FO today so I can then work with Joel to finalize this language. Reading through the recent NOAA report you sent me, the NCA, and EPA's tools SLR appears to be less of an issue in this area. I am having our intern do some additional research.

Megan

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Wednesday, June 20, 2018 6:50 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: revised climate language for Pebble scoping

Hi Megan,
In the interest of time **Personal Matters / Ex. 6** I went ahead and made some additions to the climate section to address the comment we discussed yesterday. The expanded text is below. Please let me know if this addresses the concern, and share with Tom if appropriate.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thank you,
Molly

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 10:49:33 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: R10AOO Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO Conference Line/Code / Ex. 6 @epa.gov]

Subject: Pebble Scoping letter
Location: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 6/26/2018 7:30:00 PM
End: 6/26/2018 8:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Ashley and Patty – this is the earliest time I could find that the three of us are available on Tuesday (but please propose an earlier time if there is an additional time you are free that currently appears blocked off).

Jill – I have included you just in case your sediment team workload meeting wraps up early

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 7:26:21 PM
To: Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Scoping
Location: Call Molly at 907-271-1215

Start: 6/26/2018 11:00:00 PM
End: 6/26/2018 11:30:00 PM
Show Time As: Tentative

In case you don't make it to the conversation with Ashley and Patty, call me when you are available.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 7:25:42 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6

Subject: Pebble Scoping letter
Location: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 10:00:00 PM
End: 6/26/2018 11:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Ashley and Patty – this is the earliest time I could find that the three of us are available on Tuesday (but please propose an earlier time if there is an additional time you are free that currently appears blocked off).

Jill – I have included you just in case your sediment team workload meeting wraps up early

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/19/2018 7:22:16 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
BCC: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6
Subject: Pebble Scoping letter round 2
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt
Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/13/2018 5:09:33 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6

Subject: Pebble scoping letter
Location: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Ashley and Patty, I understand that this time works for both of you to discuss today. Jill, your schedule looks busy, but I've included you in case.
Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/17/2018 11:07:07 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: Pebble scoping - timing for director review

Hi Tami,
There has been a slight shift in review schedule from what I previously mentioned to you, so I wanted to let you know that the director-level review of the letter (for you and David) is now planned for 5/25-6/1. If you expect there will be a problem with this timing for you, please let me know.
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 7/25/2018 9:21:14 PM
To: Maley, Timothy [maley.timothy@epa.gov]
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Thanks Tim!

-----Original Message-----
From: Maley, Timothy
Sent: Wednesday, July 25, 2018 1:16 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Attached are my review comments for PreDraft Ch 4 Section 4.18 (Water and Sediment Quality).

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, July 16, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:
- 4.1 Intro – Molly
- 4.5 Recreation – Molly
- 4.11 Aesthetics – Molly
- 4.14 Soils – Mark/Palmer
- 4.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology – Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality – Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites – Mark/Palmer
- 4.26 Vegetation – Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal Website / Ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM

AMERICAN OVERSIGHT

To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/19/2018 7:30:27 PM
To: Holsman, Marianne [Holsman.Marianne@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Subject: RE: Media contact for Pebble Anchorage public scoping meeting tonight
Attachments: scoping meeting talking points.docx

Hello again, Marianne. As we just discussed, here are the talking points that were put together by Patty McGrath and Ashley Palomaki for use if we get any questions by members of the public at the scoping meetings. I will be prepared with your phone number and Suzanne's in the case of any inquiries from the press.
Thanks,
Molly

From: Vaughan, Molly
Sent: Thursday, April 19, 2018 11:03 AM
To: Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: Media contact for Pebble Anchorage public scoping meeting tonight

Hello Marianne,
I will be attending the USACE public scoping meeting here in Anchorage for the Pebble Project this evening, beginning at 5pm. EPA does not have a speaking role, and I expect to be solely observing the proceedings as a member of the public. However, in the event that I receive any press inquiries, who shall I direct them to? I realize that this will be very late Seattle time, though the Corps is not offering a public speaking format (attendees can provide their input on computers or one-on-one to a court reporter) so I don't expect to stay very long into the evening.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Talking Points for Pebble Scoping Meetings

Introductory Talking Points:

- EPA is a cooperating agency in assisting the Corps in developing the EIS.
- The Corps has specifically requested that we provide input into issues related to the CWA 404(b)(1) guidelines.
- EPA has put together a technical team to provide this assistance and review EIS documents.

If asked how the Proposed Determination or Bristol Bay Watershed Assessment influences the EIS process:

- The BBWA is a three-year, twice peer-reviewed study that provides technical and scientific information about the watershed and the impacts of mining the Pebble deposit. We will use the Assessment, along with other available information, to inform our input into the EIS.

- The Proposed Determination, which has not been finalized, contains proposed restrictions for mining the Pebble deposit. It is not a veto of all mining. Pursuant to the terms of a settlement agreement with the Pebble Limited Partnership, EPA cannot move forward with its Section 404(c) process, should such a decision be made, until a Final EIS is noticed for the project or until May of 2021, whichever is sooner.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 10/18/2018 2:57:23 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: Pebble Cooperating Agency Meeting
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: 10/24/2018 8:30:00 PM
End: 10/25/2018 12:30:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/24/2018 7:58:57 PM
To: Craig, Bill [bill.m.craig@aecom.com]

Subject: Accepted: FW: [Non-DoD Source] Pebble EIS: Agency Meeting on Alternatives
Location: AECOM - 500 G Street Suite 500, Anchorage or Teleconference

Start: 8/22/2018 9:00:00 PM
End: 8/22/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 7/19/2018 9:54:41 PM
To: Kelly, Christine M [kelly.christinem@epa.gov]
Subject: RE: Final scoping letter

Thank you!

From: Kelly, Christine M
Sent: Thursday, July 19, 2018 1:48 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Final scoping letter

Yes. Here it is. << File: Pebble Project Scoping 062818 compiled draft-rda.docx >>

Christine Kelly
EPA- Region 10
206-553-2770

From: Vaughan, Molly
Sent: Thursday, July 19, 2018 2:44 PM
To: Kelly, Christine M <kelly.christinem@epa.gov>
Subject: FW: Final scoping letter

Hello Christine,
I was wondering if by chance you have the Word version of the final Pebble scoping letter signed by David? (see below for date). If so, can you send it to me?
Thank you,
Molly

From: Allnutt, David
Sent: Friday, June 29, 2018 2:32 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: Final scoping letter

All – attached is the final Pebble scoping letter that I signed this afternoon. Patty is submitting electronically to the Corps today.

AMERICAN OVERSIGHT

To's – first, please accept and pass on my gratitude for the truly above and beyond efforts to see this over the finish line. There's a lot to feel good about in here. Second, please distribute to the (many) others whose efforts contributed to the final product (or to one of the many intermediate products). I started trying to address to all, but knew that I'd never come up with a complete list.

Cc's – thanks for your support on this.

Erik and Patty – please set aside at least 20 minutes of our Tuesday team meeting agenda to discuss the letter and to begin discussing lessons learned.
<< File: Pebble.062918.Scoping Letter FINAL.pdf >>

<< OLE Object: Picture (Device Independent Bitmap) >>
<< OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 8:14:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]
BCC: Conference Line/Code / Ex. 6 R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO [R10AOO-Room-Raven-25-VTC@epa.gov]; R10Sea-Room-20Chinook/R10-Rooms-Service-Center [R10Sea-Room-20Chinook@epa.gov]

Subject: Pebble Scoping - Wetland comments strategy meeting
Location: Conference Line/Code / Ex. 6 R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Tentative

Hello,
The extension of the comment period now provides some time for strategy discussion on what to include in the scoping comments. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

→ Join by Phone

Conference Line/Code / Ex. 6

Local numbers: Conference Line/Code / Ex. 6

I have also reserved the Raven Room in AOO and the Chinook Room in Seattle.

Thank you,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 8:00:31 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6

Subject: Pebble scoping - indirect/cumulative impacts
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Tentative

Given the extra time for preparing scoping comments, and following an excellent suggestion from Ashley, I propose a strategy conversation regarding how to address potential indirect/cumulative effects of a future expanded mine or opening up the area to other developers in the scoping letter.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 12:37:45 AM
To: Nogi, Jill [nogi.jill@epa.gov]

Subject: Canceled: Pebble scoping schedule
Location: Molly will call Jill

Start: 4/10/2018 8:00:00 PM
End: 4/10/2018 8:30:00 PM
Show Time As: Free

Importance: High

Hi Jill – in case we do not connect today on Pebble, here is a time to discuss tomorrow.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/9/2018 11:25:51 PM
To: Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]
BCC: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6

Subject: Pebble AQ Scoping check-in
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 4/23/2018 6:00:00 PM
End: 4/23/2018 7:00:00 PM
Show Time As: Tentative

Per Jay's recommendation, I am setting up a short time to chat. However, it appears Karl is fully booked on the 10th so I found a time slot the afternoon of the 9th. Hope this is still helpful.

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/9/2018 9:30:06 PM
To: Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble scoping schedule
Location: Molly will call Jill

Start: 4/10/2018 8:00:00 PM
End: 4/10/2018 8:30:00 PM
Show Time As: Tentative

Hi Jill – in case we do not connect today on Pebble, here is a time to discuss tomorrow.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/16/2018 7:02:22 PM
To: Muche, Muluken [muche.muluken@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hi Muluken. You are right, the figures are missing, thank you for catching that! I double checked all the emails I received from the Corps, and it appears they forgot to send those figures. I just sent an email to the project manager, so hopefully we will hear back soon.
Thanks,
Molly

From: Muche, Muluken
Sent: Friday, November 16, 2018 5:42 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation

Hello Molly,

I could not find figures of chapter 4 in the Sharepoint.

Thanks,
Muluken

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: Vaughan, Molly
Sent: Wednesday, November 14, 2018 6:04 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Chapter 5 Mitigation
Importance: High

Hello All,
The Corps has just distributed Chapter 5 Mitigation for review as well, and I have loaded it onto the Sharepoint site. When reviewing the analysis of Environmental Consequences for each resource, please also take a look at the mitigation measures that have been proposed for that resource, and provide any additional recommendations where mitigation is not sufficient, including revisions to proposed mitigation language or additional measures recommended.
Thank you,
Molly

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/16/2018 6:52:36 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

Hello Shane,
We did not receive the figures for Chapter 4.16 (7 pdf files noted below). Can you please resend those?
Thank you,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 09, 2018 5:42 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: FW: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.16, K3.16, 4.16 – Surface Water Hydrology. The only technical appendix is K3.16. There are 2 separate figure PDFs for K3.16; 10 separate PDF files for 3.16; and 7 separate PDF files for 4.16 which are being sent separately. CAs are EPA, State of Alaska

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/16/2018 6:40:23 PM
To: Maley, Timothy [maley.timothy@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Good morning, Tim. Hopefully we will find they have addressed our comments in the sections, but we did not receive a response to comments.
--Molly

From: Maley, Timothy
Sent: Thursday, November 15, 2018 2:52 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Did they ever address/reply to comments (July 2018) regarding our review submittals of the Pre-Draft (incomplete) chapters?

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly

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- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
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- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/14/2018 11:19:41 PM
To: Eckley, Chris [Eckley.Chris@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections
Attachments: Comment spreadsheet blank.docx

Hi Chris – Please use the attached comment table, which will help me with the job of compiling comments. Thanks so much for reviewing!
--Molly

From: Eckley, Chris
Sent: Wednesday, November 14, 2018 11:24 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hi Molly….I'll get Water and Sediment Quality section reviewed and comments to you by 11/29. Is there a particular format that you would like to receive the comments in?

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 12:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

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- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
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- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/2/2018 9:18:35 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: FW: Pebble Scoping Letter - Review Requested
Attachments: Pebble Project Scoping 041118 draft_pfh_ks_jle.docx

Hi Matt – I just realized it looks like you were not on this email from Joe – adding his comments to those from Kate Schofield.
--Molly

From: Ebersole, Joe
Sent: Tuesday, May 01, 2018 3:57 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Patty and Molly,
I've attached the marked-up copy with my comments added. See comments on page 7 in particular, as they may or may not be on mark depending on the intended emphasis of the fishery analysis.
Best regards,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Monday, April 30, 2018 10:04 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Pebble Scoping Letter - Review Requested

Hi Joe-
We have been trading voice mails regarding this. Please add your comments to this version of the letter and send response back to myself and Molly Vaughan.
Look forward to talking to you soon.
Thanks-
Patty

Ps. Kate and Palmer – thanks for your input.

From: Hough, Palmer
Sent: Friday, April 27, 2018 2:20 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly/Patty:

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As I mentioned yesterday, I shared the draft scoping letter with Joe Ebersole and Kate Schofield. Attached are comments from Kate. Your draft letter incorporated all of the input that I provided earlier in the development process but I have a few additional suggestions that I added on top of Kate's comments.

Have a great weekend.

-Palmer

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 4:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

AMERICAN OVERSIGHT

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/2/2018 6:27:22 PM
To: Eckley, Chris [Eckley.Chris@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Thank you, Chris!
--Molly

From: Eckley, Chris
Sent: Wednesday, May 02, 2018 7:52 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hi Molly,
I just finished going over the document….only a few minor suggestions, feel free to include or remove my suggested edits at your discretion.
Let me know if you have any questions.
Thanks,
Chris

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 1:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

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Internal Website / Ex. 6

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(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate

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versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/1/2018 7:42:22 PM
To: Bray, Dave [Bray.Dave@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]
CC: McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Bonifacino, Gina [Bonifacino.Gina@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Thank you, Dave, for this catch. I have incorporated the change into the draft letter.
Regards,
Molly

From: Bray, Dave
Sent: Tuesday, May 01, 2018 11:32 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Bonifacino, Gina <Bonifacino.Gina@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

This looks great. I only have one small edit in order t Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Dave



From: Vaughan, Molly
Sent: Monday, April 30, 2018 11:03 AM
To: Pepple, Karl <Pepple.Karl@epa.gov>; Bray, Dave <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Bonifacino, Gina <Bonifacino.Gina@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hello Dave,
Please use the following link, which should take you directly to the draft letter, and should provide editing privileges as well. I would appreciate any additional comments by COB May 2. Thank you for your assistance.

Personal Address / Ex. 6

Regards,
Molly

AMERICAN OVERSIGHT

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

From: Pepple, Karl
Sent: Friday, April 27, 2018 2:31 PM
To: Bray, Dave <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Bonifacino, Gina <Bonifacino.Gina@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Apologies – I meant to copy GB on here too.

KP

From: Pepple, Karl
Sent: Friday, April 27, 2018 2:48 PM
To: Dave Bray (Bray.Dave@epa.gov) <Bray.Dave@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Hello Dave,

As we mentioned earlier this week, the Pebble letter is ready for your review. I think that Molly and Jay did a great job. I would really appreciate your review to make sure Jay and I are not missing anything.

The link to the site with the letter is below here in Molly's April 11 email.

At your earliest opportunity, please let us know if you think any changes need to be made to the letter.

Thank you

KP

From: McAlpine, Jerrold
Sent: Friday, April 27, 2018 10:55 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Thank you Molly! **Deliberative Process / Ex. 5**
Deliberative Process / Ex. 5 cheers

From: Vaughan, Molly
Sent: Thursday, April 26, 2018 4:13 PM

AMERICAN OVERSIGHT

To: McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Thanks, Jay! The one other piece I have in my notes [Deliberative Process / Ex. 5]

From: McAlpine, Jerrold
Sent: Thursday, April 26, 2018 2:49 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

Molly and Karl,

In response to our call earlier this week I have made some edits to the Pebble scoping letter air quality section, namely:

[Deliberative Process / Ex. 5]

I believe I have covered the main points we discussed in the call, but I failed to keep adequate notes and my memory is failing me. I'll sleep on it and may have further edits/additions tomorrow. But, if you can recall any other main points we discussed on the call, I would appreciate if you could please refresh my memory!

Thank you,
Jay

Jay McAlpine, PhD
Atmospheric Scientist, Regional Modeling Contact
Office of Air and Waste
U.S. Environmental Protection Agency, Region 10
1200 6th Ave., OAW-150
Seattle, WA 98101
206.553.0094
McAlpine.Jay@epa.gov

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 1:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

[Internal Website / Ex. 6]

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Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/30/2018 5:53:37 PM
To: Maley, Timothy [maley.timothy@epa.gov]
Subject: RE: Pebble Scoping Letter - Review Requested

Thank you, Tim!
--Molly

From: Maley, Timothy
Sent: Friday, April 27, 2018 10:20 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: RE: Pebble Scoping Letter - Review Requested

I read through the Draft Scoping Letter and have no edits or comments, in particular to my area of expertise (hydrogeology, water quality).

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Wednesday, April 11, 2018 1:59 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Scoping Letter - Review Requested

Hello Associate Reviewers,

I have completed a first draft of a scoping comment letter for the Pebble Project, which is now loaded onto the Sharepoint Site in the Documents>Scoping folder, at:

Internal Website / Ex. 6

Please review the draft letter, in particular the portions of the detailed comments that relate to your areas of expertise. This letter has been drafted based off of ERSMU's standard scoping language and language used in other recent letters for similar projects (including mining, road, pipeline, and port development projects). Some tweaks have already been made to reflect the specific considerations for this project, but there is likely to be more room for project-specific tailoring of the comments. Please review and provide:

(1) any edits necessary for technical accuracy, and

(2) any additional site-specific or project-specific technical information/concerns/recommendations you think necessary to convey to the Corps during this scoping period.

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Please provide your edits in "track changes" format. If it is not too cumbersome, please make your edits directly in the document on the Sharepoint site (titled "Pebble Project Scoping 041118 draft"), to reduce the number of separate versions of the letter. If this format doesn't work for you, you can also save your edits as a separate version and I will work to consolidate them.

Please complete your review by **COB Wednesday May 2**. If you have any questions or think a meeting to discuss the comments on your subject area would be helpful, please let me know.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/5/2018 4:59:02 PM
To: Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]
BCC: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt Conference Line/Code / Ex. 6

Subject: Pebble AQ Scoping check-in
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 4/9/2018 9:30:00 PM
End: 4/9/2018 10:00:00 PM
Show Time As: Tentative

Per Jay's recommendation, I am setting up a short time to chat. However, it appears Karl is fully booked on the 10th so I found a time slot the afternoon of the 9th. Hope this is still helpful.

Conference Line/Code / Ex. 6

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/31/2018 8:57:51 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Please Review - Draft comments on first installment of Pebble Pre-DEIS
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 103118.docx

Hi Ashley,
As we discussed, here are our draft comments on the first round of Pre-DEIS sections distributed by the Corps for our review. I would appreciate if you can review and send me any comments or edits by Tuesday 11/6. Please also feel free to call with any questions about these comments.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/5/2018 4:48:37 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Pebble - scoping letter schedule

I'll try my best! I have allotted until COB on the 11th for associate reviewer input, but I'll turn it around as quickly as I can once I receive their comments.

From: Palomaki, Ashley
Sent: Thursday, April 05, 2018 8:20 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble - scoping letter schedule

I should also add that getting to me by COB on the 11th is ideal – then ORC would actually have it's allotted time, but I realize that things are tight. I'm anticipating that I'm just going to have to review on Sunday as well.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Thursday, April 05, 2018 8:17 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Pebble - scoping letter schedule

Good morning Ashley,
As I know you are aware, I have a very aggressive schedule for drafting the Pebble scoping letter, to allow adequate time for all of the internal R10 and HQ reviews that will need to occur. I have time allotted for an ORC review from 4/12 (I'll get you the letter by COB on that day, hopefully earlier) to 4/16 COB. I realize this really only gives you 2 business days, but it's the best I could figure out. Will this plan work with your schedule?
Thanks,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 10/31/2018 8:47:48 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Tentative

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/5/2018 3:55:39 PM
To: McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]
Subject: Pebble Scoping Comments - Please review/edit
Attachments: 12-0057-COE Donlin Scoping + Enclosures.docx

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

18-0002-COE Pebble Project Scoping 040418 draft.docx

<!--[endif]-->

Good Morning Jay and Karl,
As you know, we are in the process of drafting scoping comments for the Pebble Project, with a short comment window. I have a very aggressive schedule to get the letter ready for management review. I have completed a first draft of the letter, but would like your input on the air quality scoping comments. I believe you are also aware that the Corps has declined our repeated requests to extend our areas of "special expertise" for cooperating agency involvement beyond the 404 nexus. This means that we only have three opportunities for input on AQ issues – Scoping, DEIS and FEIS. Consequently, I want to make sure the AQ comments are as thorough as we can be at this stage, given what we know about the project.

I've attached the current draft of the comment letter. For easy reference I've also provided a link below to the project description on the sharepoint site. The final attachment is the scoping comments on Donlin gold – this letter overall used a much longer format than we are using for this scoping letter, but may provide some ideas of other things to include, if appropriate/necessary.

In order to stick to the letter writing schedule, I will need any comments/edits/additions you have by COB 4/11. If a conference call to discuss would be helpful, please let me know and I will set one up.

Internal Website / Ex. 6

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Unextractable file placeholder

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ECOSYSTEMS,
TRIBAL AND PUBLIC
AFFAIRS

March 29, 2013

Mr. Don Kuhle, Project Manager
U. S. Army Corps of Engineers, Alaska District
Regulatory Division
Post Office Box 6898
Joint Base Elmendorf Richardson, Alaska 99506-0898

Re: The Donlin Gold Project Scoping Comments. EPA Region 10 Project No.12-0057-COE

Dear Mr. Kuhle;

The U.S. Environmental Protection Agency has reviewed the December 14, 2012, Notice of Intent to prepare an Environmental Impact Statement for the proposed Donlin Gold Project. Our scoping comments are provided pursuant to the National Environmental Policy Act, Section 309 of the Clean Air Act, the Clean Water Act, and our responsibilities as a cooperating agency.

The CAA §309 specifically directs the EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Our review of the Draft EIS will consider the expected environmental impacts and the adequacy of the EIS in meeting the procedural and public disclosure requirements of NEPA. The EPA's review criteria for rating EISs are available on our website http://www.epa.gov/compliance/nepa/comments/ratings.html.

The NOI indicates that Donlin Gold, LLC, is proposing the development of an open pit, hardrock gold mine in Southwest Alaska, ten miles north of Crooked Creek. The proposed project would include a waste rock facility, tailings storage facility, a mill processing facility, mine camp, and other ancillary facilities, such as a natural gas-fired power plant supplied by a 313-mile long, 14-inch diameter buried pipeline from the west side of Cook Inlet. Transportation infrastructure would include a 27-mile long access road, a 5,000-ft long airstrip, port faculties at Jungjuk and Bethel, and a 40 million gallon diesel fuel storage facility.

The EPA highlights the importance of establishing and disclosing the details of financial assurance for post-closure, reclamation, and long-term water management. We recommend that the EIS provide a detailed level of information to ensure that there will be adequate financial assurance to cover the costs of implementing closure and reclamation plans, monitoring, contingency measures, and long-term water management to avoid unacceptable adverse environmental impacts. Financial assurance information should be provided for public review and comment.

We encourage the Corps to evaluate the CWA §404 permit application concurrently with the NEPA process and the National Historic Preservation Act Section 106 coordination process. We recommend the Corps identify a preferred alternative at the Draft EIS stage, and include a draft CWA §404(b)(1) Guidelines analysis. We believe this would result in a more streamlined and consistent agency decision, enhanced public disclosure, and predictability for the project proponent.

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In addition to evaluating the environmental consequences from the construction and operation of the proposed Donlin Gold project, we recommend that the EIS evaluate unanticipated, but reasonably foreseeable mine failure scenarios within the scope of NEPA analysis. There are inherent environmental and human health risks associated with the development of a new mine project that may not be anticipated or expected during the early project planning stages. Accidental fuel and chemical releases and spills do occur despite precautions to manage for those risks. An evaluation of the environmental effects resulting from the failure of the mine facilities, such as the tailings storage facility dam and liner, is also important as alternatives are developed for siting, design, closure, and financial assurance.

Finally, the proposed project may result in significant environmental and human health impacts to over 60 Alaska Native and other rural communities in the Yukon-Kuskokwim region. The release of acid rock mine drainage and metal leaching of pollutants, such as mercury, arsenic, and cyanide into the adjacent wetlands and waterbodies could affect traditional cultural practices including hunting; fishing and gathering of subsistence foods and drinking water sources relied upon by the local native communities. The transportation of diesel fuel and other chemicals on the Kuskokwim River represents a potential spill risk and conflict with local uses. The EIS should fully disclose the potential direct, indirect and cumulative impacts of these project-related activities on their traditional way of life.

As a cooperating agency, the EPA appreciates the opportunity for early involvement in the NEPA planning process by providing comments on the proposed Donlin Gold Project. The detailed comments (Enclosure 1) reflect the scope and range of issues, and potential impacts that we believe warrant consideration in the EIS.

Please do not hesitate to contact me at (907) 271-3411 or by electronic mail at jen.mark@epa.gov, if you have any questions regarding our comments. We look forward to working with your office, the applicant, and the other cooperating agencies and tribes to advance this important Alaska resource project.

Sincerely,

//s//

Mark S. Jen, Project Manager
Environmental Review and Sediment Management Unit

cc: Donlin Gold, LLC

Enclosures

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Enclosure 1

EPA Detailed Scoping Comments on the Donlin Gold Project
Region 10 Project No. 12-0057-COE

Purpose and Need

The EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing regulations for NEPA (40 CFR 1502.13). This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

Recommendations:

- The EIS should reflect not only the project proponent's and the Corps' purpose and need, but also the broader public interest and need based on the scoping comments; and
- The purpose and need statement for the EIS should be developed in coordination with the cooperating tribes and agencies.

Range of Alternatives

The EIS should evaluate a range of reasonable alternatives to meet the project purpose and need that are responsive to the issues identified during the public and agency scoping process and through tribal government-to-government consultation. A range of reasonable alternatives will ensure that the EIS provides the public and the agency decision-makers with information that sharply defines the issues and identifies a clear basis for choice among the alternatives, as required by NEPA. The Council of Environmental Quality recommends that all reasonable alternatives be considered, even if some of them could be outside the capability or the jurisdiction of the lead federal agency preparing the EIS for the proposed action.

Recommendations:

Criteria Development

- Develop criteria that would be used to (1) identify a range of reasonable alternatives; (2) eliminate alternatives from further consideration (3) identify the environmentally preferred alternative , and (4) identify the least environmentally damaging practicable alternative;
- Criteria could be based on the conservation of important aquatic and terrestrial habitats, maintaining wildlife and fish passage, maintaining subsistence and socio-cultural resources, practicability (e.g., logistics, technology, and costs), regulatory requirements, etc.;
- Comments identified during public and agency scoping, and tribal consultation should be used to develop alternatives criteria;
- Describe the process, the rationale, and the basis for how these criteria were developed; and
- The alternatives criteria should be developed in coordination with the cooperating tribes and agencies.

Range of Reasonable Alternatives

- Evaluate the unanticipated but reasonably foreseeable mine failure scenarios, which may include the potential failure of the tailings storage facility dam and liner, as well as other accidental chemical releases and spills associated with the mine site, the natural gas pipeline, and the transportation logistics;
- Evaluate alternative energy sources, such as wind, diesel, solar, hydroelectric, and geothermal;
- Evaluate alternative pipeline and road alignment routes and options;

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- Evaluate the use of winter ice roads and snow roads for (1) transportation of cargo and fuel to the mine site, and (2) logistic associated with construction activities;
- Evaluate alternative locations for the proposed port facilities;
- Evaluate alternative configurations for the mine and camp facilities, facility designs;
- Evaluate alternative mine processes, best available technologies, physical-chemical treatment options, alternatives to cyanide for gold ore processing, etc.; and
- Compare environmental impacts between the proposed project and alternatives analyzed in detail.

Cost Benefit Analysis

- For each alternative analyzed in the EIS, develop a general life cycle economic cost analysis; and
- Cost of the project would be used to determine the practicability of the proposed project under Clean Water Act (CWA) §404(b)(1) Guidelines.

Agency Preferred Alternative(s)

The Draft EIS should include an agency preferred alternative, if one or more exists. This would provide the public, the tribes, and the agencies with an opportunity to conduct a more detailed review and comment of the environmental consequences associated with the preferred alternative.

Recommendations:

- Concurrent review and analysis under the National Environmental Policy Act, CWA §404, and Section 106 National Historic Preservation Act;
- A draft CWA §404(b)(1) compliance determination for the preferred alternative should be included in the Draft EIS as an Appendix; and
- The Least Environmentally Damaging Practicable Alternative identified as the preferred alternative in the Draft EIS.

Financial Assurance – Reclamation, Post-Closure Monitoring, Long-Term Management NEPA provides for the disclosure to the public, the tribes, and the decision-makers regarding information concerning environmental consequences of a proposed action before the decisions are made and before actions are taken. A key component in determining the environmental impacts of a proposed mine is the effectiveness of closure and reclamation planning and activities, including long-term water management. The amount and viability of financial assurance are critical factors in determining the success of reclamation and closure activities and, therefore, the significance of the environmental impacts.

The EIS should disclose the costs associated with implementing the closure and reclamation plan, as well as the contingency measures to address the reasonably foreseeable but not specifically predictable project outcomes. This is necessary to inform the public, the tribes, and the decision-makers of the financial risk to the public posed by the conditions at the site. Financial assurances should be in a form that protects the public interest in the event that a company is unable to implement contingency measures or perform long-term operation and maintenance at a closed mine site. The EPA has expertise in this area and would be available to work with the Corps, the State of Alaska, and the project proponent to develop appropriate cost estimates and funding criteria.

The level of information that should be included for financial assurance is outlined in our recommendations below for site reclamation and long term-term site maintenance. We have also enclosed an example of a narrative description for financial assurance cost categories (Enclosure 2) and a cost estimate spreadsheet (Enclosure 3).

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Recommendations:

Site Reclamation (e.g., facility closure, earth moving/stabilization, revegetation, etc.):

- Estimate the cost (+/- percent) to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives;
- Identify criteria for determining success of reclamation activities for bond release;
- Estimate the direct costs for site reclamation, monitoring, long term management, maintenance, and contingencies, including removal of structures and facilities, and revegetation; and
- Include the costs associated with implementing contingency measures to address reasonably foreseeable but not specifically predicted outcomes.

Long-Term Site Management (e.g., post-closure water treatment, mitigation of aquatic resources, site maintenance, and monitoring):

- Itemize the cost estimates (including reasonable contingencies) and appropriate economic variables to calculate the net present value of future expenses, including the time period to complete long term treatment, monitoring and maintenance; and
- Describe the "mechanics" of the financial assurance mechanism for the site, for example, if a trust is being used, include such details as:
  - Requirements for timing of payments into the trust fund and for "true-ups";
  - Discount rate used, if any, including assumptions for inflation, management fees, and tax rates;
  - Acceptable investment instruments;
  - Tax status of the trust fund and how management fees and taxes are paid; and
  - Identification of the trust fund beneficiaries.

To ensure that financial assurance for both site reclamation and long-term maintenance are adequate, the agency should also:

- Reevaluate financial assurance cost estimates every three to five years or whenever a major change to the mine operations has occurred;
- Identify the responsible party for any post-closure clean up actions, should they be necessary. The financial assurance should not depend on the continued financial health of the mine operator or its parent company;
- Disclose detailed information about the process used to develop and secure financial assurance, including, but not limited to, costs, calculations, models, assumptions, inflation adjustments and rates, rates of return, contingencies, labor rates, net present value to consider costs many years into the future;
- To minimize the amount of financial assurance required, consider removal of the tailings material and potentially acid generating material off-site;
- Base the financial Assurance estimates on the reasonable spill or failure scenarios, such as the largest disturbances and material volume, water treatment, soil amendments, and hazardous materials;
- Identify the responsible party for any post-closure clean up actions, should they be necessary. The financial assurance should not depend on the continued financial health of the mine operator or its parent company;
- Disclose detailed information about the process used to develop and secure financial assurance, including, but not limited to, costs, calculations, models, assumptions, inflation adjustments and rates, rates of return, contingencies, labor rates, net present value to consider costs many years into the future;
- Estimate the indirect costs, such as mobilization and demobilization, contingencies, engineering design, etc.; and

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- Evaluate the indirect and cumulative costs associated with the long-term impacts to subsistence and water resources.

Acid Rock Drainage/Metal Leaching

Site Analogs

The geology and geochemistry of the project area may be unique or may exhibit similar features and characteristics as other gold mines in the State. Site analogs may be a way of comparing and evaluating acid mine drainage and metal leaching potential, and can be used to predict future site conditions. The EIS should include information regarding other historic and/or present gold mining projects and claims as a basis of comparing the environmental effects of the proposed project.

Recommendations:

- Discuss the regional mineralization and existing gold deposits and mine project in Alaska as site analogs for evaluating the proposed project geology and geochemistry;
- Compare the ore, waste rock, and tailings characterization (e.g., chemical/physical composition, metals leachability and acid-generating potential) of the proposed project mine site to other existing gold mines in Alaska (e.g., Fort Knox, Pogo, Nixon Fork, Kensington, etc.); and
- Identify and describe historic, present and proposed gold mining claims, and activities in the region.

Mine Site

In order to evaluate the effects of acid rock drainage/metal leaching, the geology and geochemistry of the mine site should be fully characterized. There is a potential for acid rock drainage/metal leaching to occur from surface runoff and from the ore, waste rock facility, and infiltration/seepage from the tailings storage facility. The EIS should include a characterization of the ore and waste rock and mine tailings for potential acid rock drainage/metal leaching. This characterization should be conducted prior to mine construction and operations, and throughout the 27 year mine life, as well as during mine closure and reclamation.

Recommendations:

- Characterize the ore and waste rock, and tailings, including the chemical/physical composition, metals leachability, and acid-generating potential;
- Develop a detailed acid rock drainage and metal leaching testing plan and include a schedule and timeframe. The open pit mine lithologies should be tested regularly during the active life of the mine operations for potential acid rock drainage/metal leaching, as well as during closure and reclamation;
- Identify measures and options to minimize the release of acid rock drainage/metal leaching. It is presumed that all waste rock from the mine site will generate acid. This must be accounted for and managed in perpetuity;
- Evaluate and model potential rates and volumes of infiltration/seepage from mining facilities into groundwater and surface waters;
- Identify the constituents and pollutants in the infiltration/seepage stream. Evaluate how unintended and/or unmitigated releases of seepage from facilities would affect surface/groundwater quality;
- Evaluate the feasibility of adding a thicker, denser impoundment cap to the tailings pile to reduce oxygen flux, slow down oxidation of the tailings, and reduce hydraulic conductivity and water movement down through the tailings;

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- Evaluate the feasibility of mixing amendments to the tailings to reduce the potential of acid rock drainage/metal leaching;
- Evaluate the use of a geomembrane liner for the waste rock facility to minimize infiltration/seepage; and
- Identify monitoring plans to test for acid rock drainage/metal leaching in the adjacent groundwater and surface waters. Discuss the process for treatment of water impacted by acid rock drainage/metal leaching.

Pipeline Corridor

The proposed pipeline corridor would extend over 300 miles and cross the rugged Alaska Range. The proposed pipeline would be buried and would require trenching in mineralized areas of the state. Analysis should be conducted along the proposed buried pipeline corridor to determine whether trenching could result in acid rock drainage/metal leaching into adjacent surface waters and groundwaters.

Recommendations:

- Characterize the bedrock for acid rock drainage/metal leaching potential (including neutral or high pH metal leaching);
- Use site analogs for comparison of acid rock drainage/metal leaching with other minerized areas and historic and present gold mines;
- Develop detailed acid rock drainage/metal leaching testing and monitoring plans during trenching activities; and
- Identify measures to reduce and/or capture runoff of acid rock drainage/metal leaching into adjacent surface and groundwaters.

Mercury (Air Emissions)

Point Source Emissions

On December 16, 2010, the EPA promulgated National Emissions Standards for Hazardous Air Pollutants for gold ore processing and production facilities to regulate mercury air emissions, which is the seventh largest source of mercury emission in the United States.[1] The final rule establishes mercury emission limits for four types of processes found at gold production facilities: ore-pretreatment processes (primarily heating processes used to prepare ore for gold extraction); carbon processes with mercury retorts; carbon processes without mercury retorts; and non-carbon concentrate processes. Table 1 identifies the final mercury air emission limits for new sources.

Table 1

Affected Source	Existing Sources	New Sources	Units
Ore pretreatment processes	127	84	lb/million tons of ore
Carbon processes with mercury retorts	2.2	0.8	lb/ton of concentrate
Carbon processes without mercury retorts	0.17	0.14	lb/ton of concentrate
Non-carbon concentrate processes	0.2	0.1	lb/ton of concentrate

The final rule also establishes requirements for monitoring, which include annual mercury emissions tests at all emissions stacks. The EIS should describe how this proposed project would meet the new

[1] National Emission Standards for Hazardous Air Pollutants (NESHAP): Gold Mine Ore Processing and Production Area Source Category. Final Rule 40 CFR Parts 9 and 63.

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mercury air emission limits and monitoring requirements associated with the types of gold ore processing and production facility at the Donlin mine.

Recommendations:

- Characterize the amount of mercury in the ore.
- Describe the mercury abatement process and the type of control technologies (e.g., mercury scrubbers, condensers, carbon absorbers, etc.) that would be implemented to meet the new mercury air emission limits;
- Discuss the efficiency of the mercury capture system and estimate the expected amount of mercury air emissions from the mill exhaust stack;
- Describe the predicted speciation of mercury emissions in order to identify if releases will be deposited locally or enter the global pool;
- Provide an estimate of the amount of mercury that would included in the tailings effluent stream and stored in the tailing storage facility;
- Describe the amount and the physical/chemical form of mercury captured, and how this mercury would be contained and stored. Discuss transportation of the mercury if sold to lower 48 markets as recycled mercury. Identify the names of the authorized mercury recyclers, if any;
- Describe the type and method of monitoring, frequency and schedule for monitoring, and mercury emission testing at emission stacks to ensure control technologies are effective;
- Provide a process flow diagram identifying the location of the control technologies, where monitoring of mercury emissions would occur, how much mercury would be captured, and how much mercury would be released from the mill exhaust stack; and
- Describe any corrective actions that would be taken if mercury air emissions exceed the allowable limits;

Nonpoint Source Emissions

Studies have demonstrated that mercury associated with solid material or dissolved in an aqueous solution can volatize directly to the atmosphere. Often only a relatively small percent of the solid/liquid associated mercury volatizes; however if the solid or solution concentrations are high (as they often are at mines in geologically enriched mercury areas) and/or cover a large surface area (also often the case at major mine operations), then there is potential for significant amounts of mercury to be released from nonpoint sources. Previous studies from Nevada gold mine areas indicate that surface volatilization can range from 10 to over 100 kg/year per mine—depending on many different mine characteristics (study details available upon request). A general mercury assessment and bioaccumulation study should be conducted for this project based on evaluation of the point and nonpoint sources of mercury emissions, identification of mercury receptors in the environment, and the pathways for environmental and human exposure.

Recommendations:

- In order to have a full understanding of mercury air emissions from a mine operation, these nonpoint sources will need to be identified and quantified. Prior to the development of the mine, these emissions can be estimated based on anticipated mercury concentrations of the different mine surfaces;
- Surface-air fluxes are not unique to mining areas. They can also occur from natural landscapes—with landscapes containing geologically enriched mercury having larger emissions. To help contextualize the emissions from a proposed mine, there may be utility in first quantifying the baseline mercury emissions from the natural landscape;

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- Apart from volatilization, particulate bound mercury can be mobilized through wind erosion, which may be deposited locally. The potential for wind erosion of mercury enriched particles should be discussed in the EIS; and
- Identify and quantify the mercury receptors in the environment. The potential for this mercury to be deposited to local wetlands and other surface waters, and methylated should also be described.

Mercury Methylation (Water)

The impact of mercury on aquatic systems may be dependent on the amount that is methylated. Mercury methylation requires inorganic mercury and methylating bacteria. The predominant (though not exclusive) methylators of mercury are sulfate reducing bacteria, which require anoxic conditions, sulfate, and an organic carbon source. Therefore, any landscape alterations that affect the activity of SRB can have a large effect on methylmercury concentrations in aquatic biota. As such, in evaluating the impacts of the proposed mine, it is not adequate to look at just releases of inorganic mercury. The EIS should discuss how the mining activity influences the methylation potential of mercury. The pathways for environmental and human exposure to methylmercury should also be described.

Recommendations:

- In 2007, measurements of methylmercury were added to the mercury baseline study. These measurements focused on stream/river sediments. While measuring sediments may have the benefit of being less temporally variable than water; the water measurements may be more representative of the methylmercury available for accumulation in the food web. It is likely that mercury methylation in the area is mainly occurring in wetlands. The export of methylmercury from these wetlands is likely in the dissolved phase. Therefore, it may be the case that sediment methylmercury concentrations are not representative of water methylmercury concentrations. The export of methylmercury from wetlands is likely highly temporally variable and would be dependent on hydrological connectivity between the wetlands and streams. An efficient way to identify the baseline methylation potential of the ecosystem is to collect measurements directly from the wetlands;
- Numerous studies have shown that methylmercury concentrations in water have large seasonal variability—with the highest concentrations in the late summer/early fall. Over the winter, methylmercury typically decreases, resulting in lower spring time concentrations. As such, to understand the maximum amount of methylmercury being produced, measurements should be made in the late summer or early fall;
- The EIS should discs the potential for methylation to occur downstream from the mine site and the role that export of dissolved organic carbon, sulfate, and inorganic mercury may have on facilitating downstream methylation;
- Releases of mercury or methylmercury associated with the mine need to be contextualized with the releases from Red Devil and other mines upstream, and naturally occurring background levels to understand any cumulative impacts of releases; and
- Discuss the potential pathways for environmental and human exposure to methylmercury, and the potential for methylmercury to bioaccumulating in fish and other subsistence foods relied upon by the local communities.

Cyanide

The proposed gold extraction process would require the use of cyanide, which may pose a risk to human health and the environment if released in large quantities. Accidental spills of cyanide at gold mine processing facilities do occur. For example, the Fort Knox Gold Mine north of Fairbanks had spill

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releases of 300,000 gallons of cyanide containing water (May 2010) and 45,000 gallons as a result of a bulldozer breaching the supply line (August 2012).

The transportation, storage, and disposal of cyanide present potential risks and many opportunities for accidental spills and releases of cyanide. As proposed, cyanide would be transported to the mine site using marine cargo vessels, river tug/barges, and trucks on a gravel road. In transit, the cyanide would be stored at the Bethel and Jungjuk ports. Considerations should be made to minimize transportation and multiple transfer points for cyanide.

Furthermore, recent studies have shown that residual cyanide in mine tailings can cause persistent release of toxic metals (e.g., mercury) into groundwater and surface waters. Potential steps should be considered to detoxify, remediate, and remove cyanide from the tailings effluent. Wildlife, particularly birds, can also be exposed to residual cyanide in tailings ponds. The EIS should include a cyanide management plan and a discussion on the environmental and human health impacts associated with cyanide exposure and strategies aimed at reducing exposure to resident and/or migratory wildlife.

Recommendations:

- Discuss the transportation and storage of cyanide. Identify opportunities to minimize transit times and multiple transfer points. Explain how cyanide would be properly stored and contained during transit and at the mine site. An alternative should include the use of air cargo to transport cyanide directly to the mine site;
- Develop a plan to manage cyanide during transpiration and at the mine facility and how to respond to accidental releases of cyanide;
- Evaluate control technologies and/or additives to detoxify, remediate and/or remove cyanide from the mining process effluent. Any cyanide removed should be properly disposed at an approved faculty;
- Provide an estimate of the amount of cyanide that would included in the tailings effluent stream and stored in the tailing storage facility; and
- Evaluate the environmental fate and pathways for human and wildlife exposure to cyanide.

Arsenic

Arsenic is a naturally occurring element in the earth's crust and widespread throughout Alaska. The proposed project activities would expose the aquatic environment to arsenic and potentially result in subsequent exposure to humans by drinking contaminated water and/or eating contaminated foods. The EIS should include an arsenic assessment and determine potential impacts to human health.

Recommendations:

- Identify the sources and the amounts of arsenic potentially released from this project. Identify the receptors of arsenic in the environment. Describe the potential pathways for human exposure. Provide the toxic exposure limits for arsenic to humans and wildlife;
- The mobility and toxicity of arsenic vary depending on the form (e.g. arsenite, arsenate) and is heavily influenced by oxidation/reduction conditions. The EIS needs to include a discussion of predicted arsenic speciation in the context of potential changing redox conditions and how this influences the potential environmental transport and impacts;
- Identify any control technologies that would be implemented to detoxify, remediate, remove and/or treat arsenic from the mining process effluent. For any arsenic removed, identify the proper disposal facility; and

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- Provide an estimate of the amount of arsenic in the tailings effluent stream and in the tailings storage facility.

Air Quality Assessment

The temporary short-term and long-term air emissions from the proposed project may result in direct, indirect, and cumulative impacts on the environment and human health. Concerns have been expressed regarding mercury, arsenic, and cyanide emissions into the atmosphere resulting from gold ore processing. The EIS should include an air quality assessment for comparing the existing baseline air quality conditions with the air quality during project construction, operations, maintenance, and reclamation/closure. Winter and summer conditions should be considered in the assessment. The air quality data should meet the EPA's Prevention of Significant Deterioration collection requirements.

Recommendations:

Background Information

- Identify the physical, climatological, meteorological, and visibility characteristics of the project area, which are important to understanding air pollution and transport. Include the representative climate data in the vicinity of the project, including mixing height information, a discussion on whether the data is representative enough to characterize movement of the air mass in the area of interest, and a discussion of variables that affect air pollution and the fate and transport of pollutants, including air dispersion patterns, complex terrain interactions, extreme temperature affects, seasonal variations, and presence of other atmospheric phenomena;
- Discuss surrounding topography, pollutant transport and dispersion, and potential secondary formation of air pollutants;
- During the scoping meetings, local knowledge and wisdom were shared regarding local wind patterns. This information should be included in the air quality assessment;
- Provide existing baseline air quality data, including on a map the locations and terrain elevation of all past and present air quality and meteorological data collections stations, methods and frequency of monitoring, criteria air pollutants (e.g. SO_2, NO_2, CO, O_3, PM_{10}, $PM_{2.5}$. and Pb), measured maximum, minimum, and average concentrations, data quality assurance and quality control;
- Describe the natural resources, ecosystems and human communities that may be adversely affected by any additional air emissions, including critical habitat areas or sensitive areas, wildlife refuges or sanctuaries, sensitive wetlands and waterbodies, threatened and/or endangered species or species of special concern, water resources, or archeological or cultural resources;
- Class I Areas - In Alaska, there are four federal land units identified as a Class I area under the Clean Air Act to protect and improve visibility. These areas include the Denali National Park, the Bering Sea Wilderness Area, the Simeonof Wilderness Area, and the Tuxedni Wilderness Area. Evaluate whether there would be any adverse effects to these Class I areas and develop mitigation measures to minimize impacts;
- Discuss project area air quality designations (i.e., attainment, non-attainment or unclassified), if any and the need to conduct conformity analysis;
- Discuss and provide a map showing the project definition of ambient air; and
- Summarize and discuss the representativeness of the measured air quality data used for background levels.

Air Emissions Inventory

- Develop an air emissions inventory to provide a comprehensive accounting of the sources and the total quantities of air pollutant emissions from all aspects of the proposed project and alternatives. Emission sources considered should include support activities, such as site

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preparation, project construction and start-up, as well as operations, maintenance, reclamation and closure activities. An emissions inventory should cover all potential pollutant releases and cover a specific geographic area for a certain timeframe. Include scaled schematics and process flow diagrams that identify product flow and emission-generating activities and points. Fugitive emission points, emission leaks, gas flaring, and ancillary activities that have the potential to generate air emissions should also be included;

- Provide emission inventories of all project combustion and non-combustion, mobile and stationary sources. This would include sources of emissions during the construction and operation phases, and the total quantity of air pollutants emitted (e.g., diesel engines, turbines, mobile sources, aircraft, marine vessels and river tugs/barges, pipeline, and fugitive road dust);
- Identify sources of potential gas flaring and describe the gas flaring system for the proposed pipeline. Evaluate the air emissions associated with the source of gas flaring.
- Identify any nearby sensitive receptors (i.e., schools, hospitals, churches, etc.) and vulnerable populations (i.e., children, elderly, asthmatics, pregnant women, etc.). Consider various pathways of exposure, such as direct contact, inhalation of particles or gaseous pollutants and potential impacts to receptors as a result of pathway exposure;
- Identify and discuss applicable air quality laws, regulations, standards, and guidance. Verify the data meets the National Ambient Air Quality Standards and/or State standards, increments and thresholds. Provide date(s) for any monitoring data that indicates an air quality violation. Identify and discuss required air quality permits;
- Include a plot plan/facility layout showing the ambient air boundary, location of all emission sources, buildings, structures, north arrow and scale;
- Provide tables summarizing the data and model results, and graphics/isopleths to display the locations of predicted concentration. This applies to both a project only analysis and a cumulative analysis; and
- There should be reference sections for sources of assumptions, information and data.

<u>Air Modelling</u>

- Identify the type of modeling used to predict changes in ambient air quality associated with the propose action and alternatives;
- Conduct air quality modeling to determine whether or not emissions from the proposed project activities will cause adverse environmental impacts. Models are selected for their ability to predict changes in ambient air quality and any significant pollutant deposition associated with the preferred action and alternatives being considered. Identify the type of air quality modeling necessary to consider air quality impacts;
- Provide and discuss the calculation methodologies and assumptions of all emission rates, both short term (g/sec, lbs/hr, lbs/dy) and long term (tns/yr). This would include operating hours, fuels, heat input, etc.);
- Provide stack parameters for point sources (height, temperature, exit velocity and diameter), and dimensions for area and volume sources;
- Conduct and provide a Good Engineering Practice stack height analysis i.e., Building Profile Input Program for PRIME;
- Discuss and provide a map showing project modeling domain. This would include ambient air boundary, near field, far field, sensitive receptor locations, map scale and north arrow;
- Identify the representative meteorological data that will be used with the EPA guideline or non-guideline model(s) to predict project concentration impacts during construction, start-up/shutdown, and operation phases;
- Identify the EPA guideline or non-guideline that will be used to predict project compliance with air standards, increments, and *de minimus* levels. In addition, identify any options selected that

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are not regulatory defaults. (Note: If a non-guideline model is proposed to predict concentrations in complex terrain, please inform the EPA as soon as possible. This approach will require a Section 3.2.2.e demonstration pursuant to Appendix W in 40 CFR Part 51);
- Conduct an Air Quality Related Value analysis consistent with Bureau of Land Management requirements; and
- Address secondary formation of O_3 and $PM_{2.5}$ (i.e., sulfates, nitrates and VOCs). The latter three should be included with primary $PM_{2.5}$ to determine compliance with air standards.

Hazardous Air Pollutants
- Hazardous Air Pollutants - Include a list of project specific HAPS emitted, estimated quantity, and the mobile (e.g., trucks, vehicles, heavy equipment, tugs/barges and marine vessels, airplanes) and stationary (e.g., mine processing facility, power generator) sources;
- Compare the emissions to the National Emissions Standards for Hazardous Air Pollutants. Discuss whether the standards are achieved or explain why the standards have been exceeded;
- Identify mitigation measures, and control technologies that would be implemented to minimize the emission of HAPs. Mitigation measures could include the use of natural gas to power heavy equipment and vehicles during project construction and operations; and
- Any pollutants not considered in the analysis, there should be a discussion for their omission and an explanation why omitted pollutants are not expected to contribute to reasonable significant impacts.

Fugitive Dust (Particulate Matter)
- In the emissions inventory, include estimates of $PM_{2.5}$ and PM_{10} (particulate matter) emissions from project sources during construction, operation, and reclamation/closure, such as the mine site, gravel roads and pads, gravel source sites, etc.;
- Evaluate the magnitude and significance of fugitive dust emissions (e.g., ore processing operations, gravel roads and pads, construction activates, etc.) and impacts on human health and sensitive populations (e.g., children and elderly);
- Identify mitigation measures, such as wetting the source material, installing barriers to prevent dust from leaving the source area, and halting operations during high wind events; and
- Provide monitoring of fugitive dust during construction, operations, maintenance, and closure/reclamation to ensure effectiveness of mitigation measures.

Water Resources

Water Quality Assessment

The proposed project may contribute in potential adverse direct, indirect, and cumulative impacts to water quality in the region. Water quality impacts to wetlands, rivers, streams, lakes and other surface waters could result from storm water discharges from construction, operation, and reclamation and closure of the mine and camp facilities, the access road, the pipeline, and other support facilities. Accidental releases of fuel and chemicals into adjacent waterbodies could also be a source of water quality pollution. The EIS should include a framework for comparing the baseline water quality to the water quality monitored during construction and operations of the proposed project.

Recommendations:

Baseline Water Quality Information
- Collect baseline water quality information in the project area. Identify the period of record of the collected water quality data. List the water quality parameters for which data has been collected (if certain parameters have been dropped, specify the basis);
- The QA/QC should be maintained at adequately low detection levels;

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- Include maps showing the locations and terrain elevation of all past and present data collection stations (explain any that have been dropped or location changed);
- Identify and discuss applicable national and state water quality regulations, standards, and guidance;
- Identify and discuss required wastewater permits;
- Include a plot plan/facility layout showing affected watershed boundaries with location of all discharge points, buildings, structures, north arrow and scale;
- Describe proposed water treatment options and alternatives;
- Provide estimates of the mine effluent water quality – type of pollutants and quantities, etc;
- A draft Alaska Pollutant Discharge Elimination System permit should be included as an appendix to the EIS. This would be beneficial for the public, local and tribal governments, and agency decision-makers; and
- There should be a reference section for the sources of assumptions, information and data.

303(d) Listed Waterbodies

Clean Water Act §303(d) requires States to identify water bodies that do not meet water quality standards and to develop water quality restoration plans to meet established water quality criteria and associated beneficial uses. The list of Alaska's impaired waters (2010) can be obtained on line at: http://www.dec.state.ak.us/water/wqsar/Docs/2010impairedwaters.pdf.

Impaired waterbodies listed in the project area include the Kuskowkim River and the Red Devil Creek (at the confluence of the two rivers), which are both Category 5 and therefore, requires the development of a Total Maximum Daily Load. The Kuskokwim River (AK ID No. 30501-002) and the Red Devil Creek (AK ID No. 30501-002) are listed for exceeding water quality standards for antimony, arsenic, and mercury associated with mining activities, including the Red Devil Mine. The EIS should evaluate the direct, indirect, and cumulative impacts on any impaired waterbodies in the project area.

Recommendations:

- Identify and evaluate impacts to any listed impaired waterbodies in and adjacent to the project area that is on the current EPA approved §303(d) list. Specify the pollutant(s), source(s) and the water quality standard(s) exceeded that was the basis for its listing. Identify whether a water body recovery plan and/or a Total Maximum Daily Load has been developed and/or implemented;
- Describe any enhancement efforts for those impaired waters, and how the proposed project would coordinate with on-going protection efforts, if any,
- Identify mitigation measures to minimize further degradation of impaired waters in the project area; and
- Identify the monitoring efforts to ensure that mitigation measures are effective in achieving water quality standards.

Source Water Protection Areas

The proposed project may impact potable drinking water sources and/or their source areas utilized by the community. Construction of the buried natural gas pipeline would require trenching, excavation, and water withdrawal. Mine construction and operations could result in other impacts to source water areas. The EIS should describe potential direct, indirect, and cumulative impacts to source water protection areas associated with this project.

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Recommendations:

- Identify and map the location of known public drinking water supplies and their sources, surface and groundwaters, aquifers, recharge zones, natural springs, etc. within the project area;
- Identify the local traditional drinking water sources, which may include rain barrels, melting ice in the winter, etc. Discuss impacts to these sources from dust and other contaminants;
- Identify the location of known water supply wells in the project area. The Alaska Department of Natural Resources maintains a well log tracking system database that provides information on reported sources of drinking water;
- Identify project construction and/or operational activities that could potentially impact known source water areas;
- Identify potential contaminants that may impact known source waters through infiltration/seepage;
- Distinguish the effects that any current or historic activities, including mining activities, have had on source waters of the project area; and
- Identify mitigation measures and monitoring activities to protect known source water areas.

Storm Water Management

The CWA requires any construction site resulting in the disturbance of one or more acres to have authorization under the construction storm water discharge permit for industrial activities, as part of the APDES permit program. The EIS should evaluate the direct, indirect, and cumulative impacts from storm water discharges.

Recommendations:

- The EIS should disclose that this project would meet the requirements of ADEC's APDES permit program, including development of SWPPPs, submittal of NOIs, reporting, and monitoring; and
- Identify specific best management practices, erosion and sediment control, and other mitigation measures to minimize impacts.

Water Body Crossings

Numerous rivers, streams, lakes and wetlands would be crossed for the construction of the natural gas pipeline, the gravel access road, and other mine related facilities. Different types of water body crossing construction methods and techniques would be implemented, including, but not limited to culverting, bridging, horizontal directional drilling, etc. HDD should be considered for all waterbody crossings. The EIS should evaluate the impacts associated with these construction methods. A water body crossing plan should be developed and included in the EIS.

Recommendations:

- Characterize all proposed the water body crossings, and summarize the information for width, depth, streamflow, presence/absence of fish, fish species, etc.;
- For each water body crossing, identify the type of construction methods (open cut – dry or wet, trenching, HDD, etc.) and/or structures (bridges, culverts, etc.) that would be implemented;
- Identify mitigation measures, such as maintaining no disturbance buffers, in water timing restrictions for fish migration and spawning, etc.; and
- Identify monitoring provisions to ensure effectiveness of mitigation measures.

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Water Withdrawal

The proposed project would require large volumes (millions of gallons) of water for construction of permanent and temporary gravel roads, facility pads, hydrostatic testing of the pipeline, HDD, and other mine operations. The EIS should include an evaluation of the water resources of the project area.

Recommendations:

- Identify existing and potential surface water locations where water withdrawal for project construction and operation would occur. Provide the water withdrawal locations on a map;
- Characterize each water resource and identify its surface area, maximum depths, available volume of water, volume of proposed withdrawal, and presence/absence of resident and/or anadromous fish species;
- Identify the maximum water requirements for project construction and operation;
- Identify any mitigation measures/commitments, such as establishing water withdrawal rates, timing of water withdrawal, and screening to avoid impacts to fish; and
- Identify monitoring activities to ensure that fisheries resources are protected.

Mine Site Water Management

The proposed water management objectives for the Donlin Gold Mine are: (1) no discharge of process water during operations, (2) ensure sufficient supply of water during operations, and (3) minimize the amount of water that has to be treated. The EIS should evaluate plans, contingencies and options to ensure that these water management objectives are achieved throughout the 27 year mine life, as well as during mine closure, reclamation, and long-term site management.

Water Balance

The mine site water balance should be estimated for each phase of the mine development (e.g., construction, operations, closure, reclamation periods, and post-closure), and cover a range of hydrological conditions (extreme and average) and potential variations or disruptions in process flow (e.g., temporary suspension of operations as well as closure). The mine site water balance should be described in detail in the EIS.

Recommendations:

- Characterize all potential water source(s) (e.g., surface water, ground water, snow, precipitation, run off, etc.) and estimate the amount of water from each source;
- Specify the volume of water needed for construction and operation of the mine facility;
- Estimate peak flood flows, precipitation, and duration and intensity of storm events on a seasonal basis;
- Estimate changes in water flow patterns for surface drainage modifications, groundwater aquifer dewatering, surface water dewatering, water use, water storage and discharge, and for different seasons;
- Identify the location of meteorological stations and water monitoring stations, length of monitoring and data collection;
- Provide a detailed water balance evaluation at the mine facilities during the full lifecycle– water flow patterns for surface water, water use, land application and discharge systems, pond storage and discharge, seasonal changes, etc. during steady state and peak flow conditions; and
- Provide a detailed schematic diagram depicting the water balance changes throughout the mine life cycle - construction, start up, operations, closure, reclamation and post-closure and monitoring.

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Water Treatment

The EIS should provide detailed information regarding the proposed water treatment and long-term treatment and monitoring for the proposed mine facility. An effective water treatment system would ensure that impacts to water quality of the adjacent surface and groundwaters are minimized.

Recommendations:

- Describe in detail the water treatment systems, type of filtration and removal system – active or passive, type of pollutants to be removed. Evaluate the effectiveness of the waste water treatment measures;
- Provide a detailed schematic diagram depicting treatment schemes through mine construction, start up, operations, closure, reclamation and post-closure and monitoring;
- Discuss effectiveness of the water treatment systems during seasonal and high flow events, and during pit dewatering;
- Identify back up options, as needed to address water management concerns throughout the mine lifecycle. For example, during high water periods, can the excess water be managed or stored beyond the capacity of the proposed treatment system. In predicting the water treatment capacity needs, does this account for climate change effects; and
- Provide estimates of the quantities and composition of process solutions, tailings water, runoff waters, mine drainage, and treated effluent at the proposed operation.

Watershed Characterization – American and Anaconda Creeks

The proposed mine facility is located within the two adjacent watersheds – the American and Anaconda creeks. Both creeks provide source water to Crooked Creek, which drains into the Kuskokwim River. The proposed waste rock facility would permanently impact American Creek. The proposed tailings storage facility would permanently impact Anaconda Creek. The EIS should evaluate the direct, indirect, and cumulative impacts to American and Anaconda creeks. The watershed characteristics of both drainages should be evaluated in detail.

Recommendations:

- Conduct a watershed characterization of American and Anaconda creeks;
- Analyze the watershed geomorphological and other characteristics, such as basin shape, slope, vegetation cover, soil type and land use conditions;
- Evaluate the seasonal water levels, flow regimes, and channel morphology (i.e., channel bed and bank erosion and sediment transport capacity), and impacts caused by stream diversions, channelization, and altered drainage patterns;
- Evaluate the types of resident and anadromous fish resources;
- Demonstrate how construction of the proposed mine and its associated facilities might alter runoff responses to both average and extreme precipitation events;
- Evaluate the downriver effects to Crooked Creek and the Kuskokwim River, such as reduction in seasonal and annual water flow, sediment and nutrient transport, etc.; and
- Evaluate the effects of surface water discharge, and impacts to adjacent wetlands or stream reaches from mine dewatering activities.

Mine Closure and Reclamation

Long-term contamination of the mine site and adjacent areas should be minimized by implementing appropriately engineered methods and plans for closure and reclamation. A major goal is to ensure that residual fluids and soluble metal complexes from the tailings storage facility and other mine facilities are neutralized or permanently contained. Otherwise, seepage of metals-laden acidic or cyanide-rich

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fluids into adjacent groundwater and surface waters could result. The EIS should include a detailed mine closure and reclamation plan that describes the closure procedures and methods for stabilizing all contaminated material, decommissioning and reclaiming all process facilities, and ensuring long-term water management and treatment.

Recommendations:

- Describe the methods that would be implement to lower the risk of long-term contamination from the waste rock and tailing storage facilities, such as low permeable caps, covers, and capillary barriers following recontouring;
- Describe any land treatments, such as grading, recontouring of facility slopes to reduce the potential for erosion, slope failure, and sedimentation in surface waters. Describe the type and methods for revegetation or reseeding, using native plants, that would aid in reducing erosion and evapotranspiration of water from surface layers;
- Discuss any additional best management practices that would be employed to minimize long-term contamination; and
- Discuss the long-term monitoring program that would be implemented to ensure that water quality of surface and groundwaters would be maintained.

Wetlands, Aquatic Resources, and Riparian Areas

The proposed project would contribute to the direct loss or degradation of wetlands, aquatic resources, and riparian areas for the construction of permanent and temporary facilities. For example, American Creek and Anaconda Creek would be permanently altered from the construction and operation of the waste rock facility and tailing storage facility, respectively. The EIS should quantify and disclose the direct, indirect, and cumulative wetland impacts associated with construction of the mine site and support facilities, the pipeline, the access road, and the port facilities.

Recommendations:

- Describe the appropriate and practicable steps taken to avoid, minimize, and compensate for unavoidable impacts to wetlands, aquatic resources, and riparian areas. Alternatives should consider options for avoiding and minimizing wetland impacts;
- Integrate NEPA process with the CWA §404 permitting process, such as including a draft 404(b)(1) analysis in the Draft EIS as an Appendix;
- Characterize acreages, habitat types and quantify areas of wetlands and aquatic resources within the project area – include their location and information on aerial photograph maps;
- For the proposed natural gas pipeline, jurisdictional Waters of the United States should be mapped using aerial photo interpretation within a minimum 1,000 feet corridor. Field delineation of wetlands should be conducted within a minimum 300-ft wide corridor, as agreed to for other Alaska pipeline projects;
- Describe mitigation measures/commitments to minimize the unavoidable impacts to wetlands; and
- Develop a monitoring plan for wetlands, aquatic resources, and riparian areas to ensure implementation of mitigation measures and their effectiveness. The monitoring plan should also specify any corrective measures.

<u>Function and Condition Assessment</u>

In order to evaluate the function and conditions of the wetlands, aquatic resources, and riparian areas, a functional assessment should be conducted in the project area. A functional assessment would provide an estimate of the quantity and types of wetlands that would be impacted based on their ecological

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functions in the landscape. The function and condition assessment would be used to evaluate compensatory mitigation under CWA §404.

Recommendations:

- Identify the condition and functional assessment methodology to evaluate the project area wetlands, riparian areas, drainages, and other aquatic resources;
- In particular, a functional assessment for Anaconda Creek and American creek watersheds should be conducted; and
- Provide the functions and conditions of wetlands on a map and include information, such as the acreage, habitat or vegetation type, percent cover in the project area, etc.

Compensatory Mitigation

On April 10, 2008, the EPA and Corps issued final regulations governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the United States.[2] The regulations establish the performance standards and criteria for the use of permittee-responsible compensatory mitigation, mitigation banks, and in-lieu fee programs to improve the quality and success of compensatory mitigation projects.

Recommendations:

- To compensate for the unavoidable impacts to wetlands and other aquatic resources, the EIS should identify the appropriate compensatory mitigation type – permittee responsible, mitigation banks, in-lieu fee programs that would be utilized for this project;
- Compensatory mitigation must be based on the functional assessment of wetlands and aquatic resources and replacement of those functions lost according to an ecologically appropriate mitigation ratio; and
- The project proponent should consider establishing a mitigation bank for this project to compensate for the wetland impacts. A combination of compensatory mitigation options, such as in-lieu fees, mitigation bank, and/or permittee responsible mitigation should be evaluated in the EIS.

The Kuskokwim River

The Kuskokwim River is an important aquatic resource for the native communities of the region. The Alaska Department of Fish and Game considers the Kuskokwim River a significant salmon fishery and serves as the running grounds for Chinook, chum, sockeye, pink, and coho salmon. The Kuskokwim River is one of the biggest subsistence fisheries in the state with more than 1,500 households currently fishing. Approximately 38 communities live within the Kuskokwim River drainage, representing 4,600 households. The direct, indirect, and cumulative impacts to this important aquatic resource may be significant, particularly to the traditional subsistence way of life. The potential project impacts could result from the daily tug and barge transportation (open water season) of fuel, cargo, and cyanide, which may contribute to the risk of fuel and chemical spills, increase river traffic, conflicts with navigability and other river users, and erosion of the riverbanks.

Recommendations:

Riverbank Erosion and Wakes

[2] EPA and Department of Defense, U.S. Army Corps of Engineers (2008). *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule; Federal Register Vol. 73, No. 70.*

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- Conduct a geomorphology study for the Kuskokwim River. Evaluate the historic bank erosion rates and quantify the loss of river bank along the reach of the river between Bethel and the proposed Jungjuk port site;
- Conduct a boat wake study using modeling techniques to evaluate the magnitude in which boat traffic and wakes contribute to bank erosion along the Kuskokwim River;
- Evaluate mitigation measures to minimize wake and riverbank erosion, such as establishing a maximum tug/boat speed and load limits, and reconfiguration of the tug/barge, which may minimize boat wakes; and
- Monitor the effectiveness of these measures by evaluating the annual river bank loss.

Navigation, Traffic, and User Conflicts

The tug and barge transportation of cargo and fuel on the Kuskokwim River may result in potential navigation challenges, boat traffic, and conflicts with multiple user groups. Subsistence and commercial fishing activities on the Kuskokwim River could include the use of boats, set and drift gillnets, seines, fish wheels, long lines, and dip nets, which may result in conflicts with tug and barge transportation. The EIS should evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts on the Kuskokwim River.

Recommendations:

- Evaluate alternatives to tug/barge transport of cargo and fuel, such as winter transportation over land using ice and/or snow roads and trails between the Bethel port and the mine site. This option could reduce the tug and barge traffic on the Kuskokwim River during the open water season;
- Identify the multiple user groups on the Kuskokwim River and estimates the number and type of each user group;
- Evaluate the carrying capacity of the Kuskokwim River to support navigation, tug, barge, and commercial and subsistence boat traffic, etc.;
- Identify where the user groups are located and their number and frequency, type of equipment used (e.g., set nets, fish wheels, etc.);
- Identify existing and historic fish camps, cultural sites, etc. Such information may be proprietary and sensitive. Precautions should be made to ensure the confidentiality of the information;
- Establish mitigation measures/commitments to avoid and minimize potential conflicts with these user groups, such as agreements to reduce the frequency of barge traffic during King salmon openings, etc.; and
- Monitor the effectiveness of the mitigation measures to avoid/minimize river traffic conflicts.

Sediment Dredging and Disposal

Tug and barges would transport fuel and cargo on the Kuskowim River from Bethel to the proposed Jungjuk Port site during the open water season. Concerns have been raised regarding the navigability of barges up the Kuskokwim River during the open water season. Water levels may be lower and certain reaches of the river may be shallower, preventing certain draft tugs/barges from navigating up the river. The EIS should discuss potential problems associated with tug and barge navigation along the Kuskokwim River. If navigational dredging would be required as part of this project, the direct, indirect and cumulative environmental impacts should be evaluated. A navigational dredging plan should also be developed and included in the EIS.

Recommendations:

- Evaluate the need to conduct navigational dredging of the Kuskowkim River;

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- Evaluate the open water season past and current water levels, depths, seasonal changes, etc. along the Kuskokim River between Bethel and Jungjuk port site;
- Specify the size, weight, and draft limits for the proposed river barges. Specify the minimum clearance to the river bottom required for the tugs and barges;
- If dredging is required, identify the location of dredging along the Kuskowkim River and the quantity (cubic yards), surface area and depth to be dredged; and
- Identify the location of where the dredged material would be properly disposed of on upland locations.

Waste Material and Fluids

Drilling Muds and Cuttings

HDD for the natural gas pipeline is being proposed for a number of river body crossings. The HDD process typically requires the use of drilling muds to install the pipeline underneath the waterbody. Soil cuttings and other drilling fluid additives are mixed with the drilling muds. Potential releases of drilling muds, cuttings, and additives into adjacent wetlands and waterbodies could adversely impact resident and/or anadromous fish species. A drilling mud plan should be developed and incorporated into the EIS.

Recommendations:

- Describe how drilling muds and cuttings, fluid additives, etc. would be managed, stored, transported, and properly disposed of;
- Describe the types of drilling fluid additives that would be used and their potential impacts on the aquatic environment; and
- Describe potential environmental impacts, proposed mitigation measures, monitoring procedures and contingency planning for accidental releases of drilling fluids, muds and cuttings during HDD construction activities.

Hydrostatic Test Water

The proposed natural gas pipeline would require hydrostatic testing to ensure pipeline integrity during construction. Hydrostatic testing may require large volumes of water, which may be heat treated and/or added with freeze depressants if construction is during the winter season. The EIS should provide information to evaluate the direct, indirect, and cumulative environmental impacts associated with the discharge of hydrostatic test water into adjacent lands, wetlands, and waterbodies containing resident and/or anadromous fish. A pipeline hydrostatic test water plan should be developed and incorporated into the EIS.

Recommendations:

- Describe the location of water sources, volume of water, and withdrawal rates that would be required for hydrostatic testing of the natural gas pipeline;
- Identify the discharge locations to land and/or surface waters, and discharge methods;
- For winter hydrostatic testing, identify the use of any chemical additives, such as anti-freeze or freeze depressants, and how these chemicals would be treated prior to discharging;
- Avoid discharging hydrostatic test water into surface waters containing resident and/or anadromous fish; and
- Describe mitigation measures/commitment and control devices that would be implemented to minimize environmental impacts associated with discharging hydrostatic test water.

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Blasting Plan
During project construction, blasting would be required for the open pit mine, and for certain areas along the pipeline corridor route and ancillary facilities. Blasting would result in increased noise levels and related effects to residents, and disruption and displacement of local birds and wildlife. A blasting management plan should be developed and incorporated into the EIS.

Recommendations:
- In the project area, identify the location of proposed blasting, and describe the blasting methods that would be used;
- Specify how blasting effects, such as noise, and wildlife displacement would be controlled and mitigated. A table with this summary information and a map identifying the blasting locations should be provided in the EIS; and
- Noise levels in the project area should be quantified. The threshold levels of noise impacts should be described and the effects of blasting to human health, birds and wildlife should be evaluated.

Material Source Sites
The Donlin Gold project will require large volumes of gravel material for construction of permanent and temporary access roads and development pads, and other project related facilities. The EIS should evaluate the direct, indirect, and cumulative impacts associated with the development of material source sites to cultural and historic resources, wetlands, and other resources.

Recommendations:
- Estimate the total volume (cubic yards) of gravel material that would be required for construction of this project, including the mine facility, access roads, natural gas pipeline, port facilities, airplane runway, camp, etc.;
- Identify the location of any existing and proposed new material source sites on a map; and
- Summarize in a table the information regarding each material source site, such as the location, surface area impacts, quantity of material available, land ownership, permit status, etc.

Fuel Management and Response Planning
The storage and management of petroleum products is regulated by the EPA under 40 CFR Part 112. The applicant will be required to develop Spill Prevention Control and Countermeasures plans and Facility Response Plans and submit these plans to the EPA for review. The EIS should discuss the implementation of these plans.

Recommendations:
- Identify and fully analyze the risks associated with potential fuel spills and other emergency response scenarios along the Kuskokwim River;
- Evaluate the risks of fuel spills from multiple fuel transfer and storage points at Dutch Harbor, Bethel, and Jungjuk port sites;
- Describe the proposed project fuel planning, transportation, storage and containment, and spill planning and response; and
- Identify impacts to area users, as well as any strategies employed to communicate risks or actual emergencies to those users.

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Hazardous and Solid Waste Materials Planning

Over the lifetime of the proposed project, large quantities of hazardous and solid waste material would be generated during construction, operation, maintenance, closure and reclamation. The EIS should address the potential direct, indirect, and cumulative environmental impacts of hazardous and solid waste from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and incorporated into the EIS.

Recommendations:

- Identify the sources, types, and volumes of hazardous and solid waste material;
- Discuss how the hazardous and solid waste material would be properly handled, stored, and disposed at the camp and/or mine sites or at an offsite facility;
- Identify whether an on-site lined solid waste landfill would be constructed to dispose of solid waste material from the camp and mine activities. Specify whether on site burning of solid waste would be proposed;
- For clean solid waste material, develop and implement a recycling and/or composting program. Consider backhauling recyclable material offsite and incorporating the composting material on site;
- For hazardous waste materials, identify any facilities where the material would be properly disposed. The facility should be approved and certified to accept hazardous waste material;
- As an alternative to disposing of hazardous waste, an onsite underground injection control well should be considered to handle hazardous waste material disposal. The EIS should evaluate this alternative; and
- Identify other hazardous material sites within the adjacent project area and determine the potential cumulative impacts from the proposed project (e.g. the Red Devil Mine and other abandoned or historical mines).

Marine Vessel Traffic

The proposed project would result in the increase of marine fuel tanker traffic between the Pacific West Coast and Dutch Harbor, Alaska. Fuel would then be stored in Dutch Harbor until transported onto barges to the Port of Bethel. Additionally, marine cargo would be transported to Bethel from the West Coast. The EIS should evaluate the marine cargo and fuel transportation system and analyze their potential direct, indirect and cumulative impacts on the marine environment, including marine mammals, threatened and endangered species, critical habitats, and subsistence resources. A marine barge and tanker traffic plan should be corporate into the EIS.

Recommendations:

- Evaluate potential environmental impacts associated with marine fuel tanker and cargo barge traffic between the Pacific West Coast Ports to Dutch Harbor and Bethel on marine mammals, threatened and endangered species, and subsistence resources;
- Identify the marine barge/tanker classes, timing and frequency of travel, volume handled, and marine transportation routes to address potential environmental impacts;
- Identify the seasonal migration routes and timing for marine mammals, threatened and endangered species, and subsistence resource harvesting along the marine navigation routes and evaluate any potential conflicts between barge/vessel traffic and marine resources and uses; and
- Identify mitigation measures to minimize impacts to marine resources and monitoring efforts to ensure that marine resources are protected.

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Invasive Species
Executive Order 13112 Invasive *Species* (February 3, 1999) requires that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species may cause.

Vegetation
Construction activities which disturb the ground may potentially expose areas and facilitate propagation of non-native invasive species. Climate change resulting in warmer temperatures may encourage invasive species growth which may not normally occur at this climate zone. An invasive species management plan should be developed and incorporated into the EIS.

Recommendations:
- Conduct an invasive non-indigenous plant study (pre- and post- project construction);
- Identify mitigation and control measures to minimize the establishment of noxious invasive plant species. Conduct monitoring activities during and after project construction to ensure that non-native invasive species are not establishing in the area; and
- Utilize native plants and grasses for restoration and reclamation of disturbed areas after project construction and during mine closure activities.

Ballast Water
Ballast water from marine barges and vessels serves as a conduit for the introduction of non-native invasive organisms into the marine ecosystem. Non-indigenous species may compete with or prey upon native species of marine algae, fish, and wildlife, may reduce biodiversity of species inhabiting coastal waters, may carry diseases or parasites that affect native species, and may disrupt the aquatic environment and economy of affected nearshore area.

Concerns have been raised that aquatic nuisance species may be transported and introduced into the Kuskokwim River, as well as the marine and intertidal waters by cargo and fuel tankers and river barges. The EIS should evaluate the potential impacts associated with non-native invasive species introduced from marine cargo and fuel barge ballast water.

The National Invasive Species Act of 1996 provides for ballast water management to prevent the introduction and spread of nonindigenous aquatic species into the waters of the United States. A ballast water management plan should be developed and incorporated into the EIS.

Recommendations:
- Include a commitment to use commercial marine vessels and river barges that operate with a ballast water management plan; and
- Include a commitment to use marine vessels and river barges that have onboard ballast water treatment systems to prevent invasive species into the Kuskokwim River.

Permafrost and Vegetation
The proposed project may result in the melting of permafrost as the overlying vegetation is removed or disturbed, gravel fill material is placed on the surface for access roads and facility pads, or the area is excavated and trenched to install the buried natural gas pipeline. Thawing permafrost may destabilize the ground that supports proposed project roads, buried pipelines, and other facilities. In addition, methane and carbon dioxide gas would be released, contributing to greenhouse gas emissions and

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climate change. As baseline information for this project, the EIS should include a permafrost and vegetation mapping analysis.

Recommendations:

- Evaluate surface disturbance activities to permafrost and vegetation resulting from the removal of vegetation, the placement of gravel for permanent and temporary access roads, pads, work areas, airstrips, mine facilities, etc.; and
- Identify mitigation measures to minimize impacts to permafrost and vegetation resulting from the construction and operation of this project.

Seismic and other Risks

Seismic activities in tectonically active areas of the region may affect the structural integrity of the tailing storage facility dam, the buried natural gas pipeline, secondary containment for the fuel storage tanks, and other related facilities. The EIS should include a seismic hazard study and evaluate the risks and potential impacts associated with earthquakes and other geologic activities in the project area.

Recommendations:

- Conduct a seismic hazard study for the project area;
- Identify the seismically active areas, geological faults, tectonic activity, etc. in the project area. Include this information on a map;
- Describe the potential risks associated with seismic activities and the effects to project related facilities and structures;
- Appropriate seismic design and construction standards and practices should be implemented for all proposed facilities;
- Identify mitigation measures/commitments to minimize impacts from seismic activities; and
- Describe how the seismically active areas will be monitored and managed to respond to structural failures of facilities.

Terrain Mapping

Terrain mapping is a classification system that describes the characteristics and spatial distribution of surficial materials, landforms, and geomorphological processes. This mapping approach should be used to identify areas of geological, landslide, and avalanche hazards, glacial terrains, soil stability, erosion problems, etc. for the proposed pipeline route. The EIS should evaluate the proposed pipeline route based on terrain mapping information.

Recommendations:

- Use terrain mapping to identify, classify, and map soil, rock, and geomorphic and seismic features; and
- Identify areas of potential geological and landscape hazards, such as erosion, slope instability, ground freezing, glacial terrain, thawing of permafrost, landslides, avalanches, etc.

Protected Species

The proposed project may impact protected species listed under the Endangered Species Act and the Marine Mammal Protection Act, their habitats, as well as Bureau of Land Management and the State of Alaska sensitive species. The EIS should include identification of endangered, threatened, and candidate species under ESA and MMPA, and other sensitive species within the project corridor and surrounding areas and the impacts of the project to these protected species.

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Recommendations:

- Identify all listed species – endangered, threatened, and candidate species, within the project area;
- Describe the critical habitat for these species and their migratory range, breeding and feeding areas, etc.;
- Include the Biological Assessments and description of the outcomes under ESA Section 7 consultations with the federal resource agencies; and
- Federal actions should promote the recovery of declining populations of species and protection of their habitat.

Climate Change and Greenhouse Gas Emissions

On February 18, 2010, CEQ issued draft guidance on analyzing the effects of climate change and greenhouse gas emissions.[3] Greenhouse gas includes carbon dioxide, methane, nitrous oxides, hydrofluorocarbons, per fluorocarbons, and sulfur hexafluoride.[4] The EIS should evaluate and disclose GHG emissions and climate change effects resulting from the proposed project, including all phases of development (e.g., mobilization, staging, construction, operation, monitoring and maintenance, and closure and reclamation), and all components, such as the mine and associated facilities, the natural gas pipeline, marine and river, air, and ground cargo/fuel transportation, etc. Please refer to the CEQ guidance for information on quantifying GHG emissions.

Recommendations:

- Develop a GHG emission inventory that includes baseline emissions, direct and indirect projected related emissions, and emissions from reasonably foreseeable activities over the life of this project. Identify the sources of GHG emissions and evaluate their contributions;
- Characterize and quantify the expected annual and cumulative emissions due to construction and operation of the mine and ancillary facilities, and the pipeline using CO2-equivalent as a metric for comparing the different types of GHG emitted over the life of the project, including post mine reclamation and closure;
- Evaluate future needs and capacity of the open pit mine and ancillary facilities, and the natural gas pipeline to adapt to project climate change effects;
- Establish reasonable spatial and temporal boundaries for this analysis;
- Disclose the differences between GHG emissions associated with each alternative analyzed in detail;
- Describe the link between GHG and climate change, and the potential impacts of climate change on the structural integrity of the proposed project, such as impacts to the TSF liner and dam, and the melting of permafrost on gravel pads and roads, etc.;
- Consider impacts of climate change on vulnerable communities, such as to Alaska Native communities and their traditional way of life;
- Estimate the extent that melting permafrost associated with this project would contribute to GHG emissions;
- Discuss options for minimizing project related emissions, including consideration of mitigation measures and reasonable alternatives; and
- Describe efforts to monitor for GHG emissions and climate change impacts throughout the lifecycle of this project.

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[3] CEQ (February 18, 2010), Draft Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.

[4] CEQ defines "GHGs" in accordance with Section 19(i) of Executive Order 13514

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Cumulative Impacts

Cumulative impacts on the natural and human environment results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. The EIS should evaluate the past, present, and reasonably foreseeable projects and actions in the proposed project area. Where significant cumulative impacts may exist, the EIS should disclose the parties that would be responsible for avoiding, minimizing, and mitigating for those adverse impacts. Refer to CEQ's *Considering Cumulative Effects under the National Environmental Policy Act*[5] for information regarding methods, tools, and techniques for the cumulative effects analysis.

Recommendations:

- Evaluate the proposed project impacts along with other past, present, and reasonably foreseeable future projects and actions, and considering their cumulative impacts in their entirety;
- Identify the geographic scope and timeframe for the CEA;
- Describe the CEA methodology and explain any assumptions and models used in the analysis;
- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date;
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resources is improving, declining, or in stasis;
- Identify the future condition of the resource based on an analysis of the cumulative impacts of reasonably foreseeable projects or actions added to existing conditions and current trends. For example, what will the future condition of the watershed be?
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives; and
- Identify opportunities to avoid and minimize impacts, including working with other federal and state agencies, Alaska Native Regional and Village Corporations, regional and health non-profit organizations, and local and tribal governments and communities.

Past and Present Actions

- Identify and evaluate existing, and abandoned mining projects and mining claims in the region, such as the abandoned Tuluksak River Mine, and Kolmakof Mine (near Napaimute), and placer mines north of Tuluksak;
- Evaluate the Red Devil Mine, an abandoned mercury mine upriver from the proposed project. Discuss the efforts of BLM and other agencies to evaluate the impacts and potential remedial activities; and
- Evaluate the Nixon Fork Mine and existing operational mine near McGrath, Alaska.

Reasonably Foreseeable Future Actions

- Evaluate the proposed future projects, such as the Chikuminuk Lake Hydroproject (Nuvista Light and Electric), the road between the Yukon River and Kuskokwim River; Susitna Watana Hydroelectric project; Neumont Mining (exploration near Napaimute); NYAC Gold (exploration near Tuluksak); Holitna Basin natural gas (mid Kuskokwim exploration).

Mitigation and Monitoring

On January 14, 2011, CEQ issued final guidance on the Appropriate Use of Mitigation and Monitoring on establishing, implementing, and monitoring mitigation commitments identified

[5] Council on Environmental Quality (January 1997). Considering Cumulative Effects under the National Environmental Policy Act.

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and analyzed during the NEPA process.[6] This guidance enables agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs. Mitigation mechanisms may include avoidance, minimization, rectifying, reducing or eliminating, and compensation.

A monitoring program should be designed to assess impacts from the project activities and the effectiveness of mitigation commitments being implemented. The level of effort afforded monitoring should be commensurate with the complexity of the project and the risk to and sensitivity of the affected environment. The public and tribes should have an opportunity to participate in the monitoring efforts for this project.

Recommendations:

- Develop a project mitigation plan for each the project lifecycle (e.g. pre-construction, construction, operations, maintenance, rehabilitation and closure) to assess mitigation needs, identify mitigation measures/commitments, best management practices, etc., and evaluate their effectiveness;
- Involve the tribes and the public in mitigation planning, and monitoring;
- Ensure mitigation measures/commitments are implemented and documented;
- Provide estimates of the timeframes for each mitigation measure to ensure a start date and duration for implementation. This would avoid and minimize impacts associated with tribal subsistence activities;
- Evaluate whether proposed project mitigation measures would result in additional environmental impacts;
- Describe any corrective actions that would remedy failed mitigation or ineffective mitigation measures;
- Develop an overall monitoring strategy for the project - define the goals and objectives of monitoring, provide summary information on monitoring (including a list of measurement parameters, methods, locations, and frequency, etc.) data analysis, and reporting;
- Specify terms of measurable performance standards or expected outcomes to establish clear performance expectations;
- Identify the source of funding to implement mitigation and monitoring measures, and disclose the lack of funding. Assess the resultant environmental effects; and
- Identify who is responsible for mitigation implementation and monitoring – lead agency, cooperating agency, project proponent, and third party.

Disclosure of Uncertainty

For all predictions of effects, regardless of whether they are qualitative or quantitative, the NEPA analysis should disclose the limitations of the predictions, and the associated uncertainty. It should also disclose uncertainty or risk associated with implementation of mitigation measures Sources and magnitude of uncertainty should be discussed. Understanding of uncertainties and risks are absolutely necessary for informed decision-making. If uncertainty cannot be reduced by data collection or analysis, it may be possible to mitigate for some uncertainty by developing an alternative or imposing mitigation measures that include monitoring, and contingency planning (see discussion below).

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[6] Council on Environmental Quality (January 14, 2011). Memorandum for Heads of Federal Department and Agencies, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact.

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Adaptive Management Planning

The NEPA analysis should describe the strategy for responding to unforeseen circumstances at the project site. Adaptive management and contingency planning are particularly important aspects that carry a high level of uncertainty in predictions of environmental consequences. The strategy should include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set in motion a follow-up action. An adaptive management strategy or plan should be described so that reviewers may comment on its adequacy. This type of plan when coupled with the monitoring program is necessary to mitigate for uncertainties and risks associated with predictions of environmental outcomes. Such plans are necessary to ensure that post-mining land use objectives can be achieved and sustained in the future.

Recommendations:

- Develop an adaptive management and contingency strategy to respond to an unforeseen and unexpected worst case/mine failure conditions. This plan should be discussed in the EIS; and
- Identify project situations and scenarios where additional corrective actions and response activities should be established, such as the failure of the TSF liner and dam, accidental spills of cyanide, etc.

Consultation with Federally-Recognized Tribal Governments

Executive Order 13175 *Consultation and Coordination with Indian Tribal Governments* (November 9, 2000) directs each Federal agency to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have implications on tribes. The proposed project may potentially affect traditional subsistence and cultural practices, access to subsistence areas, and resources of certain tribal members in the project areas. In addition, there is a potential for those who obtain subsistence resources, and other traditional and cultural resources through barter and trade to be adversely impacted. Tribal governments, whose members or traditional resources may be impacted, either directly and indirectly, by this proposed project, should be invited to consult on a government-to-government basis consistent with E.O. 13175. The EIS should document these consultation activities, as well as any actions taken to address the concerns identified by the tribal governments. The EPA offers our experience and special expertise working with Tribal governments to assist the Corps in fulfilling our tribal consultation and coordination responsibilities for this project. The EPA has developed Region 10 Tribal Consultation and Coordination Procedures which may be helpful in developing this plan.[7]

Recommendations:

Consultation Plan

- Develop a Tribal government-to-government Consultation Plan which would outline the process for working effectively with tribal governments during the EIS development process. The G2G Plan should include a schedule with agreed upon timelines and milestones for consolation, meetings, and decision points;
- The G2G Plan should determine the best timing for conducting the consultation meetings which would avoid conflict with Alaska Native Village subsistence, cultural and religious seasons, which varies with each community; and
- The G2G Plan should be developed in collaboration with the affected and/or interested tribal governments. Tribes should have the opportunity to review, provide comments and concurrence with the G2G Plan.

[7] The EPA Region 10 Tribal Consultation and Coordination Procedures can be found at the following website: http://www.epa.gov/region10/pdf/tribal/consultation/r10_tribal_consultation_and_coordination_procedures.pdf

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Consultation and Coordination Process

- Tribal government-to-government consultation and coordination should be open, meaningful, and occur throughout the EIS process until the Record of Decision is issued;
- Discussion how tribal government concerns and issues raised during government-to-government consultation meetings will be recorded, whether or not the tribe wishes that information to be made publicly available and an opportunity to correct any information prior to it being included in the record should be discussed and agreed up front for each meeting. Some tribes may wish to have their comments entered into the record or wish the meeting to be held confidentially as it is a government-to-government consultation. Therefore discussing this up front prior to the meeting is critical;
- The EIS should document the tribal consultation and coordination process by providing a chronology with the dates and locations of meetings with tribal governments, and results of the meeting.
- The EIS should discussion of how the tribal governments 'comments were addressed through changes in the project design, evaluation of alternatives and impacts, and development of mitigation measures;
- Meetings, milestones, and decision points in the EIS process should avoid conflicts with subsistence, cultural, religious, and other traditional activities, whenever possible;
- Tribes should be notified of the key decision points and milestones in the EIS process.
- The consultation and coordination process should be used as an opportunity to provide educational outreach and technical exchange of information regarding the project. Fact sheets and workshops (either in person, teleconference, or webinar) should be provided to Tribes throughout the NEPA process; and
- The consultation and coordination process should be used as an opportunity to gather Traditional Ecological Knowledge and Wisdom from the local tribal members who may be affected by this project. This should be done in partnership and close consultation with the federally recognized tribal governments.

Traditional Ecological Knowledge and Wisdom

There are over 60 Alaska Native communities who may be affected by this proposed project. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants and other resources of the region. Traditional Ecological Knowledge and Wisdom in coordination with empirical scientific data should be used to develop and evaluate alternatives, assess environmental and human health impacts, and identify mitigation measures. The identification, inclusion, and integration of TEKW into the EIS analysis would result in a more robust agency decision making document. The cooperating agencies, including the EPA, the State of Alaska (Department of Fish and Game, Subsistence Division), the cooperating tribal governments, and the Kuskokwim River Watershed Council could potentially provide expertise for developing the TEKW studies. Additionally, through government-to-government consultation, tribes can help design an appropriate study.

Recommendations:

- Coordinate with the communities in the region to identify special habitat areas, migration corridors and seasonal patterns, current and historical traditional and cultural uses, timelines and schedules for subsistence, hunting, fishing, harvesting, trapping, recreation, etc. and their way of life;
- Review current information available from previous EISs and databases regarding subsistence resources. Identify TEKW data gaps, and conduct additional TEKW studies as necessary to

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clearly identify concerns and potential impacts, including cumulative, from the proposed project and proposed alternatives;

- TEKW should be incorporated into the EIS to evaluate project modifications, alternatives, environmental and human health impacts, and to develop mitigation and monitoring measures; and
- In working with the communities to document and incorporate TEKW into the EIS, it is important to acknowledge up front appropriate tribal protocols for how this information could be used and how to ensure that sensitive information is protected. The Alaska Native Science Commission has principles that were developed in regards to appropriately working with TEKW, http://nativescience.org/issues/tk.htm.

Environmental Justice and Public Participation

Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994) requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes. The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be potential Environmental Justice communities due to their unique vulnerabilities.

Additionally, per the Executive Order 12898, "Federal Agencies, whenever practicable and appropriate, shall collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Federal Agencies shall communicate to the public the risks of those consumption patterns." Tribes have expressed concerns regarding declining Chinook salmon stocks, climate change impacts, barge traffic and erosion, mercury and other contaminants in the Yukon Kuskokwim Region. It is particularly important that human health exposure and pathways for contaminants and other impacts from the proposed project be fully discussed and mitigation measures developed in close consultation and coordination with the communities. This should include a discussion regarding any human health or cultural impacts from the proposed project, as well as any risk from accidents or failures along the transportation corridor and at the proposed mine site. This discussion will require enhanced communication efforts throughout the process of developing the EIS.

Clearly the impacts to subsistence are not just lost food sources, but loss of healthy subsistence life ways, loss of practices, loss of cultural connections to the past, loss of connection to specific places, loss of teaching and learning, loss of sharing networks, loss of individual, community, and cultural identity, among others should be considered in the EIS. The cultural, social, psychological, and spiritual aspects of subsistence livelihoods should also be considered in addition in the socio-economic, environmental justice and human health impact assessments. For more information, refer to the EPA website, "Environmental Justice Considerations in the NEPA Process" http://www.epa.gov/compliance/nepa/nepaej/index.html.

According to the CEQ Environmental Justice Guidance under the National Environmental Policy Act (1977), when determining whether environmental effects are disproportionately high and adverse, agencies should consider the following factors: [8]

[8]Council on Environmental Quality (December 10, 1997). *Environmental Justice Guidance Under the National Environmental Policy Act.* Available online at http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf

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1. Whether environmental effects are or may be having an adverse impact on minority populations, low-income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and
2. Whether the disproportionate impacts occur or would occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

In addition, we emphasize the EJ analysis address the following:

Demographic Analysis. Gather geographic and demographic data about the area affected by the proposed action to determine whether minority populations, low-income populations, or Indian tribes are present, and if so whether there may be disproportionately high and adverse human health or environmental effects on these populations.

Baseline Conditions. Consult relevant public health data and industry data to establish the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available.

Characterization. Describe the direct, indirect, and cumulative effects of the proposed action within this context: Recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action. These factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.

Effective Public Participation Strategies. Agencies should, as appropriate, acknowledge and seek to overcome linguistic, cultural, institutional, geographic, and other barriers to meaningful participation, and should incorporate active outreach to affected groups. Strategies include using notices, mailings, fact sheets, briefings, presentations, exhibits, tours, news releases, translations, newsletters, reports, community interviews, surveys, canvassing, telephone hotlines, question and answer sessions, stakeholder meetings, and on scene information.

Meaningful Community Representation. Agencies should endeavor to have complete representation of the community as a whole and should be aware that community participation must occur as early as possible if it is to be meaningful. The EIS should describe what was done to inform the communities about the project and the potential impacts it will have on their communities, what input was received from the communities, and how that input was utilized in the decisions that were made regarding the project.

Tribal Representation. Seek tribal representation in the process that is consistent with the government-to-government relationship between the United States and tribal governments, and the federal government's trust responsibility to federally-recognized tribes.

Recommendations:

- Encourage meaningful engagement and participation by the community, particularly communicating in the regional native Yup'ik language;
- EJ analysis should be conducted in consultation and coordination with communities;

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- Scheduling meetings and decision points in the EIS process should avoid conflicts with subsistence and other traditional activities whenever possible;
- Attention should be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources;
- Provide more frequent opportunities to involve the tribal governments and the public (between the Scoping and the Draft EIS stage);
- Prepare and disseminate fact sheets on technical aspects of the project;
- Conduct educational workshops on various subjects that would bring in the Traditional Ecological Knowledge and Wisdom and local knowledge of the people of the region (e.g., information to help shape the NHPA Section106 process, the emergency response planning, characterizing impacts from potential failure scenarios, impacts to subsistence resources, and timing of the subsistence calendar and any special habitat areas for wildlife. The location, schedule, and agenda for these workshops should be coordinated with the local communities;
- In addressing potential adverse impacts, measures for avoidance or minimization of those impacts should be considered before resorting to mitigation measures. Where avoidance or minimization is not possible, develop appropriate mitigation measures and agreements. These should be developed with input from the affected population in a consensus-based process. Agreements should be developed between the project proponent and the EJ communities; and
- Include in the EIS a summary conclusion or an EJ determination which concisely expresses whether impacts have been appropriately avoided, minimized and/or mitigated.

Health Risk or Impact Analysis

Screening Analysis

The proposed project may contribute to adverse impacts to human health of individuals and communities in the Kuskowkim River region. In particular, attention should be given to vulnerable populations, such as the elderly, young children, and pregnant women, who may be more susceptible to exposure. In 2009, the Alaska Department of Health and Social Services issued a fish consumption advisory for children, pregnant women, and women of child-bearing age to limit intake of large pike (>2 feet long) in the lower Kuskokwim River. In 2011, preliminary consumption guidelines were issued for women of child-bearing age and children in the middle region of Kuskokwim River who eat pike and burbot.

Local residents have expressed concerns regarding potential contaminant exposure from the Red Devil Mine. The majority of residents in the region practice a subsistence lifestyle to provide for their families. Local residents may trap for fish in Red Devil Creek, net fish in the Kuskokwim River, and harvest berries from the site for their families. There have been concerns expressed regarding the higher cancer rates in former mine workers at the Red Devil Mine site.

We understand that ADHSS and the Yukon-Kuskokwim Health Corporation are undertaking a health screening process in the project area. Depending on the results of this screening analysis, additional evaluation of health effects, such as a Health Risk Assessment or Health Impact Assessment may be required to evaluate the direct, indirect, and cumulative impacts to human health and the environment resulting from this project. We look forward to reviewing and commenting on the draft screening analysis for this project. The final health screening analysis should be included as an appendix to the Draft EIS.

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Recommendations:

- Complete screening analysis to determine which aspects of human health (including, but not limited to public, environmental, mental, social, cultural health, etc.) could be impacted;
- Consider historical impacts to health and overall cultural well-being;
- Identify human health exposure pathways related to environmental impacts and subsistence resource;
- Identify potential contaminants that may persist and bioaccumulate in the environment and up the food chain (e.g., consumption of berries, fish, drinking water, etc.); and
- When conducting a screening, we recommend using the "Standard for the screening stage" from the North American HIA Practice Standards Working Group document "Minimum Elements and Practice Standards for Health Impact Assessment (November 2010, Version 2).[9]

Scope of the Health Assessment

Human health effects from development projects are often more far-reaching than is commonly recognized. Contaminant exposure or cancer risks are common in areas for impact assessment. However, numerous other health impacts that could occur as a result of a new project are often overlooked. For example, the EIS should look for information that can be used to assess the project's effects by looking at how income from new jobs can have positive and negative health impacts. Income from new jobs has also been associated with increased rates of alcohol and drug use, and domestic violence and child abuse due to rapid social and community change, particularly in rural areas, and disrupted family structure due to unusual work schedules. During the scoping meetings we heard concerns specifically about this and whether or not there would also be an increase in infrastructure within the community to address these impacts, such as increased village safety police officers, health programs, etc. Increased income can also result in increased ownership of motorized vehicles, which often results in less physical activity, particularly in the village setting. Although such health impacts have been documented for other projects on numerous occasions, they are rarely addressed in project development or permitting.

Recommendations:

- Determine which health impacts to evaluate in the EIS based on the screening analysis;
- Identify and discuss the methods and process for developing the HIA analysis and the sources of information. Discuss how local communities and tribes would be involved; and
- Include a workplan and schedule for completing the health assessment;

Assessment and Data Collection

In order to appropriately evaluate human health, specific health data are required that may not be routinely collected as part of the EIS scoping process. In order to ensure that the necessary data are available for this evaluation, it is important to involve public health professionals early in the NEPA process.

Public health data and expertise for prospective health impact analysis or for providing input on health issues may be available from local and state health departments, tribal agencies, or federal public health agencies, such as the U.S. Centers for Disease Control and Prevention's National Center for Environmental Health, U.S. Agency for Toxic Substances and Disease Registry, or Indian Health Service. We are encouraged that the ADHSS and YKTHC are partnering to conduct the screening analysis and HIA for the Donlin Gold Project.

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[9] R. Bhatia et al. *Minimum Elements and Practice Standards for Health Impact Assessment, Version 2* (North American HIA Practice Standards Working Group, 2010), 3 – 4.

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Recommendations:

- Include a profile of existing health conditions of the region and identify the sources of this information;
- Evaluate the potential health impacts of individuals and communities in the region; and
- Include the HIA as an appendix in the Final EIS.

Guides and Resources

The Health Impact Assessment framework is a combination of procedures, methods and tools that enables systematic analysis of the potential positive or negative effects of a policy, plan, program or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage or mitigate negative effects. HIA is currently the only widely accepted methodology or framework used to provide decision-makers with information about how a specific policy, project, or program may affect human health.

The World Health Organization and the U.S. Centers for Disease Control and Prevention support the use of HIA as a tool to address health impacts when policies, programs, or projects are being developed. Many other countries have successfully used HIA for these purposes. The International Finance Corporation, a member of the World Bank Group, has adopted HIA as the standard for evaluating health and requires it of any projects for which it provides funding.

Guides for conducting HIA are available from various sources. While the EPA does not endorse or recommend use of any single or particular guidance on HIA, these references are provided to assist with identifying additional resources on HIA.

- World Health Organization – *Health Impact Assessment Short Guides*;[10]
- International Finance Corporation – *Introduction to Health Impact Assessment (2009)*;[11]
- CDC – *Healthy Places, Health Impact Assessment*;[12]
- Human Impact Partners – *A Health Impact Assessment Tool Kit: A Handbook for Conducting HIA, 3rd Edition (2011) and Health Impact Assessment: A Guide for Practice (2011).*[13]

Mitigation Strategies

In order to minimize the potential identified adverse health effects resulting from this project, mitigation strategies should be developed and included in the EIS. For example, the Bureau of Land Management prepared the 2008 Northeast National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement which identified public health mitigation on 'social determinants of health.[14]

Recommendations:

- Identify strategies to manage identified adverse health impacts;

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[10] World Health Organization, *Health Impact Assessment Short Guides*; http://who.int/hia/about/guides/en/.
[11] International Finance Corporation, *Introduction to Health Impact Assessment* (2009).
[12] Centers for Disease Control and Prevention, *Healthy Places Health Impact Assessment*; http://www.cdc.gov/healthyplaces/hia.htm.
[13] Human Impact Partners, Health *Impact Assessment Toolkit: A Handbook for Conducting HIA, 3rd Edition, Oakland, CA (2011)* and Rajiv Bhatia, *Health Impact Assessment: A Guide for Practice, Oakland, CA (2011).* http://www.humanimpact.org
[14] See Appendix G: Examples of Public Health Mitigation Strategies in the BLM's 2008 Northeast National Petroleum Reserve-Alaska FEIS.

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- Involve communities and tribal governments in developing health strategies and mitigation measures. Prepare a plan to monitor the health of individuals and the community during construction, operations and closure/reclamation; and
- Communicate the findings of the HIA to the tribes, communities, and the public.

Children's Health and Safety

Executive Order 13045 *Protection of Children from Environmental Health Risk and Safety Risks* (April 21, 1997) directs each Federal agency to make it a priority to identify and assess environmental health and safety risks that may disproportionately affect children. Analysis and disclosure of these potential effects is appropriate because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to health and safety risks.

Recommendations:

- Address potential direct, indirect, and cumulative impacts of the proposed project on children's health, including consideration of prenatal exposures;
- Assess children's potential exposures, pathways, and susceptibilities to the pollutants of concern;
- Identify pollutants of concern and their sources that represent health and safety risks to children;
- Conduct an exposure assessment for children – air, water, subsistence foods, noise, etc.; and
- Identify the children's baseline health conditions.

Social-Cultural Impacts

While it is anticipated that this proposed project will result in employment opportunities for Alaska Native residents, there would also be local and corporate revenues generated from this project in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be negative impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts may also affect a community's ability to access traditional and accustomed subsistence use areas. The sociocultural impacts associated with this project should be fully evaluated and disclosed in the EIS.

Reports and Resources

There are a number of technical reports and other Environmental Impact Statements that have been completed throughout Alaska which consider impacts from resource extraction projects on Alaska Native communities. These resources should be reviewed and included, as appropriate, as references for considering the full range of impacts to Alaska Native communities and their way of life. While the EPA does not endorse or recommend use of any single or particular documents, these references are provided to assist with evaluating impacts on socio-cultural resources:

1. Ballard, C. and G. Barks (2003). *Resource Wars: The Anthropology of Mining*. Annual Review of Anthropology 32: 287:313.
2. Braund, Stephen R. & Associates (2009). *Impacts of Oil and Gas Development to Barrow, Nuiqsut, Wainwright, and Atqasuk Harvesters*. Report prepared for the North Slope Borough, Department of Wildlife Management.
3. Braund, S.R. and J. Kruse (ed.) (2009). *Synthesis: Three Decades of Research on Socioeconomic Effects Related to Offshore Petroleum Development in Coastal Alaska*. Minerals Management Service, Outer Continental Shelf Study 2009-006.
4. National Research Council (2003). *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*. Washington D.C.: The National Academies Press.

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5. Palinkas, L.A., M.A. Downs, J. S. Petterson, and J. Russell (1993). *Social, Cultural, and Psychological Impacts of the Exxon Valdez Oil Spill. Human Organization* 52(1):1-12.
6. Storey, K. and L.C. Hamilton (2004). *Planning for the Impacts of Megaprojects: Two North American Examples*. Pp. 281-302 in R.O. Rasmussen and N.E. Koroleva (eds.) *Social and Economic Impacts in the North*. Dordrecht, Netherlands: Kluwer Academic Publishers.
7. Tetra Tech (2009). *Red Dog Mine Extension Aqqaluk Project Final Environmental Impact Statement* October 2009 for the U.S. Environmental Protection Agency, Region 10.
8. Gerard Duhaime & Bernard, Nick, editors (2008). *Arctic Food Security*. Canadian Circumpolar Institute (CCI) Press, University of Alberta and Centre inter-universitaire d'etudes et de recherché autochtones (CIERA), Univerite' Laval.

Recommendations:

Socioeconomic Impacts

- Evaluate impacts to families, communities, and cultures associated with transitioning from a subsistence economy to a cash economy; and
- Evaluate a post-mining scenario and the potential decline in the economy of the region.

Accessibility of Traditional Use Areas

- Identify community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, etc.;
- Describe the access limitations to these traditional use areas and their impacts to local communities; and
- Coordinate with the community on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.

Compatibility of Traditional Use Areas

9. Identify project activities that may conflict with traditional and accustomed uses (e.g. barge traffic on the Kuskokwim River conflicts with subsistence fishing and other traditional and cultural activities); and
10. Coordinate with the community to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses with the construction and operation of this project.

Historical and Cultural Resources

Section 106 National Historic Preservation Act of 1966 requires Federal agencies to analyze the effects of their actions on historic properties. Since the Donlin Gold project area represents a frequent and accustomed use area by the Alaska Native tribal governments for subsistence fishing, hunting, trapping, and harvesting, cultural activities, and migration routes, the Alaska State Historic Preservation Officer would need to be consulted. The 1992 amendments to the NHPA placed major emphasis on consolation with tribal governments. Consultation should respect tribal sovereignty and the government-to-government relationship between the Federal and tribal governments. Tribal governments must be consulted about actions on or affecting their lands or resources on the same basis, and in addition to the SHPO. Potential impacts to resources of concern to the tribes may include, but are not limited to, impacts to cultural resource areas, archaeological sites, traditional cultural properties of landscape, sacred sites, and environments with cultural resource significance. The tribal government(s) must be specifically engaged and consulted with in accordance with Section 106 of the NHPA. An additional resource in the Yukon Kuskokwim Region is the Association of Village Council Presidents as they have a department that focuses on protection and mitigation of impacts to cultural sites. We are encouraged that the Bureau of Land Management has started coordinating with AVCP.

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To determine whether the area of potential effect would be eligible for the National Register of Historic Places, the perspectives of the tribal government(s) should be considered. Such considerations should include significant events that may have taken place in the past (tribal wars, establishment of trade routes, etc.)

The Section 106 consultation process should be run concurrent with the Federal permitting and NEPA processes. If adverse effects to traditional cultural properties, sacred sites, or other areas of cultural resource concerns are identified, any Memorandum of Agreement developed to resolve these concerns under Section 106 should be addressed in the Record of Decision for this EIS. Unless there is a compelling reason to do otherwise, the Section 106 MOA should be fully executed before the ROD is issued, and the ROD should provide for implementation of the terms of the MOA.

Recommendations:

- NHPA Section 106 consultation should be conducted with tribal governments, local governments, the public, in addition to SHPO;
- Evaluate the Alaskan historical and traditional significance of the project area, the importance of ethnobotany, hunting, fishing, and gathering uses of the area by Alaska Natives, any long term traditional ecological management of the area, and any significant historic events that took place in the area;
- The scope of impacts to these resources should include the direct, indirect, and cumulative impacts to sacred sites; traditional cultural properties or landscapes; hunting, fishing, gathering areas; access to traditional and current hunting, fishing, and gathering areas and species; changes in hydrology or ecological composition of springs, seeps, wetlands, and streams, that could be considered sacred or have traditional resource use association; historical and currently used travel and migration routes; and historic properties, districts or landscapes; and
- Conduct the Section106 NHPA consultation process concurrent with the EIS process. The Section 106 process should be completed prior to issuing the ROD, which would provide for the implementation of the MOA terms.

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Enclosure 2
Narrative Description for Financial Assurance Cost Categories

EIS Alternative
Reclamation and Closure Costs

1.0 INTRODUCTION

This estimation of a financial assurance amount (bond) for the reclamation of the X Project is intended to generally follow guidelines presented in the USFS Training Guide for Reclamation Bond Estimation and Administration (USFS, 2004). This estimate utilizes information and format from an initial cost estimate compiled by X.

The agency bond calculation includes a separate itemization of indirect costs based on Forest Service standards and that reflect Region 4's experience with mine reclamation at other sites.

The reclamation cost estimate is broken into the following cost categories:

Direct Costs:

- Interim Operations and Maintenance
- Hazardous Materials Disposal
- Water Treatment
- Demolition and Disposal (structures, equipment and materials)
- Site Works
- Revegetation
- Groundwater capture
- Post Closure Operation, Maintenance and Monitoring
- Post Closure Water Treatment

Indirect Costs:

- Engineering
- Mobilization
- Contract Administration
- Insurance
- Bond performance and payment
- Contractor profit
- Contingency

2.0 BASIS AND ASSUMPTIONS

The basis for each cost category is discussed below. Unit costs for some specific items were provided by XXX from RS Means cost data books, other cost data sources, or from site specific vendor quotes. These unit costs were reviewed and checked, but have generally been retained. XXX's notes and EIS team notes on additional cost items are included in the cost estimate.

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Enclosure 2
Narrative Description for Financial Assurance Cost Categories

2.1 Interim Operations and Maintenance

This category includes the activities needed to maintain the integrity of the project facilities during an unexpected shutdown or following closure until reclamation activities begin and contains three general subcategories: public safety; access and utilities; and water management. Public safety includes fencing and warning signs for the portals, removal of explosives, and site security personnel. Access and utilities include road maintenance, snow removal, and electricity for lights and basic facilities. Water management includes periodic inspection of ponds, wells, pipelines, and drainage works. Water pumping and treatment from the mine and the water management ponds are included in the water treatment cost item. For the purposes of this estimate it is assumed that an interim shutdown period would last up to one year.

2.2 Hazardous Materials

XXX will keep have hazardous materials on site and this category estimates costs for sampling, analysis, handling, transport, and disposal at the US Ecology RCRA Subtitle C landfill in Grand View, ID (250 miles from the site). It is assumed that 40 barrels would be sufficient for removal of all hazardous materials from the lab and mill facilities, based on the expected size of the operations. On-site fuels storage will remain for use at reclamation or be reclaimed by vendors. Fluids in the mill circuit are assumed to be processed through the water treatment plant.

2.3 Water Treatment

Water treatment costs for the agency preferred alternative and assume a conventional precipitation and solids removal system that produces a dewatered cake as the primary waste. It is assumed that one full time operator and a part time assistant would be required to run the plant. The water treatment costs are calculated on an annual basis and one-year of water treatment is included in the interim shutdown category. A separate category for post-closure water treatment is included and for the purposes of the financial assurance, it is assumed that water treatment would continue for 100 years following mine closure. The agency estimate includes costs for offsite disposal of post closure water treatment wastes.

2.4 Demolition

XXX assumed that facility equipment and the tram would be salvaged at no cost due to the salvage value of the equipment. This is not in accord with USFS guidelines and the agency estimate assumes that there would be demolition and disposal costs for the mill, buildings, tram and mining equipment. This estimate includes a cost (as a percentage of capital cost) for hauling and disposing of mine site materials even though some of these items would likely have some salvage value. Concrete foundations would be buried on-site, all other debris will be shipped to the nearest off-site RCRA Subtitle D landfill. Pipelines are assumed to be abandoned in-place. Powerlines would be removed. Roads would be regraded to approximate original topography and revegetated except for those roads that would be left following closure for access for private parties and USFS.

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2.5 Site Works

Site works includes regrading, recontouring, TWSF cap placement and topsoil replacement related to roads and facilities. The following sub-categories are included in this category:

- Borrow Site (including the topsoil stockpile)
- Portals
- Roads
- TWSF
- Water Management Pond
- Millsite and Tram

Unit earthwork costs are based on equipment production (CAT Handbook) and site specific hourly costs. Material volumes for the TWSF and water management pond are based on the expected amount of regrading required and the volume of cover and growth media required by the preferred alternative. Material volumes for road reclamation are based on a unit volume/linear foot of road based on site specific road construction volumes. The overall length of road reclamation was based on the total length of on-site and off-site roads as described in the EIS alternative analysis.

2.6 Revegetation

This category includes all initial reclamation revegetation work consistent with the preferred alternative. The revegetation category assumes one replanting of the site to achieve successful revegetation. Growth media placement (earthwork) is included in the Site Works category. Post-reclamation revegetation monitoring and maintenance is included in Post Closure O & M category.

2.7 Groundwater Capture

Groundwater capture may be required post closure to maintain groundwater or surface water quality. Capture would include wells or an alluvial pumpback system and pumping to the water treatment plant.

2.8 Post Closure Opeations & Maintenance

Post closure operation and maintenance would include maintenance of facilities roads, long term water treatment facilities, water management facilities, etc. This task also includes reclamation performance monitoring and maintenance of the TWSF cover construction and revegetation and environmental monitoring.

The reclamation cost estimate includes costs for reclamation monitoring (water quality, revegetation, and cover stability), reporting/documentation of monitoring data, costs for periodic maintenance of the TWSF reclamation cover, maintenance of water control BMP's and annual weed control. Long-term water treatment costs are included in a separate category. A five-year time frame was used for this O&M category.

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2.9 Post Closure Water Treatment

Post closure water treatment may or may not be required for this site. A post-closure water treatment cost for 100 years of operation is included to protect the public from having to assume treatment costs if water treatment is required. The calculation of a net present value of the 100 years of treatment costs requires the assumption of interest and inflation values. The inflation rate value selected (3.66%) is the 2000 to 2005 five year average of the Construction Cost Index from the Engineering News Record and the interest rate (4.85%) is the October 2006 average 30 US Treasury bond rate.

2.10 Indirect Costs

Indirect costs are based on guidance in USFS Manual (USFS, 2004) and USFS Region 4. Engineering redesign costs are based on a percentage of the site works costs only. Mobilization and demobilization costs are based on a percentage of the demolition, site works and revegetation costs only. A contingency of 20% of direct costs is consistent with general engineering practice.

Reference:

USFS, 2004. Training Guide for Reclamation Bond Estimation and Administration for Mineral Plans of Operation authorized and administered under 36 CFR 228A. U.S. Dept. of Agriculture – USFS. April.

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Enclosure 3
Spreadsheet for Financial Assurance Cost Estimates

RECLAMATION COST ESTIMATE SUMMARY		
COST CATEGORIES		**AMOUNT**
Direct Costs		
Interim Operations and Maintenance (two years)		$
Hazardous Materials Removal and Disposal		$
Water Treatment		$
Demolition and Disposal		$
Site Works		$
Borrow Sites	$	
Portals	$	
Roads	$	
TWSF	$	
Water Management Pond	$	
Millsite and Tram	$	
Revegetation		$
Groundwater Capture		$
Post Closure Operations/Maintenance		$
	Total Direct Costs:	$
Indirect Costs		
Engineering Redesign	6% of Site Works & GW Capture Capital	$
Mob/Demob	3% of Demo, Site Works and Reveg	$
Contract Administration	4.5% of Direct Costs	$
Contingencies	20% of Direct Costs	$
Insurance	1.5% of Labor Costs	$
Bond (performance)	1.5% of Labor Costs	$
Bond (payment)	1.5% of Labor Costs	$
Contractor Profit	10% of Direct Costs	$
Indirect Agency Overhead	4.5% of Direct Costs	$
	Total Indirect Costs:	$
Post Closure Water Treatment Costs		
Post closure water treatment (NPV – beginning second year after closure)		$
Overhead and contingency	10% of post closure WT NPV	$
		$
Total Direct and Indirect Costs		$

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Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/14/2018 5:28:10 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble Scoping Letter
Location: Molly will call Patty

Start: 5/14/2018 7:30:00 PM
End: 5/14/2018 8:00:00 PM
Show Time As: Tentative

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/16/2018 8:18:30 PM
To: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

Hi Shane, thanks so much for your quick response, I have received all of the figures.
Regards,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 16, 2018 10:11 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Thanks Molly,
It appears I missed it for all CAs. I will send in a few minutes.

VR

Shane McCoy
Program Manager
(907) 753-2715

-----Original Message-----
From: Vaughan, Molly [mailto:Vaughan.Molly@epa.gov]
Sent: Friday, November 16, 2018 9:53 AM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: [Non-DoD Source] RE: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

Hello Shane,
We did not receive the figures for Chapter 4.16 (7 pdf files noted below). Can you please resend those?
Thank you,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 09, 2018 5:42 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: FW: Pebble Review Drafts Transmission (3.16, K3.16, 4.16) please provide comments by 12/7/2018 if your agency has been identified below (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Attached are 3 Word files, the review drafts of:

Sec3.16, K3.16, 4.16 - Surface Water Hydrology. The only technical appendix is K3.16. There are 2 separate figure PDFs for K3.16; 10 separate PDF files for 3.16; and 7 separate PDF files for 4.16 which are being sent separately. CAs are EPA, State of Alaska

VR

Shane McCoy

AMERICAN OVERSIGHT

Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/4/2018 4:21:03 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble Scoping letter check-in
Location: Molly will call Patty

Start: 4/4/2018 11:00:00 PM
End: 4/4/2018 11:30:00 PM
Show Time As: Tentative

Hi Patty – I plan to have a first take at a scoping letter to you by the end of today. I'd like to take a few minutes to go over the letter and next steps, as well as check in on anything else we need to before you are out next week (such as expectations for scoping meeting participation).
Thanks,
Molly

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/3/2018 10:25:51 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble Scoping Comments

Hi Tami,
I was not able to find your edit in the TEK section in the OneDrive version of the letter that Neverley shared. I did not see anything in track changes, but also compared the two side-by-side and couldn't see a difference. Did you save as a separate file that you can send me?
Thanks,
Molly

From: Fordham, Tami
Sent: Thursday, May 03, 2018 9:22 AM
To: Wake, Neverley <wake.neverley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Herbst, John <herbst.john@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>
Subject: RE: Pebble Scoping Comments

Thanks for the reminder, my apologies for the delay. I added one comment in the TEK section. Please let me know if you have any questions. Thanks! Tami

From: Wake, Neverley
Sent: Thursday, May 03, 2018 9:02 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Herbst, John <herbst.john@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble Scoping Comments

Hi, Molly.

Again, apologies for getting back to you past your May 2nd deadline.

I've sent you the link to the One Drive document that I shared with the others since they couldn't access the one for the team. Other than any comments on that shared document, I have not received any emails directly.

Respectfully,
Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Thursday, May 03, 2018 7:49 AM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble Scoping Comments

Good morning, Neverley. I have not received any comments back on the sections of the letter related to potential impacts to tribes and government-to-government consultation. Since the deadline was yesterday and I now need to quickly turn this around and get it to Patty, I am wondering if I should be expecting any comments? I see that you are out of the office, so I will reach out directly to Michelle, JR and Tami, since I believe those are the people you indicated

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you would be coordinating with. However, please do reply if you get this message, so I know the status and whether to expect any comments from you directly.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/3/2018 10:09:30 PM
To: Herbst, John [herbst.john@epa.gov]
Subject: RE: Pebble Scoping Comments

Thank you, JR!

From: Herbst, John
Sent: Thursday, May 03, 2018 10:06 AM
To: Fordham, Tami <Fordham.Tami@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Davis, Michelle V. <Davis.MichelleV@epa.gov>
Subject: Re: Pebble Scoping Comments

Hello Molly,

Thanks for the opportunity to review the draft letter. Below are my suggested edits in blue for the tribal consultation section (pg. 18).

JR

Deliberative Process / Ex. 5

From: Fordham, Tami
Sent: Thursday, May 3, 2018 10:21 AM
To: Wake, Neverley; Vaughan, Molly
Cc: Herbst, John; Davis, Michelle V.
Subject: RE: Pebble Scoping Comments

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Thanks for the reminder, my apologies for the delay. I added one comment in the TEK section. Please let me know if you have any questions. Thanks! Tami

---

From: Wake, Neverley
Sent: Thursday, May 03, 2018 9:02 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Herbst, John <herbst.john@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble Scoping Comments

Hi, Molly.

Again, apologies for getting back to you past your May 2nd deadline.

I've sent you the link to the One Drive document that I shared with the others since they couldn't access the one for the team. Other than any comments on that shared document, I have not received any emails directly.

Respectfully,
Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Thursday, May 03, 2018 7:49 AM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble Scoping Comments

Good morning, Neverley. I have not received any comments back on the sections of the letter related to potential impacts to tribes and government-to-government consultation. Since the deadline was yesterday and I now need to quickly turn this around and get it to Patty, I am wondering if I should be expecting any comments? I see that you are out of the office, so I will reach out directly to Michelle, JR and Tami, since I believe those are the people you indicated you would be coordinating with. However, please do reply if you get this message, so I know the status and whether to expect any comments from you directly.
Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

~~~~~~

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/3/2018 9:05:13 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: RE: Revised Scoping Letter Text

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.


Aquatic Resources Comment Letter Text -MV 050318.docx

<!--[endif]-->

Thank you, Mary Anne. The attached version incorporates your edit and a few more from me, and also adds in your comments emailed on April 17, which were inadvertently omitted from this version.
Thanks,
Molly

From: Thiesing, Mary
Sent: Thursday, May 03, 2018 7:31 AM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Revised Scoping Letter Text

Matt,

This reads well and I had only one (tiny) edit. Molly, you have an enormous job ahead in editing all the parts but the letter is well-documented and thorough, and you have my sincere admiration for how you have pulled everyone together thus far. Please let me know how I can help.

Mary Anne

From: LaCroix, Matthew
Sent: Wednesday, May 02, 2018 9:29 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: Revised Scoping Letter Text

Molly,

I excerpted and revised text from the first part of the scoping comment letter. I tried to make things flow a little more smoothly and reduce duplication in these sections. I may have partly succeeded, but will allow you to be the judge. Where I inserted or edited text within the General Components of NEPA Analysis section, I highlighted the text. I didn't highlight the text in the Aquatic Resources section because I re-worked most of this text. If you have any questions, I will be in the office tomorrow.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office

AMERICAN OVERSIGHT

222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/3/2018 5:34:21 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: FW: Scoping Comments

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

Pebble Project Scoping 041118 draft MAT.docx

<!--[endif]-->

Hi Matt – Thanks so much for the edited text for the letter, and for taking on the huge tasks of consolidating comments. It sounds great, and I am working through it now to try to understand the changes and how it incorporates the many edits from other reviewers. I didn't see the text Mary Anne had suggested in the attached. Though not sure if you incorporated bits and pieces, or determined it was not appropriate to include at this time? Please let me know if this should still be added in.
Thanks,
Molly

From: Thiesing, Mary
Sent: Tuesday, April 17, 2018 2:45 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Dean, Heather <Dean.Heather@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Scoping Comments

DRAFT CONFIDENTIAL –DELIBERATIVE AND PREDECISIONAL

Matt, Palmer, Heather,

I took a look at the scoping comment draft comments. You guys have given it a pretty thorough look—unbelievable given the original turnaround; my congratulations.

I suggested some language in the early part of the draft scoping comments up front. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 Anyway, I thought it would be helpful to spell out very specifically what we wanted them to look at up front.

Thanks.

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

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Unextractable file placeholder

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Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/3/2018 5:08:23 PM
To: Wake, Neverley [wake.neverley@epa.gov]
CC: Herbst, John [herbst.john@epa.gov]; Davis, Michelle V. [Davis.MichelleV@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble Scoping Comments

Hi Neverley,
Thank you so much for sending the link, I will take a look.
Tami, JR and Michelle – if we haven't already spoken, please let me know if you still plan to review and provide comments on the letter. I will appreciate your comments as soon as possible, but by no later than COB Friday, to allow me to make the changes and stay on track for the (many) rounds of internal review yet to go.
Thanks,
Molly

From: Wake, Neverley
Sent: Thursday, May 03, 2018 9:02 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Herbst, John <herbst.john@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble Scoping Comments

Hi, Molly.

Again, apologies for getting back to you past your May 2nd deadline.

I've sent you the link to the One Drive document that I shared with the others since they couldn't access the one for the team. Other than any comments on that shared document, I have not received any emails directly.

Respectfully,
Neverley
(907) 271-3206

From: Vaughan, Molly
Sent: Thursday, May 03, 2018 7:49 AM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble Scoping Comments

Good morning, Neverley. I have not received any comments back on the sections of the letter related to potential impacts to tribes and government-to-government consultation. Since the deadline was yesterday and I now need to quickly turn this around and get it to Patty, I am wondering if I should be expecting any comments? I see that you are out of the office, so I will reach out directly to Michelle, JR and Tami, since I believe those are the people you indicated you would be coordinating with. However, please do reply if you get this message, so I know the status and whether to expect any comments from you directly.
Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/6/2018 10:30:34 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 110618.docx

Hi Ashley –
Thank you for your review. The attached version reflects our discussion today. Please make any additional edits needed. If possible, I would like to send this to Jill by the time I leave here today (2:45 AK time)
Thanks,
Molly

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 4:24 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Molly –

Thanks for the opportunity to review. My calendar was full on Thursday and I was at a conference on Friday so I started to review yesterday.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Wednesday, October 31, 2018 1:58 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Draft comments on first installment of Pebble Pre-DEIS

Hi Ashley,
As we discussed, here are our draft comments on the first round of Pre-DEIS sections distributed by the Corps for our review. I would appreciate if you can review and send me any comments or edits by Tuesday 11/6. Please also feel free to call with any questions about these comments.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/24/2018 7:04:36 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: pebble scoping
Attachments: Pebble Project Scoping 052418 draft.docx



Pebble Project Scoping 052418 ...

-----Original Appointment-----
From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 4:10 PM
To: Vaughan, Molly
Subject: Accepted: pebble scoping
When: Thursday, May 24, 2018 11:00 AM-11:30 AM (UTC-09:00) Alaska.
Where: Molly will call Ashley

Of course! If it's helpful to add anyone else, we can do that, too.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/24/2018 6:56:01 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: pebble scoping
Attachments: ATT60786

Here is a link to the current draft. Want to call me when you're ready – either after you've had a chance to glance through or we can go through it together, your preference.
907-271-1215
Thanks,

Molly



Pebble Project Scoping 052418 draft
usepa-my.sharepoint.com

-----Original Appointment-----
From: Palomaki, Ashley
Sent: Wednesday, May 23, 2018 4:10 PM
To: Vaughan, Molly
Subject: Accepted: pebble scoping
When: Thursday, May 24, 2018 11:00 AM-11:30 AM (UTC-09:00) Alaska.
Where: Molly will call Ashley

Of course! If it's helpful to add anyone else, we can do that, too.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/23/2018 11:32:35 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: pebble scoping
Location: Molly will call Ashley

Start: 5/24/2018 7:00:00 PM
End: 5/24/2018 7:30:00 PM
Show Time As: Tentative

Hi Ashley. Thanks so much for your review of the scoping letter. I only had time for a quick glance at the letter before needing to head home, but will get started on addressing your edits first thing in the morning. It does seem like you posed some questions/ideas for consideration, so I thought I'd go ahead and get some time on our calendars to discuss.
Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/2/2018 9:13:13 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; 'Barbara Butler (Butler.Barbara@epa.gov)' [Butler.Barbara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: RE: Please Review -- Pebble Ch 2 Alternatives
Attachments: Comment spreadsheet blank.docx

Sorry, I forgot to provide the attached blank comment table in my previous email. Please use this format for your comments.
Thanks,
Molly

From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Barbara Butler (Butler.Barbara@epa.gov) <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

Hello All,
I previously provided the draft Chapter 2 as an FYI, but the Corps has now said they will be accepting comments on this chapter, with a due date of 11/23. As you have been assisting in review of the various alternatives screening documents, I would appreciate your review of this section as well. In order to meet the comment deadline including time required for internal management review of the comments, please send me any comments you may have on Chapter 2 **by COB Friday 11/9**. (I apologize that this is a quick turnaround, but hope that you may have already begun looking over the document.)

Chapter 2 and the associated figures are available on the Sharepoint site, but please let me know if you are not able to access them or have any questions.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/2/2018 7:30:08 PM
To: Butler, Barbara [Butler.Barbara@epa.gov]
Subject: RE: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hi Barb – I think it was my mistake for neglecting to add you to the member list for the Sharepoint site when you joined our team. I just accepted your request, so you should have access to everything on our Pebble NEPA Team sharepoint site. However, if there are any more issues, let me know!
Thanks,
Molly

From: Butler, Barbara
Sent: Friday, November 02, 2018 11:27 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hi Molly,

I'm working from home on Monday, so thought I'd spend that day reading up on these. But, I just tried to access the folder and the following screen came up:



When I clicked on the Sharepoint Icon, it said I don't have access. So, I have clicked on request access. I'm not sure though if that's access to the folder, or something else so wanted to email you in case there's something different I should do.

Thanks!
Barb

From: Vaughan, Molly
Sent: Monday, October 29, 2018 6:29 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hello All,
I have created a new folder on the Sharepoint Site where I will begin storing all of the sections of the preliminary Draft EIS as we receive them: "Preliminary Draft EIS Sections Oct-Nov 2018"

AMERICAN OVERSIGHT

In addition to the documents previously shared (the Revised Project Description and powerpoint presentation on Alternatives), this folder now contains the draft text of Chapter 1 and Chapter 2 (with additional folder containing figures). Comments are not requested on these sections, however, they have been provided for our review as context for review of the analysis in Chapter 3 and 4, so I do recommend reading when you get a chance.

As previously mentioned, we will be receiving the sections of Ch. 3 and 4 on a rolling basis between now and the first week of November. A few sections (the intros to 3 and 4 as well as Recreation sections) have already been received and are also available in the new folder.

Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

Sent: 9/17/2018 10:47:41 PM
To: Douglas, Mark [douglas.mark@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: FW: Correct version of the Alternatives memo
Attachments: 09_14_2018_AppendixB_Alts_Development_DRAFT.PDF

Hello All,
The Corps has distributed the updated, more detail, discussion on Alternatives development for cooperating agency review. Per the below email, comments are welcome if we would like to provide any. I would appreciate your review of the attached, if you have time (I realize this is later than originally anticipated). If you do have any comments, please send them to me by COB Wednesday 9/26.

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, September 17, 2018 1:32 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Bill Craig <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Correct version of the Alternatives memo

All,
Attached is the correct version. My apologies for sending previous email.

Attached is the more robust discussion on alternatives. We are not requesting comments, however if your agency has comments and can provide them NO LATER THAN Close of Business October 3, we will incorporate as much as possible. Comments received after October 3 will be considered after the release of the draft EIS.

Thanks

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [no-reply@sharepointonline.com]
Sent: 6/6/2018 2:59:36 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]
CC: Barnhart, Megan [barnhart.megan@epa.gov]
Subject: Barnhart, Megan has shared 'Pebble Project Scoping 060518 draft HQ Review'

Here's the document that Barnhart, Megan shared with you.

Open Pebble Project Scoping 060518 draft HQ Review.docx

See more related to Barnhart, Megan in Delve.



Get the SharePoint mobile app!





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Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 11/9/2018 3:42:14 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Heads up about Pebble preliminary draft EIS chapter review
Attachments: Pebble EIS Outline_2018.3.19 (002).docx

Hi Carrie – I wanted to flag Region 10's heads up about preliminary draft EIS chapters currently at (and coming to) EPA for review. Ashley talked to Allyn and they wanted to see if I would be willing to review. I told her I would do what I could depending on the schedule.

Ashley's email has more detail about the content of the draft chapters. Attached is a draft table of contents. It looks like chapters 3 and 4 are the bulk of the draft EIS. Ashley asked me to what extent others in OGC need to be involved. Region 10 has 28 days from the date a chapter was received to provide comments and I am guessing that a chapter wouldn't come to HQ until the middle (or maybe end) of that time. If you are available for Tuesday's BB call, it might be worth joining to hear the status/timing and provide any thoughts you may have on our internal process.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 4:54 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: FW: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hi Heidi –

I talked to Molly briefly (she's at training) and the most recent table of contents is attached. This was circulated a while ago and may have changed but it's the most recent one that we have.

It looks like our comments are being requested on Chapters 3 and 4 so those are the sections that we will be getting over the next couple of weeks or so. As you decide what you want to review and Dave works through OFA review, we can set up a schedule. We get 28 days to review from the date received.

The sections will be deposited in the folder below.

Currently, Molly has sent me her comments on 3.1, 3.5, 4.1, and 4.5 (attached). She is asking for my review by tomorrow because Jill is out the rest of the week. I am going to chat with Kim this afternoon (our NEPA attorney) but will cc you on my comments to her.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Monday, October 29, 2018 3:29 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: FYI- Pre-Draft Chapters 1 and 2 of Pebble EIS

Hello All,
I have created a new folder on the Sharepoint Site where I will begin storing all of the sections of the preliminary Draft EIS as we receive them: "Preliminary Draft EIS Sections Oct-Nov 2018"

In addition to the documents previously shared (the Revised Project Description and powerpoint presentation on Alternatives), this folder now contains the draft text of Chapter 1 and Chapter 2 (with additional folder containing figures). Comments are not requested on these sections, however, they have been provided for our review as context for review of the analysis in Chapter 3 and 4, so I do recommend reading when you get a chance.

As previously mentioned, we will be receiving the sections of Ch. 3 and 4 on a rolling basis between now and the first week of November. A few sections (the intros to 3 and 4 as well as Recreation sections) have already been received and are also available in the new folder.

Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/6/2018 3:58:09 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]
CC: Wendelowski, Karyn [wendelowski.karyn@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review
Attachments: Pebble Project Scoping 060518 draft.docx

Hi Carrie – I asked the program to give you access to the scoping letter. Attached is a word version. Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Attorney Client / Deliberative Process/Ex. 5

I had asked Karyn if she would be willing to talk this through too given her spruce experience and she graciously agreed.

I will look for some time for the three of us to talk.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 11/14/2018 1:29:06 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Makes sense. Thanks.

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Tuesday, November 13, 2018 4:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Please Review - Pebble Pre-DEIS Sections

I talked to Palmer after our call today. Given the schedule, he and I agreed that it would make sense for him to review the draft sections he identified below and flag for me any discussions he thinks warrant legal review.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Hough, Palmer
Sent: Tuesday, November 13, 2018 4:40 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Molly

I've been slammed and will not be able to turn to this until next week (which is a two-day week for me). I would greatly appreciate being able to look through what is in the sharepoint site and provide any comments I have by COB 11/30. Is that possible?

I'm particularly interested in looking at draft sections on the sharepoint site that deal with the following:

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1) Characterization of the wetlands, streams, and other aquatic resources, including fishery resources, in the project area;
2) Characterization of the likely direct, secondary (indirect), and cumulative impacts to these resources; and
3) Proposed compensatory mitigation for unavoidable impacts to these resources.

Thanks, Palmer

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 3:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

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Molly Vaughan
U.S. Environmental Protection Agency Region 10

AMERICAN OVERSIGHT
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Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 4/24/2018 9:15:42 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Pebble Scoping

No, it conflicts with a Matt briefing on Mingo Logan – possible to reschedule? Thanks.

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Tuesday, April 24, 2018 5:05 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Pebble Scoping

Are you available for this meeting? If not, I can see if Ashley can move it. We have had a few staff level discussions but I think folks want to get some quick reactions from management on a couple of big picture issues. I would be happy to fill you in beforehand so you aren't walking in cold.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com.*

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. Description of the Proposed Project. Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 11/14/2018 12:30:43 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Pebble Options/ **Conference Line/Code / Ex. 6**
Location: R10SeaRA-Room-21Tahoma-VTC/R10-Rooms-Restricted

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 10:00:00 PM
Show Time As: Busy

POC David Allnutt

Patty McGrath
Palmer Hough (HQ-OW – by phone)
Ashley Palomaki
Erik Peterson
Allyn Stern
Cara Steiner-Riley
Michelle P.

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/18/2018 11:09:44 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

Permit Oversight/ NEPA Review Team

Scoping Document

Preliminary EIS review

Alternatives

Site Visits

Schedule

404(c) Team

FOIA

Litigation hold

Representative DeFazio and Senator Carper letter response

Conservative group letter to EPA

External Meetings

External Correspondence

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/18/2018 8:30:45 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

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External Meetings

External Correspondence

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/21/2018 12:56:57 AM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: RE: Bristol Bay Check-in

We are postponing this check-in until 10/9 due to scheduling conflicts.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 4:15 PM
To: Peterson, Erik; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Fordham, Tami; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in
When: Tuesday, September 25, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 12/11/2018 6:52:53 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Pebble Options Hladick and Forsgren Briefing Preparation
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/11/2018 11:30:00 PM
End: 12/12/2018 12:30:00 AM
Show Time As: Busy

Purpose is to provide an opportunity for us as a group to talk again prior to briefing Hladick and Forsgren. Erik is teleworking and will call-in.

Agenda

- Confirm key goals for Hladick and Forsgren briefing.
  - **Deliberative Process / Ex. 5**
- Discuss approach to the briefing itself
- Dry run of key parts of the presentation if appropriate
- Next steps

Bristol Bay - Briefings Folder

→ Join by Phone

Conference Line/Code / Ex. 6

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 11/5/2018 5:29:46 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Discussion USACE MOU / Pebble
Location: Chris' Office

Start: 11/9/2018 9:00:00 PM
End: 11/9/2018 9:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:14:40 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Canceled: Bristol Bay Check-in; Untitled Attachment; Bristol Bay Check-in; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Tentative

Recurrence: (none)

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

Agenda

NEPA preliminary EIS comments

Briefing

FOIA

Information Quality Act Request for Correction or Withdrawal

404c rulemaking

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0ecba75a9f9448d3980a693951129e64-Peterson, Erik]
Sent: 9/18/2018 11:09:44 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Walker, Denise [Walker.Denise@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/23/2018 4:00:00 PM
End: 10/23/2018 5:00:00 PM

Recurrence: (none)

Agenda

NEPA Review

FOIA – E&E News

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM

Recurrence: (none)

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special

AMERICAN OVERSIGHT

expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 12/18/2018 5:00:00 PM
End: 12/18/2018 6:00:00 PM

Recurrence: (none)

Proposed Agenda – let Erik know if you have suggestions

Permit Oversight/ NEPA Review Team

NEPA Preliminary EIS Comments

Public Notice

PLP's draft Compensatory Mitigation Plan

404(c) Team

Hladick and Forsgren 12/12 Briefing

Bristol Bay NEPA and 404 Leadership Update for January 2019

CMS Pebble Limited Partnership

FOIA

Request for Correction or Withdrawal

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/16/2018 5:11:26 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Organizer: R10-OERA Calendar[R10-OERA_Calendar@epa.gov]

From: Kelly, Christine M

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: **Personal Matters / Ex. 6**

Importance: Normal

Subject: Bristol Bay Check-in

Start Time: Tue 7/3/2018 4:00:00 PM

End Time: Tue 7/3/2018 5:00:00 PM

Required Attendees: Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Marcia Combes (Combes.Marcia@epa.gov); Mendelman, Krista; Stern, Allyn; Stern, Allyn; Nalven, Heidi; Peterson, Erik; Hough, Palmer; Vaughan, Molly; LaCroix, Matthew; Nogi, Jill; Skadowski, Suzanne; Lindsay, Andrea; Steiner-Riley, Cara; Szerlog, Michael; Palomaki, Ashley; McGrath, Patricia; Anderson-Carnahan, Linda; Mendelman, Krista; Fordham, TamiAllnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Combes, Marcia; Stern, AllynFordham, Tami; Mendelman, Krista

Optional Attendees: Detwiler, Susan K.; Douglas, Mark

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 4/16/2018 10:48:44 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Holsman, Marianne [Holsman.Marianne@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: Conversation with Anderson-Carnahan, Linda, holsman.marianne@epa.gov

Anderson-Carnahan, Linda 2:42 PM:
Heather Dean is sending an E&E reporter request on Pebble on compensatory mitigation for wetlands your way Marianne.
Holsman, Marianne 2:57 PM:
Good. Thanks!

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/5/2018 8:45:50 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/9/2018 3:48:24 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

AMERICAN OVERSIGHT

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/9/2018 2:47:57 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

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AMERICAN OVERSIGHT

404(c) Team

FOIA

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- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up

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- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

External Correspondence

- Recent activity and approach

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/27/2018 4:59:13 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Holsman, Marianne [Holsman.Marianne@epa.gov]; Hamlin, Tim [Hamlin.Tim@epa.gov]; Kowalski, Edward [Kowalski.Edward@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Opalski, Dan [Opalski.Dan@epa.gov]; Bilbrey, Sheryl [Bilbrey.Sheryl@epa.gov]
Subject: RE: Dunleavy selects Jason Brune for DEC Commissioner

Jason worked for Anglo American as its Government and Public Affairs manager when Anglo was a partner on the Pebble project. I have worked with him during that time and on other issues over the years (e.g., Donlin).

From: Hladick, Christopher
Sent: Tuesday, November 27, 2018 8:51 AM
To: Detwiler, Susan K. <detwiler.susan@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>; Hamlin, Tim <Hamlin.Tim@epa.gov>; Kowalski, Edward <Kowalski.Edward@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>; Bilbrey, Sheryl <bilbrey.sheryl@epa.gov>; R10-AOO Mail Group <R10AOO_Mail_Group@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Dunleavy selects Jason Brune for DEC Commissioner

Yup I know Jason from RDC. His affiliation with Pebble is something I was not aware.

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

From: Detwiler, Susan K.
Sent: Tuesday, November 27, 2018 8:47 AM
To: Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>; Hamlin, Tim <Hamlin.Tim@epa.gov>; Kowalski, Edward <Kowalski.Edward@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>; Bilbrey, Sheryl <bilbrey.sheryl@epa.gov>; R10-AOO Mail Group <R10AOO_Mail_Group@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Dunleavy selects Jason Brune for DEC Commissioner

See Juneau Empire article below. Also see KTVA https://www.ktva.com/story/39540909/dunleavy-announces-environmental-health-commissioners

https://www.juneauempire.com/news/dunleavy-announces-environmental-health-commissioners/

Dunleavy announces environmental, health commissioners

- Monday, November 26, 2018 6:20pm

AMERICAN OVERSIGHT

Alaska Gov.-elect Mike Dunleavy's pick to lead the Department of Environmental Conservation has a resource development background. His pick for health commissioner is a workforce development company executive.

Dunleavy, a Republican former state senator, in a statement said the status quo "came to a screeching halt" with his election. He said his appointees with help deliver state services in "innovative ways.

Dunleavy takes office Dec. 3. Among the appointments he announced Monday were Jason Brune as Environmental Conservation commissioner and Adam Crum as health commissioner.

Brune is a former executive director of the Resource Development Council who worked in public affairs for a former partner in the Pebble Mine project. He most recently has worked for the Alaska Native corporation Cook Inlet Region, Inc., as senior director of land and resources.

Crum's bio, released by Dunleavy's transition, says he has degrees in psychology and public health. Crum told The Associated Press he is not a "health care policy guy" but is experienced in putting together and leading teams and working on projects.

He said there are talented people working in the state Department of Health and Social Services.

Crum, who said he applied for the job, is executive vice president with Northern Industrial Training LLC.

In his new role, he said a focus will be on "people, not programs," to make sure services are provided to those who need them most. Dunleavy has said he wants to review the state's Medicaid program to see if it's sustainable.

Becky Hultberg, president and CEO of the Alaska State Hospital and Nursing Home Association, said it's a bit unusual to hire someone who hasn't worked directly in the industry. But she said the department is big and complex and requires a leader with strong management skills. If Crum has those skills and surrounds himself with people who understand the complexities of health care, she said he could be a strong leader.

"I think we need to give him the benefit of the doubt," said Hultberg, a former state commissioner of Administration who remembers being called inexperienced. She said her agency got things done because of the talent on her team.

Dunleavy named Jonathan Quick his pick for commissioner of the Department of Administration and Donna Arduin as his budget director.

Arduin has worked with other Republican governors across the country, including as budget director for former Florida Gov. Jeb Bush.

The three commissioner picks are subject to legislative confirmation.

This is an Associated Press article by Becky Bohrer.

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [gahner.pamela@epa.gov]
Sent: 11/14/2018 12:30:43 AM
To: Allnutt, David [Allnutt.David@epa.gov]

Subject: Pebble Options
Location: Chris' Office

Start: 12/7/2018 9:30:00 PM
End: 12/7/2018 10:30:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/22/2018 10:37:38 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 10/23/2018 4:00:00 PM
End: 10/23/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

NEPA Review

FOIA – E&E News

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: R10-ORA [R10-ORA@epa.gov]
Sent: 11/23/2018 5:19:29 PM
To: Conference Line/Code / Ex. 6 R10-RAs-Ste-Eqpt [R10SeaRA-CfLn Conference Line/Code / Ex. 6 @epa.gov]; R10-ET Mail Group [R10ET_Mail_Group@epa.gov]

Subject: Region 10 Executive Team Meeting
Attachments: 11262015 ET Agenda.pdf
Location: Room Change - 21 Shoshone / VTC w/Ops Offices

Start: 11/26/2018 9:00:00 PM
End: 11/26/2018 10:00:00 PM
Show Time As: Tentative

Conference Line Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

R10 Executive Team Meeting Agenda

Monday, November 26, 2018 1:00pm – 2:00pm
ET Conference Room (21 Tahoma)
Chair: Chris Hladick/Michelle Pirzadeh

Time:	1:00 PM to 1:15 PM
Topic:	RA/DRA Download
Presenter:	Chris Hladick/Michelle Pirzadeh
Time:	1:15 PM to 2:00 PM
Topic:	ET Roundtable Discussion
Presenters:	All ET Members

RA/DRA Whereabouts & Meetings with External Partners for the week of Nov 26, 2018

Monday	*Chris* *Michelle*	**Non-Responsive - Unrelated to Bristol Bay/Pebble Mine**
Tuesday	*Chris* *Michelle*	
Wednesday	*Chris* *Michelle*	
Thursday	*Chris* *Michelle*	
Friday	*Chris* *Michelle* *Acting RA*	

RA/DRA Whereabouts & Meetings with External Partners for the week of Dec 3, 2018

Monday	*Chris* *Michelle* *Acting RA*	**Non-Responsive - Unrelated to Bristol Bay/Pebble Mine**
Tuesday	*Chris* *Michelle* *Acting RA*	
Wednesday	*Chris* *Michelle* *Acting RA*	
Thursday	*Chris* *Michelle* *Acting RA*	
Friday	*Chris* *Michelle*	In all day; Pebble Options Meeting Non-Responsive - Unrelated to Bristol Bay/Pebble Mine

Upcoming Events:

Dec 10:	**Non-Responsive - Unrelated to Bristol Bay/Pebble Mine**
Dec 11:	
Dec 11-13:	

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/21/2018 11:31:35 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Bristol Bay - High Level Briefing Preparation #2
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 10:00:00 PM
Show Time As: Tentative

Not sure if David will want/need to participate in this 2nd briefing preparation meeting. Just getting it on our calendars for now. Agenda TBD based on 1st meeting.

My suggestion is that we use the following briefings folder to collaborate.

Bristol Bay - Briefings Folder

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/21/2018 11:27:27 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Bristol Bay - High Level Briefing Preparation
Location: David's Office and on the phone

Start: 11/28/2018 7:15:00 PM
End: 11/28/2018 8:00:00 PM
Show Time As: Tentative

Agenda

- Reason for briefing
- For whom
- Main topics
- Timing
- Next steps

I've created a folder to compile relevant information. If you have useful documents (like briefing papers), scripts or previous presentations etc., then I suggest adding them to the briefings folder at the link below. Ok for it to be too many or imperfect for now, goal is to get relevant source material in one place. We'll organize it better as we go along.

Bristol Bay - Briefings Folder

→ Join by Phone

Conference Line/Code / Ex. 6

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 8:15:10 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 8:14:12 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 8:13:08 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 7:58:03 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 10/26/2018 8:24:17 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: OERA shout out

Thanks for the recognition.

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Allnutt, David
Sent: Thursday, October 25, 2018 5:29 PM
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: OERA shout out

Sent bcc to
all OERA staff

OERA – After a strong start last spring, Linda and I have been delinquent recently in sharing individual and team shout outs with the office.

To help get us back on track, I wanted to share with the office my gratitude (previously expressed orally to the team) for the Bristol Bay NEPA team's efforts earlier this year. In particular, I wanted to call out the group of folks who worked together on the Pebble Mine NEPA scoping letter that EPA submitted this past summer to the Corps of Engineers.

In May and June, the team worked tirelessly to develop the Region's recommendations at this very early stage in the NEPA process on a range of technical- and policy-related topics including water quality, air quality, aquatic resource protections, traditional ecological knowledge, tribal consultation, climate adaptation, financial assurance, mining geochemistry, seismic stability, dredged material management, and much more. This was a high-profile letter, and the team did a great job pulling together, refining, and defending two dozen pages of technically sound comments for this very complex project. Kudos to OERA's own Molly Vaughan, Tim Maley, Chris Eckley, Mark Douglas, Mary Anne Thiesing, Chris Meade, Justine Barton, and Jill Nogi. Others on the team whose technical, policy, legal, and communications expertise helped shape the letter include colleagues outside of OERA: Patty McGrath, Jay McAlpine, Ashley Palomaki, Suzanne Skadowski, Heidi Nalven (OGC), and Palmer Hough (OW). Thanks to all of you for helping to ensure that the environmental review for this project will be robust and based on sound science!

Now that I'm back on track, be on the lookout for additional shout outs in the coming weeks and months.

<< OLE Object: Picture (Device R. David Allnutt, Director

AMERICAN OVERSIGHT

Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >> << OLE Object: Picture (Device Independent Bitmap) >>

Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Fiedorczyk, Bryan [Fiedorczyk.Bryan@epa.gov]
Sent: 10/26/2018 4:59:03 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: OERA shout out
Attachments: ATT22343

Thanks for sending this out, David – and including "shout out" in the title and bccing the Internal Comms team!

Cheers!
Bryan

Bryan Fiedorczyk | Program Analyst | Regional Administrator's Division | U.S. EPA Region 10
1200 Sixth Avenue, Suite 155 ;Mail Stop RAD-121-1 | Seattle, WA 98101
206.553.0506 | fiedorczyk.bryan@epa.gov

October is
Children's Health Month
Prime time for Children's Environmental Health Training!



How? Go to InfoPage, click **eLearning**, click the eLearning icon, enter regular login info, search **Children's Environmental Health Training**, then **Launch**.

Treat? Send your completion certificate to me by email or by mail to RAD-121-1 to get a tasty treat.

From: Allnutt, David
Sent: Thursday, October 25, 2018 5:29 PM
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: OERA shout out

Sent bcc to
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AMERICAN OVERSIGHT

geochemistry, seismic stability, dredged material management, and much more. This was a high-profile letter, and the team did a great job pulling together, refining, and defending two dozen pages of technically sound comments for this very complex project. Kudos to OERA's own Molly Vaughan, Tim Maley, Chris Eckley, Mark Douglas, Mary Anne Thiesing, Chris Meade, Justine Barton, and Jill Nogi. Others on the team whose technical, policy, legal, and communications expertise helped shape the letter include colleagues outside of OERA: Patty McGrath, Jay McAlpine, Ashley Palomaki, Suzanne Skadowski, Heidi Nalven (OGC), and Palmer Hough (OW). Thanks to all of you for helping to ensure that the environmental review for this project will be robust and based on sound science!

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R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/16/2018 8:06:38 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/16/2018 8:03:49 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

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Agenda

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- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

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→ Join by Phone

Conference Line/Code / Ex. 6

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Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/31/2018 8:55:17 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]
Subject: Bristol Bay Check-in Agenda - 8/1/18

Hello,

Tomorrow at 10 am PST, 8/1/18, we will have a Bristol Bay check-in with Linda Anderson-Carnahan. Linda is acting for David Allnutt while he is out.

The purpose of these bi-weekly meetings is for the two Bristol Bay Teams - the Permit Oversight/NEPA Review Team and the 404(c) Team – to check-in with each other and with regional management. Agenda items are listed below.

Agenda

Site visit

Review of preliminary EIS deliverables

Congressman De fazio and Senator Carter CMS

AOO Director Briefing

Henry Darwin Briefing

Gosar et al./Western Caucus Response

PLP legal memo OGC project

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 4:15 PM
To: Anderson-Carnahan, Linda; Peterson, Erik; Allnutt, David; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Fordham, Tami; Mendelman, Krista; Stern, Allyn; Anderson-Carnahan, Linda
Cc: Detwiler, Susan K.
Subject: Bristol Bay Check-in

AMERICAN OVERSIGHT

When: Wednesday, August 01, 2018 10:00 AM-10:30 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 4/11/2018 1:58:29 AM
To: Allnutt, David [Allnutt.David@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Lessons from the Donlin Review
Attachments: A **Deliberative Process / Ex. 5**

David and Molly,

Good evening. I am planning to talk through the attached document during tomorrow's Bristol Bay check-in. David, I hope this is somewhat close to what you had in mind. This discussion can take five minutes or much longer, depending on how deep we want to get into the individual issues, and the time allocated. It should, at a minimum, be useful for stimulating follow-up discussions. I was hoping to share the document earlier today, but circumstances prevented me from finishing it until just now. Until tomorrow.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/21/2018 12:42:52 AM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: Bristol Bay Check-in 9/25/18 - Cancel?

Ok, thank you. HQ decided not to respond to the Competitive Enterprise Institute and the Congressional letters are essentially all awaiting signature, no more staff or regional input.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Allnutt, David
Sent: Thursday, September 20, 2018 5:41 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Bristol Bay Check-in 9/25/18 - Cancel?

Erik – fine with me to postpone. I think Molly is out that day as well. Is anyone looking for our input on the Congressional letters or the CMS from Competitive Enterprise Institute? Or maybe those are done?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Peterson, Erik
Sent: Thursday, September 20, 2018 4:35 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: Bristol Bay Check-in 9/25/18 - Cancel?

David,

I propose we cancel the check-in for 9/25 because there aren't pressing major updates for either team beyond what is in the 9/7 update I sent before (enclosed) and several key staff are out (myself and Palmer) tentative (Ashley), or just returning from leave (Patty). It seems like a more well attended check-in two weeks later could be more valuable.

What do you think? I'm working until about 6 pm and am currently thinking to cancel based on the reasons above before the end of the day. I'll wait until 5:30 before doing so in case you disagree and would like to have the check-in.

AMERICAN OVERSIGHT

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Peterson, Erik
Sent: Friday, September 07, 2018 3:17 PM
To: Fordham, Tami <Fordham.Tami@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Cc: Detwiler, Susan K. <detwiler.susan@epa.gov>; Chu, Rebecca <Chu.Rebecca@epa.gov>
Subject: Bristol Bay Check-in 9/11/18 - Cancellation and Update

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation
- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- **Deliberative Process / Ex. 5**

Alternatives

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas

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- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule
- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

404(c) Team

FOIA
- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response
- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA
- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings
- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file
- An OGC clerk has completed a summary of court decisions on challenges to agencies withdrawing proposals.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 4:15 PM
To: Fordham, Tami; Peterson, Erik; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Mendelman, Krista; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in

AMERICAN OVERSIGHT

When: Tuesday, September 11, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 4/10/2018 3:34:35 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: BB check-in

Hi Patty,
When you send highlights or updates to David on the project, please also copy me as well as the folks you have below, so that I have the same updates. I appreciate it!
Thanks – Jill

From: McGrath, Patricia
Sent: Friday, April 06, 2018 2:17 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check-in

Hi David-

Personal Matters / Ex. 6 Molly will be providing NEPA/permitting input into the check-in call on Wednesday.

Highlights for this week include:

- Corps extended scoping period to now end on June 29
- Suzanne posted a blurb on our BB site about the EIS and link to Corps' Pebble website. I informed the Corps of this.
- Additional scoping meeting added in New Stuyahok.
- Most cooperating agencies are not participating in the scoping meetings. Exception is the State who will be at the meetings next week. BSEE is attending the Homer and Anchorage meeting. The Corps is providing a conference line. Molly, Neverly, or myself will be calling into the scoping meetings to listen in (except for Homer, Anchorage, and Dillingham). Molly will attend the Anchorage meeting.
- Molly and I had a call with ORD this week. I expect we will get assistance from ORD on fisheries, transportation, and hydrology (though need to verify with hydrologists)
- Molly is off to a good start on our scoping letter
- Based on a call with the Corps today, we will be setting up a 404 strategy meeting between EPA and Corps in May. I will work on that (attendees, agenda, timing, internal strategy) when I return.

Have a good week.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/22/2018 7:50:47 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Bristol Bay Check-in

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn; Douglas, Mark
Subject: Bristol Bay Check-in
When: Wednesday, May 23, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

Meeting agenda:

NEPA/permitting team
- Welcoming Mark Douglas
- Scoping letter status
- PLP project description updates
- June 6 cooperating agency meeting
- DNR announcement regarding Bristol Bay Advisory Group

404c team
- FOIA
- PLP response
- Congressional Western Caucus response
- HAC QFR response
- FYI correspondence

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [Frazer.Brian@epa.gov]
Sent: 6/6/2018 7:36:38 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
CC: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Knight, Kelly [knight.kelly@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Pebble mine brief

Rob,

Yes, I would like to be on the call and will be available this Friday.

Thanks.

bf

-----Original Message-----
From: Tomiak, Robert
Sent: Wednesday, June 06, 2018 3:09 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>
Cc: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Pebble mine brief

Brian,

David and I are scheduled to discuss the option of a joint project brief to OW and OP.

Would you like to join our Friday 11am coord call? Or plug anyone else in from OW....?

Thanks, Rob

AMERICAN OVERSIGHT

Message

From: Duncan, Bruce [Duncan.Bruce@epa.gov]
Sent: 5/4/2018 3:55:13 PM
To: Burden, Susan [Burden.Susan@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
CC: LaVay, Maggie [LaVay.Maggie@epa.gov]; Blank, Valerie [Blank.Valerie@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Walton, Barb [Walton.Barb@epa.gov]; Hartzell, Evelyn [hartzell.evelyn@epa.gov]
Subject: RE: ORD support for Pebble EIS
Attachments: FW: NHEERL support for Pebble EIS

Thank you Susan;

We very much appreciate your timely response and inreach within ORD on our high priority regional request. I have copied Patty McGrath (Lead), David Allnutt (Office Director) and Jill Nogi (Unit Manager) in our Office of Environmental Review and Assessment.

Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

- Although no hydrologist has been identified, Steve Kraemer (NERL) has been suggested as a possible option.

- Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in areas not mentioned in the original request that might come up in the future, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0216 | **duncan.bruce@epa.gov**

AMERICAN OVERSIGHT

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

AMERICAN OVERSIGHT

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low	

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

AMERICAN OVERSIGHT

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	**Summary of Assistance Requested**	**ORD staff requested**
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Ringold, Paul [Ringold.Paul@epa.gov]
Sent: 5/3/2018 1:45:50 AM
To: Burden, Susan [Burden.Susan@epa.gov]
CC: Thornhill, Alan [thornhill.alan@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]; Fisher, Bill [Fisher.William@epa.gov]; Saterson, Kathryn [Saterson.Kathryn@epa.gov]; Walton, Barb [Walton.Barb@epa.gov]
Subject: FW: NHEERL support for Pebble EIS

Importance: High

Hi Susan,

I wanted to follow up on some fine points associated with our offer to make Joe available to assist with the Pebble mine EIS.

The first is that I would hope that we could agree with R10 on fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

The second is to inquire as to the possibility of providing funds that could be used to assist the multiple ORD technical experts in keeping engaged with the EIS process. This may be particularly important as they will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of the time and effort of the ORD experts.

If you could convey these queries directly the R10 or identify someone in the Region with whom I could consult on these queries, I would be most appreciative.

Thanks for your assistance, Susan.

Paul L. Ringold, Ph.D.
Supervisory Biologist, Chief
Freshwater Ecology Branch
Western Ecology Division
National Health and Environmental Effects Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
200 SW 35th Street
Corvallis, OR 97330

and

Leader, Final Ecosystem Goods and Services Task (SHC 2.61.2)
Community-Based Ecosystem Goods and Services Project (SHC 2.61)
Sustainable and Healthy Communities Research Program

Phone: 541-754-4565
ringold.paul@epa.gov

From: Walton, Barb
Sent: Tuesday, May 01, 2018 10:20 AM

AMERICAN OVERSIGHT

To: Burden, Susan <Burden.Susan@epa.gov>
Cc: Thornhill, Alan <thornhill.alan@epa.gov>; Ringold, Paul <Ringold.Paul@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>; Fisher, Bill <Fisher.William@epa.gov>; Saterson, Kathryn <Saterson.Kathryn@epa.gov>
Subject: FW: NHEERL support for Pebble EIS
Importance: High

Susan,
I'm pleased to confirm that Dr. Ebersole, his Branch Chief, and Division Director have approved Joe's participation in the Pebble Mine EIS activity for up to 10% of his time for up to two years.

Should the demand for his time exceed this, Drs. Ringold and Thornhill would like to re-evaluate the demand to ensure that Joe is not overcommitted.

This commitment does not include travel funds. Should travel be required, alternative sources of travel funds will be needed.

Thank you for the opportunity to have NHEERL staff contribute to this important work of the Agency.

Joe would appreciate receiving any supplemental info on Pebble Mine germane to the EIS.

Best regards,
~Barb

From: Walton, Barb
Sent: Friday, April 27, 2018 6:30 AM
To: Ringold, Paul <Ringold.Paul@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Thornhill, Alan <thornhill.alan@epa.gov>; Fisher, Bill <Fisher.William@epa.gov>; Burden, Susan <Burden.Susan@epa.gov>; Saterson, Kathryn <Saterson.Kathryn@epa.gov>; Rashleigh, Brenda <Rashleigh.Brenda@epa.gov>
Subject: RE: ORD support for Pebble EIS
Importance: High

Paul,
Technical expertise of Dr. Joe Ebersole has been requested through the Office of Science Policy for his knowledge of fisheries and related matters of interest for the Pebble Mine EIS. The attached technical support request form has more information on the scope of the project and anticipated time needed.

Please let me know if Joe is available to assist on this project and if you know of any other individuals with expertise relevant to the Pebble Mine EIS who might be willing to assist.

A speedy RSVP would be much appreciated! ☺
~Barb

Barbara T. Walton, Ph.D., D.A.B.T, M.B.A.
Assistant Laboratory Director
National Health and Environmental Effects Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina, 27711
919-541-7776; Cell: 919-943-0996
walton.barb@epa.gov

AMERICAN OVERSIGHT

From: Burden, Susan
Sent: Friday, April 27, 2018 8:32 AM
To: Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Riddick, Lee <Riddick.Lee@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>
Cc: Stroup, Gene <Stroup.Gene@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi all,

As we discussed yesterday, attached is the R10 request for ORD technical support on the Pebble Mine EIS. Information about the EIS and the anticipated workload can be found in the attached file. The attached file also includes the type of expertise needed, which is copy and pasted below. Please note that R10 has requested specific ORD people for specific areas of expertise.

Please let me know if the requested ORD people are available for this project, or if there are other technical experts available by COB, May 3. This is a high-priority for R10, and we would like to get a response to R10 by the end of next week.

Please let me know if you have any questions. Thank you!

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	**Joe Ebersole**
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist. Note from Susan: Jason Todd and Jim Wigington worked on the hydrology part. Jason is now with OCSPP and Jim has retired. Perhaps Steve Kraemer (NERL) would be a good option.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

AMERICAN OVERSIGHT

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>

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Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	

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Project Milestones and Due Date
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No
If yes, please list the names of the scientists.
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group	Joe Ebersole

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	Review and provide comments on fisheries sections of the EIS	
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Gahner, Pamela [gahner.pamela@epa.gov]
Sent: 6/5/2018 9:11:22 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: RA drop in

I just tried calling Chalon Harrington and got her Voicemail so I will let you know what she says when she calls me back.

Pam

From: Allnutt, David
Sent: Tuesday, June 5, 2018 1:22 PM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: RA drop in

Pam – could you check with the Pebble POC? I'm primarily attempting to determine whether ORC should be included.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Gahner, Pamela
Sent: Tuesday, June 05, 2018 1:03 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: RA drop in

I do not know of anyone else accompanying him.

From: Allnutt, David
Sent: Tuesday, June 5, 2018 12:58 PM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RE: RA drop in

Yes – I knew it was me and Chris on the EPA side. My question was whether anyone would be accompanying Tom on behalf of Pebble.

R. David Allnutt, Director
Office of Environmental Review and Assessment

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U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Gahner, Pamela
Sent: Tuesday, June 05, 2018 12:21 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: RA drop in

Hi David,
Sorry I missed you. Thursday meeting is with Tom Collier from Pebble, Chris and you. Michelle Pirzadeh is the one who said I should add you to the invite. I know Tom is in Seattle attending other meetings and I do not know if anyone else is accompanying him. If there's someone else, EPA, I should invite please let me know.

Pam
X2598

From: Fraser, Michelle
Sent: Tuesday, June 5, 2018 11:46 AM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RA drop in

Hi Pam,

David Allnut stopped by wanting to check in regarding Chris' meeting on Thursday with the Pebble Limited Partnership. He specifically wanted to know who all was on the invite.

Thanks,

Michelle Fraser
Office of Compliance and Enforcement
(206) 553-4269
fraser.michelle@epa.gov

EPA Region 10
1200 Sixth Avenue
Suite 155, M/S: OCE-101
Seattle, WA 98101-3188

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/6/2018 6:02:19 PM
To: Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: BB Funds Recommendation
Attachments: Paralegal Contract Support for FOIA.DOCX; July 2017 Justification of Critical Need - FOIA services.pdf

Michael,

David, Ashley, Patty and I - and others involved in Bristol Bay work - have the following recommendation for you to share with HQ regarding your forecasted Bristol Bay funding request.

Deliberative Process / Ex. 5

Thank you for continuing to track this issue and please let David, Patty, Ashley or I know if you have any questions.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Allnutt, David
Sent: Friday, April 06, 2018 9:58 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: FOIA Services Update

Eric – the latest on FOIA service contract. I think our $10-15k estimate remains valid.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155

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Seattle, Washington 98101-3140
(206) 553-2581

From: Tyree, James
Sent: Friday, April 06, 2018 9:52 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Young, Margo <Young.Margo@epa.gov>; Kercheval, Stephanie <Kercheval.Stephanie@epa.gov>; Whitmire, Yvette <whitmire.yvette@epa.gov>; Ripley, Denise <Ripley.Denise@epa.gov>; Lindsay, Nancy <Lindsay.Nancy@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Denno, Donald <Denno.Donald@epa.gov>
Cc: Clever, Kathleen <clever.kathleen@epa.gov>; Beery, Daniel <beery.daniel@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Dalrymple, Anne <Dalrymple.Anne@epa.gov>
Subject: FOIA Services Update

To all,

Here is the latest on our efforts to obtain longer term contract FOIA support for complex FOIAs with voluminous records:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Next Steps:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please let me know if you have any questions/comments.

James T. Tyree
Information Resource Manager
Information Services Unit, Office of Management Programs
US EPA Region 10
Phone: 206-553-1777
Mobile: 206-245-8602

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [douglas.mark@epa.gov]
Sent: 6/5/2018 7:18:53 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: Bristol Bay Check-in

David,

Patty, Molly and I will be in the cooperating agency meeting tomorrow starting at 8am.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Allnutt, David
Sent: Tuesday, June 05, 2018 10:59 AM
To: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

Team – are we holding our regular check-in tomorrow? I know that Erik and Patty (and perhaps others) are out tomorrow. There are a couple of topics that I'd like to update the group on if possible.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Appointment-----
From: R10-OERA Calendar

AMERICAN OVERSIGHT

Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn; Douglas, Mark
Subject: Bristol Bay Check-in
When: Wednesday, June 06, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/6/2018 2:03:40 PM
To: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
Subject: RE: BB website - EIS info

Great. Thanks Suzanne

From: Skadowski, Suzanne
Sent: Friday, April 6, 2018 6:11 AM
To: Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>
Subject: RE: BB website - EIS info

Hi Team,

We've updated our Bristol Bay webpage to include an intro and link to the Corps' permit review and EIS process.

https://www.epa.gov/bristolbay

Patty, we had to shorten your text due to space limitations, but I think this is fine, we directing folks to the Corps to get all the info.

Thank you!

Suzanne Skadowski
Public Affairs | Media Relations Specialist
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Twitter: @EPAnorthwest
Facebook: @eparegion10

From: Skadowski, Suzanne
Sent: Thursday, April 5, 2018 9:42 AM
To: Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: BB website - EIS info

Thank you Patty and David!

I'll get our BB updated with this info this week.

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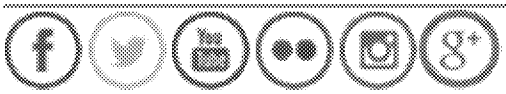
Suzanne Skadowski
Public Affairs | Media Relations Specialist
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Twitter: @EPAnorthwest
Facebook: @eparegion10

From: Allnutt, David
Sent: Thursday, April 5, 2018 9:08 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: RE: BB website - EIS info

Patty – this language looks good.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581



From: McGrath, Patricia
Sent: Wednesday, April 04, 2018 6:01 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Subject: BB website - EIS info

Hi David-
Taking into account suggested changes from Molly, Jill and Eric, below is the recommended blurb related to the EIS for EPA's Bristol Bay website.
Please let me know if you have additional edits.
thanks
Patty

Environmental Impact Statement Process

The U.S. Army Corps of Engineers received a Department of Army permit application and project description from the Pebble Limited Partnership on December 22, 2017 and has determined that an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) is needed before it makes a decision on the permit application. The Corps is the lead agency in managing the NEPA process and developing the EIS. EPA is a cooperating agency in the EIS process, at the invitation of the Corps. The EIS will describe the proposed project and project alternatives, evaluate the potential impacts of the project and alternatives on the physical, biological, and social environment, and discuss measures to mitigate impacts. The purpose of the NEPA process is to help public officials make informed decisions that

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are based on an understanding of environmental consequences and take federal agency actions that protect, restore, and enhance the environment.

The Corps initiated public scoping of the EIS on April 1, 2018. Below is a link to the Corps EIS website for more information and documents pertaining to the Department of Army permit application and the EIS process.
https://www.pebbleprojecteis.com/#/

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/16/2018 11:56:04 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]
Subject: RE: Bristol Bay Check-in

Hello,

I'm writing to cancel the 7/18 Bristol Bay Check-in on behalf of the EPA Bristol Bay 404(c) Team and Permit Oversight/NEPA Review Team. See the updates below for awareness of our ongoing Bristol Bay related activities.

Updates

Linda Anderson-Carnahan is acting w **Personal Matters / Ex. 6** We will continue Bristol Bay Check-ins with Linda during this time period. Our next scheduled check-in with Linda is for 30 minutes starting at 10 am PST on August 1st.

The 404(c) team is managing equity reviews and preparing non-equities documents for release for the Trustees for Alaska FOIA.

The Permit Oversight/NEPA Review team is reviewing preliminary EIS documents.

An EPA staff visit to the Pebble mine site is planned for 7/30 and 7/31.

A Pebble overview briefing for the new Alaska Operations Office Director, Sue Detwiler, is scheduled for July 23rd in Seattle.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, June 25, 2018 1:03 PM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Marcia Combes (Combes.Marcia@epa.gov); Mendelman, Krista; Stern, Allyn
Cc: Douglas, Mark; Detwiler, Susan K.
Subject: FW: Bristol Bay Check-in

AMERICAN OVERSIGHT

When: Wednesday, July 18, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

-----Original Appointment-----
From: Kelly, Christine M **On Behalf Of** R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Marcia Combes (Combes.Marcia@epa.gov); Mendelman, Krista; Stern, Allyn
Cc: Douglas, Mark; Detwiler, Susan K.
Subject: Bristol Bay Check-in
When: Wednesday, July 18, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/11/2018 5:53:40 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Sent: 5/8/2018 9:11:17 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Mendelman, Krista [Mendelman.Krista@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: proposed topics for Natl Wetland meeting round table (I have 9 min).

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Ind. Projects

Pebble: proposed CWA 404(c) determination left in place; Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 Currently looking at application under the NEPA review. Time table has ROD issued in spring 2020. COE informed EPA they will only consider EPA comments regarding compliance with NEPA guidelines (we will send comments on all impacts we identify, e.g. impacts to groundwater, climate change). 90 days to submit NEPA scoping comments.

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 6/13/2018 3:54:12 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: Fwd: Top level talking points on Pebble

Anything you want me to forward

Sent from my iPhone

Begin forwarded message:

> **From:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> **Date:** June 13, 2018 at 8:49:35 AM PDT
> **To:** "Goodin, John" <Goodin.John@epa.gov>, "Hough, Palmer" <Hough.Palmer@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>, "Kaiser, Russell" <Kaiser.Russell@epa.gov>
> **Cc:** "Hladick, Christopher" <hladick.christopher@epa.gov>
> **Subject: Top level talking points on Pebble**
>
> John,
> I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.
>
> Lee
>
> **D. Lee Forsgren**
> Deputy Assistant Administrator
> Office Of Water
> Environmental Protection Agency
> 1200 Pennsylvania Avenue, NW
> Room 3219 WJCE
> Washington, DC 20460
> Phone: 202-564-5700
> Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Message

From: Szerlog, Michael [Szerlog.Michael@epa.gov]
Sent: 4/17/2018 2:14:28 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: BB Funds Recommendation

Erik,

Thanks. I will add this funding need to the list and get back to HQ with our final number.

Thanks

Michael J. Szerlog, Acting Director
Regional Administrator's Division (RAD)
Office of the Regional Administrator
Environmental Protection Agency
1200 Sixth Avenue, Suite 155, Mailstop RAD 202
Seattle, Washington 98101
(206) 553-0279
szerlog.michael@epa.gov

From: Peterson, Erik
Sent: Friday, April 06, 2018 11:02 AM
To: Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB Funds Recommendation

Michael,

David, Ashley, Patty and I - and others involved in Bristol Bay work - have the following recommendation for you to share with HQ regarding your forecasted Bristol Bay funding request.

Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

Thank you for continuing to track this issue and please let David, Patty, Ashley or I know if you have any questions.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Allnutt, David
Sent: Friday, April 06, 2018 9:58 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: FOIA Services Update

Eric – the latest on FOIA service contract. I think our $10-15k estimate remains valid.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Tyree, James
Sent: Friday, April 06, 2018 9:52 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Young, Margo <Young.Margo@epa.gov>; Kercheval, Stephanie <Kercheval.Stephanie@epa.gov>; Whitmire, Yvette <whitmire.yvette@epa.gov>; Ripley, Denise <Ripley.Denise@epa.gov>; Lindsay, Nancy <Lindsay.Nancy@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Denno, Donald <Denno.Donald@epa.gov>
Cc: Clever, Kathleen <clever.kathleen@epa.gov>; Beery, Daniel <beery.daniel@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Dalrymple, Anne <Dalrymple.Anne@epa.gov>
Subject: FOIA Services Update

To all,

Here is the latest on our efforts to obtain longer term contract FOIA support for complex FOIAs with voluminous records:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Next Steps:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please let me know if you have any questions/comments.

James T. Tyree
Information Resource Manager
Information Services Unit, Office of Management Programs
US EPA Region 10
Phone: 206-553-1777
Mobile: 206-245-8602

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/17/2018 12:59:31 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: US Army Corps Pebble EIS website

All-

Just FYI that the Corps continues to add documents to the Pebble EIS website.
For example, public scoping comments are being loaded (so far there are 487 comments).

https://pebbleprojecteis.com/publiccomments/list

The Project Library section includes the Pebble EBD, preliminary JD, the BB Assessment and other information.

https://pebbleprojecteis.com/documents/library

Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/12/2018 3:39:43 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: RE: Bristol Bay Check-in

Meeting agenda:

- Status of scoping letter
- Cooperating agency meeting
- Site travel
- QFR
- PLP response
- Forsgren and Hladick meeting
- Western Caucus response

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 10:13 AM
To: Allnutt, David; Anderson-Carnahan, Linda; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Szerlog, Michael
Cc: Douglas, Mark; Stern, Allyn; Douglas, Mark; Stern, Allyn
Subject: Bristol Bay Check-in
When: Tuesday, June 12, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

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Message

From: Douglas, Mark [douglas.mark@epa.gov]
Sent: 11/20/2018 8:09:56 PM
To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: PLP Mailer

David,

As an FYI, I'm sending you a mailer from PLP sent to my home. Others in the office, but not all, have received the same information so it appears to be broad effort to Alaskans. There is even a chance to win a tour of the mine site.

You will receive it via interoffice mail next week.

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

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Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/29/2018 11:16:06 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: Bristol Bay Check-in Agenda 7/3/18

Agenda

- Scoping letter
- Site visits
- Review of preliminary EIS deliverables
- Pruitt 404(c) memo
- Status of responses to Congress
- FOIA

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 9/12/2018 8:20:27 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Herbst, John [herbst.john@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
Subject: FW: BB Meeting Notes
Attachments: BBEDC Meeting Notes 9.12.2018 RLK.DOCX

Folks

Lee F met with some BB folks today (Norm Van Vactor and Robin Samuelsen, BBEDC). The notes are attached. The most noteworthy point is that Lee indicated that the Acting Administrator has recused himself from the decision-making process re Pebble and that action will be overseen by Henry Darwin.

I was not aware of this.

-Palmer

From: Kaiser, Russell
Sent: Wednesday, September 12, 2018 3:49 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: BB Meeting Notes

Palmer – attached are my notes from the BB Meeting, and they are similar for the meeting that occurred yesterday. Once we get the list of attendees from Ann, I can make minor tweaks to document that one as well. Let me know if you have any questions. Russ

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

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EPA Deputy AA Meeting with BBEDC
Topic: Bristol Bay
Meeting Date: Sep 12, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Mathew Paxton, Adams & Reese • Norm Van Vactor, BBEDC • Robin Samuelsen, BBEDC
Did EPA decide which third parties would attend?: No.
List of EPA Attendees: • Lee Forsgren • Russ Kaiser
Agenda: Bristol Bay EIS Status and Next Steps Forward
Did EPA/Third Party Set the Agenda?: Third Party, Mathew Paxton
Did EPA/Third Party Run the Meeting: Meeting ran as a conversation
Notes from Discussion (including individual advice/feedback provided to Agency): • Lee opened and indicated that we are staying on course and there are no actions for EPA at this time related to the (c) action. Will need to determine at a later date when to request public comment on the proposed action and what that will look like. Not there yet. • Lee indicated that we were supporting the Corps in developing the DEIS, when requested by Corps. • Lee noted that the Acting Administrator has recused himself from the decision-making process and that action will be overseen by Henry Darwin. • The group will plan to brief Mr. Darwin on the action in March-April of next year; they will also invite both the Acting Administrator and Mr. Darwin to visit the region so that they can explain the project and identify potential environmental consequences. • Lee also discussed broader AK initiatives, including the mitigation memo and the flexibilities that exist in the rule.
Next Steps/Follow-up Discussed: None.

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Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 5/8/2018 4:30:32 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: FW: Please Review - current draft of Pebble Letter

Importance: High

Hi David,
This is FYI – Molly called me that she hasn't heard anything from Chris and all the other reviewers have previously provided input. She's been waiting for him to respond and hasn't heard anything, so she asked me to try and see if I can get him to respond to her today. Sharing what I just sent to him… thanks! Jill

From: Nogi, Jill
Sent: Tuesday, May 08, 2018 9:29 AM
To: Meade, Christopher <Meade.Chris@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Please Review - current draft of Pebble Letter
Importance: High

Chris,
I hope that you are doing well. Molly called this morning with her concern that she needs to keep the scoping letter moving through the internal review process as it needs to go to Patty McGrath today. As per her message below, she needs you to review the section related to dredged material management (pages 13-15) and provide any necessary edits, as well as adding a few sentences to the letter regarding upland disposal. The review schedule is tight and I anticipate that you only need to take about 30 minutes today to assist Molly with this. I know that you have been great about sharing your concerns with the team over the phone, so it should be a pretty easy task for you to complete your contributions to the scoping letter today. If Molly hasn't heard from you by 2pm today, I will need to reach out to Justine to see if she can make the time to provide input related to dredged material management. Justine doesn't have the background with this project however – so she would need to hear from you all about your involvement to date – which could take more time than having you edit it and send it back to Molly.

Please make responding to Molly your first priority when you get in to the office today, and take care of this as soon as you are able.
Thank you!
Jill

From: Vaughan, Molly
Sent: Monday, May 07, 2018 5:00 PM
To: Meade, Christopher <Meade.Chris@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Please Review - current draft of Pebble Letter
Importance: High

Hi Chris,
I have to leave for the day and didn't see any edits from you yet on the Sharepoint site version. So, so make things go more quickly, here is the current version of the document on my OneDrive. I need to send this to Patty ASAP when I come in tomorrow. Please make any edits directly in this document using track changes. As a reminder, the specific section for your review is titled "Marine Environment". It begins in the middle of Page 13 of this version, and ends top of page 15. In particular, please add the appropriate text we've discussed in place of the italicized text on page 14.

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If you've already begun edits on another version, no need to switch gears now, just send those to me and I will consolidate in the morning.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 29, 2018

Mr. Shane McCoy, Project Manager
U.S. Army Corps of Engineers
Regulatory Division
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Mr. McCoy:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' March 29, 2018, Notice of Intent initiating the scoping process for the proposed Pebble Project Environmental Impact Statement development (EPA Region 10 Project Number 18-0002-COE). We have also reviewed the additional project information available on the Corps website. The EPA is providing comments for your consideration pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500-1508) and Section 309 of the Clean Air Act. The EPA is also supporting the Corps in EIS development as a cooperating agency, due to our special expertise. We appreciate the opportunity to provide early input in the analysis of the Pebble Project.

The Pebble Limited Partnership (PLP) is proposing to develop the Pebble deposit in southwest Alaska, containing copper, gold, and molybdenum. The proposed project includes an open-pit mine, tailings storage facility, a low-grade ore stockpile, an overburden stockpile, a mill facility, a natural gas-fired power plant, and other mine site facilities. The anticipated throughput at the mill facility is 160,000 tons of ore per day, and the proposed mine operating life is 20 years. The proposed project also includes development of a 188-mile natural gas pipeline across Cook Inlet and Lake Iliamna and two compressor stations used to transport natural gas from the Kenai Peninsula to the mine site. The proposed transportation network includes 65 miles of roads, ferry terminals on the north and south shores of Lake Iliamna for use by an ice-breaking ferry, and the Amakdedori Port on Cook Inlet (including dredging and disposal of up to 20 million cubic yards of dredged material).

The scoping comments that follow are provided to inform the Corps of issues the EPA believes are significant and warrant explicit treatment in the EIS, based on current information. Overall, the EPA encourages the development of an EIS that evaluates and compares a full range of reasonable alternatives and comprehensively discusses the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action.

The EPA has significant concerns regarding the potential impacts of mining activities near the world-class fisheries of the Bristol Bay Watershed.[1] Many of these concerns have been previously documented in the EPA's 2014 Bristol Bay Watershed Assessment, which evaluated the potential impacts of large-scale mining on the region's fish resources, and in the Agency's 2014 Proposed Determination under

[1] See https://www.epa.gov/bristolbay for more information.

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Section 404 of the Clean Water Act. This Proposed Determination proposed restrictions on the discharge of dredged or fill material to waters of the U.S. to protect waters that support fishery areas in and near the Pebble deposit area. Because the Watershed Assessment and the Proposed Determination were completed before PLP submitted its permit application to the Corps, these assessments did not consider and were not based on the specific parameters of PLP's pending proposal. The EIS should thoroughly analyze the potential impacts of PLP's proposal to aquatic and other resources, including the anticipated direct impacts of the proposed action, and the reasonably foreseeable indirect and cumulative impacts. We note that the geographic extent of the proposed project infrastructure is not limited to the Bristol Bay watershed, and we recommend that the EIS analyze all areas of impact from the project, including Cook Inlet.

We appreciate the information provided in the Corps' scoping package, including the list of resources to be analyzed in the EIS, and we agree that the suite of issues presented are appropriate to analyze in detail in the EIS. Our enclosed scoping comments provide our recommendations for analysis of key areas that will be the focus of our review of the project, including natural resource impacts, as well as human health and impacts to communities and federally recognized tribes. Our scoping comments also include recommendations related to: risk analysis and hazardous materials management, including geotechnical stability; analytical tools and methodologies, including predictive modeling of impacts to water, air, fish, and other aquatic resources; mitigation and monitoring; and financial assurance. Identification of these key issues and recommendations is based on the EPA's knowledge of the proposed project as well as our experience with mining projects in Alaska and other Region 10 states.

We appreciate the opportunity to participate early in the planning process for this project and are looking forward to working with you as you develop the EIS. Should you have any questions regarding our comments, please contact Patty McGrath, EPA Region 10 Mining Advisor at (206) 553-6113 or mcgrath.patricia@epa.gov.

Sincerely,

R. David Allnutt
Director

Enclosure:

1. U.S. Environmental Protection Agency Detailed Scoping Comments for the Pebble Project EIS

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EPA Region 10 Detailed Scoping Comments for the
Pebble Project Environmental Impact Statement

General Components of NEPA Analysis

Purpose and Need

We recommend that the EIS include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with the implementing regulations for NEPA[2] and the Clean Water Act Section 404(b)(1) Guidelines (Guidelines).[3] In presenting the purpose and need, the EIS should reflect not only the Corps' purpose in responding to the permit application, but also the broader public interest and need for this project. An appropriately defined purpose and need statement is of critical importance to setting up the analysis of a range of reasonable and practicable alternatives in the EIS that will meet the requirements of both NEPA and the Guidelines.

Range of Alternatives

We recommend that the EIS include a range of reasonable alternatives that meet the stated purpose and need for the project, are responsive to the issues identified during the scoping process and through tribal consultation, and include options for avoiding significant environmental impacts. This will ensure that the NEPA analysis provides agency decision makers and the public with information that defines the issues and identifies a clear basis for the choices made among the range of alternatives, as required by NEPA. The EIS should clearly outline the physical design of current and proposed facilities and alternatives (including ore storage sites, waste rock disposal areas, tailings areas, water storage and conveyance facilities, and supporting infrastructure including the transportation corridor, port site, and pipeline).

The EIS should "rigorously explore and objectively evaluate all reasonable alternatives"[4] even if some of them are outside the capability or the jurisdiction of the agency preparing the EIS for the proposed action.[5] This includes identifying the specific criteria that were used to (1) develop the range of reasonable alternatives, (2) eliminate certain alternatives, and (3) identify the agency preferred alternative, as appropriate. In addition, we recommend the EIS provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail.

While NEPA requires the evaluation of *reasonable* alternatives to the proposed action, the Guidelines require the analysis of *practicable*[6] alternatives in order to identify the least environmentally damaging

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[2] 40 C.F.R. § 1502.13.
[3] Within the context of the Guidelines, practicable alternatives to the proposed discharge of fill or dredged material are identified "in light of overall project purposes," which is also termed "the basic purpose of the proposed activity." 40 C.F.R. § 230.10(a)(2).
[4] 40 C.F.R. § 1502.14(a).
[5] 40 C.F.R. § 1502.14(c).
[6] An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2).

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practicable alternative (LEDPA), which is the only alternative that can be permitted.[7] The analysis of alternatives for NEPA can provide the information for evaluation of alternatives under the Guidelines.[8] We recommend that the EIS range of alternatives include the practicable alternatives developed for the Guidelines analysis.

In evaluating the proposed project and alternatives, the analysis should include an evaluation of performance and effectiveness, as well as the planned monitoring to ensure efficacy of proposed design features, environmental protection measures, and mitigation.[9]

Regarding mitigation for purposes of NEPA, we recommend that the alternatives analysis include appropriate mitigation measures not already included in the proposed action or alternatives.[10] The EIS should evaluate reasonable alternatives, including mitigation measures, to reduce or minimize adverse impacts to environmental resources. We recommend that, in conducting such an evaluation, the Corps consider:

- The disturbance footprint;
- Habitat value, cultural significance, and risks in siting project components for the proposed mine site components, as well as the port site, transportation corridor, and pipeline components;
- Source control measures (effective management of waste rock and tailings to prevent acid generation and metal leaching) and containment (liners and covers);
- Measures to reduce contact between mine waste materials and surface water and groundwater (such as surface water diversions and liners and covers as recommended above);
- Impacts of pit dewatering on groundwater and stream flows;
- Treatment to promote compliance with water quality standards;
- The physical stability of structures (e.g., pit walls, ore storage and waste rock facilities, tailings facility) during operations and closure, such as considering dry stack tailings;
- Impacts along the pipeline route and transportation corridor, including to Lake Iliamna;
- Impacts from dredged material disposal;
- Impacts to the marine environment at the Amakdedori Port site;
- Air pollutant emissions; and
- Impacts to traditional and cultural uses and resources, including key subsistence species and sites.

Indirect Impacts

We recommend that the EIS include consideration of all reasonably foreseeable indirect effects caused by the action but that may occur later in time or farther removed in distance.[11] The indirect effects analysis "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural

---

[7] 40 C.F.R. § 230.10(a)
[8] 40 C.F.R. § 230.10(a)(4).
[9] The term mitigation included in this "Range of Alternatives" section is referring to the general term as it applies to NEPA. Compensatory mitigation for purposes under CWA section 404 cannot be used to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 40 C.F.R. § 230.10(a). *See* 1990 Memorandum of Agreement between Army and EPA concerning the determination of mitigation under CWA section 404(b)(1) Guidelines.
[10] 40 C.F.R. § 1502.14(f).
[11] 40 C.F.R. § 1508.8(b).

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systems, including ecosystems."[12] While NEPA does not require agencies to engage in speculation, "[t]he EIS must identify all of the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are reasonably foreseeable."[13]

We therefore recommend that the EIS evaluate the expansion and continued operation of the currently proposed project to the extent that the Corps considers it to be a reasonably foreseeable indirect effect of the proposed action. The current proposed Pebble Project description includes mining of approximately 1.1 billion tons of mineralized material, while the 2011 Preliminary Assessment Technical Report[14] estimated that the total Pebble mineral resource may be 11.9 billion tons. It may be reasonable to predict that a mine at the Pebble deposit will eventually operate for longer than 20 years and recover and process additional ore based on the size of the deposit, the significant infrastructure that will be developed under the current project description, and statements made by the Pebble Limited Partnership regarding the potential to examine expanding the mine once initial production has begun on the current proposal.[15] Accordingly, we recommend that the EIS consider the potential impacts associated with reasonably foreseeable mine expansion scenarios, including up to 11.9 billion tons.

In addition, we recommend that the EIS consider the extent to which it is reasonably foreseeable that the proposed transportation corridor and natural gas pipeline may be made accessible to the public and may stimulate additional reasonably foreseeable mining projects in the area, and potential environmental effects associated with that induced mining. Although PLP's current proposal only includes private access to the infrastructure components, public access may be granted in the future. This potential may be different for the different infrastructure elements. For example, if the pipeline is regulated as a common carrier, then public access could be allowed if capacity permits. We recommend that the EIS discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.

Construction and operation of the project would result in increased vessel traffic in Cook Inlet and on Lake Iliamna because vessels will bring supplies to the site and transport products off-site. In addition to evaluating the direct effects of the increased transportation, we recommend that, if it is reasonably foreseeable that the ports and ferry landings will become available for public use, then any reasonably foreseeable future use of these components should be assessed in the EIS as indirect or cumulative effects. Should the port and ferry terminals remain open following mining, this infrastructure may result in increased use and vessel traffic beyond what PLP is currently proposing.

Indirect project impacts under NEPA can include secondary effects, which are defined by the Guidelines as "effects on the aquatic ecosystem that are associated with the discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[16] The consideration of secondary effects is necessary for the Guidelines analysis, and examples of potential secondary effects are discussed in the section on aquatic resources below.

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[12] *Id.*

[13] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 18 (CEQ, 1981).

[14] Preliminary Assessment of the Pebble Project, Southwest Alaska, February 2011. Developed by Wardrop, A Tetra Tech Company, for Northern Dynasty Minerals, Ltd.

[15] e.g., see http://www.alaskajournal.com/2018-01-10/permit-application-reveals-size-scaled-down-pebble-project. "Collier has acknowledged the company might look to expand after initial production commences but contends growing the project would require additional rounds of environmental reviews and permitting that would be independent from any approvals Pebble already had."

[16] 40 C.F.R. § 230.11(h).

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Cumulative Impacts

In accordance with NEPA, the cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be affected by, past, present, or reasonably foreseeable future activities in the project area, "regardless of what agency (federal or non-federal) or person undertakes such other actions."[17]

The Guidelines also fundamentally require consideration of reasonably foreseeable cumulative effects in determining whether a project complies with the significant degradation prohibition and to ensure that discharges will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.[18] Cumulative effects are "the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material," which individually may be minor, but cumulatively may result in a "major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems."[19]

For the cumulative impacts assessment, we recommend that the EIS delineate appropriate geographic boundaries, including natural ecological boundaries whenever possible, as well as consider an appropriate time period for the project's effects. We recommend that resources be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of any historical degradation (e.g., due to exploration activities), and to predict the environmental effects of the project components.

Past, present, and reasonably foreseeable future activities that should be considered in the cumulative impact assessment will vary across the geographic scope of the various mine-site and infrastructure components. Please refer to CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act"[20] and the EPA's "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[21] for assistance with identifying appropriate boundaries and identifying appropriate past, present, and reasonably foreseeable future projects to include in the analysis.

In particular, we recommend that the cumulative effects analysis consider, but not be limited to, the following activities:

- Past and current exploration activities conducted by PLP and others at the Pebble site;
- Current exploration activities occurring in the Bristol Bay watershed region;
- Reasonably foreseeable expansion and continued operation of the currently proposed project (while this is an indirect effect under NEPA, as discussed above, it is a cumulative effect under the Guidelines);
- Reasonably foreseeable future use of project infrastructure (road, port, pipeline); and,
- Reasonably foreseeable development of additional mining projects as a result of increased exploration activity in the region. Even if those activities are not determined to be indirect effects of the proposed action (as discussed above), they are still reasonably foreseeable.

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[17] 40 C.F.R. § 1508.7.
[18] 40 C.F.R. § 230.10(c).
[19] 40 C.F.R. § 230.11(g).
[20] http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm.
[21] http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf.

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ENVIRONMENTAL RESOURCE IMPACTS

Aquatic Resources, Including Wetlands, Streams, and Fish

Evaluating Compliance with the Clean Water Act Section 404(b)(1) Guidelines

The Corps' potential CWA Section 404 permitting action is triggering preparation of the EIS. We recommend that the Corps' permitting regulations and the Guidelines therefore provide the context for identifying relevant issues and evaluating alternatives in the EIS.

The Guidelines are the substantive environmental criteria for the evaluation of proposed discharges of dredged or fill material, and applicants must demonstrate compliance with the Guidelines.[22] The EIS is a significant component of the administrative record for the District's permit decision, which can and should provide sufficient information to address compliance with the Guidelines and the Corps' public interest review.[23] Although it is not mandatory, we support the Corps' decision to include of the public interest review factors into the list of issues to be considered in the EIS. This will enable the expected benefits to be balanced against reasonably foreseeable detriments, and all relevant public interest factors to be weighed.

We recommend that the organization of the EIS facilitate the evaluation of the proposed project's compliance with the Guidelines. Issues relevant to compliance with the Guidelines should be addressed explicitly in the EIS where possible. Alternatively, a stand-alone Section 404(b)(1) analysis could be included as its own section of, or appendix to, the EIS. As mentioned above, we recommend that the range of alternatives evaluated in the EIS be sufficient to identify the LEDPA. In addition, we recommend that the final EIS identify which alternative is the LEDPA.

The Guidelines prohibit, for example, the authorization of a proposed discharge that would cause or contribute to the violation of an applicable water quality or toxic effluent standard, jeopardize a listed threatened or endangered species, or impact a marine sanctuary.[24] We recommend that these criteria be used to evaluate and compare alternatives.

The Guidelines also prohibit the authorization of a proposed discharge which will cause or contribute to significant degradation of the aquatic ecosystem.[25] Findings of significant degradation must be based upon specific factual determinations, evaluations, and tests identified in the Guidelines. These include the evaluation of the direct, secondary, and cumulative effects of the proposed discharge and alternatives on specific resources including fish, wildlife, and special aquatic sites. The significant degradation findings must also evaluate the effects to resource characteristics including aquatic ecosystem diversity, productivity, and stability. Evaluating the potential for significant degradation also requires the consideration of effects to human uses or values, including recreational, aesthetic, and economic values. With regard to fisheries, the Guidelines require, for example, an evaluation of effects to all forms and life stages of aquatic organisms in the food web, including fish and the plants and animals on which they feed and depend upon for their needs.[26] The Guidelines also require an evaluation of effects to

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[22] 40 C.F.R. § 230.12(a)(3)(iv).
[23] See 33 C.F.R. § 320.4.
[24] 40 C.F.R. § 230.10(b).
[25] 40 C.F.R. § 230.10(c).
[26] 40 C.F.R. § 230.31.

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recreational and commercial fisheries, which includes harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man.[27] The Corps has proposed including a number of these evaluations in the EIS. We recommend that as many of the specific factual determinations, evaluations, and tests required by the Guidelines as possible be included in the EIS, and be used to evaluate and compare alternatives.

The Guidelines also prohibit any proposed discharge that does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem.[28] Subpart H of the Guidelines identifies numerous possible steps to minimize impacts, including reducing the footprint of the project, using co-location of facilities whenever possible, implementation of best management practices to reduce environmental impacts, configuring the project footprint to reduce or eliminate impacts to higher functioning aquatic resources and other appropriate and practicable measures. Also, as previously discussed, we recommend that the EIS include appropriate minimization measures both as part of the action alternatives and relative to the affected environment. The discussion of minimization measures should include assessment of their likely effectiveness.

Compensatory Mitigation

For unavoidable impacts to wetlands, streams, and other aquatic resources, the Guidelines require appropriate and practicable compensatory mitigation to offset unavoidable environmental impacts associated with discharges permitted under CWA Section 404. We recommend that the EIS consider potential mechanisms to offset likely unavoidable aquatic resource impacts. We also recommend that the EIS include the applicant's proposed compensatory mitigation plan. Compensatory mitigation requirements, including the components of a compensatory mitigation plan, are described in Subpart J of the Guidelines. Pursuant to the Guidelines, the level of detail in the compensatory mitigation plan should be commensurate with the scale and scope of the impacts.

Compensatory mitigation may be provided through purchase of credits from an approved mitigation bank, purchase of credits from an approved in-lieu fee mitigation program, and/or completion of a permittee-responsible compensatory mitigation project(s). Final compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Section 404 permit.[29] Compensatory mitigation required by the Guidelines is separate from, and may be in addition to, proposed project impact mitigation under NEPA.

Characterizing the Affected Environment

We recommend that the EIS describe aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. For example, if wetlands are mapped using a Cowardin classification, that mapping should be to the smallest identifiable map unit. Likewise, streams should be classified and mapped accordingly. The baseline information for aquatic resources should include their functional condition and integrity. We also recommend that the EIS evaluate the characteristics of the potentially affected aquatic resources, how those characteristics provide fish habitat, and how such habitat could be adversely impacted by the proposed project. Wetlands and streams perform different functions at different rates, and capturing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions (exploration and mining) on these resources.

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[27] 40 C.F.R. § 230.51.
[28] 40 C.F.R. § 230.10(d).
[29] 40 C.F.R. § 230.93(a)(1).

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Characterizing the distribution of resident and anadromous fish in potentially affected streams and other aquatic resources is also important, and we recommend the use of data sources such as the Anadromous Waters Catalog[30] and the Alaska Freshwater Fish Inventory[31] to help with this characterization.

Aquatic Resource Impacts Analysis

We recommend that the areal extent (i.e., acreage) of impacts to aquatic resources be quantified in the EIS for both direct and secondary effects. The acreage values for the direct and secondary impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, mudflats, and other waters. In other words, reported acreage losses should represent the total loss of jurisdictional waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles. Channel length values are a more intuitive metric for some, and facilitate different types of analyses than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.

Direct effects are impacts on aquatic resources within the footprint of the discharge of dredged or fill material. Direct effects at the mine site would include stream and other aquatic resource losses within the footprints of the tailings storage facility, the ore and overburden storage sites, the mine pit, and other mine site facilities described in the permit application. Construction of the transportation and pipeline corridors and port facility will likely involve such discharges as well.

Secondary effects, as defined by the Guidelines, are associated with the discharge of dredged or fill material, but do not result from actual placement of this material. These effects are also considered indirect impacts under NEPA. Examples of secondary effects that should be evaluated in the EIS include the following:

- Elimination of streams and wetlands due to drowning by the tailings impoundment and other mine components;
- Dewatering of streams and other aquatic resources due to pumping of groundwater during open pit mining and filling during closure;
- Fragmentation of aquatic resources due to the placement of the mine pit, ore storage sites, tailings storage facility, and other mine components;
- Degradation of downstream fish habitat due to streamflow alterations resulting from water capture, withdrawal, storage, treatment, or release at the mine site;
- Degradation of downstream fish habitat due to water quality impacts associated with mine construction and operation;
- Degradation of downstream fish habitat due to the loss of important inputs such as nutrients and groundwater from upstream sources;
- Degradation of aquatic resources due to dust deposition from mining and transportation activities.

The evaluation of the proposed project's impacts and alternatives should fully consider the physical, chemical, and biological effects of each of the direct and secondary effects, and should consider incremental changes from these impacts along each stream segment downstream of the impact site.

[30] See https://www.adfg.alaska.gov/sf/SARR/AWC/.
[31] See http://www.adfg.alaska.gov/index.cfm?adfg=ffinventory.main.

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Considering the value of the region's commercial, subsistence, and recreational fishery resources, we recommend that the EIS focus on quantifying direct, indirect, and cumulative impacts on resident and anadromous fish and their habitat resulting from losses of streams with documented fish occurrences; losses of headwater source areas of these streams; losses of wetlands, lakes, and ponds; and streamflow alterations. We appreciate that the Corps has made the EPA's 2014 Bristol Bay Watershed Assessment available on the Pebble Project website, and we also recommend that this document be referenced in preparing the EIS.[32]

The losses of stream reaches and adjacent wetlands from dewatering, as well as changes to downstream reaches and adjacent wetlands, may result in physical, chemical, and biological changes which would impact fishery habitat and habitat support. We recommend that the EIS model and consider these impacts compared to baseline conditions, including but not limited to:

- Evaluate changes in water volume in the stream areas of impact, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. We recommend that the analysis address seasonal changes to the different stream segment hydrographs, including changes to seasonal temperatures, dissolved oxygen levels, sediment transport capabilities, and any associated changes to sediment grain sizes in the different stream segments;
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points, to assess any potential changes to stream profile, form, and pattern, and to identify any areas of accretion and/or scouring which may reasonably be anticipated. We also recommend that areas of stream incision as a result of flow changes be identified, as well as losses of connectivity to floodplains and riparian wetlands currently connected to the downstream reaches;
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches. We further recommend that both the direct losses of both autochthonous and allochthonous inputs from upstream reaches lost and/or disconnected from wetland and other riparian habitats, as well as the incremental reductions in those inputs in downstream segments throughout the stream reaches and their effects on system-wide primary, secondary, and tertiary production, be evaluated. These analyses should consider the direct changes to downstream habitats as well as changes to fisheries support in the different stream reaches;
- Evaluate decreases in anticipated invertebrate transport and production in downstream segments and those effects on fish production; and
- Evaluate the effects of disconnecting any off-channel habitat both near the areas of direct impact and throughout the downstream reaches, both for losses of allochthonous inputs and also for potential losses of nursery habitat.

We recommend that the direct, indirect, and cumulative impacts of any of these potential physical, chemical, and biological alterations be examined for how they may result in the loss and/or degradation of fish habitat, including alterations with respect to spawning, overwintering, nursery, and migration. Habitat losses that may result from freeze-through or seasonal warming of fish production areas should also be evaluated.

[32] See https://www.epa.gov/bristolbay/bristol-bay-assessment-final-report-2014.

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Water Quality and Quantity

Evaluating Impacts to Surface Water and Groundwater Quality and Quantity

Water quality is one of the EPA's principal concerns at mine facilities due to the potential for acid-generating and metal-leaching waste materials (ore, waste rock, tailings, pit walls) that are exposed to the environment and require management over long periods of time. In addition, road construction and operation have the potential to contribute a significant quantity of sediment to streams. We recommend that the EIS characterize baseline surface water and groundwater quality, quantity, and interactions, and evaluate the impacts of all aspects of the proposed operations and alternatives (including pit dewatering and backfilling, tailings management and disposal, water management, and port-site and transportation aspects) on these hydrologic components and describe mitigation for adverse impacts.

Given the potential impacts of the proposed Pebble Project, the EPA recommends that the Corps specifically include in the water resources analysis for the EIS (see also our recommendations for Analysis Tools and Methodologies):

- Characterization of existing groundwater, surface water, springs, and wetland resources within the area of both the project and all potential alternatives, including groundwater levels, flow direction and gradients, and chemistry;
- Development of a hydrogeologic conceptual site model, including:
    - Maps of groundwater, surface water, springs, and wetland resources in the area to be developed or affected;
    - Baseline data on the extent and quality of groundwater, surface water, springs and wetlands;
    - Information on the quantity and location of all aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
    - Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters;
    - Identification and description of all wetlands and surface waters that could be affected by the project and alternatives; where applicable, acreages, channel lengths, habitat types, values and functions of these waters should be identified;
    - Identification and description of hydrologic pathways (e.g., the connectivity of springs or groundwater to surface waters; the connectivity of all streams to each other and to wetlands); and
    - A detailed water balance for the proposed action and each alternative.
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), specific pollutants likely to impact those waters and a comparison to applicable environmental standards (e.g., surface water and drinking water quality standards);
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability (in particular, the impacts of copper, which can have adverse effects on salmon at very low concentrations);
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes; and
- Consideration of effects of seasonality on water quantity and quality impact assessment, including predictions for all phases of the project (construction, operations, and closure).

Anti-degradation

The anti-degradation provisions of the CWA apply to those waterbodies where water quality standards are currently being met. In certain high-quality waters, the anti-degradation provisions prohibit

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degrading water quality unless it is determined that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.[33] We recommend that the EIS discuss whether and how the CWA anti-degradation requirements could be met.

Water Management and Treatment

We recommend that the EIS describe the plans for water management, treatment, and discharge during all phases of the project (construction, operations, and closure), including plans for long-term water treatment. The EIS should evaluate and disclose the adequacy, reliability, effectiveness, and operational uncertainty associated with proposed operation and closure (long-term) water management and treatment techniques, taking into account seasonality and potential changes associated with future climate scenarios. We also recommend that the analysis characterize chemical compositions and quantities of process waters, mine drainage, storm water, and treated and untreated effluent. This information should be supported by the results of treatability testing. Assumptions used in the analysis should be disclosed and be reasonably conservative. If long-term water treatment is needed, we recommend that the EIS include modeling of predicted stream concentrations of contaminants of concern, both with and without treatment, to evaluate the potential impacts to water quality if the treatment system is not working properly.

The EIS should also identify the Alaska Pollutant Discharge Elimination System (APDES) discharge locations, identify applicable water quality standards, and analyze the likelihood and ability of all discharges to meet applicable standards and the direct, indirect, and cumulative impacts of such discharges to the receiving waters. We recommend that any applicable water quality variance requests, site-specific criteria proposals, and/or any other planned or potential requests for water quality standard revisions also be disclosed in the EIS.

Sediment Management and Stormwater Runoff

Since the project has the potential to cause or contribute to erosion of soils and subsequent sediment loading to nearby surface waters, we recommend that the EIS evaluate construction design and operation practices that will be used to minimize erosion and control stormwater runoff from the mine site, port sites, transportation corridor, and pipeline route. We recommend that the EIS discuss specific mitigation measures that may be necessary or beneficial in preventing and minimizing adverse impacts to water quality and disclose the effectiveness of such measures. We suggest that the Corps consider the Best Management Practices identified by the EPA for mining facilities[34] and specify those that would be suitable and likely implemented at the Pebble Project. We also recommend that the EIS document the project's consistency with applicable APDES stormwater permitting requirements.

Hydrostatic Test Water

Hydrostatic testing will likely be utilized to verify pipeline integrity. We recommend that the EIS identify and describe the location of the water sources required for hydrostatic testing, in terms of surface area, depth, volume, withdrawal rate, and project requirements. For each water source, we recommend that the EIS discuss the presence of any anadromous and/or resident fish species, including discussion of any direct and cumulative impacts to fisheries resources. In addition, we recommend that locations and methods of discharges to land and/or surface waters be specified in the EIS. Emphasis should be placed on minimizing inter-basin transfers of water to the maximum extent practicable, to

[33] 40 C.F.R. § 131.12.

[34] https://www3.epa.gov/npdes/pubs/sector_g_metalmining.pdf.

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minimize the risk of mobilizing invasive species. We recommend that the EIS describe the mitigation measures and control devices that would be implemented to minimize environmental impacts.

Marine Environment and Freshwater Lakes

Port Construction and Dredging Impacts

According to the Permit Application Appendix D – Project Description, the Amakdedori Port will require dredging of a channel and turning basin for shipping access to berths. According to the application, annual maintenance dredging will be necessary throughout the life of the port facility. Dredging activities potentially affect habitats and key ecological functions that support recruitment and sustainability of estuarine and marine organisms. We recommend that the EIS:

- Characterize the marine benthic environment and organisms, sediment composition and grain size, etc.;
- Identify any biologically important areas, such as migratory routes, benthic communities, and subsistence areas;
- Evaluate marine dredging, dewatering, transloading (from water to land), placement methods and options (summer and winter), and disposal sites (offshore, nearshore, upland, and open-water), as well as beneficial uses of the dredged material;
- Include and evaluate a sampling and analysis plan, as well as a marine dredging and disposal plan;
- Evaluate the following potential impacts of dredging activities on species and their habitats:
  - Substrate removal and any resulting habitat and species removal (entrainment);
  - Potential changes to estuarine bathymetry, fluvial and tidal energy, and substrate roughness, and any attendant impacts to salinity structure and estuarine circulation;
  - Potential changes to sediment transport processes, including effects on adjacent shorelines;
  - Alteration of sediment composition in and around the dredging site (including changes to the nature and diversity of benthic communities);
  - Local resuspension of sediments and any turbidity increases;
  - Spread of sediments (and any associated contaminants) into the area surrounding the dredging site;
  - Release of sediment-associated nutrients, potential increases in eutrophication and resulting decreases in dissolved oxygen concentrations;
  - Decreased primary production due to reduced transparency of the water column and/or smothering, particularly at in-water disposal sites; and
  - Enhanced bioavailability and ecotoxicological risk of background contaminants and/or chemical or biochemical changes of contaminants;
- Consider implementation of effective mitigation measures to ensure that marine resources and habitats are adequately protected; and
- Incorporate a monitoring plan for marine protected resources and associated habitats to ensure effectiveness of mitigation measures.

Because of the magnitude of the proposal, dredging and disposal operations will need to be carefully planned and scheduled to avoid and minimize impacts to sensitive marine mammals, fish, shellfish, and their habitat at critical spawning and migration periods.

Dredged Material Disposal

According to the Permit Application Appendix D, dredged material will be used to construct the jetty, causeway, and/or the main terminal patio area, if suitable. Excess dredged material will be stockpiled in

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an upland location adjacent to the port facilities. The EPA recommends an on-the-ground wetland delineation at the proposed dredged material disposal site to verify whether there are any jurisdictional waters of the United States at this location.

The proposed discharge of dredged material effluent from the confined disposal facility into Kamishak Bay is subject to regulation under Section 404 of the CWA. Thus, the EIS should include sufficient information to support making the required determinations and findings under the Guidelines. For example, Subpart G of the Guidelines includes general evaluation procedures and specific testing procedures to reach the determinations required by 40 C.F.R. § 230.11. The Inland Testing Manual[35] also provides detailed technical guidance on how to evaluate and test dredged material consistent with the Guidelines. In particular, the EPA recommends using the ITM Appendix B, "Guidance for Evaluation of Effluent Discharges from Confined Disposal Facilities."

To support disposal decisions, we recommend that the EIS provide an inventory of the physical and chemical characteristics of the dredged material and an assessment of disposal alternatives. We recommend that the range of dredged material management alternatives include: no action; the proposed action; beneficial uses such as beach nourishment or construction material; a disposal site in internal waters, landward of the Kamishak Bay closing line (regulated under the CWA); and an ocean disposal site seaward of the Kamishak Bay closing line (regulated under the Marine Protection, Research and Sanctuaries Act).

Potential for Ocean Disposal of Dredged Material

Under Section 102 of the MPRSA, the EPA is responsible for designating and managing ocean dumping sites for all materials, including dredged material. The EPA designates ocean disposal sites through rulemaking and sites are published at 40 C.F.R. § 228.15. The EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas similar to the site in physical, chemical, and biological characteristics. All studies for the evaluation and potential selection of dredged material disposal sites should be conducted in accordance with the criteria for the selection of disposal sites for ocean dumping published in 40 C.F.R. §§ 228.5 and 228.6. The minimum requirements for baseline assessment surveys are found in 40 C.F.R. § 228.13.

The evaluation process includes conducting oceanographic studies to establish the environmental conditions at all alternative locations being considered as potential sites, as well as the area or region encompassing the alternative sites. Results from oceanographic studies and other sources are used to model likely dispersion and deposition of material disposed at the alternative sites and evaluate potential impacts. If there are no practicable alternatives to ocean dumping that will have a less adverse impact on the environment, this information is used to select the best ocean site proposed for designation.

If ocean disposal is to be considered as an alternative, we encourage the Corps to engage early and actively with the EPA to ensure that site selection activities are consistent with the MPRSA and the ocean disposal criteria. The EIS must be adequate for the EPA to ensure that use of the site selected for designation will not likely cause unreasonable degradation to the surrounding marine environment. In addition, only dredged material that is authorized for disposal under the MPRSA and 40 C.F.R. Part 227 may be disposed in an EPA-designated ocean dredged material disposal site.

[35] See https://www.epa.gov/cwa-404/inland-testing-manual.

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Impacts of Vessel Traffic

Marine traffic, including barges and other vessels associated with construction and operation of the proposed project, may also result in impacts to the marine environment. For example, vessel traffic may result in potential impacts to marine mammals, including threatened and/or endangered species, and their migration patterns and routes; subsistence, commercial, and recreational fisheries; and other vessel use. We recommend the EIS describe the vessel traffic schedule in Cook Inlet; patterns and marine transportation routes; subsistence, commercial, and recreational fishery resources; and the migration period, patterns, and routes of potentially affected marine mammals, including Cook Inlet Belugas. The direct, indirect and cumulative impacts from vessel traffic on marine mammals, threatened and endangered species, critical habitats, and fishery resources should be analyzed in the EIS, and the EIS should discuss the mitigation measures that would be implemented to minimize such impacts.

Use of the proposed ice-breaking ferry on Lake Iliamna may result in similar impacts to the freshwater lake environment, including the potential for wake impacts to the shoreline. We recommend the EIS analyze the direct, indirect, and cumulative impacts of the year-round use of the lake proposed by the applicant on threatened and/or endangered species, fishery resources, and other lake user groups, and discuss mitigation measures to minimize impacts.

Air Quality

The EPA recommends that the EIS evaluate how the construction and operation of the proposed project and alternatives could affect air quality and what measures may be needed to mitigate potentially significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. To address potential air quality impacts, the EIS should consider whether the direct, indirect, or cumulative impacts of project-related air emissions would result in any adverse impact on air quality or air quality-related values.

Potential air pollutant concerns for the proposed project include:

- Operation of heavy machinery and equipment, including marine vessels, during construction and operations that result in the emission of fossil fuel combustion exhausts. Such exhausts will include oxides of nitrogen, oxides of sulfur, carbon monoxide, and particulates. The significance of the contribution of project emissions to the formation of secondary particulate matter ($PM_{2.5}$) and ozone should also be evaluated;
- Fugitive dust emissions may be generated from construction and operation of the mine, ancillary facilities, and supporting infrastructure. In addition to human health effects, dust blown from the roadway can settle onto wetlands, vegetation, or waterbodies, impairing their health as well; and
- Hazardous air pollutants may result from fuel combustion and ore processing. The *National Air Toxics Assessment* asserts that numerous human epidemiology studies show increased lung cancer rates associated with diesel exhaust and significant potential for non-cancer health effects (see http://www.epa.gov/ttn/atw/nata). Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule (66 Fed. Reg. 17,230, March 29, 2001) lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. The EPA recommends the EIS disclose whether hazardous air pollutant emissions would result from project construction and operations, discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations and individuals likely to be exposed to these emissions.

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We recommend the following steps for the EIS air quality analysis:

- Characterize the existing conditions to set the context for evaluating project impacts, including:
  - Regional climate and meteorology,
  - Air quality and air quality related values (e.g., visibility),
  - Identification of sensitive receptors in the vicinity;
- Review air quality regulations and any air permitting requirements that apply to the air pollutant sources associated with the project;
- Provide a comprehensive emissions inventory of criteria pollutants (in tons per year), greenhouse gas emissions (in metric tons CO_2 equivalents per year), and significant HAP emissions for all project components (mine site, transportation corridor, port, and pipeline) and project phases; and
- If projected emissions are significant, conduct near-field and far-field air quality modeling to assess project-related air quality and visibility impacts. Also, see our recommendations related to Predictive Modeling, later in this document.

We recommend that the Corps evaluate and incorporate best management practices and mitigation measures into the EIS to reduce emissions of criteria pollutants and HAPs, which also have co-benefits of reducing GHGs. We recommend that the EIS include a comprehensive fugitive dust control plan as well as a construction air pollutant emissions control plan to address reduction of engine emissions.

These recommendations are separate and distinct from, and are not intended as a substitute for compliance with, any additional obligations of the Corps and the project proponent to comply with the federal Clean Air Act and any applicable state or tribal air pollution laws, which may require, among other things, obtaining pre-construction permits and operating permits, compliance with new source performance standards and/or national emission standards for hazardous air pollutants, as well as any applicable state implementation plan (SIP) requirements, including, as applicable to the Corps, the requirements under Section 176 of the Clean Air Act regarding conformity of federal activities to implementation plans approved or promulgated under section 110 of the Clean Air Act.

Climate Adaptation

The EPA recommends that the EIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure. This could help inform the development of measures to improve the resilience of the proposed project. If projected changes could notably exacerbate the environmental impacts of the project, the EPA recommends these impacts also be considered as part of the NEPA analysis.

Fish and Wildlife, including Endangered Species and Essential Fish Habitat

The EPA recommends that the EIS evaluate impacts to fish and wildlife from the proposed project and alternatives. The aquatic resources section above also provides recommendations related to fisheries.

Special consideration should be given to listed and proposed species under the Endangered Species Act and Essential Fish Habitat under the Magnuson Stevens Fishery Conservation and Management Act. NEPA regulations require that, to the fullest extent possible, the EIS be prepared concurrently with

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environmental analyses required by the ESA and other environmental laws.[36] Magnuson Stevens Act and ESA implementing regulations also encourage coordination with other environmental reviews.[37, 38]

We recommend that the EIS discuss the species listed and proposed as threatened or endangered under the ESA and the essential fish habitat within the project area (including the pipeline, roads, and port site) and the potentially impacted area surrounding the project. The EIS should describe impacts to ESA species and EFH and discuss the activities proposed to avoid, minimize, mitigate, and monitor listed and proposed species and EFH. We understand that the Corps will develop a biological assessment to evaluate impacts to listed and proposed endangered species and EFH, and recommend that it be included with the draft EIS. We also recommend that the federal action agencies work together to ensure that a single biological assessment is developed that meets all agencies' needs.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties, including those of traditional religious and cultural importance, following regulations in 36 C.F.R. Part 800. The NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, to consult with the appropriate State Historic Preservation Officer /Tribal Historic Preservation Officer. We support the Corps' early engagement with the Advisory Council on Historic Preservation, and we recommend that the EIS discuss any potential impacts to historic properties, including any tribal, cultural, or other treaty resources that are historic properties or traditional cultural properties. In addition, the EIS should identify alternatives and mitigation to avoid significant impacts. Recommendations related to traditional uses and resources that are not historic properties are discussed further below.

Invasive Species

We know that ballast water from barges or vessels can be a major source of non-native species into marine ecosystems. Non-native species can adversely impact the economy and the environment and cause harm to human health. Impacts may include reduction of biodiversity of species inhabiting coastal waters due to competition between non-native and native species for food and resources. We recommend that the EIS discuss potential impacts from non-native invasive species associated with ballast water in vessels that will be utilizing the Amakdedori Port associated with this project and identify mitigation measures to minimize adverse impacts to the marine environment and human health.

SAFETY, RISK ANALYSIS, AND HAZARDOUS MATERIALS MANAGEMENT

Accidents and Failures

An array of spills, accidents, and failures can occur at mining sites. We recommend that the EIS describe the control measures that will be in place to prevent these events from occurring during construction, operations, and closure. To identify these events, we recommend that the Corps evaluate the proposed design and management of the tailings facility, dams, and other structures and evaluate PLP's waste and water management and reclamation plans to determine the project-specific likelihood of different types of accidents and failures. Designs and management plans for the pipeline and transportation components

[36] 40 C.F.R. § 1502.25.
[37] 50 C.F.R. § 600.92 (c), (f).
[38] 50 C.F.R. § 402.06.

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(road, ports, shipping) should also be evaluated to determine the probability of accidents and failures. We recommend that the results of these evaluations be documented in the EIS. For those events that are determined to be of low probability but high consequence, we recommend that the EIS evaluate the potential effects of such events on aquatic ecosystems, particularly fishery resources, and other resources. The EIS should also discuss mitigation measures that could minimize the risk or damages of such events.

Physical Stability of Structures

The EIS should assess the likelihood of earthquakes in the region and describe the geotechnical stability of the tailings and waste storage facilities and open pit walls during operations and closure. We recommend including a description of how these facilities are designed and how they would be operated, closed, and monitored to ensure stability. In addition, we recommend that a risk assessment, such as a Failure Modes Effects Analysis, (FMEA) be conducted on each of the tailings dams with the results summarized in the EIS. An FMEA considers potential failure modes and identifies the relative likelihood and consequences of the failure modes, which are key considerations for impact assessment. We recommend that the EIS incorporate mitigation or alternatives to improve stability should the FMEA identify failure modes that are anything other than a tolerable risk.

For the tailings impoundment in particular, we recommend that the Corps require a demonstration that the structure complies with state dam safety criteria and has been designed by qualified persons. In addition, we recommend that the Corps require that the dam be independently reviewed (and modified if indicated by the review)[39]. Given the proposed size of the dams associated with the Pebble project and value of the downstream resources, we believe that an independent review of the dam structure is appropriate. We recommend that the results of the independent review be documented in the EIS in order to support the assessment of geotechnical stability.

As mentioned above in the Range of Alternatives section, we recommend that the Corps consider alternatives to improve physical stability of the tailings, including consideration of filtered tailings (dry stack). We note that consideration of a filtered tailings alternative and assessment of safety and stability via a FMEA and independent review panel are consistent with recommendations of *The Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach* (January 30, 2015). In addition to investigating the cause of the Mount Polley tailings storage facility failure, the Review Panel made recommendations on actions that could be taken to ensure that similar failure does not occur at other mines. We recommend that the Corps consider the Review Panel Report and, in particular, the recommendations related to best available technology for new impoundments, design commitments to support permit applications, and actions to validate the safety of tailings storage facilities.

Hazardous Materials

We recommend that the EIS address the potential direct, indirect, and cumulative impacts of hazardous materials/wastes management and storage from the construction and operation of the proposed project and alternatives. Mining activities may involve the transport of hazardous materials, and we recommend that the EIS disclose the types and amounts of materials that will be used at each step of mining operations. In addition, we recommend that the EIS describe measures that will be taken to minimize the

[39] 33 C.F.R. § 325.1.

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chances of an accidental release, emergency measures that will be implemented should such an event occur, and how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations.

We also recommend that potential health impacts to local communities or other project area users be identified, as well as any strategies employed to communicate risks or actual emergencies. As part of this analysis, we recommend that the EIS use scientific and traditional ecological knowledge to describe potential health effects from exposure to hazardous materials and the effects on the palatability of eating potentially contaminated foods.

HUMAN HEALTH AND IMPACTS TO COMMUNITIES

Sociocultural Impacts

It is anticipated that the proposed project will result in employment opportunities for Alaska Native residents, as well as generate local and corporate revenues in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts may affect a community's ability to access traditional and accustomed subsistence use areas. We recommend that the EIS identify the specific communities, federally recognized tribes, and corporations that could be impacted, both positively and negatively, which will help agency decision makers and the public understand the scope of the potential sociocultural impacts.

We recommend that the sociocultural impacts associated with this project and alternatives be fully evaluated and disclosed in the EIS and include, but not be limited to, the following:

- Socioeconomic Impacts
    - Evaluate potential changes to the region's economy as a result of the mine construction and operation (e.g., changes to commercial fishery, recreational fishery, and tourism sectors).
    - Evaluate impacts associated with economic changes to families, communities, and cultures, including potential changes to those aspects of the area's economy that are currently subsistence-based;
    - Evaluate the potential decline in the region's economy following mine closure; and
    - Evaluate replacement costs of traditional foods if access or availability are impacted by the proposed project.
- Accessibility of Traditional Use Areas
    - Identify community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, camping, berry picking, and other uses;
    - Describe the potential access limitations to these traditional use areas and their impacts to local communities; and
    - Coordinate with the tribes and communities on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.
- Compatibility of Traditional Use Areas
    - Identify project activities that may conflict with traditional and accustomed uses; and

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- Coordinate with the affected tribes and communities to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses and the construction and operation of this project.

Environmental Justice and Impacted Communities

In compliance with NEPA and Executive Order 12898 on Environmental Justice, actions should be taken to conduct adequate public outreach and participation that ensures that the public and Native American tribes understand possible impacts to their communities and trust resources.

Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.[40] The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be uniquely vulnerable populations that may be impacted.

The CEQ has developed guidance concerning how to address Environmental Justice in the environmental review process.[41] In accordance with this guidance, the EPA recommends that the EIS address the following points:

- Identify low income, minority, and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts;
- Disclose the results of meaningful involvement efforts, such as community identified impacts;
- Evaluate identified project impacts for their potential to disproportionately impact low income, minority, or Alaska Native communities, relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the Corps' decision making process;
- Propose mitigation for unavoidable impacts that will or are likely to occur; and
- Include a summary conclusion, sometimes referred to as an "environmental justice determination" that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on the EPA's website at: https://www.epa.gov/environmentaljustice.

Health Risk or Impact Analysis

The EPA recommends that the Corps undertake a screening process to determine which aspects of health (including but not limited to public, environmental, mental, social, and cultural) could be impacted by the proposed project. Depending on the screening results, an analysis of health effects, such

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[40] EO 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-income Populations. February 11, 1994.

[41] http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf.

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as a health risk assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health. This analysis may need as much time to complete as the Draft EIS, therefore we recommend that early screening is essential to ensuring a timely analysis. We further recommend that the Corps partner directly with local, state, tribal, and federal health officials to determine the type of analysis needed to assess health impacts and conduct the analysis, and to determine appropriate and effective mitigation of potential health impacts.

Scope of Health Assessment in EIS

In terms of the scope of the health assessment, we recommend that the potential for contaminant exposure and resulting risks be evaluated. In addition, we recommend that the EIS consider how income from new jobs can result in positive or negative health impacts, for example by increasing socioeconomic status or by generating rapid social and community change. We also recommend considering the health impacts of potential changes to traditional way of life from the project, including reduced reliance on a traditional diet due to lack of access and corresponding increased reliance on substitutes.

Data Collection

To appropriately evaluate health impacts, we recommend that specific health data that may not be routinely collected as part of the scoping process may be required. To ensure that the necessary data are available for this evaluation, the Corps may want to involve public health professionals early in the NEPA process. Public health data and expertise for prospective health impact analysis, or for providing input on health issues, may be available from local health departments, tribal health agencies, the Alaska Department of Health and Social Services, or federal public health agencies such as the U.S. Centers for Substances and Disease Registry, or the Indian Health Service.

Methods and Tools

The Health Impact Assessment methodology is a common tool that can be used to assess potential health impacts. HIA is a combination of procedures, methods, and tools that enables systematic analysis of potential positive or negative effects of a policy, plan, program, or project on the health of a population, as well as the distribution of those effects within the population.[42] Depending on available data and potential effects, there are different levels of HIA analysis, and we recommend that the Corps' involve public health professionals in determining the appropriate level of analysis. In addition to evaluating impacts, we recommend that the HIA identify the appropriate actions to manage or mitigate health effects from the proposed project.

Guidelines for conducting an HIA are available from various sources.[43] The World Health Organization has links to many guides.[44] The International Finance Corporation has also developed detailed guidelines for conducting an HIA.[45] In addition, the State of Alaska has developed *Technical Guidance for Health Impact Assessment*, also known as the "Alaska HIA Toolkit".[46]

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[42] This definition is from the International Association for Impact Assessment (IAIA), which is modified from the World Health Organization's Gothenberg consensus statement (1999).

[43] The EPA does not endorse or recommend use of any single or particular guidance on HIA. These references are provided as general information and to assist permitting agencies with identifying additional resources on HIA.

[44] See http://www.who.int/hia/about/guides/en/.

[45] See http://www.ifc.org/wps/wcm/connect/a0f1120048855a5a85dcd76a6515bb18/HealthImpact.pdf?MOD=AJPERES.

[46] See http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf.

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CONSULTATION AND COORDINATION WITH TRIBAL GOVERNMENTS

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States' government-to-government relationships with Indian tribes. In addition, pursuant to Public Law 108-119, 118 Stat. 452, as amended by Public Law 108-4217, 188 Stat. 3267, federal agencies are required to consult with Alaska Native Claims Settlement Act corporations on the same basis as Indian tribes under Executive Order 13175. We recommend that the EIS describe the process and outcome of any government-to-government and/or government-to-corporation consultations regarding the Pebble Project, issues that were raised during the tribal consultations and how those issues were addressed.

Cooperating agency involvement establishes a mechanism for addressing intergovernmental issues throughout the EIS development process, and we support the Corps' inclusion of two tribal governments as cooperating agencies. We recommend that the Corps remain open to including other potentially affected tribal governments that have the resources and interest in serving as cooperating agencies for EIS development, consistent with the July 28, 1999, memorandum from CEQ to the heads of federal agencies.

ANALYSIS TOOLS AND METHODOLOGIES

Baseline Data Adequacy

We suggest categorizing and synthesizing existing data to ensure pertinent information is available for review and use in the EIS analysis. We understand that the Corps intends to establish focused workgroups during development of the EIS. We support this approach and recommend that the workgroups include cooperating agency subject matter experts for key areas (air, water, wetlands, fisheries, etc.) to review baseline data for completeness, identify data gaps, and recommend approaches toward resolving those gaps in a timely manner. For example, additional analysis or collection of additional data may be required to characterize the accuracy of best available baseline estimates of resources such as fish populations, groundwater elevations, or wetland extents. Such information will be critical for designing and developing a robust monitoring framework and for assessing impacts during and after project development and comparing those to the baseline.

Geochemistry/Characterization of Ore, Waste Rock, and Tailings

To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste management, we recommend that the physical and chemical characteristics of the ore, pit walls, waste rock, and tailings should be determined and disclosed in the EIS. Environmental samples used to support projections should represent a range of conditions that currently occur and that could occur in the future as a result of the project, including under potentially altered future climate conditions. Waste materials (ore, waste rock, tailings) used for environmental projections should be representative of the material to be mined and related to the mine plan and proposed processing methods. Physical and chemical characterization should be conducted in a manner that provides environmentally conservative estimates of impacts.

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It may be helpful to consider EPA Region 10's Sourcebook for Hardrock Mining for recommendations related to the NEPA analyses of mining projects.[47] We recommend that the following information be utilized to characterize geologic and mineralogy setting/aqueous geochemistry in the baseline environment and impact prediction sections of the EIS:

- Whole rock analysis;
- Mineralogy;
- Drill core descriptions;
- Block model or similar model (a computerized estimate of the quantity and characteristics of ore and waste);
- Available literature on the ore deposit;
- Mineral occurrences (e.g., on fracture surfaces, in groundmass, using hand specimens and thin section) with an emphasis on sulfides and carbonates;
- Acid-base accounting;
- Long-term kinetic testing (including possible startup of test pads if sufficient material and access to site are available);
- Baseline surface and ground water quality and flows (including springs);
- Potentiometric surface for groundwater;
- Hydraulic properties (e.g., hydraulic conductivity, porosity, permeability) of soil, vadose zone, and groundwater aquifers, especially under proposed locations of mine facilities; and
- Hydrogeochemical models for prediction of water quality.

Predictive Modeling

We recommend that predictive modeling be based on a site-specific conceptual model that describes the system boundaries, spatial and temporal scales, hydraulic (for water modeling) and chemical characteristics, sources of data and data gaps, and the mathematical relationships used to describe processes. We also recommend that our suggestions be applied to any environmental and predictive modeling used for assessing impacts in the EIS. The water quality model, in particular, should be capable of predicting both whole water and dissolved fractions of metals/metalloids and should provide temporal predictions that are consistent with the time-steps in applicable water quality criteria.

Any modeling documentation should include:

- Tables of parameter values used in the model;
- Tables and graphs of results;
- Uncertainty and sensitivity analyses;
- Errors associated with both measured and assumed data; and
- Recommendations for further analysis, if applicable.

We recommend that discussions on modeling include a clear statement of the management objectives intended to be achieved by the modeling, the level of analysis required to meet the objectives, and uncertainties associated with modeled outcomes. For your reference, please refer to EPA's guidance that provides recommendations for the effective development, evaluation, and use of models in

[47]U.S. EPA Region 10. 2003. EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska January 2003.

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environmental decision making.[48]

We recommend that the EIS use caution in describing absolute outcomes based on modeling. Mathematical modeling used for describing the physical and chemical characteristics of the project site and potential impacts includes a level of uncertainty; understanding these uncertainties and associated risks is necessary for informed decision making. We recommend that the study plan for modeling analysis clearly state the purpose, questions of concern, method, data, and limitations of the model to generate valuable interpretations. We also strongly recommend an appropriately conservative approach be taken with modeling and a range of predictive outcomes be discussed (e.g., most likely case, reasonable worst-case, and reasonable best-case scenarios) that reflect a range of climatic settings and critical input values. Inclusion of a reasonable range of outcomes allows the agencies to make better informed plans for mitigation, adaptive management, and contingencies to respond to reasonably foreseeable adverse impacts.

Traditional Ecological Knowledge

Due to the location of the proposed project and traditional uses of the area, we recommend the identification, inclusion, and integration of traditional ecological knowledge into the EIS analysis, as appropriate. Such anthropological work can include the collection of local and traditional knowledge concerning the affected environment, anticipated impacts from the project, and traditional hunting and land use patterns in the area. We recommend that, in addition to reviewing any pertinent traditional ecological knowledge currently available, additional studies be conducted as necessary to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed project and project alternatives. This information should be reviewed and included in the EIS to the extent possible and utilized in the analysis of potential impacts.

MITIGATION, MONITORING, AND ADAPTIVE MANAGEMENT

Mitigation

CEQ regulations at 40 C.F.R. § 1508.20 define mitigation to include five categories of actions to address impacts. Briefly stated, these are: avoiding, minimizing, rectifying, reducing, and compensating. The regulations at 40 C.F.R. § 1502.14(f), 1502.16(h), and 1508.25 indicate that appropriate mitigation measures should be addressed in an EIS both as part of the analysis of alternatives and in discussions of environmental consequences.

Mitigation is also relevant to evaluating compliance with the Guidelines, which prohibit discharges of dredged or fill material that will cause or contribute to significant degradation of the waters of the United States, and prohibit all discharges *"unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."*[49] The Guidelines identify numerous types of actions to mitigate potential adverse impacts, which include

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[48] Guidance Document on the Development, Evaluation and Application of Environmental Models (PDF). EPA/100/K-09/003. March 2009. http://www.epa.gov/crem/cremlib.html.

[49] 40 C.F.R. § 230.10(d).

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measures to avoid, minimize, and compensate for impacts. Avoidance, minimization, and compensation form a "mitigation sequence" that must be followed in order to comply with the Guidelines' requirement that all appropriate and practicable steps be taken to mitigate impacts to aquatic resources.[50] Compensatory mitigation considerations under the Guidelines are discussed further in the section on aquatic resources above.

The EPA recommends that the EIS identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this project. In addition, we recommend identifying whether implementation of each measure is required by the Corps or any other governmental entity and which entity will be responsible for implementing the measure. To the extent possible, mitigation goals and measurable performance standards should be identified in the EIS to reduce impacts to a particular level or adopted to achieve an environmentally preferable outcome. CEQ guidance on the Appropriate Use of Mitigation and Monitoring seeks to enable agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs.[51]

Monitoring

Environmental monitoring programs should be designed to assess both impacts from the project and whether implemented mitigation measures are effective. We recommend that the monitoring programs:

- Define the monitoring goals and objectives;
- Provide details to demonstrate that goals and objectives will be achieved such as the parameters to be monitored, monitoring locations and frequency, data analysis, and reporting;
- Discuss actions (contingencies, triggers, adaptive management, corrective actions, etc.) that will be taken based on monitoring results;
- Identify and incorporate controls and pre-project data with quantified bias and precision to enable detection of impacts, success of BMPs, and ability to distinguish these from natural variation; and
- Require regular analysis and reporting of data to oversight agencies, including submittal of a sampling and quality assurance plan for agency approval.

We recommend that the monitoring programs be described in the EIS and that the EIS also discuss public participation, and how the public can get information on mitigation effectiveness and monitoring results.

Adaptive Management Planning

We recommend that the EIS utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy should include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set follow-up actions into motion. This strategy or plan should be described so that reviewers may comment on its adequacy. This type of plan, when coupled with the monitoring program, is necessary to mitigate for uncertainties and risks associated with predictions of

[50] 40 C.F.R. § 230.10(a), (d); *See* Memorandum of Agreement between U.S. Department of Army and the Environmental Protection Agency on the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.
[51] https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

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environmental outcomes, and will provide an early warning system of unexpected outcomes.

FINANCIAL ASSURANCE

NEPA provides for the disclosure of all information concerning the environmental consequences of a proposed action to agency decision makers and the public before decisions are made and actions are taken. A key component in determining the environmental impacts of a mining project is the effectiveness of the closure and reclamation activities, including long-term water management. In turn, whether any closure and reclamation activities that may be necessary will be adequately funded is key to determining whether those activities will be effective. We therefore recommend that the project's ability to self-fund, and/or any third-party financial assurance mechanisms, be disclosed. Disclosure of the financial assurance amount and mechanism is particularly important for this project given that PLP's proposal includes long term water management and treatment.

We recommend that the draft EIS disclose the estimated costs to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives. The EPA recommends that the final EIS identify proposed financial assurance mechanisms and demonstrate that these mechanisms would ensure that necessary reclamation work is completed.

The EPA is available for further conversations about the level of detail to include in the document. Below are the main elements that we believe should be disclosed in the EIS:

1. Site Reclamation (facility closure, earth moving/stabilization, revegetation, etc.):

- Phases of reclamation;
- Estimated cost (+/- percent) to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives;
- Criteria for determining success of reclamation activities for financial assurance release; and
- Costs associated with implementing contingency measures to address reasonably foreseeable but not specifically predicted outcomes.

2. Long-Term Site Management (post-closure water treatment, mitigation of impacts to aquatic resources, site maintenance, and monitoring):

- Itemized cost estimate (including reasonable contingencies) and appropriate economic variables to calculate the net present value of future expenses; and
- If a trust fund is utilized, address the "mechanics" of the fund, including:
    - Trust fund mechanism (e.g., current value trust, net present value trust, etc.);
    - Requirements for timing of payments into the trust fund;
    - How the Corps would ensure that the trust fund or other financial assurance could not be claimed by a creditor in the case of bankruptcy;
    - Acceptable financial instruments;
    - How trust management fees and taxes will be paid;
    - Identity of the trust fund beneficiaries; and
    - Identity of the operator with responsibility/liability for financial assurance.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/26/2018 6:17:06 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Pebble Letter.

Hello David,
Per the voicemail I just left you, here is the latest on the status of the letter review in OGC.
Thank you,
Molly

From: Nalven, Heidi
Sent: Tuesday, June 26, 2018 9:54 AM
To: Marshall, Tom <marshall.tom@epa.gov>; Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble Letter.

Carrie checked in with David Fotouhi yesterday and he said he is not done with the letter and needs to follow-up with Justin.

We can make sure David knows that Region 10 is waiting on OGC.

From: Marshall, Tom
Sent: Tuesday, June 26, 2018 1:45 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble Letter.

Hi, Megan. Copying Heidi re: your inquiry below, in case she has any update. (She has the Pebble lead in OGC; at least today, though, I know our FO is very jammed.) Deliberative Process / Ex. 5
Deliberative Process / Ex. 5 hanks.

202.564.5549

From: Barnhart, Megan
Sent: Tuesday, June 26, 2018 12:44 PM
To: Marshall, Tom <marshall.tom@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: FW: Pebble Letter.

Tom,

We just closed the loop with OW (see email below). Are there any updates from OGC?

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Best,
Megan

From: Kaiser, Russell
Sent: Tuesday, June 26, 2018 12:26 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Pebble Letter.

Megan,

Deliberative Process / Ex. 5

Thanks

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 11/15/2018 11:15:31 PM
To: Bennett, Brittany [bennett.brittany@epa.gov]; Herbst, John [herbst.john@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: Notes from 11-14-18 meeting between Deputy AA OW and PLP
Attachments: Bristol Bay Meeting Notes 11.14.2018 RLK.DOCX

Pebble 404(c) Team

Yesterday Lee Forsgren met with PLP and other BB stakeholders supportive of Pebble mine. Attached are the notes from that meeting put together by Russ Kaiser. Please add these to our meeting records.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

EPA Deputy AA Meeting with PLP
Topic: Bristol Bay
Meeting Date: Nov 14, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Abe Williams, The Pebble Partnership (PLP) • Chasity Anelon, PLP • Rhiannon Nanabook, PLP • Ventura Sumanigo, Kijik • Brad Angasan, ADC • Krista Williams, BBNC Shareholder • Shannon Johnson-Nanabook, Iliamna
Did EPA decide which third parties would attend?: No.
List of EPA Attendees: • Lee Forsgren • Brian Frazer • Russ Kaiser
Agenda: Status of Bristol Bay PD
Did EPA/Third Party Set the Agenda?: Third Party, Abe Williams
Did EPA/Third Party Run the Meeting: Meeting ran as a conversation
Notes from Discussion (including individual advice/feedback provided to Agency): EPA Notes (Forsegren): • We will stay on current path, noting there are no immediate actions for EPA to take with respect to the (c) action. • We will remain engaged in the NEPA process as it relates to our mission. • We will continue to be transparent and listen to views from interested parties. • We will use the NEPA document findings and latest science to inform our ultimate decision on the (c) action - we will use facts to support our decision. • We don't know what the final decision will be at this time and reminded them that there is no pre-judged outcome for the action. • Lee will be the lead for OW, and it is not clear at this time if the Acting Administrator or Henry Darwin will be the decision-maker. Third Party Summary Notes: • Requested EPA to please remove the pending (c) action as it is creating investor uncertainties, which is creating a lower growth rate in needed jobs in the area and likely eliminating future jobs as a consequence of not taking an action. Also, potentially causing other community issues. • Looming veto inhibits Corps from completing NEPA process. Lee F clarified that (c) action only prevents Corps from making final permit decision. They can complete NEPA ROD. • Salmon initiative failed … need to consider that in your findings. • BBNC doesn't represent all positions for the AK Natives.
Next Steps/Follow-up Discussed: Request for Lee to convey meeting summary highlights with decision-makers. Lee indicated he would do so when he had the opportunity to do so.

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AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 4/3/2018 2:30:16 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
Subject: RE: BB website - EIS info

Hi Patty,
Thanks for sharing the plan to add a few sentences to the EPA BB website. I also agree with the suggestion to use the sentence Erik suggests (I've added some language to what was proposed) – "The purpose of the NEPA process is to help public officials make informed decisions that are based on an understanding of environmental consequences and take federal agency actions that protect, restore, and enhance the environment." That could come after the sentence (I have added some language) "The EIS will describe the proposed project, evaluate the potential impacts of the project on the physical, biological, and social environment, and discuss the mitigation measures necessary to reduce those impacts."

Jill

From: Vaughan, Molly
Sent: Monday, April 02, 2018 4:06 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: BB website - EIS info

Hi Patty,
I agree with Erik's edits, and don't have any additional comments.
Thanks,
Molly

From: McGrath, Patricia
Sent: Monday, April 02, 2018 12:45 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB website - EIS info

Erik-
The EIS sentence that you refer to came directly out of the Corps' newsletter. I like the small change edit and will include that after hearing back from others.
Thanks- Patty

From: Peterson, Erik
Sent: Monday, April 2, 2018 1:41 PM
To: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB website - EIS info

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Patty,

Sounds good to me to put this on EPA's BB website.

My suggestions on the language:

- Consider spelling out Environmental Impact Statement
- Edit the sentence "The EIS is to evaluate potential impacts of the project on the physical, biological, and social environment". Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

- Edit "Below is link" to "Below is a link…"

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-6382

From: Skadowski, Suzanne
Sent: Monday, April 02, 2018 1:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB website - EIS info

Thank you Patty!

I think it is a good idea to add some helpful info on the current permit process. I also suggested this to the BB team a while ago.

Your wording looks fine to me, thanks.

Suzanne Skadowski
Public Affairs | Media Relations Specialist
U.S. Environmental Protection Agency

AMERICAN OVERSIGHT

Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Twitter: @EPAnorthwest
Facebook: @eparegion10

From: McGrath, Patricia
Sent: Monday, April 2, 2018 1:03 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Cc: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB website - EIS info

Hi Molly, Jill, Tami, and David-

Suzanne and I talked briefly about adding a few sentences to EPA's Bristol Bay website about our role in the EIS process and a link to the Corps EIS website.

I think that will help direct folks that are used to looking to EPA for information to the Corps website, particularly now that scoping has begun.

Following is some suggested language. Please let me know if you agree that we should include this on our website and if you have any recommended edits to the language. I have also attached the Corps' Newsletter #1 that was recently posted, FYI.

Environmental Impact Statement Process

The U.S. Army Corps of Engineers received a Department of Army permit application and project description from the Pebble Limited Partnership on December 22, 2017 and has determined that an EIS under the National Environmental Policy Act is needed before it makes a decision on the permit application. The Corps is the lead agency in managing the EIS process and developing the EIS. EPA is a cooperating agency in the EIS process, at the invitation of the Corps. The EIS is to evaluate potential impacts of the project on the physical, biological, and social environment.
The Corps initiated public scoping of the EIS on April 1, 2018. Below is link to the Corps EIS website for more information and documents pertaining to the Department of Army permit application and EIS process.
https://www.pebbleprojecteis.com/#/

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 5/24/2018 6:05:22 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: RE: QFRs Calvert 28-32

Seems like it may need to get elevated in OGC? Including Allyn.

From: Allnutt, David
Sent: Thursday, May 24, 2018 10:43 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: QFRs Calvert 28-32

Chris was scheduled to have a call with Lee earlier this morning – though not on this particular topic, I don't think.

I can try to figure out what was discussed, but won't push on this issue unless others want me to.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, May 24, 2018 10:05 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: QFRs Calvert 28-32

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Monday, May 21, 2018 10:58 AM
To: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: QFRs Calvert 28-32

Hi –

AMERICAN OVERSIGHT

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Monday, May 21, 2018 10:09 AM
To: Logan, Shanita <logan.shanita@epa.gov>; Green, Noelle <Green.Noelle@epa.gov>
Cc: Koslow, Karin <Koslow.Karin@epa.gov>; Siciliano, CarolAnn <Siciliano.CarolAnn@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Lindo, Talitha <lindo.talitha@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: QFRs Calvert 28-32

Hi Shanita,

AMERICAN OVERSIGHT

I have attached edits and comments from me and Carrie per your direction. Please let me know if you need anything further.

Heidi

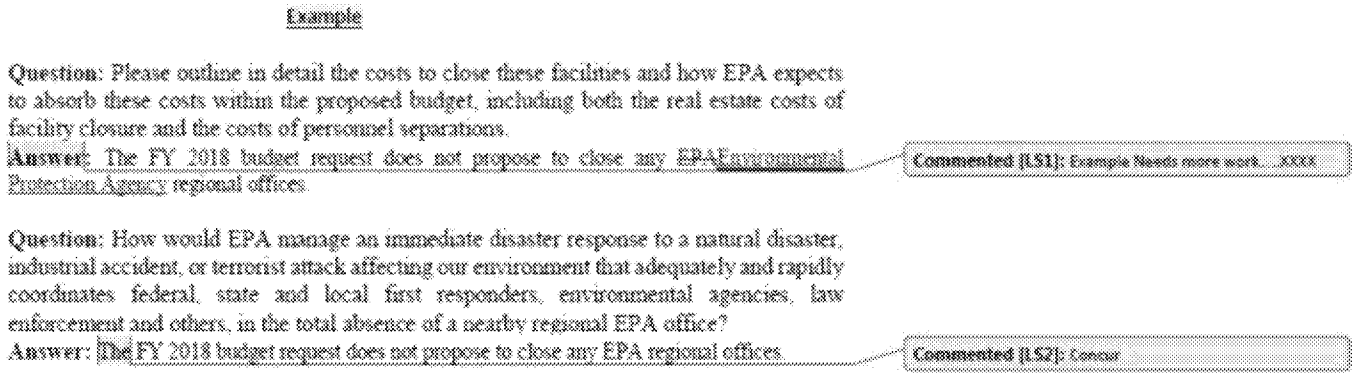
Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Logan, Shanita
Sent: Friday, May 18, 2018 6:05 PM
To: Green, Noelle <Green.Noelle@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Koslow, Karin <Koslow.Karin@epa.gov>; Siciliano, CarolAnn <Siciliano.CarolAnn@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Lindo, Talitha <lindo.talitha@epa.gov>
Subject: QFRs Calvert 28-32

All,
The attached QFR(s) has been forwarded for your review, feedback and/or concurrence. Please use one of the following reply options:

1) No comments/feedback (single or multiple QFR's) – Select the **Comment icon** and simply type **concur;**
2) Comment(s) to a single question– Use **Track Changes** and/or **Comment icon** to insert all comments and feedback into the Word document.
3) Combined set of questions - Within the same document, please select the **Comment icon** to **concur**; and use **Track Changes** and/or **Comment icon** to insert all comments and feedback – see example below

Responses are due by **cob, May 22, 2018**. Please forward all Word documents to RMO's Budget team: Shanita Logan (logan.shanita@epa.gov) and Talitha Lindo (lindo.talitha@epa.gov) .
Thanks.
Shanita Logan
202-564-0227


Example

Question: Please outline in detail the costs to close these facilities and how EPA expects to absorb these costs within the proposed budget, including both the real estate costs of facility closure and the costs of personnel separations.
Answer: The FY 2018 budget request does not propose to close any EPAEnvironmental Protection Agency regional offices.

Commented [LS1]: Example Needs more work.....xxxx

Question: How would EPA manage an immediate disaster response to a natural disaster, industrial accident, or terrorist attack affecting our environment that adequately and rapidly coordinates federal, state and local first responders, environmental agencies, law enforcement and others, in the total absence of a nearby regional EPA office?
Answer: The FY 2018 budget request does not propose to close any EPA regional offices.

Commented [LS2]: Concur

AMERICAN OVERSIGHT

Message

From: Duncan, Bruce [Duncan.Bruce@epa.gov]
Sent: 4/24/2018 6:40:56 PM
To: LaVay, Maggie [LaVay.Maggie@epa.gov]; Blank, Valerie [Blank.Valerie@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hagerthey, Scot [Hagerthey.Scot@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]
Subject: FW: ORD support for Pebble EIS
Attachments: ORD Regional Decision Support Request_PebbleEIS_April2018.docx

Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

AMERICAN OVERSIGHT

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low	

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM

AMERICAN OVERSIGHT

To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

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Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date** 4/24/2018
Contact Information Name: Patty McGrath Phone Number: (206) 553-6113 Email: mcgrath.patricia@epa.gov	
Project Title ORD Support for Pebble Mine Project Environmental Impact Statement	
Type of Scientific Support Requested X Consultative advice X Workgroup/seminar/committee participation X Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and aspects of the CWA 404 permit process. EPA Region 10 has put together a team to accomplish these responsibilities. The Pebble Mine Project is located in the Bristol Bay watershed. This is a high priority project for Region 10 due to the size of the project and ecological setting and past work EPA has undertaken. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. Below is a link to EPA's Bristol Bay website. https://www.epa.gov/bristolbay Assistance Needed/Research Steps There are several areas where EPA is requesting support from ORD to bolster EPA's EIS/permitting review team and also benefit from ORD's past work in the Bristol Bay watershed. The key areas where we are requesting support include fisheries, hydrology, transportation, and coordination. See "Type of expertise needed" for more details.	
Project Milestones and Due Date EPA scoping comments – 6/29/2018 Contributions to technical working groups Draft EIS chapters – summer/fall 2018 Draft EIS comments – early 2019 Final EIS comments – end 2019/early 2020	

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Estimated number of hours required to complete request

☐ 1 – 4 hours ☐ 8 – 16 hours

☐ 4 – 8 hours x >16 hours

If >16, please provide an estimate of the hours needed

The number of hours is difficult to estimate due to the nature of the work. There will be times of intense activity during document review and preparation of comments and times where there will be no activity.
For the fisheries and hydrology expertise, estimate each at 100 to 180 hours per year for 2 years.
For transportation expertise, estimate at 50 to 80 hours per year for next 2 years.

Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)

Fisheries - provide advice to EPA's team on fisheries issues, provide input into EPA's EIS scoping letter, review fisheries baseline data, recommend aquatic resources impact assessment methodologies, participate in fisheries technical working group, review and provide comments on fisheries sections of the EIS. Requesting Joe Ebersole due to his work on the Bristol Bay Assessment.

Hydrology - provide advice to EPA's team on hydrology issues, provide input into EPA's EIS scoping letter, review groundwater and surface water hydrology baseline data, recommend impact assessment and hydrologic modeling methodologies and review results, participate in hydrology technical working group, review and provide comments on hydrology sections of the EIS

Transportation – provide advice to EPA's team on transportation issues, review and provide comments on transportation sections of the EIS. Requesting Michael Kravitz due to his work on the Bristol Bay Watershed Assessment.

Coordination - participate in monthly Pebble EIS/permit team meetings to assist with coordinating ORD support and potentially review sections of the EIS. Requesting Kate Schofield due to her work on the Bristol Bay Watershed Assessment.

Have you worked with ORD scientists on this project previously?

x Yes ☐ No

If yes, please list the names of the scientists.

Barbara Butler, Joe Ebersole, Jeff Frithsen, Michael Kravitz, Kate Schofield, Glenn Sutter, Jason Todd, Michael Griffith, Michael McManus, Caroline Ridley

Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan)

x High ☐ Medium ☐ Low

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/24/2018 3:32:47 PM
To: Duncan, Bruce [Duncan.Bruce@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: ORD support for Pebble EIS
Attachments: ORD Regional Decision Support Request_PebbleEIS_April2018.docx

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

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The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

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Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review	

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Other (please specify)
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps
Project Milestones and Due Date
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No
If yes, please list the names of the scientists.
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

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Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date** 4/24/2018
Contact Information Name: Patty McGrath Phone Number: (206) 553-6113 Email: mcgrath.patricia@epa.gov	
Project Title ORD Support for Pebble Mine Project Environmental Impact Statement	
Type of Scientific Support Requested X Consultative advice X Workgroup/seminar/committee participation X Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and aspects of the CWA 404 permit process. EPA Region 10 has put together a team to accomplish these responsibilities. The Pebble Mine Project is located in the Bristol Bay watershed. This is a high priority project for Region 10 due to the size of the project and ecological setting and past work EPA has undertaken. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. Below is a link to EPA's Bristol Bay website. https://www.epa.gov/bristolbay Assistance Needed/Research Steps There are several areas where EPA is requesting support from ORD to bolster EPA's EIS/permitting review team and also benefit from ORD's past work in the Bristol Bay watershed. The key areas where we are requesting support include fisheries, hydrology, transportation, and coordination. See "Type of expertise needed" for more details.	
Project Milestones and Due Date EPA scoping comments – 6/29/2018 Contributions to technical working groups Draft EIS chapters – summer/fall 2018 Draft EIS comments – early 2019 Final EIS comments – end 2019/early 2020	

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Estimated number of hours required to complete request

☐ 1 – 4 hours ☐ 8 – 16 hours

☐ 4 – 8 hours x >16 hours

If >16, please provide an estimate of the hours needed

The number of hours is difficult to estimate due to the nature of the work. There will be times of intense activity during document review and preparation of comments and times where there will be no activity.
For the fisheries and hydrology expertise, estimate each at 100 to 180 hours per year for 2 years.
For transportation expertise, estimate at 50 to 80 hours per year for next 2 years.

Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)

Fisheries - provide advice to EPA's team on fisheries issues, provide input into EPA's EIS scoping letter, review fisheries baseline data, recommend aquatic resources impact assessment methodologies, participate in fisheries technical working group, review and provide comments on fisheries sections of the EIS. Requesting Joe Ebersole due to his work on the Bristol Bay Assessment.

Hydrology - provide advice to EPA's team on hydrology issues, provide input into EPA's EIS scoping letter, review groundwater and surface water hydrology baseline data, recommend impact assessment and hydrologic modeling methodologies and review results, participate in hydrology technical working group, review and provide comments on hydrology sections of the EIS

Transportation – provide advice to EPA's team on transportation issues, review and provide comments on transportation sections of the EIS. Requesting Michael Kravitz due to his work on the Bristol Bay Watershed Assessment.

Coordination - participate in monthly Pebble EIS/permit team meetings to assist with coordinating ORD support and potentially review sections of the EIS. Requesting Kate Schofield due to her work on the Bristol Bay Watershed Assessment.

Have you worked with ORD scientists on this project previously?

x Yes ☐ No

If yes, please list the names of the scientists.

Barbara Butler, Joe Ebersole, Jeff Frithsen, Michael Kravitz, Kate Schofield, Glenn Sutter, Jason Todd, Michael Griffith, Michael McManus, Caroline Ridley

Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan)

☐ High ☐ Medium ☐ Low

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/2/2018 8:03:24 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: BB website - EIS info
Attachments: Pebble EIS Newsletter No. 1.pdf

Hi Molly, Jill, Tami, and David-

Suzanne and I talked briefly about adding a few sentences to EPA's Bristol Bay website about our role in the EIS process and a link to the Corps EIS website.

I think that will help direct folks that are used to looking to EPA for information to the Corps website, particularly now that scoping has begun.

Following is some suggested language. Please let me know if you agree that we should include this on our website and if you have any recommended edits to the language. I have also attached the Corps' Newsletter #1 that was recently posted, FYI.

Environmental Impact Statement Process

The U.S. Army Corps of Engineers received a Department of Army permit application and project description from the Pebble Limited Partnership on December 22, 2017 and has determined that an EIS under the National Environmental Policy Act is needed before it makes a decision on the permit application. The Corps is the lead agency in managing the EIS process and developing the EIS. EPA is a cooperating agency in the EIS process, at the invitation of the Corps. The EIS is to evaluate potential impacts of the project on the physical, biological, and social environment.
The Corps initiated public scoping of the EIS on April 1, 2018. Below is link to the Corps EIS website for more information and documents pertaining to the Department of Army permit application and EIS process.
https://www.pebbleprojecteis.com/#/

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Pebble Project EIS

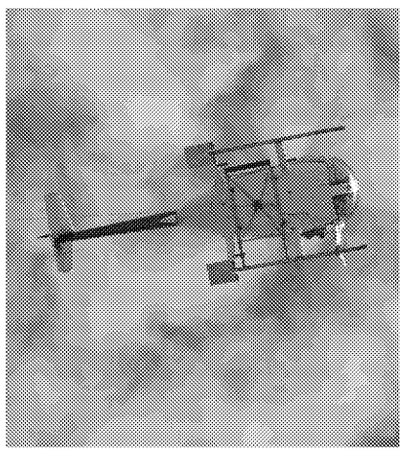
NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.

2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.

3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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EPA-0135-0004357

Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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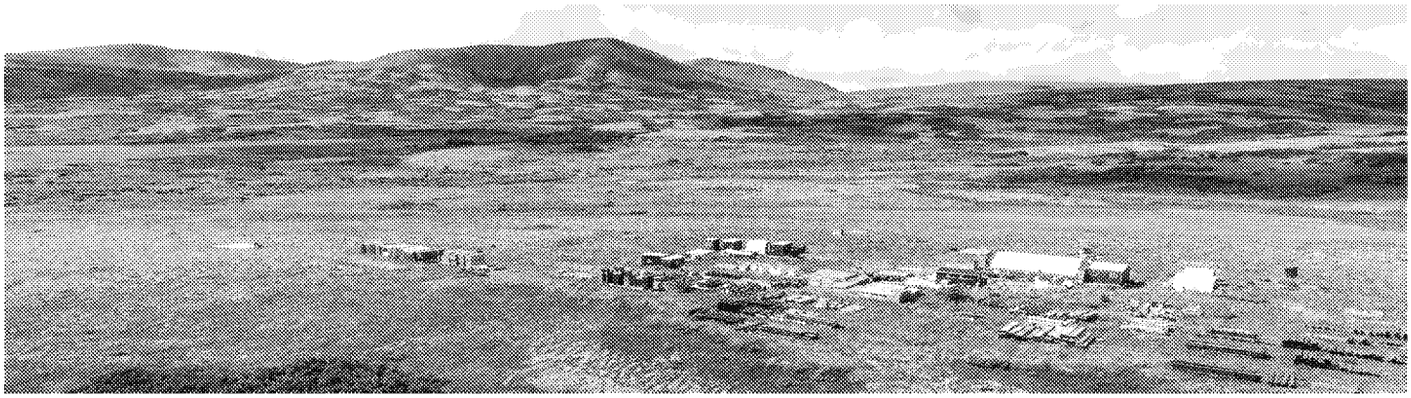
EPA-0135-0004357



Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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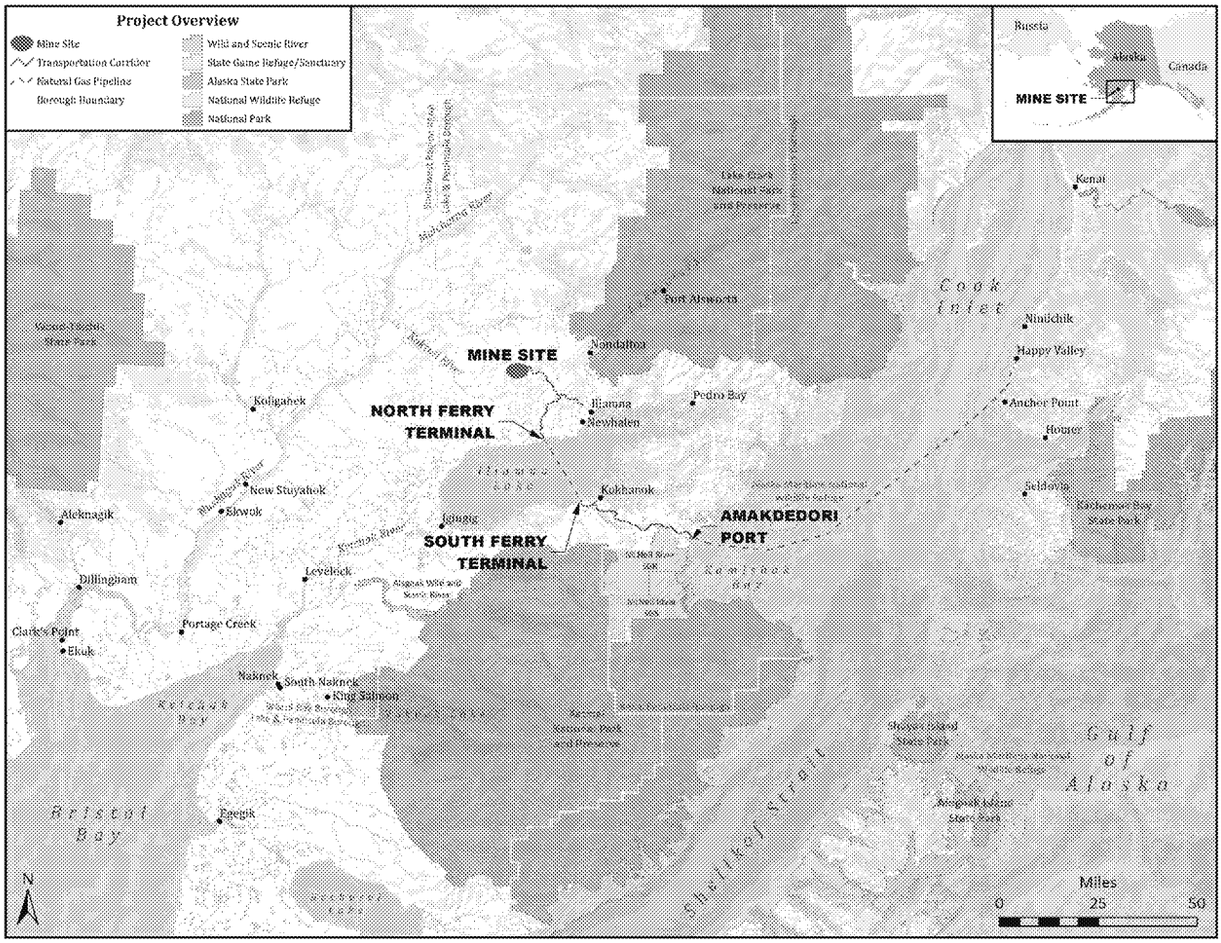
EPA-0135-0004357



Program Manager
Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson AK 99506-0898

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/7/2018 1:21:52 AM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: Re: RA drop in

Just heard from Patty who spoke with James Fugh. Meeting is purely a "courtesy call" and no one is accompanying Collier.

Sent from my iPhone

On Jun 6, 2018, at 4:50 PM, Palomaki, Ashley <Palomaki.Ashley@epa.gov> wrote:

> Checked in with Pam and she hasn't heard back from PLP's executive assistant on this yet. She'll call again in the morning.
>
> Cara – Just FYI - meeting is at 2pm in the event one of us should go.
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> **From:** Allnutt, David
> **Sent:** Tuesday, June 05, 2018 1:22 PM
> **To:** Gahner, Pamela <gahner.pamela@epa.gov>
> **Cc:** Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
> **Subject:** RE: RA drop in
>
> Pam – could you check with the Pebble POC? I'm primarily attempting to determine whether ORC should be included.
>
> <image001.png>
> <image002.png> <image003.png> <image004.png>
>
> **R. David Allnutt**, Director
> Office of Environmental Review and Assessment
> U.S. EPA, Region 10
> 1200 Sixth Avenue, Suite 155
> Seattle, Washington 98101-3140
> (206) 553-2581
>
> **From:** Gahner, Pamela
> **Sent:** Tuesday, June 05, 2018 1:03 PM

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To: Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: RA drop in

I do not know of anyone else accompanying him.

From: Allnutt, David
Sent: Tuesday, June 5, 2018 12:58 PM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RE: RA drop in

Yes – I knew it was me and Chris on the EPA side. My question was whether anyone would be accompanying Tom on behalf of Pebble.

<image001.png>
<image002.png> <image003.png> <image005.png>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Gahner, Pamela
Sent: Tuesday, June 05, 2018 12:21 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: RA drop in

Hi David,
Sorry I missed you. Thursday meeting is with Tom Collier from Pebble, Chris and you. Michelle Pirzadeh is the one who said I should add you to the invite. I know Tom is in Seattle attending other meetings and I do not know if anyone else is accompanying him. If there's someone else, EPA, I should invite please let me know.

Pam
X2598

From: Fraser, Michelle
Sent: Tuesday, June 5, 2018 11:46 AM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RA drop in

Hi Pam,

David Allnut stopped by wanting to check in regarding Chris' meeting on Thursday with the Pebble Limited Partnership. He specifically wanted to know who all was on the invite.

Thanks,

Michelle Fraser

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Office of Compliance and Enforcement
(206) 553-4269
fraser.michelle@epa.gov

EPA Region 10
1200 Sixth Avenue
Suite 155, M/S: OCE-101
Seattle, WA 98101-3188

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 10/22/2018 11:27:03 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay Check-in

Erik – I'm going to be travelling to the lab tomorrow morning and will call into this from the road.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Appointment-----
From: Peterson, Erik
Sent: Monday, October 22, 2018 3:38 PM
To: Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in
When: Tuesday, October 23, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Agenda

NEPA Review

FOIA – E&E News

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/15/2018 11:31:24 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: RE: Pebble hand off

Thanks – I've let the two Pebble team leads know (Patty and Erik). We should give some thought to whether Mark should be on the regional mining team.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 12:05 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: Pebble hand off

HI David and Linda,

Mark Douglas has bravely stepped forward to be the lead on Pebble taking over for Matt. There will obviously be a transition between Matt and Mark with Mary Anne supporting Mark through a team approach. This is something that Michael S and I have discussed and Michael is supportive.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/2/2018 3:47:20 PM
To: Holsman, Marianne [Holsman.Marianne@epa.gov]
Subject: RE: Need your help: Chris speaks to Northwest Environmental Business Council next Thursday. Need some bits of content from you

Marianne – here are some thoughts on (1) the bullet relevant to my program in the draft remarks; and (2) the NEBC question below:

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Holsman, Marianne
Sent: Tuesday, May 01, 2018 10:03 AM
To: Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Bilbrey, Sheryl <Bilbrey.Sheryl@epa.gov>; Kowalski, Edward <Kowalski.Edward@epa.gov>; Wilson, Wenona <Wilson.Wenona@epa.gov>; Hamlin, Tim <Hamlin.Tim@epa.gov>

AMERICAN OVERSIGHT

Subject: Need your help: Chris speaks to Northwest Environmental Business Council next Thursday. Need some bits of content from you
Importance: High

Hello Folks:

You may have heard that Chris is scheduled to speak to the Cascade Chapter of the Northwest Environmental Business Council next Thursday at the WAC. This will be his first time talking with this group. Dennis spoke with them several times.

We've agreed with the organizers that this will be a somewhat informal and a chance for Chris to introduce himself to the group and for them to tell him about their organization, what their members are working on, etc. More of a dialogue, than a long speech. I'm shooting for 15 mins. for his remarks.

I've attached a draft of his remarks. It's written in more the style I've seen Chris speak – less formally, more conversational.

We want him to spend a few minutes on his current priorities. **This is where you come in.** On pages four and five in the attachment I have a list of priorities and a few words on each. I need you to help me put a bit more meat into this content with two – three sentences max. about Chris'/our focus on these topics in the near term. Should be easy, I think. ***If you could just send me an email with your suggested text for the bullets relevant to your program, that would be great. If you could send them to me by COB Thursday, I will then get a final draft ready for Chris' review Monday.***

Michelle, I need your overall "once over" plus a close look at the section on internal stuff…If you prefer to mark up a hard copy, Michelle, I can make your edits on Monday.

Also, below I need David and Sheryl to help provide some fodder for the questions/topics suggested by the NEBC members (one on Pebble and one on Portland Harbor/Duwamish lessons learned). We need to give Chris some suggestions for those two (bolded at the end of the list below). Again, an email with your contributions would be best and I'll plug them in.

Thanks all!

Topics NEBC members are interested in:

-Policy as driver for environmental business.

-Insights and thoughts on the future of EPA.

-Modernization of EPA. Perception is that it's an antiquated bureaucracy.

-Region 10 environmental issues / priorities.

-Pebble Mine / Mining – can we mine copper and "rare earth" elements responsibly?

-Lessons learned from Portland Harbor applied to Duwamish Cleanup.

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/2/2018 3:35:01 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: RE: GMT 2

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Mendelman, Krista
Sent: Tuesday, May 01, 2018 7:39 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: GMT 2

HI David,

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: LaCroix, Matthew
Sent: Tuesday, May 01, 2018 7:07 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: GMT 2?

Krista,

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

The internal deadline for our draft Pebble scoping comments is tomorrow. And the deadline for feedback on the North Slope Permitting Initiative options paper is today. Every project has its day.

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

From: Mendelman, Krista
Sent: Tuesday, May 01, 2018 5:11 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: GMT 2?

Gentlemen,

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

Thanks for your help.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/27/2018 4:44:33 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
Subject: RE: Pebble letter

Yes – this is different from the version you sent me yesterday, but appears merely to reflect OGC/ORC staff's replies to David's and Justin's comments of a couple of weeks ago. I guess the question remains, are we done yet?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 9:39 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Pebble letter

Is this version different from what I sent previously?

From: Nalven, Heidi
Sent: Wednesday, June 27, 2018 10:08 AM
To: Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble letter

Attached is a version with edits from OGC political management and with responses from attorneys from CCILO and WLO. We are still waiting for feedback on the responses and final OGC political management edits.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 9:03 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Pebble letter

Great. Thx.

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Sent from my iPhone

On Jun 27, 2018, at 9:02 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> 11:00?
>
> ---
>
> **From:** Marshall, Tom
> **Sent:** Wednesday, June 27, 2018 8:55 AM
> **To:** Knight, Kelly <knight.kelly@epa.gov>
> **Cc:** Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
> **Subject:** Re: Pebble letter
>
> Any flexibility on the timing here, so we can coordinate internally? Thanks.
>
> Sent from my iPhone
>
> On Jun 27, 2018, at 7:09 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:
>
> > Good Morning –
> >
> > Rob needs OGC's comments to share with Drew by 9am. Is that possible?
> >
> > Thanks
> >
> > Kelly Knight
> > Director, NEPA Compliance Division
> > Environmental Protection Agency
> > 202-564-2141 (office)
> > 202-594-6391 (cell)

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/27/2018 4:34:53 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
Subject: FW: Most recent letter with HQ comments
Attachments: Pebble Project Scoping 060518 draft HQ Review.docx

Rob – we've already incorporated the HQ comments reflected in this mark-up. Is there another version floating around that has edits from David F. and Justin Schwab?

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 8:53 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Most recent letter with HQ comments

From: Knight, Kelly
Sent: Wednesday, June 27, 2018 11:14 AM
To: Tomiak, Robert <tomiak.robert@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: FW: Most recent letter with HQ comments

This is the most recent version with HQ comments.

From: Barnhart, Megan
Sent: Wednesday, June 27, 2018 10:46 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Subject: Most recent letter with HQ comments

Megan Barnhart
U.S. Environmental Protection Agency
Office of Federal Activities, NEPA Compliance Division
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/27/2018 4:33:19 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Most recent letter with HQ comments

It appears that way. Am following up with Rob.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Wednesday, June 27, 2018 9:31 AM
To: Allnutt, David <Allnutt.David@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Most recent letter with HQ comments

Are we sure that this has OGC comments? I think this might be the OFA version before it went to David F. and Justin.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Allnutt, David
Sent: Wednesday, June 27, 2018 9:19 AM
To: Stern, Allyn <Stern.Allyn@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: Most recent letter with HQ comments

OGC's current (final?) comments. Not sure who in the region, if anyone has seen this. Rob is discussing with OP's politicals later this morning and will be calling me back. Let's not do anything with these edits until those conversations have occurred.

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And I would be remiss if I did not point out the following sentence from Administrator Pruitt's memo of yesterday on the 404(c) process:

"I believe that it is critical for the agency to participate in the EIS process [for the Pebble project] and review the final EIS in detail before determining whether to proceed with the section 404(c) process in this case."



R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Tomiak, Robert
Sent: Wednesday, June 27, 2018 8:53 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Most recent letter with HQ comments

From: Knight, Kelly
Sent: Wednesday, June 27, 2018 11:14 AM
To: Tomiak, Robert <tomiak.robert@epa.gov>; Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: FW: Most recent letter with HQ comments

This is the most recent version with HQ comments.

From: Barnhart, Megan
Sent: Wednesday, June 27, 2018 10:46 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Subject: Most recent letter with HQ comments

……

Megan Barnhart
U.S. Environmental Protection Agency
Office of Federal Activities, NEPA Compliance Division
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/8/2018 9:02:18 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: TCTO and other updates

See below --

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Nogi, Jill
Sent: Tuesday, May 08, 2018 1:48 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: TCTO and other updates

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

If Chris really doesn't get comments to Molly today on Pebble, I think we have to move forward with what we have and keep to the schedule. **Personal Matters / Ex. 6** and the letter is supposed to be with Patty. Molly mentioned that she's coming to Seattle next week (for Tribal I guess?) and is giving Ashley a few days to review before it comes to me around the end of next week.

- Sounds good.

Talk with you tomorrow – feel free to let me know if there's anything you would do differently related to these couple of updates. Thanks! Jill

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/11/2018 5:57:23 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: field verification visit

Patty – not sure whether I replied to this earlier, but would support Mark attending, particularly if ARE can fund.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Thiesing, Mary
Sent: Monday, June 11, 2018 9:54 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: field verification visit

Patty,

I think it would be very useful for Mark to go on this trip, if there are funds to support it. He will be the 404 program person responsible for helping to bring this EIS and associated permit process to completion, so it would be useful for those purposes to have eyes on the ground. We typically do go when the Corps invites us on wetland/aquatic resource delineation visits, and since there is a different footprint proposed than any of the pre-app footprints or the footprints proposed by Pebble in their SEC filing, I think it becomes even more important for our evaluation, comments and the record to be informed about what is on the ground.

Mary Anne

From: McGrath, Patricia
Sent: Thursday, June 07, 2018 1:50 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: field verification visit

All-
Mark and I are seeking your advice on whether Mark should participate in the field verification visit with the USACE at the Pebble site. The trip is scheduled for July 9 – 11.

AMERICAN OVERSIGHT

During the previous agency meetings we had discussed our possible interest in this trip, but were notified only yesterday of the dates. The flight to Illiamna on July 9 is full, so if Mark does go he will need to travel a day early or later.

I did not see that Matt had included this trip in ARE travel, though it looks like we do have the funds to cover it.

I am planning a separate overview visit for some of the NEPA team that would benefit and have not previously been to the site.

I see this as an ARU decision as field verification would be to support the 404 delineations. Would we typically participate in a verification site visit? Please let Mark and I know if he should plan for this trip. We would need to initiate planning asap.

Thanks -Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/7/2018 5:57:49 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: RA drop in

I will take notes using the template (thanks for sending) and send to you and Erik for safe keeping, sharing.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Thursday, June 07, 2018 10:36 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: RE: RA drop in

Okay – can you take notes? Or have someone else take them?

We have just been taking hand-written notes and then filling in the templates afterwards. The templates are the same, but there is one on the 404c sharepoint and one on the NEPA sharepoint, in part b/c there isn't complete overlap between the teams. If the meeting ends up clearly being for both, we can just put it both places:

Internal Website/ Ex. 6

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: Allnutt, David
Sent: Wednesday, June 06, 2018 6:22 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Re: RA drop in

Just heard from Patty who spoke with James Fugh. Meeting is purely a "courtesy call" and no one is accompanying Collier.

Sent from my iPhone

On Jun 6, 2018, at 4:50 PM, Palomaki, Ashley <Palomaki.Ashley@epa.gov> wrote:

> Checked in with Pam and she hasn't heard back from PLP's executive assistant on this yet. She'll call again in the morning.
>
> Cara – Just FYI - meeting is at 2pm in the event one of us should go.
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> **From:** Allnutt, David
> **Sent:** Tuesday, June 05, 2018 1:22 PM
> **To:** Gahner, Pamela <gahner.pamela@epa.gov>
> **Cc:** Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
> **Subject:** RE: RA drop in
>
> Pam – could you check with the Pebble POC? I'm primarily attempting to determine whether ORC should be included.

<image001.png>
<image002.png> <image003.png> <image004.png>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Gahner, Pamela
Sent: Tuesday, June 05, 2018 1:03 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: RA drop in

I do not know of anyone else accompanying him.

AMERICAN OVERSIGHT

From: Allnutt, David
Sent: Tuesday, June 5, 2018 12:58 PM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RE: RA drop in

Yes – I knew it was me and Chris on the EPA side. My question was whether anyone would be accompanying Tom on behalf of Pebble.

<image001.png>
<image002.png> <image003.png> <image005.png>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Gahner, Pamela
Sent: Tuesday, June 05, 2018 12:21 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: RA drop in

Hi David,
Sorry I missed you. Thursday meeting is with Tom Collier from Pebble, Chris and you. Michelle Pirzadeh is the one who said I should add you to the invite. I know Tom is in Seattle attending other meetings and I do not know if anyone else is accompanying him. If there's someone else, EPA, I should invite please let me know.

Pam
X2598

From: Fraser, Michelle
Sent: Tuesday, June 5, 2018 11:46 AM
To: Gahner, Pamela <gahner.pamela@epa.gov>
Subject: RA drop in

Hi Pam,

David Allnut stopped by wanting to check in regarding Chris' meeting on Thursday with the Pebble Limited Partnership. He specifically wanted to know who all was on the invite.

Thanks,

Michelle Fraser
Office of Compliance and Enforcement
(206) 553-4269
fraser.michelle@epa.gov

AMERICAN OVERSIGHT

EPA Region 10
1200 Sixth Avenue
Suite 155, M/S: OCE-101
Seattle, WA 98101-3188

AMERICAN OVERSIGHT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 29, 2018

Mr. Shane McCoy, Project Manager
U.S. Army Corps of Engineers
Regulatory Division
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Mr. McCoy:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' March 29, 2018, Notice of Intent initiating the scoping process for the proposed Pebble Project Environmental Impact Statement development (EPA Region 10 Project Number 18-0002-COE). We have also reviewed the additional project information available on the Corps website. The EPA is providing comments for your consideration pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500-1508) and Section 309 of the Clean Air Act. The EPA is also supporting the Corps in EIS development as a cooperating agency, due to our special expertise. We appreciate the opportunity to provide early input in the analysis of the Pebble Project.

The Pebble Limited Partnership (PLP) is proposing to develop the Pebble deposit in southwest Alaska, containing copper, gold, and molybdenum. The proposed project includes an open-pit mine, tailings storage facility, a low-grade ore stockpile, an overburden stockpile, a mill facility, a natural gas-fired power plant, and other mine site facilities. The anticipated throughput at the mill facility is 160,000 tons of ore per day, and the proposed mine operating life is 20 years. The proposed project also includes development of a 188-mile natural gas pipeline across Cook Inlet and Lake Iliamna and two compressor stations used to transport natural gas from the Kenai Peninsula to the mine site. The proposed transportation network includes 65 miles of roads, ferry terminals on the north and south shores of Lake Iliamna for use by an ice-breaking ferry, and the Amakdedori Port on Cook Inlet (including dredging and disposal of up to 20 million cubic yards of dredged material).

The scoping comments that follow are provided to inform the Corps of issues the EPA believes are significant and warrant explicit treatment in the EIS, based on current information. Overall, the EPA encourages the development of an EIS that evaluates and compares a full range of reasonable alternatives and comprehensively discusses the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action.

The EPA has significant concerns regarding the potential impacts of mining activities near the world-class fisheries of the Bristol Bay Watershed.[1] Many of these concerns have been previously documented in the EPA's 2014 Bristol Bay Watershed Assessment, which evaluated the potential impacts of large-scale mining on the region's fish resources, and in the Agency's 2014 Proposed Determination under

[1] See https://www.epa.gov/bristolbay for more information.

AMERICAN OVERSIGHT

Section 404 of the Clean Water Act. This Proposed Determination proposed restrictions on the discharge of dredged or fill material to waters of the U.S. to protect waters that support fishery areas in and near the Pebble deposit area. Because the Watershed Assessment and the Proposed Determination were completed before PLP submitted its permit application to the Corps, these assessments did not consider and were not based on the specific parameters of PLP's pending proposal. The EIS should thoroughly analyze the potential impacts of PLP's proposal to aquatic and other resources, including the anticipated direct impacts of the proposed action, and the reasonably foreseeable indirect and cumulative impacts. We note that the geographic extent of the proposed project infrastructure is not limited to the Bristol Bay watershed, and we recommend that the EIS analyze all areas of impact from the project, including Cook Inlet.

We appreciate the information provided in the Corps' scoping package, including the list of resources to be analyzed in the EIS, and we agree that the suite of issues presented are appropriate to analyze in detail in the EIS. Our enclosed scoping comments provide our recommendations for analysis of key areas that will be the focus of our review of the project, including natural resource impacts, as well as human health and impacts to communities and federally recognized tribes. Our scoping comments also include recommendations related to: risk analysis and hazardous materials management, including geotechnical stability; analytical tools and methodologies, including predictive modeling of impacts to water, air, fish, and other aquatic resources; mitigation and monitoring; and financial assurance. Identification of these key issues and recommendations is based on the EPA's knowledge of the proposed project as well as our experience with mining projects in Alaska and other Region 10 states.

We appreciate the opportunity to participate early in the planning process for this project and are looking forward to working with you as you develop the EIS. Should you have any questions regarding our comments, please contact Patty McGrath, EPA Region 10 Mining Advisor at (206) 553-6113 or mcgrath.patricia@epa.gov.

Sincerely,

R. David Allnutt
Director

Enclosure:

1. U.S. Environmental Protection Agency Detailed Scoping Comments for the Pebble Project EIS

AMERICAN OVERSIGHT

EPA Region 10 Detailed Scoping Comments for the Pebble Project Environmental Impact Statement

General Components of NEPA Analysis

Purpose and Need

We recommend that the EIS include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with the implementing regulations for NEPA[2] and the Clean Water Act Section 404(b)(1) Guidelines (Guidelines).[3] In presenting the purpose and need, the EIS should reflect not only the Corps' purpose in responding to the permit application, but also the broader public interest and need for this project. An appropriately defined purpose and need statement is of critical importance to setting up the analysis of a range of reasonable and practicable alternatives in the EIS that will meet the requirements of both NEPA and the Guidelines.

Range of Alternatives

We recommend that the EIS include a range of reasonable alternatives that meet the stated purpose and need for the project, are responsive to the issues identified during the scoping process and through tribal consultation, and include options for avoiding significant environmental impacts. This will ensure that the NEPA analysis provides agency decision makers and the public with information that defines the issues and identifies a clear basis for the choices made among the range of alternatives, as required by NEPA. The EIS should clearly outline the physical design of current and proposed facilities and alternatives (including ore storage sites, waste rock disposal areas, tailings areas, water storage and conveyance facilities, and supporting infrastructure including the transportation corridor, port site, and pipeline).

The EIS should "rigorously explore and objectively evaluate all reasonable alternatives"[4] even if some of them are outside the capability or the jurisdiction of the agency preparing the EIS for the proposed action.[5] This includes identifying the specific criteria that were used to (1) develop the range of reasonable alternatives, (2) eliminate certain alternatives, and (3) identify the agency preferred alternative, as appropriate. In addition, we recommend the EIS provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail.

While NEPA requires the evaluation of *reasonable* alternatives to the proposed action, the Guidelines require the analysis of *practicable*[6] alternatives in order to identify the least environmentally damaging

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[2] 40 C.F.R. § 1502.13.
[3] Within the context of the Guidelines, practicable alternatives to the proposed discharge of fill or dredged material are identified "in light of overall project purposes," which is also termed "the basic purpose of the proposed activity." 40 C.F.R. § 230.10(a)(2).
[4] 40 C.F.R. § 1502.14(a).
[5] 40 C.F.R. § 1502.14(c).
[6] An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2).

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practicable alternative (LEDPA), which is the only alternative that can be permitted.[7] The analysis of alternatives for NEPA can provide the information for evaluation of alternatives under the Guidelines.[8] We recommend that the EIS range of alternatives include the practicable alternatives developed for the Guidelines analysis.

In evaluating the proposed project and alternatives, the analysis should include an evaluation of performance and effectiveness, as well as the planned monitoring to ensure efficacy of proposed design features, environmental protection measures, and mitigation.[9]

Regarding mitigation for purposes of NEPA, we recommend that the alternatives analysis include appropriate mitigation measures not already included in the proposed action or alternatives.[10] The EIS should evaluate reasonable alternatives, including mitigation measures, to reduce or minimize adverse impacts to environmental resources. We recommend that, in conducting such an evaluation, the Corps consider:

- The disturbance footprint;
- Habitat value, cultural significance, and risks in siting project components for the proposed mine site components, as well as the port site, transportation corridor, and pipeline components;
- Source control measures (effective management of waste rock and tailings to prevent acid generation and metal leaching) and containment (liners and covers);
- Measures to reduce contact between mine waste materials and surface water and groundwater (such as surface water diversions and liners and covers as recommended above);
- Impacts of pit dewatering on groundwater and stream flows;
- Treatment to promote compliance with water quality standards;
- The physical stability of structures (e.g., pit walls, ore storage and waste rock facilities, tailings facility) during operations and closure, such as considering dry stack tailings;
- Impacts along the pipeline route and transportation corridor, including to Lake Iliamna;
- Impacts from dredged material disposal;
- Impacts to the marine environment at the Amakdedori Port site;
- Air pollutant emissions; and
- Impacts to traditional and cultural uses and resources, including key subsistence species and sites.

Indirect Impacts

We recommend that the EIS include consideration of all reasonably foreseeable indirect effects caused by the action but that may occur later in time or farther removed in distance.[11] The indirect effects analysis "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural

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[7] 40 C.F.R. § 230.10(a)
[8] 40 C.F.R. § 230.10(a)(4).
[9] The term mitigation included in this "Range of Alternatives" section is referring to the general term as it applies to NEPA. Compensatory mitigation for purposes under CWA section 404 cannot be used to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 40 C.F.R. § 230.10(a). *See* 1990 Memorandum of Agreement between Army and EPA concerning the determination of mitigation under CWA section 404(b)(1) Guidelines.
[10] 40 C.F.R. § 1502.14(f).
[11] 40 C.F.R. § 1508.8(b).

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systems, including ecosystems."[12] While NEPA does not require agencies to engage in speculation, "[t]he EIS must identify all of the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are reasonably foreseeable."[13]

We therefore recommend that the EIS evaluate the expansion and continued operation of the currently proposed project to the extent that the Corps considers it to be a reasonably foreseeable indirect effect of the proposed action. The current proposed Pebble Project description includes mining of approximately 1.1 billion tons of mineralized material, while the 2011 Preliminary Assessment Technical Report[14] estimated that the total Pebble mineral resource may be 11.9 billion tons. It may be reasonable to predict that a mine at the Pebble deposit will eventually operate for longer than 20 years and recover and process additional ore based on the size of the deposit, the significant infrastructure that will be developed under the current project description, and statements made by the Pebble Limited Partnership regarding the potential to examine expanding the mine once initial production has begun on the current proposal.[15] Accordingly, we recommend that the EIS consider the potential impacts associated with reasonably foreseeable mine expansion scenarios, including up to 11.9 billion tons.

In addition, we recommend that the EIS consider the extent to which it is reasonably foreseeable that the proposed transportation corridor and natural gas pipeline may be made accessible to the public and may stimulate additional reasonably foreseeable mining projects in the area, and potential environmental effects associated with that induced mining. Although PLP's current proposal only includes private access to the infrastructure components, public access may be granted in the future. This potential may be different for the different infrastructure elements. For example, if the pipeline is regulated as a common carrier, then public access could be allowed if capacity permits. We recommend that the EIS discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.

Construction and operation of the project would result in increased vessel traffic in Cook Inlet and on Lake Iliamna because vessels will bring supplies to the site and transport products off-site. In addition to evaluating the direct effects of the increased transportation, we recommend that, if it is reasonably foreseeable that the ports and ferry landings will become available for public use, then any reasonably foreseeable future use of these components should be assessed in the EIS as indirect or cumulative effects. Should the port and ferry terminals remain open following mining, this infrastructure may result in increased use and vessel traffic beyond what PLP is currently proposing.

Indirect project impacts under NEPA can include secondary effects, which are defined by the Guidelines as "effects on the aquatic ecosystem that are associated with the discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[16] The consideration of secondary effects is necessary for the Guidelines analysis, and examples of potential secondary effects are discussed in the section on aquatic resources below.

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[12] *Id.*

[13] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 18 (CEQ, 1981).

[14] Preliminary Assessment of the Pebble Project, Southwest Alaska, February 2011. Developed by Wardrop, A Tetra Tech Company, for Northern Dynasty Minerals, Ltd.

[15] e.g., see http://www.alaskajournal.com/2018-01-10/permit-application-reveals-size-scaled-down-pebble-project. "Collier has acknowledged the company might look to expand after initial production commences but contends growing the project would require additional rounds of environmental reviews and permitting that would be independent from any approvals Pebble already had."

[16] 40 C.F.R. § 230.11(h).

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Cumulative Impacts

In accordance with NEPA, the cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be affected by, past, present, or reasonably foreseeable future activities in the project area, "regardless of what agency (federal or non-federal) or person undertakes such other actions."[17]

The Guidelines also fundamentally require consideration of reasonably foreseeable cumulative effects in determining whether a project complies with the significant degradation prohibition and to ensure that discharges will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.[18] Cumulative effects are "the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material," which individually may be minor, but cumulatively may result in a "major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems."[19]

For the cumulative impacts assessment, we recommend that the EIS delineate appropriate geographic boundaries, including natural ecological boundaries whenever possible, as well as consider an appropriate time period for the project's effects. We recommend that resources be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of any historical degradation (e.g., due to exploration activities), and to predict the environmental effects of the project components.

Past, present, and reasonably foreseeable future activities that should be considered in the cumulative impact assessment will vary across the geographic scope of the various mine-site and infrastructure components. Please refer to CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act"[20] and the EPA's "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[21] for assistance with identifying appropriate boundaries and identifying appropriate past, present, and reasonably foreseeable future projects to include in the analysis.

In particular, we recommend that the cumulative effects analysis consider, but not be limited to, the following activities:

- Past and current exploration activities conducted by PLP and others at the Pebble site;
- Current exploration activities occurring in the Bristol Bay watershed region;
- Reasonably foreseeable expansion and continued operation of the currently proposed project (while this is an indirect effect under NEPA, as discussed above, it is a cumulative effect under the Guidelines);
- Reasonably foreseeable future use of project infrastructure (road, port, pipeline); and,
- Reasonably foreseeable development of additional mining projects as a result of increased exploration activity in the region. Even if those activities are not determined to be indirect effects of the proposed action (as discussed above), they are still reasonably foreseeable.

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[17] 40 C.F.R. § 1508.7.
[18] 40 C.F.R. § 230.10(c).
[19] 40 C.F.R. § 230.11(g).
[20] http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm.
[21] http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf.

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ENVIRONMENTAL RESOURCE IMPACTS

Aquatic Resources, Including Wetlands, Streams, and Fish

Evaluating Compliance with the Clean Water Act Section 404(b)(1) Guidelines

The Corps' potential CWA Section 404 permitting action is triggering preparation of the EIS. We recommend that the Corps' permitting regulations and the Guidelines therefore provide the context for identifying relevant issues and evaluating alternatives in the EIS.

The Guidelines are the substantive environmental criteria for the evaluation of proposed discharges of dredged or fill material, and applicants must demonstrate compliance with the Guidelines.[22] The EIS is a significant component of the administrative record for the District's permit decision, which can and should provide sufficient information to address compliance with the Guidelines and the Corps' public interest review.[23] Although it is not mandatory, we support the Corps' decision to include of the public interest review factors into the list of issues to be considered in the EIS. This will enable the expected benefits to be balanced against reasonably foreseeable detriments, and all relevant public interest factors to be weighed.

We recommend that the organization of the EIS facilitate the evaluation of the proposed project's compliance with the Guidelines. Issues relevant to compliance with the Guidelines should be addressed explicitly in the EIS where possible. Alternatively, a stand-alone Section 404(b)(1) analysis could be included as its own section of, or appendix to, the EIS. As mentioned above, we recommend that the range of alternatives evaluated in the EIS be sufficient to identify the LEDPA. In addition, we recommend that the final EIS identify which alternative is the LEDPA.

The Guidelines prohibit, for example, the authorization of a proposed discharge that would cause or contribute to the violation of an applicable water quality or toxic effluent standard, jeopardize a listed threatened or endangered species, or impact a marine sanctuary.[24] We recommend that these criteria be used to evaluate and compare alternatives.

The Guidelines also prohibit the authorization of a proposed discharge which will cause or contribute to significant degradation of the aquatic ecosystem.[25] Findings of significant degradation must be based upon specific factual determinations, evaluations, and tests identified in the Guidelines. These include the evaluation of the direct, secondary, and cumulative effects of the proposed discharge and alternatives on specific resources including fish, wildlife, and special aquatic sites. The significant degradation findings must also evaluate the effects to resource characteristics including aquatic ecosystem diversity, productivity, and stability. Evaluating the potential for significant degradation also requires the consideration of effects to human uses or values, including recreational, aesthetic, and economic values. With regard to fisheries, the Guidelines require, for example, an evaluation of effects to all forms and life stages of aquatic organisms in the food web, including fish and the plants and animals on which they feed and depend upon for their needs.[26] The Guidelines also require an evaluation of effects to

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[22] 40 C.F.R. § 230.12(a)(3)(iv).
[23] See 33 C.F.R. § 320.4.
[24] 40 C.F.R. § 230.10(b).
[25] 40 C.F.R. § 230.10(c).
[26] 40 C.F.R. § 230.31.

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recreational and commercial fisheries, which includes harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man.[27] The Corps has proposed including a number of these evaluations in the EIS. We recommend that as many of the specific factual determinations, evaluations, and tests required by the Guidelines as possible be included in the EIS, and be used to evaluate and compare alternatives.

The Guidelines also prohibit any proposed discharge that does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem.[28] Subpart H of the Guidelines identifies numerous possible steps to minimize impacts, including reducing the footprint of the project, using co-location of facilities whenever possible, implementation of best management practices to reduce environmental impacts, configuring the project footprint to reduce or eliminate impacts to higher functioning aquatic resources and other appropriate and practicable measures. Also, as previously discussed, we recommend that the EIS include appropriate minimization measures both as part of the action alternatives and relative to the affected environment. The discussion of minimization measures should include assessment of their likely effectiveness.

Compensatory Mitigation

For unavoidable impacts to wetlands, streams, and other aquatic resources, the Guidelines require appropriate and practicable compensatory mitigation to offset unavoidable environmental impacts associated with discharges permitted under CWA Section 404. We recommend that the EIS consider potential mechanisms to offset likely unavoidable aquatic resource impacts. We also recommend that the EIS include the applicant's proposed compensatory mitigation plan. Compensatory mitigation requirements, including the components of a compensatory mitigation plan, are described in Subpart J of the Guidelines. Pursuant to the Guidelines, the level of detail in the compensatory mitigation plan should be commensurate with the scale and scope of the impacts.

Compensatory mitigation may be provided through purchase of credits from an approved mitigation bank, purchase of credits from an approved in-lieu fee mitigation program, and/or completion of a permittee-responsible compensatory mitigation project(s). Final compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Section 404 permit.[29] Compensatory mitigation required by the Guidelines is separate from, and may be in addition to, proposed project impact mitigation under NEPA.

Characterizing the Affected Environment

We recommend that the EIS describe aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. For example, if wetlands are mapped using a Cowardin classification, that mapping should be to the smallest identifiable map unit. Likewise, streams should be classified and mapped accordingly. The baseline information for aquatic resources should include their functional condition and integrity. We also recommend that the EIS evaluate the characteristics of the potentially affected aquatic resources, how those characteristics provide fish habitat, and how such habitat could be adversely impacted by the proposed project. Wetlands and streams perform different functions at different rates, and capturing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions (exploration and mining) on these resources.

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[27] 40 C.F.R. § 230.51.
[28] 40 C.F.R. § 230.10(d).
[29] 40 C.F.R. § 230.93(a)(1).

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Characterizing the distribution of resident and anadromous fish in potentially affected streams and other aquatic resources is also important, and we recommend the use of data sources such as the Anadromous Waters Catalog[30] and the Alaska Freshwater Fish Inventory[31] to help with this characterization.

Aquatic Resource Impacts Analysis

We recommend that the areal extent (i.e., acreage) of impacts to aquatic resources be quantified in the EIS for both direct and secondary effects. The acreage values for the direct and secondary impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, mudflats, and other waters. In other words, reported acreage losses should represent the total loss of jurisdictional waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles. Channel length values are a more intuitive metric for some, and facilitate different types of analyses than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.

Direct effects are impacts on aquatic resources within the footprint of the discharge of dredged or fill material. Direct effects at the mine site would include stream and other aquatic resource losses within the footprints of the tailings storage facility, the ore and overburden storage sites, the mine pit, and other mine site facilities described in the permit application. Construction of the transportation and pipeline corridors and port facility will likely involve such discharges as well.

Secondary effects, as defined by the Guidelines, are associated with the discharge of dredged or fill material, but do not result from actual placement of this material. These effects are also considered indirect impacts under NEPA. Examples of secondary effects that should be evaluated in the EIS include the following:

- Elimination of streams and wetlands due to drowning by the tailings impoundment and other mine components;
- Dewatering of streams and other aquatic resources due to pumping of groundwater during open pit mining and filling during closure;
- Fragmentation of aquatic resources due to the placement of the mine pit, ore storage sites, tailings storage facility, and other mine components;
- Degradation of downstream fish habitat due to streamflow alterations resulting from water capture, withdrawal, storage, treatment, or release at the mine site;
- Degradation of downstream fish habitat due to water quality impacts associated with mine construction and operation;
- Degradation of downstream fish habitat due to the loss of important inputs such as nutrients and groundwater from upstream sources;
- Degradation of aquatic resources due to dust deposition from mining and transportation activities.

The evaluation of the proposed project's impacts and alternatives should fully consider the physical, chemical, and biological effects of each of the direct and secondary effects, and should consider incremental changes from these impacts along each stream segment downstream of the impact site.

[30] See https://www.adfg.alaska.gov/sf/SARR/AWC/.
[31] See http://www.adfg.alaska.gov/index.cfm?adfg=ffinventory.main.

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Considering the value of the region's commercial, subsistence, and recreational fishery resources, we recommend that the EIS focus on quantifying direct, indirect, and cumulative impacts on resident and anadromous fish and their habitat resulting from losses of streams with documented fish occurrences; losses of headwater source areas of these streams; losses of wetlands, lakes, and ponds; and streamflow alterations. We appreciate that the Corps has made the EPA's 2014 Bristol Bay Watershed Assessment available on the Pebble Project website, and we also recommend that this document be referenced in preparing the EIS.[32]

The losses of stream reaches and adjacent wetlands from dewatering, as well as changes to downstream reaches and adjacent wetlands, may result in physical, chemical, and biological changes which would impact fishery habitat and habitat support. We recommend that the EIS model and consider these impacts compared to baseline conditions, including but not limited to:

- Evaluate changes in water volume in the stream areas of impact, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. We recommend that the analysis address seasonal changes to the different stream segment hydrographs, including changes to seasonal temperatures, dissolved oxygen levels, sediment transport capabilities, and any associated changes to sediment grain sizes in the different stream segments;
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points, to assess any potential changes to stream profile, form, and pattern, and to identify any areas of accretion and/or scouring which may reasonably be anticipated. We also recommend that areas of stream incision as a result of flow changes be identified, as well as losses of connectivity to floodplains and riparian wetlands currently connected to the downstream reaches;
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches. We further recommend that both the direct losses of both autochthonous and allochthonous inputs from upstream reaches lost and/or disconnected from wetland and other riparian habitats, as well as the incremental reductions in those inputs in downstream segments throughout the stream reaches and their effects on system-wide primary, secondary, and tertiary production, be evaluated. These analyses should consider the direct changes to downstream habitats as well as changes to fisheries support in the different stream reaches;
- Evaluate decreases in anticipated invertebrate transport and production in downstream segments and those effects on fish production; and
- Evaluate the effects of disconnecting any off-channel habitat both near the areas of direct impact and throughout the downstream reaches, both for losses of allochthonous inputs and also for potential losses of nursery habitat.

We recommend that the direct, indirect, and cumulative impacts of any of these potential physical, chemical, and biological alterations be examined for how they may result in the loss and/or degradation of fish habitat, including alterations with respect to spawning, overwintering, nursery, and migration. Habitat losses that may result from freeze-through or seasonal warming of fish production areas should also be evaluated.

[32] See https://www.epa.gov/bristolbay/bristol-bay-assessment-final-report-2014.

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Water Quality and Quantity

Evaluating Impacts to Surface Water and Groundwater Quality and Quantity

Water quality is one of the EPA's principal concerns at mine facilities due to the potential for acid-generating and metal-leaching waste materials (ore, waste rock, tailings, pit walls) that are exposed to the environment and require management over long periods of time. In addition, road construction and operation have the potential to contribute a significant quantity of sediment to streams. We recommend that the EIS characterize baseline surface water and groundwater quality, quantity, and interactions, and evaluate the impacts of all aspects of the proposed operations and alternatives (including pit dewatering and backfilling, tailings management and disposal, water management, and port-site and transportation aspects) on these hydrologic components and describe mitigation for adverse impacts.

Given the potential impacts of the proposed Pebble Project, the EPA recommends that the Corps specifically include in the water resources analysis for the EIS (see also our recommendations for Analysis Tools and Methodologies):

- Characterization of existing groundwater, surface water, springs, and wetland resources within the area of both the project and all potential alternatives, including groundwater levels, flow direction and gradients, and chemistry;
- Development of a hydrogeologic conceptual site model, including:
    - Maps of groundwater, surface water, springs, and wetland resources in the area to be developed or affected;
    - Baseline data on the extent and quality of groundwater, surface water, springs and wetlands;
    - Information on the quantity and location of all aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
    - Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters;
    - Identification and description of all wetlands and surface waters that could be affected by the project and alternatives; where applicable, acreages, channel lengths, habitat types, values and functions of these waters should be identified;
    - Identification and description of hydrologic pathways (e.g., the connectivity of springs or groundwater to surface waters; the connectivity of all streams to each other and to wetlands); and
    - A detailed water balance for the proposed action and each alternative.
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), specific pollutants likely to impact those waters and a comparison to applicable environmental standards (e.g., surface water and drinking water quality standards);
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability (in particular, the impacts of copper, which can have adverse effects on salmon at very low concentrations);
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes; and
- Consideration of effects of seasonality on water quantity and quality impact assessment, including predictions for all phases of the project (construction, operations, and closure).

Anti-degradation

The anti-degradation provisions of the CWA apply to those waterbodies where water quality standards are currently being met. In certain high-quality waters, the anti-degradation provisions prohibit

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degrading water quality unless it is determined that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.[33] We recommend that the EIS discuss whether and how the CWA anti-degradation requirements could be met.

Water Management and Treatment

We recommend that the EIS describe the plans for water management, treatment, and discharge during all phases of the project (construction, operations, and closure), including plans for long-term water treatment. The EIS should evaluate and disclose the adequacy, reliability, effectiveness, and operational uncertainty associated with proposed operation and closure (long-term) water management and treatment techniques, taking into account seasonality and potential changes associated with future climate scenarios. We also recommend that the analysis characterize chemical compositions and quantities of process waters, mine drainage, storm water, and treated and untreated effluent. This information should be supported by the results of treatability testing. Assumptions used in the analysis should be disclosed and be reasonably conservative. If long-term water treatment is needed, we recommend that the EIS include modeling of predicted stream concentrations of contaminants of concern, both with and without treatment, to evaluate the potential impacts to water quality if the treatment system is not working properly.

The EIS should also identify the Alaska Pollutant Discharge Elimination System (APDES) discharge locations, identify applicable water quality standards, and analyze the likelihood and ability of all discharges to meet applicable standards and the direct, indirect, and cumulative impacts of such discharges to the receiving waters. We recommend that any applicable water quality variance requests, site-specific criteria proposals, and/or any other planned or potential requests for water quality standard revisions also be disclosed in the EIS.

Sediment Management and Stormwater Runoff

Since the project has the potential to cause or contribute to erosion of soils and subsequent sediment loading to nearby surface waters, we recommend that the EIS evaluate construction design and operation practices that will be used to minimize erosion and control stormwater runoff from the mine site, port sites, transportation corridor, and pipeline route. We recommend that the EIS discuss specific mitigation measures that may be necessary or beneficial in preventing and minimizing adverse impacts to water quality and disclose the effectiveness of such measures. We suggest that the Corps consider the Best Management Practices identified by the EPA for mining facilities[34] and specify those that would be suitable and likely implemented at the Pebble Project. We also recommend that the EIS document the project's consistency with applicable APDES stormwater permitting requirements.

Hydrostatic Test Water

Hydrostatic testing will likely be utilized to verify pipeline integrity. We recommend that the EIS identify and describe the location of the water sources required for hydrostatic testing, in terms of surface area, depth, volume, withdrawal rate, and project requirements. For each water source, we recommend that the EIS discuss the presence of any anadromous and/or resident fish species, including discussion of any direct and cumulative impacts to fisheries resources. In addition, we recommend that locations and methods of discharges to land and/or surface waters be specified in the EIS. Emphasis should be placed on minimizing inter-basin transfers of water to the maximum extent practicable, to

[33] 40 C.F.R. § 131.12.

[34] https://www3.epa.gov/npdes/pubs/sector_g_metalmining.pdf.

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minimize the risk of mobilizing invasive species. We recommend that the EIS describe the mitigation measures and control devices that would be implemented to minimize environmental impacts.

Marine Environment and Freshwater Lakes

Port Construction and Dredging Impacts

According to the Permit Application Appendix D – Project Description, the Amakdedori Port will require dredging of a channel and turning basin for shipping access to berths. According to the application, annual maintenance dredging will be necessary throughout the life of the port facility. Dredging activities potentially affect habitats and key ecological functions that support recruitment and sustainability of estuarine and marine organisms. We recommend that the EIS:

- Characterize the marine benthic environment and organisms, sediment composition and grain size, etc.;
- Identify any biologically important areas, such as migratory routes, benthic communities, and subsistence areas;
- Evaluate marine dredging, dewatering, transloading (from water to land), placement methods and options (summer and winter), and disposal sites (offshore, nearshore, upland, and open-water), as well as beneficial uses of the dredged material;
- Include and evaluate a sampling and analysis plan, as well as a marine dredging and disposal plan;
- Evaluate the following potential impacts of dredging activities on species and their habitats:
  - Substrate removal and any resulting habitat and species removal (entrainment);
  - Potential changes to estuarine bathymetry, fluvial and tidal energy, and substrate roughness, and any attendant impacts to salinity structure and estuarine circulation;
  - Potential changes to sediment transport processes, including effects on adjacent shorelines;
  - Alteration of sediment composition in and around the dredging site (including changes to the nature and diversity of benthic communities);
  - Local resuspension of sediments and any turbidity increases;
  - Spread of sediments (and any associated contaminants) into the area surrounding the dredging site;
  - Release of sediment-associated nutrients, potential increases in eutrophication and resulting decreases in dissolved oxygen concentrations;
  - Decreased primary production due to reduced transparency of the water column and/or smothering, particularly at in-water disposal sites; and
  - Enhanced bioavailability and ecotoxicological risk of background contaminants and/or chemical or biochemical changes of contaminants;
- Consider implementation of effective mitigation measures to ensure that marine resources and habitats are adequately protected; and
- Incorporate a monitoring plan for marine protected resources and associated habitats to ensure effectiveness of mitigation measures.

Because of the magnitude of the proposal, dredging and disposal operations will need to be carefully planned and scheduled to avoid and minimize impacts to sensitive marine mammals, fish, shellfish, and their habitat at critical spawning and migration periods.

Dredged Material Disposal

According to the Permit Application Appendix D, dredged material will be used to construct the jetty, causeway, and/or the main terminal patio area, if suitable. Excess dredged material will be stockpiled in

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an upland location adjacent to the port facilities. The EPA recommends an on-the-ground wetland delineation at the proposed dredged material disposal site to verify whether there are any jurisdictional waters of the United States at this location.

The proposed discharge of dredged material effluent from the confined disposal facility into Kamishak Bay is subject to regulation under Section 404 of the CWA. Thus, the EIS should include sufficient information to support making the required determinations and findings under the Guidelines. For example, Subpart G of the Guidelines includes general evaluation procedures and specific testing procedures to reach the determinations required by 40 C.F.R. § 230.11. The Inland Testing Manual[35] also provides detailed technical guidance on how to evaluate and test dredged material consistent with the Guidelines. In particular, the EPA recommends using the ITM Appendix B, "Guidance for Evaluation of Effluent Discharges from Confined Disposal Facilities."

To support disposal decisions, we recommend that the EIS provide an inventory of the physical and chemical characteristics of the dredged material and an assessment of disposal alternatives. We recommend that the range of dredged material management alternatives include: no action; the proposed action; beneficial uses such as beach nourishment or construction material; a disposal site in internal waters, landward of the Kamishak Bay closing line (regulated under the CWA); and an ocean disposal site seaward of the Kamishak Bay closing line (regulated under the Marine Protection, Research and Sanctuaries Act).

Potential for Ocean Disposal of Dredged Material

Under Section 102 of the MPRSA, the EPA is responsible for designating and managing ocean dumping sites for all materials, including dredged material. The EPA designates ocean disposal sites through rulemaking and sites are published at 40 C.F.R. § 228.15. The EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas similar to the site in physical, chemical, and biological characteristics. All studies for the evaluation and potential selection of dredged material disposal sites should be conducted in accordance with the criteria for the selection of disposal sites for ocean dumping published in 40 C.F.R. §§ 228.5 and 228.6. The minimum requirements for baseline assessment surveys are found in 40 C.F.R. § 228.13.

The evaluation process includes conducting oceanographic studies to establish the environmental conditions at all alternative locations being considered as potential sites, as well as the area or region encompassing the alternative sites. Results from oceanographic studies and other sources are used to model likely dispersion and deposition of material disposed at the alternative sites and evaluate potential impacts. If there are no practicable alternatives to ocean dumping that will have a less adverse impact on the environment, this information is used to select the best ocean site proposed for designation.

If ocean disposal is to be considered as an alternative, we encourage the Corps to engage early and actively with the EPA to ensure that site selection activities are consistent with the MPRSA and the ocean disposal criteria. The EIS must be adequate for the EPA to ensure that use of the site selected for designation will not likely cause unreasonable degradation to the surrounding marine environment. In addition, only dredged material that is authorized for disposal under the MPRSA and 40 C.F.R. Part 227 may be disposed in an EPA-designated ocean dredged material disposal site.

[35] See https://www.epa.gov/cwa-404/inland-testing-manual.

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Impacts of Vessel Traffic

Marine traffic, including barges and other vessels associated with construction and operation of the proposed project, may also result in impacts to the marine environment. For example, vessel traffic may result in potential impacts to marine mammals, including threatened and/or endangered species, and their migration patterns and routes; subsistence, commercial, and recreational fisheries; and other vessel use. We recommend the EIS describe the vessel traffic schedule in Cook Inlet; patterns and marine transportation routes; subsistence, commercial, and recreational fishery resources; and the migration period, patterns, and routes of potentially affected marine mammals, including Cook Inlet Belugas. The direct, indirect and cumulative impacts from vessel traffic on marine mammals, threatened and endangered species, critical habitats, and fishery resources should be analyzed in the EIS, and the EIS should discuss the mitigation measures that would be implemented to minimize such impacts.

Use of the proposed ice-breaking ferry on Lake Iliamna may result in similar impacts to the freshwater lake environment, including the potential for wake impacts to the shoreline. We recommend the EIS analyze the direct, indirect, and cumulative impacts of the year-round use of the lake proposed by the applicant on threatened and/or endangered species, fishery resources, and other lake user groups, and discuss mitigation measures to minimize impacts.

Air Quality

The EPA recommends that the EIS evaluate how the construction and operation of the proposed project and alternatives could affect air quality and what measures may be needed to mitigate potentially significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. To address potential air quality impacts, the EIS should consider whether the direct, indirect, or cumulative impacts of project-related air emissions would result in any adverse impact on air quality or air quality-related values.

Potential air pollutant concerns for the proposed project include:

- Operation of heavy machinery and equipment, including marine vessels, during construction and operations that result in the emission of fossil fuel combustion exhausts. Such exhausts will include oxides of nitrogen, oxides of sulfur, carbon monoxide, and particulates. The significance of the contribution of project emissions to the formation of secondary particulate matter ($PM_{2.5}$) and ozone should also be evaluated;
- Fugitive dust emissions may be generated from construction and operation of the mine, ancillary facilities, and supporting infrastructure. In addition to human health effects, dust blown from the roadway can settle onto wetlands, vegetation, or waterbodies, impairing their health as well; and
- Hazardous air pollutants may result from fuel combustion and ore processing. The *National Air Toxics Assessment* asserts that numerous human epidemiology studies show increased lung cancer rates associated with diesel exhaust and significant potential for non-cancer health effects (see http://www.epa.gov/ttn/atw/nata). Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule (66 Fed. Reg. 17,230, March 29, 2001) lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. The EPA recommends the EIS disclose whether hazardous air pollutant emissions would result from project construction and operations, discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations and individuals likely to be exposed to these emissions.

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We recommend the following steps for the EIS air quality analysis:

- Characterize the existing conditions to set the context for evaluating project impacts, including:
  - Regional climate and meteorology,
  - Air quality and air quality related values (e.g., visibility),
  - Identification of sensitive receptors in the vicinity;
- Review air quality regulations and any air permitting requirements that apply to the air pollutant sources associated with the project;
- Provide a comprehensive emissions inventory of criteria pollutants (in tons per year), greenhouse gas emissions (in metric tons CO_2 equivalents per year), and significant HAP emissions for all project components (mine site, transportation corridor, port, and pipeline) and project phases; and
- If projected emissions are significant, conduct near-field and far-field air quality modeling to assess project-related air quality and visibility impacts. Also, see our recommendations related to Predictive Modeling, later in this document.

We recommend that the Corps evaluate and incorporate best management practices and mitigation measures into the EIS to reduce emissions of criteria pollutants and HAPs, which also have co-benefits of reducing GHGs. We recommend that the EIS include a comprehensive fugitive dust control plan as well as a construction air pollutant emissions control plan to address reduction of engine emissions.

These recommendations are separate and distinct from, and are not intended as a substitute for compliance with, any additional obligations of the Corps and the project proponent to comply with the federal Clean Air Act and any applicable state or tribal air pollution laws, which may require, among other things, obtaining pre-construction permits and operating permits, compliance with new source performance standards and/or national emission standards for hazardous air pollutants, as well as any applicable state implementation plan (SIP) requirements, including, as applicable to the Corps, the requirements under Section 176 of the Clean Air Act regarding conformity of federal activities to implementation plans approved or promulgated under section 110 of the Clean Air Act.

Climate Adaptation

The EPA recommends that the EIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure. This could help inform the development of measures to improve the resilience of the proposed project. If projected changes could notably exacerbate the environmental impacts of the project, the EPA recommends these impacts also be considered as part of the NEPA analysis.

Fish and Wildlife, including Endangered Species and Essential Fish Habitat

The EPA recommends that the EIS evaluate impacts to fish and wildlife from the proposed project and alternatives. The aquatic resources section above also provides recommendations related to fisheries.

Special consideration should be given to listed and proposed species under the Endangered Species Act and Essential Fish Habitat under the Magnuson Stevens Fishery Conservation and Management Act. NEPA regulations require that, to the fullest extent possible, the EIS be prepared concurrently with

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environmental analyses required by the ESA and other environmental laws.[36] Magnuson Stevens Act and ESA implementing regulations also encourage coordination with other environmental reviews.[37, 38]

We recommend that the EIS discuss the species listed and proposed as threatened or endangered under the ESA and the essential fish habitat within the project area (including the pipeline, roads, and port site) and the potentially impacted area surrounding the project. The EIS should describe impacts to ESA species and EFH and discuss the activities proposed to avoid, minimize, mitigate, and monitor listed and proposed species and EFH. We understand that the Corps will develop a biological assessment to evaluate impacts to listed and proposed endangered species and EFH, and recommend that it be included with the draft EIS. We also recommend that the federal action agencies work together to ensure that a single biological assessment is developed that meets all agencies' needs.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties, including those of traditional religious and cultural importance, following regulations in 36 C.F.R. Part 800. The NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, to consult with the appropriate State Historic Preservation Officer /Tribal Historic Preservation Officer. We support the Corps' early engagement with the Advisory Council on Historic Preservation, and we recommend that the EIS discuss any potential impacts to historic properties, including any tribal, cultural, or other treaty resources that are historic properties or traditional cultural properties. In addition, the EIS should identify alternatives and mitigation to avoid significant impacts. Recommendations related to traditional uses and resources that are not historic properties are discussed further below.

Invasive Species

We know that ballast water from barges or vessels can be a major source of non-native species into marine ecosystems. Non-native species can adversely impact the economy and the environment and cause harm to human health. Impacts may include reduction of biodiversity of species inhabiting coastal waters due to competition between non-native and native species for food and resources. We recommend that the EIS discuss potential impacts from non-native invasive species associated with ballast water in vessels that will be utilizing the Amakdedori Port associated with this project and identify mitigation measures to minimize adverse impacts to the marine environment and human health.

SAFETY, RISK ANALYSIS, AND HAZARDOUS MATERIALS MANAGEMENT

Accidents and Failures

An array of spills, accidents, and failures can occur at mining sites. We recommend that the EIS describe the control measures that will be in place to prevent these events from occurring during construction, operations, and closure. To identify these events, we recommend that the Corps evaluate the proposed design and management of the tailings facility, dams, and other structures and evaluate PLP's waste and water management and reclamation plans to determine the project-specific likelihood of different types of accidents and failures. Designs and management plans for the pipeline and transportation components

[36] 40 C.F.R. § 1502.25.
[37] 50 C.F.R. § 600.92 (c), (f).
[38] 50 C.F.R. § 402.06.

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(road, ports, shipping) should also be evaluated to determine the probability of accidents and failures. We recommend that the results of these evaluations be documented in the EIS. For those events that are determined to be of low probability but high consequence, we recommend that the EIS evaluate the potential effects of such events on aquatic ecosystems, particularly fishery resources, and other resources. The EIS should also discuss mitigation measures that could minimize the risk or damages of such events.

Physical Stability of Structures

The EIS should assess the likelihood of earthquakes in the region and describe the geotechnical stability of the tailings and waste storage facilities and open pit walls during operations and closure. We recommend including a description of how these facilities are designed and how they would be operated, closed, and monitored to ensure stability. In addition, we recommend that a risk assessment, such as a Failure Modes Effects Analysis, (FMEA) be conducted on each of the tailings dams with the results summarized in the EIS. An FMEA considers potential failure modes and identifies the relative likelihood and consequences of the failure modes, which are key considerations for impact assessment. We recommend that the EIS incorporate mitigation or alternatives to improve stability should the FMEA identify failure modes that are anything other than a tolerable risk.

For the tailings impoundment in particular, we recommend that the Corps require a demonstration that the structure complies with state dam safety criteria and has been designed by qualified persons. In addition, we recommend that the Corps require that the dam be independently reviewed (and modified if indicated by the review)[39]. Given the proposed size of the dams associated with the Pebble project and value of the downstream resources, we believe that an independent review of the dam structure is appropriate. We recommend that the results of the independent review be documented in the EIS in order to support the assessment of geotechnical stability.

As mentioned above in the Range of Alternatives section, we recommend that the Corps consider alternatives to improve physical stability of the tailings, including consideration of filtered tailings (dry stack). We note that consideration of a filtered tailings alternative and assessment of safety and stability via a FMEA and independent review panel are consistent with recommendations of *The Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach* (January 30, 2015). In addition to investigating the cause of the Mount Polley tailings storage facility failure, the Review Panel made recommendations on actions that could be taken to ensure that similar failure does not occur at other mines. We recommend that the Corps consider the Review Panel Report and, in particular, the recommendations related to best available technology for new impoundments, design commitments to support permit applications, and actions to validate the safety of tailings storage facilities.

Hazardous Materials

We recommend that the EIS address the potential direct, indirect, and cumulative impacts of hazardous materials/wastes management and storage from the construction and operation of the proposed project and alternatives. Mining activities may involve the transport of hazardous materials, and we recommend that the EIS disclose the types and amounts of materials that will be used at each step of mining operations. In addition, we recommend that the EIS describe measures that will be taken to minimize the

[39] 33 C.F.R. § 325.1.

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chances of an accidental release, emergency measures that will be implemented should such an event occur, and how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations.

We also recommend that potential health impacts to local communities or other project area users be identified, as well as any strategies employed to communicate risks or actual emergencies. As part of this analysis, we recommend that the EIS use scientific and traditional ecological knowledge to describe potential health effects from exposure to hazardous materials and the effects on the palatability of eating potentially contaminated foods.

HUMAN HEALTH AND IMPACTS TO COMMUNITIES

Sociocultural Impacts

It is anticipated that the proposed project will result in employment opportunities for Alaska Native residents, as well as generate local and corporate revenues in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts may affect a community's ability to access traditional and accustomed subsistence use areas. We recommend that the EIS identify the specific communities, federally recognized tribes, and corporations that could be impacted, both positively and negatively, which will help agency decision makers and the public understand the scope of the potential sociocultural impacts.

We recommend that the sociocultural impacts associated with this project and alternatives be fully evaluated and disclosed in the EIS and include, but not be limited to, the following:

- Socioeconomic Impacts
    - Evaluate potential changes to the region's economy as a result of the mine construction and operation (e.g., changes to commercial fishery, recreational fishery, and tourism sectors).
    - Evaluate impacts associated with economic changes to families, communities, and cultures, including potential changes to those aspects of the area's economy that are currently subsistence-based;
    - Evaluate the potential decline in the region's economy following mine closure; and
    - Evaluate replacement costs of traditional foods if access or availability are impacted by the proposed project.
- Accessibility of Traditional Use Areas
    - Identify community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, camping, berry picking, and other uses;
    - Describe the potential access limitations to these traditional use areas and their impacts to local communities; and
    - Coordinate with the tribes and communities on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.
- Compatibility of Traditional Use Areas
    - Identify project activities that may conflict with traditional and accustomed uses; and

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- Coordinate with the affected tribes and communities to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses and the construction and operation of this project.

Environmental Justice and Impacted Communities

In compliance with NEPA and Executive Order 12898 on Environmental Justice, actions should be taken to conduct adequate public outreach and participation that ensures that the public and Native American tribes understand possible impacts to their communities and trust resources.

Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.[40] The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be uniquely vulnerable populations that may be impacted.

The CEQ has developed guidance concerning how to address Environmental Justice in the environmental review process.[41] In accordance with this guidance, the EPA recommends that the EIS address the following points:

- Identify low income, minority, and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts;
- Disclose the results of meaningful involvement efforts, such as community identified impacts;
- Evaluate identified project impacts for their potential to disproportionately impact low income, minority, or Alaska Native communities, relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the Corps' decision making process;
- Propose mitigation for unavoidable impacts that will or are likely to occur; and
- Include a summary conclusion, sometimes referred to as an "environmental justice determination" that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on the EPA's website at: https://www.epa.gov/environmentaljustice.

Health Risk or Impact Analysis

The EPA recommends that the Corps undertake a screening process to determine which aspects of health (including but not limited to public, environmental, mental, social, and cultural) could be impacted by the proposed project. Depending on the screening results, an analysis of health effects, such

[40] EO 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-income Populations. February 11, 1994.
[41] http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf.

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as a health risk assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health. This analysis may need as much time to complete as the Draft EIS, therefore we recommend that early screening is essential to ensuring a timely analysis. We further recommend that the Corps partner directly with local, state, tribal, and federal health officials to determine the type of analysis needed to assess health impacts and conduct the analysis, and to determine appropriate and effective mitigation of potential health impacts.

Scope of Health Assessment in EIS

In terms of the scope of the health assessment, we recommend that the potential for contaminant exposure and resulting risks be evaluated. In addition, we recommend that the EIS consider how income from new jobs can result in positive or negative health impacts, for example by increasing socioeconomic status or by generating rapid social and community change. We also recommend considering the health impacts of potential changes to traditional way of life from the project, including reduced reliance on a traditional diet due to lack of access and corresponding increased reliance on substitutes.

Data Collection

To appropriately evaluate health impacts, we recommend that specific health data that may not be routinely collected as part of the scoping process may be required. To ensure that the necessary data are available for this evaluation, the Corps may want to involve public health professionals early in the NEPA process. Public health data and expertise for prospective health impact analysis, or for providing input on health issues, may be available from local health departments, tribal health agencies, the Alaska Department of Health and Social Services, or federal public health agencies such as the U.S. Centers for Substances and Disease Registry, or the Indian Health Service.

Methods and Tools

The Health Impact Assessment methodology is a common tool that can be used to assess potential health impacts. HIA is a combination of procedures, methods, and tools that enables systematic analysis of potential positive or negative effects of a policy, plan, program, or project on the health of a population, as well as the distribution of those effects within the population.[42] Depending on available data and potential effects, there are different levels of HIA analysis, and we recommend that the Corps' involve public health professionals in determining the appropriate level of analysis. In addition to evaluating impacts, we recommend that the HIA identify the appropriate actions to manage or mitigate health effects from the proposed project.

Guidelines for conducting an HIA are available from various sources.[43] The World Health Organization has links to many guides.[44] The International Finance Corporation has also developed detailed guidelines for conducting an HIA.[45] In addition, the State of Alaska has developed *Technical Guidance for Health Impact Assessment*, also known as the "Alaska HIA Toolkit".[46]

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[42] This definition is from the International Association for Impact Assessment (IAIA), which is modified from the World Health Organization's Gothenberg consensus statement (1999).

[43] The EPA does not endorse or recommend use of any single or particular guidance on HIA. These references are provided as general information and to assist permitting agencies with identifying additional resources on HIA.

[44] See http://www.who.int/hia/about/guides/en/.

[45] See http://www.ifc.org/wps/wcm/connect/a0f1120048855a5a85dcd76a6515bb18/HealthImpact.pdf?MOD=AJPERES.

[46] See http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf.

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CONSULTATION AND COORDINATION WITH TRIBAL GOVERNMENTS

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States' government-to-government relationships with Indian tribes. In addition, pursuant to Public Law 108-119, 118 Stat. 452, as amended by Public Law 108-4217, 188 Stat. 3267, federal agencies are required to consult with Alaska Native Claims Settlement Act corporations on the same basis as Indian tribes under Executive Order 13175. We recommend that the EIS describe the process and outcome of any government-to-government and/or government-to-corporation consultations regarding the Pebble Project, issues that were raised during the tribal consultations and how those issues were addressed.

Cooperating agency involvement establishes a mechanism for addressing intergovernmental issues throughout the EIS development process, and we support the Corps' inclusion of two tribal governments as cooperating agencies. We recommend that the Corps remain open to including other potentially affected tribal governments that have the resources and interest in serving as cooperating agencies for EIS development, consistent with the July 28, 1999, memorandum from CEQ to the heads of federal agencies.

ANALYSIS TOOLS AND METHODOLOGIES

Baseline Data Adequacy

We suggest categorizing and synthesizing existing data to ensure pertinent information is available for review and use in the EIS analysis. We understand that the Corps intends to establish focused workgroups during development of the EIS. We support this approach and recommend that the workgroups include cooperating agency subject matter experts for key areas (air, water, wetlands, fisheries, etc.) to review baseline data for completeness, identify data gaps, and recommend approaches toward resolving those gaps in a timely manner. For example, additional analysis or collection of additional data may be required to characterize the accuracy of best available baseline estimates of resources such as fish populations, groundwater elevations, or wetland extents. Such information will be critical for designing and developing a robust monitoring framework and for assessing impacts during and after project development and comparing those to the baseline.

Geochemistry/Characterization of Ore, Waste Rock, and Tailings

To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste management, we recommend that the physical and chemical characteristics of the ore, pit walls, waste rock, and tailings should be determined and disclosed in the EIS. Environmental samples used to support projections should represent a range of conditions that currently occur and that could occur in the future as a result of the project, including under potentially altered future climate conditions. Waste materials (ore, waste rock, tailings) used for environmental projections should be representative of the material to be mined and related to the mine plan and proposed processing methods. Physical and chemical characterization should be conducted in a manner that provides environmentally conservative estimates of impacts.

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It may be helpful to consider EPA Region 10's Sourcebook for Hardrock Mining for recommendations related to the NEPA analyses of mining projects.[47] We recommend that the following information be utilized to characterize geologic and mineralogy setting/aqueous geochemistry in the baseline environment and impact prediction sections of the EIS:

- Whole rock analysis;
- Mineralogy;
- Drill core descriptions;
- Block model or similar model (a computerized estimate of the quantity and characteristics of ore and waste);
- Available literature on the ore deposit;
- Mineral occurrences (e.g., on fracture surfaces, in groundmass, using hand specimens and thin section) with an emphasis on sulfides and carbonates;
- Acid-base accounting;
- Long-term kinetic testing (including possible startup of test pads if sufficient material and access to site are available);
- Baseline surface and ground water quality and flows (including springs);
- Potentiometric surface for groundwater;
- Hydraulic properties (e.g., hydraulic conductivity, porosity, permeability) of soil, vadose zone, and groundwater aquifers, especially under proposed locations of mine facilities; and
- Hydrogeochemical models for prediction of water quality.

Predictive Modeling

We recommend that predictive modeling be based on a site-specific conceptual model that describes the system boundaries, spatial and temporal scales, hydraulic (for water modeling) and chemical characteristics, sources of data and data gaps, and the mathematical relationships used to describe processes. We also recommend that our suggestions be applied to any environmental and predictive modeling used for assessing impacts in the EIS. The water quality model, in particular, should be capable of predicting both whole water and dissolved fractions of metals/metalloids and should provide temporal predictions that are consistent with the time-steps in applicable water quality criteria.

Any modeling documentation should include:

- Tables of parameter values used in the model;
- Tables and graphs of results;
- Uncertainty and sensitivity analyses;
- Errors associated with both measured and assumed data; and
- Recommendations for further analysis, if applicable.

We recommend that discussions on modeling include a clear statement of the management objectives intended to be achieved by the modeling, the level of analysis required to meet the objectives, and uncertainties associated with modeled outcomes. For your reference, please refer to EPA's guidance that provides recommendations for the effective development, evaluation, and use of models in

[47]U.S. EPA Region 10. 2003. EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska January 2003.

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environmental decision making.[48]

We recommend that the EIS use caution in describing absolute outcomes based on modeling. Mathematical modeling used for describing the physical and chemical characteristics of the project site and potential impacts includes a level of uncertainty; understanding these uncertainties and associated risks is necessary for informed decision making. We recommend that the study plan for modeling analysis clearly state the purpose, questions of concern, method, data, and limitations of the model to generate valuable interpretations. We also strongly recommend an appropriately conservative approach be taken with modeling and a range of predictive outcomes be discussed (e.g., most likely case, reasonable worst-case, and reasonable best-case scenarios) that reflect a range of climatic settings and critical input values. Inclusion of a reasonable range of outcomes allows the agencies to make better informed plans for mitigation, adaptive management, and contingencies to respond to reasonably foreseeable adverse impacts.

Traditional Ecological Knowledge

Due to the location of the proposed project and traditional uses of the area, we recommend the identification, inclusion, and integration of traditional ecological knowledge into the EIS analysis, as appropriate. Such anthropological work can include the collection of local and traditional knowledge concerning the affected environment, anticipated impacts from the project, and traditional hunting and land use patterns in the area. We recommend that, in addition to reviewing any pertinent traditional ecological knowledge currently available, additional studies be conducted as necessary to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed project and project alternatives. This information should be reviewed and included in the EIS to the extent possible and utilized in the analysis of potential impacts.

MITIGATION, MONITORING, AND ADAPTIVE MANAGEMENT

Mitigation

CEQ regulations at 40 C.F.R. § 1508.20 define mitigation to include five categories of actions to address impacts. Briefly stated, these are: avoiding, minimizing, rectifying, reducing, and compensating. The regulations at 40 C.F.R. § 1502.14(f), 1502.16(h), and 1508.25 indicate that appropriate mitigation measures should be addressed in an EIS both as part of the analysis of alternatives and in discussions of environmental consequences.

Mitigation is also relevant to evaluating compliance with the Guidelines, which prohibit discharges of dredged or fill material that will cause or contribute to significant degradation of the waters of the United States, and prohibit all discharges *"unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."*[49] The Guidelines identify numerous types of actions to mitigate potential adverse impacts, which include

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[48] Guidance Document on the Development, Evaluation and Application of Environmental Models (PDF). EPA/100/K-09/003. March 2009. http://www.epa.gov/crem/cremlib.html.

[49] 40 C.F.R. § 230.10(d).

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measures to avoid, minimize, and compensate for impacts. Avoidance, minimization, and compensation form a "mitigation sequence" that must be followed in order to comply with the Guidelines' requirement that all appropriate and practicable steps be taken to mitigate impacts to aquatic resources.[50] Compensatory mitigation considerations under the Guidelines are discussed further in the section on aquatic resources above.

The EPA recommends that the EIS identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this project. In addition, we recommend identifying whether implementation of each measure is required by the Corps or any other governmental entity and which entity will be responsible for implementing the measure. To the extent possible, mitigation goals and measurable performance standards should be identified in the EIS to reduce impacts to a particular level or adopted to achieve an environmentally preferable outcome. CEQ guidance on the Appropriate Use of Mitigation and Monitoring seeks to enable agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs.[51]

Monitoring

Environmental monitoring programs should be designed to assess both impacts from the project and whether implemented mitigation measures are effective. We recommend that the monitoring programs:

- Define the monitoring goals and objectives;
- Provide details to demonstrate that goals and objectives will be achieved such as the parameters to be monitored, monitoring locations and frequency, data analysis, and reporting;
- Discuss actions (contingencies, triggers, adaptive management, corrective actions, etc.) that will be taken based on monitoring results;
- Identify and incorporate controls and pre-project data with quantified bias and precision to enable detection of impacts, success of BMPs, and ability to distinguish these from natural variation; and
- Require regular analysis and reporting of data to oversight agencies, including submittal of a sampling and quality assurance plan for agency approval.

We recommend that the monitoring programs be described in the EIS and that the EIS also discuss public participation, and how the public can get information on mitigation effectiveness and monitoring results.

Adaptive Management Planning

We recommend that the EIS utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy should include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set follow-up actions into motion. This strategy or plan should be described so that reviewers may comment on its adequacy. This type of plan, when coupled with the monitoring program, is necessary to mitigate for uncertainties and risks associated with predictions of

[50] 40 C.F.R. § 230.10(a), (d); *See* Memorandum of Agreement between U.S. Department of Army and the Environmental Protection Agency on the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.
[51] https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

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environmental outcomes, and will provide an early warning system of unexpected outcomes.

FINANCIAL ASSURANCE

NEPA provides for the disclosure of all information concerning the environmental consequences of a proposed action to agency decision makers and the public before decisions are made and actions are taken. A key component in determining the environmental impacts of a mining project is the effectiveness of the closure and reclamation activities, including long-term water management. In turn, whether any closure and reclamation activities that may be necessary will be adequately funded is key to determining whether those activities will be effective. We therefore recommend that the project's ability to self-fund, and/or any third-party financial assurance mechanisms, be disclosed. Disclosure of the financial assurance amount and mechanism is particularly important for this project given that PLP's proposal includes long term water management and treatment.

We recommend that the draft EIS disclose the estimated costs to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives. The EPA recommends that the final EIS identify proposed financial assurance mechanisms and demonstrate that these mechanisms would ensure that necessary reclamation work is completed.

The EPA is available for further conversations about the level of detail to include in the document. Below are the main elements that we believe should be disclosed in the EIS:

1. Site Reclamation (facility closure, earth moving/stabilization, revegetation, etc.):

- Phases of reclamation;
- Estimated cost (+/- percent) to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives;
- Criteria for determining success of reclamation activities for financial assurance release; and
- Costs associated with implementing contingency measures to address reasonably foreseeable but not specifically predicted outcomes.

2. Long-Term Site Management (post-closure water treatment, mitigation of impacts to aquatic resources, site maintenance, and monitoring):

- Itemized cost estimate (including reasonable contingencies) and appropriate economic variables to calculate the net present value of future expenses; and
- If a trust fund is utilized, address the "mechanics" of the fund, including:
    - Trust fund mechanism (e.g., current value trust, net present value trust, etc.);
    - Requirements for timing of payments into the trust fund;
    - How the Corps would ensure that the trust fund or other financial assurance could not be claimed by a creditor in the case of bankruptcy;
    - Acceptable financial instruments;
    - How trust management fees and taxes will be paid;
    - Identity of the trust fund beneficiaries; and
    - Identity of the operator with responsibility/liability for financial assurance.

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Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/26/2018 4:40:37 PM
To: Kaiser, Russell [Kaiser.Russell@epa.gov]
CC: Barnhart, Megan [barnhart.megan@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Re: Pebble Letter.

Please ensure you're working off the correct version of the letter. Molly currently has the pen.

Sent from my iPhone

On Jun 26, 2018, at 9:25 AM, Kaiser, Russell <Kaiser.Russell@epa.gov> wrote:

Megan,

Deliberative Process / Ex. 5

Thanks

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 4/12/2018 12:24:22 AM
To: Kelly, Christine M [kelly.christinem@epa.gov]
Subject: please add Krista to our bi-weekly Wednesday Bristol Bay check-ins ...
Attachments: ATT40973; ATT55522; ATT51323; ATT05212; ATT61918; ATT35536; ATT47874

… starting with the next one. Thanks.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/29/2018 8:15:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Draft language

Re: Pebble scoping. I know you were tracking the climate change section and the language therein. Final language is below. We can discuss how we got there next week.

The final letter should be coming your way soon.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Feeley, Drew (Robert)
Sent: Friday, June 29, 2018 1:00 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Draft language

That language looks good. Thanks for your help, David.

From: Allnutt, David
Sent: Friday, June 29, 2018 3:56 PM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>
Subject: RE: Draft language

Drew -- I am finalizing the scoping letter and received the following language (in a very round-about way) after the exchange below. It is different from (but similar to) the language attached to Drew's message of last night, but am presuming that it is final and approved and inserting into the letter. Approaching COB, so please let me know if direction is otherwise.

Climate Adaptation

EPA recommends that the EIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure. This could help inform the development of measures to improve the resilience of the proposed project. If projected changes could notably exacerbate the environmental impacts of the project, EPA recommends these impacts also be considered as part of the NEPA analysis.

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U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Feeley, Drew (Robert)
Sent: Thursday, June 28, 2018 1:59 PM
To: Tomiak, Robert <tomiak.robert@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Draft language

Thanks! It's not final yet. Will forward when that happens.

From: Tomiak, Robert
Sent: Thursday, June 28, 2018 4:58 PM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Fwd: Draft language

Including David.....

I have no objections to the version attached.

Thanks, Rob

Begin forwarded message:

> **From:** "Feeley, Drew (Robert)" <Feeley.Drew@epa.gov>
> **Date:** June 28, 2018 at 4:56:05 PM EDT
> **To:** "Knight, Kelly" <knight.kelly@epa.gov>, "Tomiak, Robert" <tomiak.robert@epa.gov>
> **Subject: Draft language**

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/29/2018 8:08:53 PM
To: Kelly, Christine M [kelly.christinem@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: final letter for formatting
Attachments: Pebble Project Scoping 062818 compiled draft-rda.docx; ATT65316; ATT65412; ATT25900; ATT22320

Patty to transmit to Corps once signed and pdf'd.



Pebble Project Scoping 062818 ...

R. David Allnutt, Director
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AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/14/2018 12:05:41 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT23962; ATT75725; ATT99943; ATT95885

Chris – I found the two attached documents useful in beginning to wrap my head around the questions surrounding next steps for our Pebble 404(c) determination.

The Word document is the paper we used to brief you, Lee, and David Fotouhi last March regarding how to implement Administrator Pruitt's commitment to hold an additional public comment period on the proposal to withdraw the PD. It

Deliberative Process / Ex. 5

The PowerPoint document is the most recent (Feb. 2018) version of the background materials used for leadership briefings on Bristol Bay. (You and Lee saw earlier versions of this presentation in 2017).

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

The options I think we'd present would be:

Deliberative Process / Ex. 5


Pebble-Bristol Bay 404(c)_Options f...


BB Presentation_12...

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Office of Environmental Review and Assessment
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1200 Sixth Avenue, Suite 155
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DRAFT

EPA's Work in the Bristol Bay Watershed

Presentation for Office of Federal Activities

January 31, 2018

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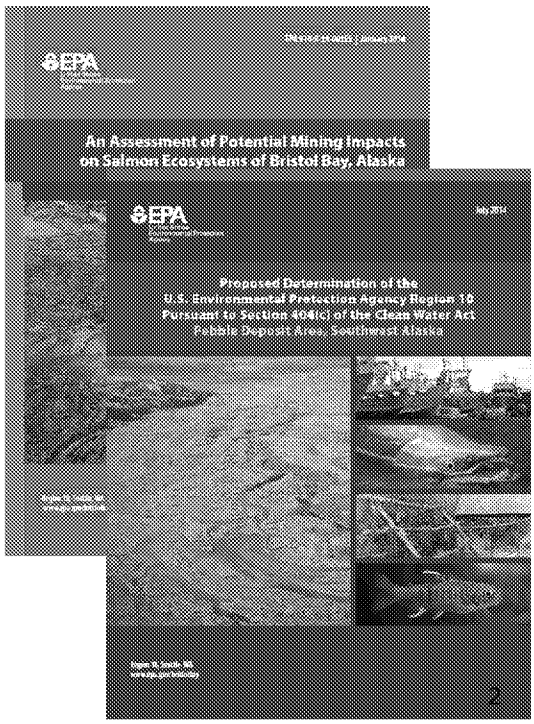
Overview

DRAFT

- EPA's Involvement History
- Science
- Section 404(c) Regulatory Response
- Section 404 Permitting and NEPA



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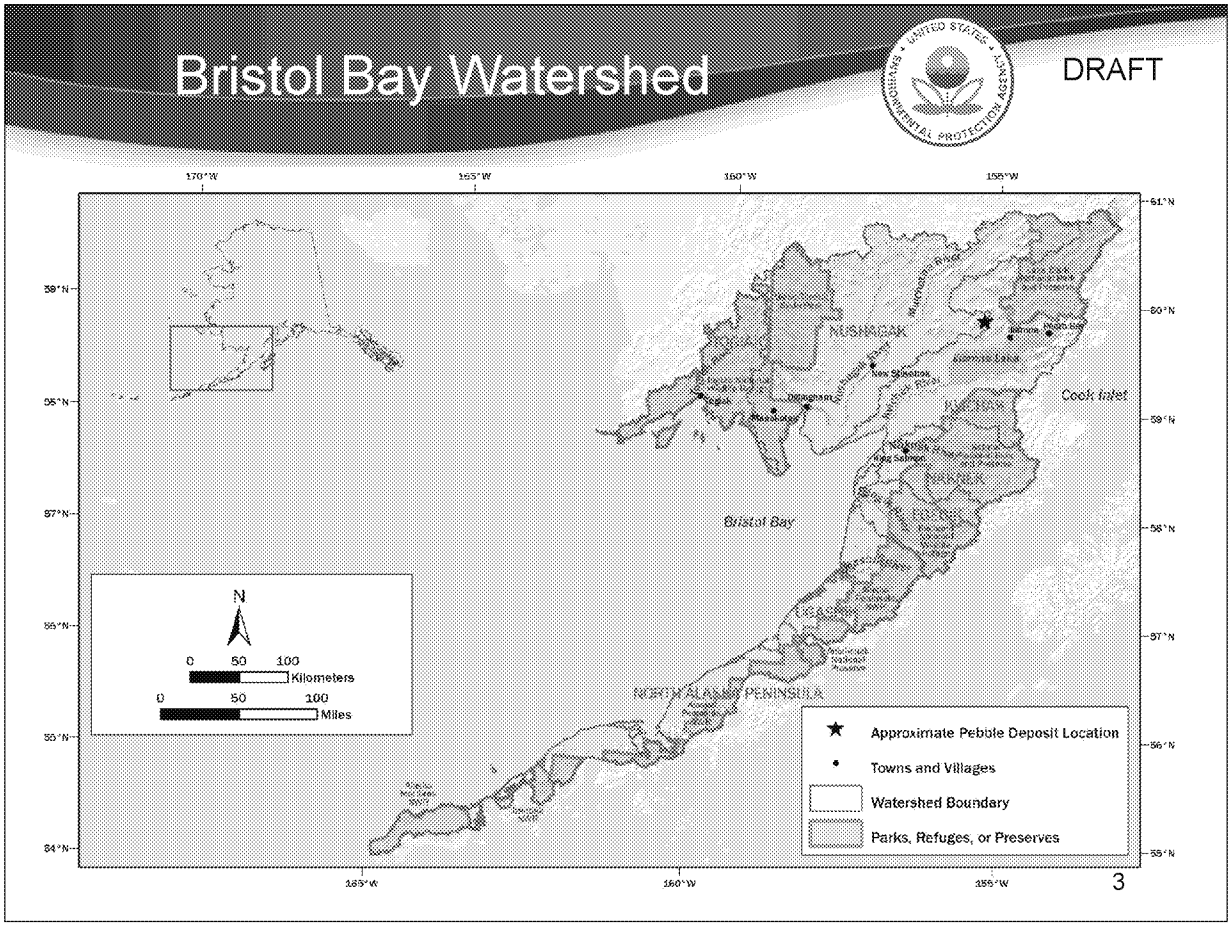

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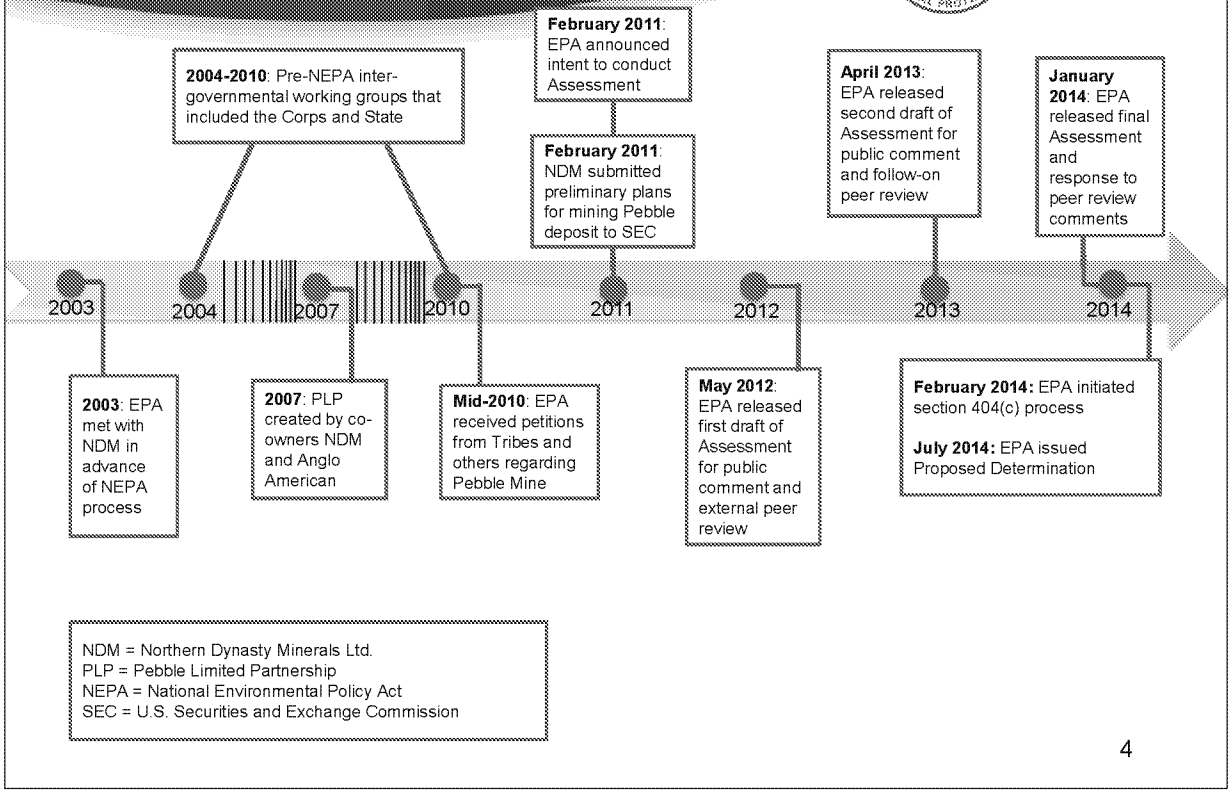
Timeline 2003 - 2014

DRAFT



NDM = Northern Dynasty Minerals Ltd.
PLP = Pebble Limited Partnership
NEPA = National Environmental Policy Act
SEC = U.S. Securities and Exchange Commission

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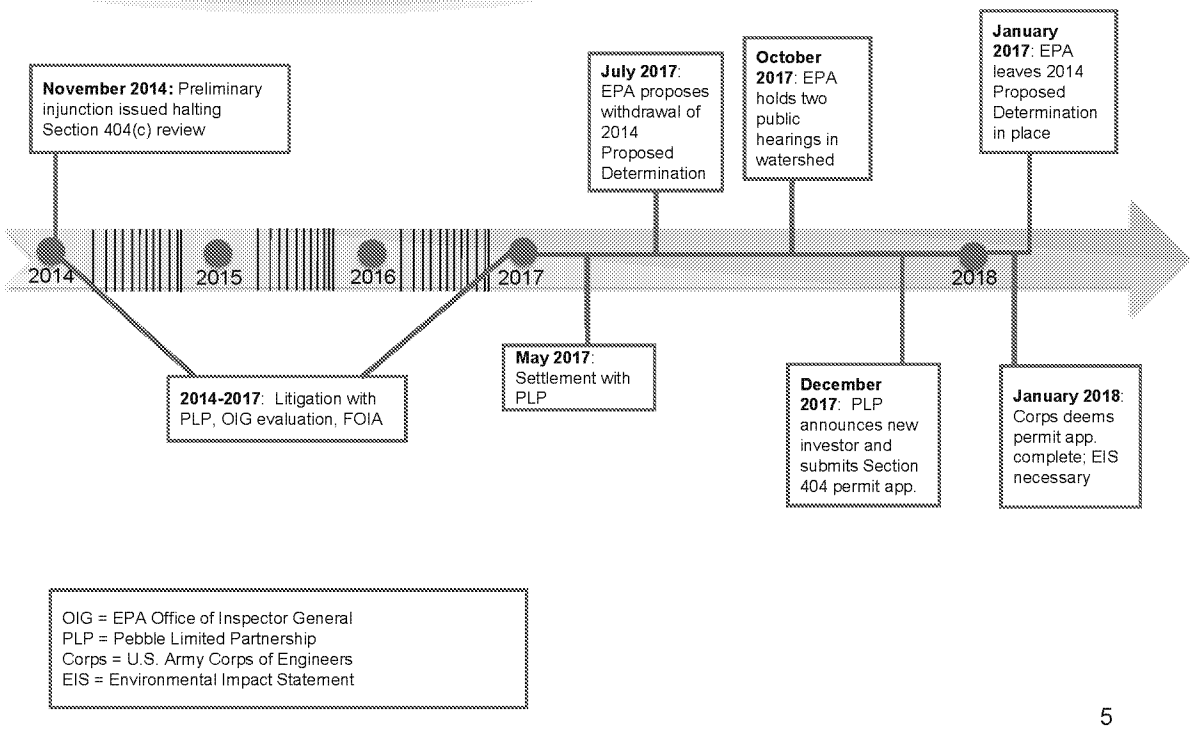
Timeline 2014 - Present

DRAFT



OIG = EPA Office of Inspector General
PLP = Pebble Limited Partnership
Corps = U.S. Army Corps of Engineers
EIS = Environmental Impact Statement

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Bristol Bay Watershed Assessment

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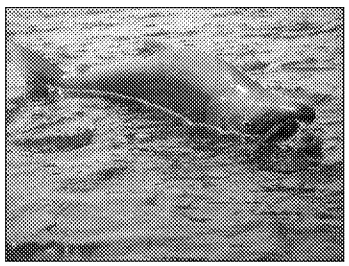
- Purpose:
  - Characterize the biological and mineral resources of the Bristol Bay watershed
  - Increase understanding of the potential impacts of large-scale mining on the region's fish resources
  - Inform future decision-making
- Scientific Ecological Risk Assessment evaluating potential impacts associated with:
  - Large-scale mine construction and operation
  - Accidents and failures



- Three-year scientific assessment effort
  - Independent external peer review
  - Stakeholder and public engagement
    - 8 public meetings
    - 2 rounds of public comment – over 1.1 million comments
  - Tribal consultations

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Bristol Bay Watershed Resources

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Biological Resources:

- Bristol Bay produces almost half of world's sockeye salmon
- Kvichak watershed world's largest producer of sockeye salmon
- Nushagak watershed frequently at or near world's largest producer of Chinook salmon

Biological Resources Support:

- 14,000 jobs, generates $480 million annually in direct economic expenditures and sales
  - Salmon fishery valued at $1.5 billion annually
- 4,000-year-old subsistence fishery for Alaska Natives

Geological Resources:

- At least 10 claims with more than minimal exploration, including Pebble.
- Pebble deposit: low-grade, with copper, gold, and molybdenum
- According to NDM, Pebble could:
  - Be largest mine of its type in North America
  - Produce 3,000 jobs in AK
  - Contribute $2.7 billion to US GDP annually
- Economics of mining the Pebble deposit are speculative
- Since 2001, four major mining companies have walked away from Pebble project

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Bristol Bay Watershed Assessment

- Mining scenarios informed by NDM plans submitted to U.S. Securities and Exchange Commission (SEC) in 2011
- Uses 3 potential stages of mine development at Pebble deposit
  - 0.25-billion-ton mine (worldwide median size porphyry copper deposit)
  - 2.0-billion-ton mine (smallest mine size proposed by NDM to SEC)
  - 6.5-billion-ton mine (largest mine size proposed by NDM to SEC)
- NDM says deposit is nearly 12 billion tons

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Bristol Bay Watershed Assessment

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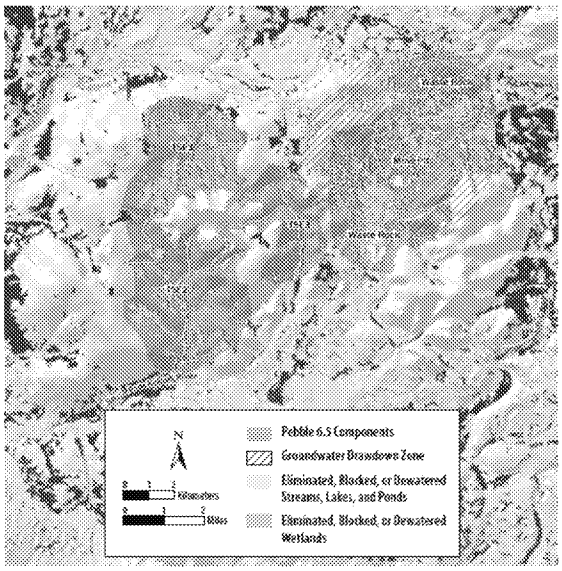
Mine Footprint Impacts:

- 24-94 miles of salmon-supporting streams destroyed
- 1,300-5,350 acres of wetlands, ponds, lakes destroyed
- 9-33 miles of salmon-supporting streams with altered streamflow likely to affect ecosystem structure and function

Other Impacts:

- Tailings dams need maintenance in perpetuity
- Routine operations and accidents would increase impacts on salmon habitat quality, both at the mining site and along the 86-mile transportation corridor.



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Clean Water Act Section 404

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- § 404(a) authorizes the Secretary of the Army to issue **permits**
  - For the discharge of dredged or fill material into waters of the U.S. at specified disposal sites
- § 404(b) directs the Secretary of the Army to apply **environmental criteria** developed by EPA when specifying disposal sites
  - § 404(b)(1) Guidelines [40 CFR Part 230]
- § 404(c) authorizes EPA to prohibit, deny or restrict (withdraw) the placement of dredged or fill material at defined sites in waters of the U.S.

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Limits of Section 404(c)

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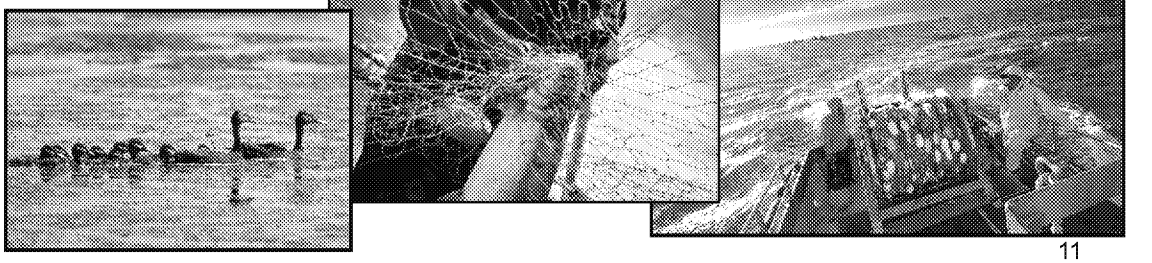
- **Whenever** it determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an **unacceptable adverse effect(s)** on:
  - Municipal water supplies; or
  - Shellfish beds and **fishery areas**; or
  - Wildlife; or
  - Recreation areas.



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Pebble Deposit 404(c) Process

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Step 1

- 2/28/14: **Initiation by EPA Region 10 – "15-day letter"**
- Consulted with Corps, NDM/PLP, and State

Step 2

- 7/18/14: **Proposed Determination** released (PD) by EPA Region 10
- 8/12-15/14: 7 public hearings in Alaska
- > 670,000 written comments; > 99% (86% unique) supported Proposed Determination

Step 3

- EPA Region 10 will review the public comments
- EPA Region 10 will withdraw PD *or* prepare **Recommended Determination** (RD)

Step 4

- **Final Determination (FD) by EPA Assistant Administrator for Water**
- Consult again with Corps, NDM/PLP, and State
- Within 60 days of receipt of RD, issue FD affirming, modifying, or rescinding RD

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What Are the Proposed Restrictions?

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Restrict the discharge of dredged or fill material related to mining the Pebble deposit into waters of the U.S. that would, individually or collectively, result in the following:

1. **Loss of Streams.**
   a. The loss of 5 or more linear miles of streams with documented anadromous fish occurrence; **or**
   b. The loss of 19 or more linear miles of streams where anadromous fish are not currently documented, but that are tributaries of streams with documented anadromous fish occurrence; **or**

2. **Loss of Wetlands, Lakes, and Ponds.** The loss of 1,100 or more acres of wetlands, lakes, and ponds contiguous with either streams with documented anadromous fish occurrence or tributaries of those streams; **or**

3. **Streamflow Alterations.** Streamflow alterations greater than 20% of daily flow in 9 or more linear miles of streams with documented anadromous fish occurrence

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Response to Section 404(c) Proceeding

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- Office of Inspector General (OIG) Review
  - 17-month in-depth evaluation found no evidence of bias or a pre-determined outcome
  - Possible misuse of position for retired Region 10 employee noted
- PLP broad Freedom of Information Act (FOIA) requests
  - Approximately 18,000 documents produced
- PLP filed three lawsuits in 2014
  - Administrative Procedure Act (APA) challenge to initiation of 404(c) process
  - FOIA litigation
  - Federal Advisory Committee Act (FACA) litigation
- May 2017 settlement agreement
  - Resolved FOIA and FACA litigation and PLP's outstanding FOIA requests

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Settlement Agreement

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- Key terms of the May 11, 2017 settlement agreement between PLP and EPA:
  - EPA may use its Bristol Bay Watershed Assessment without limitation
  - EPA agrees to initiate a process to propose to withdraw its 2014 Proposed Determination by July 11, 2017
  - EPA agrees not to forward a Recommended Determination (the next step in the 404(c) review process) to EPA HQ until a Final EIS is noticed for the project or May 11, 2021, whichever is earlier
  - PLP drops remaining lawsuits and fee requests against EPA and agrees to file no new FOIA requests during the 2.5- to 4-year hiatus period

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Proposal to Withdraw 2014 Proposed Determination

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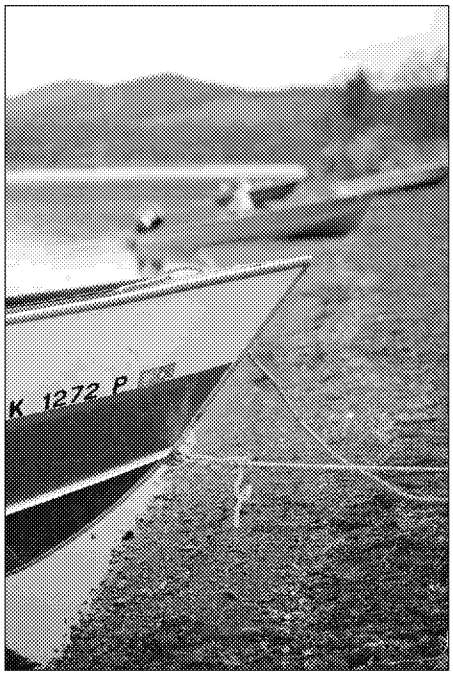
- July 2017: Withdrawal proposed based on policy rationale
  - EPA did not solicit comment on the proposed restrictions or on science or technical information underlying the Proposed Determination
- Outreach and Consultation
  - Proposal generated >1 million comments (~99% opposed)
  - 2 public hearings in watershed
  - Tribal and ANCSA Consultation
    - 16 tribal governments and 1 ANCSA Regional Corp. opposed
    - 1 tribal government and 2 ANCSA Village Corps. supported



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Section 404(c) Next Steps

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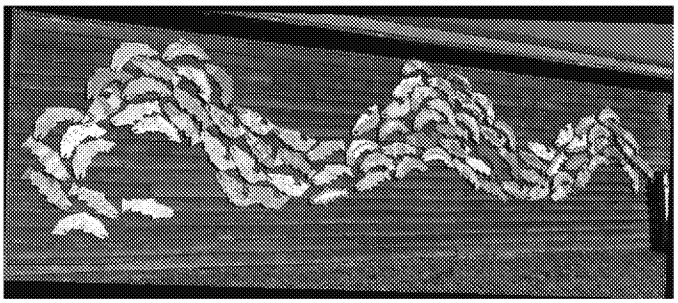
- EPA decided not to withdraw and suspended Section 404(c) process pending further review

- Settlement agreement obligations
  - EPA can issue a new/modified Proposed Determination at any time
  - EPA Region 10 cannot forward a Recommended Determination to EPA HQ until May of 2021 or until a final EIS is noticed, whichever comes first



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2017 Permit Application

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- PLP filed Department of Army (DA) permit application to the Corps in December 2017
  - Includes CWA 404 and RHA Section 10
  - Includes Project Description: mine, power supply, transportation
- Corps deemed application sufficient to begin NEPA



Pebble deposit area

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Project Description

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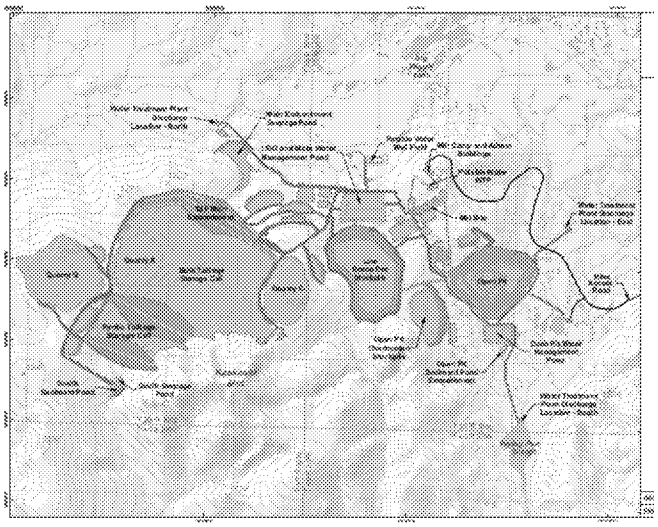
Mine Site

- 1.1 billion tons of ore mined over 20 years
- 160,000 tons/day of ore processed to produce:
  - Copper concentrate
  - Molybdenum concentrate
  - Gold via gravity separation
- Open pit mine, ore storage pile, 2 tailings impoundments
- 2 water treatment plants and 3 discharge outfalls
- Closure
  - PAG waste rock backfilled into open pit
  - Dry closure of tailings
  - Long-term water treatment



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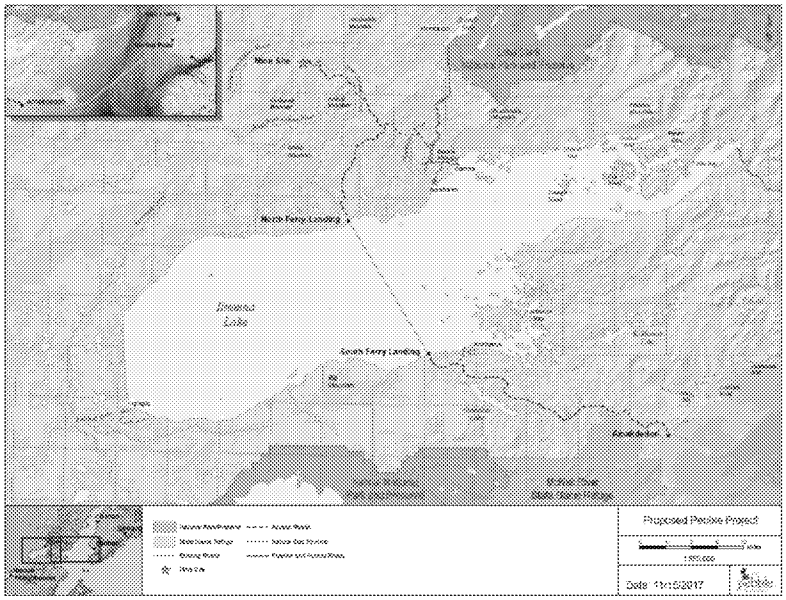
Project Description

Power

- 230 MW power plant at mine site
- 188 mile natural gas pipeline

Transportation

- 65 miles of roads
- Ferry across Lake Illiamna
- Cook Inlet port site & dredge disposal site



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Project Description

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- Proposed mine is:
  - Smaller than 2011 Preliminary Assessment to SEC
  - Larger than the EPA Assessment's 0.25 billion ton mine scenario, which is the basis for the 2014 Proposed Determination

2014 Proposed Determinations
Loss of 5 or more miles of streams with anadromous fish; or
Loss of 19 or more miles of streams that are tributaries of anadromous fish streams; or
Loss of 1100 or more acres of wetlands, lakes and ponds contiguous with streams or tributaries to streams that have anadromous fish; or
Stream flow alteration > 20% of daily flow in 9 or more miles of streams with anadromous fish

2017 DA Application	
component	**wetlands filled**
Mine site	3190
Transportation (roads, ferry terminals, port)	480
Pipeline	408
TOTAL	4078

- Differences from 2011 Preliminary Assessment and EPA's Assessment:
  - Less waste rock mined
  - No cyanide leaching
  - Liners (pyritic tailings and low grade ore stockpile)
  - Advanced water treatment and "Physical Habitat Simulation System" to mitigate dewatering
  - Compensatory mitigation - TBD
- Project description could evolve during EIS and 404 review

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Initial Corps Process

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- Corps issued informational Public Notice of application (January 5, 2018)
  - Did not request public comment at this time
- Corps invited EPA to be EIS cooperating agency
  - Currently proposing to limit EPA's involvement to Section 404(b)(1) issues
  - Framework for coordination is atypical
  - EPA requested higher-level meeting to discuss
- Proposed schedule
  - Notice of Intent/EIS scoping in spring 2018
  - Final EIS by end of 2020
  - DA Application (CWA 404) public notice with Draft or Final EIS
  - FAST-41 considerations

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Potential NEPA Cooperating Agencies

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- Federal
  - DOT Pipeline and Hazardous Materials Safety Administration (TBD)
  - US Coast Guard
  - DOI Bureau of Safety and Environmental Enforcement
  - US Fish and Wildlife Service
  - National Marine Fisheries Service
  - EPA
- State
  - Alaska Department of Natural Resources Office of Project Management and Permitting coordinates state agencies (ADNR, ADEC, ADFG, SHPO)
- Local Governments
  - Lake & Peninsula Borough & Kenai Peninsula Borough
- Tribes
  - Corps sent consultation letters to 35 tribal governments
  - Corps has not yet solicited tribes interest in participating as cooperating agency

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EPA Response to Permit Application

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- EPA Role
  - NEPA
    - Potentially a cooperating agency
    - CAA 309 review of the Draft EIS
  - Clean Water Act
    - CWA 404 permit application & 404(b)(1) review
    - Oversight of State CWA 402 Alaska Pollutant Discharge Elimination System Permit
  - Clean Air Act
    - Oversight of State Air Quality Permit
- EPA has developed a cross-programmatic, multi-disciplinary team
- Next Steps
  - Resolve cooperating agency status
  - EIS scoping

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Questions

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Upper Talarik Creek, one of three streams flowing from the Pebble deposit site

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Sent: 11/10/2018 2:43:52 AM
To: R10-ORA [R10-ORA@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Linda Anderson-Carnahan (Anderson-Carnahan.Linda@epa.gov) [Anderson-Carnahan.Linda@epa.gov]
Subject: R10 ORA Briefing Paper for Meet and Greet with Col Borders.docx
Attachments: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx

Pam – attached is the final briefing paper for Chris's visit with the Colonel next Friday. Thanks.

Becky – this version should match the one on your OneDrive. I've revised slightly today.



R10 ORA Briefing Paper and Talkin...

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/9/2018 12:40:46 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]
Subject: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx
Attachments: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx

Chris – an early preview of a briefing paper for you to prep for next Friday's conversation with Colonel Borders. You should not feel compelled to review now; we can discuss during our meeting scheduled for 1pm tomorrow, and I'll make sure that a final version is included in the packet you take to Alaska next week.

I understand that Sue is accompanying you to the meeting with the Colonel. Am cc'ing her and have invited her to join our discussion tomorrow.



R10 ORA Briefing Paper and Talkin...

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Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/8/2018 10:14:38 PM
To: Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: FW: Discussion USACE MOU / Pebble
Location: Chris' Office

Start: 11/9/2018 9:00:00 PM
End: 11/9/2018 9:45:00 PM
Show Time As: Tentative

Sue – as discussed.

-----Original Appointment-----
From: Hladick, Christopher
Sent: Monday, November 05, 2018 9:30 AM
To: Hladick, Christopher; Allnutt, David
Subject: Discussion USACE MOU / Pebble
When: Friday, November 09, 2018 1:00 PM-1:45 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Chris' Office

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Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/8/2018 3:01:48 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Comments Sections 3.1_3.5_4.1_4.5 Draft 110618.docx
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 110618.docx

Molly – I understand that this is due to the Corps on Tuesday. Are you and/or others on this email available to discuss before it's submitted? Want to (1) convey discussions I've had with ORC and OFA about this overall effort; and (2) make sure I understand the RFFA issues presented.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Nogi, Jill
Sent: Wednesday, November 07, 2018 3:55 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Comments Sections 3.1_3.5_4.1_4.5 Draft 110618.docx

David,
Here's the draft table – please take a look and feel free to let Molly and I know if there's anything else to say before this goes out on 11/13.
Jill

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/6/2018 1:10:00 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
CC: Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]
Subject: message to Henry
Attachments: ATT03059; ATT56904; ATT41735; ATT54034

Chris – when we met last week, you asked me to draft a short email to Henry proposing to meet and provide background on Pebble. Below is a draft for your consideration. Let me know if you have questions.

++++++++++++++++++++++++++++++++++++

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 4/11/2018 6:32:12 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: FW: RA briefing updates
Attachments: OERA Office Briefing for Hladick-FINAL.pptx; Briefing Book for Regional Administrator December 13 2017.pdf; 404 overview for Region 10 RA.pptx; BB Presentation_Hladick_120517.pptx; ATT92620; ATT14749; ATT98461; ATT48608; ATT73169; ATT92551; ATT51687; ATT93924; ATT64595; ATT85812; ATT11058; ATT49950; ATT22100; ATT04958

For Krista, in particular, below are some materials that might be useful for getting up to speed on some of the issues currently front and center before OERA and ARU. Each of the four documents attached is something we've shared with Chris H. over the past few months to get him up to speed.

404 overview for Region 10 RA.pptx

BB Presentation_Hla...

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Allnutt, David
Sent: Monday, December 18, 2017 4:12 PM
To: R10-OERA <R10-OERA@epa.gov>
Subject: RA briefing updates

OERA – at last week's all-staff meeting, we discussed the ongoing efforts to get our new Regional Administrator informed about our office and the numerous issues pending before us. The purpose of this email is to pass on some of the materials related to this effort.

You may have seen the InfoPage announcement that the briefing book that we prepared for the incoming RA is now posted on the Office of Regional Administrator's SharePoint site. I've also attached it to this message. Thanks to all who helped me compile and update the content in the OERA section of the book. I think the book came out well, and I may use all or portions of it in the future to introduce Region 10 or our office to external parties.

As I mentioned at the all-staff, I've participated in three introductory RA briefings so far: an introduction to OERA; an overview of the CWA § 404 program; and an overview of EPA's work to protect the Bristol Bay watershed from the impacts of large-scale mining. This week I'm scheduled to participate in RA briefings on Waters of the U.S./Puget Sound High Tide Line and EPA's Scientific Integrity Policy. Attached to this email is the presentation I used for the OERA office

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overview; like the briefing book, you might find it useful for introducing our office's structure and functions to an outside party.


Briefing Book for Regional Admini...


OERA Office Briefing for Hladi...

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

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Clean Water Act Section 404

Overview for Region 10

Regional Administrator Hladick

December 6, 2017

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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AMERICAN OVERSIGHT

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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DRAFT

EPA's Work in the Bristol Bay Watershed

Presentation for Regional Administrator Hladick

December 7, 2017

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Overview

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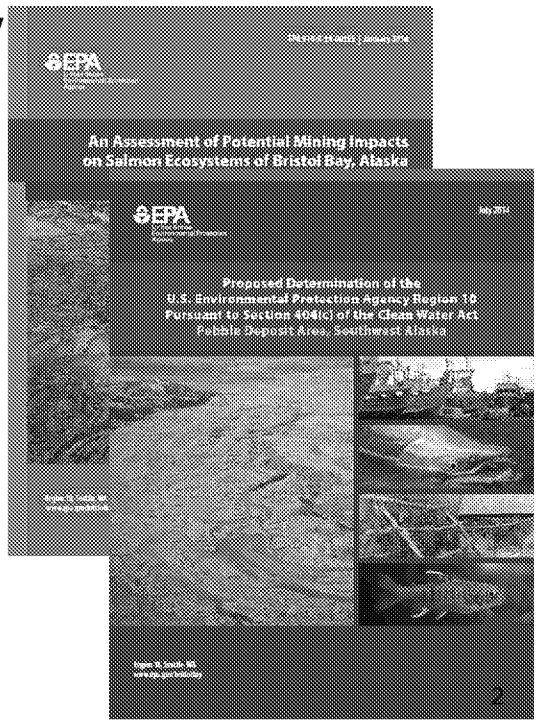
- EPA's Involvement History
- Science
- Regulatory Response
- Litigation/Settlement
- Withdrawal Proposal
- Next Steps



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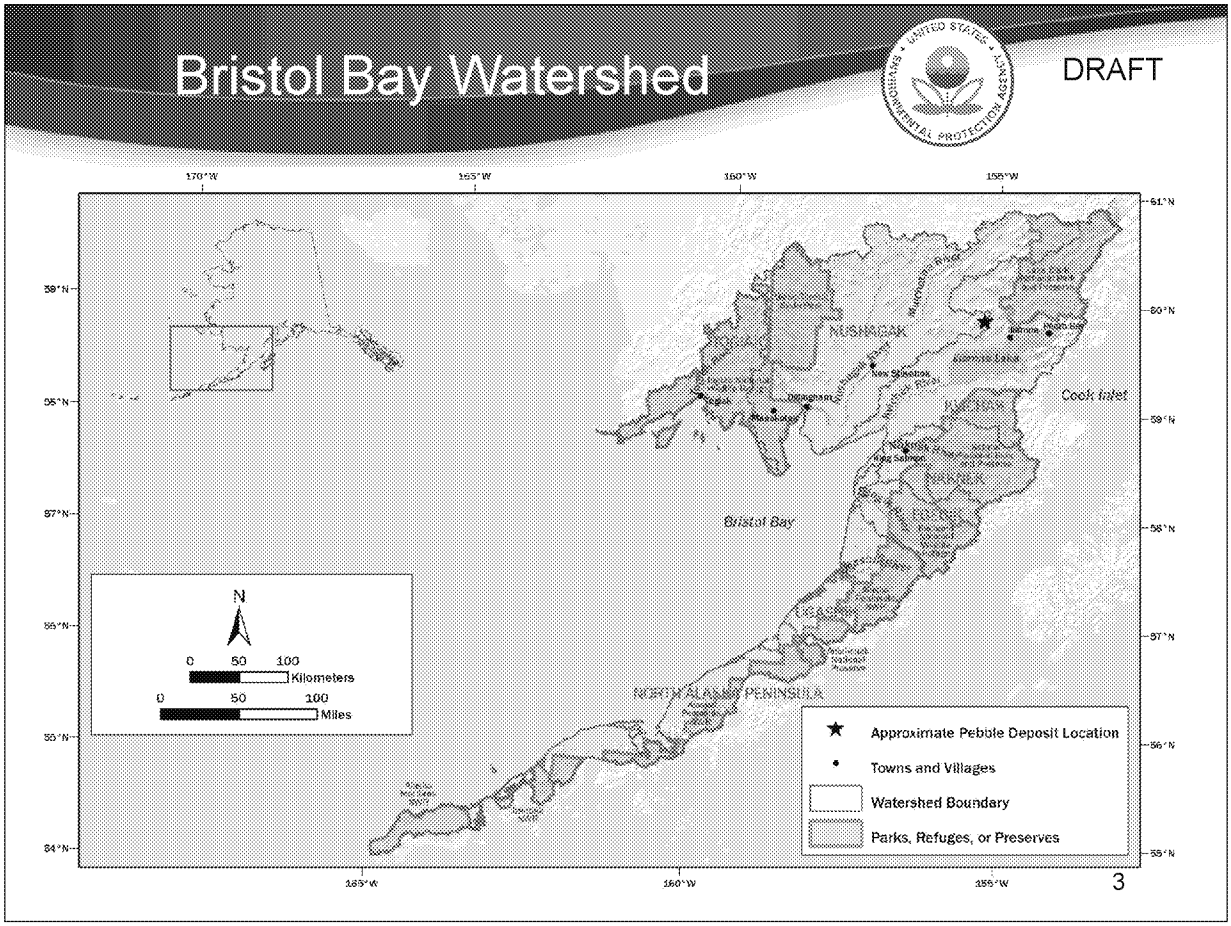

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Timeline 2003 - 2014

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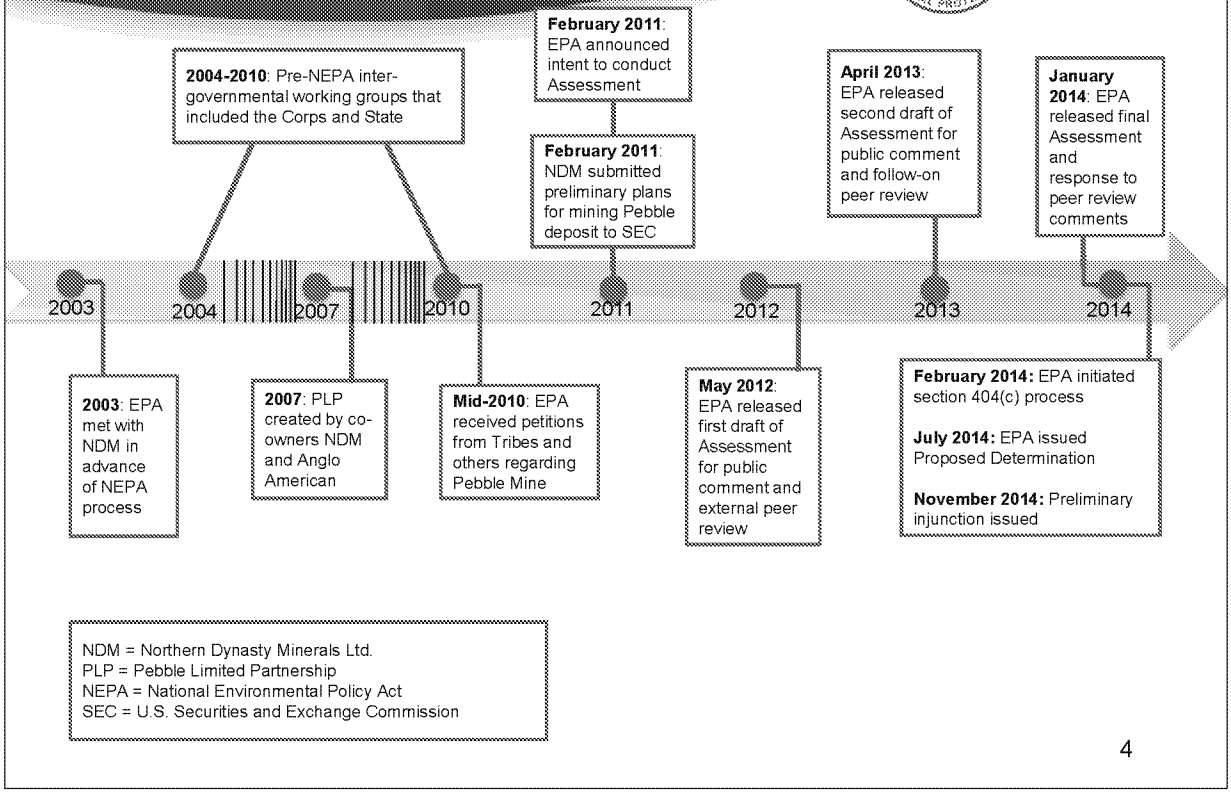

NDM = Northern Dynasty Minerals Ltd.
PLP = Pebble Limited Partnership
NEPA = National Environmental Policy Act
SEC = U.S. Securities and Exchange Commission

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Bristol Bay Watershed Assessment

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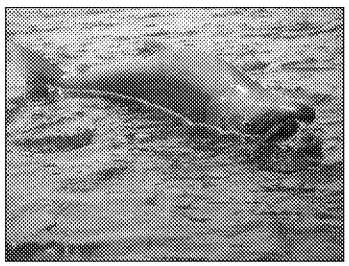
- Purpose:
  - Characterize the biological and mineral resources of the Bristol Bay watershed
  - Increase understanding of the potential impacts of large-scale mining on the region's fish resources
  - Inform future decision-making
- Scientific Ecological Risk Assessment evaluating potential impacts associated with:
  - Large-scale mine construction and operation
  - Accidents and failures



- Three-year scientific assessment effort
  - Independent external peer review
  - Stakeholder and public engagement
    - 8 public meetings
    - 2 rounds of public comment – over 1.1 million comments
  - Tribal consultations

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Bristol Bay Watershed Resources

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Biological Resources:

- Bristol Bay produces almost half of world's sockeye salmon
- Kvichak watershed world's largest producer of sockeye salmon
- Nushagak watershed frequently at or near world's largest producer of Chinook salmon

Biological Resources Support:

- 14,000 jobs, generates $480 million annually in direct economic expenditures and sales
  - Salmon fishery valued at $1.5 billion annually
- 4,000-year-old subsistence fishery for Alaska Natives

Geological Resources:

- At least 10 claims with more than minimal exploration, including Pebble.
- Pebble deposit: low-grade, with copper, gold, and molybdenum
- According to NDM, Pebble could:
  - Be largest mine of its type in North America
  - Produce 3,000 jobs in AK
  - Contribute $2.7 billion to US GDP annually
- Economics of mining the Pebble deposit are speculative
- Since 2001, four major mining companies have walked away from Pebble project

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Bristol Bay Watershed Assessment

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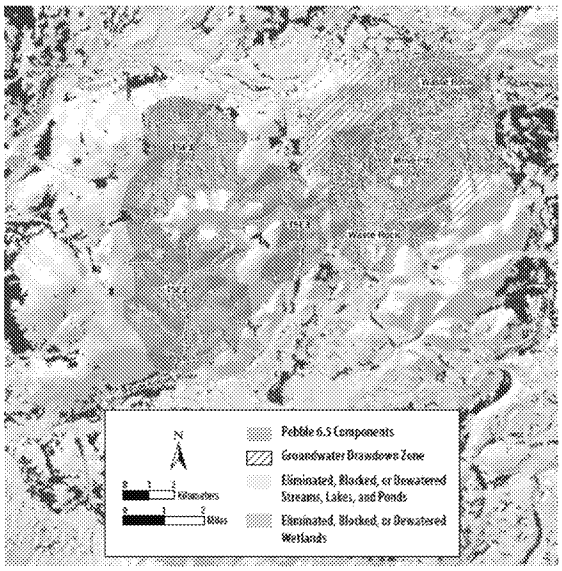
Mine Footprint Impacts:

- 24-94 miles of salmon-supporting streams destroyed
- 1,300-5,350 acres of wetlands, ponds, lakes destroyed
- 9-33 miles of salmon-supporting streams with altered streamflow likely to affect ecosystem structure and function

Other Impacts:

- Tailings dams need maintenance in perpetuity
- Routine operations and accidents would increase impacts on salmon habitat quality, both at the mining site and along the 86-mile transportation corridor.



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Clean Water Act Section 404

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- § 404(a) authorizes the Secretary of the Army to issue **permits**
  - For the discharge of dredged or fill material into waters of the U.S. at specified disposal sites
- § 404(b) directs the Secretary of the Army to apply **environmental criteria** developed by EPA when specifying disposal sites
  - § 404(b)(1) Guidelines [40 CFR Part 230]
- § 404(c) authorizes EPA to prohibit, deny or restrict (withdraw) the placement of dredged or fill material at defined sites in waters of the U.S.

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Limits of Section 404(c)

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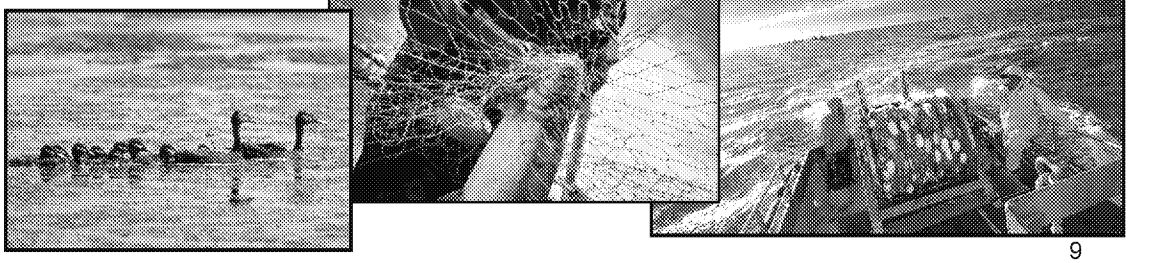
- **Whenever** it determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an **unacceptable adverse effect(s)** on:
  - Municipal water supplies; or
  - Shellfish beds and **fishery areas**; or
  - Wildlife; or
  - Recreation areas.



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Pebble Deposit 404(c) Process

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Step 1

- 2/28/14: **Initiation by EPA Region 10 – "15-day letter"**
- Consulted with Corps, NDM/PLP, and State

Step 2

- 7/18/14: **Proposed Determination** released (PD) by EPA Region 10
- 8/12-15/14: 7 public hearings in Alaska
- Comment period closed 9/19/14

STOP

Step 3

- EPA Region 10 will review the public comments
- EPA Region 10 will withdraw PD *or* prepare **Recommended Determination** (RD)

Step 4

- **Final Determination (FD) by EPA Assistant Administrator for Water**
- Consult again with Corps, NDM/PLP, and State
- Within 60 days of receipt of RD, issue FD affirming, modifying, or rescinding RD

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What Are the Proposed Restrictions?

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Restrict the discharge of dredged or fill material related to mining the Pebble deposit into waters of the U.S. that would, individually or collectively, result in the following:

1. **Loss of Streams.**
   a. The loss of 5 or more linear miles of streams with documented anadromous fish occurrence; **or**
   b. The loss of 19 or more linear miles of streams where anadromous fish are not currently documented, but that are tributaries of streams with documented anadromous fish occurrence; **or**

2. **Loss of Wetlands, Lakes, and Ponds.** The loss of 1,100 or more acres of wetlands, lakes, and ponds contiguous with either streams with documented anadromous fish occurrence or tributaries of those streams; **or**

3. **Streamflow Alterations.** Streamflow alterations greater than 20% of daily flow in 9 or more linear miles of streams with documented anadromous fish occurrence

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Public Input on Proposed Determination

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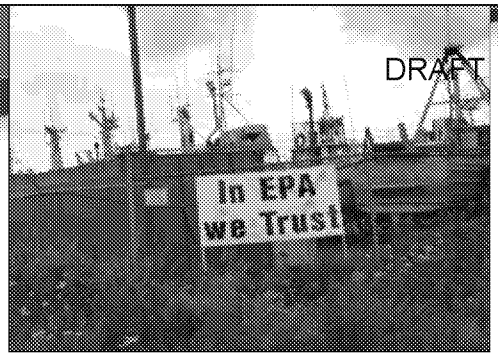
- EPA received:
  - > 670,000 total written public comments, > 99% supported the PD
  - > 4,000 total unique comments, > 86% supported the PD



Dillingham, August 2014

EPA Public Hearings – August 12-15, 2014			
	Total Attendance	**Testimony supporting PD/404(c)**	**Testimony against PD/404(c)**
Anchorage	512	95	39
Nondalton	43	18	1
New Stuyahok	60	19	0
Dillingham	134	64	8
Kokanhok	20	3	4
Iliamna	67	28	14
Iguigig	20	16	4
TOTAL	**856**	**243**	**70**
		77.6%	22.4%
Bristol Bay Region Only		**82.7%**	**17.3%**

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Response to Section 404(c) Proceeding

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- Office of Inspector General (OIG) Review
  - 17-month in-depth evaluation found no evidence of bias or a pre-determined outcome
  - Possible misuse of position for retired Region 10 employee noted
- PLP broad Freedom of Information Act (FOIA) requests
  - Approximately 18,000 documents produced
- PLP filed three lawsuits in 2014
  - Administrative Procedure Act (APA) challenge to initiation of 404(c) process
  - FOIA litigation
  - Federal Advisory Committee Act (FACA) litigation
- May 2017 settlement agreement
  - Resolved FOIA and FACA litigation and PLP's outstanding FOIA requests

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Settlement Agreement

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- Key terms of the May 11, 2017 settlement agreement between PLP and EPA:
  - EPA may use its Bristol Bay Watershed Assessment without limitation
  - EPA agrees to initiate a process to propose to withdraw its 2014 Proposed Determination by July 11, 2017
  - If PLP submits a 404 permit application to the Army Corps by November 11, 2019, EPA agrees not to forward a Recommended Determination (the next step in the 404(c) review process) to EPA HQ until a Final EIS is noticed for the project or May 11, 2021, whichever is earlier
  - PLP drops remaining lawsuits and fee requests against EPA and agrees to file no new FOIA requests during the 2.5- to 4-year hiatus period

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Proposal to Withdraw Proposed Determination

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- July 11, 2017 – Withdrawal proposal released with following rationale:
  - Reflecting "the Administrator's decision to provide PLP with additional time to submit a permit application to the Army Corps and potentially allow the Army Corps permitting process to initiate without having an open and unresolved Section 404(c) review"
  - Removing "any uncertainty, real or perceived, about PLP's ability to submit a permit application and have that permit application reviewed"
  - Allowing "the factual record regarding any forthcoming permit application to develop"
  - Retaining "discretion to act [under Section 404(c)] prior to any potential Army Corps authorization"

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Response to Settlement and Withdrawal Proposal

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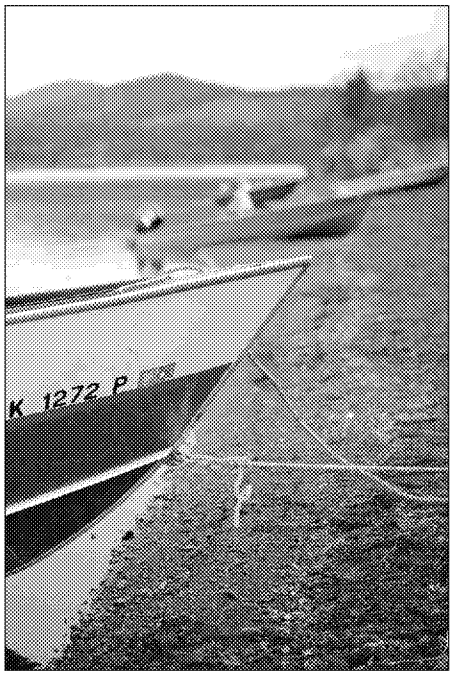
- Broad FOIA requests from news outlets and environmental groups
  - Region 10 is the lead with support from HQ
- Significant email campaigns to the Administrator and Acting Regional Administrator against withdrawal
- Substantial and sustained media attention



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Proposal to Withdraw - Engagement

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- Public Comment Period
  - >1 million comments
- Consultation and Coordination
  - EPA met with 18 Tribes, 3 ANCSA Corporations, and 1 Tribal Association
- Two public hearings in the watershed
  - ~200 participants

Personal Matters / Ex. 6

Iliamna Hearing, Oct. 2017

Deliberative Process / Ex. 5

Personal Matters / Ex. 6

Dillingham Hearing, Oct. 2017

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Proposal to Withdraw – Next Steps

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Deliberative Process / Ex. 5

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Potential Pebble Mine – Next Steps

DRAFT

- Impacts from past exploration and site activities?
- In October of 2017, PLP publicly described a smaller mine concept
- Corps has indicated that PLP plans to file a permit application on December 22
  - Interagency pre-application meeting scheduled for December 21
  - EPA would be involved in 404 and NEPA review



Pebble deposit area.

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Current Bristol Bay Team

DRAFT

R10 Office of Environmental Review and Assessment
- David Allnutt, Director*
- Michael Szerlog*
- Derek Threet

HQ Office of Water
- Lee Forsgren, Deputy Assistant Administrator*
- Russell Kaiser*
- Palmer Hough
- Brittany Bennett

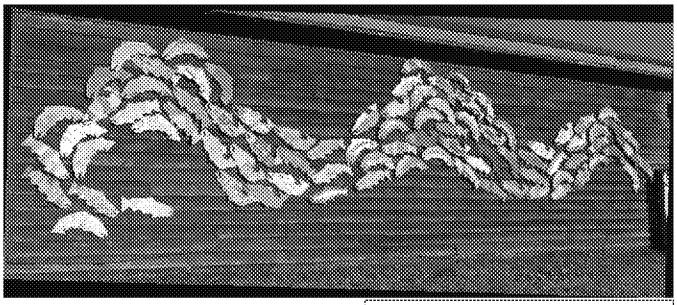
R10 Public Affairs
- Marianne Holsman*
- Suzanne Skadowski

Tribal
- Stacy Murphy* (R10)
- Karen Gude (HQ)

R10 Mining Advisor
- Patty McGrath

Legal
- Allyn Stern, Regional Counsel*
- Cara Steiner-Riley* (R10)
- Ashley Palomaki (R10)
- Carrie Wehling* (HQ)
- Heidi Nalven (HQ)

R10 Community Involvement Coordinator
- Andrea Lindsay



Alaska Operations Office
- Tami Fordham*

FOIA Expert Assistance Team
- Denise Walker

* denotes management

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Questions

DRAFT



Upper Talarik Creek, one of three streams flowing from the Pebble deposit site

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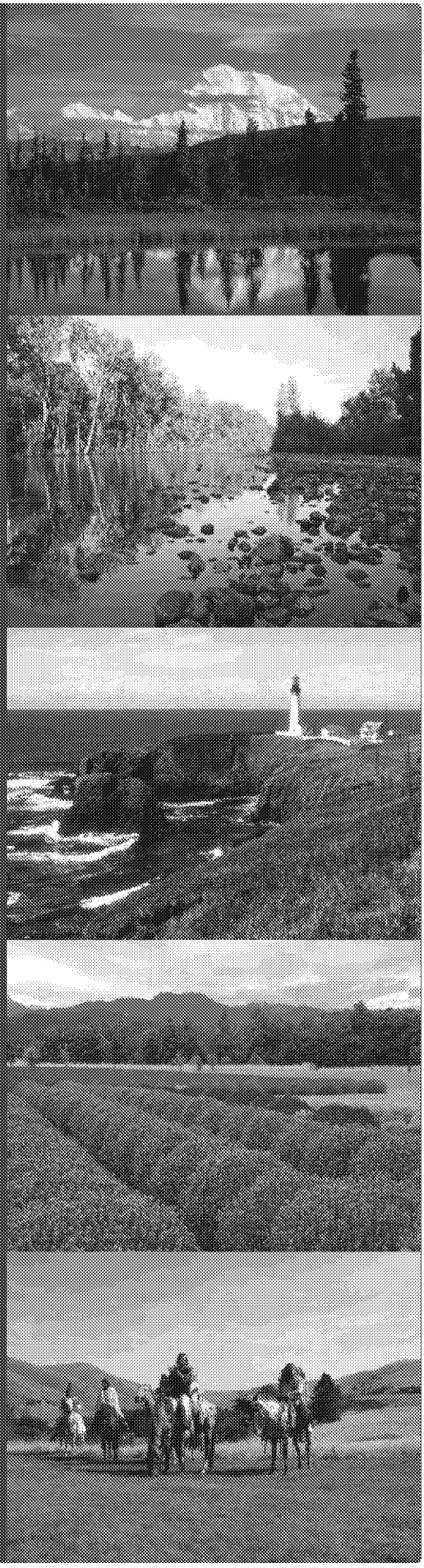

Briefing Book for Incoming Regional Administrator for EPA Region 10

Prepared by the Office of the Regional Administrator

December 2017

For internal use only, not for distribution

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Key Challenges and Opportunities

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Bristol Bay/Pebble Mine

Mine would sit at headwaters of world's largest commercial salmon fishery; significant opposition to mine from native, commercial fishing, and environmental interests; EPA's CWA 404 program would play a significant role in permitting process.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Tribal

Pebble Mine: The Pebble Limited Partnership proposes to extract the extremely large, low grade Pebble copper deposit in Alaska's Bristol Bay watershed, but has not yet submitted a permit application. In July 2014, based in part on EPA's January 2014 "Bristol Bay Watershed Assessment," EPA issued a Proposed Determination under CWA §404(c) to restrict the use of certain waters in the Bristol Bay watershed as a disposal site. Under a May 2017 settlement agreement, EPA agreed to propose to withdraw the proposed determination. On July 11, EPA initiated that process, and received over 1 million comments during a 90-day public comment period and concurrent tribal consultation period.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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EPA-0135-0004387

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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DRAFT

Office of Environmental Review and Assessment Region 10

Overview for Regional Administrator Hladick

December 6, 2017

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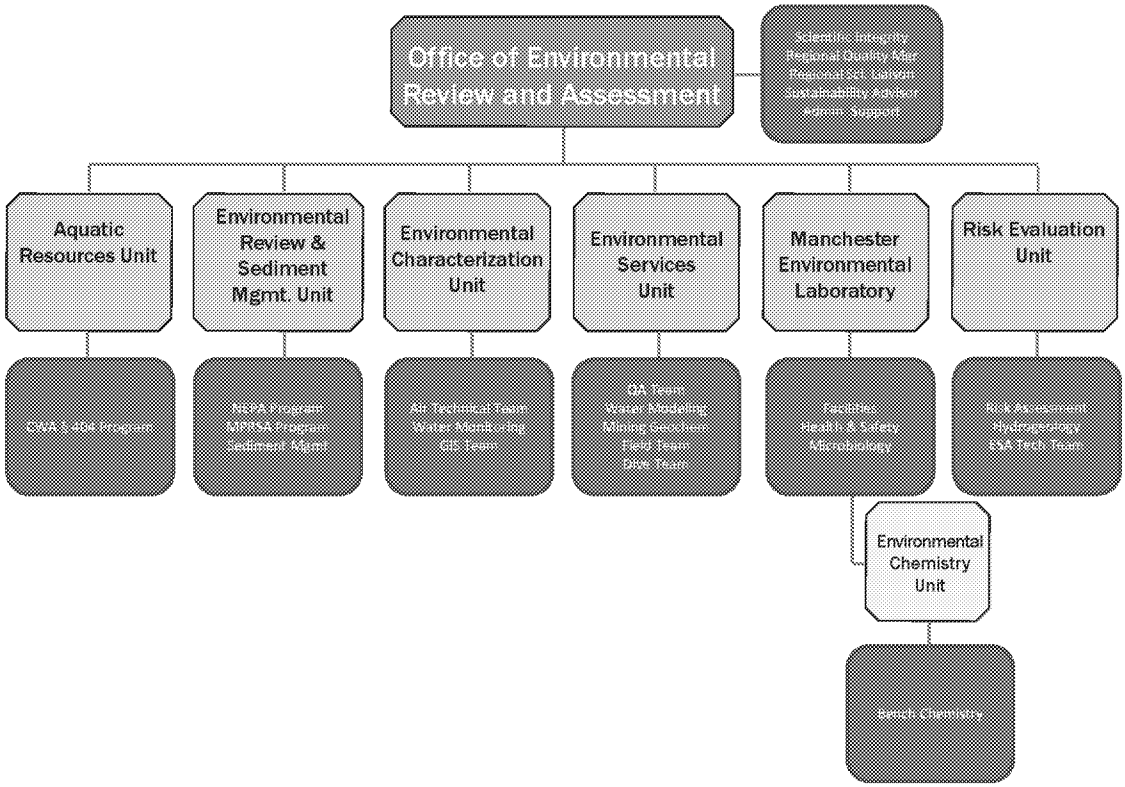
OFFICE OF ENVIRONMENTAL REVIEW AND ASSESSMENT
ORGANIZATIONAL STRUCTURE



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OFFICE OF ENVIRONMENTAL REVIEW AND ASSESSMENT
MAJOR AREAS OF RESPONSIBILITY

Clean Water Act § 404 Program (discharges of "dredged or fill material" to "waters of the U.S.")

- CWA Jurisdiction/WOTUS
- Corps permit review and oversight
- Wetland Program Development Grants
- Mitigation banking
- Water quality certification
- Enforcement technical support

Marine Protection, Research and Sanctuaries Act (Ocean Dumping Act) Program

- Ocean disposal site designation and surveys
- MPRSA ocean dumping permits
- Ocean Policy (e.g., MRAC, West Coast RPB)

National Environmental Policy Act/Clean Air Act § 309 Program

- NEPA compliance
- NEPA review
- Cooperating Agency/FAST-41

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OFFICE OF ENVIRONMENTAL REVIEW AND ASSESSMENT
MAJOR AREAS OF RESPONSIBILITY

Scientific and Technical Support Functions

- Quality assurance (QA)
- Air, surface water, and wetland monitoring
- Air and water modelling
- Hydrogeology
- Ecological and human health risk assessment
- Geographic information systems (GIS)
- Sediment management review
- Endangered Species Act (ESA) technical support
- Field support
- Scientific Dive Team

Manchester Environmental Laboratory

- Analytical support to programs
- Lab certification, auditing
- Facility sharing agreement with Dept. of Ecology
- ESAT contract

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Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 4/24/2018 8:45:22 PM
To: Schuster, Cindy [Schuster.Cindy@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Check-in on Smith/Bishop/Gosar letter re: Bristol Bay
Attachments: 18-000-5435.pdf; supporting doc. AL-18-000-5435, L. Smith - 4-4-18.pdf; ATT84638; ATT99856; ATT70926; ATT46728

Cindy – this version seems to be structured a bit differently than the one I reviewed last month, with a few elaborating sentences, but it seems OK to me.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Schuster, Cindy
Sent: Tuesday, April 24, 2018 12:56 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Schuster, Cindy <Schuster.Cindy@epa.gov>
Subject: FW: Check-in on Smith/Bishop/Gosar letter re: Bristol Bay

David,
I believe you reviewed a version of this CMS response on March 28. Do you and/or any others here need to look at this version approved by Lee Forsgren? The response is overdue, so OCIR is looking for a reply soon.
--Cindy, x. 1815

From: Skane, Elizabeth
Sent: Tuesday, April 24, 2018 12:20 PM
To: Schuster, Cindy <Schuster.Cindy@epa.gov>
Subject: Check-in on Smith/Bishop/Gosar letter re: Bristol Bay

Hi Cindy, I'm running the traps on a Bristol Bay letter (AL-18-000-5435)—you might have worked with Denis Borum on this one but he is out of the office this week so I'm doing my best to get it wrapped up. In any event, it looks like we have an approved response in CMS but it's not entirely clear if you all in the Region have been involved and reviewed this letter? If so, that's great and I will proceed to run this through our front office before closing it out. At you

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earliest convenience please let me know if you all are okay with this response. Incoming and draft response (with Lee Forsgren's approval) attached.
Thanks!
Elizabeth


18-000-5435.pdf


supporting doc. AL-18-000-5435,...

Elizabeth Skane 202.564.5696
US Environmental Protection Agency
Office of Congressional Affairs
WJC North 3443S

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Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 3/31/2018 7:41:20 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Werntz, James [Werntz.James@epa.gov]
Subject: Re: hot issues

Patty- thanks

Jim - I'll stick the pebble item in the weekly

Sent from my iPhone

On Mar 31, 2018, at 1:10 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

> Hi Jim and David -
>
> Below are blurbs for the weekly hot issues.

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

> Pebble Mine Project: On March 29 the Army Corps of Engineers published a Notice of Intent in the Federal Register initiating the formal scoping process for the Pebble EIS. The 30-day scoping period began on April 1 and will include nine public meetings. Numerous requests have already been submitted to the Corps requesting an extension to the scoping period. EPA's Pebble NEPA team will be developing scoping comments.

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

Sent: 11/13/2018 11:58:54 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

Chris – I found the two attached documents useful in beginning to wrap my head around the questions surrounding next steps for our Pebble 404(c) determination.

The Word document is the paper we used to brief you, Lee, and David Fotouhi last March regarding how to implement Administrator Pruitt's commitment to hold an additional public comment period on the proposal to withdraw the PD. It

Deliberative Process / Ex. 5

The PowerPoint document is the most recent (Feb. 2018) version of the background materials used for leadership briefings. (You and Lee saw earlier versions of this presentation in 2017). **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

The options I think we'd present would be:

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Pebble-Bristol Bay 404(c)_Options f...

BB Presentation_12...

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Seattle, Washington 98101-3140
(206) 553-2581

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Message

Sent: 11/13/2018 11:31:58 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:41:43 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT03077; ATT05238; ATT90216; ATT76528

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Message

Sent: 11/13/2018 11:51:26 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT14583; ATT94083; ATT14154; ATT12801

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Pebble-Bristol Bay 404(c)_Options f...

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Message

Sent: 11/13/2018 11:40:47 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/14/2018 12:06:52 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:30:02 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT77449; ATT01929; ATT37929; ATT33843

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Message

Sent: 11/13/2018 11:39:39 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT85003; ATT58639; ATT48634; ATT53155

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Message

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To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:29:02 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
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Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

The options I think we'd present would be:

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Pebble-Bristol Bay 404(c)_Options f...

BB Presentation_12...

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

Sent: 11/13/2018 11:38:32 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/14/2018 12:05:54 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT87296; ATT30666; ATT90602; ATT69447

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Message

Sent: 11/13/2018 11:22:27 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT04573; ATT98939; ATT98378; ATT46474

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Message

Sent: 11/13/2018 11:47:05 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT11537; ATT88419; ATT28226; ATT25893

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Deliberative Process / Ex. 5

The options I think we'd present would be:

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Pebble-Bristol Bay 404(c)_Options f...

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Message

Sent: 11/13/2018 11:36:26 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT96410; ATT26399; ATT14887; ATT26860

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Pebble-Bristol Bay 404(c)_Options f...

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Message

Sent: 11/13/2018 11:21:24 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT56423; ATT99482; ATT13818; ATT51311

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Message

Sent: 11/13/2018 11:35:21 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Sent: 11/14/2018 12:04:54 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:46:06 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:32:56 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT05047; ATT78214; ATT06167; ATT26464

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Message

Sent: 11/13/2018 11:44:57 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT95142; ATT52498; ATT20480; ATT37785

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Message

Sent: 11/14/2018 12:01:55 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT59883; ATT64953; ATT22305; ATT54158

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Message

Sent: 11/13/2018 11:43:48 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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1200 Sixth Avenue, Suite 155
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Message

Sent: 11/14/2018 12:01:02 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT73739; ATT37248; ATT00111; ATT18253

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Message

Sent: 11/13/2018 11:59:46 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: background materials
Attachments: Pebble-Bristol Bay 404(c)_Options for additional public comment_3-2-18_final.docx; BB Presentation_1282018_pm_ACP.PPTX; ATT37035; ATT56485; ATT31283; ATT02538

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U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155

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(206) 553-2581

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Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/9/2018 10:57:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Werntz, James [Werntz.James@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Bilbrey, Sheryl [Bilbrey.Sheryl@epa.gov]; Opalski, Dan [Opalski.Dan@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: ET Mining Subgroup meeting
Attachments: ET_miningsubgroup_summary_201808.docx
Location: R10IOO-[Conference Line/Code / Ex. 6]OO-Meet-Me-Ln/R10-IOO-Eqpt; R10Sea-Room-11Camas-ORC-VTC/R10-Rooms-Restricted

Start: 8/7/2018 4:00:00 PM
End: 8/7/2018 5:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Meeting of ET Mining Subgroup
Agenda to be sent out before the meeting

Dear ET Mining Subgroup-
Attached is the mining update for August. Areas highlighted in the update are those that I propose discussing during our meeting tomorrow, which include:

- [Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."]
- Project-specific updates – Pebble, Stibnite, Kensington, Triumph
- [illegible]

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Patty

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ET Mining Subgroup – Mining Sector Update
August 6, 2018

ET Mining Subgroup Meeting – last meeting 5/10/2018; next meeting 8/7/2018

Region 10 Mining Team (Attachment 1 contains current roster)

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

NEPA and Permitting Updates

- Current cross-programmatic NEPA/permitting mining work is summarized in the table below

Mine Project	Programs	Update
Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."		
Pebble (AK)	NEPA (CA) 404 NPDES (o/s) Air (o/s)	- Proposal to withdraw 404(c) determinations was suspended - EPA submitted scoping comments to the Corps on 6/29/2018 - We are reviewing early versions of select sections of the draft EIS - Draft EIS scheduled for January 2019 - Summer field visits
Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."		

[PAGE * MERGEFORMAT]

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Mine Project	Programs	Update

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

- EPA mining NPDES permits

Permit	Permit Expiration date	Issues/Status

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

- Future work - The following projects are likely to be added to our mining work in 2018/2019

Mine Project	Activity	Programs	Timing

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

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Compliance & Enforcement

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Superfund

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Transboundary Mining

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Project	Location in relation to US waters	Status/Update

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.”

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ATTACHMENT 1
EPA Regional Mining Team Roster

Office	Program	Core Mine Team Member	Regional Mining Workgroup Member
RA	Tribal	Michelle Davis	Catherine Villa Need ID member to replace Jim Zokan
	Public Affairs	Julie Congdon	Mark MacIntyre
OERA	NEPA	Molly Vaughn (Alaska) Lynn Hood (Idaho)	Theogene Mbabaliye
	404	Mary Ann Thiesing	Charissa Bujak Anne Whitley
	Scientists	Chris Eckley Tim Maley	Joe Goulet
OWW	NPDES permits	Cindi Godsey	Misha Vakoc
	NEPA compliance	Jamey Stoddard	
OCE		Tara Martich	Derek Schruhl (UIC)
ECL	Remedial	Dave Tomten Matt Wilkening Ed Moreen	Beth Sheldrake Cami Grandinetti Chris Cora Eva DeMaria Joe Wallace Kim Prestbo
	Removal	Eric Vanderboom	
	Site assessment		Monica Tonel
ORC	Superfund	Elizabeth McKenna	Jennifer MacDonald
	Multi-media	Ashely Palomaki Kim Owens	Cara Steiner-Riley
OAWT	RCRA	Lisa Olson	Dave Bartus
	Air	Karl Pepple	Jay McAlpine

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ATTACHMENT 2
Currently Active Remedial and Removal Mining Sites

State	Name	NPL listed & year	Status

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

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State	Name	NPL listed & year	Status

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

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State	Name	NPL listed & year	Status

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.”

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Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Busy

Recurrence: (none)

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: (none)

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Walker, Denise [Walker.Denise@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/23/2018 4:00:00 PM
End: 10/23/2018 5:00:00 PM

Recurrence: (none)

Agenda

NEPA Review

FOIA – E&E News

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM

Recurrence: (none)

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special

AMERICAN OVERSIGHT

expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

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→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

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To: Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Thiesing, Mary [Thiesing.Mary@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 1/1/2019 5:00:00 PM
End: 1/1/2019 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/16/2018 5:11:26 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Canceled: Bristol Bay Check-in; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

COE not intending to send EPA a complete preliminary draft EIS. State will review but not likely help write the document. Cooperating Agency Plan asked for agencies to help develop sections based on expertise rather than just reviewing. Joint State agency 23 pg. comment letter on fish, tailings (look at dry tailings option), water quality, and climate change (similar to ours but we also mentioned the modeling and human health impacts). State cooperating agency comment letter expressed concern about the schedule. Governor wants the company to demonstrate financial viability of the project before the process proceeds. COE will need more information on feasibility but will continue the process unless the permit is withdrawn. We will use the usual process and coordinate with HQ at the staff level on the DEIS when it's out in Jan Feb 2019 (Pebble saying spring or summer). Need to determine how best to give HQ senior leadership the context moving to the next step in the process. As of yesterday, EPA comments not posted on the COE website (letter speaks for itself). ACHP letter asked for reasonable effort with consultations under Historic Preservation Act. We are currently submitting comments to the COE on hydrology, water quality, wetlands (baseline rather than impact section). Molly and Patty to be cc'd on comments sent to COE staff. Big meeting of COE and cooperating agencies moved from July to Aug. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Site visits next week with Mark Douglas (field verification with the COE). July 31 site visit by Patty, Chris E, Mark J, Molly; COE did not respond on request to coordinate with them and other agencies, so coordinating directly with Pebble on the site visit. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

HQ 404(c) memo has a section on Pebble; need to participate fully in the EIS process.
Western Congressional Caucus with Forsgren for signature. House Appropriations Committee response with OMB.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 6/29/2018 10:48:09 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Allnutt, David

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 6/29/2018 10:31:20 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Allnutt, David

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 4/16/2018 10:01:01 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Holsman, Marianne [Holsman.Marianne@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Allnutt, David, Marianne Holsman

Anderson-Carnahan, Linda 2:41 PM:

Heather Dean is sending an E&E reporter request on Pebble on compensatory mitigation for wetlands your way Marianne.

Marianne Holsman 2:57 PM:

Good. Thanks!

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 4/16/2018 9:49:33 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Holsman, Marianne [Holsman.Marianne@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Conversation with Allnutt, David, Marianne Holsman

Anderson-Carnahan, Linda 2:41 PM:

Heather Dean is sending an E&E reporter request on Pebble on compensatory mitigation for wetlands your way Marianne.

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/24/2018 10:42:06 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Hot Topics from ERSMU today

Great, thanks Linda! ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Anderson-Carnahan, Linda
Sent: Wednesday, October 24, 2018 3:29 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics from ERSMU today

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine I think Jill is covering the BB write up

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Barton, Justine
Sent: Wednesday, October 24, 2018 2:56 PM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics from ERSMU today

OK, thanks for this…I don't use the Weekly and have just now been on the Infopage trying to Nonresponsive: Unrelated to Bristol Bay/Pebble Mine Pebble Draft Sections of DEIS write ups. I don't see either one, but I'm sure it's me. Thanks for putting them in!
JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Anderson-Carnahan, Linda
Sent: Wednesday, October 24, 2018 2:49 PM
To: Nogi, Jill <nogi.jill@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>

AMERICAN OVERSIGHT

Cc: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics from ERSMU today

Go ahead and put them in. Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Nogi, Jill
Sent: Wednesday, October 24, 2018 2:27 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Barton, Justine <Barton.Justine@epa.gov>
Subject: Hot Topics from ERSMU today

Double checking with you while I'm thinking of it. We have the Pebble Hot Topic in the Weekly, y Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

Sent: 6/4/2018 3:06:59 PM
Subject: natl wetland meeting notes

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

- There are a lot of ongoing mine proposals in Ak that present significant 404 issues.
  - Probably the most significant is Pebble. I'm sure you've heard that the 404c proposed determination was left in place after we received lots of public comment. Deliberative Process / Ex. 5 Deliberative Process / Ex. 5 Deliberative Process / Ex. 5 We're currently looking at the application under the NEPA review process. We have 90 days to submit NEPA scoping comments. COE has informed EPA they will only consider comments regarding compliance with NEPA guidelines.

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Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/9/2018 10:57:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Werntz, James [Werntz.James@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Bilbrey, Sheryl [bilbrey.sheryl@epa.gov]; Opalski, Dan [Opalski.Dan@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: ET Mining Subgroup meeting
Attachments: ET_miningsubgroup_summary_201808.docx
Location: R10IOO-ConfLnMM-208-378-6511/IOO-Meet-Me-Ln/R10-IOO-Eqpt; R10Sea-Room-11Camas-ORC-VTC/R10-Rooms-Restricted

Start: 8/7/2018 4:00:00 PM
End: 8/7/2018 5:00:00 PM
Show Time As: Tentative

Meeting of ET Mining Subgroup (Patty, Allyn, Dan, Jim W, Sheryl)

Dear ET Mining Subgroup-
Attached is the mining update for August. Areas highlighted in the update are those that I propose discussing during our meeting tomorrow, which include:

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- Project-specific updates – Pebble, Stibnite, Kensington, Triumph

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Patty

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Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 5/11/2018 5:04:46 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Fact Sheets
Attachments: Excerpts from Pebble Draft Scoping Letter General & Aquatic Resources.docx; AKLNG CWA 404 Fact Sheet.docx; ASAP Fact Sheet May 2018.docx

Flag: Follow up

<!--[if lte mso 15 || CheckWebRef]-->

Thiesing, Mary has shared a OneDrive for Business file with you. To view it, click the link below.

Donlin background 5-10-18.docx

<!--[endif]-->

Linda,

Personal Matters / Ex. 6

My apologies in getting you this information late; today. However, I am forwarding two fact sheets on the ASAP and AKLNG projects, as well as excerpts from our draft Pebble scoping letter.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/10/2018 7:57:28 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
Subject: RE: Bristol Bay Check-in

Agenda

- FOIA
- Donlin discussion
- Options paper follow-up
- Extension of scoping comment deadline to June 29 and revised internal review schedule.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Szerlog, Michael
Subject: Bristol Bay Check-in
When: Wednesday, April 11, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

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EPA's Work in the Bristol Bay Watershed

Presentation for Alaska Operations Office Director

July 23, 2018

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Overview

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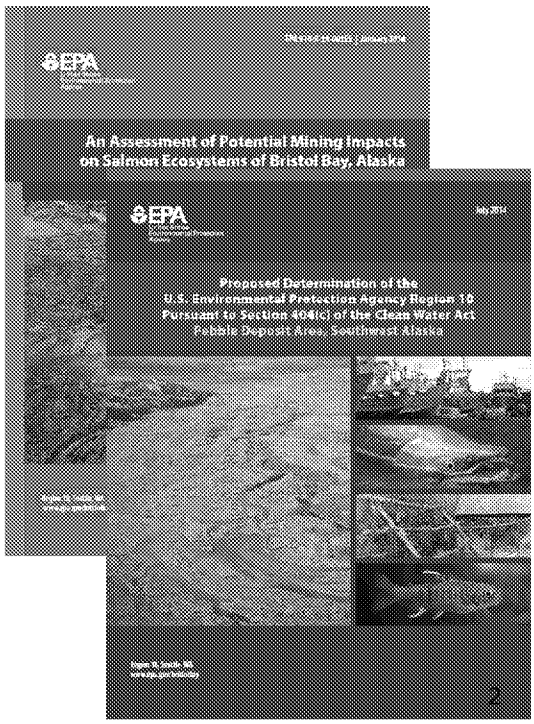
- EPA's Involvement History
- Science
- Section 404(c) Regulatory Response
- Section 404 Permitting and NEPA



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Bristol Bay Watershed

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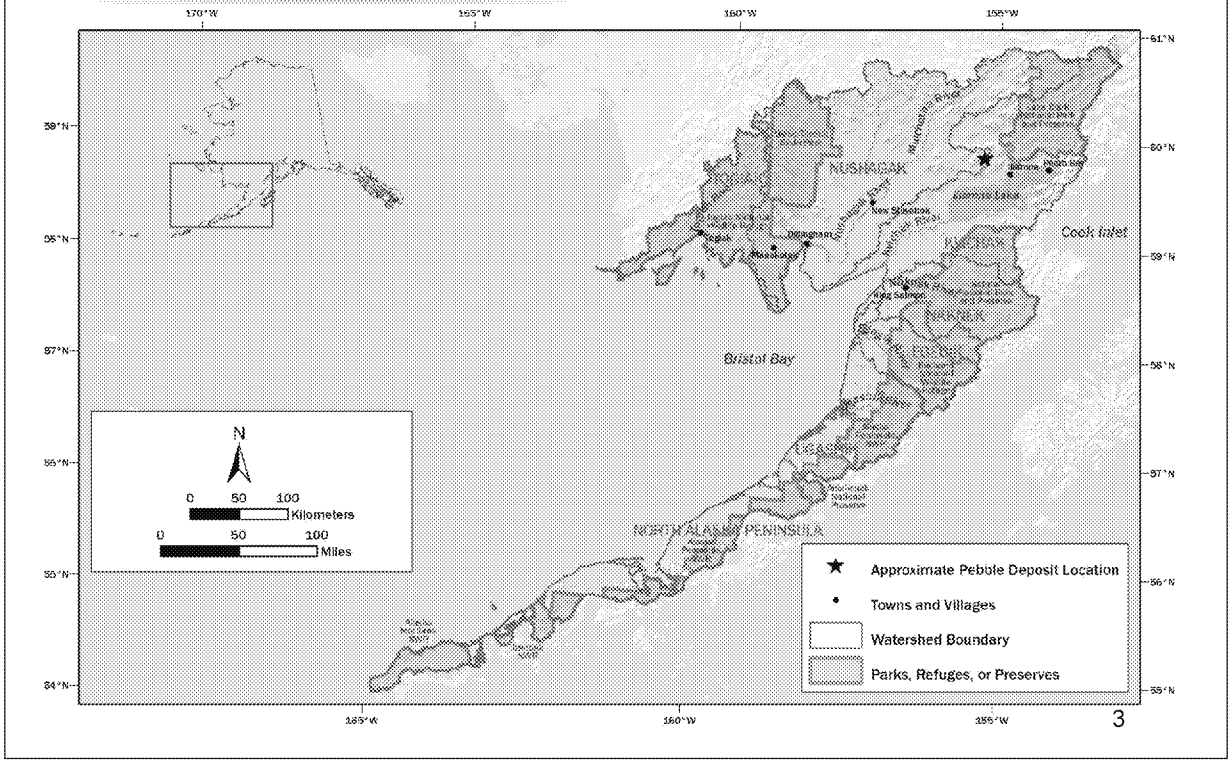

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Timeline 2003 - 2014

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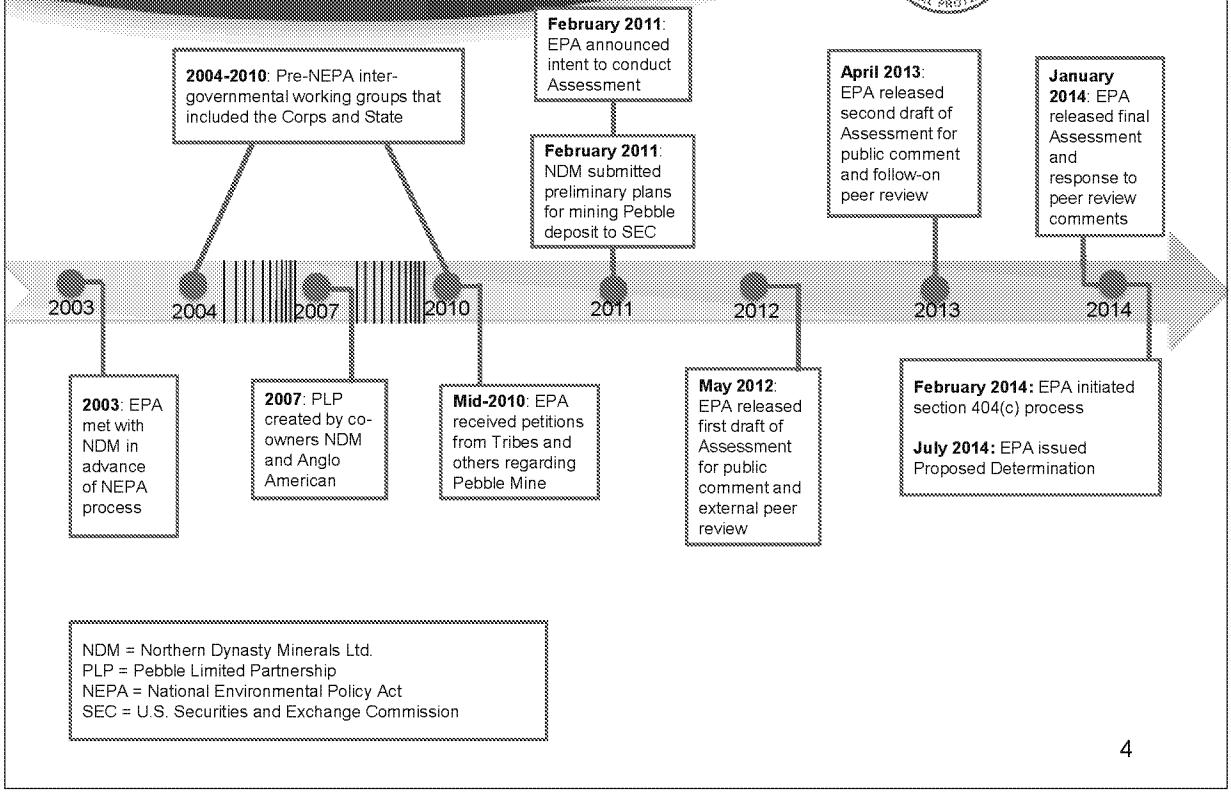

NDM = Northern Dynasty Minerals Ltd.
PLP = Pebble Limited Partnership
NEPA = National Environmental Policy Act
SEC = U.S. Securities and Exchange Commission

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Timeline 2014 - Present

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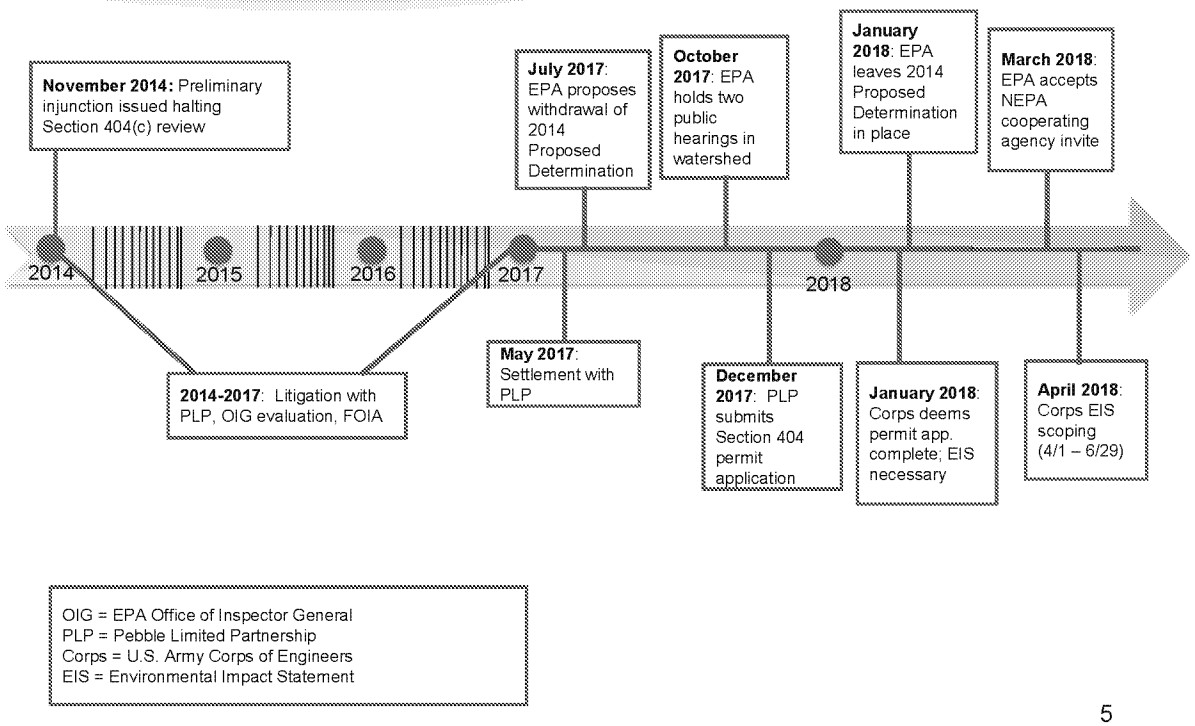

OIG = EPA Office of Inspector General
PLP = Pebble Limited Partnership
Corps = U.S. Army Corps of Engineers
EIS = Environmental Impact Statement

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Bristol Bay Watershed Assessment

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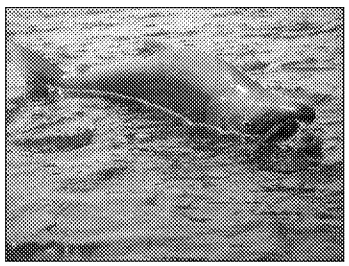
- Purpose:
  - Characterize the biological and mineral resources of the Bristol Bay watershed
  - Increase understanding of the potential impacts of large-scale mining on the region's fish resources
  - Inform future decision-making
- Scientific Ecological Risk Assessment evaluating potential impacts associated with:
  - Large-scale mine construction and operation
  - Accidents and failures



- Three-year scientific assessment effort
  - Independent external peer review
  - Stakeholder and public engagement
    - 8 public meetings
    - 2 rounds of public comment – over 1.1 million comments
  - Tribal consultations

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Bristol Bay Watershed Resources

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Biological Resources:

- Bristol Bay produces almost half of world's sockeye salmon
- Kvichak watershed world's largest producer of sockeye salmon
- Nushagak watershed frequently at or near world's largest producer of Chinook salmon

Biological Resources Support:

- 14,000 jobs, generates $480 million annually in direct economic expenditures and sales
  - Salmon fishery valued at $1.5 billion annually
- 4,000-year-old subsistence fishery for Alaska Natives

Geological Resources:

- At least 10 claims with more than minimal exploration, including Pebble.
- Pebble deposit: low-grade, with copper, gold, and molybdenum
- According to NDM, Pebble could:
  - Be largest mine of its type in North America
  - Produce 3,000 jobs in AK
  - Contribute $2.7 billion to US GDP annually
- Economics of mining the Pebble deposit are speculative
- Since 2001, five major mining companies have walked away from Pebble project

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Bristol Bay Watershed Assessment

- Mining scenarios informed by NDM plans submitted to U.S. Securities and Exchange Commission (SEC) in 2011
- Uses 3 potential stages of mine development at Pebble deposit
  - 0.25-billion-ton mine (worldwide median size porphyry copper deposit)
  - 2.0-billion-ton mine (smallest mine size proposed by NDM to SEC)
  - 6.5-billion-ton mine (largest mine size proposed by NDM to SEC)
- NDM says deposit is nearly 12 billion tons

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Bristol Bay Watershed Assessment

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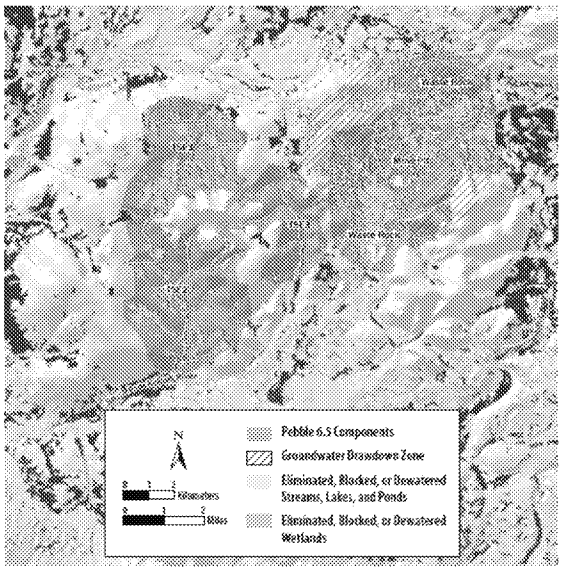
Mine Footprint Impacts:

- 24-94 miles of salmon-supporting streams destroyed
- 1,300-5,350 acres of wetlands, ponds, lakes destroyed
- 9-33 miles of salmon-supporting streams with altered streamflow likely to affect ecosystem structure and function

Other Impacts:

- Tailings dams need maintenance in perpetuity
- Routine operations and accidents would increase impacts on salmon habitat quality, both at the mining site and along the 86-mile transportation corridor.



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Clean Water Act Section 404

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- § 404(a) authorizes the Secretary of the Army to issue **permits**
  - For the discharge of dredged or fill material into waters of the U.S. at specified disposal sites
- § 404(b) directs the Secretary of the Army to apply **environmental criteria** developed by EPA when specifying disposal sites
  - § 404(b)(1) Guidelines [40 CFR Part 230]
- § 404(c) authorizes EPA to prohibit, deny or restrict (withdraw) the placement of dredged or fill material at defined sites in waters of the U.S.

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Limits of Section 404(c)

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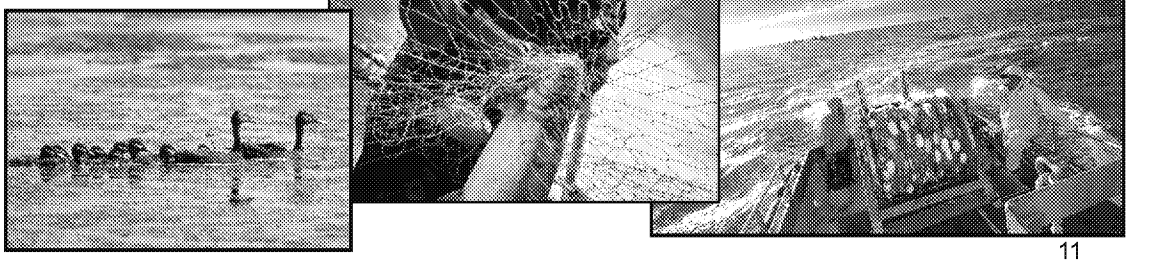
- **Whenever** it determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an **unacceptable adverse effect(s)** on:
  - Municipal water supplies; or
  - Shellfish beds and **fishery areas**; or
  - Wildlife; or
  - Recreation areas.



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Pebble Deposit 404(c) Process

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Step 1

- 2/28/14: **Initiation by EPA Region 10 – "15-day letter"**
- Consulted with Corps, NDM/PLP, and State

Step 2

- 7/18/14: **Proposed Determination** released (PD) by EPA Region 10
- 8/12-15/14: 7 public hearings in Alaska
- > 670,000 written comments; > 99% (86% unique) supported Proposed Determination

Step 3

- EPA Region 10 will review the public comments
- EPA Region 10 will withdraw PD *or* prepare **Recommended Determination** (RD)

Step 4

- **Final Determination (FD) by EPA Assistant Administrator for Water**
- Consult again with Corps, NDM/PLP, and State
- Within 60 days of receipt of RD, issue FD affirming, modifying, or rescinding RD

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What Are the Proposed Restrictions?

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Restrict the discharge of dredged or fill material related to mining the Pebble deposit into waters of the U.S. that would, individually or collectively, result in the following:

1. **Loss of Streams.**
   a. The loss of 5 or more linear miles of streams with documented anadromous fish occurrence; **or**
   b. The loss of 19 or more linear miles of streams where anadromous fish are not currently documented, but that are tributaries of streams with documented anadromous fish occurrence; **or**

2. **Loss of Wetlands, Lakes, and Ponds.** The loss of 1,100 or more acres of wetlands, lakes, and ponds contiguous with either streams with documented anadromous fish occurrence or tributaries of those streams; **or**

3. **Streamflow Alterations.** Streamflow alterations greater than 20% of daily flow in 9 or more linear miles of streams with documented anadromous fish occurrence

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Response to Section 404(c) Proceeding

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- Office of Inspector General (OIG) Review
  - 17-month in-depth evaluation found no evidence of bias or a pre-determined outcome
  - Possible misuse of position for retired Region 10 employee noted
- PLP broad Freedom of Information Act (FOIA) requests
  - Approximately 18,000 documents produced
- PLP filed three lawsuits in 2014
  - Administrative Procedure Act (APA) challenge to initiation of 404(c) process
  - FOIA litigation
  - Federal Advisory Committee Act (FACA) litigation
- May 2017 settlement agreement
  - Resolved FOIA and FACA litigation and PLP's outstanding FOIA requests

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Settlement Agreement

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- Key terms of the May 11, 2017 settlement agreement between PLP and EPA:
  - EPA may use its Bristol Bay Watershed Assessment without limitation
  - EPA agrees to initiate a process to propose to withdraw its 2014 Proposed Determination by July 11, 2017
  - EPA agrees not to forward a Recommended Determination (the next step in the 404(c) review process) to EPA HQ until a Final EIS is noticed for the project or May 11, 2021, whichever is earlier
  - PLP drops remaining lawsuits and fee requests against EPA and agrees to file no new FOIA requests during the 2.5- to 4-year hiatus period

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Proposal to Withdraw 2014 Proposed Determination

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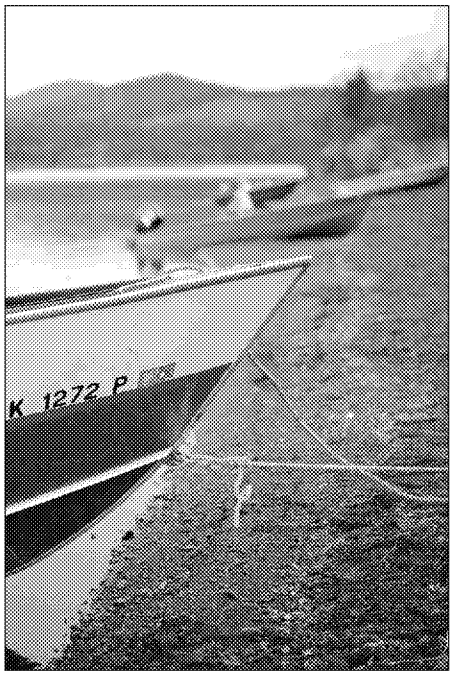
- July 2017: Withdrawal proposed based on policy rationale
  - EPA did not solicit comment on the proposed restrictions or on science or technical information underlying the Proposed Determination
- Outreach and Consultation
  - Proposal generated >1 million comments (~99% opposed)
  - 2 public hearings in watershed
  - Tribal and ANCSA Consultation
    - 16 tribal governments and 1 ANCSA Regional Corp. opposed
    - 1 tribal government and 2 ANCSA Village Corps. supported



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Section 404(c) Next Steps

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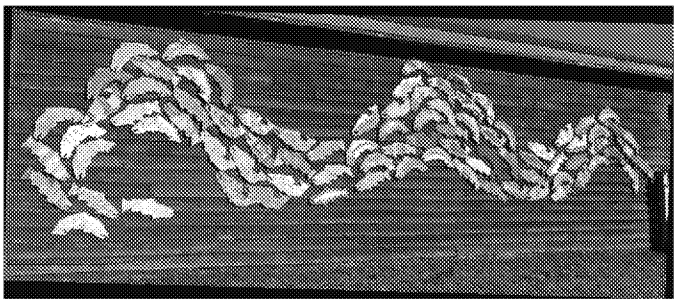
- In January 2018 EPA decided not to withdraw and suspended Section 404(c) process pending further review

- Settlement agreement obligations
  - EPA can issue a new/modified Proposed Determination at any time
  - EPA Region 10 cannot forward a Recommended Determination to EPA HQ until May of 2021 or until a final EIS is noticed, whichever comes first



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2017 Permit Application

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- PLP filed Department of Army (DA) permit application to the Corps in December 2017
  - Includes CWA 404 and RHA Section 10
  - Includes Project Description: mine, power supply, transportation
- Corps deemed application sufficient to begin NEPA



Pebble deposit area

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Project Description

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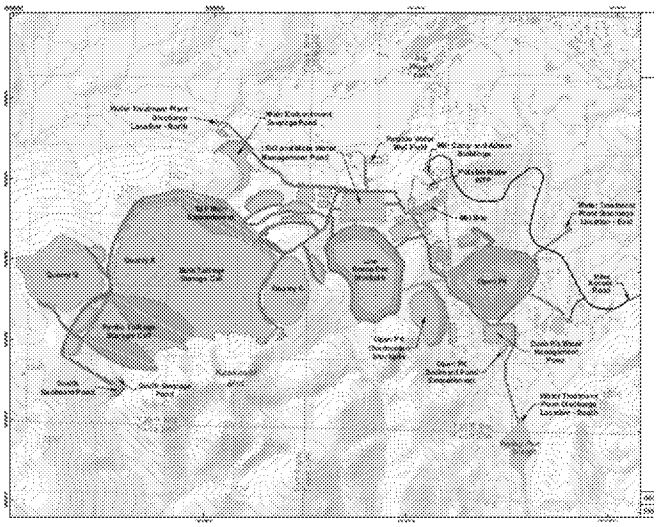
Mine Site

- 1.3 billion tons of ore mined over 20 years
- 160,000 tons/day of ore processed to produce:
  - Copper concentrate
  - Molybdenum concentrate
  - Gold via gravity separation
- Open pit mine, ore storage pile, 2 tailings impoundments
- 2 water treatment plants and 3 discharge outfalls
- Closure
  - PAG waste rock & pyritic tailings backfilled into open pit
  - Dry closure of bulk tailings
  - Long-term water treatment



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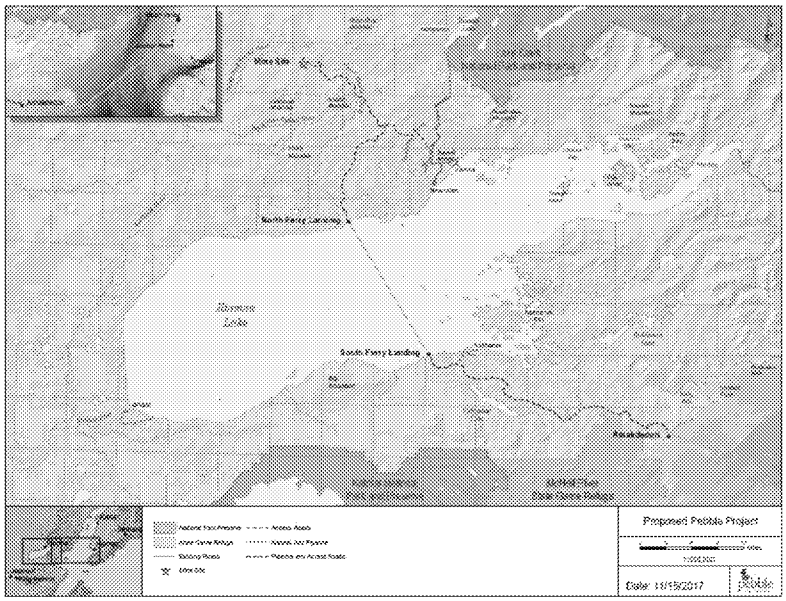
Project Description

Power

- 230 - 270 MW power plant at mine site
- 188 mile natural gas pipeline

Transportation

- 65 miles of roads
- Ferry across Lake Illiamna
- Cook Inlet port site



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Project Description

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- Proposed mine is:
  - Smaller than 2011 Preliminary Assessment to SEC
  - Larger than the EPA Assessment's 0.25 billion ton mine scenario, which is the basis for the 2014 Proposed Determination

2014 Proposed Determination
Loss of 5 or more miles of streams with anadromous fish; or
Loss of 19 or more miles of streams that are tributaries of anadromous fish streams; or
Loss of 1100 or more acres of wetlands, lakes and ponds contiguous with streams or tributaries to streams that have anadromous fish; or
Stream flow alteration > 20% of daily flow in 9 or more miles of streams with anadromous fish

2017 DA Application	
component	**wetlands filled**
Mine site	3190
Transportation (roads, ferry terminals, port)	480
Pipeline	408
TOTAL	4078

- Differences from 2011 Preliminary Assessment and EPA's Assessment:
  - Less waste rock mined
  - No cyanide leaching
  - Liners (pyritic tailings)
  - Advanced water treatment and "Physical Habitat Simulation System" to mitigate dewatering
  - Compensatory mitigation - TBD
- Project description could evolve during EIS and 404 review

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Initial Corps NEPA & 404 Process

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- Corps issued informational Public Notice of application (January 5, 2018)
  - Did not request public comment at this time
- Corps Cooperating Agency Plan specifies agency involvement.
  - EPA's cooperating agency involvement is limited to Section 404(b)(1) issues
- EIS scoping occurred April 1 through June 29
  - EPA submitted scoping letter
- Corps is developing preliminary EIS sections
  - EPA reviewing and providing comments where requested

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Corps NEPA Schedule

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- Corps EIS schedule:
  - Draft EIS – January 2019
  - Final EIS – late 2019
  - Record of Decision – early 2020
- PLP has requested inclusion of the project in FAST 41 infrastructure & critical minerals streamlining

Corps' Pebble website
https://pebbleprojecteis.com/

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NEPA Cooperating Agencies

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- Federal
  - DOT Pipeline and Hazardous Materials Safety Administration
  - US Coast Guard
  - DOI Bureau of Safety and Environmental Enforcement
  - US Fish and Wildlife Service
  - National Park Service
  - Advisory Council on Historic Preservation
  - EPA
- State
  - Alaska Department of Natural Resources Office of Project Management and Permitting coordinates state agencies (ADNR, ADEC, ADFG, SHPO)
- Local Governments
  - Lake & Peninsula Borough & Kenai Peninsula Borough
- Tribes
  - Curyung Tribal Council
  - Nondalton Tribal Council

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EPA Response to Permit Application

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- EPA Role
  - NEPA
    - Cooperating agency
    - CAA 309 review of the Draft EIS
  - Clean Water Act
    - CWA 404 permit application & 404(b)(1) review
    - Oversight of State CWA 402 Alaska Pollutant Discharge Elimination System Permit
  - Clean Air Act
    - Oversight of State Air Quality Permit
- EPA has developed a cross-programmatic, multi-disciplinary team

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EPA Pebble Teams

DRAFT

R10 Management Team
- David Allnutt, OERA Director
- Krista Mendelman, Acting ARU Manager
- Jill Nogi, NEPA Unit Manager
- Cara Steiner-Riley, ORC Unit Manager
- Sue Detwiler, AOO Director
- Marianne Holsman, Public Affairs Director

CWA 404(c) Team
- Erik Peterson, Team lead
- Annie Whitley, ARU
- Palmer Hough, OW
- Brittany Bennett, OW
- Ashley Palomaki, ORC
- Heidi Nalven, OGC

NEPA/Permit Oversight Team
- Patty McGrath, Team lead
- Molly Vaughn, NEPA review
- Mark Douglas, ARU
- Palmer Hough, OW
- Justine Barton, ARU
- Mary Anne Thiesing, ARU
- Cindi Godsey, NPDES
- Jay McAlpine, Air
- Karl Pepple, Air
- Chis Eckley (geochemist), OERA
- Tim Maley (hydrogeologist), OERA
- Kate Schofield, ORD
- Joe Ebersole (fisheries), ORD
- Muluken Muche (hydrological modelling), ORD

Tribal, Press & Community Support to CWA 404(c) and NEPA/Permit Teams
- Neverley Wake, Tribal Coordinator
- Suzanne Skadowski, Press
- Andi Lindsay, Community Involvement Coordinator

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Questions

DRAFT



Upper Talarik Creek, one of three streams flowing from the Pebble deposit site

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Message

From: Storm, Linda [Storm.Linda@epa.gov]
Sent: 5/8/2018 2:10:23 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
CC: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: FW: My input/thoughts RE: Preparing Linda AC for National Wetlands Meeting - feedback by Thursday

Importance: High
Flag: Follow up

Hi there Linda;
This is the input I provided to Krista more broadly as suggestions for your pre-briefing and requests for you role in going to the National 404/Wetlands meeting. Krista encouraged me to send this to you directly so you could see my requests and suggestions.

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Cheers,
Linda

Linda E. Storm, Aquatic Ecologist
U.S. EPA, Region 10 – Aquatic Resources Unit
Office of Environmental Review and Assessment
1200 Sixth Avenue, Mail Stop OERA-140
Seattle, Washington 98101-3140
Ofc: (206) 553-6384; Cell: (206) 437-2293
Email: storm.linda@epa.gov

From: Storm, Linda
Sent: Thursday, May 03, 2018 12:14 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: My input/thoughts RE: Preparing Linda AC for National Wetlands Meeting - feedback by Thursday
Importance: High

Thanks Krista! Here's my input for how Linda could be prepared for the National meeting. I would like her to be asked specifically to take in the information and report back to all of us about what she hears.

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Day 1 – 5/15
Regional Update - Round Table
We should prepare her so she can give a thorough update on Hot Topics on our R10 workstreams :

1) High Priority Corps PNs/NEPA EIS workload (Pebble, **Nonresponsive: Unrelated to Bristol Bay/Pebble Mine** ng) – All including David's input

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Hoping this is helpful/useful!
Linda

Linda E. Storm, Aquatic Ecologist
U.S. EPA, Region 10 – Aquatic Resources Unit
Office of Environmental Review and Assessment
1200 Sixth Avenue, Mail Stop OERA-140
Seattle, Washington 98101-3140
Ofc: (206) 553-6384; Cell: (206) 437-2293
Email: storm.linda@epa.gov

From: Mendelman, Krista
Sent: Tuesday, May 01, 2018 6:06 PM
To: Colowick, Susan <colowick.susan@epa.gov>; Dean, Heather <Dean.Heather@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Nadeau, Tracie-Lynn <Nadeau.Tracie@epa.gov>; Peak, Tracy <Peak.Tracy@epa.gov>; Storm, Linda <Storm.Linda@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>; Bujak, Charissa <bujak.charissa@epa.gov>; Rave-Perkins, Krista <Rave-Perkins.Krista@epa.gov>; Vallette, Yvonne <Vallette.Yvonne@epa.gov>
Subject: Preparing Linda AC for National Wetlands Meeting - feedback by Thursday

ARU and WWEU Team,

I know you all are super busy and this is one more thing so I am sorry … I spoke with Linda AC about briefing her before she attends the National Wetland meeting and she would really appreciate that so she can go in prepared. Please look at the attached agenda and let me know what topics you would like to brief her on and how long you think you would need by Thursday COB. I will follow up with her and we can set up some times to talk with her.

Thank you so much,

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

OERA All Staff Agenda

August 16, 2018

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

11:15 – 11:30 am *Pebble Mine* – Update from Recent Trip to AK, Patty McGrath, Eric Peterson, Chris Eckley, Theo Mbabaliye

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 7/30/2018 3:01:59 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: RE: Henry Darwin BB-Pebble briefing

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Anderson-Carnahan, Linda
Sent: Monday, July 30, 2018 6:57 AM
To: Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: Henry Darwin BB-Pebble briefing

Hi, I have a couple questions on the briefing:

Deliberative Process / Ex. 5

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: McGrath, Patricia
Sent: Thursday, July 26, 2018 1:56 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Islam, Mahbubul <Islam.Mahbubul@epa.gov>
Subject: Henry Darwin BB-Pebble briefing

Hi Chris and Michelle-
Palmer informed us of a briefing tomorrow related to Pebble. The briefing materials are those used to brief Sue Detwiler on Monday.
It looks like Chris has been invited. Will you be able to participate? Please let me know if you need any support or have questions.
Patty

From: Hough, Palmer
Sent: Thursday, July 26, 2018 1:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: AOO director briefing materials

Folks:

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I just wanted to give you a heads-up that the materials that you used to brief the new AOO will be used tomorrow to brief Henry Darwin, EPA's chief of operations.

It is my understanding that Lee Forsgren will be leading the briefing and John Goodin and Brian Frazer from OWOW will be present as well. Brian indicated that Chris Hladick has also been invited but it is not clear that he has accepted this invite.

That is basically all I know about this briefing.

-Palmer

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Dean, Heather [Dean.Heather@epa.gov]
Sent: 5/21/2018 8:57:09 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: Re: THANKS

Thanks, Linda.

From: Anderson-Carnahan, Linda
Sent: Thursday, May 17, 2018 9:17 AM
To: Thiesing, Mary; Storm, Linda; Vallette, Yvonne; Dean, Heather; Douglas, Mark; Mendelman, Krista; Szerlog, Michael
Subject: THANKS

Thanks for letting me represent you at the national wetlands meeting and for all your excellent briefings – I felt well prepared! It was a great experience and I enjoyed engaging with the other regions on key issues (and

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

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- There are a lot of ongoing mine proposals in Ak that present significant 404 issues.
  - Probably the most significant is Pebble. I'm sure you've heard that the 404c proposed determination was left in place after we received lots of public comment. Deliberative Process / Ex. 5

    Deliberative Process / Ex. 5

    Deliberative Process / Ex. 5 We're currently looking at the application under the NEPA review process. We have 90 days to submit NEPA scoping comments. COE has informed EPA they will only consider comments regarding compliance with NEPA guidelines.

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AMERICAN OVERSIGHT

Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

AMERICAN OVERSIGHT

Message

From: Storm, Linda [Storm.Linda@epa.gov]
Sent: 5/17/2018 6:20:50 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
Subject: RE: THANKS

Thank you!

Linda E. Storm, Aquatic Ecologist
U.S. EPA, Region 10 – Aquatic Resources Unit
Office of Environmental Review and Assessment
1200 Sixth Avenue, Mail Stop OERA-140
Seattle, Washington 98101-3140
Ofc: (206) 553-6384; Cell: (206) 437-2293
Email: storm.linda@epa.gov

From: Anderson-Carnahan, Linda
Sent: Thursday, May 17, 2018 9:17 AM
To: Thiesing, Mary <Thiesing.Mary@epa.gov>; Storm, Linda <Storm.Linda@epa.gov>; Vallette, Yvonne <Vallette.Yvonne@epa.gov>; Dean, Heather <Dean.Heather@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: THANKS

Thanks for letting me represent you at the national wetlands meeting and for all your excellent briefings – I felt well prepared! It was a great experience and I enjoyed engaging with the other regions on key issues (and I learned a lot). It

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- There are a lot of ongoing mine proposals in Ak that present significant 404 issues.
  - Probably the most significant is Pebble. I'm sure you've heard that the 404c proposed determination was left in place after we received lots of public comment. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

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AMERICAN OVERSIGHT

1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 5/15/2018 3:44:39 AM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

- There are a lot of ongoing mine proposals in Ak that present significant 404 issues.
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    Deliberative Process / Ex. 5
    Deliberative Process / Ex. 5 We're currently looking at the application under the NEPA review process. We have 90 days to submit NEPA scoping comments and COE has informed EPA they will only consider comments regarding compliance with NEPA guidelines.

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 5/15/2018 7:09:54 PM
CC: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Pebble hand off

Way to go Mark!! Thanks – this will fit in well with your IDP and career goals!

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 12:05 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: Pebble hand off

HI David and Linda,

Mark Douglas has bravely stepped forward to be the lead on Pebble taking over for Matt. There will obviously be a transition between Matt and Mark with Mary Anne supporting Mark through a team approach. This is something that Michael S and I have discussed and Michael is supportive.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 5/15/2018 3:46:17 AM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
Subject: my notes - take a quick look

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

- There are a lot of ongoing mine proposals in Ak that present significant 404 issues.
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Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 We're currently looking at the application under the NEPA review process. We have 90 days to submit NEPA scoping comments and COE has informed EPA they will only consider comments regarding compliance with NEPA guidelines.

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/5/2018 8:28:02 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Declined: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/5/2018 8:27:29 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]

Subject: FW: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Fordham, Tami
Sent: Thursday, July 5, 2018 12:29 PM
To: Fordham, Tami; McGrath, Patricia; Palomaki, Ashley; Douglas, Mark; Detwiler, Susan K.; R10AOO-Conference
Conferenc e Line/Cod e / Ex. 6
Cc: Vaughan, Molly; Anderson-Carnahan, Linda; Peterson, Erik; Steiner-Riley, Cara
Subject: Pebble Overview for AOO Director
When: Monday, July 23, 2018 10:00 AM-11:00 AM (UTC-09:00) Alaska.
Where: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Sue and I will be in Seattle, looking forward to seeing most of you in person. Thanks! Tami

→ Join Skype Meeting

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

Join by Phone

Conference Line/Code / Ex. 6

Help

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/3/2018 9:40:55 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: notes from ET meeting - for sharing Wed.
Attachments: ATT41060; ATT92661; ATT24302; ATT13428

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Allnutt, David
Sent: Monday, July 2, 2018 3:31 PM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: notes from ET meeting - for sharing Wed.

Sr. Staff -- Michelle

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Chris

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Michelle

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Roundtable:

- Sue D.
  - Governor Walker's letter re: Pebble getting a lot of press attention
    - Andy Mack (DNR Commissioner) quoted as saying: Pebble must prove that mine will have "zero impact" on fisheries

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

Me:

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

- Pebble-related items:
  - Last Wednesday's Memo from Pruitt directing OW to propose a rule modifying EPA's 404(c) procedures
    - Included discussion of Pebble with the following quote:
      - "It is critical for the agency to participate in the EIS process and review the final EIS"
  - Last Friday's deadline to submit scoping comments to the Corps on the Pebble project EIS
    - R10 submitted two-page letter and 24-page enclosure on Friday. Recommendations include analyzing:
      - Aquatic resource impacts
        - And compensatory mitigation for unavoidable impacts
      - Potential for ocean disposal of dredged material
      - Reasonably foreseeable cumulative and indirect effects resulting from transportation infrastructure
      - Air quality impacts
      - Climate-adaptation
      - Financial assurance

AMERICAN OVERSIGHT

- Gov. Walker submitted letter requesting that the Corps "suspend environmental review" pending completion of "preliminary economic assessment"

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 8/15/2018 7:43:06 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay Check-in

Sounds great

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Peterson, Erik
Sent: Wednesday, August 15, 2018 12:42 PM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: RE: Bristol Bay Check-in

Thank you for letting me know. I suggest that we cancel the check-in and switch over to setting something up with you if the need arises. Does that sound ok to you?

<< OLE Object: Picture (Device Independent Bitmap) >>

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Anderson-Carnahan, Linda
Sent: Wednesday, August 15, 2018 12:10 PM
To: Peterson, Erik
Subject: Declined: Bristol Bay Check-in
When: Tuesday, August 28, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Nonresponsive Discussion of Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Anderson-Carnahan, Linda [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c34cc9be6ab74896b7ea15338cbe41eb-Anderson-Carnahan, Linda]
Sent: 8/15/2018 7:10:16 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Busy

Nonresponsive Discussion of Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 9/7/2018 10:26:39 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay Check-in 9/11/18 - Cancellation and Update

Nicely done Erik!

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Peterson, Erik
Sent: Friday, September 7, 2018 3:17 PM
To: Fordham, Tami <Fordham.Tami@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Cc: Detwiler, Susan K. <detwiler.susan@epa.gov>; Chu, Rebecca <Chu.Rebecca@epa.gov>
Subject: Bristol Bay Check-in 9/11/18 - Cancellation and Update

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation

AMERICAN OVERSIGHT

- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.

Deliberative Process / Ex. 5

Alternatives

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule

- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

404(c) Team

FOIA

- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response

- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA

- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings

- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file

Deliberative Process / Ex. 5

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 4:15 PM
To: Fordham, Tami; Peterson, Erik; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Mendelman, Krista; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in
When: Tuesday, September 11, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/30/2018 3:19:47 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Henry Darwin BB-Pebble briefing

I haven't heard but will try to check during the ET meeting.

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: McGrath, Patricia
Sent: Monday, July 30, 2018 8:04 AM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Re: Henry Darwin BB-Pebble briefing

No. I never heard back from Chris or Michelle. Do you know if they participated?

Sent from my iPhone

On Jul 30, 2018, at 6:56 AM, Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov> wrote:

> Thanks Patty. Were you able to participate?
>
> Linda Anderson-Carnahan
> Associate Director
> Office of Environmental Review and Assessment
> US EPA Region 10
> Suite 155
> 1200 Sixth Ave
> Seattle Wa, 98101
> Office: (206) 553-2601
> Cell: (206) 291-6879
>
> **From:** McGrath, Patricia
> **Sent:** Thursday, July 26, 2018 1:56 PM
> **To:** Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>
> **Cc:** Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Islam, Mahbubul <Islam.Mahbubul@epa.gov>
> **Subject:** Henry Darwin BB-Pebble briefing

AMERICAN OVERSIGHT

Hi Chris and Michelle-
Palmer informed us of a briefing tomorrow related to Pebble. The briefing materials are those used to brief Sue Detwiler on Monday.
It looks like Chris has been invited. Will you be able to participate? Please let me know if you need any support or have questions.
Patty

From: Hough, Palmer
Sent: Thursday, July 26, 2018 1:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: AOO director briefing materials

Folks:

I just wanted to give you a heads-up that the materials that you used to brief the new AOO will be used tomorrow to brief Henry Darwin, EPA's chief of operations.

It is my understanding that Lee Forsgren will be leading the briefing and John Goodin and Brian Frazer from OWOW will be present as well. Brian indicated that Chris Hladick has also been invited but it is not clear that he has accepted this invite.

That is basically all I know about this briefing.

-Palmer

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101

AMERICAN OVERSIGHT

M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/11/2018 5:14:30 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

I have a meeting with Lee Forsgren at this time; can we reschedule?

AMERICAN OVERSIGHT

Appointment

From: Lovell, Will (William) [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=3b150bb6ade640f68d744fadcb83a73e-Lovell, Wil]
Sent: 8/27/2018 5:21:19 PM
To: Bolen, Brittany [bolen.brittany@epa.gov]
CC: Forsgren, Lee [Forsgren.Lee@epa.gov]
BCC: DCRoomARN3500/OPEI [DCRoomARN3500@epa.gov]

Subject: Meet w/Pebble Partnership
Location: DCRoomARN3500/OPEI

Start: 9/4/2018 2:00:00 PM
End: 9/4/2018 2:30:00 PM
Show Time As: Busy

Tom Collier, CEO
Peter Robertson, Senior Vice President
Ryan Thompson

AMERICAN OVERSIGHT

Message

From: Burton, Tamika [burton.tamika@epa.gov]
Sent: 7/26/2018 9:03:15 PM
Subject: Friday 27, July 2018 | Schedule for Assistant Deputy Administrator and Chief of Operations

Schedule for Assistant Deputy Administrator and Chief of Operations
Henry Darwin

Friday, July 27 2018

■	9:00 AM – 10:00 AM	**Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.**
■	10:00 AM – 10:30 AM	
■	10:30 AM – 11:00 AM	
■	11:00 AM – 11:30 AM	
■	11:30 AM – 12:00 PM	
■	12:30 PM – 1:00 PM	Pebble Mine - briefing material added* WJCN 3412 Darwin, Henry
■	1:00 PM – 1:30 PM	**Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.**
■	2:00 PM – 2:30 PM	
■	2:00 PM – 2:30 PM	
■	2:30 PM – 3:00 PM	
■	3:00 PM – 3:30 PM	
■	3:30 PM – 5:00 PM	
■	4:00 PM – 4:30 PM	

Tamika Burton
Staff Assistant to the Acting Deputy Administrator And Chief of Operations
Immediate Office of the Administrator
MC 1104A Room 3412 WJC North

AMERICAN OVERSIGHT

(202) 564-4771 (d)
(202) 507-3630 (c)
burton.tamika@epa.gov

AMERICAN OVERSIGHT

Message

From: Carroll, Carly [Carroll.Carly@epa.gov]
Sent: 4/6/2018 6:48:00 PM
Subject: Weekly Report for 04.06.18
Attachments: Weekly Report 04.06.2018.docx; Weekly Report 04.06.2018.pdf

Good Afternoon,
Please find the weekly report for the week ending 04.06.18 attached.

Have a good weekend,

Carly Carroll
U.S. Environmental Protection Agency
(202) 564-2769
carroll.carly@epa.gov

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

AMERICAN OVERSIGHT

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

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Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

AMERICAN OVERSIGHT

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

AMERICAN OVERSIGHT

Region 10

Hot Topics:

None.

Upcoming Major Decisions and Events:

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

Pebble Mine Project NEPA Scoping Period Begins (AK): On March 29th, the Army Corps of Engineers Alaska District published a Notice of Intent in the Federal Register initiating the formal scoping process for the Pebble Mine Environmental Impact Statement. The 30-day scoping period began on April 1st and will include nine public meetings. Numerous requests have already been submitted to the Corps requesting an extension to the scoping period. EPA's Pebble NEPA team will be developing scoping comments.

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

AMERICAN OVERSIGHT

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Region 10

Hot Topics:

None.

Upcoming Major Decisions and Events:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble Mine Project NEPA Scoping Period Begins (AK): On March 29th, the Army Corps of Engineers Alaska District published a Notice of Intent in the Federal Register initiating the formal scoping process for the Pebble Mine Environmental Impact Statement. The 30-day scoping period began on April 1st and will include nine public meetings. Numerous requests have already been submitted to the Corps requesting an extension to the scoping period. EPA's Pebble NEPA team will be developing scoping comments.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Eng, Connie [Eng.Connie@epa.gov]
Sent: 9/28/2018 8:21:05 PM
Subject: RE: Calendar for Associate Deputy Administrator and Chief of Operations Henry Darwin for Monday, October 1, 2018

ASSOCIATE DEPUTY ADMINISTRATOR AND CHIEF OF OPERATIONS
HENRY DARWIN

Monday, October 1

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

3:30 PM – 4:00 PM Bristol Bay Intro
Teleconference

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine.

Thanks.

Have a great day!

AMERICAN OVERSIGHT

Connie

****

Connie Eng
U.S. Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue, N.W.
William Jefferson Clinton Building North, Room 3412 (MC1101A)
Washington, DC 20460
Phone: 202-564-3279
Email: eng.connie@epa.gov
AO Sharepoint

AMERICAN OVERSIGHT

Message

From: Burton, Tamika [burton.tamika@epa.gov]
Sent: 8/1/2018 8:50:44 PM
Subject: Thursday, August 1, 2018 | Associate Deputy Administrator and Chief of Operations Henry Darwin

Associate Deputy Administrator and Chief of Operations Henry Darwin

Thu, August 2, 2018

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

10:00 AM – 11:00 AM Pebble Mine Discussion
WJCN 3412

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Tamika Burton
Staff Assistant to the Office of the Deputy Administrator
Immediate Office of the Administrator
MC 1104A Room 3412 WJC North
(202) 564-4771 (d)
(202) 507-3630 (c)
burton.tamika@epa.gov

AMERICAN OVERSIGHT

Message

From: Bolen, Brittany [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31E872A691114372B5A6A88482A66E48-BOLEN, BRIT]
Sent: 7/31/2018 6:51:36 PM
To: Lovell, Will (William) [lovell.william@epa.gov]
Subject: Fwd: Meeting request

Can you check with Tamika on this? To save time, I can attend Henry's scheduled meeting.

Sent from my iPhone

Begin forwarded message:

> **From:** "Thompson, Ryan" <thompsonr@akingump.com>
> **Date:** July 30, 2018 at 12:28:08 PM EDT
> **To:** Brittany Bolen <bolen.brittany@epa.gov>
> **Subject: Meeting request**
>
> Brittany,
>
> I hope you are well! I wanted to reach out on behalf of our client the Pebble Partnership. The CEO of Pebble, Tom Collier, will be in Washington this week and will be meeting with the Acting Deputy Administrator at 10am on Aug 2nd. I am not sure if you will join that meeting as well, but if not, I wanted to see if you had any time to meet briefly with Tom on Wednesday or Thursday? The objective of the meeting would be to bring you up to speed on the latest regarding the project.
>
> Thanks in advance for considering,
>
> -Ryan
>
> **Ryan Day Thompson**
> **AKIN GUMP STRAUSS HAUER & FELD LLP**
> Mobile: 202.236.7885 | thompsonr@akingump.com | akingump.com | Bio
> The information contained in this e-mail message is intended only for the personal and confidential use of the recipient(s) named above. If you have received this communication in error, please notify us immediately by e-mail, and delete the original message.

AMERICAN OVERSIGHT

Appointment

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 7/5/2018 7:29:28 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; **Conference Line/Code / Ex. 6**
CC: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

Sue and I will be in Seattle, looking forward to seeing most of you in person. Thanks! Tami

---

→ Join Skype Meeting

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

Conference Line/Code / Ex. 6

Help

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/5/2018 9:42:09 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; **Conference Line/Code / Ex. 6**
Conference Line/Code / Ex. 6

Subject: Prep for AOO Director Bristol Bay Overview
Attachments: BB Presentation_1282018_pm_ACP.pptx; Bristol Bay Script - Tomiak brief_ACP_pm.docx
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/9/2018 6:00:00 PM
End: 7/9/2018 6:30:00 PM
Show Time As: Tentative

Hi –

Attached is the most recent Bristol Bay presentation and script (this was used for OFA in January). The section on Pebble's permit application will need to be updated and we'll need to figure out who's doing what.

Conference Line/Code / Ex. 6

Thanks,

Ashley

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 6/26/2018 3:00:51 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: FW: Bristol Bay Check-in
Attachments: Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Hi Mark, I didn't see you on the recipient list. Krista

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Stern, Allyn
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 6/20/2018 until 7/18/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Stern, Allyn
Subject: Bristol Bay Check-in
When: Tuesday, July 03, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:14:40 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

Agenda

NEPA preliminary EIS comments

Briefing

FOIA

Information Quality Act Request for Correction or Withdrawal

404c rulemaking

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM

Recurrence: (none)

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special

AMERICAN OVERSIGHT

expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

AMERICAN OVERSIGHT

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 12/18/2018 5:00:00 PM
End: 12/18/2018 6:00:00 PM

Recurrence: (none)

Proposed Agenda – let Erik know if you have suggestions

Permit Oversight/ NEPA Review Team

NEPA Preliminary EIS Comments

Public Notice

PLP's draft Compensatory Mitigation Plan

404(c) Team

Hladick and Forsgren 12/12 Briefing

Bristol Bay NEPA and 404 Leadership Update for January 2019

CMS Pebble Limited Partnership

FOIA

Request for Correction or Withdrawal

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/7/2018 12:02:20 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble wetlands coordination conversation
Location: Conference Line/Code / Ex. 6
Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/18/2018 8:21:33 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Subject: Pebble check-in
Location: AOO

Start: 6/5/2018 10:00:00 PM
End: 6/6/2018
Show Time As: Busy

Molly and Mark –
Reserving this time to talk before the Pebble cooperating agency meeting on 6/6. I should be in the AOO office.

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Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/18/2018 7:28:53 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Attachments: Pebble permit oversight/NEPA team; Pebble permit oversight/NEPA team; Pebble permit oversight/NEPA team; Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov)
Cc: Douglas, Mark
Subject: Pebble permit oversight/NEPA team
When: Occurs the fourth Thursday of every 1 month(s) effective 2/22/2018 until 11/22/2018 from 1:00 PM to 2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 5/24/2018 8:00:00 PM
End: 5/24/2018 9:00:00 PM
Show Time As: Busy

Recurrence: (none)

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Agenda:

Welcome Mark Douglas to the team
Status of scoping letter
Possible changes to project description
Next steps

AMERICAN OVERSIGHT

Appointment

To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Busy

Recurrence: (none)

Updated meeting room location – 14 Walla Walla

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

To: Meade, Christopher [Meade.Chris@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/27/2018 8:00:00 PM
End: 9/27/2018 9:00:00 PM
Show Time As: Busy

Recurrence: (none)

Hi all- Here is the agenda for our meeting tomorrow. Feel free to suggest additional topics

AGENDA

- Litigation hold
- NEPA documents under review
    - Alternatives
- Schedule for upcoming document reviews
- Additional topics

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/26/2018 8:00:00 PM
End: 7/26/2018 9:00:00 PM
Show Time As: Busy

Recurrence: (none)

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda below, please feel free to suggest additional agenda topics

Agenda:

- Review of preliminary EIS sections – Molly
- Field verification site visit – Mark
- Upcoming agency meetings – Patty
- Schedule - Patty

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/18/2018 7:28:11 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Bristol Bay Check-in
Attachments: Untitled Attachment; Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 2/14/2018 5:00:00 PM
End: 2/14/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Mark,

Hopefully you will receive the entire series.

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 9:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 2/14/2018 until 6/8/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

Start: 5/23/2018 4:00:00 PM
End: 5/23/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

Mark,

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Sent: Monday, February 5, 2018 9:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn
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Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]

CC: Stern, Allyn [Stern.Allyn@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Bristol Bay Check-in

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/12/2018 4:00:00 PM

End: 6/12/2018 5:00:00 PM

Show Time As: Busy

Recurrence: (none)

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Mendelman, Krista [Mendelman.Krista@epa.gov]
Sent: 6/26/2018 3:00:47 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Stern, Allyn
Subject: Bristol Bay Check-in
When: Tuesday, July 03, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

From: Mendelman, Krista [Mendelman.Krista@epa.gov]
Sent: 6/26/2018 3:00:44 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Hi Mark, I didn't see you on the recipient list. Krista

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Stern, Allyn
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 6/20/2018 until 7/18/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 6/22/2018 9:16:02 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
CC: Brown, DonaldM [Brown.DonaldM@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint
Attachments: CE Comments on PreDraft_Sec3.18_WaterQuality.docx

Hi Molly,
Attached are my comments on Section 3.18.
Let me know if you have questions or need follow up information.
--Chris

From: Vaughan, Molly
Sent: Thursday, June 7, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website / Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

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The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

Internal Website / Ex. 6

If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

Please identify the sub-section and page number for each of your comments.

Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark

AMERICAN OVERSIGHT

<douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (e.g., use of lightering and elimination of dredging).
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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United States Army Corps of Engineers
Meeting Agenda
Cooperating Agencies

Department of the Army Permit Application POA-2017-271, Pebble Limited Partnership

June 6, 2018 0800-1530

Join WebEx meeting

Conference Line/Code / Ex. 6

Join from a video system or application

Conference Line/Code / Ex. 6

Join by phone

Conference Line/Code / Ex. 6

Meeting Objectives: Identify technical working groups and points of contacts, Protocols for technical team interactions and expectations.

0800-0900	Welcome and Introductions
	Introductions of new CAs and revisit previous CAs
0900-1000	Introduction to Technical leads and back grounds
1000-1030	Break
1030-1200	Review of roles and responsibilities;
	Cooperating Agency Coordination Plan/Protocols and expectations
1200-1300	Lunch
1300-1400	Proposed Schedule for resource planning
	Chapter 3 – send for 30 day review
	Scoping report; comments by 29 June
1400-1415	Break
1415-1530	Other*, wrap up, follow up task identification, closing comments

*other may be discussion on project changes to date

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/13/2018 7:25:11 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Pebble EIS: Cooperating Agency Timelines

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 12, 2018 3:16 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Subject: FW: Pebble EIS: Cooperating Agency Timelines

All,
Here is a quick look at the anticipated dates for CA engagements/deliverables/meetings. I will be sending draft CH 4 in a few minutes

Shane

Scoping Report

Distributed July 25, 2018

List of Potential Alternatives

Distributed August 14 (may be sooner, but plan on short turn)

Meeting with CAs on Alternatives

August 22

Pre-Draft Chapter 4

Distributed July 12

CAs assist with Chapter 4 Impact Analysis

October 1 to 30

AMERICAN OVERSIGHT

Message

From: Mendelman, Krista [Mendelman.Krista@epa.gov]
Sent: 6/18/2018 9:25:18 PM
To: Douglas, Mark [douglas.mark@epa.gov]
CC: Smith, Marla J. [Smith.MarlaJ@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble Request form
Attachments: 2018_06_18_MDSiteReqForm.pdf

Here you go. Sorry for the delay.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: Douglas, Mark
Sent: Monday, June 18, 2018 1:56 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: Pebble Request form

Krista,

Can you sign and send back attached document for the trip to Iliamna?

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Douglas, Mark
Sent: Thursday, June 14, 2018 4:30 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Request form

Krista or Mary Anne,

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Attached is the form Pebble sent for the site visit in July. Please sign it and send it back Personal , but if you are able to sign it on Friday please call my cell Personal Phone / Ex. 6 to let me know it's ready and I'll log in and send it on to Pebble.

Thanks!

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Clear Form

THE pebble PARTNERSHIP

2017 SITE SERVICES REQUEST FORM

Two weeks advance notice is required prior to all site visits

DATE OF REQUEST: 6/6/2018		*For PLP Use only* Purchase Order #:
PROJECT LEADER: Mark Douglas	CATEGORY/TASK # Wetlands	___10ANC09 ___20SIT09 ___30ENG09 ___40ENV09 ___50BD09 ___50PA09 ___50SR09 ___50WF09
COMPANY: US EPA		
CONTACT PHONE/EMAIL: Douglas.Mark@epa.gov		

FLIGHT DETAILS: ALL FLIGHTS TO SITE MUST BE BOOKED THROUGH sitetravel@pebblepartnership.com

From/To	Airline	Date	Flight	Time
ANC/ILI	IAT	07/09/18		AM
ILI/ANC	IAT	07/11/18		PM

However, If arrangements are in place please provide details below

Names of Individuals in Group:	Affiliation	M	F	Special Dietary Requests / Food Allergies
1. Mark Douglas	USACE	◉	○	
2.		◉	○	
3.		◉	○	
4.		◉	○	
5.		○	○	
6.		○	○	
7.		○	○	
8.		○	○	
9.		○	○	
10.		○	○	

Purpose of Visit:

Wetlands field work

Scope of Work:

Field verification of mosaic wetlands with HDR wetlands crews.

Comments:

EPA staff will coordinate with USACE & HDR wetlands scientists to determine sites that will be visited and configuration of each field crew. All work will be conducted in the mine site/deposit area and will be based out of Iliamna.

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ADDITIONAL REQUIREMENTS			
Private Land Access:		**# People:**	**Dates:**
☐	APC		
☐	CIRI		
☐	INL		
☐	PBC		
☐	KIJIK		
☐	Other *(describe)*:		
Labor:		**# People:**	**Dates:**
☑	Bear Guard	1*	7/9-7/11
☐	Observer		
☐	Laborer		
☐	Local Knowledge Specialist		
☐	Other *(describe)*:		
Helicopter:		**# People:**	**#Hours/Day:**
☐			
☑	ASTAR	1*	Full
☐	500		
☐	R44		
Other:		**Quantity:**	**Dates:**
☐	Boat *(describe)*:		
☐	Backhoe		
☐	Vehicle		
☐	Bicycle		

Comments:

Please arrange for individual rooms for EPA staff.
*Helicopter and bear guard needs should be coordinated with USACE/HDR request for the same days.

TO BE COMPLETED BY THE REQUESTING TRAVELER
Date: 6/14/18 Signature:

TO BE COMPLETED BY AUTHORIZING SUPERVISOR
Date: 6/18/18 Signature:
Printed Name: Krista L. Mendelman

TO BE COMPLETED BY PERSON COMPLETING TRAVEL ARRANGEMENTS
Date Received: Date Completed:
Signature of person completing travel arrangements:
☐ Emailed to PLP Invoicing ☐ Emailed to traveler ☐ Faxed to traveler

PLEASE ATTACH MAPS AS THEY RELATE TO THE SCOPE OF WORK.

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Page	Section	Existing text (if applicable)	Recommendation

AMERICAN OVERSIGHT

Message

From: Smith, Marla J. [Smith.MarlaJ@epa.gov]
Sent: 6/13/2018 3:26:51 PM
To: Douglas, Mark [douglas.mark@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Curtis, Jennifer [Curtis.Jennifer@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: July 9-11 Pebble site visit

Importance: High

ARE will cover the cost of this travel for Mark.

From: Douglas, Mark
Sent: Tuesday, June 12, 2018 3:31 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: July 9-11 Pebble site visit

Krista and all,

I am putting in a TA for the proposed site visit as we wait for the ethics response.

There are several unknowns including available flights to and from and cost of helicopter.

Cost estimates are as follows:
High estimate for flights between Anchorage and Iliamna: $500
High estimate for seat on helicopter: $2,500
Lodging $150 per night: $300 total
MI&E: $88 per total: $220

Total high estimate: $3,520.

Thanks to Patty I'm anticipating a call from the company with additional details today or tomorrow.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Sent: 6/12/2018 5:31:25 PM
To: Douglas, Mark [douglas.mark@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Smith, Marla J. [Smith.MarlaJ@epa.gov]
Subject: RE: remote site travel

Okay, thanks!

From: Douglas, Mark
Sent: Tuesday, June 12, 2018 8:10 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>
Subject: RE: remote site travel

Jennifer,

I don't recall Gayle or myself developing a justification for helicopter use from the Nanushuk site visit.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Curtis, Jennifer
Sent: Tuesday, June 12, 2018 8:04 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>
Subject: FW: remote site travel

Hi Mark,

Do you have a justification/write-up for helicopter travel that Patty could look at?

From: Shaw, Hanh
Sent: Monday, June 11, 2018 11:20 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>
Subject: RE: remote site travel

I haven't done a justification for helicopter travel since the Chuitna days. You may want to check with Mark Douglas. He and Gayle Martin participated in a Nanushuk site visit using helicopter services provided by Armstrong.

From: Curtis, Jennifer
Sent: Monday, June 11, 2018 12:13 PM

AMERICAN OVERSIGHT

To: Shaw, Hanh <Shaw.Hanh@epa.gov>
Subject: FW: remote site travel

Hi Hanh,

Hope you are doing well!

Do you recall putting together anything for helicopter travel justification, similar to what Patty is referencing below?

From: McGrath, Patricia
Sent: Monday, June 11, 2018 10:04 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: remote site travel

Hi All-
I am preparing an email to ORC regarding upcoming site travel to Pebble. As has been done in the past, we would be invoived by Pebble for helicopter time.
I understand that Jennifer (or Hanh?) had developed similar justifications/emails for O&G site travel.
Could you send me an example of this so I don't have to reinvent the wheel and could also point to these other examples?
Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/19/2018 7:34:32 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Pebble Draft Ch 2 comments for review
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 111518draft_ACP.docx

Hi Mark – please take a look at Ashley's edits to the first comment in the table, also described in her email below, and let me know how you would like to finalize the comment.
Thanks,
Molly

From: Palomaki, Ashley
Sent: Monday, November 19, 2018 8:01 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly –

Thanks for the opportunity to review. My comments are attached. I have a problem in that I always fix nits if I see them ☺ but you should take it or leave it. I also flagged a couple places for you where you should edit the sentence b/c it isn't clear.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Friday, November 16, 2018 9:25 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly and Ashely –

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Thursday, November 15, 2018 3:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Draft Ch 2 comments for review

Hi Ashley,
I am so sorry for the delay in getting these comments to you for review. If you will no longer be able to complete your review Friday, please let me know. I also apologize that some of the comments (particularly the last couple pages) are still a bit rough. So, please don't feel that you have to edit grammar, punctuation, etc., as I will do another read-through for that before sending this to Jill.

Patty – I've copied you here as well, so you can decide if you would prefer to do your final review of the compiled comments now, or at the same time as Jill's review.

Thank you very much in advance for your review!
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

AMERICAN OVERSIGHT

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/7/2018 9:07:13 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: RE: Field Logistics

Marla,

Personal Matters / Ex. 6 **Deliberative Process / Ex. 5**

Patty

-----Original Message-----
From: Smith, Marla J.
Sent: Thursday, June 7, 2018 12:18 PM
To: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: Field Logistics
Importance: High

Hi Mark,

Deliberative Process / Ex. 5

Thanks,
Marla

-----Original Message-----
From: Douglas, Mark
Sent: Thursday, June 07, 2018 12:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: FW: Field Logistics

The form Pebble wants me to sign and get back.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

-----Original Message-----
From: Tim Havey [mailto:timhavey@pebblepartnership.com]
Sent: Thursday, June 07, 2018 12:06 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Field Logistics

Mark:

Please review the attached and send back to me. Basically I need your cell phone number and for you to add any food or dietary requirements. Below is the email I sent to Estrella yesterday with some additional info. Call if you have any questions.

Regards,

Tim Havey
Director-Environment and Permitting

3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 C: 907.230.5056

AMERICAN OVERSIGHT

-----Original Message-----
From: Tim Havey
Sent: Wednesday, June 6, 2018 10:20 AM
To: 'Campellone, Estrella F CIV USARMY CEPOA (US)' <Estrella.F.Campellone@usace.army.mil>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: RE: Field Logistics

Estrella:

I have attached the site services request form that our operations staff need to finalize your arrangements. I went ahead and filled out most. Please review and add your phone number (cell phone preferably) and whether anyone has any food allergies or special needs. You can send the completed form back to me and I will submit it to site. I have requested individual rooms for each of you.

Meals are cafeteria style. For your arrival day, it will be easiest if you can bring your lunch with you. For the remaining days you will make a bag lunch at breakfast to bring with you to the field.

We will provide in-town transportation to/from the airport each day in one of our vehicles. Work days are 12 hours, with 10 in the field and one hour on either end for muster, briefings, etc. Crews normally do not return to base during the work day unless weather limits flight operations. Low clouds and/or high winds are typically the only conditions that will restrict helicopter travel.

No firearms are permitted at any Pebble facility or in helicopters. Trained bear guards will be provided with each crew. Guards are in constant radio contact with site operations. Alcohol is prohibited at any Pebble facility.

Safety training and site orientation will take place as soon as you arrive. That should take about an hour, followed by a 20-minute helicopter safety briefing. We provide basic PPE (safety goggles, high visibility vest, hearing protection). You are welcome to bring your own as long as the operations manager approves. Field gear requirements are what you would normally bring.

Accommodations are 150/person/day. We will invoice you after your trip. Our site staff does not have the ability to accept payments. Helicopter time will likewise be invoiced to you based on the per seat cost and number of flight hours logged. Cost may vary depending on which helicopter is available.

Please let me know if you have any other questions.

Thanks,
Tim

-----Original Message-----
From: Campellone, Estrella F CIV USARMY CEPOA (US) [mailto:Estrella.F.Campellone@usace.army.mil]
Sent: Wednesday, June 6, 2018 7:31 AM
To: Tim Havey <timhavey@pebblepartnership.com>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: Field Logistics

Hi Tim,

I think I left a voice mail and I am wondering if you received it.

In any case, please let me review with you our itinerary:
Arrival time @ Iliamna: July 9 (Monday) at 0900.
Departure time: July 11 @ 4:30 p.m.

Corps will disburse your company directly for hotel/helicopter costs.
Hotel:
Check in July 9th
Check out July 11th

Meals:
July 9th (lunch brown bag - Diner)
July 10th (all meals)
July11th (breakfast & lunch).

Helicopter: as per time-usage logs (coordination field work with HDR at this point).

Truck Rental: We will take your offer of picking us up at the airport on Monday July 9th.

You mentioned we will have safety training upon arrival on July 9th before heading to the field. Please let us know if there is anything else we need to be aware of.

Thank you very much for your help,

Estrella
-----Original Message-----

AMERICAN OVERSIGHT

From: McCoy, Shane M CIV USARMY CEPOA (US)
Sent: Monday, June 4, 2018 10:51 AM
To: Campellone, Estrella F CIV USARMY CEPOA (US) <Estrella.F.Campellone@usace.army.mil>
Cc: Tim Havey <timhavey@pebblepartnership.com>
Subject: contact info

Estrella,
Here is Tim's email.

Shane

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 5/24/2018 10:40:26 PM
To: Douglas, Mark [douglas.mark@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hi Mark. Welcome to the Pebble Project Permitting Oversight and NEPA Review Team! Here is a link to the sharepoint site.--Molly

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.



Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/2/2018 9:06:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Please Review -- Pebble Ch 1 Purpose and Need

Patty, Mark and Palmer,
The Corps is also now accepting comments on Chapter 1 Purpose and Need. (this Chapter is only 3 pages long!). If you have any comments on this section, please also send those to me by COB 11/9.
Thank you,
Molly

From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:02 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Barbara Butler (Butler.Barbara@epa.gov) <Butler.Barbara@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Please Review -- Pebble Ch 2 Alternatives

Hello All,
I previously provided the draft Chapter 2 as an FYI, but the Corps has now said they will be accepting comments on this chapter, with a due date of 11/23. As you have been assisting in review of the various alternatives screening documents, I would appreciate your review of this section as well. In order to meet the comment deadline including time required for internal management review of the comments, please send me any comments you may have on Chapter 2 **by COB Friday 11/9**. (I apologize that this is a quick turnaround, but hope that you may have already begun looking over the document.)

Chapter 2 and the associated figures are available on the Sharepoint site, but please let me know if you are not able to access them or have any questions.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Chu, Rebecca [Chu.Rebecca@epa.gov]
Sent: 11/2/2018 7:18:35 PM
To: Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: PLEASE UPDATE THIS BRIEFING DOC!!! Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

Importance: High

Hi All

Now that we are coordinating on TWO briefing docs for the RA- reminder that the One Drive doc below needs to be updated with the NEPA info by COB today. Please let me know if you don't have access to this doc. As a reminder- these talking points are being drafted for the RA for:

11-16-18 Meeting of Chris H, RA and Col. Borders, DE, Alaska District, Corps of Engineers

Purpose of the meeting: it's a meet-and-greet between the two senior leaders. Topics to cover: EPA and the Army MOA for Alaska District & Large NEPA Projects (ID'd in Jill's email below- Nanushuk, Pebble, Ambler, Willow and Coastal Plain)

Talking Point Need:
AK MOU Talking Points: The current draft talking points came from a discussion with David Allnutt. *Mark, Matt and Mary Anne:* please review and edit for accuracy. *Jennifer/Molly/Erik*- we also identified specific ongoing project where we'd like more coordination with the Corps on to support our "one federal decision" and aggressive timelines. Feel free to review those and edit for NEPA accuracy!
Large NEPA Projects Talking Points: NEPA team- we need your help in getting these sorted out. An idea- maybe you can use our last "MOU Talking Point" of wanting more coordination to support our "one federal decision" as a way to describe the specific large projects so it ties together?

Process and Timeline to Complete the Talking Points:
We need to have the talking points to the RA's office by 11-13. To meet this timeline:

- ***Staff input on draft talking points- pretty much need this by COB today or 11/5 AM at the latest***
- HQ Coordination on programmatic level (for 404 program, Mary Anne lead; for NEPA, ???)- 11/5ish
- Jill/Rebecca Review- 11/5-11/6
- David and Linda review & edit - 11/7-11/9
- David/Linda submit to RA's office by 11/13

Please let me know if I have missed any steps in the review process.

Thanks!!

Rebecca Chu | Acting Unit Manager
Aquatic Resources Unit
United States Environmental Protection Agency
Region 10
1200 Sixth Ave Suite 900
MS-140
Seattle, WA 98101
(206) 553-1774

AMERICAN OVERSIGHT

Chu.Rebecca@epa.gov

From: Nogi, Jill
Sent: Sunday, October 28, 2018 3:43 PM
To: Chu, Rebecca <Chu.Rebecca@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

Hi Becky,
David and I talked on Friday about having bullet points ready for Chris to bring up with the Colonel regarding our efforts/thinking on Nanushuk, Pebble, Ambler, Willow and Coastal Plain – a number of the big NEPA projects in AK. The Corps is the lead on Pebble and Nanushuk and will be coordinating/collaborating with us regarding our 404/aquatic resource related comments on the BLM-led projects on the list. Jennifer Curtis is the lead point of contact for NEPA for Nanushuk and Molly Vaughan is the lead point of contact on the other projects. David had mentioned that he wanted to talk with Chris about everything we pull together prior to the 16th. If we've set 11/6 as the deadline to get it to David and Linda, I would ask that the NEPA leads please have bullet points/talking points ready for me to take a look by Friday 11/2 – and I can help add points to this as well, if needed, by the 6th.

Please also share your one drive link with Molly and Jennifer – Erik is working on the 404(c) team effort but isn't working on the NEPA EIS review, which would be separate talking points for Chris, if we wanted to bring up both. Thanks everyone – we'll be in good shape getting everything together in plenty of time! Your help in developing this is much appreciated. I'm still home sick – so won't be in on Monday but can catch up with folks (hopefully) Tuesday or later.

Jill

From: Chu, Rebecca
Sent: Friday, October 26, 2018 2:53 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

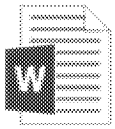
All

The RA is meeting with the new District Engineer at the Alaska District on 11-16. David has asked us to put together some talking points for the RA, and we're going to get these to David and Linda by 11-6. I understand that David spoke with Jill re: talking points specific to Bristol Bay. So including Jill and Eric if they'd like to join ARU in what we're putting together for Linda/David and the RA.

Matt & Mary Anne- my notes are from our discussions. Feel free to reframe and clean up.

This link only works for the direct recipients of this message.

AMERICAN OVERSIGHT



R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders

Open

Microsoft OneDrive

Microsoft respects your privacy. To learn more, please read our Privacy Statement.
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

AMERICAN OVERSIGHT

Message

From: Muche, Muluken [Muche.Muluken@epa.gov]
Sent: 7/11/2018 2:19:42 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Pebble Chapter 3.16 and 3.26 now on Sharepoint site
Attachments: MM Review Comments _PreDraft_Sec3.16_SurfaceWater.docx

Good morning,

My review comments for Surface Water Hydrology section is attached.

Thanks,
Muluken

From: Vaughan, Molly
Sent: Wednesday, June 27, 2018 1:45 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: Pebble Chapter 3.16 and 3.26 now on Sharepoint site

Good morning,
The Corps has finally sent us the missing word documents for Section 3.16 Surface Water Hydrology and 3.26 Vegetation, and I have added those documents to the sharepoint site. They did not provide a new due date for these delayed sections, but have requested comments as soon as possible. I will try to confirm a deadline by our team meeting tomorrow. But, in the meantime, please begin your review as soon as you are able.
Thank you,
Molly

From: Vaughan, Molly
Sent: Thursday, June 07, 2018 11:13 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website / Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

AMERICAN OVERSIGHT

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

  Internal Website / Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215

AMERICAN OVERSIGHT

vaughan.molly@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (e.g., use of lightering and elimination of dredging).
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

AMERICAN OVERSIGHT

Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/10/2018 8:17:43 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
Subject: RE: Pebble Chapter 3.16 and 3.26 now on Sharepoint site
Attachments: TM Comments on PreDraft Sec3.16 SW resources 7-10-18.docx

Attached is my review comments associated with Section 3.16 SW Resources.

tm

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Wednesday, June 27, 2018 10:45 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: Pebble Chapter 3.16 and 3.26 now on Sharepoint site

Good morning,
The Corps has finally sent us the missing word documents for Section 3.16 Surface Water Hydrology and 3.26 Vegetation, and I have added those documents to the sharepoint site. They did not provide a new due date for these delayed sections, but have requested comments as soon as possible. I will try to confirm a deadline by our team meeting tomorrow. But, in the meantime, please begin your review as soon as you are able.
Thank you,
Molly

From: Vaughan, Molly
Sent: Thursday, June 07, 2018 11:13 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website / Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

AMERICAN OVERSIGHT

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

  Internal Website / Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215

AMERICAN OVERSIGHT

vaughan.molly@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (e.g., use of lightering and elimination of dredging).
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

AMERICAN OVERSIGHT

Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/18/2018 7:39:20 PM
To: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov)
Cc: Douglas, Mark
Subject: Pebble permit oversight/NEPA team
When: Occurs the fourth Thursday of every 1 month(s) effective 2/22/2018 until 11/22/2018 from 1:00 PM to 2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 5/18/2018 7:28:56 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/22/2018 8:00:00 PM
End: 7/22/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Shoemake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris; Wake, Neverley
Subject: Pebble permit oversight/NEPA team
When: Sunday, July 22, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Appointment

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 5/18/2018 7:28:55 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/22/2018 8:00:00 PM
End: 9/22/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Shoemake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris; Wake, Neverley
Subject: Pebble permit oversight/NEPA team
When: Saturday, September 22, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Appointment

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 5/18/2018 7:28:53 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 12/22/2018 9:00:00 PM
End: 12/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Shoemake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris; Wake, Neverley
Subject: Pebble permit oversight/NEPA team
When: Saturday, December 22, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/23/2018 12:20:59 AM
To: Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; R10IOO-
Conference Line/Code / Ex. 6
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/25/2018 9:00:00 PM
End: 10/25/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Pebble permit team meeting

Hi all, I moved this meeting out by an hour due to a conflict that Molly and I have with another meeting.
Also, note the change in meeting location (14- Walla Walla)

Conference Line/Code / Ex. 6

Agenda

- Updated project description available
- EIS section reviews
    - Current – dry stack, intro to sections 3 and 4
    - Upcoming – revised sections of chapters 3 and 4
- Report on 10/24 cooperating agency meeting

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/5/2018 9:42:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10Sea-Conference Line/Code / Ex. 6
Conference
Subject: Prep for AOO Director Bristol Bay Overview
Attachments: BB Presentation_1282018_pm_ACP.pptx; Bristol Bay Script - Tomiak brief_ACP_pm.docx
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/9/2018 6:00:00 PM
End: 7/9/2018 6:30:00 PM
Show Time As: Tentative

Hi –

Attached is the most recent Bristol Bay presentation and script (this was used for OFA in January). The section on Pebble's permit application will need to be updated and we'll need to figure out who's doing what.

Conference Line/Code / Ex. 6

Thanks,

Ashley

AMERICAN OVERSIGHT

Appointment

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 7/5/2018 8:17:24 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Conference Line/Code / Ex. 6; Conference Line/Code / Ex. 6
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]

Subject: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Tentative

Sue and I will be in Seattle, looking forward to seeing most of you in person. Thanks! Tami

→ Join Skype Meeting

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

Join by Phone

Conference Line/Code / Ex. 6

Help

AMERICAN OVERSIGHT

Appointment

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 5/18/2018 7:28:09 PM
To: Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Start: 2/14/2018 5:00:00 PM
End: 2/14/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Mark,

Hopefully you will receive the entire series.

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 9:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 2/14/2018 until 6/8/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 10/22/2018 2:03:30 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble review request

Patty,

Not sure I can finish by the 24th but will be done by COB on the 25th. Hope this can work for you.

From: McGrath, Patricia
Sent: Thursday, October 18, 2018 4:59 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble review request

Hi Cindi and Mark-

We have another short turn around review on a draft section of the Pebble EIS.

Attached is draft Section 4.1, which is the introduction to the Environmental Consequences section. The Corps has requested comments by 10/31. This section identifies past, present, and reasonably foreseeable future actions that will be considered in the cumulative effects analysis in subsequent chapters. We especially appreciate your review of the actions identified and whether there are others that could be missing.

The Corps has requested comments by 10/31. In order to meet this deadline and have management review, if you have time to look at this section, then please send Molly and I comments by COB 10/24.

Let us know if you have questions.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/18/2018 11:58:34 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble review request
Attachments: Sec4.1_IntroEC_reviewdraft_2018.10.16.docx

Hi Cindi and Mark-

We have another short turn around review on a draft section of the Pebble EIS.

Attached is draft Section 4.1, which is the introduction to the Environmental Consequences section. The Corps has requested comments by 10/31. This section identifies past, present, and reasonably foreseeable future actions that will be considered in the cumulative effects analysis in subsequent chapters. We especially appreciate your review of the actions identified and whether there are others that could be missing.

The Corps has requested comments by 10/31. In order to meet this deadline and have management review, if you have time to look at this section, then please send Molly and I comments by COB 10/24.

Let us know if you have questions.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 5/7/2018 10:57:15 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: Fact Sheets

Hey guys,

Are there any up to date fact sheets (or even short, Hot-Topics like blurbs) on any of the following projects?

Donlin
Pebble
ASAP
AKLNG

If so, would you please send them to me, and if not, can you let me know? I will be briefing Linda A-C in preparation for the National meeting and need to know what materials exist and what I will need to put together. Thanks.

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/23/2018 7:41:59 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Updated meeting room location – 14 Walla Walla

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 9/26/2018 6:52:26 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/27/2018 8:00:00 PM
End: 9/27/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Hi all- Here is the agenda for our meeting tomorrow. Feel free to suggest additional topics

AGENDA

- Litigation hold
- NEPA documents under review
    - Alternatives
- Schedule for upcoming document reviews
- Additional topics

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/4/2018 11:30:32 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: 06_06_2018_Federal_State_Meeting_Agenda.docx
Attachments: 06_06_2018_Federal_State_Meeting_Agenda.docx

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Monday, June 04, 2018 10:30 AM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Subject: 06_06_2018_Federal_State_Meeting_Agenda.docx

All,
I will send the Cooperating Agency Coordination plan in another email.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/16/2018 7:03:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
Subject: REVIEW REQUEST - Pebble Preliminary Ch. 4 Sections
Attachments: Sec4.18_Water&SedQual_FINAL.docx; Sec4.22_Wetlands_FINAL.docx; Sec4.26_Vegetation_FINAL.docx; Sec4.1_Intro_FINAL.docx; Sec4.5_Recreation_FINAL.docx; Sec4.11_Aesthetics_FINAL.docx; Sec4.14_Soils_FINAL.docx; Sec4.16_SurfaceWater_FINAL.docx; Sec4.17 Hydrogeology_FINAL.docx; Comment spreadsheet.docx

Hello All,
The Corps has distributed some very preliminary draft sections of Chapter 4 for Cooperating Agency review. These documents do not contain the actual project analysis, but appear to be more of a framework to work from in completing the analysis and EIS text. The sections include heading, some introductory-type text, and some blank tables. The Corps did not provide detailed instructions for review, but I recommend that we review from the perspective of determining whether the skeleton of the analysis presented here appears that it will address the key issues for review, and provide recommendations for inclusion of any issues that appear to have been overlooked in the current structure.

Here are the specific section assignments, similar to last time:

- 4.1 Intro - Molly
- 4.5 Recreation - Molly
- 4.11 Aesthetics - Molly
- 4.14 Soils - Mark/Palmer
- 4.16 Surface Water Hydrology - Tim/Mark/Palmer/Muluken
- 4.17 Hydrogeology - Tim/Mark/Palmer/Muluken
- 4.18 Water and Sediment Quality - Cindi/Tim/Chris
- 4.22 Wetlands/ Special Aquatic Sites - Mark/Palmer
- 4.26 Vegetation - Mark/Palmer

The Corps has requested a quick turnaround for review, therefore please send me any comments you may have on these sections by COB 7/24. I am hoping, given the brevity of these documents, that this timeframe will be achievable, but please let me know as soon as possible if it will not.

Please provide your comments in the attached comment table format.

It may be helpful to look back at the issues we recommended for analysis in our scoping comments - I have saved the final version of that letter on the Sharepoint Site here:

Internal Web Address / Ex. 6

Thank you,
Molly

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Thursday, July 12, 2018 3:22 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Draft Chapter 4 comments due 7/31/2018

For your agency review.

Vr

Shane McCoy

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Page	Section	Existing text (if applicable)	Recommendation

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 APPROACH TO ENVIRONMENTAL ANALYSIS

Chapter 4 describes the potential impacts on the environmental resources addressed in Chapter 3 that would occur under the No Action Alternative, the Applicant's Proposed Alternative, and other action alternatives.

4.1.1 Impact Characterization

Adverse and beneficial effects of the project were evaluated and described for each of the 25 resources. Each resource section provides context for analyzing impacts by considering them generally in relation to four dimensions:

- Magnitude, or the intensity of the impact
- Duration, or how long the impact would be expected to occur or last
- Geographic extent, or where the impact would be expected to occur
- Potential, or how likely the impact is to occur.

Not every resource considers every dimension, and the level of quantified or qualified information presented is appropriate to the context of the resource. In each of the resource subsections, the methods used for analysis are described.

Project component values, such as road lengths and pad acreage, are approximations based on best available data. Due to differences in data processing systems (e.g., Geographic Information System [GIS]) and methodologies (e.g., number rounding), the values presented in the Environmental Impact Statement (EIS) may differ slightly from values presented in other project-related documents, such as permit drawings. These differences have been reviewed, and were determined to be insignificant to the analysis, as well as to the overall permitting process.

4.1.1.1 Types of Effects Considered

The National Environmental Policy Act (NEPA) requires three types of impacts to be evaluated—direct, indirect, and cumulative—as defined below:

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Direct Effects: Effects caused by the action and occurring at the same time and place (40 Code of Federal Regulations [CFR] 1508.8). Limited to the proposed action and alternatives.

Indirect Effects: Effects that are "caused by an action and are later in time or farther removed in distance but are still reasonably likely. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8). Indirect effects are caused by the project, but do not occur at the same time or place as the direct effects. Limited to the proposed action and alternatives.

Cumulative Effects: Additive or interactive effects that would result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). This includes incremental impacts of the proposed action and alternatives when added to other past, present, and reasonably foreseeable future actions. Interactive effects may be either greater or less than the sum of the individual effects; therefore, the action's contribution to the cumulative case could increase or decrease the net effects. For this analysis, reasonably foreseeable future actions (RFFAs) are existing plans, permit applications, and fiscal appropriations that are external to the proposed action, and likely (or reasonably certain) to occur in the next 30 years.

[Note: RFFAs are being developed and will be added at a later time.]

4.1.1.2 Time Periods for the Impact Assessment

Impacts on some resources may vary depending on the phase of the proposed project. Accordingly, the impact assessment was divided into three time periods:

- Construction phase
- Operations phase
- Closure or post-closure phase.

Although division of analysis into these three time periods works well for most resources, it is less relevant for some resources, such as Needs and Welfare of the People (Socioeconomics), or Recreation.

4.1.2 Issues Selected for Analysis

The U.S. Army Corps of Engineers (USACE) and cooperating agencies selected substantive impact topics for further analysis, and eliminated others from evaluation. Based on scoping comments, issues were selected for analysis, and are organized by physical, biological, or social environment.

The site of the proposed project and the nature of open-pit mining activity would lead to a complex interaction between groundwater, surface water, and a number of water-related resources. The proposed project would also lead to a complex interaction between water-related resources and fish and aquatic resources. This section provides an overview of the water-related resources, and fish and aquatic resources, and their interactions with groundwater. In this document, *water-related resources* include:

- Wetlands, streams, and other Waters of the U.S. (WOUS)
- Aquatic habitat and resources
- Groundwater and surface water quality and water supplies

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- Floodplains
- Riparian communities
- Terrestrial resources.

[Note: Issues will be further developed at a later time.]

4.1.3 Financial Assurances and Bonding

This section describes the concepts of financial assurances and bonding in the mining and metals industry; the requirements for bonding under the State of Alaska; and Pebble Limited Partnership's (PLP) proposal for financial assurances.

[Note: This section will be further developed at a later time.]

4.1.4 Evaluation of Potential Failures

[Note: This section will be further developed at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

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4.5 RECREATION

For the purposes of this section, the region around the project site is defined as the area from Lake Clark National Park and Preserve south to Katmai National Park and Preserve, and from the Mulchatna River east to the western Kenai Peninsula. See Figure 3.2-1 for generalized land status.

4.5.1 No Action Alternative

Under the No Action Alternative, the Pebble Project would not be developed. No construction, operation, or closure activities would occur at the Mine Site or Amakdedori Port, or in the Transportation Corridor or Natural Gas Pipeline Corridor. Therefore, no future direct or indirect effects on recreation resources would be expected. Exploration activities currently associated with the project would cease. Helicopter traffic related to these exploration activities would likely decrease. Although recreation use of the Mine Site is minimal, such a decrease in helicopter traffic would be noticeable to recreation users of the Newhalen River and the northern shoreline of Iliamna Lake near Iliamna.

4.5.2 Action Alternative 1 – Applicant's Proposed Alternative

The following sections describe anticipated recreation impacts from the project's four major components: the Mine Site, Amakdedori Port, the Transportation Corridor, and the Natural Gas Pipeline Corridor. For economic impacts related to commercial and recreational fishing, see Section 4.6, Recreational and Commercial Fisheries.

4.5.2.1 Mine Site

Recreation use at the Mine Site is minimal, consisting of some sport hunting and fishing and occasional snowmachine use. Flights taking recreationists to various destinations in the region may also pass over the Mine Site.

Construction, operation, and closure at the Mine Site may affect sport hunting and fishing on state lands surrounding the project area. Project-related activities, such as blasting and operation of heavy equipment and helicopters, would adversely affect the recreational experience for hunters and anglers by changing the setting from a quiet wilderness area to a developed industrial area within visual and auditory distance of the Mine Site. The noise generated by these activities would also displace wildlife from the immediate Mine Site area,

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and likely from lands immediately surrounding the project area, thus reducing the likelihood of hunting success close to project components. Therefore, hunters, anglers, or guides who currently use the immediate vicinity would likely stop using these areas and would be displaced to other areas during construction, operation, and closure activities.

Given the low estimated use of the Mine Site and immediate surrounding area for sport hunting and fishing, project-related noise and activities at the Mine Site would result in minimal displacement of sport hunting and fishing use, likely to other state lands in the area with similar habitat. However, project-related noise and aircraft traffic that would be noticeable to recreation users on the Newhalen River, Upper Talarik Creek, and the upper North and South Forks of the Koktuli River would detract from the quality of the recreation experience, potentially resulting in some displacement of activities to other areas. For further analysis, see Section 4.11, Aesthetics; Section 4.19, Noise; Section 4.23, Wildlife Values; and Section 4.24, Fish Values.

Project construction, operation, and closure at the Mine Site would also physically remove acreage available for recreation. However, given the likely low use of the site for recreation, the loss of 6,874 acres (Mine Site footprint) for recreation would likely result in minimal displacement of recreation use to other nearby state lands where similar recreation opportunities and settings exist.

Project-related noise and activities would not be likely to affect recreational settings or activities in Lake Clark National Park and Preserve, the nearest regional recreation destination and known recreation use area to the Mine Site. As stated in Section 4.11, Aesthetics, the Mine Site would/would not be visible from this park unit; and as described in Section 4.19, Noise, Mine Site construction and operational noise would not affect sensitive receptors there.

[Note: This paragraph will be updated with information about visibility of the Mine Site from recreation areas when the results of RFI 34 (viewshed analysis) are received.]

Activities at the Mine Site would be visible and potentially audible to visitors flying over the Mine Site to reach regional recreation destinations such as Lake Clark National Park and Preserve or nearby lodges, fishing the Upper Talarik Creek, and accessing the North Fork and South Fork Koktuli River for recreational river floating purposes. The presence of the mine, a large industrial use in an otherwise generally primitive area, may adversely affect the recreation experience for visitors flying over the Mine Site by causing a change in the recreation setting. Because of the Mine Site's location relative to nearby lodges and airstrips/airports, only a few flight paths cross the Mine Site; thus, visitors flying into the area would be affected by the presence of the project. The recreation experience for visitors on these flights would be adversely affected during project construction, operations, and closure.

Recreation by construction and operation staff would be expected to occur elsewhere (i.e., beyond the Mine Site), because site rules would prohibit hunting, fishing, or gathering on-site to minimize impacts on local subsistence resources. The mine would operate on a fly-in, fly-out basis. Therefore, non-resident staff members would not likely contribute to an increase in recreation use, although some may occasionally stay in the area for recreational trips to nearby destinations. As described in Section 4.3, Needs and Welfare of the People—Socioeconomics, operation of the mine is not expected to generate a large increase in the number of full-time residents.

4.5.2.2 Amakdedori Port

The Amakdedori Port site is located on state lands designated for habitat use by the Kenai Area Plan (ADNR 2001). The Kenai Area Plan does not mention recreation use, although there may be recreational boating, overflights, hunting, fishing and incidental wildlife viewing near the port

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site. Boat traffic to and from the port would be minimal: up to 27 concentrate vessels and 33 supply barges per year during operations. Therefore, activities at Amakdedori Port would result in minimal adverse impacts on recreational boat traffic, and thus, on boating experiences and opportunities around the port site and in Cook Inlet. The visual impacts of the port would affect the recreation setting for boaters.

The project may affect incidental wildlife viewing, hunting, and fishing opportunities at the port site, to the extent that they occur. Noise and activities would displace wildlife and fish from the area, thus adversely affecting wildlife viewing, hunting, and fishing opportunities and experiences by reducing the likelihood of seeing wildlife or catching fish.

In addition, project-related noise and activities during construction, operation, and closure at Amakdedori Port would adversely affect the recreational experiences of visitors within visual and auditory distance of the port site because of the change from a quiet, undeveloped area to a developed site with visible facilities, generators, and in-water facilities. The adverse effects would displace from this area those visitors who prefer a quiet, undisturbed recreation setting, or who participate in recreation opportunities such as wildlife viewing, hunting and fishing, which typically require a quiet, undisturbed recreation setting.

Overall, because recreational use of the Amakdedori Port site is low even during the peak summer season, project-related wildlife and fish displacement, noise, and activities would result in minimal displacement of wildlife viewing and fishing uses to other nearby shoreline areas.

The port site, including construction, operation, and closure activities, would be visible from flights over the site to regional recreation destinations such as Katmai National Park and Preserve or towns farther west such as King Salmon or Naknek. Although the recreation use of McNeil River State Game Refuge is limited by permit numbers, and the use of Augustine Island and nearby shoreline areas is low, on-water sightseeing and/or wildlife viewing may occur in these locations. Construction, operation, and closure at Amakdedori Port could adversely affect the recreation experience for visitors participating in sightseeing or wildlife viewing opportunities in these surrounding areas, by causing a change in the recreation setting to a more developed and less remote, primitive area. However, given the distance of the port site from these areas, which would reduce the port's visibility, and the likely low level of recreation use at these nearby locations, impacts on recreation experiences would be limited.

[Note: This paragraph will be updated with information about visibility of Amakdedori Port from recreation areas when the results of RFI 34 (viewshed analysis) are received.]

The project would not result in changes in access to McNeil River State Game Refuge or Sanctuary. Visitors fly into the sanctuary, where the main recreation use areas are located. McNeil Camp, the main access point to the sanctuary and refuge, is located 12 miles south of the Amakdedori Port site.

4.5.2.3 Transportation Corridor

The volume of recreation use is likely low in numbers along the north and south mine access road corridors, the Kokhanok Airport spur road, and the Iliamna spur road. However, many consider recreation use opportunities to be of extremely high quality in these areas, particularly along the Newhalen River and Upper Talarik Creek by the north access road, and in the Gibraltar River and Lake portions of the south access road corridor, which some local lodges advertise as offering guided fishing, hunting, and sightseeing trip options (Haugen et al. 2003). Recreational sport hunting or snowmachine use may occur occasionally within these road corridors. See Section 4.12 Transportation and Navigation for impacts to snowmachine use for travel. Some boating takes place at Iliamna Lake and could be affected by the ferry. Both

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motorized and non-motorized boating may occur, either as activities in themselves and as a means of accessing other recreation opportunities, primarily fishing. Fishing is the main recreation opportunity at Iliamna Lake.

Noise and activities along the Transportation Corridor during project construction, operation, and closure would affect the quality of sport hunting, fishing, and other recreation activities on state lands and along creeks in and surrounding the project area by generating potential noise and visual impacts. Impacts on sport hunting and fishing opportunities and experiences would be similar to those described above for the Mine Site.

Similar to the Mine Site, project-related noise and activities would not likely affect recreational settings or activities in Lake Clark National Park and Preserve. As stated in Section 4.11, Aesthetics, the Transportation Corridor would/would not be visible from this park unit; and as described in Section 4.19, Noise, Transportation Corridor construction and operational noise would not affect sensitive receptors there.

[Note: This paragraph will be updated with information about visibility of the Mine Site from recreation areas when the results of RFI 34 (viewshed analysis) are received.]

Activities in the road and ferry terminal portions of the Transportation Corridor would also physically remove acreage available for recreation during project construction, operation, and closure. However, given the likely low use of these portions of the corridor for recreation, the loss of 1,128 acres for recreation would likely result in minimal displacement of recreation use to other state lands in the general area with similar habitat.

As stated in Section 4.3, Needs and Welfare of the People—Socioeconomics, limited access to the roadways and ferry terminal would be available to local residents and businesses only, even after closure of the mine, and would be provided only in scheduled, escorted convoys. Therefore, the Transportation Corridor facilities would not induce recreation or expose previously inaccessible areas to public access and use (RFI 27).

Activities in the Transportation Corridor may be partially visible to and potentially audible for visitors flying over the corridor to reach regional recreation destinations such as Lake Clark National Park and Preserve, float trip destinations (on the Mulchatna, Gibraltar, and other rivers), or nearby lodges. The presence of roads, ferry terminals, and ferry in an otherwise generally primitive area may adversely affect the recreation experience for visitors flying over the Transportation Corridor because of the change in the recreation setting from remote and primitive to more developed and seemingly accessible. Because of the narrow road corridor and vegetation along the roadways and the size of the ferry terminals, the corridor would likely be visible to most visitors only briefly. The recreation experience for visitors on these flights could be adversely affected.

The Transportation Corridor, including construction, operation, and closure activities at the site, would/would not be intermittently visible from the northern edges of Katmai National Park and Preserve and the McNeil River State Game Refuge, depending on the elevation of the viewpoint.

[Note: This paragraph will be updated with information about visibility of the Transportation Corridor from recreation areas when the results of RFI 34 (viewshed analysis) are received.]

The project would also affect incidental wildlife viewing along the Transportation Corridor; the primary recreation use in these areas is likely from other activities, such as fishing. Movement and distribution of bears and other terrestrial mammals through the Transportation Corridor to the McNeil River State Game Refuge and Katmai National Park and Preserve would be disrupted, thus construction and operational activities in the south access corridor would have

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some adverse impacts on wildlife viewing in both of those recreation areas. See Section 4.23, Wildlife Values, for more information on impacts to bear movement and distribution.

Iliamna Lake provides opportunities for wildlife viewing, although there are no known opportunities specific to the proposed ferry terminal locations, ferry route, or pipeline route. Fishing is the primary recreational use of the lake, and extensive opportunities for fishing are available given the lake's size. The project would likely displace wildlife and fish from the locations of the ferry terminals and ferry route during all phases, thus reducing the likelihood of viewing any wildlife or catching fish in and immediately adjacent to the project area. Project noise would also change the recreation setting of the terminal sites from quiet and remote to developed and active. Therefore, all project phases would adversely affect wildlife viewing and fishing experiences and opportunities around the Iliamna Lake portions of the Transportation Corridor. Other locations around the lake would be available for displaced wildlife viewing and fishing use.

Project-related noise and activities during construction, operation, and closure could adversely affect boating on Iliamna Lake. Construction of the pipeline and ferry terminals and operation of the ferry would likely displace boaters from the area immediately surrounding the equipment, ferries, and facilities. Boaters would likely be displaced to other areas of the lake during construction, operation, and closure to avoid the noise and hazards presented by the equipment and activities. Project-related noise and equipment would particularly affect non-motorized boating use, a generally quieter activity that requires more time and effort to circumnavigate in-water obstructions. One ferry trip per day would occur during operations, which would not be expected to contribute considerably to boat traffic on the lake. Although recreational lake boat traffic may slow down and avoid the ferry, alternative open water would be available for boating use during ferry operations. See Section 4.12, Transportation and Navigation, for impacts to non-recreational lake traffic.

4.5.2.4 Natural Gas Pipeline Corridor

From the Amakdedori Port site to the Mine Site, the Natural Gas Pipeline Corridor is adjacent to the Transportation Corridor, and potential impacts on recreation have been described above. Existing recreation use along the pipeline alignment in Cook Inlet and on the Kenai Peninsula consists of boating on the inlet and recreation use on the peninsula. Boating on Cook Inlet is both an activity in itself and a means of accessing other recreation opportunities such as fishing, wildlife viewing, birdwatching, and beachcombing.

[Note: This paragraph will be updated when the updated GIS data for the project footprint are received.]

Equipment present on Cook Inlet during project construction and closure would be visible and audible to recreational boaters within a certain distance, and would likely temporarily displace any boating and fishing use from the area immediately surrounding the equipment and construction activity; however, alternate open water is available for use by displaced boaters or anglers. Recreation experiences for non-motorized boaters would also be temporarily adversely affected by noise and activity by equipment used during construction or closure, which would affect the recreation setting of the state recreation area for these users.

[Note: This paragraph will be updated when the updated GIS data for the project footprint are received.]

Noise and activities during project construction and closure may also temporarily adversely affect recreation experiences for other visitors to Anchor River State Recreation Area. Visitors participating in camping, picnicking, and hiking may also be adversely affected by the change in

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the recreation setting caused by the noise and project activities, thus adversely affecting their recreation experiences. Some visitors may be displaced from the site temporarily because of the change in recreation setting to other state parks or locally managed recreation sites along the Kenai Peninsula.

The pipeline would be located south of Augustine Island in Cook Inlet. Although no recreation occurs on the island itself, some sightseeing of the island's volcano and wildlife occurs from the water. Therefore, equipment and noise associated with construction and closure may temporarily adversely affect sightseeing opportunities and experiences along the south side of the island. However, displaced boats would be able to view the island from other locations around the island that were not affected by project equipment and noise.

The pipeline would not be visible above ground (it would be located below ground, on the seafloor, or below the seafloor in the inlet) and would not remove any acreage from use for recreation opportunities. Recreation experiences for on-water or state park unit visitors may be temporarily affected during pipeline operations because of the presence of boat traffic during pipeline maintenance.

4.5.2.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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4.11 AESTHETICS

4.11.1 Methods

Potential impacts on aesthetics and visual resources were assessed by determining the overall change in landscape character and scenic integrity based on an assessment of visual contrast, scale dominance, and viewer experience as perceived from various Key Viewing Areas (KVAs).

The mechanisms by which effects on visual resources were assessed include:

- The *magnitude or intensity* of effects on visual resources was measured by the level of visual contrast created by the project. Magnitude or intensity was also informed by the scale of contrasting features relative to the existing landscape, and by the anticipated exposure of viewers to these features, including the angle from which a viewer is exposed to an effect (viewer geometry).
- The *duration* of the effects was measured by the anticipated temporal extent of effects (temporary, long-term, or permanent).
- The *extent* of the effects was measured by the extent of moderate to strong visual contrast, and was summarized as localized, extended, or regional.

The context of the effects was considered, and measured by the perceived sensitivity of viewers and the potential for the effects to alter the human experience of the landscape.

As described above, the magnitude of the impact was determined by assessing visual contrast and scale dominance in the context of the prevailing viewer experience. These metrics were assessed as follows:

- *Visual Contrast:* The Bureau of Land Management (BLM) Contrast Rating Procedure was used to determine visual contrast that could result from the construction and operation of the project (BLM 1986). The project would not directly affect federal land; however, the BLM Contrast Rating Procedure is an established and developed methodology commonly used to assess visual impacts. This method assumes that the extent to which a project results in adverse effects on visual resources is a function of the visual contrast between the project components and the existing landscape character. Levels of contrast are defined as follows:
    - *None* – The element contrast is not visible or perceived.

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- *Weak* – The element contrast can be seen but does not attract attention.
- *Moderate* – The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- *Strong* – The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

- *Scale Dominance:* The contrast created by a project is directly related to its size and scale as compared to the surroundings in which it is placed. Scale dominance refers to the scale of an object relative to the visible expanse of the landscape that forms its setting (BLM 1986). A dominant feature of a landscape tends to attract attention to it and becomes the focal point of the view. Where two or more features both attract attention and have generally equal visual influence over the landscape, they are considered co-dominant. An object or feature that is easily overlooked or absorbed by the surrounding landscape is considered subordinate. Scale dominance was classified using the following metrics:
  - Not Visually Evident (NVE)
  - Visually Subordinate (VS)
  - Visually Evident (VE)
  - Dominant (D)
- Viewer experience was assessed by considering viewer duration, viewer geometry, and distance:
  - *Viewer Duration:* Viewer duration or exposure refers to the length of time project features may be in view. This description discloses whether expected viewer exposure would be limited to a short duration and/or small number of viewpoints, or would be of a prolonged duration and/or experienced from multiple viewpoints.
  - *Viewer Geometry:* Viewer geometry refers to the spatial relationship of the observer to the viewed object (i.e., the project), including both the vertical and horizontal angles of view (USDOI 2013). The vertical angle of view refers to the observer's elevation relative to the viewed object. The horizontal angle of view refers to the compass direction of the view from the observer to the object. Visibility is typically greater for observers whose viewing angle is directed toward a project feature than for those with a lateral view.
  - *Distance:* The degree of perceived visual contrast and scale dominance of an object is influenced by the object's distance from the viewer. As viewing distance increases, the project appears smaller and less dominant. Likewise, as distance increases, the apparent contrast of color decreases (BLM 1986). Distance from project components is classified as follows:
    - Immediate foreground (less than 3 miles)
    - Foreground–middle ground (3–5 miles)
    - Background (5–15 miles)
    - Seldom seen (beyond 15 miles).

4.11.2 No Action Alternative

Under the No Action alternative, the project would not be constructed, and would not have any new effects on aesthetics.

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4.11.3 Action Alternative 1 – Applicant's Proposed Alternative

4.11.3.1 Mine Site

Mine Site activities would vary in scale. Collectively, these activities would be expected to result in strong visual contrasts, given the scale of the disturbance. Geographic extent would be extended, with moderate to strong visual contrast. Direct effects from the construction and operation of the Mine Site would be of high intensity when viewed from these locations.

Viewer duration would be intermittent to prolonged, depending on the activity of the viewer. The duration of impacts would be long term, extending beyond the life of the project.

[Note: Visual contrast, other potential visual effects, viewer groups from KVAs (Table 4.11-1) will be developed based on visual simulations, and the geographic extent of impacts will be determined by viewshed models, following the receipt of RFI 34.]

Table 4.11-1: Impact Metrics for the Mine Site from Key Viewing Areas

Key Viewing Areas	Project Component	Viewer Group	Magnitude				
			Visual Contrast	Scale Dominance	Viewer Duration	Viewer Geometry	Viewer Distance

4.11.3.2 Amakdedori Port

Amakdedori Port would be located near the mouth of the McNeil River in Kamishak Bay and near Augustine Island. Development of the port would change the configuration of the shoreline and create an industrial feature in an otherwise natural landscape in Kamishak Bay and has the potential to dominate the viewer experience.

The port facilities and associated components would result in strong visual contrast against the surrounding landscape. Visual contrast would be strongest when viewed from Kamishak Bay. It would also be visible to regional residents who might access the site overland from the west, for the purposes of subsistence activities. Increased project-related boat traffic on Kamishak Bay within Cook Inlet would be visually evident from the foreground, middle ground, and background distance zones. The port would/would not be visible from the Alaska Maritime National Wildlife Refuge and the shoreline near the mouth of McNeil River at the edge of McNeil State Game Refuge. [Note: This paragraph will be edited following the receipt of the viewshed analysis from RFI 34.]

The Amakdedori Port would have high visual contrast against the existing landscape (Table 4.11-2). The vertically erect, geometric facilities would appear dominant and contrast against the low marshlands, with the backdrop of the rolling hills and mountains. Indirect effects on recreation and tourism could result if the natural character of the landscape were compromised in this localized area.

The duration of direct impacts would be long term, as an agreement with the landowner would leave the port facilities in place for use as an industrial port.

[Note: Visual contrast from KVAs (Table 4.11-2) will be developed based on visual simulations, and the geographic extent of impacts will be determined by viewshed models, following the receipt of RFI 34.]

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Table 4.11-2: Impact Metrics for Amakdedori Port from Key Viewing Areas

Key Viewing Areas	Project Component	Viewer Group	Magnitude				
			Visual Contrast	Scale Dominance	Viewer Duration	Viewer Geometry	Viewer Distance

4.11.3.3 Transportation Corridor

The Transportation Corridor could be viewed by local residents, visitors, subsistence users, and mine workers. A strong line would be caused by the construction of the road system, contrasting with the native structure of the landscape. This line would be evident when intermittently viewed by air travelers, overland visitors pursuing sports fish and other recreation pursuits in the vicinity of the corridor, and regional residents who might access the site overland from the west, for the purposes of subsistence activities.

Visual contrast in the Transportation Corridor would be expected to result from the construction and operation of roads and ferry terminal infrastructure (Table 4.11-3), which would include daily truck and ferry vessel traffic. The ferry terminals would appear distinct against the shoreline of Iliamna Lake, as the form and line of the structures would contrast with the natural character of the surrounding landscape.

Visibility of new access roads would be visually limited when viewed from land-based positions, as existing vegetation and topography would block views of these features. The visual contrast of the road system would be most evident from superior viewer positions (such as higher elevations) and/or by aircraft. The geographic extent of impacts would be localized.

Viewer exposure would be intermittent to prolonged, depending on the activity of the viewer. The duration of impacts would be long term, extending beyond the life of the project.

[Note: Visual contrast from KVAs (Table 4.11-3) will be developed based on visual simulations, and the geographic extent of impacts will be determined by viewshed models, following the receipt of RFI 34.]

Table 4.11-3: Impact Metrics for the Transportation Corridor from Key Viewing Areas

Key Viewing Areas	Project Component	Viewer Group	Magnitude				
			Visual Contrast	Scale Dominance	Viewer Duration	Viewer Geometry	Viewer Distance

4.11.3.4 Natural Gas Pipeline Corridor

Because the Natural Gas Pipeline Corridor would follow the Transportation Corridor, it is not expected to be visually evident, as it would be absorbed within the impact area and viewed as a component of the Transportation Corridor.

On the Kenai Peninsula, the compressor station would create a weak visual contrast against the surrounding landscape. [Note: This paragraph will be edited following the receipt of the updated project footprint.]

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[Note: Visual contrast from KVAs (Table 4.11-4) will be developed based on visual simulations, and the geographic extent of impacts will be determined by viewshed models, following the receipt of RFI 34.]

Table 4.11-4: Impact Metrics for the Natural Gas Pipeline Corridor from Key Viewing Areas

Key Viewing Areas	Project Component	Viewer Group	Magnitude				
			Visual Contrast	Scale Dominance	Viewer Duration	Viewer Geometry	Viewer Distance

4.11.3.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.14 SOILS

This section describes potential impacts on soils resulting from each project component. Mitigation and control measures would incorporate structural and non-structural best management practices (BMPs) to address erosion and stormwater runoff. The evaluation also assumes that activities would be performed in accordance with prepared water management and sediment control plans, and necessary Alaska Department of Environmental Conservation (ADEC) permits and stormwater pollution prevention plans (SWPPPs). This includes typical or standard practice activities and BMPs when none are specified in project documents.

4.14.1 No Action Alternative

Under the No Action alternative, the project would not be constructed, and would not have any new effects on soils.

4.14.2 Action Alternative 1 – Applicant's Proposed Alternative

Impacts to soil resources from the Alternative 1 include those related to soil disturbance and erosion. Soil quality is also evaluated for the Mine Site due to potential fugitive dust impacts from sources of concern. Factors used to evaluate soil impacts include soil type and area of disturbance; erosion based on BMPs and foreseeable control measures using common industry practices; planned reclamation and objectives; and anticipated effects on soil quality based on planned project activities.

Evaluation of soil impacts assumes that sediment control measures, BMPs, and adaptive control strategies would be established in a water management and sediment control plan prepared prior to construction and operation; and that proposed earthwork would sufficiently meet necessary conditions required for approval of an ADEC Clean Water Act Section 402 Stormwater Construction and Operation Permit and a Stormwater Discharge Pollution Prevention Plan prior to construction. Other agencies that may require additional considerations related to upland soils include the Alaska Department of Natural Resources (ADNR) for an Approved Pipeline Right-of-Way (ROW) Permit; the Alaska Department of Transportation (ADOTPF) for a Utility Permit on ROW; Kenai Peninsula Borough (KPB); and U.S. Army Corps of Engineers (USACE) Section 404/10 Permit.

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4.14.2.1 Mine Site

This section describes potential effects on soils at the Mine Site from construction through reclamation and post-closure management.

Soil Disturbance

Varying degrees of soil disturbances would occur at the Mine Site throughout construction to post-closure. Disturbances would range from the complete removal or permanent burial of pre-existing soil conditions, to reclaimed surfaces following Mine Site operations. Soils impacted at the Mine Site would include surface or very shallow soils (less than 20 inches), shallow soils (10 to 20 inches), moderately deep soils (20 to 40 inches), and deep soils (40 to 60 inches). Soils generally considered most valued and sensitive to disturbances from an ecological perspective are the productive, organic-rich materials in very shallow to moderately deep soils. None of the soils in the project footprint are considered suitable for agricultural purposes.

Principal components associated with soil map units at the Mine Site that would be disturbed (Figure 3.14-1) include:

- IA7: typically less than 20 inches of black and reddish-brown fine thixotropic volcanic ash over gravelly glacial till
- IA9: thin surface mat of partly decomposed plant litter mixed with volcanic ash, with loamy volcanic ash extending up to 30 inches above glacial till or bedrock (Exploratory Soil Survey of Alaska [ESS], Rieger et al., 1979).

The ESS while useful as a general soils map, does not provide site-specific interpretations. For this reason, deviations or variations from these soil descriptors at the Mine Site likely exist.

Soil disturbances can also impart adverse impacts to supporting vegetation and ecological communities. For this reason, salvage of organic-rich growth media and select overburden having growth media attributes is a significant component in the restoration of impacts through reclamation. Additional discussion regarding productivity losses and impacts to wetlands and vegetation are provided in Sections 4.22, Wetlands/Special Aquatic Sites, and 4.26, Vegetation. Additional discussion regarding overburden and disturbances to surficial geology is also provided in Section 4.13, Geology.

The total acreage of soil disturbance that would potentially occur at the Mine Site is approximately 6,875 acres. Most of the disturbances would occur in soils associated with soil map unit IA9 (4,960 acres), with the remaining disturbance associated with soil map unit IA7. The total acreage of soil disturbances includes major earthworks over the four-year construction period, and Mine Site operation up to closure. The total acreage estimate does not include reclamation of various Mine Site infrastructure that would partially restore or reduce soil disturbances during the closure period.

Mine Site facilities not required for post-closure activities would be reclaimed in accordance with State of Alaska requirements. Facilities that would be reclaimed include the potentially acid-generating (PAG) waste and pyritic tails storage facility; the bulk Tailings Storage Facility (TSF); overburden stockpiles; milling and processing facilities; and non-essential roads. Progressive reclamation of the seepage recovery systems, main water management pond, and treatment plants would be performed in post-closure as water recovery rates diminish (e.g., from the bulk TSF) and water quality becomes suitable for discharge to downstream drainages. With the exception of overburden stockpiles, all reclamation would occur after operations. Mine Site infrastructure that would not undergo reclamation includes the open pit (820 acres); mine water treatment plant; power generation facilities; inert monofill in the disturbed footprint; quarry sites;

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and limited camp, storage facilities, and access roads. These components would result in permanent disturbances to existing soil conditions.

[Note: Acreages in above text will be revised following receipt of updated project footprint reflecting changes to Mine Site facilities, as described in PLP 2018.]

Overburden would be salvaged as growth media or re-purposed as construction material. Overburden removal would start during construction and continue through operation to support pit expansion. Segregated non-growth media overburden would be stockpiled at a dedicated location southwest of the open pit. The overburden stockpile would be contained in a prepared berm constructed of non-mineralized rock. Surface soils and overburden with growth media attributes would be stockpiled at various locations throughout the Mine Site for future reclamation use. Any waste rock used for construction purposes would be geochemically tested prior to use to avoid adverse impacts to soil and water during operation and closure.

Reclamation would include the dismantling and removal of infrastructure; in situ demolition of impermeable concrete pads and foundations; and disposal of inert materials in an on-site monofill. Disturbed areas would be graded and contoured to conform to the landscape and direct surface water runoff. Scarification or ripping of ground surfaces would promote water infiltration and reduce erosional runoff. Salvaged growth media would be applied, in addition to natural revegetation, soil amendments, or application of proposed reclamation seed mixtures.

Although soil conditions underlying the TSF footprints would result in permanent soil disturbances, each would be reclaimed to conform to designated post-mining land use, as administered by the ADNR. The pyritic tailings and PAG waste would be placed in the pit lake. The liner below the pyritic tailings and PAG waste facility would be removed, and bermed structures leveled. This would be followed by application of salvaged growth media and surface restoration. The bulk TSF would remain in place after controlled dewatering and dry closure, resulting in a permanent landform. The bulk TSF surface would be graded and contoured as needed for drainage control. Growth media would be added for seeding and revegetation, including the embankments.

The intensity of impacts to soil from ground disturbances at the Mine Site would range from noticeable compaction and stress on supporting ecological communities (e.g., vegetation), to acute or obvious changes due to complete burial or removal. Reclamation during closure would minimize soil disturbance to large portions of the site; however, irreversible changes would result from permanent infrastructure required throughout post–closure as well as the remaining pit (pit lake). Soil disturbance would extend across watersheds, but would remain within Mine Site footprint and project boundaries. The context of impacts would disturb surface soil types considered usual or ordinary resources that are widely distributed in the region.

Soil Quality

Potential soil quality impairments at the Mine Site could result from wet or dry atmospheric deposition of fugitive dust derived from orebody sources. These include ore deposit mining operations (e.g., drilling and blasting); ore transport, storage, processing, and handling (including concentrate); and wind erosion of exposed bulk tailings. The cumulative deposition of dust throughout the construction and operation periods could result in adverse changes to surface soil chemistry. Impacts could include elevating concentrations of chemical constituents (e.g., metals) found in orebody materials above those found in existing soils.

Fugitive Dust Constituents of Concern

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[Note: This section will be developed following receipt of RFI 007 response regarding fugitive dust emissions. Text will summarize air quality evaluations, metals concentrations in fugitive dust sources, and dispersion modeling inputs.]

Dust Deposition on Soils

[Note: This section will be developed following receipt of RFI 009 response regarding fugitive dust deposition modelling. Text will include dispersion and deposition modeling results, and predicted distribution and accumulation rates in shallow soils at the end of mine life.]

Reasonable Maximum Exposure Concentrations

[Note: This section will be developed following receipt of RFI 009 response regarding fugitive dust deposition modelling. Text will include statistical evaluation of baseline and predicted dust concentrations for constituents of concern (e.g., selected metals).]

Dust Control

The project design incorporates a number of measures to minimize fugitive dust. Coarse ore would be stockpiled in a covered steel-frame building to minimize dust emissions. Baghouse-type dust collectors would be present at each conveyor-fed ore transfer point between the coarse ore stockpile and semi-autogenous grinding ("ball") (SAG) mills. Water would be added for dust suppression purposes at the SAG mill to alleviate additional baghouse infrastructure. Specialized bulk cargo containers equipped with removable locking lids would contain thickened concentrates for delivery to Amakdedori Port.

The pyritic tailings and PAG waste would be completely inundated with water during operations. This removes the potential for wind erosion and dust dispersion from sources with elevated metals concentrations. The tailings associated with the bulk TSF cell would have tailings beaches, which would be susceptible to wind erosion and fugitive dust emissions throughout operations. The bulk TSF cell would eventually be reclaimed through contouring of surfaces and application of growth media for revegetation and surface stabilization, eliminating the beaches as a dust source following closure activities.

Summary of Soil Quality Impacts

[Note: Text pending, awaiting RFI responses].

Erosion

Varying extents of hydraulic and wind erosion would occur throughout all phases of the project at the Mine Site. Without applied mitigation and control measures, erosion can result in adverse water quality and physical impacts to soils, waterbodies (e.g., lakes and streams), wetlands, and ecological communities. Depending on the magnitude and frequency of unmitigated erosion, sediment or particulate transport can extend well beyond the source. Planned activities at the Mine Site would incorporate structural and non-structural BMPs to address erosion and stormwater runoff (PLP 2017). The evaluation of erosion at the Mine Site assumes that all applicable activities would be performed in accordance with prepared water management and sediment control plans, and necessary ADEC permits and SWPPPs.

The greatest potential for hydraulic erosion under planned conditions at the Mine Site would likely occur during the year-round construction phase, coinciding with the longest period of soil disturbances. Removal of vegetative matting would expose fine-grained silty loam, volcanic ash mixtures in shallow surface soils (less than 30 inches deep) that are less tolerant of water and wind erosion. Deeper soils consisting of coarser-grained glacial till and colluvium mixtures would

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be comparatively less susceptible to erosional processes. Much of the finer-grained (i.e., shallow) soil mixtures exposed during construction would be removed due to undesirable engineering properties (e.g., loading and compaction) required for infrastructure construction, and placed in salvaged growth media stockpiles.

Insignificant wind and hydraulic erosion is anticipated when soils are frozen during winter months. Consistent frozen soil conditions generally range from four to five months between the fall and spring shoulder seasons (HCG 2011). The greatest potential for erosion would most likely be during rainfall events that typically occur during the fall months. Such events have been documented to result in erosional losses on the Kenai Peninsula and Pile Bay-Williamsport Road . Precipitation and runoff associated with spring breakup and snowmelt would also provide a mechanism for hydraulic erosion.

Wind-induced erosion would be comparatively less than hydraulically driven processes in the construction phase, due to seasonal meteorological conditions and cohesive forces associated with soil moisture. Soil susceptibility to wind erosion is influenced by moisture and particle size. A soil matrix composed of larger grains is less capable of retaining moisture, but less susceptible to wind transport. Although finer-grained soils are generally less tolerant to wind erosion, they are more capable of retaining cohesive moisture. Moisture is anticipated to minimize wind erosion of finer-grained surface soils for most of the year; however, the potential would be greatest during drier periods lasting 1 to 2 months during the summer. Wind erosion could be mitigated through dust control watering as needed during summer construction months.

Vegetation clearing, grubbing, and overburden excavation using heavy equipment (e.g., loaders excavators, dozers, dumptrucks, graders) would occur during the construction phase. Initial construction would include establishing temporary facilities that would be incorporated into the operational footprint. This would be followed by construction of long-term infrastructure such as the TSFs, mill sites, water/sediment ponds and treatment facilities, power generation, access roads, pit, and other long-term or permanent infrastructure. Destabilization of interim soil surfaces would be vulnerable to erosion if not stabilized or covered by infrastructure. Interim soil stabilization and erosion control measures would be necessary during construction to prevent or mitigate erosional issues. Furthermore, construction would not start without an ADEC-approved discharge permit and coverage under an SWPPP (PLP 2017).

Select Mine Site infrastructure that would have inherent design characteristics to minimize or control erosion during construction and operations is discussed below.

Waste Rock and Overburden

Waste rock would be used to construct large portions of Mine Site infrastructure, including TSF embankments, water management pond (WMP) embankments, and roads. The geochemical composition of all non-PAG construction waste rock would be determined in advance to segregate PAG sources. Initial materials used to construct TSF embankments would also be sourced from two quarries at the Mine Site. The coarse-grained rock used to construct the TSF and other Mine Site infrastructure is considered to have a low susceptibility to hydraulic and wind erosion.

Excavated overburden would be stockpiled at a designated location southwest of the open pit, and contained in a non-mineralized rock berm impoundment for stabilization. Suitable overburden would also be used for construction as needed. Fine- and coarse-grained soils salvaged for future growth media would also be stockpiled at various locations throughout the Mine Site. Stockpile surfaces would be stabilized to minimize erosion potential. Typical stabilization measures may include engineered contouring of slope angles and drainages;

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rolling and compaction of exposed surfaces; interim seeding and revegetation; silt fencing; and impoundments or sedimentation ponds.

Water Management

All runoff water that comes in contact with Mine Site facilities or is derived from the open pit would be captured. This would also include any entrained sediment in runoff from erosion. A Water Management Plan is currently under development that would include water treatment options and strategic discharges of treated water. A sediment control plan during construction would also address runoff and associated sediment control measures, BMPs, and adaptive control strategies. Collected water would be treated prior to discharge if it could not be diverted.

[Note: This section will be revised following receipt of Water Management Plan in response to RFI 019.]

Water management structures (e.g., berms, channels, collection ditches) would be designed to accommodate a 100-year, 24-hour rainfall event. Sediment control ponds would be designed to treat a 10-year, 24-hour rain event, and safely accommodate a 200-year, 24-hour rainfall event.

Runoff upgradient of the TSFs during construction would be intercepted by a cofferdam and released at a discharge point downgradient of all construction activities in the same watershed. Runoff from the TSF embankments during construction would also be captured. Similarly, runoff from larger excavations associated with the construction of long-term infrastructure (e.g., process plant, camps, power plant, storage areas) would be routed to settling ponds prior to discharge.

Comparatively less soil erosion from water would occur during operations due to a diminished need for soil removal. Completed construction of most long-term infrastructure would coincide with established water management and sediment control plan measures. Although water and sediment control during the operations phase would emphasize contact water minimization and management, runoff and sediment control measures would continue to be managed through BMPs and adaptive control strategies per the SWPPP. With the exception of overburden stockpiles, no mine site infrastructure would be progressively reclaimed during operations.

A greater potential for wind erosion is anticipated during operations, when the bulk TSF is susceptible to this process. Bulk tailings would be pumped and discharged through spigots along the interior of the perimeter cell, with the slurry preferentially discharged to maintain a tailings beach between the TSF embankment and supernatant pond. Although this approach minimizes potential risks associated with seepage effects on embankment stability, the fine tailings (e.g., beaches) would be susceptible to wind erosion when dried. Additional information regarding fugitive dust derived from the bulk TSF is presented in the Soil Quality discussion for the Mine Site.

The Mine Site would be reclaimed per an ADNR-approved reclamation plan that establishes requirements for designated post-mining land use. The reclamation plan would supplement or describe measures to control and mitigate erosion at the Mine Site through the post-operations period. Erosion during closure would be less than during construction, but likely greater than during operations. Large areas of destabilized soil surfaces from demolition activities and application of growth media would likely result in erosion until surface stabilization is achieved. At a minimum, similar measures established in the sediment control plan during construction would address runoff through sediment controls and BMPs. Additional measures may include future developments in available technologies or practices, and refined adaptive control strategies acquired throughout operations. Removal and reclamation of long-term water management infrastructure would progressively coincide with surface stabilization objectives.

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The potential for erosion during reclamation from destabilized surfaces would likely continue for several years beyond closure. Prescribed design standards for reclaimed infrastructure and monitoring requirements would be established in the reclamation plan. Continued monitoring would be required to implement any erosional control maintenance or adaptive control measures. Prescribed monitoring would likely occur on an annual basis until surface conditions are stabilized to meet land use objectives. Indefinite monitoring would be incorporated into permanent infrastructure maintenance requirements (e.g., at the pit WTP) as needed. Although reclaimed infrastructure would be designed to withstand anomalous storm events (e.g., 100-year, 24-hour rain event), monitoring would be necessary immediately after any occurrence.

Applied erosion control and water management practices at the Mine Site during all project phases would likely maintain the intensity of impacts to within planned project design and approved monitoring and maintenance program requirements. The duration of impacts would last from completion of the activity (e.g., infrastructure construction) to months or years afterwards until stabilization criteria are met (e.g., closure revegetation). At a minimum, pre-activity levels of soil stabilization would be anticipated within 100 years after project completion. The extent of impacts would likely remain within Mine Site footprint and project boundaries.

4.14.2.2 Amakdedori Port

This section describes potential effects on shore-based, upland soils at the Amakdedori Port during construction through closure. Offshore sediment impacts resulting from intertidal and open-water construction, operations, and closure of marine facilities are discussed in Section 4.18, Water Quality.

Soil Disturbance

No current development exists at the Amakdedori Port site. Shore-based soil disturbances would mostly be attributed to construction of the terminal. The total acreage of soil disturbances at Amakdedori Port is 26 acres. Acreages of currently known soil disturbance associated with various port facilities include:

- Amakdedori Port Terminal – 23.4 acres
- Shore-based range markers – 0.7 acres
- Temporary port airstrip – 1.6 acres.

Acreages associated with soil disturbance during road construction at the port are included under Transportation Corridor. Temporary port infrastructure includes an airstrip and temporary camp. The location of the camp would coincide with other footprints retained throughout operation. [Note: Above acreages to be revised following receipt of revised footprint.]

The terminal would be constructed on engineered fill overlying nearshore beach and marine terrace deposits that extend eastward to the gravel beach high tide line. Fill would likely be derived from either road material sites or imported sources (RFI 005). The amount of dredging required for the current concept of a high-tide-only dock (PLP 2018), characterization of potential dredge material, and the location of potential dredge material disposal or reuse is under development. Although the use of lightering vessels eliminates the need for deep-water channel maintenance dredging and a large onshore dredge material stockpile, it is likely that some quantity of dredge spoils would be generated throughout the life of the port on an as-needed-basis. [Note: Above text to be revised following receipt of updated footprint, RFI 033 response, and results of summer 2018 field studies.]

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Most soil disturbances at the port would result in direct impacts during the construction period, including the complete removal of soil cover at the airstrip and terminal, and placement of engineered fill over pre-existing subsurface soil conditions at the terminal. Because no additional construction would be required during operations, any subsequent disturbances to soil would likely be limited. With the exception of necessary infrastructure to support shallow draft tug and barge access to the dock, onshore port facilities would be removed during closure. No additional soil disturbances are anticipated during closure, and restoration of post-disturbance soil conditions would occur through reclamation activities (e.g., scarification, growth media, contouring, seeding).

Soil impacts at the port would largely depend on whether plans for dredging (currently under development) would use onshore disposal, and whether such materials would be removed during closure. Impact intensity could range from the noticeable burial of existing soils, to potential acute or obvious changes associated with any stockpiled marine sediment in an upland environment. The intensity and duration of effects may be reduced pending the similarity of any dredge spoils to pre-existing soil conditions. The duration of impacts could range from long-term (lasting until reclamation targets are met in closure) to extending beyond the life of the project, pending the volume and nature of potential stockpiled dredge materials. The extent of soil disturbances would be limited to the footprint of the port site. [Note: Above conclusions to be revised following receipt of updated footprint, RFI 033 response, Summer 2018 field studies.]

Erosion

Water- and wind-induced erosion would occur at the port site throughout construction, and to a limited extent during operation and closure. The potential for soil erosion would be greatest during the initial construction phase. The most invasive period of initial disturbance to pre-existing soil conditions would occur during ice-free (e.g., Cook Inlet) construction months when ground surfaces are more susceptible to erosive processes. Construction activities that would result in erosion include:

- Clearing and removal of surface cover during development of the camp, terminal, and airport
- Excavation, handling, and storage of additional overburden considered unsuitable for port design criteria
- Placement of engineered fill, and potential stockpile of dredge materials and associated drainage infrastructure.

[Note: Above text to be revised following receipt of revised footprint and RFI 033 response.]

Although limited information is available regarding specific soil characteristics at the port, the absence of ponded water and appreciable wetlands beneath the footprint is indicative of well-drained soils. Nearshore beach environment substrates reportedly consist of gravel and sand. These materials are commonly associated with soil types that have lower potentials for erosion by water and wind. The nearly level topography at the port also reduces the potential for surface runoff, scouring, and sediment transport.

Earthwork during construction would incorporate erosion control measures specified in an approved SWPPP. Typical measures may include silt fences, hay bales, temporary sedimentation basins; and repurposed brush for berms and watering for dust suppression. BMPs may include crowning or in-sloping of running surfaces; and temporary drainage channels, berms, and catchment basins.

Hydraulic erosion during operations would be comparatively less than during construction due to little additional soil removal and established SWPPP design features (e.g., culverts, swales).

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Hydraulic erosion of any dredge materials that may be stockpiled could be mitigated through proper impoundment and drainage design. The potential for wind erosion could be greater during operations than construction in the event that onshore dredge disposal is planned. Variables that could influence the susceptibility to stockpile wind erosion, if planned, include the physical attributes of dredge materials (particle size distribution and cohesion); interim surface stabilization measures; constructed dimensions; and frequency and magnitude of coastal and seasonal winds. Physical conditions that are considered less susceptible to wind erosion include high moisture contents or frozen conditions, larger particle sizes, presence of surface cover, and lower slope angles to reduce wind shear. Mitigation measures that may reduce the potential for wind erosion include wind breaks, snow fencing, reduced slope angles, or watering during increased periods of susceptibility. [Note: Above text to be revised following receipt of revised footprint, RFI 033 response, and summer 2018 field study results indicating characteristics of any dredge material proposed for onshore disposal.]

Erosion during closure would be less than during construction, but likely greater than during operation. Exposed ground surfaces below removed infrastructure not required for post-closure would be susceptible to wind and water erosion for an interim period until reclamation and restoration activities are completed. The potential for erosion would be mitigated using measures similar to those described during construction. Removed infrastructure would be reclaimed in accordance with State of Alaska requirements. Gravel pads and areas of engineered fill would be contoured to conform to the natural landscape, and would promote natural runoff drainage. Ripping and scarification would be conducted to promote surface water infiltration and reduce surface water runoff and subsequent erosion. Reclamation may also include application of salvaged growth media, wetland or upland seed mixtures (e.g., broadcast), or soil amendments (e.g., fertilizers).

If onshore dredge disposal is considered, final closure of the stockpile would include drainage and surface stabilization. Typical measures that could facilitate stockpile surface stabilization include slope and top cover engineering, tracking (rolling), and seeding. [Note: Above text to be revised following receipt of revised footprint and RFI 033 response.]

Although the potential for erosion impacts at the port exists, the design of planned infrastructure and availability of successful mitigation and reclamation measures would minimize erosion. Impacts are expected to be of low intensity, assuming structural BMPs and erosion control measures, restoration at closure, and limited monitoring and maintenance through post-closure occur. The duration of effects may extend several years into the post-closure period. The extent of effects would be limited to the immediate vicinity of individual infrastructure footprints.

4.14.2.3 Transportation Corridor

This section describes potential effects on soils along the Transportation Corridor, from initial construction through closure and post-closure. Impacts associated with the natural gas pipeline and fiber optic cable run are also included in this section, because both are buried in road-prism engineered fill from Amakdedori Port to the Mine Site.

Soil Disturbance

Soil disturbance acreages associated with the proposed Transportation Corridor infrastructure (including co-located portion of the pipeline) include the following:

- South Access Road – 401 acres
- Kokhanok Airport Spur Road – 15 acres
- Mine Access Road – 345 acres

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- Iliamna Spur Road – 93 acres
- North Ferry Terminal – 4 acres
- South Ferry Terminal – 23 acres
- Material sites – 247 acres total.

Access Roads

Where practicable, access road routes have been selected to minimize disturbances to wetlands and waterbody crossings, and optimize existing geotechnical and soil conditions. The top driving surface of the main access road would be 30 feet wide. The base of the roadbed prism requiring excavation and/or placement of engineered fill over soils would typically be 60 feet wide, using fill embankment construction for most segments. Along some segments of the South Access Road, the roadbed prism and slope cuts would extend approximately 75 feet wide to accommodate cut-and-fill construction methods through rough terrain. The pipeline and fiber optic cable would be buried 20 feet from the road centerline in the shoulder of the road prism.

Disturbances resulting from access road construction would include direct burial of soils, or complete removal for fill placement or cross-slope contouring. Disturbances are considered permanent, because the access roads would be required to support post-closure activities. Soil types that would be impacted along project access roads are shown on Figure 3.14-1.

Ferry Terminals

Shore-based infrastructure at the South Ferry Terminal includes a 6-acre terminal facility with a container stockyard, and an 18-acre ferry construction and laydown area. The significantly smaller shore-based infrastructure at the 4-acre North Ferry Terminal is predominantly associated with a container stockyard. Most soil disturbances at the terminals would occur during construction, which would require either direct burial of surface soils, or complete removal to accommodate placement of engineered fill materials. Where possible, overburden consisting of organic-rich materials or suitable mineral soils would be salvaged as growth medium for future reclamation at closure. No additional planned disturbances are anticipated during operations.

Both ferry facilities would be removed at closure. Restoration of post-disturbance soil conditions would occur through reclamation activities. Depending on the nature of the engineered surface or foundation, this would include removal or in-place demolition. Restoration would include grading and surface contouring; scarification or ripping to promote surface water infiltration and vegetation growth; application of salvaged growth media; and seeding with proposed mixtures as needed.

Material Sites

Fill material for Transportation Corridor construction would be acquired from 18 different material sites, including 8 along the South Access Road, 7 along the Mine Access Road, and 3 along the Iliamna Spur Road. Either overburden aggregate or blasted shot-rock fill would be sourced from the material sites. Aggregate (e.g., gravel) would be sourced from eight of the material sites, shot-rock from six of the material sites, and both from four of the material sites (RFI 035). Disturbances would include the complete removal and segregation of surface soils and overburden materials considered unsuitable for construction purposes. These materials would be salvaged for future reclamation as a growth medium. Portions of sites no longer used for material extraction would be progressively reclaimed. This would mostly occur after the construction phase, once the bulk demand for materials has been met with infrastructure completion (e.g., roads). Material sites and access roads would continue to be used throughout

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operations for maintenance of project infrastructure, as needed. Comparatively less soil disturbance would occur than during construction, but it would include excavation or blasting of materials on an as-needed basis. A need for materials would also persist throughout the post-closure period for continued road maintenance and other limited post-closure needs. For these reasons, incremental reclamation of disturbance impacts at materials sites would be required. Typical reclamation at gravel material sites would likely include grading and contouring of sidewall slopes; scarification or ripping to promote surface water infiltration and vegetation growth; application of salvaged growth media; and seeding with proposed mixtures as needed. No sidewall reclamation would be conducted at shot-rock material sites with 20-foot bench heights on exposed rock walls.

In summary, the intensity of impacts to soils from ground disturbances along the Transportation Corridor would result in obvious changes in soil resources from permanent fill placement, road cuts, or material site needs throughout post-closure. However, the intensity would be minimized by complete or incremental reclamation at non-permanent infrastructure (e.g., ferry terminals, portions of material sites). The duration of soil disturbances for the access roads (and to a limited extent, material sites) would be permanent and irreversible, due to continued road use for post-closure monitoring and maintenance needs. Although the extent of impacts would span multiple watersheds, impacts would be limited to areas in the footprints of individual infrastructure components (i.e., road prism, material sites).

Erosion

Similar to all other project components, stormwater and erosion mitigation and control measures would incorporate structural and non-structural BMPs (PLP 2017).

Wind Erosion

Wind-induced erosion would be comparatively less than hydraulically driven processes throughout all phases of the project along the Transportation Corridor, due to seasonal meteorological conditions, physical attributes associated with soil types present, infrastructure configuration and construction methods, and planned mitigation. Soils capable of retaining moisture in the project area are generally considered to have a low susceptibility to wind erosion due inherent moisture content from periodic precipitation or snowmelt throughout the year. For this reason, the potential for wind erosion would be greatest during drier periods lasting one to two months during the summer. If necessary, wind erosion can be mitigated through dust control watering as needed during summer months.

Similar to the Mine Site, insignificant wind and hydraulic erosion is also anticipated when soils are frozen during winter months. Furthermore, the susceptibility of completed or reclaimed surfaces during project operations and closure from wind erosion is considered insignificant. This is based on the coarse-grained characteristics of engineered fill materials used to construct Transportation Corridor infrastructure.

Where present, soils considered most susceptible to wind erosion along the Transportation Corridor include finer-grained silt and loess mixtures that are generally overlain by organic surface cover of varying thicknesses. These conditions, which are most prevalent along the South Access Road, include fine-grained, loamy, volcanic ash components associated with soil map unit IA17 (Table 4.14.-1).

Dust from truck traffic and wind erosion of road bed aggregate is considered to have a low potential for changing chemical concentrations in soils along the access roads. Material sites along the roads are well outside the Pebble Deposit, and surface soil conditions associated with the Transportation Corridor are chemically consistent with those described for the Mine Site

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study area (SLR Alaska Inc. et al. 2011a). Field review has not identified PAG rock at any of the road material sites. If PAG were to be identified at a site evaluation prior to use, the material site would be moved (RFI 035). Therefore, the material sources are not expected to introduce chemical impairments to soil. Transportation of concentrates from the Mine Site would be in sealed containers with locking lids, and therefore are not expected to be a source of fugitive dust along the roads.

Hydraulic Erosion

The potential for hydraulic erosion exists throughout the entire project lifecycle along the Transportation Corridor. This is evident based on erosion assessments conducted on the Pile Bay-Williamsport Road, approximately 30 miles northeast of the South Access Road (USACE 2007; KPB 2014). Although topographic variability and cross-slope conditions associated with the South Access Road are less than those traversed by the Pile Bay-Williamsport Road, periods of heavy precipitation have resulted in significant hydraulic erosion losses. Precipitation events resulting in the greatest erosional losses from surface runoff and flooding generally occur from late September through November. Specific conditions that resulted in impassable erosion washout at multiple points along the Pile Bay-Williamsport Road in the fall of 2003 included culvert and bridge crossings, and surface water drainages aligned adjacent (e.g., swale or ditch) to the road (USACE 2007).

Gently sloping or level transportation infrastructure would be less susceptible to erosional processes. These would include the ferry terminal sites and access roads constructed over glacial fluvial and moraine soil types (Table 4.14-1). Physical conditions more susceptible to hydraulic erosion along the Transportation Corridor include poorly drained, fine-grained loess or colluvium on sloped topography, waterbody crossings, road prism drainages (e.g., swales), higher-gradient slopes, and sidehill cuts. Approximate access road lengths traversing moderate and rough terrain requiring rock cuts are detailed in Table 4.14-1.

Table 3.14-1: Approximate Lengths of Access Road Terrain and Soil Types

Road Segment	Gentle Terrain	Moderate Terrain	Rough Terrain	Approximate Percent Soil Map Unit
South Access Road	3.9 miles (10%)	9.8 miles (26%)	23.6 miles (63%)	20% (IA7[2]), 80% (IA17[3])
Mine Access Road	26.7 miles (92%)	2.3 miles (8%)	None (0%)	59% (IA7), 37% (IA9[4]), 4% (HY4)
Iliamna Spur Road	2.9 miles (41%)	4.1 miles (59%)	None (0%)	47% (IA7), 53% (IA9)
Percent Total Access Roads Terrain Type[1]	46%	22%	32%	

Notes:

1. Kokhanok Airport Spur Road is not included in the evaluation due to the comparatively short road length and similar conditions to other project access roads.

2. IA7: Typic Cryandepts – Very gravelly, nearly level to rolling association.

3. IA17: Dystric Lithic Crandepts – Loamy, hilly to steep association.

4. IA9: Typic Cryandepts – Very gravelly, hilly to steep association.

Source: Rieger et al. (1979); PLP (2017)

Transportation Corridor construction and year-round construction season would result in soil disturbances considered most susceptible to hydraulic erosion. Initial construction would start in

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the spring, with development of beach heads at Amakdedori Port, followed by ferry terminal locations at Iliamna Lake. The South Access Road would continue inland from Amakdedori Port to the eastern bank of the Gibraltar River through year one. Simultaneous construction of other road segments would also include preliminary Mine Access Road completion by Year One. Contiguous road access from Amakdedori Port to the South Ferry Terminal would be established after completion of the Gibraltar River Bridge during year two of construction. Concurrent development of materials sites would occur along each road segment as accessed.

Construction phase activities that would potentially create or contribute to erosion include:

- Removal and clearing of vegetation during pre-development access road alignments, material sites, and terminal facilities;
- Overburden clearing and vegetative mat removal for cut and/or fill placement of engineered materials (e.g., aggregate, substrates);
- Overburden management that would include stockpiles or windrows of organic-rich materials and vegetation, or excavated substrates considered unsuitable for infrastructure construction; and
- Development of material sites and material site access roads.

The intensity of erosion during construction would vary along project road segments depending on soil types and physical conditions present, seasonal conditions, and construction requirements. Potential erosion may be localized at susceptible locations, such as waterbody drainages and crossings (e.g., culverts, bridges, and swales), wetlands, or intermittent sloped topography. Broader areas considered more susceptible to runoff and erosion would include continuous segments of road through rough terrain; and to a lesser extent, moderate terrain. These conditions would require steeper roadbed grades and sidehill cuts that could result in greater erosion potential from runoff (e.g., energy) and slope failure. Terrain and substrates along the South Access Road correspond with conditions that are considered most susceptible to erosion along the corridor. About 63 percent of the South Access Road would be predominantly constructed over rough, variable terrain (Table 4.14-1), where fine-grained soil types reportedly overlie shallow bedrock. Although conditions along the South Access Road appear most vulnerable to hydraulic erosion processes, the evaluation is based on generalized soil descriptions provided in the ESS, and do not account for local variations in soil conditions, or bedrock outcroppings where no soil horizon may exist.

No rough terrain requiring rock cuts is present along the Iliamna Spur Road or the Mine Access Road; however, each traverses approximately 59 percent and 8 percent of moderate terrain, respectively. The Mine Access Road would be least susceptible to hydraulic erosion, based on terrain types traversed and soil conditions. Construction methods along the Mine Access Road would require less backslope cuts (i.e., layback), foreslope contouring, and variation in roadbed grade, compared to other access roads. Furthermore, surficial glacial deposits and gravel fractions in existing soils along the Mine Access Road and Iliamna Spur Road would be less susceptible to hydraulic erosion, compared to the South Access Road.

Similar to access roads, the potential for hydraulic erosion at material sites would also vary based on source material competency (e.g., shot bedrock or aggregate) and conditions unique to each borrow site location. Construction of material sites and Transportation Corridor infrastructure would use structural and non-structural BMPs, and employ erosion control measures adequate to satisfy appropriate ADEC discharge permit requirements and coverage under an SWPPP (PLP 2017).

Ground disturbances would be progressively restored throughout construction until stabilization and restoration are achieved. Most disturbances would likely be stabilized during construction,

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or several years thereafter, at locations considered less susceptible. Common industry practices used to mitigate and control erosion under a variety of scenarios applicable to the Transportation Corridor access roads and infrastructure include those described in above, and the following:

- Staging of overburden materials in unused material sites or designated areas engineered to control and mitigate surface water runoff
- Spoils placement on upslope surfaces relative to resources of concern (e.g., waterbodies), with adequate setback distances.

The least amount of erosion would likely occur during operations, when stabilization of disturbed surfaces would be achieved through natural recovery, applied restoration measures, and long-term or permanent stabilization measures. Material sites and access roads would be progressively reclaimed. Typical reclamation BMPs at material sites include benching or sloping of sidewalls to suitable grades, based on material types (e.g., aggregate or bedrock); distribution of salvaged overburden growth media on pit floors and slopes; and tracking and seeding.

Continuous feedback from truck traffic during operations and/or prescribed follow-up inspections would identify areas of acute or persistent erosion. Areas of concern would be identified, and additional or more robust measures applied to meet local site-specific conditions. This would most likely be required along rough terrain associated with the South Access Road, and/or areas requiring permanent drainage controls (e.g., culverts, bridges, swales).

Erosion during closure and post-closure would likely be greater than during operations. Some erosion may be derived from the removal and reclamation of long-term facilities (e.g., ferry terminals) before complete restoration and surface stabilization objectives are met; however, most would likely be associated with permanent roads to the Mine Site. Monitoring frequencies in post-closure would typically be less than during operations, and there would be reduced access to equipment and resources. Required permanent Transportation Corridor access would result in an indefinite potential for erosion monitoring and maintenance.

In summary, varying degrees of erosion would be associated with most Transportation Corridor infrastructure during construction, operations, and post-closure. Erosion impact intensity for most transportation components would be reduced or mitigated through typical control measures, BMPs, and restoration activities, assuming that conditions required through discharge permits and prescribed SWPPP activities are met. However, soil conditions and rough terrain along the South Access Road may require enhanced design and mitigation measures. Without such measures, erosion during extreme fall storm events could result in impassable road conditions from washout on an episodic basis. Erosional susceptibilities potentially exist along other access road features, as well (e.g., culverts, swales, bridges). The duration of erosion would vary from completion of the activity (e.g., construction or reclamation), to an indefinite period in post-closure along permanent access roads. The extent of erosion effects would be mostly limited to the immediate vicinity of individual infrastructure footprints and watershed occurrence.

4.14.2.4 Natural Gas Pipeline Corridor

This section describes potential effects on shore-based upland soils from pipeline infrastructure on the eastern side of Cook Inlet north of Anchor Point. Pipeline impacts for segments of the pipeline coincident with the Transportation Corridor are addressed above. Pipeline activities resulting in disturbances to wetlands and submerged ocean and lake sediment are detailed in Sections 4.22, Wetlands, and 4.18, Water Quality, respectively.

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Soil Disturbance

The cumulative total acreage of shore-based soil disturbances from pipeline infrastructure on the eastern side of Cook Inlet is approximately 5.1 acres. This would include the compressor station, laydown area, access road, metering pad, and horizontal directional drilling (HDD) work area.

HDD activities would occur during the second year of construction, followed by completion of the Anchor Point compressor station facility during year three. Construction would include clearing of vegetation and unsuitable substrates for access road installation, drilling pad preparation, and compressor facility installation. Most soil restoration measures would be conducted during and immediately after construction; however, follow-up measures may be required on a limited basis, pending winter construction activities.

Surface disturbances not associated with long-term infrastructure are expected to recover immediately after or within the first few years following construction. Soil disturbances during operations would be significantly less than during construction, because no other disturbances are planned or anticipated.

If the compressor facility is retained, and usage re-appropriated to other stakeholders after Mine Site closure, the 5.1 acres of soil disturbance would be indefinite. However, if there is no future need for the pipeline infrastructure, soil disturbances would be minimized through facility demolition and subsequent reclamation. Reclamation may include in-place abandonment of subsurface pipe; grading and contouring of ground surfaces; ripping and scarification to promote water infiltration and reduce surface water runoff and subsequent erosion; and application of seed mixtures (e.g., broadcast) or soil amendments (e.g., fertilizers).

The intensity and extent of soil disturbance effects would be greatest during construction, but would be limited to a 5.1-acre area. The duration of disturbance would be indefinite if the infrastructure is re-appropriated to another entity (stakeholder). Disturbances are expected to return to pre-activity levels within several years after closure if reclamation is performed.

Erosion

Similar to other project components, mitigation and control measures would incorporate structural and non-structural BMPs to address erosion and stormwater runoff (PLP 2017).

The topography associated with the pipeline infrastructure on the eastern side of Cook Inlet is gently sloping or nearly level. Silty loam soils associated with these conditions are considered to have a low hazard of erosion by water, and severe hazard of erosion by wind, assuming the top cover is removed. Use of HDD would provide a sufficiently wide setback distance between the project footprint and Cook Inlet bluff (about 200 feet), so that project activities are not expected to contribute to ongoing natural erosion in this area (Section 3.15, Geohazards).

Construction activities and sources that could contribute to erosion include vegetation clearing and brush removal; rutting or tearing of surface cover from equipment; excavation and trenching; and overburden management (i.e., spoils and snow). Given the limited acreage associated with infrastructure on the eastern side of Cook Inlet and available erosion control measures described above, effective hydraulic and wind erosion management is anticipated during the construction process until stabilization is achieved shortly thereafter. Little to no erosion is anticipated during operations, because no other disturbances are planned or anticipated. Similarly, stabilization of ground surfaces is expected to occur within several years after closure if reclamation is performed. Less erosion would be expected following Mine Site closure if the infrastructure is retained, and re-appropriated to another operator or entity.

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In summary, the intensity of soil erosion from the limited acreage of pipeline infrastructure on the eastern side of Cook Inlet would be minimized through BMPs and erosion control measures. Surfaces would stabilize to pre-activity levels shortly after construction, and extents would be limited to areas within or bordering the disturbance footprint, and would not appreciably contribute to other naturally occurring erosional processes.

4.14.2.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.16 SURFACE WATER HYDROLOGY

This section describes the potential impacts of the project on surface water hydrology. Planned mitigation related to surface water hydrology (including a water management plan) is considered part of the project description, and would be based on Pebble Limited Partnership (PLP) plan documents and engineering reports, as well as the impact analysis.

Planned mitigation may not be specified but is considered typical or standard engineering practice. In cases where planned mitigation is unknown, unclear, or an uncommon situation is encountered, mitigation recommendations are provided. Water quality is addressed in Section 4.18, Water and Sediment Quality.

[Note: Impacts on surface water hydrology will be analyzed in detail and results presented following receipt of response to RFI 019, including a water management plan, and receipt of the revised project footprint, as described in PLP (2018).]

4.16.1 No Action Alternative

Under the No Action alternative, the project would not be constructed, and would not have any new effects on surface water hydrology.

4.16.2 Alternative 1 – Applicant's Proposed Alternative

[Note: This section has been prepared in advance of response to RFI 019, Water Balance, Groundwater Model, Streamflow Reduction, Water Management Plan and the updated project footprint, as described in PLP (2018). The text will be revised following receipt of this information.]

4.16.2.1 Mine Site

The quantity and distribution of surface water in the upper tributaries of the North Fork Koktuli River (NFK) and South Fork Koktuli River (SFK) and Upper Talarik Creek watersheds would be disrupted during all or parts of the project phases. The water management plan would address strategies for surface water management during all phases of the project. Changes to surface water drainage in affected watersheds would result from construction of access roads and related drainage structures, camp and airstrip facilities, and mine tailing, waste rock storage,

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and water storage impoundments; and from excavation of the mine pit and associated dewatering activities.

The main objective of water management at the Mine Site would be to manage surface water originating in the project area, and to maintain the process water supply during operations. A primary design requirement would include water treatment processes for all contact water to meet water quality criteria before discharge to the environment (RFI 020). Water balance models would be developed for each phase of the project to estimate fresh water requirements, pond storage volumes, water treatment requirements, and surface water flow rates. A description of baseline water balance input parameters and calibration is presented in Section 3.16 in Chapter 3. Expected water management plans and procedures during all project phases are described in detail in Chapter 2, Alternatives, and summarized below.

Water Management Plan – Construction Phase

Water management during construction would include the following activities:

- Water diversion, collection, and treatment systems would be installed around the Mine Site for managing runoff during construction
- Water management and sediment control best management practices (BMPs), including temporary settling basins and silt fencing, would be installed during initial construction at the Mine Site
- Water management structures would be constructed. Structures would include diversion and runoff collection ditches for minimizing contact with disturbed surfaces, and sediment control measures such as settling ponds to prevent sediment from reaching downstream waters. Energy dissipation structures would be included where necessary to reduce erosion at the outlets of diversion channels and collection ditches
- The design criterion for diversion channels, berms, and collection ditches would be the 100-year, 24-hour rainfall event
- Sediment control ponds would be sized to treat a 10-year, 24-hour rainfall event and safely manage a 200-year, 24-hour rainfall event
- An open pit dewatering system would be installed and operational to provide sufficient time to draw down the water table
- Before completion of the tailings storage facility (TSF) embankments and water management structures, all water not meeting water quality standards would be treated before release. This includes water from construction pit dewatering, water that accumulates in the open pit during construction mining, runoff captured during construction of the TSF embankments, and runoff captured during construction of Mine Site infrastructure
- Temporary, modular water treatment plants (WTPs) would be used to treat contact water before construction and operations phase WTPs.

Water Management Plan – Operations Phase

The primary goal of water management and sediment control during operations would be to minimize contact water. Runoff and associated sediment control measures would be managed with appropriate BMPs and adaptive control strategies, and where water could not be diverted before becoming contact water, it would be collected and used as process water, or treated and discharged. Water management during production would include the following activities:

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- Water collected from pit dewatering wells and the open pit would be pumped to the open pit water management pond (WMP) (see section 3.16, Surface Water Hydrology, for details). Water from the open pit WMP would be pumped to the open pit WTP for treatment and discharged
- Runoff from the Mine Site would be collected in the main WMP north of the pyritic TSF/potentially acid generating (PAG) storage facility and would be either used as process water or treated in the main WTP and discharged [Note: Text to be revised following receipt of updated project footprint, as described in PLP (2018).]
- Water surplus is anticipated during production under average and above-average precipitation scenarios. The water available for discharge would be less than the pre-mine flows within the mine footprint because of water lost in tailings voids, evaporation, and other minor uses. The average annual water surplus during the maximum Mine Site footprint is estimated to be 39 cubic feet per second (cfs), which would be treated and discharged throughout the year [Note: Text to be revised to address new project footprint, as described in PLP (2018).]
- Adaptive water management strategies would include the ability to provide additional water storage capacity in the bulk TSF, provide surplus storage capacity in the WMPs, and provide for expansion of the WTP rate by building excess capacity
- Additional water storage capacity would be made available under above-average precipitation conditions by directing excess water to the open pit, allowing it to flood until pumping and treatment systems restore the water stored in the system to the design level
- A comprehensive water management system would be implemented to monitor water quantity and quality. All discharge water would be monitored for compliance with state and federal permit requirements. Water released from WTPs would be strategically discharged to optimize downstream fish and aquatic habitat. Discharge locations are described in Section 3.16, Surface Water Hydrology. [Note: Text will be revised as needed following receipt of updated project footprint, as described in PLP (2018), Technical Note on Updates to PLP's Proposed Project.]

Water Management Plan – Closure and Post-Closure Phase

Water management during closure and post-closure would address both reclamation activities and long-term post-closure. The water management plan would include the following activities:

- Pit dewatering would cease once mining stops, and the water level in the open pit would begin to rise
- Surface runoff from reclaimed areas would be collected and either treated in a WTP or directed to the open pit until the runoff is determined to be suitable for direct discharge
- Free water would be pumped from the bulk TSF surface, which would eventually be graded and revegetated to direct surface runoff toward the closure spillway.
- Seepage water from embankment seepage collection systems would be collected and either treated in a WTP or directed to the pit lake until the water is determined to be suitable for direct discharge
- Water level in the mine pit would rise during closure and post-closure, forming the pit lake. Once the pit lake reaches an elevation of about 890 feet above mean sea level, water would be pumped from the pit (to maintain the water level) for treatment and discharged

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- The pit lake's water level would be maintained at a level at least 50 feet below the elevation at which groundwater would flow out of the open pit, to prevent unplanned discharge and allow sufficient time to address issues that might occur with the WTP during post-closure.

North Fork Koktuli River

The majority of the mine facilities would be within the NFK watershed. The bulk TSF would be within an upper NFK tributary watershed (called Tributary 1.190). Quarries A, B, and C would also be within NFK Tributary 1.190, and the final combined size of the TSF and quarries would encompass the majority of NFK Tributary 1.190. The bulk TSF capacity would be sufficient to store tailings generated for a 20-year mine life. Construction of the bulk TSF would include three embankments: the main embankment, south embankment, and east embankment. Initial TSF design components include the following:

- Starter embankments for the main and south embankments would be constructed as part of initial TSF construction, and construction of the east embankment would begin in year 10 of operations
- A temporary cofferdam would be constructed upstream of the main TSF embankment for managing water during initial construction. The cofferdam would capture undisturbed runoff from the upstream catchment that would be pumped downstream of all construction areas and released
- Each stage of embankment design would include a freeboard allowance above the maximum operating TSF pond level and tailings beach. Freeboard allowance includes containment of the inflow design flood (IDF) and wave action
- The IDF for the TSF is the Probable Maximum Flood, which is based on the 72-hour Probable Maximum Precipitation event plus the snow water equivalent for the 1-in-10-year snowpack. [Note: Text will be revised as appropriate following receipt of response to RFIs: RFI 028, TSF IDF and Freeboard. Partial response notes that the IDF volume and freeboard above the beach will be addressed in the Water Management Plan, to be provided in response to RFI 019, Water Balance, Groundwater Model, and Streamflow Reduction.]
- The design of the TSF main embankment includes a permeable flow-through facility that would minimize water buildup in the TSF and seepage pressure on the embankment, and would provide controlled flow away from the other embankments. [Note: Text to be revised as needed after receipt of response to RFI 019, Water Balance, Groundwater Model, and Streamflow Reduction.]
- The water level would be controlled below the freeboard allowance by transferring (pumping) excess water from the TSF supernatant pond to either the seepage control pond or the main WMP
- Underdrains would be constructed beneath the entire TSF to convey seepage flow to collection and recycling systems below each embankment, and to help minimize water buildup behind the main embankment
- The pyritic TSF/PAG storage facility would be a fully lined water retention facility. The water level would be controlled by pumping excess water to the bulk tailings cell or seepage control pond [Note: Text to be revised as needed after receipt of response to RFI 019, Water Balance, Groundwater Model, and Streamflow Reduction.]
- Precipitation and runoff into the bulk TSF would collect in a small operating pond. Pyritic tailings would remain fully submerged and excess water would be pumped to

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the bulk tailings cell. [Note: Text will be revised following receipt of response to RFI 019.]

Seepage and Sediment Ponds

Five seepage and sediment pond embankments would be located downstream of the TSF embankments and WMPs.

The seepage recycling pond embankments below the TSF would incorporate low-permeability core zones and grout curtains to control seepage and enhance embankment stability.

[RFI placeholder: The Preliminary Data Gaps Analysis included requests for design of seepage pond and sediment pond embankments related to water management during construction and operations.]

Water Management Ponds

The main WMP would be north of the pyritic TSF/PAG storage facility and the open pit WMP would be south of the open pit. [Note: Location description to be refined or confirmed following receipt of new project footprint as described by PLP (2018).] A sediment pond would be located downstream of each of the WMPs, and an emergency dump pond would be located downstream of the main WMP. Each of these facilities requires an embankment or berm with design considerations similar to those described for the TSF.

WMP berms and sediment pond embankments would be constructed using rock and earthen fill. Sediment control ponds would be designed to safely manage the 200-year, 24-hour rainfall event. [Note: Text to be revised following receipt of response to RFI 019, Water Balance, Groundwater Model, and Streamflow Reduction, as pertains to seepage and sediment ponds during construction and operation.]

Pyritic Tailings Storage Facility/Potentially Acid Generating Storage Facility

[Note: Text to be revised following receipt of response to RFI 019, Water Balance, Groundwater Model, and Streamflow Reduction.]

This temporary, fully lined stockpile would be located in an unnamed tributary east of Tributary 1.190. The south end of the pyritic TSF/PAG storage facility would be located along the watershed divide between the stockpile tributary and a tributary that drains south toward the SFK. A 100-foot berm would be constructed on the north side of the saddle to contain the pile and maintain drainage flow away from this saddle and the SFK watershed. [Note: Statements will be confirmed or modified after receipt of new project footprint as described by PLP (2018).]

4.16.2.2 Amakdedori Port

Runoff, Erosion, and Sedimentation

The port building would be constructed on an engineered fill patio, designed to be at an elevation high enough to avoid tidal surge from major storms. Port infrastructure would be built above the 100-year floodplain of Amakdedori Creek, although the floodplain is not well defined in current literature.

Port construction would likely cause a temporary increase in overland runoff, erosion, and sedimentation from the removal of vegetation, excavation/grading, and other ground-disturbing activities. The impact analysis includes consideration of erosion and sediment control BMPs. Low-intensity impacts could extend within the local watershed during the construction phase.

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Surface Water Use

Amakdedori Creek is a meandering stream that flows into Kamishak Bay just south of the port site, and is fed by snowmelt, rainfall, and groundwater (Glass 1999). No detailed hydrologic data or stream gauge data are available for Amakdedori Creek. The estimated average flow is some 400 cfs in summer and 35 cfs in winter. The water extraction site is near the mouth, where the creek is wide and shallow, with a stream depth of 0.5 to three feet and a width of about 400 feet (Recon 2018; RFI 022).

Limited data are available regarding estimated streamflow at Amakdedori Creek. A detailed analysis of the impact on streamflow or the streambed caused by the annual extraction of 5 million gallons from Amakdedori Creek is not practical, because the streamflow reduction may not be measurable and the impact would likely be of low intensity and temporary. [Note: This section will be updated if additional hydrologic information is developed.] Alaska Department of Fish and Game (ADF&G) permitting requirements regulate the minimum streamflow required in anadromous streams. Before water extraction, PLP would be required to demonstrate that proposed water extraction volumes and rates are within permissible limits. This is especially important for water extraction during winter months, when streams experience low-flow conditions.

Marine Water in the Port Vicinity

A 2,000-foot-long earthen causeway would extend from the shore to a jetty located in 15 ft natural water depth. One side of the jetty would include a roll-on/roll-off barge access berth.

During placement of fill material for causeway construction, increased concentrations of suspended sediment would occur in Kamishak Bay for the duration of construction, and would persist for days to weeks after completion. The duration of increased suspended sediment concentrations would depend on the amount of fine sediment in the fill material. Suspended sediment would be transported within Kamishak Bay under the influence of tidal and wind-driven currents before settling on the seabed. The duration and geographic extent of suspended sediment plumes can be estimated when the grain size distribution of fill material is made available. Assuming the causeway is constructed to include with a 40-foot-wide roadbed with side slopes of 1H:5V (horizontal:vertical) and freeboard of 10 feet, the causeway footprint on the floor of Kamishak Bay would be approximately 730,000 square feet or 17 acres.

The capability of a causeway to alter oceanographic processes is well-known and understood (e.g., Colonell et al. 1992). However, the capability of a causeway to alter the density structure of the water column is more subtle. Causeway-induced influences on the water column can be important. In some cases, water column density may become stratified, which would appear as vertical or horizontal gradients in temperature and/or salinity (such as when fresher water overlies denser saltier water). In Kamishak Bay, only small sources of fresh water enter salt water; therefore, it is very unlikely that the project causeway would cause notable variations in water density. In addition, it is very unlikely that the causeway would affect overall circulation in Kamishak Bay, given its relatively short length.

The causeway would support servicing of the lightering vessels that would transport ore concentrate to the Handysize ships moored offshore. Although ship wakes and propeller wash can contribute substantially to shoreline erosion in relatively quiescent waters, neither is expected to be an issue in Kamishak Bay. Wave forecasts for wind conditions typical of Kamishak Bay (Section 3.16) suggest that the bay already has a dynamic wave climate to which the shoreline has achieved a stable equilibrium; the bay is not likely susceptible to incrementally increased wave activity as a result of the lightering vessels' wakes. Whether the seabed at or near the causeway would be susceptible (i.e., erodible) to propeller wash would depend on the

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composition of the seabed materials (e.g., sand, silt, rock), and on the management of lightering vessel operations. Establishment of suitable BMPs for vessel operations should be sufficient to minimize adverse impacts; namely, BMPs should include specifications for managing ferry speed (minimizing wakes) and engine power settings (minimizing bottom erosive stress) during approach and departure from the causeway berths.

During winter, sea ice could become an operational issue. The causeway may provide shelter from ice on its leeward side, but this is likely to be variable throughout the winter because of shifts in prevailing winds.

Removal of the causeway at the end of the project would cause substantial increases in suspended sediment in Kamishak Bay that would persist for days to weeks after decommissioning is completed.

4.16.2.3 Iliamna Lake

Ferry Terminals

Ferry terminals would be built on the north and south shores of Iliamna Lake. Project description noted that planned construction of causeways consisted of rock and aggregate. Some shoreline and lakebed disturbance would be expected to occur on both sides of the lake, resulting in temporary increases in suspended sediment concentrations during construction and decommissioning. Such disturbances would be limited to the immediate vicinities of the ferry terminals. Transport of suspended sediment concentrations by wind-driven currents along shore is not expected to be of long duration or to cover a large geographic area.

Vessel Operations

Both ferry terminals would support barge/tug traffic during construction, mine development, operations, and closure for transfer of equipment, materials, and supplies. Ore concentrate would be transported across the lake via an ice-breaking ferry from the north terminal to the south terminal, for transfer to overland transport to Amakdedori Port. Vessel wakes and propeller wash can contribute to shoreline erosion in relatively quiescent waters, but neither wake nor propeller wash is expected to affect the shoreline of Iliamna Lake. Wave forecasts for wind conditions typical of Iliamna Lake (Section 3.16) suggest that the lake already has a dynamic wave climate to which the shoreline has achieved a stable equilibrium; the lake is not likely susceptible to incrementally increased wave activity caused by the ferry's wake. Whether the lake bottom at or near the ferry terminals would be susceptible (i.e., erodible) to propeller wash would depend on the lake bottom materials (e.g., silt, sand, gravel, rock), and on the management of ferry operations. Establishment of suitable BMPs for ferry operations should be sufficient to avoid or minimize adverse impacts; namely, BMPs should include specifications for management of ferry speed (minimizing wakes) and engine power settings (minimizing bottom erosive stress) during approach and departure from the terminals.

Offshore Anchoring and Concentrate Transfer

Ore concentrate in containers would be loaded onto lightering vessels (barges) at Amakdedori Port and transported to deeper water where a Handysize bulk carrier would be anchored. The ore concentrate containers would be emptied directly into the hold of the bulk carrier, using a crane mounted on the lightering vessel. Primary and alternate locations are proposed for offshore concentrate transfers:

- *Primary Transfer Location* – Approximately 12 miles due east of the proposed Amakdedori Port. Based on National Oceanic and Atmospheric Administration

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Chart 16440, the seabed is relatively flat and featureless with water depths of 12–14 fathoms (72–84 feet re: mean lower low water [MLLW])

- *Alternate Transfer Location* – Approximately 18 miles east-northeast of the proposed Amakdedori Port, 1–2 miles southwest of Augustine Island, between the island and the mainland. This lightering point would be used for concentrate transfer when required by sea conditions. Water depth is about 5 fathoms (30 feet re: MLLW)

Vessel Operations

Two or three lightering barges supported by tugboats would be used to move ore concentrate in containers from Amakdedori Port to the bulk carrier. Depending on which lightering point is used (i.e., 12 or 18 miles each way), about 10 trips by the lightering barges would be required to load the anchored bulk carrier over a period of 4–5 days. Transfer and unloading of concentrate would be curtailed when sea and weather conditions preclude operations.

Up to 27 Handysize shiploads would be needed to transport the expected annual concentrate production. Although some damage to seabed flora and fauna could result from each ship anchoring, a BMP could be developed to avoid excessive damage by directing ship masters not to anchor in the same location(s) each time. Sea ice in west Kamishak Bay (the alternate transfer location) could become problematic for lightering via barge/tug from early December to late March, and also for the bulk carriers at both lightering locations from mid-January to mid-March, as ice accumulates around Augustine Island (Table 3.16-9; Mulherin et al. 2001). This suggests that some ice-breaking capability between Amakdedori Port and Augustine Island could be required from December through March. Such ice-breaking capacity would be provided, including two ice-breaking tugs to support marine facility operations (PLP 2017).

4.16.2.4 Transportation Corridor

The evaluation of impacts on surface water and substrate incorporates an understanding of their probability of occurrence, and of planned mitigation in the form of engineering design and maintenance that can meaningfully reduce impacts.

Road Stream Crossings

Roads could potentially block or restrict drainage, and drainage crossings must be designed and constructed to ensure adequate streamflow. PLP's stormwater pollution prevention plan would include standard BMPs to reduce erosion and sedimentation during bridge and culvert construction. Culverts requiring fish passage would be designed based on criteria used by the Alaska Department of Transportation & Public Facilities (ADOTPF). [Note: Text will be developed to address potential impacts on drainage in the Transportation Corridor as more information becomes available. RFI 036 addresses waterbody substrate and turbidity.]

Bridge Crossings

A total of seven bridges would be constructed for the proposed project: a bridge across Upper Talarik Creek on the mine access road, a bridge across the Newhalen River on the Iliamna spur road, and five bridges along the south access road. Bridge engineering and design would vary with stream size and hydrologic properties. Instream channel work, including installation of bridge footings and embankments, would occur year-round during the first two years of construction. Table 4.16-1 lists all bridge crossings along the Transportation Corridor and relevant hydrologic data.

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[Note: Table 4.16-1 to be completed as hydrologic data are available.]

Table 4.16-1: Bridge Crossings along the Transportation Corridor (North to South)

Waterbody	Stream Width at Crossing	Stream Depth at Crossing	Mean Annual Stream Discharge (cfs)
Upper Talarik Creek			
Newhalen River			
Gibraltar River			
South Creek 4			
South Creek 3			
South Creek 2			
South Creek 1			

Culverts

A total of 222 culverts would be installed at drainages along the Transportation Corridor. Culverts would be used to allow proper discharge at stream crossings, to reduce erosion, and for some crossings, would be used for fish passage. Culvert design would vary by stream size and whether or not fish passage is required. Seventy-three culvert crossings would be designed to allow for fish passage; 149 would not require allowance for fish passage. Most of the culverts would be 4- or 8-foot-diameter circular passage, with the four largest culverts 12 feet tall by 20 feet wide (not circular). The length of the culverts would vary from 77 to 256 feet (PLP 2017; PLP Application Attachment B, Culvert Schedule). Culvert sizes and types would be determined to address anticipated flow, and designs would be refined during final engineering and design.

During construction of bridges and culverts, the potential exists for increased runoff, erosion, and sedimentation as a result of vegetation removal and excavation of soil, rock, and sediment. Low-intensity consequences could extend within the local watershed during the construction phase.

Surface Water Extraction

ADF&G Fish Habitat Permit requirements regulate the minimum streamflow required in anadromous streams. Before the extraction of water from anadromous streams along the road and pipeline corridors, sufficient streamflow would need to be demonstrated to permit summer/winter extraction.

Water would be extracted from 21 designated sites along the Transportation Corridor (Figure 4.16-1). Water extraction sites may be used at any time of the year, although during the winter months, low-flow conditions may limit water availability.

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Figure 4.16-1: Water Extraction Sites along Transportation Corridor

[Figure to be added later.]

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The maximum projected surface water use along the Transportation Corridor during construction would be a total of 50 million gallons: 19 million gallons along the mine access road, seven million gallons along the Iliamna spur road, and 24 million gallons along the south access road. Table 4.16-2 provides estimates of streamflow and pond volumes for the water extraction sites. A total of 16 million gallons would be extracted from two sites on Iliamna Lake and five million gallons would be extracted from the large drainage of the Newhalen River. The remaining 39 million gallons would be extracted from smaller ponds and streams. Estimated average extraction rates would range from 500 to 1,000 gallons per minute, depending on the streamflow/volume of the waterbody (Recon 2018; RFI 022). All surface water extraction would require compliance with approved state permits, stipulations, and reporting requirements.

[Note: Table 4.16-2 to be completed as hydrologic data are available.]

Table 4.16-2: Hydrologic Data from Water Extraction Sites along Transportation Corridor (South to North)

Extraction of 16 million gallons from Iliamna Lake and five million gallons from the Newhalen River would likely have no measurable consequences, given the high volumes of these waterbodies. With only limited hydrologic data estimates available on other water bodies across the Transportation Corridor, determining the consequences of water extraction is not practicable at this time. Extraction of 39 million gallons from streams and ponds along the Transportation Corridor could cause streamflow or pond volumes to be reduced in some waterbodies during construction activities. Depending on streamflow/pond volume and the extraction rate, the streamflow/pond volume reduction may not be measurable, and would likely be of low intensity.

[Note: This section will be updated with more detailed hydrologic data, if available.]

Erosion and Scour at Stream Crossings

The Transportation Corridor would cross 229 waterbodies with culverts and bridges. If not properly designed, constructed, and maintained, culverts and bridge abutments may cause constricted natural streamflow, increasing water velocity at the downstream end of the structure. This could lead to localized bank erosion and scour, or erosion around the infrastructure. Erosion and scour could modify stream morphology by deepening and widening the stream channel downstream, modifying aquatic habitat, and causing sedimentation downstream. If the infrastructure would not allow for adequate flow, water could pool up on the upstream side, leading to erosion of the roadbed. In extreme cases, improper bridge or culvert design or improper construction materials could lead to collapse of the infrastructure. Culverts and bridges may also need to be designed to allow for safe fish passage. See Section 3.24, Fish Values, for information on fish and aquatic resource impacts.

The potential for erosion and scour at stream crossings is dependent on streamflow and streambed substrate and would be mitigated through engineering design and maintenance. Freshwater fish field studies scheduled for summer 2018 will include identification of streambed substrate in fish-bearing streams along the corridor (RFI 036). [Note: Text will be updated and expanded following receipt of response to RFI 036.] Culvert and bridge design will be further evaluated during final engineering and design.

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4.16.2.5 Natural Gas Pipeline Corridor

Pipeline segments on land include the lengths of the mine access road and south access road. The pipeline would lie on the lake floor across Iliamna Lake, and across the seafloor of Cook Inlet. At the pipeline river crossings along the main road corridor, the pipeline and a fiber optic cable would be suspended below precast concrete decking attached to bridge infrastructure.

The 12-inch-diameter pipeline would be buried 20 feet from the road centerline, or a minimum of five feet beyond the road shoulder. Buried pipeline segments would be placed in a trench extending to a depth of 52 inches. Installation of the natural gas pipeline would involve year-round construction over a period of two years, during the second and third years of project construction.

Surface Water Extraction

Surface water extraction during pipeline construction would likely have consequences to watersheds intersected by the pipeline corridor.

Erosion and Scour at Stream Crossings

Impacts would be similar to those described for the Transportation Corridor.

4.16.2.6 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.17 HYDROGEOLOGY

4.17.1 No Action Alternative

Under the No Action Alternative, the project would not be undertaken; there would be no Mine Site, Transportation Corridor, Amakdedori Port development, or Natural Gas Pipeline Corridor. Consequently, groundwater at the Mine Site would return to its pre-existing condition following cessation of exploration, monitoring, and testing activities that have been conducted in support of permitting. All drill holes would be grouted, monitoring and temporary water supply wells properly abandoned, and temporary water use permits allowed to expire. Minimal groundwater impacts would occur in the villages of Iliamna, Nondalton, and Newhalen because groundwater use for water supply would continue. Groundwater along the Transportation Corridor, Pipeline Corridor, and at the Amakdedori Port would remain in its current state. There are no known wells in the Transportation Corridor or at the Amakdedori Port site. There would be no effects on existing private wells near the Kenai Peninsula terminus of the Natural Gas Pipeline Corridor. In summary, there would no direct or indirect impacts on groundwater from implementation of the No Action Alternative.

4.17.2 Alternative 1 – Applicant's Proposed Alternative

4.17.2.1 Mine Site

Pit Dewatering

Construction of the open pit would require lowering groundwater levels in the pit area through dewatering to establish stable pit walls and provide dry working conditions. Although a specific dewatering design has not been developed at this point, dewatering is typically accomplished by placement of dewatering wells around the proposed pit perimeter; wells in the pit bottom as mining progresses; and horizontal drains along the pit walls. Dewatering results in a groundwater "cone of depression" because the water table is lowered in the pit, and extends beyond the pit extent into the adjacent bedrock, glacial, and alluvial aquifers. The cone of depression would deepen and widen as pit excavation progresses, and would last as long as the dewatering system is operated during construction and operation of the mine. The final open pit is estimated to be approximately 6,000 feet in diameter. Groundwater levels would ultimately need to be lowered below the base of the final mine pit depth, which is estimated to be up to

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1,750 feet below grade. The number of dewatering wells and drains required to dewater the proposed pit and the expected impacts on groundwater and surface water in the proposed pit area would be estimated using the calibrated groundwater flow model being developed for the Mine Site.

Creation of a cone of depression around the proposed pit would locally change groundwater flow patterns so that groundwater flows radially towards the pit, which acts as a groundwater "sink" while dewatering occurs. Groundwater/surface water interactions and surface water flows would also be impacted by pit dewatering. Groundwater discharge to seeps, springs, streams, ponds, or lakes in or adjacent to the proposed pit may cease or be reduced, resulting in lower surface water base flows or pond or lake levels. Some stream segments, ponds, or lakes in the immediate pit area may be eliminated as the water table is lowered in the immediate pit area during construction and mining operation.

The Pebble deposit straddles a watershed and groundwater divide between the headwaters of the Upper Talarik Creek and South Fork Koktuli River. Groundwater dewatering impacts are expected to be largely confined within the upper reaches of the South Fork Koktuli River basin, but may locally impact groundwater flow across the divide within the bedrock aquifer from the headwaters of the Upper Talarik Creek basin, depending on the extent of the cone of depression around the pit. The primary groundwater flow impacts would be in the alluvial, glacial, and bedrock aquifers in the open pit footprint. Groundwater flow in these aquifers would radially flow towards the pit, and be captured by the dewatering system. The groundwater impact would grow as mining proceeds to depth, and the cone of depression surrounding the pit becomes wider and extends to depth.

[Note: Quantitative estimates of the likely impacts of dewatering on the groundwater and surface water flow systems within the South Fork Koktuli River and Upper Talarik Creek basins will be added to the above text when the revised groundwater model results are available in response to RFI 019].

Once mining ceases, groundwater in the open pit would be allowed to slowly rise, resulting in a permanent pit lake. Groundwater flow into the pit would initially be fast, but would slow as water level rises. It would likely take tens of years for the groundwater in the pit to attain the level at which the groundwater would then be maintained to create a permanent groundwater sink to prevent potentially acidic pit lake water from discharging to the environment. The presence of a permanent groundwater sink at the pit would locally influence groundwater flow in the immediate vicinity of the pit; however, the influence on groundwater flow would be less than the pit in its fully dewatered state. [Note: Quantitative estimates of the likely impacts of the pit lake on the groundwater and surface water flow systems in post-closure will be provided when the revised groundwater model results are available in response to RFI 019.]

Drinking Water Wells

Potable water would be supplied by a series of groundwater wells north of the Mine Site, outside of the estimated cone of depression around the proposed open pit. The wells would be pumped at a rate to provide sufficient potable water for Mine Site personnel living and working at the site. The potable water supply wells would also be used for fire-fighting if needed. The potable water supply wells are expected to have much less local impact on groundwater flow, compared to the open pit dewatering. [Note: Quantitative estimates of the likely impacts of pumping the potable water supply wells on groundwater flow at the Mine Site will be provided when additional information on water supply pumping rates and revised groundwater model results are available in response to RFI 019].

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Water Management Ponds

Water Management Ponds (WMPs) would be constructed at the Mine Site to manage water removed during pit dewatering, manage water from the milling and concentrating operations, and manage surface water runoff from the Mine Site. These ponds would be lined to prevent leakage of water with potentially elevated particulate and constituent concentrations. Water in these ponds would be treated as needed and used in the milling operations. The water may also be used in tailings disposal operations. Surplus water would be treated to discharge standards and released downstream of the Mine Site to maintain water balances in the streams draining the mine site. The WMPs are expected to have no adverse impact on groundwater flow, because they would be lined to prevent leakage of water to the subsurface. The WMPs may help restore downgradient groundwater flow to existing conditions as surplus water is treated and discharged downstream of the Mine Site.

Tailings Storage Facilities

Non-acid generating bulk flotation tailings generated during milling operations would be stored in an unlined bulk tailings storage facility (TSF) at the Mine Site. The TSF would be constructed in the North Fork Koktuli watershed, with a series of embankments to impound the tailings and entrained and ponded water; and an underdrain system to manage seepage water draining from the tailings. The thickened bulk flotation tailings discharged to the TSF would settle, and water would be collected in a tailings decant pond. Seepage water draining from the tailings would be collected by the underdrain system, and routed to a lined seepage control pond. Water collected in the seepage control pond would be used for tailings dust control, or transferred to the water management ponds for subsequent use in milling and concentrating operations. Surplus water would be treated to discharge standards and released downstream of the Mine Site to maintain stream water balances. Construction of the TSF would locally impact surface water features at the site, and potentially impact groundwater/surface water interactions; this impact is expected to be small in extent (e.g., near the vicinity of TSF) but permanent. Although the underdrain system is expected to minimize vertical seepage into native materials below the TSF, the largest potential impact to groundwater beneath the TSF would result from tailings seepage with elevated constituent concentrations that is not captured, and is released to the underlying groundwater, thereby impacting local groundwater quality. (Impacts to groundwater quality are further discussed in Section 4.18, Water and Sediment Quality.) Tailings seepage that is not captured could create a local groundwater mound beneath the TSF that could have a local influence on groundwater flow.

The potentially acid-generating (PAG) pyritic tailings and PAG waste rock would be stored submerged in a separate lined impoundment to minimize oxidation and the potential release of acidic contact waters to the environment. Groundwater flow would be minimally impacted by the construction of this impoundment through local reduction in recharge through the liner. The pyritic tailings would be placed at the bottom of the open pit at the end of mining, and submerged in the pit lake to prevent oxidation. The pyritic tailings storage impoundment liner and embankments would be removed at closure and the site reclaimed to its approximate pre-mining state. Therefore, groundwater flow in this tributary drainage is expected to return to pre-mining conditions post-closure.

[Note: Above text to be revisited following receipt of revised project footprint and Water Balance Model in response to RFI 019.]

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4.17.2.2 Amakdedori Port

Shallow Groundwater Interception

Minor excavations across the port footprint may be required during construction activities. Due to the apparent high water table in the area, which is likely hydraulically connected to Amakdedori Creek, some excavations could intercept shallow groundwater. Impacts would likely be limited to within the port footprint and would occur only during construction activities.

Groundwater Use

Based on limited hydrogeologic information at the port site, shallow glacial and fluvial sediments in the area are likely to host groundwater (Glass 1999). Although no details have been provided on project-related groundwater use at the port, a well may be needed to supply potable water for port personnel and/or fresh water for operations. It is anticipated that such a well would have a local impact on groundwater flow and quantity resulting from drawdown caused by pumping. The duration of impacts would be long-term, lasting through the life of the project. Depending on location and pumping rates, the potential exists for saltwater intrusion into the well. [Note: An RFI is under development for information regarding potential groundwater use at the port; above text to be revised following receipt.]

4.17.2.3 Transportation Corridor

Shallow Groundwater Interception

The Transportation Corridor is designed to avoid wetlands and stream crossings where feasible, and its alignment would be optimized for the most favorable soil and geotechnical conditions. Local groundwater flow impacts may occur along the corridor where the roadway is constructed across wetlands that may be supported by groundwater inflow.

Some road segments would likely require road cuts to maintain proper road grade. These are represented by wide areas of the road footprint on hillslopes (PLP 2017: Figures T-001 through T-046), which are prevalent throughout much of the access and spur road corridors. Due to the likelihood of shallow groundwater being present across the road corridor, it is possible that road cuts could intersect groundwater in some areas and cause a local effect on groundwater flow as drainage controls direct potential seepage away from the road.

Water Use

Substantial surface water/groundwater interaction from project water use is likely along much of the corridor, as demonstrated farther north in the Mine Site. Approximately 50 million gallons of surface water would be extracted from 21 water extraction sites along the road corridor, mostly for use in road construction activities (RFI 022 response). This water would be extracted across the entire road corridor over months to years of construction. Due to the abundance of groundwater in the region, the extraction of surface water for road construction would not likely have measurable impact on groundwater flow or other uses.

4.17.2.4 Natural Gas Pipeline Corridor

Shallow Groundwater Interception

Although no specific studies have been conducted on hydrogeology along most of the pipeline corridor, the water table is likely close to the surface along most of the corridor, as evidenced by abundant wetlands and kettle ponds. Groundwater along the corridor is likely held in shallow

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aquifers of glacial sediment, as demonstrated in similar geologic terrain at the Mine Site. Therefore, a large percentage of the buried pipeline could intersect shallow groundwater.

[Note: Additional stream crossing and wetlands investigations will be completed in summer 2018 along the south corridor. This section will be revised with related hydrogeologic information, if available, following completion of field reports.]

The pipeline would be buried a minimum of 5 feet beyond the road shoulder, and placed in a trench extending to a depth of 4 feet (minimum). Potential impacts to groundwater would likely involve interception of shallow groundwater during trenching activities, which could be captured and locally routed along the trench backfill. Modifications to groundwater flow would occur mostly in the immediate vicinity of the trench. Impacts could extend beyond the life of the project, because the pipeline would be abandoned in place. Low-permeability trench plugs, considered a typical best management practice for pipeline installation (e.g., USACE 2018), would likely be installed to minimize movement of groundwater along the trench, internal erosion, and alteration of the natural flow of groundwater.

Potential contamination of groundwater could occur during pipeline construction, when heavy machinery and trenching equipment would likely be operating in close proximity to the water table. Section 4.18, Water and Sediment Quality, describes potential impacts of project activities on groundwater quality.

Horizontal Directional Drilling

On the Kenai Peninsula, the pipeline would be trenched for a short distance west of the compressor station, then installed by horizontal directional drilling (HDD) at the shoreline and into Cook Inlet from an elevation of about 200 feet to -12 feet mean lower low water (RFI 011 response). Groundwater is present in this area in aquifers in thick glacial and alluvial deposits, and Tertiary sedimentary bedrock. Although the exact depth to groundwater is unknown at the HDD location, nearby wells drilled at similar elevations to the HDD work area encountered shallow water-bearing glacial deposits at depths between 8 and 30 feet below ground surface, as well as deeper aquifers in both glacial deposits and sedimentary bedrock units between 50 and 120 feet deep (USGS 1967; Nelson and Johnson 1981; ADNR 2018). Therefore, the HDD installed pipeline segment would likely intersect these aquifers, which are used near the project footprint by private wells (Figure 3.17-12).

Plans for control of groundwater during HDD drilling are currently unknown. Typical effects might include dewatering during drilling; pressurization of the hole, forcing drilling fluids into aquifers; and discharge of pumped groundwater (e.g., TRCA 2013). Dewatering, if required, could draw down the local water table, potentially changing local flow patterns and affecting other uses. If discharge of dewatering water is necessary, impacts to surface water, wetlands, and soils could occur if discharge water is not treated effectively, or if dissipation methods are not employed to minimize erosion. These effects are expected to be temporary, recovering days or weeks after construction, and localized in the near vicinity of the footprint, depending on drawdown extent and potential discharge location. [Note: An RFI is under development regarding proposed HDD drilling practices. The above text will be revised following response. Mitigation measures may be added to Chapter 5 if warranted.]

4.17.2.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.18 WATER AND SEDIMENT QUALITY

This section describes potential impacts of the project on surface water quality, groundwater quality, and sediment quality. The following discussion is based on currently available information and will be updated as further project details are available.

4.18.1 No Action Alternative

The geologic material at the Mine Site would continue to weather in place naturally. Background water and sediment quality in the vicinity of the Mine Site would not change, and would still contain certain constituents in amounts exceeding regulatory levels because of natural mineralization and geochemical weathering processes. Water quality along the Transportation and Natural Gas Pipeline corridors would continue to reflect the presence of elevated levels of some constituents as described in Chapter 3, Affected Environment. Sediment would continue to contain certain constituents (e.g., metals) at elevated levels. No project-related geochemical processes or impacts on surface water, groundwater, or sediment quality would occur under this alternative. Consequently, under the No Action alternative, the project would not be constructed, and would not have any new effects on water and sediment quality.

4.18.2 Alternative 1 – Applicant's Proposed Alternative

4.18.2.1 Mine Site

The construction phase would consist of dewatering of the pit area and removal of overburden that would be stockpiled. Dewatering would begin approximately one year before the start of operations. Approximately 1,300 million tons of mineralized rock (ore) and 200 million tons of waste rock would be excavated from the open pit (PLP 2018). Non-acid-generating waste rock would be used in construction of the tailings embankments and Mine Site roads. The pyritic tailings and potentially acid-generating (PAG) waste rock would be stored subaqueously until closure, when it would be transferred to the open pit lake.

Surface Water Quality

The main objective of water management at the Mine Site is to manage water originating in the project area in an environmentally responsible manner while providing an adequate water supply for operations. A primary design consideration is to ensure that all contact water

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requiring treatment before release to the environment would be effectively managed. This includes carefully assessing the layout of project facilities, process requirements, the area's topography, hydrometeorology, aquatic habitat and resources, and regulatory discharge requirements for managing surplus water.

All runoff water contacting the facilities at the Mine Site and water pumped from the open pit would be captured to protect overall downstream water quality. The final project design would incorporate a detailed analysis of water collection and management, including quantity and quality estimates, water treatment options, water management facility design, and strategic discharge of treated water. Implementation of the water management plan would enable the plant to operate without additional water from off-site sources.

Construction Phase – Water Management and Treatment

Implementation of the water management plan during the pre-production phase can be summarized as follows:

- Water diversion, collection, and treatment systems would be installed to address the effects of ground disturbance during construction.
- Water management and sediment control structure best management practices (BMPs), including temporary settling basins and silt fences, would be installed to accommodate initial construction at the Mine Site.
- Among the first permanent facilities to be constructed would be water management structures that would be maintained for use in adaptive management during operations. These structures would include diversion and runoff collection ditches to minimize water contact with disturbed surfaces, and sediment control measures such as settling ponds to prohibit sediment from reaching downstream water bodies.
- The pre-production phase could not commence until the proposed open pit dewatering system lowers the groundwater table in the area of the open pit. Lowering the groundwater table would allow the uninterrupted removal of overburden in the open pit area in preparation for production mining of mineralized material. The dewatering system comprises a series of dewatering wells drilled into and around the perimeter of the open pit. The specific number of wells and their locations would be determined by testing the overburden aquifers, and would include an allowance for wells with poor or no water yields and wells lost through sanding, equipment loss, or other interference with water production. Pump sizes for each well would be based on well-specific yields. Water collected from the pit dewatering wells would be discharged to the environment if it meets water quality criteria; otherwise, this water would be treated in a modular water treatment plant (WTP) before discharge.

Operations Phase – Water Management and Treatment

[Note: RFI placeholder: Text regarding production phase will be revised as needed based on additional project information through RFI 019, including the water management plan.]

During operations phase, implementation of the water management and sediment control plan would focus on minimizing contact water. Runoff and associated sediment control measures would be managed with BMPs and adaptive management control strategies. Where water could not be diverted, it would be collected for use in the mining process or treated and discharged.

Water collected from the pit dewatering wells and the open pit during the production phase would be pumped to the open pit water management pond (WMP). From there, water would be pumped to the open pit WTP for treatment and discharge.

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Bulk and pyritic tailings slurry from the mill would be directed to the bulk tailings storage facility (TSF) and the pyritic TSF, respectively. In addition, precipitation and runoff water would collect in the bulk TSF. The bulk TSF would maintain a small operating (supernatant) pond while the pyritic tailings would remain fully submerged in the pyritic TSF. Excess water from the pyritic TSF would be pumped to the bulk TSF. The main embankment at the bulk TSF would operate as a flow-through facility. Water collecting in the bulk TSF would flow through the embankment to the main embankment's seepage collection pond. From there, water would be directed either to the main WMP for use in the mill or to the main WTP for treatment and discharge. Excess surface water in the bulk TSF would be similarly managed.

Contact water would be pumped to the main WMP. Water treatment byproduct sludge and reject water (water resulting from the treatment process) would be directed to the process plant and added to the pyritic TSF via the pyritic tailings slurry line. A portion of the treated water from the main WTP would be returned for use in the process plant and power plant cooling towers.

A water surplus is anticipated during the operations phase under normal and wetter than normal climatic conditions. Although the Mine Site would have a water surplus, the volume of water available for discharge would be less than pre-mine flows within the mine footprint, because some water would be consumed in the tailings voids and some would be lost to evaporation and other minor uses. The site's water surplus would vary during operations as the mine footprint expands and additional site runoff is collected. The annual average surplus is estimated at approximately 39 cubic feet per second for the maximum mine footprint. Surplus water would be treated and discharged throughout the year.

Minimal water storage capacity would be available at the Mine Site until the completion of initial construction activities. Therefore, before the bulk TSF embankments and water management structures are completed, all water not meeting water quality standards would be treated and released. Water from the following sources and activities is expected to require treatment before release:

- Water present during pre-production phase pit dewatering. (Dewatering of the overburden aquifer near the pit may require treatment
- Water, primarily from precipitation, that accumulates in the open pit during pre-production phase mining
- Runoff from construction of TSF embankments.

Runoff from excavation for site infrastructure such as the process plant, camps, power plant, or storage areas would be routed to settling ponds before release.

Before the operations WTPs are brought online, modular WTPs would be used to treat contact water not meeting discharge requirements.

[Note: The discussion of water treatment plant flows will be revised as needed following receipt of a response to RFI 019, including the water management plan.]

[Note: The response to RFI 020 (Water Treatment) includes benchmarking studies summarizing information on typical water treatment plants using technologies proposed for the project. These studies are not specific to the current project and were used as general guidance for the following text. The text will be revised following receipt of a response to RFI 021 (Water Quality Predictions at the Mine Site) and project-specific water treatment plans.]

During the production phase, the Mine Site would have two WTPs: the main WTP and the open pit WTP. Both would be constructed with multiple, independent treatment trains, which would enable ongoing water treatment during mechanical interruption of any one train.

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[Note: The following summaries of WTPs are based on PLP 2017 and will be revised based on updated project plans. Text will be revised following responses to RFI 019 and RFI 021.]

Main Water Treatment Plant

The main WTP would treat water from the bulk TSF main embankment seepage pond WMP. Key treatment steps would occur in the following sequence:

1. Dissolved metals would be oxidized with air, ferric sulfate, and potassium permanganate, followed by co-precipitation with lime. Flocculators/clarifiers would be used to separate out the co-precipitated solids.
2. The clarified water would flow into a membrane feed tank, where sodium hydrogen sulfide or an organosulfide would be added to complete the precipitation process. Supplemental lime and sulfuric acid would be added as needed to maintain the water pH for optimal precipitation and membrane feed.
3. Ultrafiltration membranes would be used to filter precipitated metals and protect downstream high-pressure membranes.
4. High-pressure membranes (either nanofiltration, reverse osmosis, or a combination) would provide additional removal of metals and removal of calcium, magnesium, and sulfate. Filtrate from the high-pressure membranes may require an alkalinity adjustment before discharge.
5. Reject from the high-pressure membranes would have a high concentration of sulfate and other divalent ions. To prevent overloading the mine water balance with sulfate, some sulfate must be removed from the reject before its disposal in the TSF. Sulfate would be removed with a multi-stage calcium sulfate precipitation process. Precipitated calcium sulfate solids would be disposed of in the TSF.
6. Decant from the calcium sulfate precipitation process would contain high levels of selenium, nitrate, sodium, and potassium. It would be necessary to split the decant stream to treat selenium and nitrate separately from sodium and potassium as follows:
    A. Approximately half of the decant stream would be sent to a biological reactor to remove selenium and nitrate, followed by filtration. The filtrate would be blended with treated water from the high-pressure membranes (step 4) for discharge.
    B. The remainder of the decant stream would be sent to a multi-stage reverse osmosis system to remove sodium and potassium. Reverse osmosis filtrate would be blended with treated water from the high-pressure membranes (step 4) for discharge. Concentrated reverse osmosis reject (reject water) sent to an evaporator to remove sodium and potassium as a solid. The evaporate would be condensed and the condensate blended with treated water from the high-pressure membranes (step 4) for discharge.

Open Pit Water Treatment Plant

The open pit WTP would treat water from the open pit WMP with treatment plant processes commonly used in the mining industry around the world. Key treatment steps would occur in the following sequence:

1. Dissolved metals would be oxidized with potassium permanganate, followed by co-precipitation with ferric chloride. Sodium hydroxide and hydrochloric acid would be added as needed to maintain the water pH for optimal precipitation. Flocculators/clarifiers would be used to separate out the co-precipitated solids.

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2. Clarified water would then be treated with sodium hydrogen sulfide, sodium hydroxide, and ferrous sulfate to further co-precipitate remaining metals under reducing conditions.
3. Water from the sulfide reaction tanks would be filtered to remove precipitated metals. The filtered water would be suitable for discharge.
4. Clarifier solids and filter backwash would be thickened and transferred to the TSF.

Closure/Post-Closure Phase – Water Management and Treatment

Closure and post-closure water management would address both the physical closure of the site and associated reclamation activities, as well as the long-term post-closure period and associated maintenance and monitoring activities. [Note: Text describing closure/post-closure water management will be revised following receipt of a response to RFI 019 and the water management plan.]

The current water management plan for the closure and post-closure phases is generally described below.

Once mining ceases, dewatering would also stop, the groundwater level in the pit would begin to rise to create the pit lake, and site reclamation would commence. Surface runoff from the reclaimed areas would be collected and either treated in the WTPs or directed to the pit lake until the runoff is determined to be suitable for direct discharge. Free water would be pumped from the surface of the bulk TSF, which would be graded and revegetated to direct surface runoff toward the closure spillway. Pyritic tailings and PAG waste would be moved into the pit. Seepage water from the embankment seepage collection systems would be collected and either treated in the WTPs or directed to the pit lake until it is determined to be suitable for discharge.

Surface runoff into the pit lake could cause metals to leach from the pit walls. Water quality in the pit lake would be expected to be acidic, with elevated concentrations of some metals caused by the oxidation of sulfide compounds in the pit walls and the natural concentrations of metals found in the mineralized rock. Once the level of the pit lake has risen to about 890 feet above mean sea level, water would be pumped from the pit, treated as required, and discharged to the environment. With the pit water level maintained at least 50 feet below the natural groundwater level, the pit water would be retained in the pit and would not contribute (flow out) to affect the quality of the shallow groundwater. [Note: RFI Placeholder – RFI 019. Text will be revised following receipt of a response to RFI.]

Water treatment during closure/post-closure would use the existing WTPs as needed. Water quality would be monitored, and changes and adjustments to the treatment process would be made as needed. The reclamation plan and closure bond package required by the State of Alaska would include provisions for periodic replacement of water treatment facilities and ongoing treatment operating and monitoring costs over the long-term, post-closure period. [Note: RFI Placeholder – RFI 021, RFI 019, including water management plan. Text will be revised following receipt of a response to RFI.]

Process-related (contact) water would not be considered waters of the United States or subject to the Alaska Pollutant Discharge Elimination System (APDES) permitting program while such water is retained within the water management facilities. Contact water would be retained and treated as necessary to meet regulatory criteria before discharge.

Contact water collected in certain mine facilities is not expected to meet Alaska water quality criteria (18 Alaska Administrative Code 70, Water Quality Standards) (ADEC 2018) for discharge and would not be released directly to the environment. Contact water would be treated to ensure compliance with the most stringent applicable water quality standards before

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being discharged to the environment. The geographic extent of impacts on surface water quality attributable to contact water would be limited to the areas used for contact water storage before treatment. Because the contact water would first be treated to comply with the most stringent applicable water quality standards, the activities proposed under Alternative 1 are not expected to result in impacts on surface water quality.

Groundwater Quality

[Note: The following text is under development and will be revised following receipt of the revised groundwater model, water management plan, and water quality modelling in RFI 019 and 021 responses.]

The affected environment with respect to groundwater flow and quality is addressed in Section 3.17, Hydrogeology, and Section 3.18, Water and Sediment Quality, respectively. With an effective water management and water treatment program, impacts on groundwater quality would be limited to discrete portions of the project area. The principal mechanisms responsible for potential effects on groundwater quality at the Mine Site are currently under evaluation. A summary of a preliminary evaluation of Mine Site facility concepts is presented below.

Groundwater that could be contaminated by vertical seepage from the unlined bulk TSF would flow north down the North Fork Koktuli River (NFK) west drainage and would be captured by the main embankment seepage collection pond. Groundwater would be less likely to be contaminated beneath the pyritic TSF /PAG waste rock facility and the main WMP, because these facilities would be fully lined. Any leakage through the liners would flow north down the NFK east drainage and would be intercepted by the downgradient sediment pond or other seepage collection systems (currently under development). The spatial extent of these impacts is expected to be limited to shallow groundwater between the TSFs and seepage collection facilities. The TSFs and PAG storage facilities are not expected to result in impacts on downgradient groundwater quality outside of the Mine Site, based on understanding of current seepage collection design features. However, impacts on local groundwater could be sufficient to exceed water quality regulatory criteria, and could persist through the life of the mine and well into post-closure, until monitoring at seepage collection systems indicates that water quality meets the approved criteria for discharge.

Inputs of contaminated water from the pit to groundwater after the cessation of pit depressurization could potentially exceed regulatory limits for water quality. During the early closure period after pit depressurization ceases and the lake level rises, concentrations of several constituents of concern would be expected to increase in the groundwater surrounding the pit. These effects are expected to be localized and hydraulic containment maintained during this period, because of overall flow gradients toward the pit area. After the early closure period, groundwater would flow toward the pit lake radially from all directions, thereby limiting the extent of migration, and ultimately recapturing any pit-contaminated groundwater and restricting the spatial extent of the impact. After lake level rise, groundwater gradients toward the pit would be maintained by managing the pit lake level through pumping and treating lake water in perpetuity. [Note: The possibility of regional groundwater flow away from the pit has not been addressed in project documents to date. The above text will be revised, and anticipated changes to groundwater flow determined, upon receipt of groundwater model in RFI 019 response.]

Groundwater is abundant in the project area and would be used as a source of potable water. The proposed water supply wells would be sited on a groundwater high located upgradient, and on the north or opposite side of the NFK east drainage, which would contain seepage collection systems for the pyritic/PAG storage area and main WMP. Thus, groundwater potentially

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affected by Mine Site facilities would not be expected to affect sources of drinking water to be used by on-site workers.

Disruption, in-filling, and removal of wetlands could influence groundwater recharge and discharge patterns, which could affect groundwater quality in the vicinity of the Mine Site. Currently, although sulfides appear to be oxidizing in the deposit area, the groundwater is not acidic (see Section 3.18 in Chapter 3). Reducing conditions are prevalent, partly because of deposition of organic carbon from wetlands and infiltration of organic carbon during spring thaw. The redox state of the overburden is not expected to change during mine operations; however, concentrations of metals in shallow groundwater may increase because of disruption of wetlands and increased sedimentation.

Impacts on groundwater quality from Mine Site activities proposed under Alternative 1 would likely be limited to effects on local groundwater in the near vicinity of mine facilities and would remain within the Mine Site boundaries. These impacts would be such that groundwater would not meet regulatory criteria at certain discrete locations within the Mine Site (e.g., shallow groundwater beneath the TSFs and groundwater near the pit during lake level rise). Groundwater quality beneath the NFK west and NFK east drainages would likely be reduced during the life of the project, but would be expected to improve in the decades after mine closure. Groundwater entering the pit where it would mix with pit lake water would be essentially pumped and treated in perpetuity. [Note: Text to be revised following receipt of water quality and groundwater modeling results and the water management plan in RFI 019 and 021 responses.]

Sediment Quality

Processes of mining and exposing rock to chemical and physical weathering and erosion may increase the natural (pre-mine) rates of these processes, and thus release some of the constituents into the surrounding surface water and substrate. Chemical components in water can be absorbed by sediment or adsorbed onto sediment surfaces. Conversely, sediment can retain chemical constituents and slowly release them into the water. Therefore, the evaluation of impacts on sediment quality largely depends on water quality, as well as other direct sedimentation impacts (e.g., erosion, dust). Impacts to sediment quality from surface disturbances would be limited to portions of the project area through containment and implementation of BMPs.

[Note: This section will be further developed based on response to RFI 019, including the water management plan and RFI 021, Water Quality Predictions at the Mine Site].

4.18.2.2 Amakdedori Port

Amakdedori Port would be the shoreline hub for shipping, receiving, and storage of concentrate containers, fuel, reagents, and other freight for the project. The port site would include power generation and distribution facilities, maintenance facilities, employee accommodations, and personnel offices. The Port Terminal building would be constructed on an engineered fill patio, designed to be at an elevation high enough to avoid tidal surge from major storms. Port infrastructure should be built above the 100-year floodplain of Amakdedori Creek, although the floodplain is not well defined.

Surface Water Quality

The WTP at Amakdedori Port would treat surface runoff from the port facilities. The treatment process would include dissolved metal oxidation using potassium permanganate, followed by co-precipitation with ferric chloride. Water from the co-precipitated solids would flow into flocculators/clarifiers to separate out solids. The clarified water would then be treated with

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sodium hydrogen sulfide, sodium hydroxide, and ferrous sulfate to further co-precipitate the remaining metals under reducing conditions. The solids removed would be thickened and disposed of appropriately. The treated water would be suitable for discharge. A potable WTP and a sewage treatment plant would also be located at the port site.

Deposition of dust from concentrate handling at the port site and the offshore loading of bulk carriers has the potential to result in impacts on surface water quality in Cook Inlet; however, such impacts could be mitigated, and possibly eliminated, by implementing BMPs to prevent the dust from entering the water. The nature and extent of dust-related impacts at the port site, and the efficacy of proposed mitigation measures will be analyzed in greater detail as more information becomes available.

Groundwater Quality

No impacts on groundwater quality are expected to occur at the port site.

Sediment Quality

Sediments in waterbodies at the port site could potentially be affected by erosion, dust deposition, and overland runoff, especially during construction. BMPs would be in place to avoid or minimize the effects of construction of the port facilities.

4.18.2.3 Transportation Corridor

Surface Water Quality

Impacts on surface water quality in the Transportation Corridor could result from occasional barge/tug-induced suspended sediment, or from erosion effects at construction sites. Erosion and sedimentation would be managed by implementing BMPs. Based on the response to RFI, no material sites proposed for the project are sources of PAG material. If PAG is identified during the site evaluation before use, the material site would not be used.

Sediment Quality

Sedimentation along the Transportation Corridor is possible during construction such as vegetation removal, excavation, grading, and other ground-disturbing activities. Eroded soils and sediments may then be transported by water and wind, potentially causing sedimentation in nearby waterbodies. Sedimentation during road construction would likely be confined to the area within the construction right-of-way. See Section 3.24, Fish Values, for information on erosion impacts to fish and aquatic resources, and Section 3.26, Vegetation for information on acres of vegetation removal. [Note: This text will be updated to address results of summer 2018 substrate sampling and analysis of fish-bearing surface water bodies along the Transportation Corridor requested as RFI 036.]

Erosion and sedimentation would continue for the life of the unpaved roads. BMPs would include dust control and erosion and sedimentation control measures to avoid or minimize the potential impact on waterbody substrate during construction and operation of the roads.

Withdrawal of water from permitted waterbodies during construction and operation along the Transportation Corridor has the potential to disturb fine sediments on streambeds and lakebeds, causing increased erosion, turbidity, and sedimentation in the waterbodies and downstream. Implementing BMPs and complying with permit stipulations for water extraction methods would avoid or reduce impacts on sediment.

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4.18.2.4 Natural Gas Pipeline Corridor

Surface Water Quality

Under Alternative 1, the primary impacts on surface water quality within the Natural Gas Pipeline Corridor would be associated with installation of the natural gas pipeline at water crossings, and the use of local water sources for hydrostatic testing. Impacts at material sites would be the same as those described above for the Transportation Corridor.

ADEC water quality standards for fresh water streams specify that turbidity levels may not exceed five nephelometric turbidity units (NTU) above natural conditions when the natural turbidity level is 50 NTU or less. When natural turbidity is more than 50 NTU, the turbidity level may not increase by more than 10 percent, not to exceed a maximum increase of 15 NTU.

Surface water quality at stream crossings along the pipeline corridor would be expected to be within this water quality standard during construction. Isolated occurrences of impacts above this standard could occur (e.g., during high-precipitation periods along summer construction segments), but are expected to be reduced within a short time frame because of planned redundancies in BMPs, erosion and sediment control measures, and reclamation/cleanup crew functions.

The extent of potential impacts from hydrostatic testing for pipeline pressure testing would be limited because water volumes required for hydrostatic testing would be small compared to the volumes of potential sources from rivers and small lakes along the route. Impacts on surface water quality would likely be imperceptible. Discharges of hydrostatic test water would meet the requirements of the applicable APDES general permit.

Sediment Quality

Potential impacts on waterbody substrate from sedimentation and erosion would be similar to those described above for the Transportation Corridor. BMPs would be in place to control runoff and erosion during trenching and backfilling and other ground-disturbing activities; therefore, impacts would be avoided or minimized.

[Note: This text will be updated to address results of summer 2018 substrate sampling and analysis of fish-bearing surface water bodies along the Transportation Corridor requested as RFI 036.]

4.18.2.5 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

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As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.22 WETLANDS/SPECIAL AQUATIC SITES

The project has the potential to result in the following direct and indirect effects to wetlands/special aquatic sites and waterbodies (henceforth, referred to as "wetlands"):

- Direct impacts from removal of wetland vegetation and soil
- Indirect impacts from:
  - Disruption of wetland hydrology
  - Alteration of surface water quantity or distribution
  - Alteration of subsurface water quantity and distribution
  - Erosion and sedimentation.

Project impacts have been assessed by watershed to place the impacts in an ecological context. U.S. Geological Survey (USGS) Hydrologic Unit Code Tenth Level (HUC10) watersheds have been used for this purpose, and define the environmental impact statement (EIS) analysis area for wetlands. Impact assessments were considered, analyzed, and determined from the perspective of overall regional Alaskan vegetation affected. To contextualize project impacts, the analysis for vegetation applied publicly available environmental data for the EIS analysis area for the nine HUC10 watersheds that could potentially be directly or indirectly affected.

The magnitude of impacts to wetlands were assessed in terms of percent of disturbance area to high-value wetlands or greater proportions of low-value wetlands in the EIS analysis area. Magnitude would be less for disturbance areas below five percent, and would be greater for disturbance areas above five percent, with greatest intensity for disturbance areas above 25 percent. Some areas of wetlands would be reclaimed, and some would not. The duration of impacts would be temporary, meaning wetland functions would be reduced during the construction phase; or permanent, meaning reduction or elimination of wetlands functions would occur after the construction phase, through the operations and into the closure and post-closure phase. The extent of impacts would be limited to areas of the project area in which wetlands would be removed or disturbed, or would affect wetlands outside of the project area, within one or more HUC 10 watersheds.

To assess the relative magnitude and extent of impacts, the relative proportion of common wetland types in each watershed was estimated. The National Wetland Inventory (NWI) mapping covers only about one-fourth of the watershed area, and was therefore not sufficient

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for this effort. The uniform vegetation mapping provided by the Alaska Center for Conservation Science (ACCS) provided the best available spatial data for estimating wetland coverage for the HUC10 watersheds.

Vegetation class descriptions from the Vegetation Map and Classification guidebooks (Boggs et al. 2016a, 2016b) were reviewed. Vegetation classes mapped in the watersheds were assigned to one of the following types in a crosswalk for comparison with wetlands mapped for the project: upland, forested wetland, shrub wetland, herbaceous wetland, aquatic bed wetland, or waterbody.

The descriptions of herbaceous vegetation classes included wetland status; therefore, these vegetation classes were directly crosswalked to herbaceous wetland or upland. The woody vegetation classes lacked wetland status, so it was not possible to directly crosswalk types. Because forested vegetation types were uncommon, an assignment was made for each mapped unit based on site characteristics.

Shrub vegetation classes were common; a shrub vegetation class was assigned to wetland or upland based on a review of site characteristics. The dwarf shrub class in particular was not broken out in the mapping to differentiate dry sites from wet sites. Therefore, the acreages and percentages for each watershed are used here for comparison purposes, and should be considered an approximation of the actual extent of wetlands.

4.22.1 No Action Alternative

Under the No Action Alternative the Pebble Project would not be constructed, and no new impacts to wetlands would occur.

4.22.2 Action Alternative 1 – Applicant's Proposed Alternative

4.22.2.1 Mine Site Direct Impacts

[Note: Section to be revised with updated numbers and descriptions based on updated project description.]

[Note: Temporary versus permanent impacts will be refined in all text and tables pending an updated project description].

Most project-related direct impacts to wetlands would be initiated during the construction phase and would result in temporary or permanent loss of wetlands or alteration in wetland functions. Primary direct construction-related impacts to wetlands and waterbodies would include:

- Clearing and removal of wetland vegetation
- Placement of fill in wetlands and waterbodies
- Excavation that eliminates wetlands and waterbodies
- Compaction, rutting, and mixing of wetland soils.

Excavation of the open pit, quarries, and sediment ponds and filling within the tailings storage facility (TSF) and stockpiles would occur throughout the active life of the mine. The maximum extents of all surface disturbance impacts were used to evaluate direct wetlands impacts for the Mine Site. Some wetland reclamation would begin shortly after the start of construction and would continue throughout operations and closure.

A total of 3,191 acres of wetlands and waterbodies would be directly affected by the proposed Mine Site facilities (Table 4.22-1). The greatest impacts would occur from the bulk tailings

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storage cell (1,083 acres), the TSF (548 acres), the open pit (178 acres), and the haul road (162 acres).

Within the Mine Site, most impacts to wetlands (XX acres) would occur within one of the HUC10 watersheds, named the "Headwaters Koktuli River watershed" (Figure 4.22-1; Table 4.22-1). Less than 10 of impacts to wetlands and waters would occur within the Upper Talarik Creek Watershed (Table 4.22-1). Direct impacts in these watersheds would affect primarily deciduous shrub wetlands on slopes (XX percent and XX percent, respectively) and herbaceous wetlands on slopes (XX percent and XX percent, respectively). Previous disturbance to wetlands in this area is minimal. Facilities have been sited to avoid and minimize wetland impacts and allow efficient reclamation of disturbed areas.

[Note: The above sections will be updated with an updated project footprint.]

Excavation, filling, and clearing of wetlands would alter or remove their capacity to provide hydrologic, biogeochemical, and biological functions. Construction-related disturbances may alter wetland modification of groundwater functions (recharge and discharge), and would decrease stormwater and floodwater storage and modification of streamflow functions by decreasing the wetlands' potential to dissipate energy and reduce peak flows. These altered hydrologic functions would extend to the streams connected to or downstream from the affected wetlands. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Construction on or through wetlands would decrease or remove the wetlands' potential to improve water quality by preventing erosion and settling sediments. Sediment barriers and erosion control planning would mitigate the loss of this wetland function. Vegetation clearing with no soil disturbance reduces the wetlands' ability to modify water quality and its contribution to the abundance and diversity of wetland fauna. It also may reduce the export of detritus and contribution to the abundance and diversity of wetland flora functions, depending on the extent of vegetation being cleared.

The Headwaters Koktuli River watershed is estimated to contain approximately 56,000 acres of wetlands and waterbodies (33 percent of the watershed). Approximately 45,000 acres (26 percent of the watershed), are shrub wetlands and 9,000 acres (five percent) are herbaceous wetlands. Forested wetlands (39 acres) and aquatic bed wetlands (132 acres) each cover less than one percent. Mine Site activities would affect 2,460 acres of shrub wetlands and 657 acres of herbaceous wetlands within the Headwaters Koktuli River watershed (Table 4.22-1). This represents approximately five percent and seven percent, respectively, of shrub and herbaceous wetlands in the watershed. No forested wetlands and one acre of aquatic bed wetlands would be affected.

[Note: Information on specifics of unique, rare, or high-value wetlands types will be added in a later version.]

Riverine wetlands are another potentially high-value wetland type because of their numerous functions, especially fish and wildlife habitat functions. A total of 176 acres of riverine HGM class wetlands in the Headwaters Koktuli River watershed would be affected by activities at the Mine Site. The extent of riverine wetlands in the watershed is not known. They account for approximately six percent of the Mine Site mapping area. The watershed contains the North Fork and South Fork Koktuli River and their numerous tributaries. It is expected that riverine wetlands would account for at least six percent of the watershed as a whole, or approximately 10,000 acres. Therefore, the area of impacts from Mine Site activities would represent approximately two percent of all riverine wetlands in the watershed. Less than one acre of

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riverine HGM class wetlands in the Upper Talarik Creek Watershed would be affected by activities at the Mine Site.

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Figure 4.22-1: Mine Site Area Watersheds Wetlands Impacts

[Note: Figure under development]

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[Note: Table to be updated with revised project description information.]

Table 4.22-1: Mine Site Wetlands Direct Impacts

NWI Group	HGM[1] Class (Acres/percent)							Impact Area (acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Headwaters Koktuli River Watershed									
Deciduous Shrub Wetlands	**2,247 71%**	**131 4%**	0	7 <1%	74 2%	<1	0	2,460	76
Herbaceous Wetlands	**607 19%**	40 1%	<1	3 <1%	6 <1%	<1	0	657	20
Aquatic Bed Wetlands	1 <1%	0	0	0	0	0	0	1	<1
Ponds	11 <1%	4 <1%	0	16 <1%	0	0	0	31	1
Lakes	0	0	0	0	0	0	<1	<1	<1
Perennial Streams	0	0	29 1%	0	0	0	0	29	1
Intermittent Streams	0	0	3 <1%	0	0	0	0	3	<1
Wetland/Water Totals	2,867	176	32	26	80	1	<1	**3,182**	100
Area (%)	90	5	1	1	2	<1	<1		
Uplands	3,658								
Totals	6,840								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Upper Talarik Creek Watershed									
Deciduous Shrub Wetlands	**6 67%**	<1	0	0	<1	0	0	6	67
Herbaceous Wetlands	**3 33%**	<1	0	<1	0	0	0	3	33
Aquatic Bed Wetlands	0	0	0	0	0	0	0	0	0
Ponds	0	0	0	<1	0	0	0	<1	<1
Lakes	0	0	0	0	0	0	0	0	0
Perennial Streams	0	0	<1	0	0	0	0	<1	<1
Intermittent Streams	0	0	<1	0	0	0	0	<1	<1
Wetland/Water Totals	9	<1	<1	<1	<1	0	0	**9**	100
Area (%)	100	<1	<1	<1	<1	0	0		
Uplands	25								
Totals	34								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									

[1]HGM = hydrogeomorphic

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Reclamation

Pebble Limited Partnership (PLP) has incorporated requirements for mine closure and long-term water management into the design of the project. During the permitting phase, a reclamation plan would be developed that would include reclamation of wetlands where feasible. The discussion below is based on generally accepted wetland reclamation practices for mine sites in Alaska. PLP has also provided some conceptual-level information on reclamation in its application and in subsequent responses to requests for information.

The Alaska Department of Natural Resources (ADNR) approves reclamation plans and associated financial assurances before construction. In its project description for the Department of the Army Application (December 2017), PLP has identified some of the design elements that would facilitate successful reclamation during and after the closure phase:

- Quarried and waste rock would be geochemically tested prior to being used in construction to avoid the potential for contaminated drainage during operations and post-closure.
- Topsoil and overburden would be salvaged during construction for use as growth medium during reclamation.
- TSF embankment slopes would be designed to provide long-term stability and facilitate the placement of growth medium.
- The overall project footprint would be minimized to facilitate physical closure and post-closure water management.

[Note: This section will be updated with information from RFI 024.]

Material sites constructed in valley bottoms or lowland sites are candidates to be reclaimed to create new ponds with emergent wetlands where sufficient water quality and hydrology are available. Final contouring around created ponds could focus on providing habitat at the water's edge and a complex interspersion between wetland and upland vegetation. Moderate to steeply sloping wetland or upland mosaics with wetland inclusions would be less feasible to restore to wetlands because of the marginal hydrology, and some fills may not be removed in these areas. Marginal wetland hydrology would be expected in areas where excavations and road cuts through colluvium and rock have reduced overland sheet flow.

Shrub wetland successional processes, generally initiated by natural disturbances such as wildland fires, gradually reestablish typical vegetation and eventually hydrologic characteristics. When construction disturbs wetlands, successional processes may be prolonged or may not occur. Construction disturbances differ from natural disturbances in that the organic mat and organic soil horizons are often removed completely, which removes seedbeds, and reduces surface and subsurface water storage capacity. The timing and extent of recovery likely depend on the intensity, extent, and duration of the disturbance. The time required for wetlands to return to pre-disturbance soil moisture and original vegetation cover has not been well documented in western Alaska.

Development of self-sustaining wetland plant communities on previously disturbed Alaska wetlands may occur within 10 to 30 years, but may be slowed in gravelly or sandy soils, and by years with failed seedling establishment or seed production. Revegetation success may be enhanced by conducting careful planning and management; minimizing disturbance; segregating and protecting materials to be used during reclamation; using the appropriate seed mixture and seeding rates; and monitoring for erosion and revegetation success.

Reclamation of wetland conditions may be complicated in areas where less permeable layers have been breached or removed. This would alter surface hydrology, causing previous wetland

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areas to drain. In these situations, restored wetlands are likely to differ in type and functional capacity from the original wetlands for decades to centuries.

Surface water resources available to wetlands would continue to be altered in distribution and abundance with an estimated return to within XX percent of predevelopment streamflows at the downstream end of the mine development (see Section 4.16, Surface Water Hydrology). These changes in surface water distribution and abundance could cause some wetlands to dry up while others would be inundated or become wetter.

The pit lake would continue to fill for a period of several decades post-closure. Once the water level reaches elevation 890 feet, water would be pumped from the pit. This elevation is at least 50 feet below the elevation at which groundwater flow would be directed outward from the open pit. As a result, a new equilibrium groundwater level would become established around the pit. Wetlands and streams above the pit lake level would potentially lose groundwater to the cone of depression created by the pit lake. This may result in long-term wetland and streamflow effects. Groundwater modeling would be used to assess potential wetland and stream dewatering, and to identify those wetlands and functions that are likely to be affected (see Section 4.17, Groundwater Hydrology, for details).

[Note: The above sections will be updated with an updated project footprint.]

4.22.2.2 Mine Site Indirect Impacts

[Note: Information on this topic to be added at a later time].

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.3 Amakdedori Port Direct Impacts

[Note: This section to be updated with revised project description information.]

Construction of Amakdedori Port would directly affect less than one acre of intertidal waters and 109 acres of subtidal waters in the Amakdedori Creek-Frontal Kamishak Bay watershed and 271 acres of subtidal waters in the Cook Inlet watershed (Table 4.22-2). The port terminal and associated facilities would be sited and designed to avoid most wetlands. Previous disturbance to wetlands or waterbodies in this area is minimal.

The Amakdedori Port facilities would be removed during closure, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation.

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Table 4.22-2: Amakdedori Port Wetlands Direct Impacts

NWI Group	Impact Area (acres)	Impact Area (%)
Amakdedori Creek–Frontal Kamishak Bay Watershed		
Marine Subtidal	109	99
Marine Intertidal	1	1
Wetland/Water Totals	110	100
Uplands	194	–
Total Area	305	–
Cook Inlet Watershed		
Marine Subtidal	271	100
Total Area	271	–

[Note: Table to be updated with revised project description information.]

4.22.2.4 Amakdedori Port Indirect Impacts

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.5 Transportation Corridor and Natural Gas Pipeline Corridor Direct Impacts

[Note: This section to be updated with revised project description information. Temporary versus permanent impacts will be addressed at that time, and a table with direct temporary impacts for the Natural Gas Pipeline Corridor will be included.]

Locations West of Cook Inlet

Construction of the Transportation and Natural Gas Pipeline corridors from Amakdedori Port to the Mine Site would directly and permanently affect XX acres of wetlands (Table 4.22-3). The south access road between the port and the south ferry terminal at Iliamna Lake would affect XX acres. The mine access road from the north ferry terminal to the mine site would affect ## acres of wetlands and waterbodies. The remaining XX acres of impacts would be from the Iliamna and Kokhanok Airport spur roads, material sites, and ferry landings.

Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Previous disturbance to wetlands in this area is minimal. The corridor has been sited to avoid and minimize wetland impacts and allow for efficient reclamation of disturbed areas.

A total of XX miles of streams would be directly affected by construction, including XX miles of perennial streams and XX miles of intermittent streams (Table 4.22-3). The larger streams with a width at ordinary high water (OHW) of 16 feet or greater would be bridged. Bridge locations are shown in Figure 4.22-2. Site-specific designs have been developed for bridges. Smaller

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stream crossings would use a series of standardized, conceptual culvert design categories based on stream width and fish presence. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Activities in the Transportation and Natural Gas Pipeline corridors would affect wetlands in five HUC10 watersheds. The highest number of acres impacted (XX acres) would occur in the Upper Talarik Creek watershed (Figure 4.22-2; Table 4.22-3). Direct impacts in this watershed would affect primarily deciduous shrub wetlands on slopes (XX percent) and flats (XX percent), and along streams (XX percent).

The Upper Talarik Creek watershed is estimated to contain approximately 34,000 acres of wetlands and waterbodies (39 percent of the watershed). Approximately 31,000 acres (35 percent of the watershed) are shrub wetlands, and 1,200 acres (one percent) are herbaceous wetlands. Forested wetlands (636 acres) and aquatic bed wetlands (eight acres) each cover less than 1 percent. Activities in the Transportation and Natural Gas Pipeline corridors and in a small portion of the Mine Site would affect XX acres of shrub wetlands and XX acres of herbaceous wetlands in the Upper Talarik Creek watershed, which is estimated to be less than one percent of shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be affected.

Based on vegetation and wetland mapping for the project, five acres of bog vegetation would be affected by activities in the Transportation and Natural Gas Pipeline corridors in the Upper Talarik Creek watershed. The extent of bog vegetation in the watershed is not known.

A total of XX acres of riverine wetlands would be affected by activities in the Transportation and Natural Gas Pipeline corridors in the Upper Talarik Creek watershed (Table 4.22-3). The extent of riverine wetlands in the watershed is not known. They account for approximately four percent of the Transportation and Natural Gas Pipeline corridor mapping areas. Riverine wetlands are estimated to account for approximately four percent of the watershed as a whole, or 3,500 acres. The corridor impacts, therefore, would represent less than two percent of all riverine wetlands in the watershed.

Wetland and waterbody impacts in the other four watersheds would be relatively low from a watershed perspective. The Iliamna Lake watershed, excluding the lake itself, has an estimated 180,000 acres of wetlands and waterbodies (33 percent of the watershed). The project would result in direct impacts on XX acres of slope wetlands and one acre of riverine wetlands (Table 4.22-3). The Newhalen River watershed has an estimated 35,000 acres of wetlands and waterbodies (29 percent of the watershed); one acre of slope wetlands would be directly affected. The Gibraltar Lake watershed has an estimated 34,000 acres of wetlands and waterbodies (41 percent of the watershed); nine acres of slope wetlands would be directly affected. The Amakdedori Creek–Frontal Kamishak Bay watershed has an estimated 77,000 acres of wetlands and waterbodies (44 percent of the watershed); 15 acres of slope wetlands and one acre of riverine channel would be directly affected (Table 4.22-3). The Transportation Corridor does enter the Paint River watershed for a very short distance, but no wetland or waterbody impacts are anticipated.

[Note: Table to be updated with revised project description information.]

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Table 4.22-3: Transportation Corridor and Natural Gas Pipeline Corridor (West of Cook Inlet) Wetlands Direct Impacts

NWI Group	HGM Class (Acres/percent)							Impact Area (Acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Upper Talarik Creek Watershed									
Deciduous Shrub Wetlands	**34 64%**	**6 11%**	–	–	**5 9%**	–	–	46	87
Herbaceous Wetlands	**4 8%**	1	–	–	2	–	–	6	11
Wetland/ Water Totals	38	7	–	–	7	–	–	**53**	100
Area (%)	72	13	<1	<1	13	0	0		
Uplands	324								
Totals	377								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Newhalen River Watershed									
Deciduous Shrub Wetlands	1	–	–	–	–	–	–	1	100
Wetland/Water Totals	1	<1	<1	<1	0	0	0	**1**	100
Area (%)	100	<1	<1	<1	0	0	0		
Uplands	50								
Totals	52								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Iliamna Lake Watershed									
Deciduous Shrub Wetlands	**9 50%**	–	–	–	–	–	–	10	56
Evergreen Shrub Wetlands	1	–	–	–	–	–	–	1	6
Herbaceous Wetlands	**5 28%**	1	–	–	–	–	–	6	33
Ponds	1	–	–	–	–	–	–	1	6
Wetland/Water Totals	17	1	<1	<1	0	0	0	**18**	100
Area (%)	94	6	<1	<1	0	0	0		
Uplands	326								
Totals	**344**								

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Table 4.22-3: Transportation Corridor and Natural Gas Pipeline Corridor (West of Cook Inlet) Wetlands Direct Impacts

NWI Group	HGM Class (Acres/percent)							Impact Area (Acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Gibraltar Lake Watershed									
Deciduous Shrub Wetlands	**3 33%**	–	–	–	–	–	–	3	33
Evergreen Shrub Wetlands	**2 22%**	–	–	–	–	–	–	2	22
Herbaceous Wetlands	**3 33%**	–	–	–	–	–	–	3	33
Ponds	1	–	–	–	–	–	–	1	11
Wetland/Waters Totals	9	0	<1	0	0	0	<1	**9**	100
Area (%)	100	0	<1	0	0	0	<1		
Uplands	132								
Totals	**142**								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Amakdedori Creek–Frontal Kamishak Bay Watershed									
Deciduous Shrub Wetlands	**6 38%**	–	–	–	–	–	–	6	38
Herbaceous Wetlands	**5 31%**	–	–	–	–	–	–	5	31
Ponds	**3 19%**	–	–	–	–	–	–	3	19
Streams	–	–	1	–	–	–	–	1	6
Wetland/Waters Totals	15	0	1	<1	0	0	<1	**16**	100
Area (%)	94	0	6	<1	0	0	<1		
Uplands	166								
Totals	182								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									

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Figure 4.22-2: Upper Talarik Creek Watershed Impacts

[Note: Figure under development]

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Locations East of Cook Inlet

[Note: The following section to be updated with revised project description information.]

Activities in the Natural Gas Pipeline Corridor on the Kenai Peninsula would affect wetlands and waterbodies in the Stariski Creek–Frontal Cook Inlet watershed (Figure 4.22-3). Direct impacts on this watershed would affect primarily shrub wetlands.

The pipeline would cross approximately 94 miles of Cook Inlet, between Anchor Point and Amakdedori Port. Horizontal directional drilling would be used to install pipe segments from the compressor station out into waters that are deep enough to avoid navigation hazards. From this point, the pipe would be installed in a trench out to a water depth of 200 feet, and then laid on the sea floor. Direct temporary impacts on approximately 340 acres of marine subtidal waters and less than one acre of intertidal waters would occur (Table 4.22-4). The compressor station at Anchor Point would be located in an area that would avoid wetland impacts.

Reclamation

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. Once no longer needed, the road system would be reclaimed. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation. The Iliamna Lake ferry facilities would be removed during closure. Once it is no longer required to provide energy to the Mine Site, the natural gas pipeline would be pigged and cleaned before being abandoned in place. Surface facilities associated with the pipeline would be removed and reclaimed.

During closure and post-closure, wetlands would be reestablished wherever practicable. The geographic extent of direct and indirect effects would affect five HUC10 watersheds, but the majority of impacts (54 percent) would occur in the Upper Talarik Creek watershed, in the Bristol Bay basin. Most impacts throughout all watersheds would be on shrub (59 percent) and herbaceous (18 percent) wetlands on slopes, which are common throughout the region. There would be some impacts on riverine wetlands (eight acres) that are important for fish habitat, although this represents a relatively small portion of riverine wetlands across all watersheds.

[Note: Table to be updated with revised project description information.]

Table 4.22-4: Natural Gas Pipeline Corridor (East of Cook Inlet) Wetlands Direct Impacts

NWI Group	Impact Area (acres)	Impact Area (%)
Amakdedori Creek–Frontal Kamishak Bay Watershed		
Marine Subtidal	3	100
Cook Inlet Watershed		
Marine Subtidal	334	100
Stariski Creek–Frontal Cook Inlet Watershed		
Forested Wetlands	<1	20
Shrub Wetlands	1	20
Herbaceous Wetlands	<1	–
Perennial Streams	<1	–
Marine Subtidal	3	60

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Marine Intertidal	<1	–
Wetland/Water Totals	5	100
Uplands	37	–
Total Area	380	–

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Figure 4.22-3: Stariski Creek–Frontal Cook Inlet Watershed Impacts

[Note: Figure under development].

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4.22.2.6 Transportation Corridor and Natural Gas Pipeline Corridor Indirect Impacts

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.7 Cumulative Effects

[Note: This section will be updated at a later time.]

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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.26 VEGETATION

Potential direct and indirect effects impacting vegetation include:

- Direct impacts from vegetation removal
- Direct impacts from removal of rare and sensitive plants; indirect impacts from habitat disturbance
- Indirect impacts from invasive species introduction or spread
- Indirect impacts from fugitive dust
- Indirect impacts from dewatering.

Impact assessments were considered, analyzed, and determined from the perspective of overall regional Alaskan vegetation affected. To contextualize project impacts, the analysis for vegetation makes use of publically available environmental data for the environmental impact statement (EIS) analysis area (the nine Hydrologic Unit Code [HUC] 10 watersheds that could potentially be directly or indirectly impacted).

The magnitude of impacts to vegetation were assessed in terms of disturbance to above-ground vegetation and soil disturbance. Vegetation would be removed above the surface, or would also involve soil disturbance. Some areas of vegetation removal and soil disturbance would be reclaimed, and some would not. The duration of impacts would be temporary, meaning removal and/or disturbance would occur during the construction phase; or permanent, meaning removal and/or disturbance would occur or remain after the construction phase, through the operations and into the closure and post-closure phase. The extent of impacts would be limited to areas of the project area in which vegetation would be removed/disturbed, or would affect vegetation outside of the project area, within one or more HUC 10 watersheds.

4.26.1 No Action Alternative

Under the No Action alternative, the project would not be constructed, and would not have any new effects on vegetation.

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4.26.2 Action Alternative 1 – Applicant's Proposed Alternative

4.26.2.1 Mine Site Direct Impacts

Vegetation Removal

Construction and operations of the Mine Site would require clearing, grading, and removal of vegetation in areas where the Mine Pit, Tailings Storage Facility (TSF), overburden stockpiles, material sites, water management ponds, milling and processing facilities, access roads, and supporting infrastructure would be located. Shrubs, trees, understory vegetation, roots, and other obstructions such as large rocks and stumps would be cleared from construction work areas. Vegetation removal can cause numerous changes in the surrounding environment, such as:

- Increased rate of soil erosion from wind or water
- Changes in water drainage patterns (increased runoff volumes)
- Sediment deposition in downslope areas
- Changes in adjacent vegetation type composition
- Changes in wildlife habitat
- Introduction or spread of invasive species.

Acres of direct impacts to vegetation were calculated by overlaying the project footprint over vegetation types in ArcGIS, and calculating the area impacted for each vegetation type in the project component mapping areas.

Table 4.26-1 lists the acreage and percent of the grouped vegetation types in the Mine Site mapping area that would be directly affected by clearing, grading, and removal activities during construction and operation of the Mine Site. The acreage and percent of each vegetation type affected in the relevant HUC 10 watersheds that the Mine Site mapping area falls within are also included to assess the magnitude and extent of impacts from the perspective of overall regional Alaskan vegetation affected. Figure 4.26-1 shows grouped vegetation type locations in the Mine Site project footprint.

In some locations, removal would be permanent (such as the mine pit that would become a pit lake, and bulk TSF that would become a new landform). In all other areas, removal would be temporary. In temporary disturbance areas, vegetation would be reestablished by reclamation, which would begin immediately after construction, and continue through to closure. In some areas, natural revegetation would be expected to occur. [Note: Specific areas will be included with updated project design.] All road material sites would be stabilized and progressively reclaimed, but would remain active to support ongoing road maintenance requirements through operation. Mine laydown areas would be retained for use through operations. All construction roads would continue to serve as site access roads.

Disturbed areas that are reclaimed are expected to continue vegetation succession over time, which would improve soil and habitat quality for wildlife. Successional species would likely include those found outside of the Mine Site as seeds from the surrounding areas are dispersed and establish on reclaimed sites. Vegetation reestablishment time of cleared or graded areas is variable. Trees and shrubs are expected to begin to re-establish almost immediately after construction and reclamation. Alders (*Alnus* spp.), willows (*Salix* spp.), and birch (*Betula* spp.) are generally the first trees and shrubs to re-establish. Reclamation details are provided in Section 3.26, Wetlands/Special Aquatic Sites.

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[Note: Section and table to be completed with updated project footprint information; reclamation details will be provided in Section 3.22, Wetlands/Special Aquatic Sites, after further development of a reclamation and closure plan and from RFI 24.]

Table 4.26-1: Mine Site Vegetation Removal Impacts

Grouped Vegetation Type	Impacts in Mapping Area (Acres/Percent)	Impacts in the Analysis Area[1]	
		Headwaters Koktuli River (Acres/Percent)	Upper Talarik Creek Watershed (Acres/Percent)
Open/Closed Forest			
Open Tall Shrub			
Closed Tall Shrub			
Open Low Shrub			
Closed Low Shrub			
Dwarf Shrub			
Dry to Moist Herbaceous			
Wet Herbaceous			
Open Water			
Other			
Total			

[1] Represents the total area of the grouped vegetation type in each of the HUC 10 watersheds that comprise the Mine Site mapping area, and the percent of the vegetation type impacted per watershed.

Source: Boggs et al. 201

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Figure 4.26-1: Mine Site Vegetation Removal

[Note: Figure to be added later.]

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Rare or Sensitive Species

There are no occurrences of rare or sensitive plant species in the Mine Site.

4.26.2.2 Mine Site Indirect Impacts

Invasive Species

[Note: Additional details on Mine Site invasive species to be provided at a later time.]

Fugitive Dust

Fugitive dust emissions are a by-product of construction and operations activities. Dust would be caused by vehicle travel on the mine roads and other unpaved surfaces in the mine, as well as by mining activities at the pit. This dust has the potential to collect on vegetation in the vicinity of the dust sources. Windblown dust could affect vegetation well beyond the source, but the effect diminishes with distance and is affected by prevailing winds and topography. The deposition of dust has been analyzed in Section 4.14, Soils, with information on impacts to wetlands included in Section 4.22, Wetlands/Special Aquatic Sites.

The intensity of the impacts would be expected to vary depending on proximity of vegetation to the source of the dust. Dust may cause variable physiological changes to vegetation depending on exposure length or level. The duration of the effects would be both seasonal, when dust is washed off during winter months (or when deciduous species lose leaves), and throughout construction and operations. In some cases, impacts may last past closure where physiological changes may occur within plants, or where vegetation community changes may take place. The extent would be in areas adjacent to roads with vehicle traffic or in unpaved surface areas, and in the dust emissions areas, with highest concentrations of dust closest to the source.

Dewatering

Groundwater lowering may reduce water availability to plant species. Response of terrestrial vegetation to reduced water availability depends on the water requirements of individual plant species, root depths, and tolerances. Plants with shallow root systems that require a fairly constant supply of water would be impacted to a greater extent than drought-tolerant or deep-rooted species. Impacts on vegetation from reduction in water availability may include stunted growth, greater susceptibility to disease (NCDENR 2009), and succession of more drought-tolerant species. Impacts would depend on the actual timing and location of the groundwater lowering and the tolerance of the vegetation types. Impacts on groundwater are discussed in Section 4.17, Groundwater Hydrology. Impacts on wetland vegetation are presented in Section 4.22, Wetlands/Special Aquatic Sites.

In areas where vegetation is removed and is no longer present to intercept rainfall and reduce runoff, indirect effects could result from erosion of the exposed soil and sedimentation. Areas without well-established vegetation may also be susceptible to invasion by invasive species. Drainage and erosion control measures, both temporary and permanent, would be implemented at the Mine Site, and reclaimed areas would be reseeded for vegetation to prevent erosion of soils and potential invasion by weeds. Impacts to soil are addressed in Section 4.14, Soils.

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4.26.2.3 Amakdedori Port Direct Impacts

Vegetation Removal

Construction and operations of the Amakdedori Port would require clearing, grading, and removal of vegetation in areas along the access road, dredge stockpile area, and where the shore-based facilities would be located, such as facilities for receipt and storage of containers, fuel storage and transfer, power generation and distribution, maintenance, and employee accommodations.

All temporary construction facilities would be removed after construction, and the sites would be reclaimed, unless being used for permanent facilities. Temporary facilities associated with the Amakdedori Port include the construction camp; however, this facility would be located in an area that would be used for port operations, and would not involve a separate footprint.

The Amakdedori Port facilities would be removed and reclaimed after closure activities are completed, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies.

Table 4.26-2 lists the acreage and percent of the grouped vegetation types in the Amakdedori Port mapping area that would be directly affected by clearing, grading, and removal activities during construction and operation of the Mine Site. Figure 4.26-2 shows grouped vegetation type locations in the Amakdedori Port component.

[Note: Section and table to be completed with updated project footprint information.]

Table 4.26-2: Amakdedori Port Vegetation Removal Impacts

Grouped Vegetation Type	Impacts in Mapping Area (Acres/Percent)	Impacts in the Analysis Area[1]	
		Headwaters Koktuli River (Acres/Percent)	Upper Talarik Creek Watershed (Acres/Percent)
Open/Closed Forest			
Open Tall Shrub			
Closed Tall Shrub			
Open Low Shrub			
Closed Low Shrub			
Dwarf Shrub			
Dry to Moist Herbaceous			
Wet Herbaceous			
Open Water			
Other			
Total			

[1]Represents the total area of the grouped vegetation type in each of the HUC 10 watersheds that comprise the Mine Site mapping area, and the percent of the vegetation type impacted per watershed.

Source: Boggs et al. 2016

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Figure 4.26-2: Vegetation Types in Amakdedori Port

[Note: Figure to be added later.]

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Rare or Sensitive Species

There are no occurrences of rare or sensitive plant species at the Amakdedori Port, or within a 1-mile radius.

4.26.2.4 Amakdedori Port Indirect Impacts

Invasive Species, Fugitive Dust, and Changes in Water Availability

The indirect impacts, including increased risk of invasive species introduction and spread, fugitive dust during construction and operations, and changes in water availability, would be similar to those described at the Mine Site.

4.26.2.5 Transportation and Natural Gas Pipeline Corridors Direct Impacts

Vegetation Removal

Construction and operations of the Transportation and Natural Gas Pipeline Corridor components would require clearing, grading, and removal of vegetation in areas where the roads, ferry terminals, laydown areas, material sites, and buried onshore pipeline would be located. During operations, periodic brushing of the revegetated pipeline corridor would occur.

Table 4.26-3 lists the acreage and percent of the grouped vegetation types in the Transportation and Natural Gas Pipeline Corridor that would be directly affected by clearing, grading, and removal activities during construction and operation of the Mine Site. Figures 4.26-3 and 4.26-4 show grouped vegetation type locations in the Transportation and Natural Gas Pipeline Corridor component project footprints.

The impacts associated with the natural gas pipeline would be temporary, because reclamation would occur shortly after installation. All temporary construction facilities would be removed after construction, and the sites, unless being used for permanent facilities, would be reclaimed. Temporary facilities associated with the Transportation/Natural Gas Pipeline Corridor on the western side of Cook Inlet include the camps established at the ferry landings.

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. The Iliamna Lake ferry facilities would be removed, and all closure-related supplies would be transported across the lake using a summer barging operation.

Rare or Sensitive Species

Two occurrences of one rare plant, Selkirk's violet (*Viola selkirkii*), were documented approximately 1.2 miles away from the road corridor (see rare and sensitive plant location map in Section 3.26, Vegetation). Impacts to this plant would be limited to potential indirect impacts if habitat were impacted by vegetation removal, or by indirect impacts such as fugitive dust presence.

[Note: Section and table to be completed with updated project footprint information.]

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Table 4.26-3: Transportation and Natural Gas Pipeline Corridors Removal Impacts

Grouped Vegetation Type	Impacts in Mapping Area (Acres/Percent)	Impacts in the Analysis Area[1]	
		Headwaters Koktuli River (Acres/Percent)	Upper Talarik Creek Watershed (Acres/Percent)
Open/Closed Forest			
Open Tall Shrub			
Closed Tall Shrub			
Open Low Shrub			
Closed Low Shrub			
Dwarf Shrub			
Dry to Moist Herbaceous			
Wet Herbaceous			
Open Water			
Other			
Total			

[1]Represents the total area of the grouped vegetation type in each of the HUC 10 watersheds that comprise the Mine Site mapping area, and the percent of the vegetation type impacted per watershed.

Source: Boggs et al. 2016

4.26.2.6 Transportation and Natural Gas Pipeline Corridors Indirect Impacts

Invasive Species, Fugitive Dust, and Changes in Water Availability

Indirect impacts would be similar to those described at the Mine Site. Because the roads and pipeline cross several watersheds, these impacts could affect a wider area compared to the Mine Site. Dust impacts would occur within a narrow corridor on either side of the roadways. The risk of invasive species being introduced or spread is higher for this component. The road and pipeline corridor could also cause wide-ranging changes in water availability due to the elevation of the roadway and structures necessary for water flow control adjacent to the roadways.

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Figure 4.26-3: Vegetation Types in the Transportation Corridor

[Note: Figure to be added later.]

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Figure 4.26-4: Vegetation Types in the Natural Gas Pipeline Corridor

[Note: Figure to be added later.]

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4.26.2.7 Cumulative Effects

[Note: This section will be updated at a later time.]

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/23/2018 10:52:14 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]
Subject: FW: no response requested
Attachments: 60-Day Pebble Priority Schedule 8.6.2018.xlsx

Pebble EIS reviewers-
As discussed during today's team meeting, attached is a 60-day schedule that shows upcoming EIS development activities and areas where cooperating agencies (CAs) will be involved. I have not received a response back from the Corps on whether we will be able to review revised sections of chapters 3 and 4 before the technical discussions that are shown on this schedule.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Wednesday, August 8, 2018 4:40 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: no response requested

All,

Attached is a 60-day priority schedule highlighting major milestones. There is a column for “who’s involved” and more detail on when activities take place or are due.

VR

Shane McCoy
Program Manager

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Activity	Who's Involved
Scoping Report	
Receive draft scoping report comments from CAs and USACE	CAs, USACE
Incorporate CA and USACE comments to prepare the final scopoing report	AECOM
Deliver Final Scoping Report to USACE	AECOM
USACE reviews final scoping report	USACE
Integrate any final USACE comments	AECOM
Deliver final scoping report to USACE	AECOM
Draft EIS Chapter 3	
Revise Chapter 3	AECOM
Incorporate CA comments (both scoping comments and predraft Chapter 3 comments)	AECOM
Incorporate alternatives	AECOM
Technical discussions on sections	CAs, AECOM (USACE as needed)
Draft EIS Chapter 4	
Revise Chapter 4	AECOM
Receive predraft Chapter 4 comments from CAs and USACE	AECOM
Early technical meetings as needed between CAs and AECOM staff	AECOM, CAs, USACE
Incorporate predraft Chapter 4 comments	AECOM
Incorporate alternatives	AECOM
Technical discussions on sections	CAs, AECOM (USACE as needed)
Draft EIS Chapter 2 - Alternatives	
Develop a wide range of alternatives; develop and apply screening criteria	AECOM
Deliver screened alternatives memo	AECOM
Review screened alternatives; prepare discussion for alternatives meeting	CAs, USACE
Alternatives meeting (half day at AECOM)	AECOM, CAs, USACE
Develop memo with list of dismissed alternatives	AECOM
Deliver dismissed alternatives memo	AECOM
Develop final alternatives list	AECOM
Deliver final alternatives memo	AECOM
Technical discussions on chapter	CAs, AECOM (USACE as needed)
Prepare Draft EIS Chapter 2	AECOM
Final Data Gap Assessment Report	
Review and update PDGA reports	AECOM
Prepare final DGA report	AECOM
Deliver Final DGA Report to USACE	AECOM

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Time Period or Due Date	Deliverable or Product
8/8	
8/9 to 8/17	
8/17	
8/20 to 8/24	
8/27 to 8/31	
8/31	Final Scoping Report to USACE (PDF)
Now to 8/31	
7/5 to 8/31	
9/21 to 10/31	
10/1 to 11/15	
now to 10/31	
8/31	
7/30 to 9/30	
8/31 to 10/31	
9/21 to 10/31	
10/1 to 11/15	
now to 8/13	
8/14	Memo to USACE (Word)
8/22	
8/23 to 9/5	
9/5	Memo to USACE (Word)
8/23 to 9/19	
9/21	Memo to USACE (PDF)
9/21 to 11/15	
9/24 to 10/31	
8/1-8/31	
9/10-9/11	
9/12	Final DGA Report to USACE (PDF)

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Notes
Underway
Will be posted to website and distributed to CAs
EPA meeting 7/30 on physical sciences, possible SoA meetings week of 8/22
Underway
Will be distributed to CAs
Will be distributed to CAs
Will be distributed to CAs
Will be posted to website and distributed to CAs

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 11/27/2018 9:58:11 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Please Review - Pebble Wetlands Sections
Attachments: Comment spreadsheet blank.docx

Mark - let me know when you have a moment to catch up on Pebble EIS stuff. -Palmer

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, November 26, 2018 2:31 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Wetlands Sections

Hi Mark and Palmer,
We have received the draft wetlands sections for the Pebble EIS for review, and I have loaded the text and associated figures into the Sharepoint folders. A comment deadline has not yet been provided by the Corps, but I am expecting it to be similar to the new deadline for the other chapters. So, at this point assume that the internal deadline will be somewhere the week of Dec. 10. I will confirm a specific deadline once we hear back from the Corps. As usual, please use the attached comment table for your comments.
Thank you,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 23, 2018 11:37 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; Bella, Elizabeth <elizabeth.bella@aecom.com>
Subject: 3.22 and 4.22 with figures for review (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good Morning,

Attached are the review drafts for Sec3.22 and Sec4.22, Wetlands. There are no technical appendices with these sections.

Sec 3.22 has one standalone PDF figure (attached) and 7 embedded figures. Sec 4.22 has three standalone PDF figures (attached).

Cooperating agencies with special expertise on this section are USACE and EPA. Suspense date for comments will be provided on Monday.

v/r,

Katie McCafferty
Project Manager
Direct: 907-753-2692

U.S. Army Corps of Engineers-Alaska District Regulatory Division P.O. Box 6898 JBER, AK 99506 main office line: 907-753-2712

CLASSIFICATION: UNCLASSIFIED

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/21/2018 9:18:30 PM
To: Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble EIS wetlands sections

I can be available Wednesday if the meeting is in the morning, and also have availability the week of the 10th. I do think that including Palmer would be beneficial.
--Molly

From: Douglas, Mark
Sent: Wednesday, November 21, 2018 12:11 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble EIS wetlands sections

Patty and Molly,

Personal Matters / Ex. 6 Would either Wednesday or sometime during the week of the 10th work?

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: McGrath, Patricia
Sent: Wednesday, November 21, 2018 12:07 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble EIS wetlands sections

Hi Mark and Molly –
I just took a call from Sheila Newman, Katie McCafferty, and Elizabeth Bella (AECOM). They indicated that the wetlands sections of the PDEIS would be sent to us for review later today. The Corps and AECOM would also like to have a wetlands technical meeting with us sometime during our review period to discuss how they developed the sections and answer any technical questions that we might have based on our preliminary look at the sections. They requested that that the technical meeting be next Thursday or Friday and would be in person at the AECOM office in Anchorage (I could call in, if needed). I told them that we needed to check schedules to see if that would work. Otherwise the technical meeting would be in the following week or two. Should we also include Palmer in this meeting and therefore scheduling?
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202

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Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/25/2018 10:29:32 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: FYI. Pebble EIS - Alternatives PowerPoint
Attachments: 20181024 Cooperating Agency Meeting.pdf

Hi All-
During the team meeting today, I mentioned the PowerPoint presentation provided during yesterday's cooperating agency meeting that provided information on the alternatives currently proposed by the Corps/AECOM for evaluation in the draft EIS. Attached is a copy of the presentation.
We still have outstanding questions/comments on some other potential alternatives (dry stack tailings, TSF liner) that we hope to work through with the Corps.
This is just FYI.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Pebble EIS: Cooperating Agency Meeting

October 24, 2018

US Army Corps of Engineers

Pebble Project EIS

Environmental Impact Statement

www.PebbleProjectEIS.com

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Agenda

- Overview of Alternatives
- Format and Level of Detail for Chapter 2
- Update on Appendix B – Alternatives Development Process
- Review of Select Alternatives
  - Filtered Tailings (Dry Stack)
  - Other Mine Locations
  - Underground Mining

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EPA-0135-0004621

Overview of Alternatives

- Alternatives to be Analyzed in Detail
  - No Action Alternative
  - Action Alternative 1 – Applicant's Proposed Alternative (includes 3 variants)
  - Action Alternative 2 – North Road and Ferry/Downstream Dams (includes 2 variants)
  - Action Alternative 3 – North Road Only (includes 1 variant)

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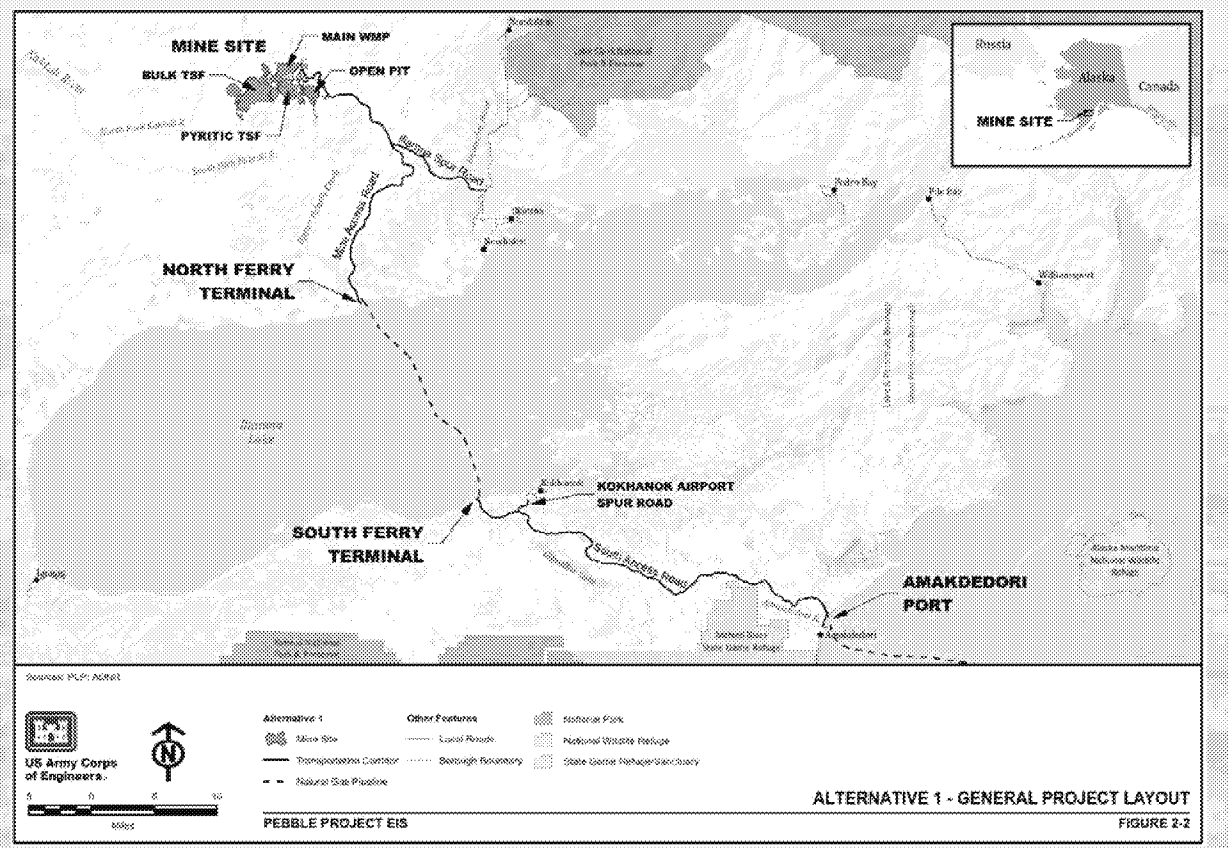
EPA-0135-0004622

Action Alternative 1



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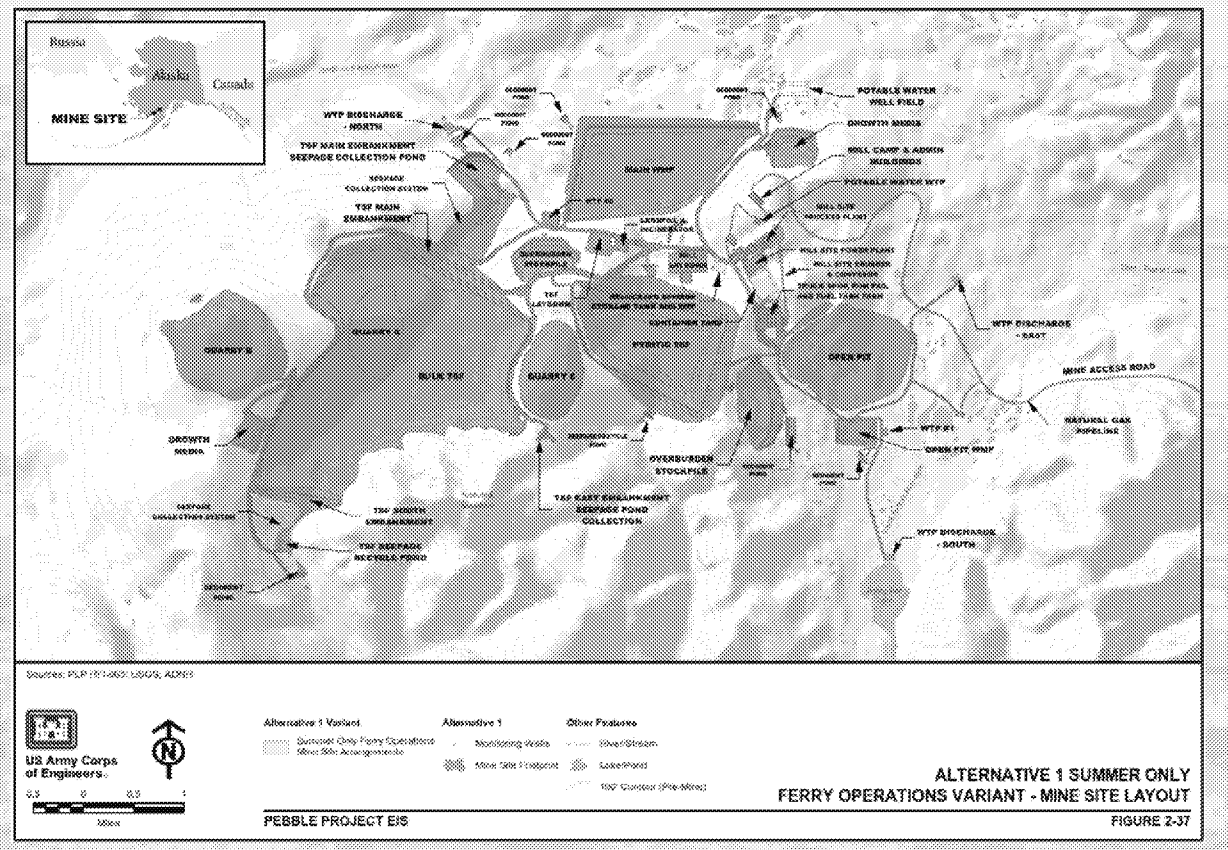
EPA-0135-0004623

Action Alternative 1 – Summer Only Ferry Operations Variant



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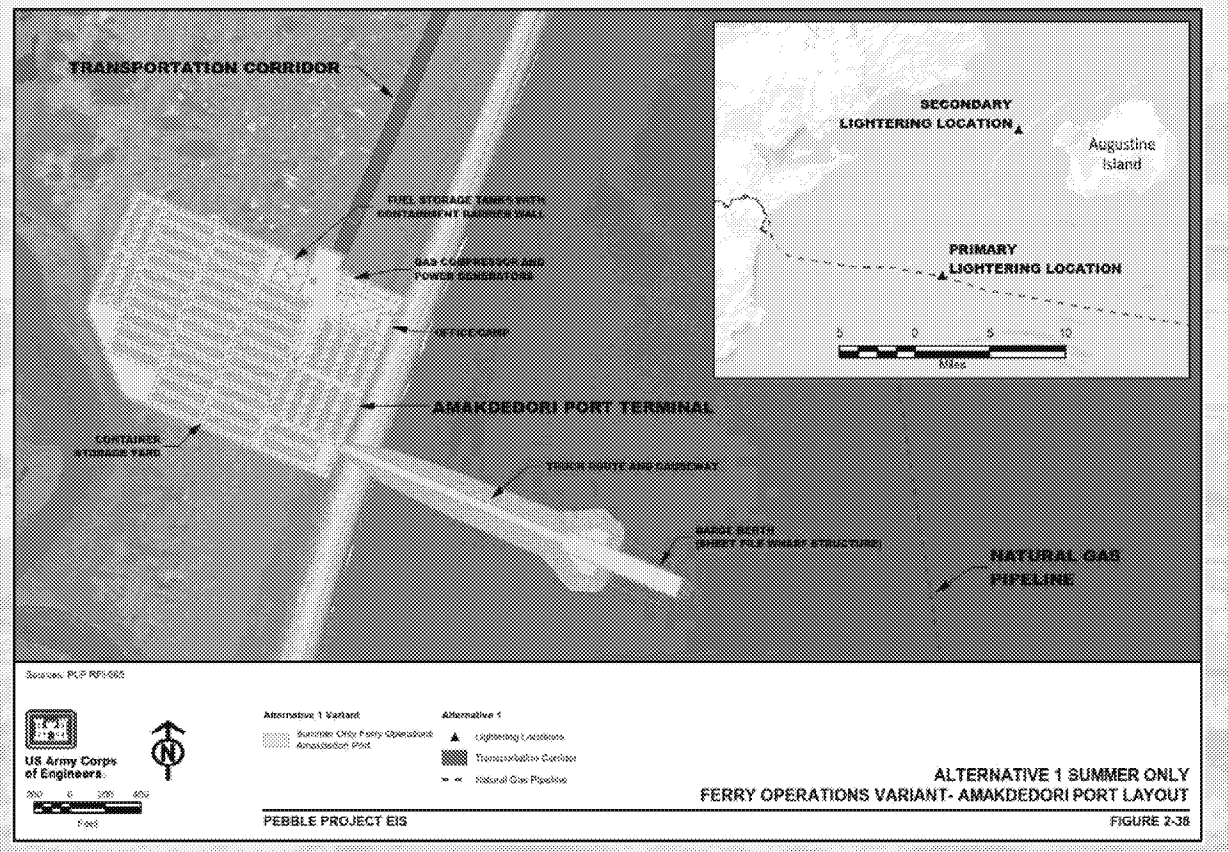
Action Alternative 1 – Summer Only Ferry Operations Variant



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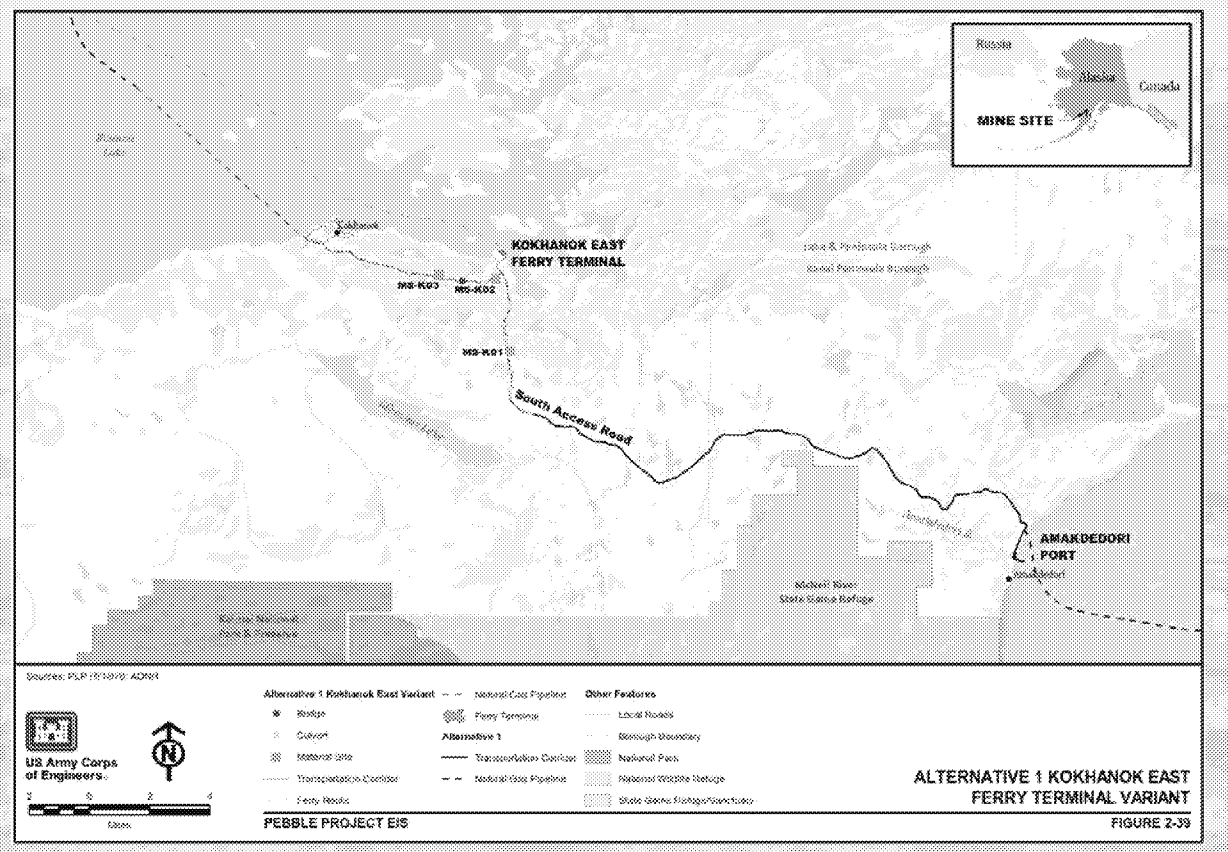
EPA-0135-0004625

Action Alternative 1 – Kokhanok East Ferry Terminal Variant



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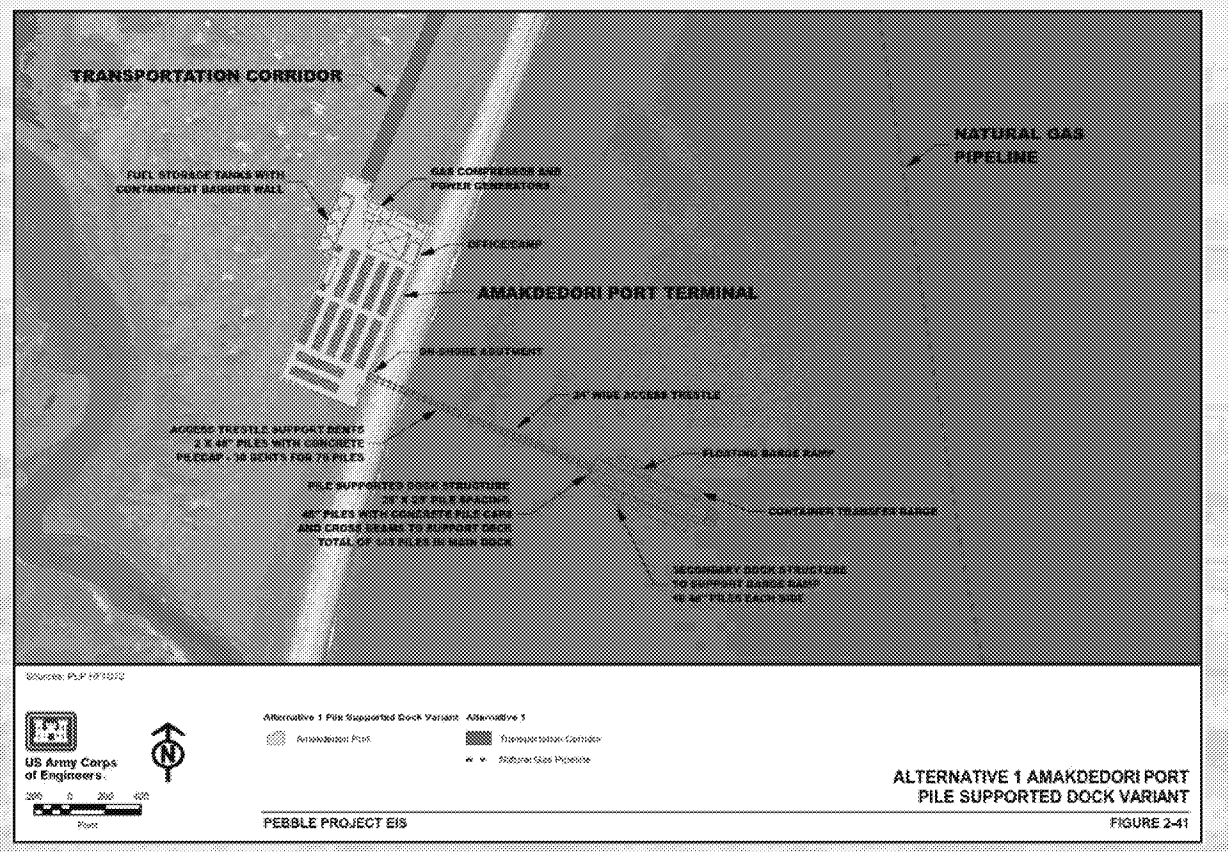
EPA-0135-0004626

Action Alternative 1 – Pile Supported Dock Variant



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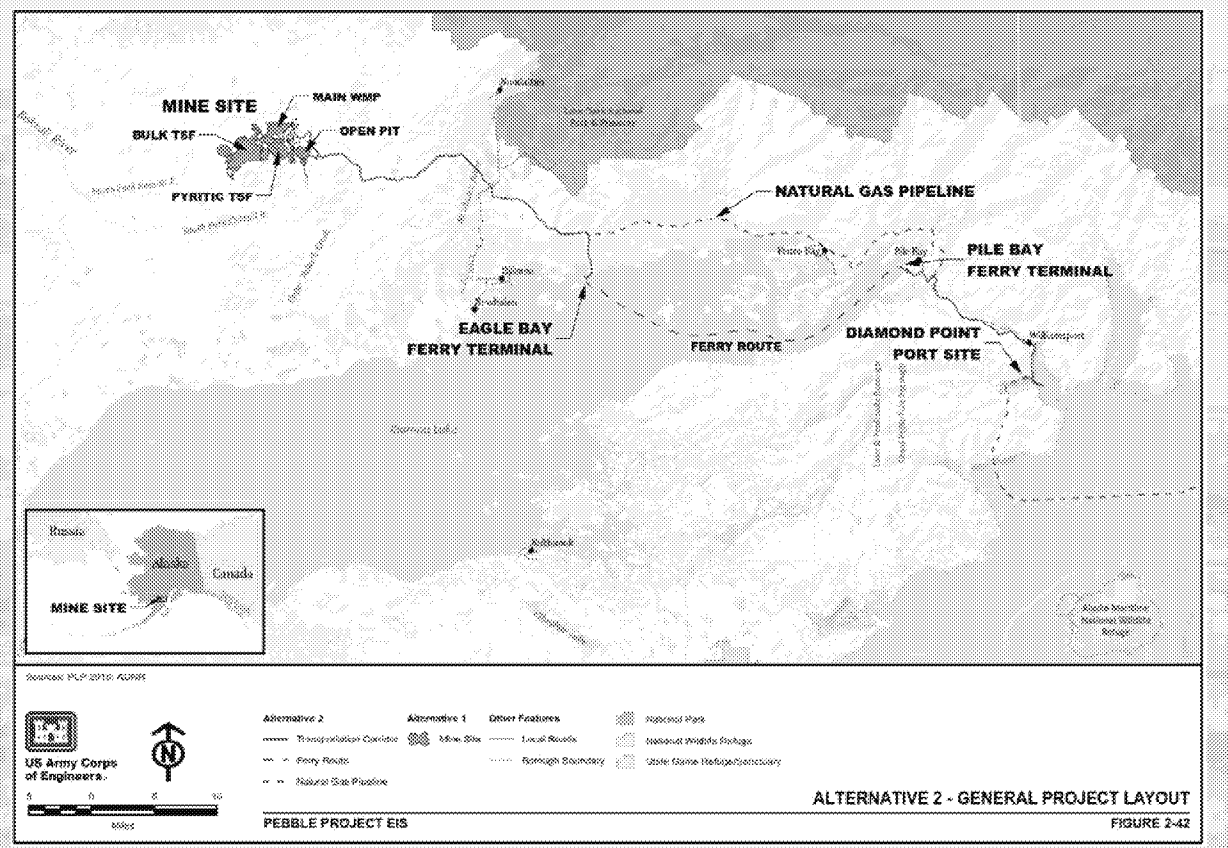
Action Alternative 2 – North Road and Ferry/Downstream Dams



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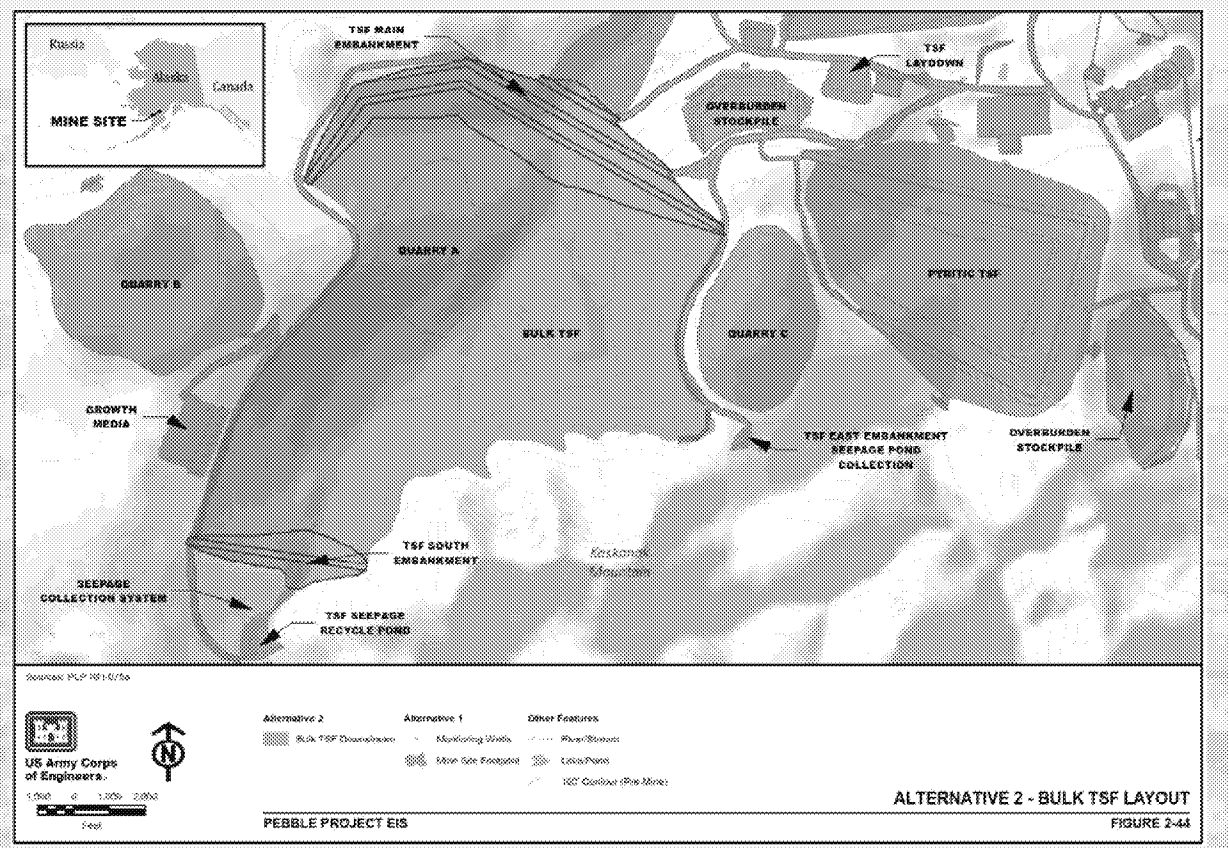
EPA-0135-0004628

Action Alternative 2 – North Road and Ferry/Downstream Dams



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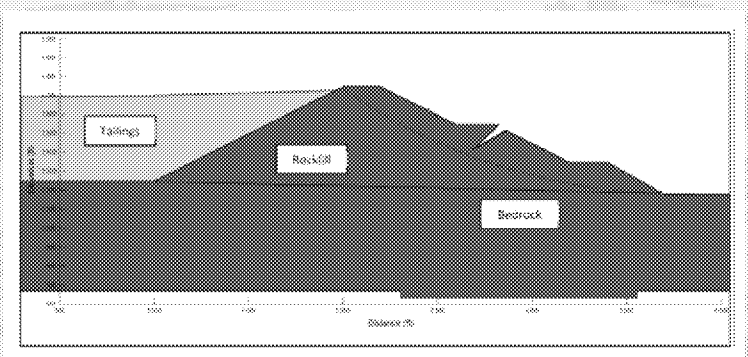
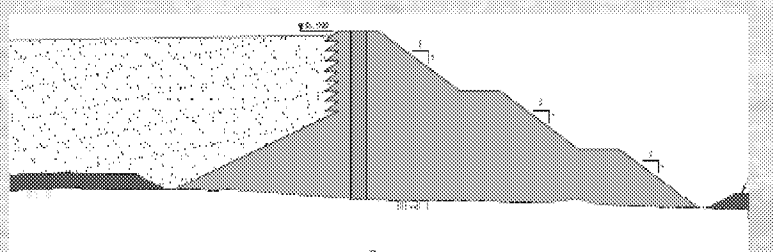
EPA-0135-0004629

Action Alternative 2 – North Road and Ferry/Downstream Dams

Alternative 2 – Bulk TSF Downstream Dam



Alternative 1 – Bulk TSF Centerline Dam



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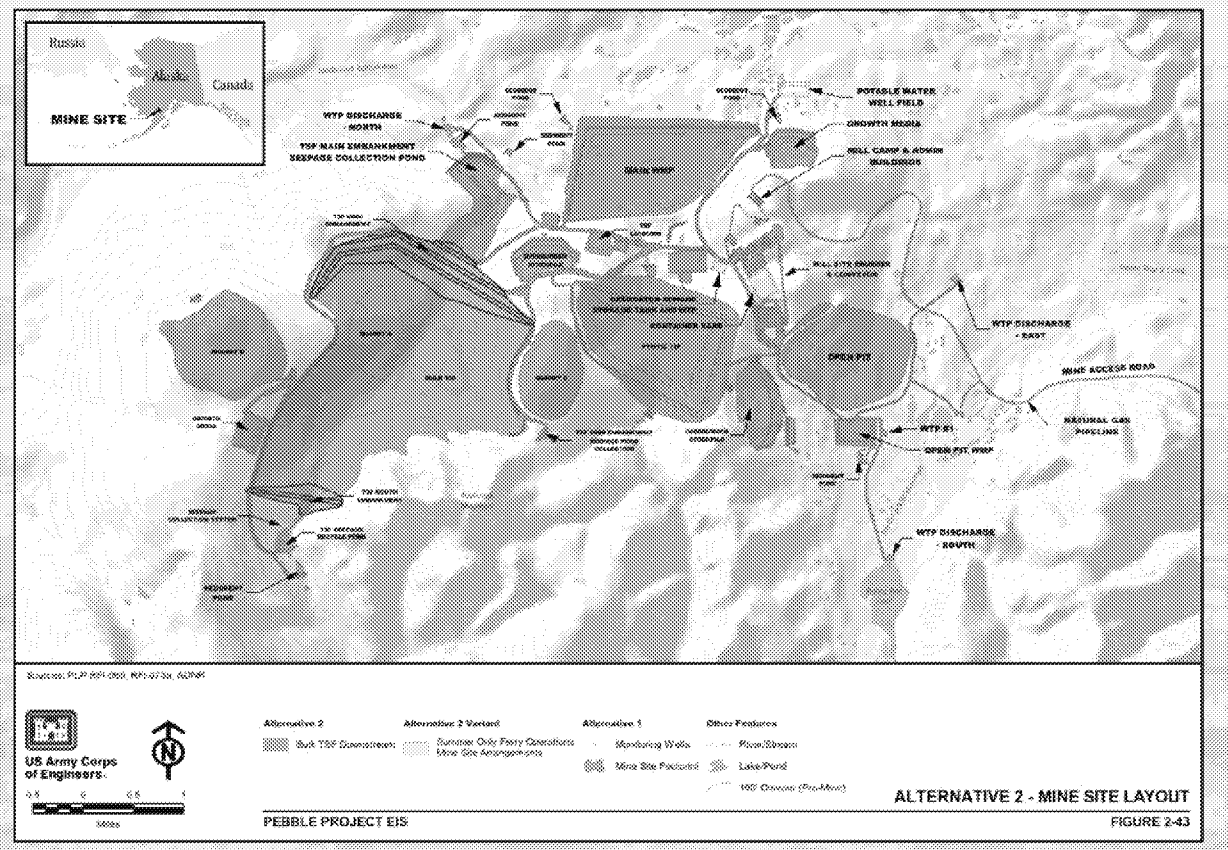
Action Alternative 2 – Summer Only Ferry Operations Variant



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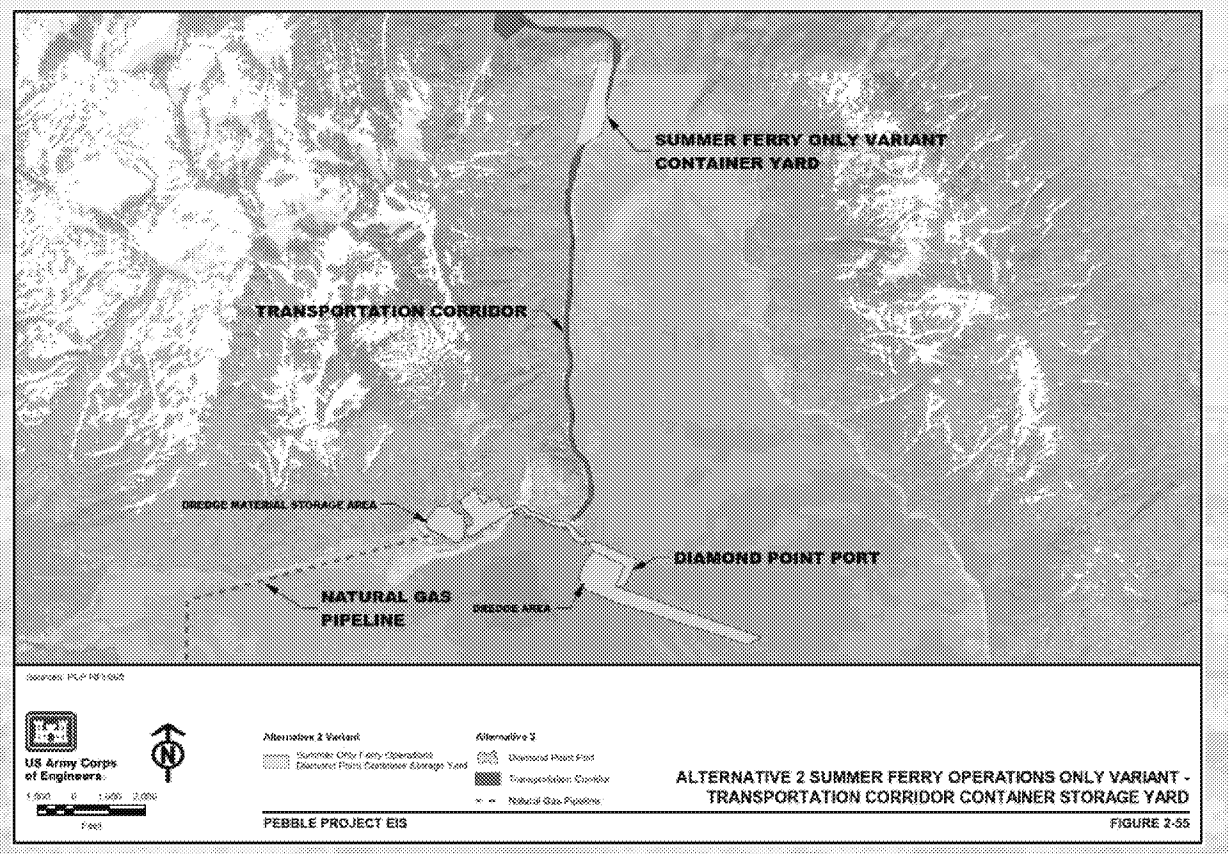
Action Alternative 2 – Summer Only Ferry Operations Variant



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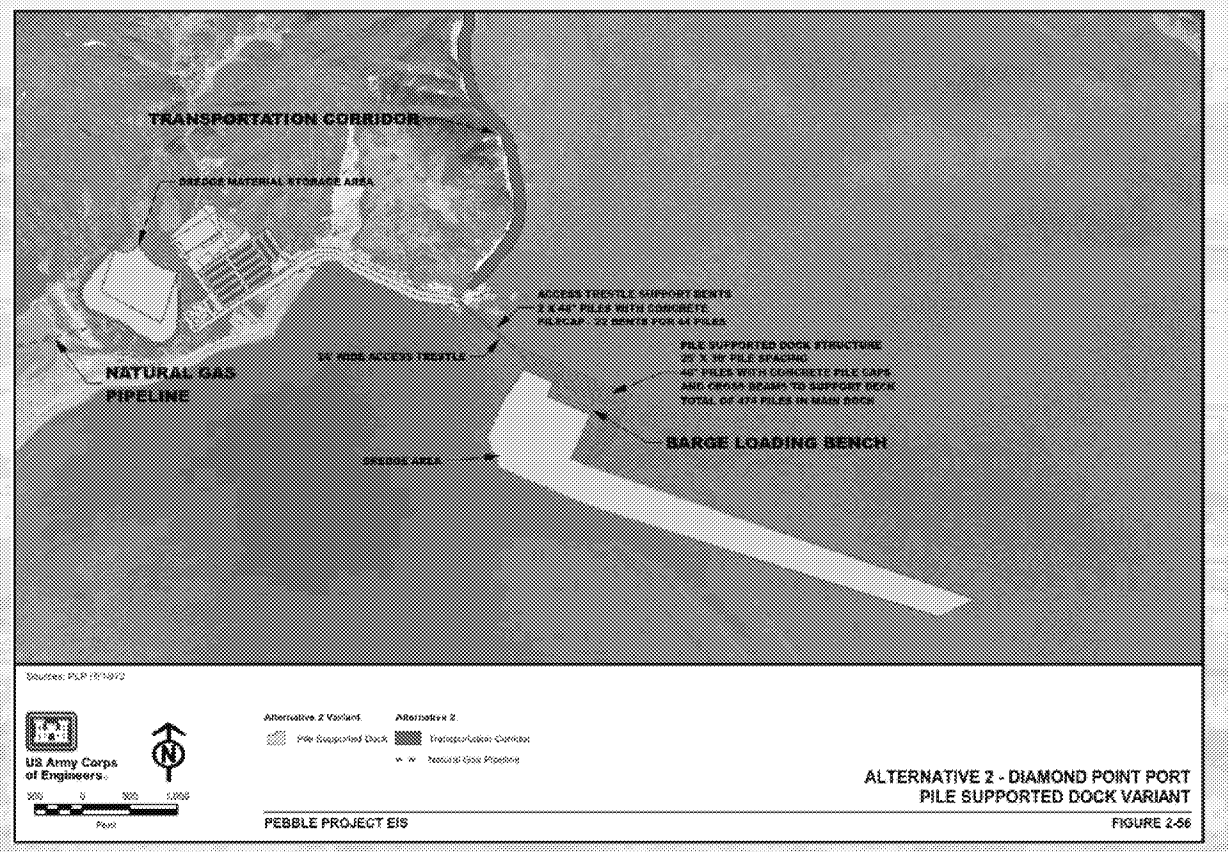
Action Alternative 2 – Pile Supported Dock Variant



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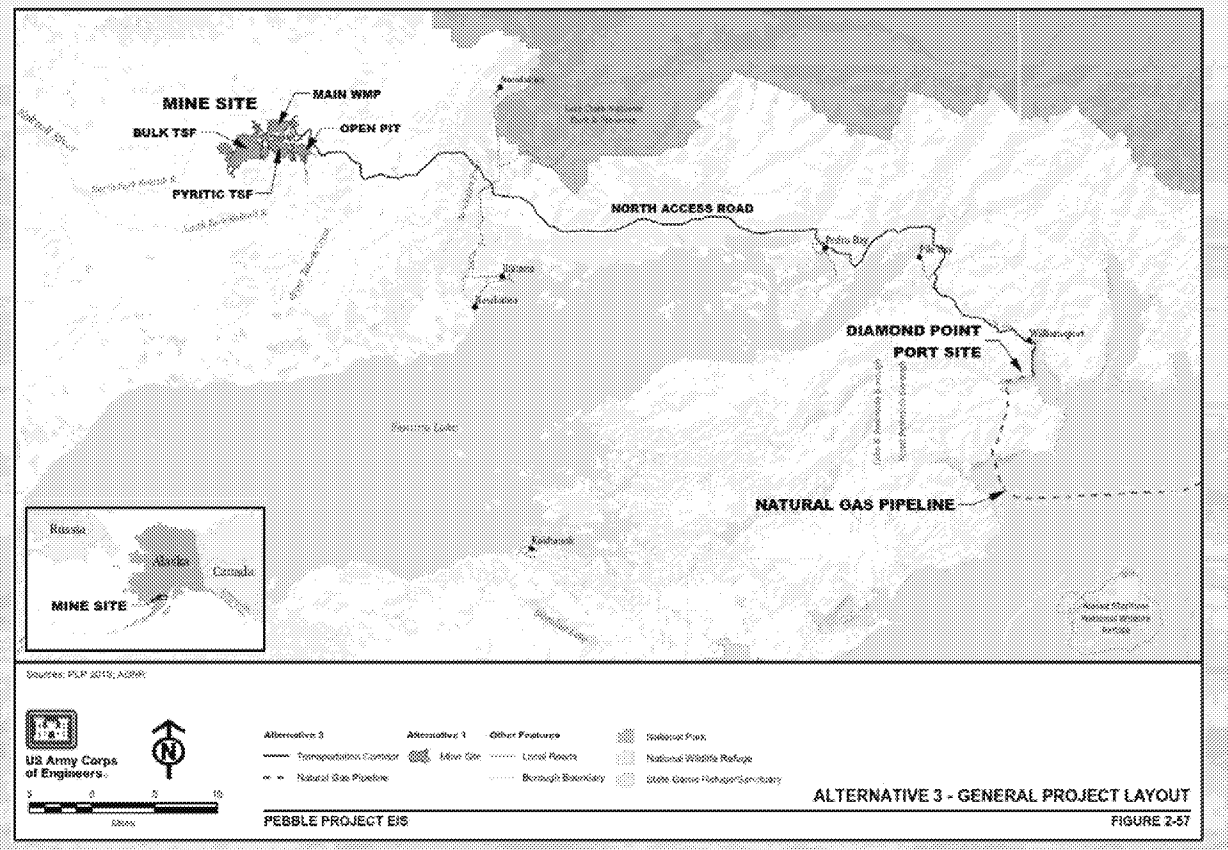
Action Alternative 3 – North Road Only



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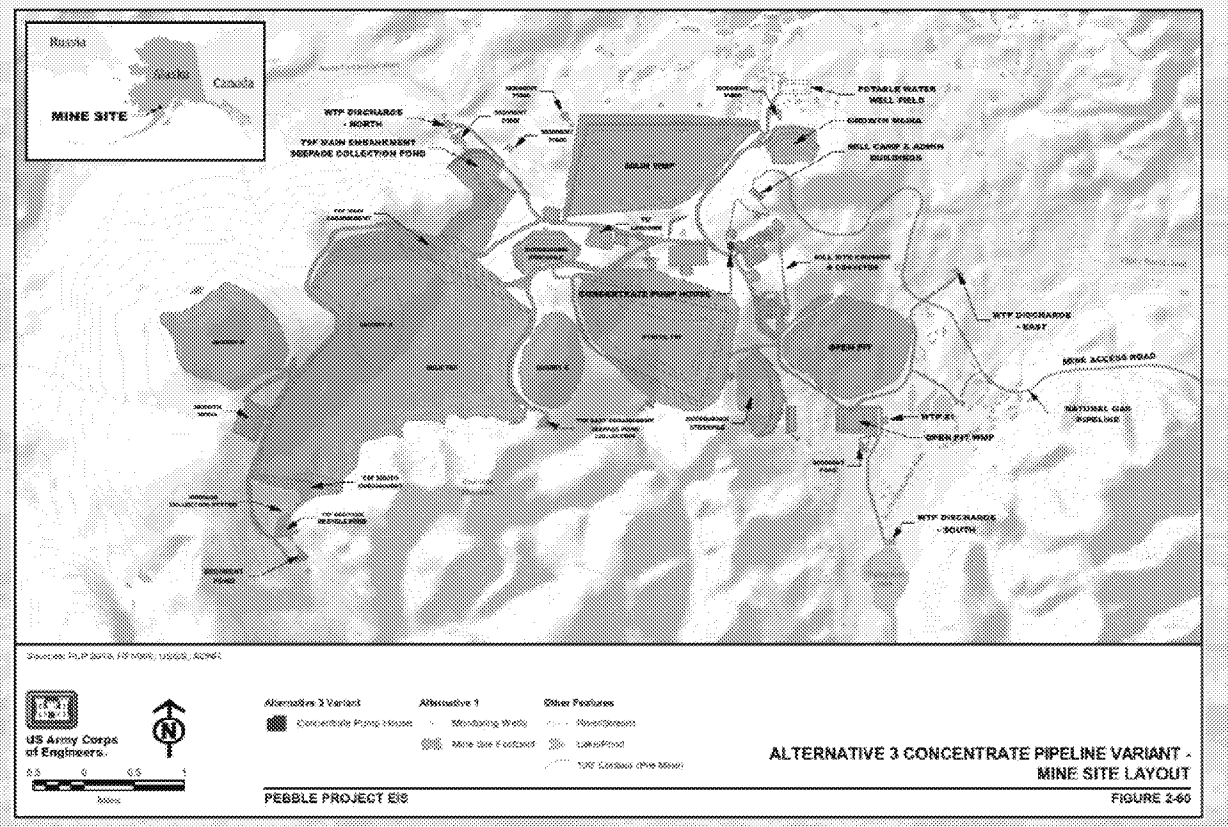
Action Alternative 3 – Concentrate Pipeline Variant

Includes two options: discharge water at Diamond Point and return water pipeline



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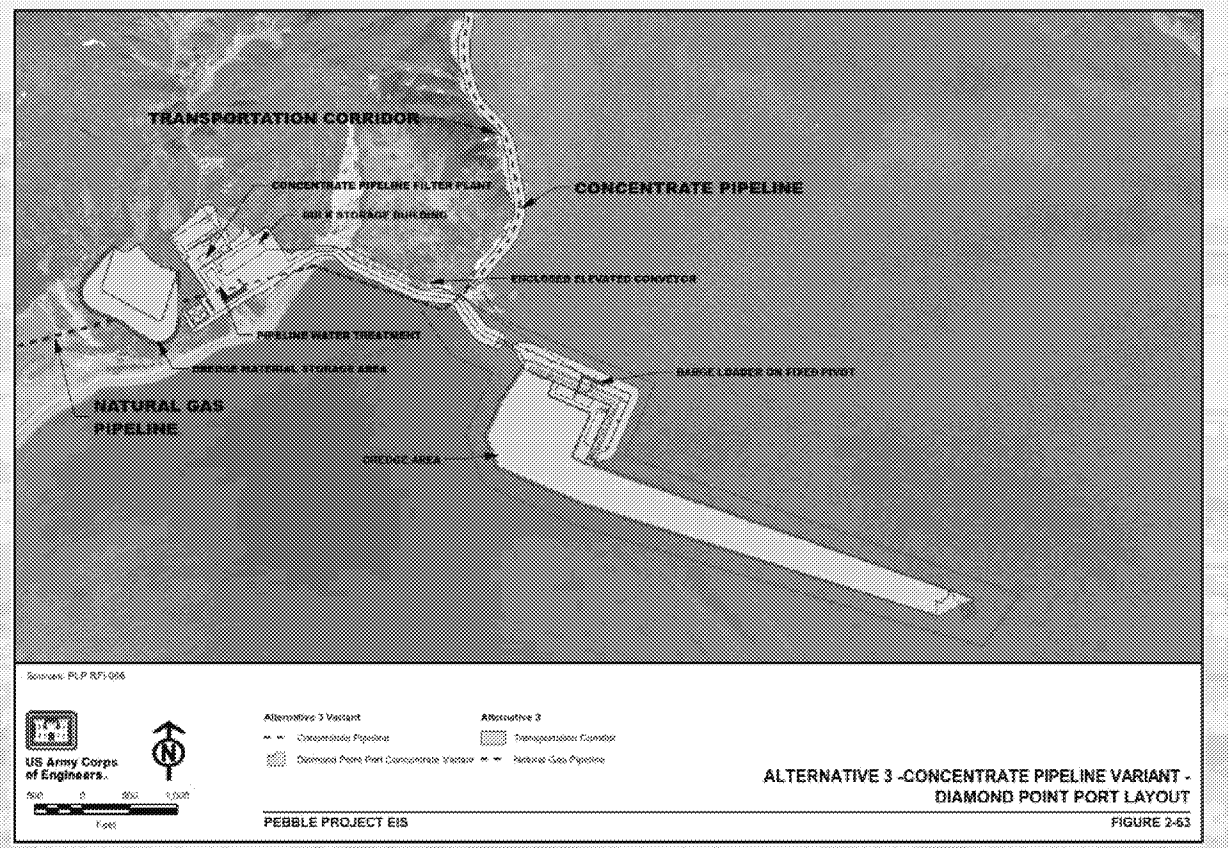
EPA-0135-0004635

Action Alternative 3 – Concentrate Pipeline Variant



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Format and Level of Detail for Chapter 2

- Section 2.1 – Alternatives Development Process, references Appendix B – 1 Page
- Section 2.2 – Alternatives Carried Forward for Detailed Analysis
  - 30 to 35 pages of text
  - 64 figures
  - 23 Tables
  - Appendix N – PLP October 10, 2018 Project Description
- Section 2.3 – Alternatives Eliminated from Further Consideration – 6 pages

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EPA-0135-0004637

Update on Appendix B – Alternatives Development

- August 17, 2018 – Preliminary List of Options and Screening Criteria
  - Condensed version intended to solicit feedback on list of options and screening criteria
  - Comments received from one Cooperating Agency
  - Comments were considered when preparing the next version of Appendix B

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EPA-0135-0004638

Update on Appendix B – Alternatives Development

- September 14, 2018 – Alternatives Development Process
  - Screening criteria modified
  - Presented the screening analysis for each alternative
  - Comments from USACE and three Cooperating Agencies
    - Currently considering comments and revising the appendix (eliminated language referring to ability of mine operator to make profit)
    - Several additional options (e.g., 115,000 tons per day throughput, Pebble East, many additional TSF locations)
    - Several options were subject to additional consideration (e.g., underground mining, in pit processing and conveying, treating tailings to make inert)
  - Next version of Appendix B will be Draft EIS

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Review of Select Alternatives

- Filtered Tailings (Dry Stack)
  - Applies to Bulk TSF only
  - Conventional slurry typically 20 to 40 percent solids
  - PLP proposes thickened tailings – approximately 55 percent solids
  - Dry stack alternative would filter to 80 to 85 percent solids
  - PLP responded to RFIs 054 and 076
  - AECOM mining experts reviewed RFIs – September 24 Memorandum
  - Dry stack is not technically practicable

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Review of Select Alternatives

- Other Mine Locations
  - Appendix B looked at Whistler, Pyramid, and five massive sulfide deposits
  - Pebble East has been added – RFI 094
  - Whistler and the five sulfide deposits do not meet USACE overall purpose
  - Pebble East and Pyramid still under evaluation
- Underground Mining
  - RFI 094 – received from PLP October 18, 2018
  - Currently being evaluated by AECOM mining engineers

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APPENDIX B – ALTERNATIVES DEVELOPMENT PROCESS

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EPA-0135-0004642

1.0 PURPOSE OF APPENDIX

This appendix further explains the alternatives development process for the Pebble Project; summarizes each step of the process; and provides the option screening criteria and results for evaluation of a reasonable range of alternatives in the Environmental Impact Statement (EIS).

1.1 CONTEXT AND REQUIREMENTS

The federal regulations governing the National Environmental Policy Act (NEPA) state in 40 Code of Federal Regulations (CFR) 1502 that the alternatives section "is the heart of the environmental impact statement." The regulations require federal agencies to "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." The Council on Environmental Quality (CEQ) guidance clarifies that:

> *In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.* [1]

Alternatives screening is also pertinent to Clean Water Act (CWA) 40 CFR Part 230 Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (hereafter identified as 404(b)(1) guidelines), which require the analysis of practicable alternatives to the proposed discharge. The 404(b)(1) guidelines specify that:

> *Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 CFR 230.10(a)).*

The 404(b)(1) guidelines define a practicable alternative as one that is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.10(a)(2)).

For actions subject to NEPA, where the U.S. Army Corps of Engineers (USACE) is the permitting agency, the analysis of alternatives required for NEPA environmental documents would in most cases provide the information for the evaluation of alternatives under the 404(b)(1) guidelines. The alternatives development process for the Pebble Project considers a broad range of alternatives in sufficient detail to address both NEPA and CWA Section 404(b)(1) requirements.

1.2 OVERVIEW OF THE ALTERNATIVES DEVELOPMENT PROCESS

Scoping yielded a wide variety of comments that provide input to the alternatives development process. The EIS team used a structured alternatives development process to recognize the project's large geographic footprint, the various project components, and the substantive input in scoping by the public, stakeholders, and agencies.

[1] Council on Environmental Quality, Executive Office of the President, Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations. 46 Fed. Reg. 18026 (March 23, 1981) As Amended (1986).

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To fully consider the wide range of issues identified in the scoping comments, this alternatives development process used the concept of "options," which consist of variations of components of the proposed project. For example, an option for transporting concentrate from the mine site could be a slurry pipeline instead of using trucks. Individual pipeline route variations would also be considered as options.

The four steps followed for alternatives development are summarized below.

Step 1: Developed the criteria for screening options to the proposed action. To narrow the range of options considered in detail in the EIS, criteria were organized around four screening tests. Each option must: 1) meet the purpose and need; 2) be reasonable; 3) be practicable in light of the overall project purpose; and 4) not increase adverse environmental impacts. The screening criteria are more fully described in Section 1.4, below.

Step 2: Identified options to address scoping concerns, compiled options that were suggested during the scoping process, and identified options that were previously evaluated by Pebble Limited Partnership (PLP) when developing the proposed project design. These options represented the initial range of alternatives and are identified in Table B-1, and organized by project component.

Step 3: Applied screening criteria from Step 1 to the options developed in Step 2. The criteria were used to determine reasonable options for detailed analysis in the EIS. Results of this screening are included in Table B-1, including rationale for the options dismissed from further analysis.

Step 4: Packaged options that met all of the screening criteria into viable action alternatives for detailed analysis in the EIS (i.e., an action alternative is a complete functioning project that includes power, a port, transportation, and mine site facilities).

1.3 SCREENING CRITERIA FOR THE FULL RANGE OF ALTERNATIVES

The EIS team screened options around four criteria, described below. The criteria screening steps were followed sequentially. If an option clearly did not meet one of the test-screening criteria, it was dismissed from further consideration, and did not proceed to the subsequent screening tests.

The objective of these criteria was to guide the screening process, but not to mechanically generate outcomes that substitute for professional judgment. By nature, these criteria were not fine filters. It was not the purpose of the option screening process to judge between trade-offs or make close calls, which would instead be addressed in the analyses within the EIS.

1.3.1 Screening – Purpose and Need

The project purpose and need is a key element of alternatives development. The purpose and need statements for the project are provided in Chapter 1 of the EIS.

The overall project purpose, determined solely by USACE, is used for evaluating practicable alternatives under the 404(b)(1) guidelines, and was therefore used as the first screening test. The overall project purpose must be specific enough to define the applicant's needs, but not so restrictive as to preclude discussion of a range of alternatives. USACE has determined that the overall project purpose is to develop and operate a copper-gold-molybdenum mine in Alaska in order to meet current and future demand for commodities, including copper, gold, and molybdenum.

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Options that did not meet the USACE's determination of overall project purpose were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

1.3.2 Screening – Reasonable Options

Screening criteria for reasonable options drew on the NEPA regulatory intent of reasonable alternatives, which includes those that are practical or feasible, using common sense. Options that would not pass this test of reason include:

- Those that are not practical because they would not provide a reasonable return on investment.
- Those that could not feasibly attain most of the basic objectives of the project.
- Those suggested during scoping that are not specific or are substantially similar to other options being considered.
- Those suggested during scoping that were based on a misunderstanding of the proposed project, regulations, or conclusions of other reports or studies.

This screening test for reasonable options is limited to the general factors listed above. Screening for technical, economic, and logistic considerations is included in the subsequent screening test for practicable options.

Options that were assessed as not reasonable were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

1.3.3 Screening – Practicable Options

Only options that are determined to be practicable based on the 404(b)(1) guidelines can be considered by USACE during the permit decision process. Therefore, options that progressed through the screening criteria above were evaluated for practicability.

In terms of practicability, the 404(b)(1) guidelines provide a two-fold definition of a practicable alternative (40 CFR 230.10(a)(2)):

1. A practicable alternative is one that is available and capable of being done after taking into consideration cost, existing technology, and logistics.
2. The three practicability criteria (cost, existing technology, and logistics) apply in light of the overall project purpose.

Cost or economic practicability considers the relative cost effectiveness of technologically feasible and operationally efficient component options. If project costs of implementing an option exceed reasonable or practical limits, the option could be considered not practicable. In the screening stage, rough order-of-magnitude cost comparisons were made, because detailed engineering and costs could not reasonably be developed for each option. Where the order-of-magnitude cost review is not sufficient to decide whether an option is economically practicable, it would be advanced for additional review, and additional information would be gathered before reaching a screening conclusion.

The practicability considerations of existing technology and logistics are evaluated to minimize the risk of an option causing a component to be unable to perform its intended function efficiently. Options that make project components too complex or use unproven technology increase the risk of operational failure and accidents. Options identified for a specific project component may be subject to technical constraints that affect the workability of the option. For

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example, topography, resource needs, spatial relationships of one component to another, temporal sequences, operating considerations, or engineering data for a specific option may influence whether a particular option is capable of meeting the project objectives. The existing technology and logistics criteria consider the ability of each option in meeting these challenges.

Options that were assessed as clearly not practicable in terms of cost, existing technology, and logistics in light of the overall project purpose were dismissed from consideration as an action alternative option for evaluation in the EIS, and did not proceed to the subsequent screening test.

1.3.4 Screening – Environmental Impacts

The 404(b)(1) guidelines require an evaluation of both practicability and environmental effects to determine whether there are practicable alternatives to the proposed project that would have less adverse impacts on the aquatic ecosystem, so long as the alternative does not have other significant environmental consequences (40 CFR 230.10(a)). Therefore, options that progressed through the screening criteria above were evaluated and compared for their relative extent and nature of impacts on the physical, biological, and socioeconomic environments.

Based on this assessment, options that have a high potential to increase the overall adverse environmental impacts or that add no environmental benefit compared to the Proposed Action were dismissed from further consideration as an action alternative option for evaluation in the EIS. Options that have potentially greater adverse impacts to one or more resources, but potentially fewer adverse impacts to other resources (i.e., trade-off of adverse impacts but may not be an overall increase), and options that clearly provide avoidance or minimization advantages (i.e., an environmental benefit) progressed as viable options to be evaluated as components of action alternatives in the EIS. Additionally, should two feasible options be generated to avoid or minimize an impact, but one of those options was determined to have potentially greater adverse impact on the environment—the option with greater impacts may be recommended for elimination from further study.

1.4 ALTERNATIVES DEVELOPMENT RESULTS

The USACE and cooperating agencies reviewed the outputs of each step in the alternative development process. The end result was to identify a reasonable range of action alternatives for full analysis in the EIS. PLP's proposed project is the proposed action for analysis in this EIS. Table B-1 provides details on the options considered, the screening results, and the status of each option (i.e., proposed action, alternative, or dismissed). The components and subcomponents of PLP's proposed action are included in Table B-1 for comparative purposes. Figure B-1 depicts the access and pipeline alignments considered. Figure B-2 illustrates the mine layout option considered.

The options that met screening criteria and marked as alternatives in Table B-1 were packaged into action alternatives (i.e., an alternative must be a functioning project and include power, a port, transportation, and mine facilities). As a result of this alternatives development process, two action alternatives were identified for detailed analysis in the EIS. The action alternatives vary from the proposed action in key engineering design, siting, and operational features. These alternatives address concerns raised in scoping and provide a reasonable range of alternatives for comparison. Action alternatives are described in Chapter 2 of the EIS.

NEPA regulations also require that a No Action alternative be analyzed. In this case, the No Action alternative would assume that the mine, transportation facilities, port, and pipeline would neither be permitted nor constructed as currently proposed.

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Location – Pebble Project / Deposit	LOC-001	***Origination*** – Pebble Limited Partnership (PLP) Proposed Action ***Description*** – The proposed project involves development of a copper-gold-molybdenum porphyry deposit (Pebble Deposit) located on state land in the Bristol Bay region of southwest Alaska.	☑ Proposed ☐ Alternative ☐ Dismissed
Location – Whistler Project	LOC-002	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. Based on the project Purpose and Need Statement "to develop and operate a copper-gold-molybdenum mine in Alaska in order to meet current and future demand for commodities, including copper, gold, and molybdenum," potential copper-gold-molybdenum porphyry and massive sulfide deposits in Alaska that are in exploration or advanced exploration were assessed. ***Description*** – The Whistler mineral property is a gold-copper porphyry deposit located in the Yentna mining district northwest of Anchorage. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Whistler was classified as an exploration-phase project by Giroux (2016). Exploration to date at the Whistler property has characterized 122 million tons (versus 6.5 billion tons of measured and indicated for Pebble) of resources (gold, copper, and silver) as indicated—no resources have been characterized as measured. Gold resources are estimated at 1.77 million ounces (oz), copper at 343 million pounds (lb), and silver at 6.13 million oz. To date, over 230,000 feet of core have been drilled, and exploration expenditures exceed $50 million. By comparison, exploration to date at Pebble has characterized 6.5 billion tons of measured and indicated resources; measured and indicated gold estimates are 70.6 million oz, copper at 56.9 billion lb, silver at 345 million oz, and molybdenum at 3.4 billion lb. (note that there are no molybdenum resources identified in the Whistler deposits); and PLP	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		expenditures to date on exploring and developing the Pebble Project are over $850 million. The Whistler property is not as advanced as the Pebble Project—no environmental, social, or community studies have been undertaken for the Whistler property; capital and operating costs have not been developed; and no economic analysis has been completed (Giroux 2016). Recommendations presented by Giroux (2016) are for additional exploration drilling throughout the Whistler deposits. The existence of the resources is too speculative (uncertain) and the scale of the potential resource is substantially smaller. Based on the exponential difference in resources and expenditures, it is concluded that this option is not reasonable because it is not economically feasible for PLP to acquire and develop the Whistler property. ***Why Dismissed*** – This option is not reasonable because it would not provide a reasonable return on investment.	
Location – Pyramid Project	LOC-003	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. See LOC-002 regarding Purpose and Need. ***Description*** – Pyramid is a copper-gold-molybdenum porphyry deposit located on the southwestern tip of the Alaska Peninsula southwest of Anchorage. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Pyramid was classified as an early-stage exploration project by SRK (2018). Exploration to date at the Pyramid property has characterized only inferred resources of 24.5 million tons of copper, 74 million tons of molybdenum, and 488,000 ounces of gold. Through 2017, the amount of core drilling at Pyramid was 42,100 feet, compared with over 1 million feet of core	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		drilling at Pebble. Therefore, it is concluded that this option is not reasonable because resources at Pyramid are inferred (speculative), but not measured/indicated; are exponentially less than those measured/indicated at the Pebble Project; and that based on the amount of money expended to date by PLP (over $850 million) to explore and develop the Pebble Project, it is not economically feasible for PLP to acquire and develop this property. ***Why Dismissed*** – This option is not reasonable because it would not provide a reasonable return on investment.	
Location – Outside of Alaska	LOC-004	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. ***Description*** –This option involves acquisition, development, and operation of a copper-molybdenum massive sulfide deposit located outside of Alaska. ***Screening*** – 1. Purpose and Need Test: Does not meet the U.S. Army Corps of Engineer's (USACE's) overall project purpose to develop and operate a copper-gold-molybdenum mine in Alaska. ***Why Dismissed*** – This option does not meet the purpose and need of the project.	☐ Proposed ☐ Alternative ☑ Dismissed
Location – within Alaska	LOC-005	***Origination*** – Evaluation of alternative mine location options for mining copper, gold, and molybdenum was suggested during scoping. ***Description*** –This option involves development and operation of a multi-metals massive sulfide deposit located in of Alaska. ***Screening*** – 1. Purpose and Need Test: Meets the Purpose and Need	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		3. Reasonable Test: Five massive sulfide deposits in Alaska (Arctic, Delta, Niblack, Palmer, and Sun) were evaluated. Indicated resources ranged from 26 million tons (Arctic) to no indicated resources (Delta and Palmer). By contrast, for the Pebble deposit, over 12 billion tons of measured (591 million tons), indicated (6.5 billion tons), and inferred (4.9 billion tons) resources are reported. Therefore, it is concluded that this option is not reasonable because resources at the five massive sulfide deposits are at best indicated at 26 million tons, but mostly inferred (speculative); and are exponentially less than those measured/indicated at the Pebble Project. Based on the amount of money expended to date by PLP (over $850 million) to explore and develop the Pebble Project, it is not economically feasible for PLP to acquire and develop these properties. ***Why Dismissed*** – This option is not reasonable because it would not provide a reasonable return on investment.	
Layout – Mine Layout Option 3	LAY-001	***Origination*** – PLP's May 11, 2018 update changed the proposed mine layout to Mine Layout Option 3, which would be the basis for PLP's application moving forward. ***Description*** – This option is part of the Proposed Action, which is based on a mining plan that sends all ore directly to the mill. It has two separate Tailings Storage Facilities (TSFs); a lined pyritic TSF with space to store potentially acid-generating (PAG) waste in the North Fork Koktuli River (NFK) East site; and an unlined bulk tailing TSF in the NFK West site. A lined water management pond (WMP) would be situated in the NFK North site. The bulk TSF would have a dry closure. The pyritic tailings and PAG waste would be relocated to the pit lake at closure, and the pyritic TSF and WMP would be reclaimed. This option facilitates post-closure placement of PAG waste and pyritic tailings in the pit lake, and enables a higher efficiency for the storage of bulk tailings. This option removes the need to store low-grade ore and manage associated runoff, and provides greater	☑ Proposed ☐ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		water storage capacity for upset conditions. The WMP is downgradient of impacted areas, facilitating capture and storage of extreme runoff events. This option also allows for safe, passively managed long-term storage of the pyritic tails and PAG waste in the pit lake.	
Layout – Mine Layout Option 1	LAY-002	***Origination*** – This mine layout option was PLP's Proposed Action in the December 2017 Department of the Army (DA) permit application. PLP's May 11, 2018 update changed the proposed mine layout to Option 3 (LAY-001). ***Description*** – This option is based on a mining plan that requires stockpiling capacity for lower-grade ore (LGO) that is processed late in the mine life. A single TSF with separate cells for bulk and pyritic tailings would be constructed in the NFK West site, with an internal embankment between the cells. The pyritic TSF would be lined. The bulk TSF would not be lined. PAG waste and LGO would be stored in a lined facility in the NFK East site. The main WMP would be constructed north of the NFK East site. The bulk TSF would have a dry closure. The pyritic TSF would have a wet closure. The LGO/PAG waste storage facility would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable mine layout option. 3. Practicable Test: This layout was originally part of PLP's proposed action, and is assumed practicable in terms of cost, existing technology, and logistics. 4. Environmental Impacts Test: This option would have a smaller WMP which would reduce the total footprint and impacts to wetlands. However, this option requires maintenance of the pyritic TSF in a subaqueous state, and seepage collection into perpetuity. The exposed LGO and PAG waste rock would also be likely to become acidic when exposed to the atmosphere, resulting in acidic drainage and increased metals leaching. There is significant public concern that	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		tailings could flow from a dam failure, and doubt that a TSF can be maintained in a subaqueous state into perpetuity. ***Why Dismissed*** – This option would increase overall adverse impacts. Although there would be a reduction in some impacts from the smaller WMP, the need to maintain the pyritic TSF and capture and treat seepage water into perpetuity makes this option more environmentally damaging than the proposed LAY-003. Additional water quality impacts would result from storing the LGO and PAG waste rock in open stockpiles. Although mitigation in the form of collecting and treating the water could be effective, preventing the LGO and PAG waste rock from becoming acidic is preferable.	
Layout – Mine Layout Option 2	LAY-003	***Origination*** – This mine layout option was evaluated by PLP when developing the proposed project design. ***Description*** – This option is based on a mining plan that would send all ore directly to the mill. The TSF would be constructed in the NFK West site, and consist of a single cell with an internal area to store the pyritic tailings so that they remain subaqueous. A lined WMP with space to store PAG waste would be constructed in the NFK East site. The tailings would have wet closure, and the WMP would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable mine layout option. 3. Practicable Test: This option is practicable. It requires less fill material, because there is no internal embankment, and it requires that all tailings be maintained in a subaqueous state in perpetuity. There are no proven methods of segregating two tailings streams in one cell that would permanently keep the pyritic tailings separate from the bulk tailings during operations, while the TSF progressively increases in size, to prevent the co-mingling of the two supernatant waters, and prevent contact of the two entrained waters concurrently with maintaining the	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		flow-through seepage concept of the bulk TSF. 4. Environmental Impact Test: Seepage water quality for the main embankment would be impacted by the pyritic tails. Re-handling of the pyritic tails for storage in the pit lake would be precluded, and they would need to be maintained in a subaqueous state into perpetuity. The dam would need to be inspected and maintained into perpetuity to prevent dam failure and tailing flows. Removes need to store LGO and manage associated runoff. Provides greater water storage capacity for upset conditions. ***Why Dismissed*** – This option would increase overall adverse impacts from reduced seepage water quality and the requirement to maintain the TSF into perpetuity.	
Mine Size – EPA Restricted Mine Size	LAY-004	***Origination*** – An alternative suggested during scoping was to restrict the size of the mine to what the U.S. Environmental Protection Agency (EPA) found appropriate in the 2014 Watershed Assessment. ***Description*** – This option would restrict the size of the mine to what the EPA found appropriate in the 2014 Watershed Assessment. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable because EPA did not make a determination in the Watershed Assessment that any of the three mine scenarios they considered would be "appropriate." ***Why Dismissed*** – This is option is not reasonable. See LAY-005, which considers the smallest mine size scenario EPA considered. LAY-004 is dismissed because the suggestion is based on a misunderstanding of the EPA Watershed Assessment, and is likely the same—or very similar to—LAY-005.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Mine Size – Smaller Mine Pit Size	LAY-005	***Origination*** – Consideration of a smaller pit mine size was evaluated by USACE as a potential means to reduce project footprint, as well as surface, water, and other environmental impacts. ***Description*** –This option examines the Pebble 0.25 mine scenario, the smallest mine size considered by the EPA in the 2014 Watershed Assessment. Under this option, 0.23 billion metric tons of ore would be mined, with a throughput of 31,100 metric tons per day (tpd). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable because it would not allow a profitable project, considering the investment in infrastructure that would be required. See TPD-002 for evaluation of the 50,000 tpd option. An optimization study showed that option TPD-002 would not have a positive net present value, due to the fixed infrastructure component of the costs. ***Why Dismissed*** – This option is not reasonable because it would not provide a reasonable return on investment. See also TPD-002.	☐ Proposed ☐ Alternative ☑ Dismissed
Mine Size – Larger Mine to Develop More of the Known Deposit	LAY-006	***Origination*** – Evaluation of options to maximize the potential economic benefits of developing the deposit, such as a larger and longer-lived mine, was suggested during scoping. ***Description*** –This option would increase the Mine Site and duration of operations to develop more of the known and inferred resource of the overall deposit. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The proposed project would only develop 10 percent of the measured, indicated, and inferred resource. It is reasonable to consider if	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mine Location and Layout Options			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		additional resources can be developed without increased impact. 3. Practicable Test: Practicability is unknown at this time, but Northern Dynasty has communicated to shareholders that expanded development is possible (Northern Dynasty 2013). 4. Environmental Impacts Test: This option would increase environmental impacts by generating additional tails and other noneconomic material that would need to be stored on site. Additionally, the mine would operate longer, prolonging the duration of operations impacts. ***Why Dismissed*** – This option would increase overall adverse impacts. Although this option fails the test to be considered as an alternative in the Environmental Impact Statement (EIS), an expanded mine would be considered in cumulative effects in Chapter 4 of the EIS.	

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Mining Type – Surface Mining	MNG-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which includes developing the resource using open pit mining methods.	☑ Proposed ☐ Alternative ☐ Dismissed
Mining Type – Underground Mining	MNG-002	***Origination*** – Underground mining was evaluated by PLP when developing the proposed project design, and was suggested for consideration during scoping. ***Description*** – This option would develop the resource using underground mining methods. The proposed project would develop the portion of the deposit that is close to the surface. If the mine were expanded in the future (see LAY-006), underground methods such as block caving would likely be proposed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Evaluating underground mining methods is reasonable for an EIS. 3. Practicable Test: The portion of the Pebble Deposit proposed to be mined is at the surface, with minimal overburden or overlying waste rock. Underground mining of this portion of the deposit would be expected to result in a mine roof collapse, ground surface subsidence, and sinkhole formation. Existing underground mining techniques cannot be used to mine the proposed project because the remaining surface material would collapse. ***Why Dismissed*** – This option is not practicable using existing technology for the portion of the deposit that is proposed to be mined. Underground block caving is a method that would be considered in the future if mine expansion is proposed (PLP Request for Information [RFI] 062 Response). An expanded mine scenario is considered in the EIS, Chapter 4, under cumulative impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Mining Type – Surface and Underground Mine	MNG-003	***Origination*** – A combination of surface and underground mining was evaluated by PLP when developing the proposed project design, and was suggested for consideration during scoping. ***Description*** – This option would develop the resource using both open pit and underground mining methods. The proposed project would develop the portion of the deposit that is close to the surface. If the mine were expanded in the future (see LAY-006), some combination of surface and underground methods would likely be proposed. See also MNG-002. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Evaluating a combination of surface and underground mining is reasonable for an EIS. 3. Practicable Test: The portion of the Pebble Deposit included in the proposed project is at the surface, with minimal overburden or overlying waste rock. Underground methods to include block caving of this portion of the deposit would be expected to result in a mine roof collapse, ground surface subsidence, and sinkhole formation. Existing underground mining techniques cannot be used to safely mine the proposed project because the remaining surface material would collapse. ***Why Dismissed*** – This option is not practicable using existing technology for the portion of the deposit that is proposed for mining. Underground block caving is a method that would be considered in the future if mine expansion is proposed (PLP RFI 062 Response). An expanded mine scenario is considered in the EIS, Chapter 4, under cumulative impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Material Handling – Truck and Shovel	MNG-004	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which involves use of large shovels to load ore into haul trucks. The trucks would transport the ore from the pit to the crusher.	☑ Proposed ☐ Alternative ☐ Dismissed
Material Handling – In-Pit Crushing and Conveying	MNG-005	***Origination*** – In-pit crushing and conveying was evaluated by PLP when developing the proposed project design. PLP completed an engineering evaluation of in-pit crushing and conveying in response to RFI 032, which requested feasibility information for several project options. ***Description*** – This option would use in-pit crushing and conveying methods for material handling that would begin several years into the start of operations, and operate through the end of the mine life. This option would require the excavation of a dedicated crusher pocket and ramp to transport ore via a conveyor to the processing facility. The additional excavation associated with the crusher pocket and ramp would generate additional PAG waste, which would exceed the space available for PAG waste storage in the pyritic TSF, and require the development of a separate PAG waste storage facility. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable material handling option. 3. Practicable Test: In-pit crushing is a practicable material handling option, but it is more commonly implemented at some point later in mine life, as the open pit is developed, and the installed crushing and conveying system can remain stationary for an extended period. 4. Environmental Impacts: This option would provide only a limited net reduction in trucking, and therefore diesel consumption and emissions; but would increase the overall impacted footprint and wetland impacts because of the crusher pocket and	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		ramp infrastructure and the need to create a separate PAG waste storage facility. ***Why Dismissed*** – This option would increase overall adverse impacts, with only a limited net saving in terms of diesel fuel usage and net emissions.	
Truck Fuel – Diesel	MNG-006	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, in which large-haul trucks are equipped with diesel engines and would use most of the anticipated diesel supplies. This option requires the shipment of diesel to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Truck Fuel – Liquefied Natural Gas	MNG-007	***Origination*** – Liquefied natural gas (LNG) for truck fuel was evaluated by PLP when developing the proposed project design. Use of alternative truck fuel was also suggested during scoping. ***Description*** –Under this option, LNG would be produced using an on-site plant consisting of modules that could be trucked, and LNG storage tanks manufactured off site. An engineered footprint for the facility has not been developed, but it would have a footprint of approximately 1 acre, based on similar facilities reviewed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Using LNG haul trucks is reasonable, because equipment manufacturers such as Caterpillar have been actively working to develop commercially available LNG-powered haul trucks. 3. Practicable Test: On-site production of LNG would be feasible because there would be a natural gas pipeline to the Mine Site and LNG plants of the size required are readily available and transportable. However, LNG-powered haul trucks are not commercially available for the mining industry, and are not proven to be viable on a production basis. There are currently no trucks available in the required size range.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Mining			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Why Dismissed – This option is not practicable in terms of existing technology. LNG trucks can be considered later in the EIS process as a mitigation measure if this technology advances prior to completion of the EIS and Record of Decision.	

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Facility Location/ Process Type – On-site Concentrate Production	PRO-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, in which the initial processing of ore would be conducted on site to produce a concentrate that would be transported off site for smelting. PLP estimates the annual production to be approximately 660,000 tons of copper-gold concentrate, and 16,500 tons of molybdenum concentrate.	☑ Proposed ☐ Alternative ☐ Dismissed
Facility Location– Off-site Ore Processing	PRO-002	***Origination*** – Off-site ore processing was evaluated by PLP as an option when developing the proposed project design. Evaluation of alternative locations for ore processing was also suggested during scoping. ***Description*** – Off-site ore processing would involve transporting all ore away from the project area for processing. This would involve transportation of 180,000 tons of ore from the mine site to the mill site daily. This would require approximately 100 times the proposed truck, ferry, lightering barge, and ship traffic. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider off-site transport if it would reduce the size and impact of mine site facilities such as the TSFs. 3. Practicable Test: Off-site processing presents a series of challenges in terms of cost and logistics, which likely make this option not practicable. Associated issues are as follows: • Introduces inefficiencies, because it requires the use of large amounts of energy and equipment to transport the non-mineralized portion of the ore. • Requires transportation of more than 100 tons of unprocessed rock every minute, which would require almost continuous truck traffic, 24 hours per day, every day of the year. • The increased amount of infrastructure required off site and for transportation	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		purposes would broaden the project footprint. • Off-site processing would result in increased project costs. 4. Environmental Impact Test: There would be increased traffic and potentially additional infrastructure required to transport the rock, resulting in elevated air emissions, diesel consumption, visual impacts, noise levels, dust, wildlife impacts, and wetland impacts. Increases risk of accidents and spills caused by adverse road conditions, inclement weather, landslides, debris blockages, etc., that would require emergency vehicles, and could further impact the environment and temporarily block the transport corridor. ***Why Dismissed*** – This option would increase overall adverse impacts, and would likely not be practicable in terms of costs and logistics.	
Facility Location /Process Type – On-site Ore Processing (Metal Production)	PRO-003	***Origination*** – On-site metal processing was evaluated by PLP as an option when developing the proposed project design. ***Description*** – On-site ore processing would construct a smelter and produce metals on site (copper, gold, and molybdenum) instead of a concentrate product. On-site smelting would require additional land for the facility and disposal of smelting waste. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider this option if it would reduce transportation impacts. 3. Practicable Test: On-site ore processing is likely feasible in terms of technology, but smelting at a large, existing, established ore-processing facility would be much less expensive. 4. Environmental Impacts Test. On-site smelting would reduce trucking and ship traffic, but increase Mine Site air emissions. Increased air emissions would result	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Processing			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		from increased natural gas usage (thermal heating of the ore and increased power generation) and heavy metals escaping the ore heating step. The additional smelting and waste disposal facilities would increase wetland impacts. ***Why Dismissed*** – This option would increase overall adverse impacts.	

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
180,000 tons per day	TPD-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which includes mine throughput of 180,000 tpd over a 20-year mine life. It is a revision of the previously proposed 160,000-tpd throughput. A throughput of 180,000 tpd eliminates the need for a LGO/PAG storage facility, which would require 4 additional years of processing at the end of operations. This option reduces the mine footprint from the originally proposed 160,000-tpd throughput.	☑ Proposed ☐ Alternative ☐ Dismissed
50,000 tons per day	TPD-002	***Origination*** – This option was evaluated by PLP as an option when developing the proposed project design. ***Description*** – Mine throughput of 50,000 tpd, with a mine life of 71 years. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: An optimization study showed that this option does not provide a positive financial return. The small throughput of the 50,000-tpd project does not have a positive net present value, due to the fixed component of the costs. It is not reasonable to consider an option that would not provide a positive financial return. ***Why Dismissed*** – This option is not reasonable because it would not provide a reasonable return on investment .	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
160,000 tons per day	TPD-003	***Origination*** – This option was evaluated by PLP as an option when developing the proposed project design. ***Description*** – This throughput option of 160,000 tpd would require construction of a large, lined pad for storing PAG waste rock and LGO (PAG waste rock would be returned to the completed pit at closure and LGO would be processed during the later years of mine operations). This option was replaced by the 180,000-tpd throughput as the Proposed Action. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider this option because it was originally proposed by PLP. 3. Practicable Test: This plant is appropriately sized to efficiently process the targeted 1.5 billion-ton ore resource using a standard processing plant design and equipment. An optimization study has demonstrated that this option produced a positive financial return. 4. Environmental Impacts Test: This throughput option is based on previous project designs to store the LGO and PAG waste rock for processing in the last 4 years of operation. This design would create additional mine facility footprint that would need to be restored at the time of closure. There would be no change in the footprint of other mine and transportation facilities compared to the 180,000-tpd option. The LGO stockpile would generate poor-quality runoff water and seepage (acid rock drainage [ARD] and metals leaching) that would need to be collected, managed, and treated. ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
320,000 tons per day	TPD-004	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – Mine throughput of 320,000 tpd over an 11-year mine. It is assumed that this throughput option would result in the same mine pit and TSF footprint over a shorter period. Due to higher production levels, it would likely increase the size of the processing facilities; accelerate the tailings deposition rate and TSF embankments raise schedule; and increase the volume of concentrate transported over a shorter period of time. This in turn would increase the volume of truck and ferry traffic on the transportation system, and increase activities associated with the port facility, including the number of lightering and marine-ore transport vessels. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider higher throughput rates. 3. Practicable Test: Construction and commissioning of a new plant this size would present significant execution, manpower, logistical, cost management, and other challenges that elevate project risk. It would require additional processing facilities. The significantly shorter mine life is not long enough to ensure that project operations can pass through several economic cycles and potential fluctuation in metals prices. However, it is likely practicable. 4. Environmental Impacts Test: This option would cut the life of mine operations nearly in half, reducing the time period of operational impacts. The footprint of mine pit and TSFs would remain the same, but would require addition footprint for processing facilities. This throughput level would nearly double the volume of ore processed over the Proposed Action, increasing the volume of ore concentrate truck traffic on the road and ferry systems. It would also increase the frequency of activities associated with marine transport, including lightering operations and marine-ore ship traffic.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Throughput			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Why Dismissed – Although this option would reduce the period of operations, it would increase overall environmental impacts, including the processing facility footprint, and truck, ferry, and marine operations traffic levels over the Proposed Action.	

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Table B-1: Preliminary List of Project Options Being Considered

Gold Recovery			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Gravity	GR-001	***Origination*** – PLP Proposed Action ***Description*** – The proposed option is to use gravity separation methods to recover gold.	☑ Proposed ☐ Alternative ☐ Dismissed
Secondary Gold Recovery	GR-002	***Origination*** – The use of a cyanide leach circuit for ore recovery was examined by PLP and recommended for consideration in scoping comments as a means to increase the efficiency of ore recovery. ***Description*** –This option involves construction of a cyanide leach circuit at the Mine Site to process the pyritic tails. A cyanide leach circuit could recover additional gold from the process. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option. 3. Practicable Test: Cyanide leaching is a common practice and would likely be technologically and economically feasible. 4. Environmental Impacts Test: Cyanide is toxic to aquatic organisms, wildlife, and humans. PLP has proposed to forgo a cyanide leach circuit and the additional gold recovery it would provide because of public concern for the use and transportation of cyanide. The leach facility would have a large footprint that would impact wetlands. ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Power Source – Thermal (Burn Natural Gas)	POW-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which involves power generation using natural gas as a fuel source. PLP is proposing to build a power plant at the Mine Site with a capacity of 270 megawatts (MW). The plant would be fueled with natural gas delivered from the Kenai Peninsula to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Power Source – Renewable Energy	POW-002	***Origination*** – Renewable energy power options were evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, PLP would construct and power the mine using renewable energy resources such as wind turbines and run-of-river (ROR) hydropower. Also considered under this option is supplementing the natural gas power plant production with renewables. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Using renewable energy is a reasonable option to consider. 3. Practicable Test: The two separate renewable options listed below were considered under this option. These options would supply power intermittently and in small quantities relative to the need, and would not eliminate the need for the proposed natural gas power plant and pipeline. These options would intermittently supply power that would decrease the demand on the proposed natural gas power plant, potentially resulting in decreased usage of natural gas. Both options would require additional access roads and ground disturbance to transmit power to the mine. • Wind – Wind energy generation is intermittent and must be paired with other energy sources or storage mechanisms to provide a stable, consistent supply. There are no identified wind energy resources in the vicinity capable of	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		providing a significant and consistent portion of the project energy. • ROR Hydropower – No suitable locations that could generate a significant amount of ROR hydropower could be identified. Additionally, in winter, rivers may freeze, making this power source intermittent, requiring additional energy sources. 4. Environmental Impacts Test: The construction of wind farms, ROR hydropower plants, and associated infrastructure would be additive to the proposed power plant and would increase the project footprint. The option likely would result in additional impacts to wetlands, wildlife, and aquatic resources, but potentially decrease emissions from burning natural gas. ***Why Dismissed*** – Although this option would potentially decrease the consumption of natural gas and associated emissions; it would not replace the need for the natural gas power plant and pipeline. The additional costs of building renewable energy systems for what would be supplemental power make the option not practicable. Also, the potential reduction in emissions does not appear to offset the likely additional impacts to wetlands, wildlife, and aquatic resources.	
Power Source – Purchase Power from Existing Grid	POW-003	***Origination*** – Purchasing power from the existing grid was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, power would be purchased from existing third-party providers and transmitted to the site via a High-Voltage Direct Current transmission. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Purchasing power is a reasonable option to consider. 3. Practicable Test: There is no significant power-generating capacity in the Cook Inlet area in general, and on the Kenai Peninsula in particular, to service the	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		anticipated project demand. Construction of additional generation capacity would be required regardless of where it is situated. This option is not practicable. ***Why Dismissed*** – The option is not practicable; there is no excess capacity in the existing grid.	
Power Source – Use Alternative Fuel Sources/Delivery Methods	POW-004	***Origination*** – Evaluation of alternative fuel sources and delivery methods was suggested during scoping due to concern with gas line leaks or ruptures, and potential long-term consequences that a subsea pipeline can have on the environment. ***Description*** – The most likely alternative energy sources would be diesel fuel and LNG, both of which could be delivered to the proposed Amakdedori Port via barge. Transportation from the port to the Mine Site could be by truck or pipeline. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Considering alternative energy sources is reasonable. 3. Practicable Test: Both diesel and LNG options are technologically feasible. The Donlin Gold Final EIS looked at a diesel power plant alternative and estimated that a similarly sized power plant (227 MW) would require approximately 80 million gallons of diesel per year. Use of diesel would require increased storage at the port, and a pipeline or 4,200 truck trips per year, each truck hauling three tank trailers. Diesel is readily available in Cook Inlet. Use of LNG would require a supply of LNG, a purpose-built LNG barge, and an LNG receiving terminal and storage tanks at Amakdedori. It would also require regasification at Amakdedori for transportation to the Mine Site by pipeline, or trucking LNG to a mine site storage tank where it would be regasified and fed to the power plant. The former ConocoPhillips LNG export facility in Nikiski has been sold and the	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		export permit was allowed to expire; and LNG is not currently barged in Alaska. 4. Environmental Impacts Test: Transporting an additional 80 million gallons of diesel increases the potential for spills. Emissions from the proposed power plant would be increased if diesel was used instead of natural gas. See also Section 4.21, which explains there would be few expected effects from natural gas pipeline leaks to soil or water bodies because the gas would dissipate rapidly. Use of LNG would avoid the need for the natural gas pipeline segment under Cook Inlet between the Kenai Peninsula and Amakdedori. ***Why Dismissed*** – Diesel would increase environmental impacts from spills and increased emissions. LNG is not practicable; it is not currently barged in Alaska, would require costly infrastructure; and provides no obvious benefit over the proposed natural gas pipeline, other than avoiding the segment between the Kenai Peninsula and Amakdedori. The EIS would assess the risk to the pipeline from seismic events.	
Power Plant Location – On-site	POW-005	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which includes construction of a new 270-MW power plant at the Mine Site to power the mine. This option would not require the construction of high-voltage transmission lines to the Mine Site.	☑ Proposed ☐ Alternative ☐ Dismissed
Power Plant Location – Off-site with High Voltage Transmission Lines	POW-006	***Origination*** – Off-site location of the power plant was evaluated by PLP when developing the proposed project design. ***Description*** –This option would require a new power plant to be built at an alternative location such as the Kenai Peninsula or Amakdedori. High-voltage transmission lines would be constructed and used to transmit the power to the Mine Site. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider off-site generation combined with high-voltage and transmission lines.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		3. Practicable Test: Off-site power production is technologically feasible. If power generation was located on the Kenai Peninsula, it would require high-voltage transmission lines via underwater cables crossing both Cook Inlet and Iliamna Lake; and overhead lines on the Kenai Peninsula, from Amakdedori to a south ferry terminal, and the North Shore Ferry Terminal to the Mine Site. Underwater cables would be more costly to install and maintain than a natural gas pipeline. Overhead lines would be subject to wind and ice buildup, resulting in potential reliability risks. Undergrounding the overland portions of the transmission lines would be cost-prohibitive, because undergrounding generally costs an–order-of magnitude greater than overhead lines, and would be more costly than the gas line. In addition, transmission losses occur over long distances, making this less efficient than a gas line to provide on-site generation. If power generation was located proximate to Amakdedori, similar issues would remain, but would be lessened, given the reduced distance. However, the gas line under Cook Inlet would still be required. In addition, off-site generation would not offer sufficient redundancy in the event of a disruption to the transmission line and associated power supply. This option is likely not practicable due to cost. 4. Environmental Impacts Test: Construction and operation of high-voltage transmission lines would result in greater visual impacts than a gas line. ***Why Dismissed*** – Off-site power production, although practicable considering technology, would be much more costly and does not provide the stability and reliability benefits that would come from on-site power production. In addition, overhead transmission lines, and possibly the power plant (depending on location) would result in increased visual impacts.	

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Gas Source – Pipeline to a Source on the Kenai Peninsula	POW-007	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action. Under this option, the proposed pipeline (about 177 miles in length) would tie in to the existing natural gas distribution system on the Kenai Peninsula and be routed to Amakdedori, and then follow the Transportation Corridor to the Mine Site. The pipeline would be on the bottom of Cook Inlet and Iliamna Lake, and would be 12 inches in diameter.	☑ Proposed ☐ Alternative ☐ Dismissed
Gas Source – Pipeline to a Source on the West Side of Cook Inlet	POW-008	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – This option would follow an alternative route to the north to access existing natural gas supplies such as Beluga on the western side of Cook Inlet. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider a route that avoids crossing deep water in Cook Inlet. 3. Practicable Test: There is no accessible gas infrastructure, pipeline capacity, or available tie-in locations on the southwestern side of the Cook Inlet. A potential tie-in location on the western side would be at Beluga, approximately 170 miles to the north (requiring an approximately 250+ mile pipeline to accommodate terrain). 4. Environmental Impacts Test: Accessing existing gas supplies for this option would require crossing Lake Clark National Park; or if a subsea route, would increase the length of the pipeline route in critical habitat for the endangered Cook Inlet beluga whale and the threatened northern sea otter (compared to the proposed route). ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Gas Source – Connect to Donlin Gold Gas Pipeline	POW-009	***Origination*** – Evaluation of an alternative pipeline route to connect with the natural gas pipeline for the proposed Donlin Gold Mine was suggested during scoping. ***Description*** –Under this option, the pipeline would follow an alternative route to the north, allowing it to connect to the proposed Donlin Gold natural gas supply pipeline. A tie-in route to the nearest point along the proposed Donlin Pipeline would be longer than 155 miles, and would cross at least 8 to 10 substantial rivers. Routing could avoid major mountain ranges. The proposed Donlin Gold Mine natural gas pipeline has not yet been constructed; timing for development and operation is not known. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider connection to the proposed pipeline given that Donlin Gold recently received federal permits for construction of the pipeline. 3. Practicable Test: The Donlin Gold Pipeline is planned to be 14 inches in diameter, serving a 230-MW power plant, based on an operating flow rate of 47 million standard cubic feet per day (mmscfd), with a design capacity of up to 73.1 mmscfd. The Pebble Project proposes a 270-MW power plant, which could more than double the necessary capacity of the pipeline, which would not be practicable given its design. ***Why Dismissed*** – The Donlin Gold Pipeline, as planned, is unlikely to provide sufficient natural gas capacity to support the Pebble Project and is therefore not practicable.	☐ Proposed ☐ Alternative ☑ Dismissed
Gas Source – Northern Gas Pipeline Route to Kenai Peninsula	POW-010	***Origination*** – Evaluation of a pipeline alignment north of Augustine Island was suggested during scoping due to concern that placing the pipeline near Augustine Island/Volcano would make it vulnerable to seismic and volcanic hazards. ***Description*** –Increasing the distance from Augustine Island by routing to the north is impracticable for the Amakdedori Port, but routing the pipeline to Diamond Point to the	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
(Ursus Cove)		north would achieve the purpose of the suggested option. Access option ACC-014 considers a port at Diamond Point in Iliamna Bay; routing the pipeline to this port would achieve the goal of increasing separation from Augustine Island. The pipeline for access option ACC-014 would be routed into Ursus Cove, run overland to Cottonwood Bay, and then continue to Diamond Port. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option for the North Access Route (ACC-002). 3. Practicable Test: Practicability – The route to Ursus Cove is relatively free of seabed obstructions and rock-like features all the way into the cove, compared to a route through Iliamna Bay to a proposed Diamond Point port. Rocks, boulders, and boulder-type features in Ursus Cove only appear much closer to the shore, which makes routing and installation safer and easier, and also allows for moored installation. A route to Amakdedori north of Augustine Island would place the pipeline approximately the same distance or closer to Augustine Island/Volcano than the proposed route, and therefore is not a practicable route to achieve the goal of this option. Access Options ACC-014 and ACC-015 evaluate port sites in Iliamna Bay, more than 20 miles north of Augustine Island. It is feasible to route the natural gas pipeline to that location. 4. Environmental Impacts Test: A route to Ursus Cove and then to Diamond Point would have additional impacts from the overland portion, but would have a shorter segment in Cook Inlet. The option represents tradeoffs and is carried forward for detailed analysis.	
Gas Source –	POW-011	***Origination*** – This option was evaluated by PLP as a conceptual route directly into	☐ Proposed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Northern Gas Pipeline Route to Kenai Peninsula (Direct Route to Iliamna Bay)		Iliamna Bay and Diamond Point. ***Description*** – Under this option, the pipeline route would follow a more direct route to Iliamna Bay and Diamond Point than POW-010. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider a more direct, shorter pipeline. 3. Practicable Test: A 12-inch-diameter subsea pipeline has a specific minimum curvature radius, and therefore a limited ability to navigate areas of the seafloor with dense obstructions. A direct pipeline route into Iliamna Bay is not practicable because of boulders and rocky seabed near to and into the bay that could not be avoided with this option. RFI 063 summarizes PLP's reconnaissance data for a direct route, which indicated the presence of—and progressive increase in—rocks, boulders, and rock-like features on the seabed. The concentration of rocks and boulders reaches its maximum density at the mouth of Iliamna Bay, and continues into the bay. The rock-prone area starts approximately 13 miles from the landing point, and is consistent to the landing point. It is interpreted that the rocks and boulders are likely from a combination of glacial outwash and ice-rafted deposits. ***Why Dismissed*** – This option is not practicable due to boulders and other seabed issues.	☐ Alternative ☑ Dismissed
Gas Source – Other	POW-012	***Origination*** – Evaluation of practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the Alaska Department of Transportation and Public Facilities, was suggested during scoping. ***Description –*** The commenter requested evaluation of alternative pipeline routes, but did not suggest specific locations.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Power			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: PLP's Proposed Action in the December 2017 DA permit application included a gas pipeline alignment that would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. PLP's May 11, 2018 update changed the pipeline origin point to a compressor station north of Anchor Point, removing the requirement for the first 9 miles of pipeline construction along the Sterling Highway. Therefore, this option is no longer reasonable, because it pertains to an old project design. ***Why Dismissed*** **–** This option is not reasonable because it is based on an old design.	

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Access Road – South Access Route (Road and Ferry)	ACC-001	***Origination*** – PLP Proposed Action ***Description*** – This road and ferry route option is part of the Proposed Action, which includes the construction of two double-lane roads as the main access route to the mine for the transportation of materials, equipment, and concentrate. Road route: The mine access road would go from the Mine Site to the North Shore Ferry Terminal Site (ACC-006) on the northern shore of Iliamna Lake. As a variant of the proposed action, an alternative ferry terminal site location would be considered just to the east of the proposed ferry terminal site in the bay: the North Shore East Ferry Terminal Site (ACC-006a). On the southern shore of Iliamna Lake, the port access road would go from the Kokhanok West Ferry Terminal Site (ACC-010) to the Amakdedori Port Site (ACC-013). As a variant of the Proposed Action, the port access road would go from the Kokhanok East Ferry Terminal Site (ACC-011) to the Amakdedori Port Site (ACC-013). This option would also include an Iliamna spur road (which would include a crossing of the Newhalen River) and a Kokhanok spur road (which would include a crossing of the Gibraltar River if the Kokhanok West Ferry Terminal Site is included). Ferry route: The route would include a ferry crossing of Iliamna Lake from north to south. Natural Gas Pipeline route: The natural gas pipeline would follow the mine and port access roads and ferry route. This option would require the following: Total miles of road: 77 (Kokhanok West Ferry Terminal); 72 (Kokhanok East Ferry Terminal) Miles of road from Mine Site to the North Shore Ferry Terminal Site: 29 Total number of stream crossings: 39 (Kokhanok West Ferry Terminal site to Amakdedori Port site); 30 (with variant Kokhanok East Ferry Terminal site to Amakdedori Port site)	☑ Proposed ☐ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		Total number of major river crossings: 2 (Kokhanok West Ferry Terminal site to Amakdedori Port site); 1 (with variant Kokhanok East Ferry Terminal site to Amakdedori Port site).	
Access Road – North Access Route (Road Only)	ACC-002	***Origination*** – Evaluation of an access road option north of Iliamna Lake to eliminate the need for a lake crossing was suggested during scoping. ***Description*** – This road-only route option was evaluated by PLP when developing the proposed design as an option that would not require a ferry to cross Iliamna Lake. Road route: The mine/port access road would stay north of Iliamna Lake, connect with the existing Pile-Bay Williamsport Road in the vicinity of Pile Bay, and then continue to the Diamond Point/Iliamna Bay Port Site (ACC-014) on Cook Inlet. The road would bypass all but 5 miles of the existing Pile Bay-Williamsport Road. The road would traverse approximately 1.7 miles of tidal flats between Williamsport and Diamond point. This option would eliminate the need for a spur road to Iliamna, because the route would cross an existing road that connects Iliamna with Nondalton, providing access to infrastructure at Iliamna. Ferry route: The route would not include use of a ferry. Natural Gas Pipeline route: The western portion of the natural gas pipeline would follow the road route. The eastern portion of the pipeline would follow a route overland between Cottonwood Bay and Ursus Cove. Concentrate Pipeline: A concentrate transport pipeline may be included with this option. This option would require the following: Total miles of road: 82 Number of stream crossings: 71 Number of major river crossings: 4	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a route that PLP has evaluated and studied extensively and is a reasonable route. 3. Practicable Test: A road-only route provides the advantages of reliable year-round access, and minimizes the need to re-handle cargo/concentrates. The option may also allow the inclusion of a concentrate pipeline for the project. There is no need to build the associated infrastructure for a ferry. This option would provide access to Cook Inlet, which is generally accessible year-round. This option would require a large number of stream crossings. This option also crosses many wetlands. The route is also more mountainous than other access routes, traversing side slopes and crossing perpendicular to drainages, including crossings of larger streams and minor rivers. Five miles of the existing Pile Bay-Williamsport Road require improvements to accommodate large trucks. The Diamond Point/Iliamna Bay Port Site (ACC-014) and access road would be subject to tidal flat filling. The port would require some dredging to 20 feet of Mean Lower Low Water (MLLW) (RFI 063), and may require blasting for access roads. This location could not accommodate deep draft vessels, and would require lightering barges to transfer ore concentrate to deep-draft bulk ships anchored at mooring locations. 4. Environmental Impacts Test: This route would cross fewer wetland acres than a southern route (ACC-001), but more than a road and ferry northern route (ACC-003), resulting in a difference in acres of fill. The Iliamna Spur Road would be eliminated, reducing impacts along these road miles. The road portion from Pile Bay to Williamsport would require more maintenance compared to a southern	

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		route (ACC-001), given the steep terrain. This route would require more stream crossings than a southern route (ACC-001) or a road and ferry northern route (ACC-003). There would be less subsistence concerns and no lake navigation or transportation concerns compared to a road and ferry route (ACC-001 or ACC-003). The route would place mine traffic near Pedro Bay. The option represents tradeoffs, and is carried forward for detailed analysis. If a concentrate pipeline was also included, the footprint would be slightly larger, but there would be a decrease in truck traffic.	
Access Road – North Access (Road and Ferry)	ACC-003	***Origination*** – This road and ferry route option is a route evaluated by PLP while looking at routes that remain entirely north of Iliamna Lake. Use of the existing road and resources at Pile Bay and Williamsport was suggested during scoping. ***Description*** – Road route: The mine access road would stay north of Iliamna Lake from the Mine Site to the Eagle Bay Ferry Terminal Site (ACC-008) on the northern shore of Iliamna Lake. On the eastern shore of Iliamna Lake, the port access road would go from the Pile Bay Ferry Terminal Site (ACC-009) to the Diamond Point/Iliamna Bay Port site, using parts of the existing Pile-Bay Williamsport Road, continuing to the Diamond Point/Iliamna Bay Port Site (ACC-014) on Cook Inlet. This road would bypass all but 5 miles of the existing Pile Bay-Williamsport Road. The road would traverse approximately 1.7 miles of tidal flats between Williamsport and Diamond Point. This option would eliminate the need for a spur road to Iliamna, because the route would cross an existing road that connects Iliamna with Nondalton, providing access to infrastructure at Iliamna. Ferry route: The route would include a ferry crossing of Iliamna Lake from west to east. Natural Gas Pipeline route: The natural gas pipeline would follow the road alignment for	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		ACC-002 because Iliamna Lake is too deep on the eastern side of the lake for laying the pipeline on the bottom (the steep underwater cliffs would stress the pipeline bends). The eastern portion of the pipeline would follow a route overland between Cottonwood Bay and Ursus Cove. This route was proposed as an option by PLP. This option would require the following: Total miles of road: 50 Number of stream crossings: 34 Number of major river crossings: 1 ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a route that PLP has evaluated and is a reasonable route. 3. Practicable Test: Thicker lake ice on the eastern side of the lake would make ferry operation more challenging; however, feasibility has been demonstrated by the long-term operation of an ice-breaking ferry on Williston Lake in British Columbia. Water depth and lakebed topography may preclude the use of a sub-lake gas pipeline along this alignment. Five miles of the existing Pile Bay-Williamsport Road require improvements to accommodate large trucks. The Diamond Point/Iliamna Bay Port Site (ACC-014) and access road would be subject to tidal flat filling. The port would require dredging to 20 feet of MLLW (per RFI 063), and may require blasting for access roads. This location could not accommodate deep-draft vessels, and would require lightering barges to transfer ore concentrate to deep-draft bulk ships anchored at mooring locations.	

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		4. Environmental Impacts Test: This route would cross fewer wetland acres than a southern route (ACC-001) or an all-road northern route (ACC-002), resulting in fewer acres of fill. The Iliamna Spur Road would be eliminated, reducing impacts along these road miles. The road portion from Pile Bay to Williamsport would require more maintenance compared to a southern route (ACC-001), given the steep terrain. The addition of a ferry route would require construction of two ferry terminals, resulting in placement of fill, and also resulting in greater transportation and potential navigation concerns along the ferry route in the eastern portion of the lake. There would be subsistence concerns with the ferry route being in areas important for subsistence seal harvesting. The option represents tradeoffs, and is carried forward for detailed analysis. The route would place mine traffic near local communities, including Iliamna, Nondalton, Pedro Bay, and Pile Bay. Additional transfer of materials with barges increases the risk of spills or loss of fugitive material during transfer operations.	
Access Road – West Access Route	ACC-004	***Origination*** – This road option is a road-only access route evaluated by PLP when developing the proposed design as an option that would not require a ferry to cross Iliamna Lake. ***Description*** – Road route: The road would go from the Mine Site around the western end of Iliamna Lake and continue to the Amakdedori Port site on Cook Inlet. This option would also include an Iliamna spur road. Ferry route: This option would not require a ferry. Natural Gas Pipeline route: The natural gas pipeline would likely follow the road.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Concentrate Pipeline: A concentrate transport pipeline may be included with this option. This option would require the following: Total miles of road: 160 Total number of stream crossings: 129 Total number of major river crossings: 4 ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider routing the road around the western end of Iliamna Bay. 3. Practicable Test: A road-only route provides the advantages of reliable year-round access, and minimizes the need to re-handle cargo/concentrates. The option would also allow the inclusion of a concentrate pipeline for the project. There is no need to build the associated infrastructure for a ferry. This option would provide access to Cook Inlet, which is generally accessible year-round. This option has a longer road footprint, with more wetlands and streams crossed. 4. Environmental Impacts Test: This access route has the highest occurrence of wetlands, with the highest environmental impact to wetlands. If a concentrate pipeline were also included, the footprint would be slightly larger. ***Why Dismissed*** **–** This option would increase overall adverse impacts.	
Access Road – Bristol Bay Access Route	ACC-005	***Origination*** **–** Evaluation of alternative port sites was suggested during scoping due to concerns with the potential ecological impact of the project. ***Description*** **–** This road option is a road-only access route that was evaluated by PLP	☐ Proposed ☐ Alternative ☑ Dismissed

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
(Road Only)		when developing the proposed design as an option that used port sites other than Cook Inlet. Road route: The road would go from the Mine Site to a port site on Bristol Bay. Ferry route: This option would not require a ferry. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative port locations. 3. Practicable Test: This would be the longest road route option. Construction of the associated port would have the potential for logistical conflicts with fishing operations in Bristol Bay. Additionally, Bristol Bay is ice-bound for a large portion of the year. Because Bristol Bay is shallow, a long trestle or causeway into the bay would be required; or alternatively, lightering to a moored bulk vessel. 4. Environmental Impacts Test: This option would have increased impacts associated with the construction of a port road, and the longest road route. Resulting impacts include increased emissions and visual impacts. The route would traverse mainly lowlands, which would have more impact to wetlands. There would be impacts to local residents in communities near the road. ***Why Dismissed*** **–** This option would increase overall adverse impacts.	
Ferry Terminal Location – North Shore Ferry Terminal	ACC-006	***Origination*** **–** PLP Proposed Action ***Description*** **–** This ferry terminal site option is part of the Proposed Action, which includes the construction of a ferry terminal on the northern shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake. The ferry route would be north-south. This location is associated with the South Access Route (Road and Ferry): ACC-001. As a variant to this option, an additional site slightly to the east in the same bay as the North Shore Ferry Terminal is included: the North Shore East	☑ Proposed ☐ Alternative ☐ Dismissed

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		Ferry Terminal Site variant. This option would include the following: Number of ferry miles to Kokhanok West Ferry Terminal Site (ACC-010): 19 Number of ferry miles to Kokhanok East Ferry Terminal Site (ACC-011): 25	
Ferry Terminal Location – North Shore East Ferry Terminal	ACC-006a	***Origination*** – Evaluation of this ferry terminal location was suggested during scoping. ***Description*** – This ferry terminal site option is a variant of the Proposed Action, which includes the construction of a ferry terminal on the northern shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake. The ferry route would be north-south. This location is associated with the South Access Route (Road and Ferry): ACC-001. The site is slightly east of the North Shore Ferry Terminal Site (ACC-006) in the same bay. ***Screening – This option is currently being evaluated.***	**Status under review**
Ferry Terminal Location – Iliamna and Kokhanok Ferry Terminals	ACC-007	***Origination*** – Evaluation of ferry terminals closer to existing infrastructure was suggested during scoping to reduce impacts to Gibraltar River and Upper Talarik Creek. ***Description*** – Under this option, the North Shore Ferry Terminal would be located in or near the communities of Newhalen and Iliamna, but away from the Newhalen River. The Iliamna spur road would therefore be the main mine access road route to connect the Mine Site to this ferry terminal. This option location could be included with South Access Route (Road and Ferry): ACC-001. The South Shore Ferry Terminal would be located north of the Kokhanok airport. The road from this ferry terminal to Amakdedori Port would follow a route similar to that described under ACC-001 for the Kokhanok East Terminal Site variant to avoid crossing the Gibraltar River. The ferry route would be north-south, and approximately 21 miles. This option location could be included with South Access Route (Road and Ferry): ACC-001.	☐ Proposed ☐ Alternative ☑ Dismissed

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider options that have potential to avoid and minimize impacts. 3. Practicable Test: Ice conditions and water depth at Iliamna are not suitable for a ferry terminal. Existing community use of the area may not be compatible with ferry route and a terminal. 4. Environmental Impacts Test: There would be additional impacts to the communities of Iliamna, Newhalen, and Kokhanok caused by changes in vessel traffic impacting current vessel and floatplane use, and heavy mine trucks traversing through the community. This location is closer to high-use areas for subsistence seal harvesting. ***Why Dismissed*** **–** This option would increase overall adverse impacts.	
Ferry Terminal Location – Eagle Bay Ferry Terminal	ACC-008	***Origination*** **–** This ferry terminal option was evaluated by PLP when developing the proposed design as an alternative North Shore Ferry Terminal location suitable for either a north-south lake transit or an east-west transit. ***Description*** **–** Under this option, the North Shore Ferry Terminal would be located in Eagle Bay. A road would connect the Mine Site to the terminal. A spur road to Iliamna would not be included in this option because the mine access road would cross the existing road from Iliamna to Nondalton, and provide community access. This option location is associated with the North Access Route (Road and Ferry): ACC-003. The location could be included with South Access Route (Road and Ferry): ACC-001. This option would include the following:	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Number of ferry miles to Kokhanok West Ferry Terminal Site (ACC-010): 24 Number of ferry miles to Kokhanok East Ferry Terminal Site (ACC-011): 27 Number of miles to Pile Bay Ferry Terminal Site (ACC-009): 33 ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This location appears to be a reasonable option, with ability to accommodate ferry traffic and road connection. 3. Practicable Test: This location is sheltered for ferry operations and protected from prevailing winds. There may be navigability issues associated with the water depth in the area. Ice in the bays is thicker and more persistent than in the open lake west of Newhalen. This option minimizes the road footprint in the Upper Talarik Creek drainage. 4. Environmental Impact Test: This site may have different or additional impacts, such as shallower water, persistent ice in Eagle Bay, and more navigational hazards.	
Ferry Terminal Location – Pile Bay Ferry Terminal	ACC-009	***Origination*** **–** This ferry terminal option was evaluated by PLP when developing the proposed design. ***Description*** **–** This option considers an eastern shore ferry terminal location suitable for use with a northern access route, and the Eagle Bay Ferry Terminal as a western ferry terminal site. This option location is associated with the North Access Route (Road and Ferry): ACC-003. This option would include the following: Number of ferry miles to Eagle Bay Ferry Terminal Site (ACC-008): 33	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		Screening **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is an existing port facility and reasonable to consider. 3. Practicable Test: There may be navigability issues associated with the water depth in the area. Ice in the bay may be more persistent than in the open lake to the west. This location would use portions of existing infrastructure and the more sheltered port location at Diamond Point. 4. Environmental Impacts Test: There may be possible impacts to subsistence seal harvesting, and additional impacts to the community of Pile Bay.	
Ferry Terminal Location – Kokhanok West Ferry Terminal	ACC-010	***Origination*** – PLP Proposed Action ***Description*** – This ferry terminal option is part of the Proposed Action, which includes the construction of a ferry terminal on the south shore of Iliamna Lake for an ice-breaking ferry to transport materials, equipment, and concentrate across the lake to a port site on Cook Inlet. The ferry route would be north-south. The south ferry terminal would be at the Kokhanok West Ferry Terminal Site, approximately 5 miles west of Kokhanok. This option would include a Kokhanok spur road. This option is associated with the South Access Route (Road and Ferry): ACC-001.	☑ Proposed ☐ Alternative ☐ Dismissed
Ferry Terminal Location – Kokhanok East Ferry Terminal	ACC-011	***Origination*** – Evaluation of alternative ferry terminal locations was suggested during scoping. ***Description*** – This ferry terminal option was evaluated as a variant of the Proposed Action for an alternative southern shore ferry terminal location. The south ferry terminal would be approximately 5 miles east of the community of Kokhanok at the Kokhanok East Ferry Terminal Site. This option would include a Kokhanok spur road. This option is associated as a variant of the South Access Route (Road and Ferry): ACC-001. The port access road would follow a shorter route (5 miles shorter) than from ACC-010 to the Amakdedori Port Site, and would not require a crossing	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		of the Gibraltar River. ***Screening – This option is currently being evaluated.***	
Ferry Terminal Location – Utilize Alternative Ferry Terminal Sites	ACC-012	***Origination*** – Evaluation of alternative ferry terminal locations was suggested during scoping. ***Description*** – The suggested option requested consideration of alternative ferry sites and locations compared to the Proposed Action, but did not specify locations. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The six ferry terminal options described in this table are the most feasible locations, and cover a variety of logistical and environmental considerations. This option is not reasonable to carry forward because other substantially similar—but more specific—locations are being considered, meeting the intent of the scoping comment. ***Why Dismissed*** – Several ferry terminal location options were developed and incorporated into this table. This option is not reasonable to carry forward because other substantially similar—but more specific—locations are being considered, meeting the intent of the scoping comment.	☐ Proposed ☐ Alternative ☑ Dismissed
Port Location – Amakdedori Port Site	ACC-013	***Origination*** – PLP Proposed Action ***Description*** – This port site option is part of the Proposed Action, which includes the construction of a port on Cook Inlet to transfer diesel fuel, materials, equipment, and concentrate using barges. The port location would be at Amakdedori. This option is associated with the South Access Route option (Road and Ferry): ACC-001. This port site would use the Offshore Lightering-Amakdedori option (ACC-022).	☑ Proposed ☐ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Port Location – Diamond Point/Iliamna Bay Port Site	ACC-014	***Origination*** – Evaluation of an option for a port site at Diamond Point in Iliamna Bay was suggested during scoping. ***Description*** – This port site option was examined by PLP in the process of developing the Proposed Action. The port site would be located at Diamond Point in Iliamna Bay. This port site option is associated with the North Access Routes (ACC-002 and ACC-003). This port site would use the Offshore Lightering-Iniskin option (ACC-023). The approach at the Diamond Point port would use a channel for barges and tugs to access the loading dock, requiring dredging to a depth of 20 feet MLLW (per RFI 063). Channels are typically more prone to sedimentation, requiring maintenance dredging; therefore, greater under-keel clearance is recommended compared to the depth of 15 feet MLLW described at the Amakdedori Port Site (ACC-013). Dredged material would either be used in construction of the causeway and dock, or disposed of onshore. The total volume of dredged material for the 20 feet MLLW channel is 650,000 cubic yards, of which a minimum of 50 percent is estimated to be used in the barge dock construction, which would require approximately 615,000 cubic yards of fill for construction. Any rocks encountered in the channel would be moved to the side of the channel, or used in the dock construction. Any remaining dredged material and any material from maintenance dredging would be disposed of on-shore in a bermed facility on uplands west of the dock site. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Diamond Point appears to be a reasonable option. 3. Practicable Test: The port location is sheltered, and access for this option could use portions of the existing Pile Bay Road. The port site and access road includes construction and placement of fill in the intertidal zone in Iliamna Bay. The port	☐ Proposed ☑ Alternative ☐ Dismissed

AMERICAN OVERSIGHT

Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		would require initial and maintenance dredging and blasting for access roads. This location could not accommodate deep-draft vessels, and would require lightering barges to transfer ore concentrate to deep-draft bulk ships anchored at mooring locations. 4. Environmental Impacts Test: This option uses some areas already impacted by development, and may avoid bear migration areas. Dredge and fill impacts would be greater in the intertidal zone.	
Port Location – Knoll Head/Iniskin Bay Port Site	ACC-015	***Origination*** – This port site option was examined by PLP in the process of developing the Proposed Action. ***Description*** – This port site would be located at Knoll Head in Iliamna Bay, and is associated with the North Access Routes (ACC-002 and ACC-003). This port site would use the Offshore Lightering-Iniskin option (ACC-023). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative port locations. 3. Practicable Test: This option requires challenging access and port site construction, and would require significant earthworks with associated impacts. This option would have prohibitive road construction cost. 4. Environmental Impacts Test: Access to this port would require crossing Iliamna Bay via a causeway, and includes substantial placement of fill in the intertidal zone in Iliamna Bay and Iniskin Bay. ***Why Dismissed*** – The environmental impacts would be greater than the Proposed Action (and ACC-014 – Diamond Point).	☐ Proposed ☐ Alternative ☑ Dismissed
Port Location – Fortification	ACC-016	***Origination*** – This port site option was examined by PLP in the process of developing the	☐ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Bluff/Rocky Point Port Site		Proposed Action. ***Description*** – Under this option, the port location would be at Fortification Bluff/Rocky Point, which is approximately 15 miles north of Amakdedori, and would require 26 additional road miles from the port access road route to this port site, compared to the Proposed Action (ACC-001). This option is associated with the South Access Route option (Road and Ferry): ACC-001. The natural gas pipeline would not be co-located along the road, and would be routed through Amakdedori as described in ACC-001. This port site would use the Offshore Lightering-Amakdedori option (ACC-022). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider other port locations. 3. Practicable Test: This option requires a longer access road and more challenging port site construction than other options, which would increase the total amount of road construction for the project. Shore approach routing options for the gas pipeline are not available due to the proximity to Augustine volcano. This option has a requirement for a steep access road to the shore that poses operational safety challenges. 4. Environmental Impacts Test: Baseline data indicate that this offshore area is a more a productive habitat with higher utilization by a wider variety of species than other options. ***Why Dismissed*** – This option would increase overall adverse impacts.	☑ Dismissed
Port Location – Williamsport Port	ACC-017	***Origination*** – Use of the existing road and resources at Pile Bay and Williamsport was suggested during scoping.	☐ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Site		***Description*** – This port site option was examined by PLP in the process of developing the Proposed Action. The port location would be at the existing Williamsport location in Iliamna Bay. This port site option would be included with the North Access routes (ACC-002 and ACC-003) and may include the Eagle Bay Ferry Terminal Site (ACC-008) and Pile Bay Ferry Terminal Site (ACC-009) options. This option would require improvements to the existing port facilities. This port site would use the Offshore Lightering-Iniskin option (ACC-023). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider use of existing facilities. 3. Practicable Test: Williamsport is inaccessible by sea except for brief periods at the peak of extreme high tides, which occur a few days each month (USACE 1995). A 1995 Environmental Assessment by USACE (Navigation Channel Feasibility Report and Environmental Assessment: Williamsport) indicates that a considerable amount of initial and ongoing maintenance dredging would be required to accommodate barges between the mouth of Iliamna Bay and Williamsport. The existing sea bottom is 2 or 3 feet above MLLW near the landing, and it would be necessary to dredge 22 to 23 feet of material to obtain the desired depth of -20 feet MLLW. The dredged material would need either onshore or offshore disposal. Existing uses of Williamsport may not be compatible with the level of activity proposed by PLP. 4. Environmental Impacts Test: This option would have increased adverse environmental impacts from the dredging and disposal of the dredged material in comparison with the Proposed Action (ACC-013) or the Diamond Point option	☑ Dismissed

AMERICAN OVERSIGHT
EPA-0135-0004696

Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		(ACC-014). ***Why Dismissed*** – This option would increase overall adverse impacts.	
Port Location – Utilize Alternative Port Sites	ACC-018	***Origination*** – Using alternative port sites was suggested during the scoping period. ***Description –*** The commenter requested consideration of alternative port sites and locations compared to the Proposed Action, but did not suggest specific locations. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The five port site options described in this table are the most feasible locations, and cover a variety of logistical and environmental considerations. The suggested option is not reasonable because it is not specific; however, the intent of the suggestion is fulfilled through evaluation of ACC-013 through ACC-017. ***Why Dismissed*** – Several port site options were considered (see ACC-013 through ACC-017). This non-specific option is not a reasonable option, and can therefore be dismissed in favor of the five location-specific options.	☐ Proposed ☐ Alternative ☑ Dismissed
Dock Type – Fill Dock	ACC-019	***Origination*** – PLP Proposed Action ***Description*** – PLP has proposed to construct a fill dock and sheetpile bulkhead at the port location.	☑ Proposed ☐ Alternative ☐ Dismissed
Dock Type – Pile-Supported Dock	ACC-020	***Origination*** – USACE is evaluating an option for a pile-supported dock to satisfy requirements for minimization of impacts to Waters of the U.S. ***Description*** – This option would construct a pile-supported dock rather than a fill dock at the port site. ***Screening – This option is currently being evaluated.***	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Port Operations–Shore-Side Loading	ACC-021	***Origination*** – Shore-side loading was evaluated by PLP when developing the proposed project design. ***Description*** – This type of loading was originally proposed as an option by PLP when developing the Proposed Action, but was eliminated in project design updates in May 2018. Bulk carriers would be loaded directly at the port site (rather than at lightering locations), and would require a deep draft navigation channel and turning basin of approximately 50 feet of water depth. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option. This was PLP's original proposed action, so is assumed to be economically and technologically feasible. 3. Practicable Test: This option involves loading a bulk carrier directly at the dock side, which minimizes concentrate re-handling and leads to improved safety and reliability. All locations where this could take place require dredging or causeway construction to allow for shore-side loading of bulk carriers. It is estimated that initially, 10 million cubic yards would need to be dredged, and another 10 million yards may need to be dredged over the life of the mine to maintain the design depth. Dredging operations for this option would increase impacts to Waters of the U.S., and requires the placement of dredge spoils. 4. Environmental Impacts Test: Dredging would have environmental impacts to marine habitat and shoreside habitat where dredged material would be placed; dredging would result in a higher volume of fill compared with other loading options such as lightering; maintaining the deep-draft navigation channel and turning basin would require annual maintenance dredging that would be a long-term effect. Shoreside loading would potentially lessen impacts to Endangered Species Act–listed species or habitat, including sea otter critical	☐ Proposed ☐ Alternative ☑ Dismissed

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EPA-0135-0004698

Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		habitat. ***Why Dismissed*** – This option would increase overall adverse impacts.	
Port Operations– Offshore Lightering – Amakdedori	ACC-022	***Origination*** – PLP Proposed Action ***Description*** – The lightering option is the Proposed Action developed by PLP, and requires approximately 15 feet of water depth at the dock, which can be achieved naturally at Amakdedori without dredging.	☑ Proposed ☐ Alternative ☐ Dismissed
Port Operations– Offshore Lightering – Iniskin	ACC-023	***Origination*** – The Iniskin Bay lightering option was developed as an alternative by PLP when looking at alternative port sites such as Diamond Point/Iliamna Bay (ACC-014). ***Description*** – Under this option, concentrate would be offloaded from trucks to transfer barges at port sites to be transported to lightering locations where larger transport barges would be moored. Concentrate would then be loaded to transport barges for transport across Cook Inlet. An additional mooring location from those identified in ACC-022 has been identified at Iniskin Bay, off the Iniskin Peninsula, which is closer to the Diamond Port site. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The Iniskin Bay option has adequate water depth for the bulk carrier ships and affords good protection; it is a reasonable option. 3. Practicable Test: Similar to ACC-022. 4. Environmental Impacts Test: This option would have less environmental impact to the marine environment than a large dock facility. There would be less removal or placement of fill required. There is risk of material spills during transfer to/from lighter barges.	☐ Proposed ☑ Alternative ☐ Dismissed
Other Access Options –	ACC-024	***Origination*** – An option to require bridges at all anadromous stream crossings was suggested during scoping.	☐ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Mandatory Bridges at Stream Crossings		***Description*** – This option would make it mandatory for bridges to be built any time the access route crosses a stream or river that supports anadromous fish. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Not reasonable, because Alaska Department of Fish and Game would specify the crossing requirements necessary to protect anadromous fish, which may be achieved by other means such as culverts rather than bridges. ***Why Dismissed*** – This option is not reasonable. Other forms of stream crossings such as culverts are often appropriate structures. The design and permitting process would select appropriate crossing structures to address the environmental concerns and reduce impacts.	☑ Dismissed
Other Access Options – Revised Project Alignment via Micro-Siting	ACC-025	***Origination*** – Consideration of micro-siting practices for the access roads was evaluated by USACE as a potential means to avoid environmental impacts. ***Description*** – Use micro-siting practices to avoid local impacts to wetlands, stream crossings, guiding, lodges, wildlife, visual resources, archeological, and historical resources. Avoid or minimize, or stay outside a buffer area important to resources. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is not reasonable to consider as a component of an action alternative for evaluation in the EIS because it lacks specificity, and is essentially mitigation. Additionally, the intent of this option would be accomplished as impact assessment is completed for the Draft EIS, resource agencies and the public review and comment on the Draft EIS, and the Applicant is asked to revise	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		the proposed project to better avoid and minimize impacts. Additionally, micro-siting practices would be demonstrated by the Applicant when they document the steps and measures they have taken to avoid and minimize environmental impacts of their proposed action. Mitigation measures included in PLP's design, which are integral components of the proposed action, will be included in Chapter 5 of the EIS, and will be considered during the NEPA impact analysis in the EIS for the proposed action and applicable components of other action alternatives. ***Why Dismissed*** – This option is not reasonable. Dismissal of this option would not preclude future consideration of micro-siting as mitigation to avoid or minimize specific impacts identified through the NEPA impact analysis, or as required by resource agencies during project permitting as the project design and permitting advances.	
Other Access Options – Summer Only Ferry Operations	ACC-026	***Origination*** – An option to restrict ferry options to the open water season was suggested during scoping. ***Description*** – Ferry would only be allowed to operate in the open water season when no ice-breaking is necessary. There would need to be infrastructure to allow ore stockpiling, an area identified for storage, and other logistical considerations associated with ceasing ferry operations during lake-ice conditions. ***Screening – This option is currently being evaluated.***	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Concentrate Transport – Truck	CTR-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which involves containerized transport of ore concentrate by using the road and ferry access route (South Access Route (Road and Ferry): ACC-001). This option would use trucks to carry concentrate containers from the Mine Site. Concentrate would be transported to the port location, loaded onto a ferry, and re-handled at lightering locations. This option does not allow for the inclusion of a concentrate pipeline in the proposed project. This option may also be included with the North Option Route (Road and Ferry): ACC-003.	☑ Proposed ☐ Alternative ☐ Dismissed
Concentrate Transport – Pipeline	CTR-002	***Origination*** – Evaluation of an option for an ore concentrate pipeline was suggested during scoping due to concerns with ferrying ore concentrate across Iliamna Lake. ***Description*** – This option would not require the re-handling of cargo/concentrate, and allows for the inclusion of a concentrate pipeline in the proposed project. A single, approximately 7-inch-diameter steel pipeline with appropriate corrosion protection would be used to transport the concentrate. The concentrate pipeline and the gas pipeline would be co-located in a single trench at the toe of the road embankment, which would increase the average width of the road corridor footprint by 3 to 5 feet. Pump stations would be required to move concentrate through the pipeline. This option may be applied with North Access routes and considered with the South Access routes. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option. 3. Practicable Test: This option is technologically feasible and would be an efficient way to move large volumes of material and reduce truck traffic. This option would require a water treatment plant (WTP) and a discharge permit at the port site, and would result in a small reduction (<1 cubic foot per second) in water available for discharge at the Mine Site. Treatment at the port site would remove toxic	☐ Proposed ☑ Alternative ☐ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		pollutants, including metals, to limits identified in an Alaska Department of Environmental Conservation (ADEC) and/or EPA discharge permit. Additionally, water depth and lake bed topography would likely preclude the use of a sub-lake gas pipeline along the South Access routes alignments or the lake portion of North Access Route 2. 4. Environmental Impacts Test: This route includes trade-offs in terms of the environmental impacts. This route would result in additional fill impacts associated with a wider corridor, but reduced trucking. This option is carried forward as an alternative to be considered in detail in the EIS.	
Concentrate Transport – Rail	CTR-003	***Origination*** – Transporting ore concentrate by rail was evaluated by PLP when developing the proposed project design. ***Description*** – This option would require the construction of a railroad from the Mine Site for the transportation of ore concentrate. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Rail transport is a reasonable option to consider. 3. Practicable Test: Construction of a railroad to move the volume of materials necessary for the proposed project would not be efficient or cost effective. The cost to construct railroads in Alaska is about five times the cost to construct roads. Railroads grades are typically limited to grades of 1 percent or less, with longer bridges. The additional cost of the track, railroad ballast, hardware, and associated equipment is a significant investment. Railroad construction in Alaska costs roughly $9 million per mile; remote road construction costs roughly $1.7 million per mile. Railroads can provide greater efficiencies where high volumes of materials are transported daily, but the total volume of transported materials	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Concentrate Transport			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		projected for the Pebble Project is low compared to typical railroad operations. Transport of concentrate, fuel, reagents and consumables is estimated to be 35 truck round trips per day for the project. The high cost to construct a railroad for the relatively low volume of freight would not be cost effective. ***Why Dismissed*** – This option would increase overall adverse impacts. It may not be practicable to achieve grade requirements.	

AMERICAN OVERSIGHT

Table B-1: Preliminary List of Project Options Being Considered

Reclamation and Closure Access			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Closure – Retain Mine Road	RCA-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which includes using and maintaining mine access roads for all mine reclamation and closure transportation needs after operations. This option uses the existing infrastructure for mine access during post-closure support activities.	☑ Proposed ☐ Alternative ☐ Dismissed
Closure – Iliamna Airport and Existing Roads	RCA-002	***Origination*** – This closure option was evaluated by PLP when developing the proposed project design. ***Description*** –This option would use existing infrastructure (Iliamna airport and Pile Bay-Williamsport Road) for all mine reclamation and closure transportation needs after operations. The mine access road would be reclaimed. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This closure option is a reasonable option to consider. 3. Practicable Test: This option uses Iliamna airport and/or the existing Pile Bay road; however, neither have the capacity to meet the post-closure logistical requirements. The existing Pile Bay Road, if used as part of an alternative, would not by itself meet the ground transportation needs for reclamation and closure if other access roads are not maintained. The option would rely on helicopter transport of fuel, materials, WTP reagents, and supplies between the Iliamna Airport and the Mine Site. This means of transportation would be inefficient, very expensive, and less safe than trucking using the mine access road. ***Why Dismissed*** – This option is not practicable in terms of logistics because the existing infrastructure would not support the reclamation and closure transportation needs.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Storage Method– Thickened Tailings Storage	TSF-001	***Origination*** – PLP Proposed Action ***Description*** – Thickened tailings storage is the Proposed Action for bulk tailings. The option is not suited for pyritic tailings that need to remain saturated to prevent them from oxidizing and generation ARD and metals leaching. Thickened tailings are slurry tailings that have been mechanically dewatered, sometimes with settling additives, to create a more viscous, molasses-like material. Thickened tailings typically have a solids content (mass of solids to total mass of the combined solids and liquid mixture) of 45 to 65 percent. They are piped to the TSF by centrifugal pumps or positive displacement pumps, depending on the topography, distance, head loss, and viscosity. They still require an embankment dam for containment: either a full dam like those used for slurry tailings, or a lower dam, depending on the viscosity. These dams need to be periodically raised to hold the tailings and supernatant water. Some mines discharge thickened tailings from the dam and create a slurry tailings type of TSF with a steeper beach. Other mines discharge thickened tailings from a central tower to produce a cone-shaped TSF with a tailings surface sloped towards the dams. Thickened tailings do not segregate as much as slurry tailings, so that they have relatively consistent particle distributions across the TSF. The yield strength (applied pressure that must be exceeded to make the fluid flow) of the consolidated tailings is 0.4 to 1.6 pounds per square foot (psf), partly depending on the degree of initial thickening.	☑ Proposed ☐ Alternative ☐ Dismissed
Storage Method– Slurry Tailings Storage	TSF-002	***Origination*** – This option is the Proposed Action for the pyritic tailings, and was considered by PLP for the bulk tailings. ***Description*** – Slurry tailings are a slightly dewatered product of the milling process. The slurry is a water-like material that is moved by pipeline to the TSF. The slurry typically has a solids content of 10 to 40 percent, and can flow down-gradient by gravity, or be moved by centrifugal pumps, depending on the topography, distance, and head loss. The high water content requires that the tailings be stored behind a dam that must be periodically raised to hold the tailings and supernatant water. The tailings gradually segregate as they flow away from the discharge, with coarser particles closest to the discharge points and finer particles further away. A beach slopes away from each	☐ Proposed ☐ Alternative ☑ Dismissed

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Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		discharge point to the supernatant pond. The tailings consolidate to a yield strength of up to 0.4 psf. The supernatant water is removed to the extent possible, and reclaimed for mill use, or treated and discharged. Some mines use cyclones to split the slurry into coarser and finer fractions, and use the coarser fraction as dam raise fill. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable tailing method to consider. 3. Practicable Test: Slurry tailings are the most common method of tailings disposal, and have been successfully produced and managed under a wide range of operating conditions for both bulk and pyritic tailings. The feasibility of this method is reliable, and proven at the proposed Pebble Project scale under these environmental conditions. 4. Environmental Impacts Test: Slurry TSFs entrain more water and have larger supernatant ponds than thickened tailings TSFs. Therefore, they have more potential energy than thickened tailings, and pose a greater risk to the environment should there be an operational problem or a dam failure. PLP has proposed thickened tailings to conserve water and reduce this risk (TSF-001). ***Why Dismissed*** **–** This option would increase overall adverse impacts.	
Storage Method– Paste Tailings Storage	TSF-003	***Origination*** **–** Paste tailings storage was suggested via scoping comments as a potentially efficient and effective method of storage. ***Description*** **–**This option is only applicable to the bulk tailings, and not the pyritic tailings that would need to stay saturated to prevent ARD generation and metal leaching. Paste tailings are essentially thickened tailings, thickened with high-density thickeners, cement, and other additives to a toothpaste-like material. They typically have a solids content of 60 to 75 percent, and a yield strength of 1.6 to 2.0 psf. They are typically moved by pipeline, but require positive displacement pumps. Paste tailings particles do not	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		segregate, so tailings characteristics would be relatively uniform throughout the TSF. However, paste tailings are mostly used as backfill in underground mine workings where transport and placement of the paste is aided by gravity, and are typically not disposed of in TSFs. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: TBD. 3. Practicable Test: Paste tailings require specialized high-density thickeners, and are the least common TSF. Positive displacement pumps are usually required for transportation to the TSF site, resulting in potential plugging of pipelines with high-density tailing and increased pumping energy requirements. Producing a consistent paste would be a major challenge with the processing, because small changes in the orebody, especially clay-sized particles, can greatly influence the paste characteristics, such as yield strength and beach slope. 4. Environmental Impacts Test: Paste tailings require additional transportation infrastructure and on-site facilities for handling cement and other thickeners, which would require a large footprint and added impact to the environment. The method would produce a more stable TSF than slurry tailings, but essentially offers no more environmental benefits than the proposed thickened tailings. ***Why Dismissed*** **–** Paste tailings are mostly used in underground workings, and have minimal surface TSF history and interest. A paste TSF would provide essentially no meaningful environmental benefit above that of the Proposed Action.	
Storage Method– Dry Stack Tailings (for Bulk	TSF-004	***Origination*** **–** This storage method was evaluated by PLP when developing the proposed project design. ***Description*** **–** This option of dry-stack tailings is only suited for bulk tailings because the pyritic tailings need to stay saturated to prevent ARD generation and metal leaching.	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
Tailings only)		Filtering tailings removes water using mechanical filters, and results in tailings with 75 to 85 percent solids content, and a yield strength of over 3 psf. This creates a soil-like material or "dry cake" that is transported by conveyor or truck to a "dry stack" TSF. These TSFs do not require dams, unless possibly for perimeter berms. The tailings are placed by bulldozers and compactors, as is done in conventional earthwork construction. ***Screening – This option is currently being evaluated.***	
Storage Method– Submarine Disposal Storage	TSF-005	***Origination*** – This storage method was evaluated by PLP when developing the proposed project design. ***Description*** – This option would place the tailings and other mine waste in a water body such as in a lake or seawater to maintain a saturated condition into perpetuity. The concept is to discharge tailings by gravity to a location and depth where they are less likely to oxidize and leach out toxic metals, and where marine life is less abundant. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option would maintain PAG material in a saturated condition without the need for an on-land TSF and maintenance of dams and other water control features. However, there are concerns about performance histories of previous and current submarine disposal operations. It is likely not possible to obtain permits for storing tailings in an existing waterbody in or near Bristol Bay in addition to significant public opposition to the storing of bulk tailings in water bodies in general. This is not a reasonable option. ***Why Dismissed*** – This option is not reasonable.	☐ Proposed ☐ Alternative ☑ Dismissed
Storage Method– Remove or	TSF-006	***Origination*** – This method was proposed via scoping comments as a measure to reduce local environmental impacts due to tailings storage. ***Description*** –This option would involve transporting all of the tailings from the project	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Make All Tailings Inert		area to another disposal area, or making the tailings inert to eliminate the ARD and metal leaching potential. ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Trucking tailings away from the project area is not reasonable because it would require round-the-clock transport. The project would generate tailings at a rate that would require a truck with triple trailers to leave the Mine Site approximately every minute. This would require new roads to connect to the existing road system. The costs to transport the tails hundreds of miles would be exorbitant and cost prohibitive. Treating the tailings appears to be a reasonable option to consider. 3. Practicable Test: Treating the pyritic tailings to make them inert (the bulk tailings are considered inert) would require additional treatment facilities that would need space in the project area, and would introduce new containment structure needs. Methods of making tailings inert include separating pyritic tailings to create a larger bulk TSF and smaller pyrite TSF (this is already the proposed action); returning the pyritic tailings to the completed pit at closure to allow natural subaqueous storage (this is also already the proposed action); adding cement to create a cementitious-type material; buffering by mixing in alkaline material like crushed limestone to neutralize the acidity; and refining processes to extract more metals and reduce their metals content in the tailings. 4. Environmental Impacts Test: Treating the tailings to make them inert by separating the bulk and pyritic tailings and returning the pyritic tailings to the completed pit at closure is the Proposed Action. Adding cement or limestone to make tailings inert would require the transport of very large volumes of these additives, including possibly developing quarries; and constructing additional	

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		infrastructure and treatment facilities in the project area. Revising mining methods to extract richer ore would result in more waste rock with higher ARD and metal leaching potential. Treatment facilities and associated containment structures would require additional space, with resultant increased environmental impacts. ***Why Dismissed*** – The option to move the tailings to another area is not reasonable. Treating the pyritic tailings with cement or limestone provides no environmental benefits over the Proposed Action, which would separate the pyritic from the bulk tails and keep them inert by maintaining them during mining in a subaqueous condition, and return them to the completed pit during closure for permanent subaqueous storage.	
Storage Method– Truck Tailings to Canada	TSF-007	***Origination*** – Evaluation of an option to truck all waste to Canada was suggested during scoping. ***Description*** –This option would involve transporting all of the tailings from the project area to a disposal area in Canada. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Trucking tailings away from the project area is not reasonable because it would require round-the-clock transport. The project would generate tailings at a rate that would require a truck with triple trailers to leave the Mine Site approximately every minute. This would require new roads to connect to the existing road system. The costs to transport the tails hundreds of miles would be exorbitant and cost prohibitive. ***Why Dismissed*** – This option is not reasonable and is cost prohibitive.	☐ Proposed ☐ Alternative ☑ Dismissed
Tailings Dam – Centerline	TSF-008	***Origination*** – PLP Proposed Action	☑ Proposed ☐ Alternative

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Construction		***Description*** – This option is part of the Proposed Action, which includes the use of centerline construction for the bulk tailings TSF embankment. Centerline construction optimizes the robustness and stability advantages of downstream construction, with the efficiency advantages of upstream construction. The centerline dam begins with a starter dam, and subsequent raises are placed directly above the starter dam or previous raise, and over the downstream face, and over the tailings adjacent to the dam. The centerline of the dam crest is maintained in the same vertical plane. The outer part of the dam expands downstream as the dam is raised. The inner part of the dam has raises that stagger over the tailings with the upstream toe of each raise on the same vertical plane. A variation of the centerline method is to bend the centerline in either the upstream or downstream direction to optimize stability and cost. Centerline dams can be built out of rock, soil, and tailings.	☐ Dismissed
Tailings Dam – Downstream Construction	TSF-009	***Origination*** – This construction method was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, downstream tailings dam construction is considered only for the bulk TSF instead of the centerline method (the pyritic TSF is proposed as a downstream dam). Downstream tailings dams can be constructed using rock, soil, or tailings in various combinations. Construction starts with a starter dam in the same way as for a centerline dam. Subsequent stages (raises) are built on top of the downstream slope of the previous dam. The centerline of the dam crest moves downstream. Downstream dams are constructed in the same way as conventional water storage dams, except for being raised in stages as mining progresses, instead of all at once. ***Screening – This option is currently being evaluated.***	**Status under review**
Tailings Dam – Upstream Construction	TSF-010	***Origination*** – This construction method was evaluated by USACE. ***Description*** – Tailings dams built by the upstream method of construction are raised by using rock, soil, and tailings in various combinations as dam fill. A starter dam is first built in the same manner as a centerline or downstream dam. Trapezoidal-shaped raises are built on top of each other at an offset toe-to-crest design, moving the dam crest and	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		centerline upstream so that the upstream part of the dam is situated over tailings in the TSF. ***Screening –*** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider alternative dam construction methods. 3. Practicable Test: Upstream raises are the oldest and most economic type of tailings dam construction. An upstream dam contains about one-third of the fill volume of a downstream dam, and one-half the volume of a centerline dam. This would result in construction time savings conducive to the project's short construction seasons, and therefore, reduced costs. However, fill can only be placed on tailings that have had time to consolidate, and thereby provide a strong foundation for the raises. Otherwise, the underlying tailings could be saturated to the extent they could liquefy as a result of seismic activity and cause the dam to fail. A rate of tailings rise of 15 to 30 feet per year is considered to be the upper limit of allowing sufficient time for tailings consolidation to provide a stable tailings foundation for upstream raise construction. The planned rate of tailings rise for the Pebble Project is at the upper end of this range, and likely too fast to allow enough time for consolidation. Therefore, an upstream raise is likely not feasible because of the fast rate of tailings rise and liquefaction potential in a high-seismic-potential area. 4. Environmental Impacts Test: The need for less dam material means less material needs to be quarried or borrowed for dam fill, resulting in less environmental impacts. However, the higher potential for tailings liquefaction results in a higher risk of dam failure, and inundation of the land and water	

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		bodies by tailings. ***Why Dismissed*** – PLP is proposing a centerline dam for the bulk TSF and downstream dam for the pyritic TSF, which are considered more stable construction methods and reduce the risk of dam failure. Upstream construction is dismissed from further consideration because of potential environmental impacts from a higher risk of dam failure.	
Storage Method – Emergency Storage for TSF	TSF-011	***Origination*** – Scoping comments expressed concern regarding the stability and environmental impacts of a TSF failure due to an unexpected event such as seismic activity or unexpected water volumes. ***Description*** –This option would require an emergency storage/overflow containment area to minimize risk of tailings spills from excessive buildup of water in the TSF. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: The dam design would require that the dams accommodate a 200-year flood event when the TSF was at maximum capacity (both events at the same time). An emergency storage facility would provide redundancy, but at the expense of having to build a separate facility that would require the disturbance and use of additional land. Any redundancies that could be achieved would be more economically achieved by more robust TSF, WMP, seepage collection, and sediment pond facilities. The concerns this option are intended to address are already designed into the proposed project, so this option is not reasonable. ***Why Dismissed*** – The option is not reasonable because the suggestion is already part of the proposed project.	**Status Under Review**

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Tailings Production – Segregated Bulk/Pyritic Tails	TSF-012	***Origination*** – PLP Proposed Action. ***Description*** – This option is part of the Proposed Action, which involves keeping both bulk and pyritic tailing streams separate. Separate tailings streams are a by-product of the mining process, so no additional steps are required. This option would require separate TSFs for bulk and pyritic tails.	☑ Proposed ☐ Alternative ☐ Dismissed
Tailings Production – Blended Bulk/Pyritic Tails	TSF-013	***Origination*** – This option was evaluated by PLP as a potential tailings production and storage method. ***Description*** – Under this option, bulk and pyritic tailings streams would be combined into one for the purpose of having a single TSF. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This is a reasonable option to consider. 3. Practicable Test: This option requires an additional step to blend tailings streams, and maintain more water in the TSF to keep the pyritic tailings subaqueous to mitigate ARD and metal leaching potential. The entire facility would need to be managed in perpetuity to maintain the wet closure, and to collect and treat seepage. A blended facility would also need to be lined, which would hinder the flow-through design concept of the bulk TSF, and thereby prevent the bulk tailings from dewatering over time and becoming a stable landform. 4. Environmental Impacts Test: The blended tails would result in a large volume of tailings—and therefore, seepage water— that would need to be managed for potential ARD metal leaching. The wet closure would have a long-term post-closure dam failure risk higher than the proposed project. ***Why Dismissed*** – This option would increase overall adverse impacts because the	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		pyritic tails would "contaminate" the bulk tails and require subaqueous storage in perpetuity.	
Bulk Tailings Basin –Unlined	TSF-014	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which would discharge thickened bulk tailings into an unlined basin, and provide TSF solids and water management in a manner that results in the TSF groundwater level sloping down towards the main embankment, and the seepage passing through a collection system built under the main embankment, and being collected by the bulk TSK main seepage collection pond.	☑ Proposed ☐ Alternative ☐ Dismissed
Bulk Tailings Basin – Lined	TSF-015	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – This option has the bottom of the bulk TSF fully lined so that the bulk tailings would not be in contact with the ground surface. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: TBD 3. Practicable Test: It would be possible to fully line the bulk TSF although it would increase costs. However, lining of the bulk TSF would create a bathtub of water in the lower part of the TSF, because the liner would impede the planned flow-through of seepage through the tailings and main embankment. This would result in saturated lower tailings that could be susceptible to static and seismic liquefaction during operations, and through closure and post-closure, even in thickened tailings several hundred feet deep. Technologies have been evaluated to connect drains into bottom liners to enhance seepage, but they have not been proven and implemented on a similar scale.	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		4. Environmental Impacts Test: This option would result in poor consolidation of tailings that would lead to long-term saturation of the deeper tailings, and susceptibility to static and seismic liquefaction. This would defeat the drainage objective of the proposed thickened TSF. The ultimate result would be higher potential mobility of the tailings, and prevention of the tailings from consolidating over time by gradual drainage, and ultimately becoming a stable landform as proposed. ***Why Dismissed*** – This option would increase overall adverse impacts because the liner would retain water in the bulk tails and increase the risk of dam failure and tailings mobility.	
Pyritic Tailings Basin – Lined	TSF-016	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which has the bottom of the pyritic tailings TSF fully lined so that the pyritic tailings would not be in contact with the ground surface. Additionally, this option allows for pyritic tailings to be stored sub-aqueously without the circulation of seepage water.	☑ Proposed ☐ Alternative ☐ Dismissed
Pyritic Tailings Basin – Unlined	TSF-017	***Origination*** – This option was evaluated by PLP when developing the proposed project design. ***Description*** – Under this option, the pyritic TSF would be unlined. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider an unlined facility. 3. Practicable Test: It is practicable with existing technology to build an unlined TSF, and it would reduce costs. 4. Environmental Impacts Test: PLP has proposed a lined pyritic TSF to allow subaqueous storage during operations. The liner would also reduce the volume	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		of pyritic tailings–contaminated seepage from the facility that would need to be collected and treated. PLP has also proposed to move the pyritic tails and PAG waste to the completed pit at closure, and reclaim the TSF; eliminating the need for the pyritic TSF to be perpetually maintained. ***Why Dismissed*** – This option would increase overall adverse impacts.	
TSF Location – NFK West TSF Location	TSF-018	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, and would store the bulk tails 2 to 3 miles west of the proposed pit. The pyritic tails would be stored at the NFK East location (TSF-021).	☑ Proposed ☐ Alternative ☐ Dismissed
TSF Location – NFK North TSF Location	TSF-019	***Origination*** – This TSF location was evaluated by PLP when developing the proposed project design. ***Description*** – This option would store pyritic tailings about 2 miles north of the proposed open pit. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This location has been studied previously and is a reasonable option to consider. 3. Practicable Test: This site is close to the process plant, has sufficient storage capacity for all tailings, and allows for the segregation of bulk and pyritic tailings. This option has the highest efficiency, making it the least costly option. 4. Environmental Impacts Test: The catchment area of the site is high, and the total anadromous stream miles impacted, as well as impacted acres of wetlands for this site, are high. ***Why Dismissed*** – This option would increase overall adverse impacts.	☐ Proposed ☐ Alternative ☑ Dismissed

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Tailings Management			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
TSF Location – NFK East TSF Location	TSF-020	***Origination*** – PLP Proposed Action ***Description*** – This location is proposed by PLP to store the pyritic tailings about 1 mile west of the proposed open pit. The bulk tailings would be stored at the NFK West location (TSF-019).	☑ Proposed ☐ Alternative ☐ Dismissed
Combined TSF and Operating Pond	TSF-021	***Origination*** – This option was evaluated by USACE to avoid impacts associated with a separate water management pond. ***Description*** – This option would add the Operating Pond (part of the main water management pond) to the bulk TSF. It would result in additional water stored in the bulk TSF, and would eliminate the need for or reduce the size of the main water management pond. The objective would be to perform all bulk tailings and water management operations at one facility, instead of two facilities. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It is reasonable to consider options that potentially reduce the footprint. A combined pond is proposed for the Donlin Gold Mine. 3. Practicable Test: This option is compatible only with the slurry tailings disposal method (TSF-002). The option is not compatible with the thickened tailings disposal objective of ultimate drainage and consolidation of the tailings to a stable landform. Production of thickened tailings requires the dewatering of tailings as part of the milling process. The bulk TSF is planned to store thickened tailings that have been previously dewatered to the extent that they would be discharged to the bulk TSF at a solids content of 55 percent. This plan would result in a drier and more stable tailings deposit than would result from slurry tailings discharge. A combined bulk TSF/Operating Pond facility could be achieved by either not thickening the tailings, and thereby depositing slurry tailings; or building an internal embankment in the combined facility to separate	**Status under review**

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Table B-1: Preliminary List of Project Options Being Considered

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Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		the thickened tailings from water. 4. Environmental Impacts Test: The proposed main water management pond has a footprint of approximately 925 acres, of which about 750 acres contain the normal operating pond level, and the remaining 175 acres are for the maximum operating pond level and probable maximum flood. Much of this area is wetlands. If the bulk TSF also contained the Operating Pond, there would be a reduction in impacts to Waters of the U.S. However, a combined bulk TSF/Operating Pond facility that combined non-thickened tailings and water would be a slurry TSF that is contrary to the environmentally safer consideration of a thickened TSF; and in conflict with current global mining objectives of developing drier TSFs as best available technology, regardless of water supply factors, and moving the industry towards zero tailings dam failures. A combined bulk TSF/Operating Pond facility with separate thickened tailings and water storage areas would require a bulk TSF area and a water retention area separated by a divider dam, and would require a footprint that would be larger than the planned bulk TSF footprint, but could be similar to the combined footprints of the proposed separate bulk TSF and main water management pond facilities. ***Why Dismissed*** – The option conflicts with the objective of thickened tailings and does not offer any environmental advantages over the proposed action.	

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PAG Waste Rock			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Storage Method– Store PAG with Pyritic Tails	PAG-001	***Origination*** – PLP Proposed Action ***Description*** – All potentially acid-generating waste rock would be stored in the pyritic TSF. All PAG waste rock would be returned to the pit at closure with the pyritic tailings for permanent subaqueous storage.	☑ Proposed ☐ Alternative ☐ Dismissed
Storage Method– Store PAG in LGO stockpile	PAG-002	***Origination*** – This option was PLP's Proposed Action in the December 2017 DA permit application. PLP's May 11, 2018 update changed the process, and would place all PAG in the pyritic tails TSF. ***Description*** – This option would store PAG with the LGO stockpile. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: This option is no longer viable because PLP is not proposing an LGO stockpile. ***Why Dismissed*** – The Proposed Action no longer has an LGO stockpile, and therefore the option is not reasonable.	☐ Proposed ☐ Alternative ☑ Dismissed
Storage Method– Separate WRF Storage	PAG-003	***Origination*** – This storage method was evaluated by PLP when developing the proposed project design. ***Description*** – This option would involve the construction of a separate permanent facility for waste rock. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Separate waste rock facilities are common at mines, and this is a reasonable option to consider. 3. Practicable Test: This option requires the construction of a separate facility, and water management and access infrastructure. The facility would be exposed to	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

PAG Waste Rock			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		the air, and therefore would generate ARD and ML that would need to be collected and treated. Additional collection and treatment facilities and infrastructure would be needed. 4. Environmental Impacts Test: Construction of the associated infrastructure would increase wetland impacts for no environmental benefit. ***Why Dismissed*** **–** This option would increase overall adverse impacts associated with construction of a separate facility, and PAG waste rock would likely generate ARD over time.	

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
Water Treatment	WTP-001	***Origination*** – PLP Proposed Action ***Description*** – This option is part of the Proposed Action, which involves water treatment technology to meet the Alaska water quality discharge standards. To meet the water quality standards in receiving body per *Alaska Water Quality Criteria Manual*, and to meet the mine plan requirements, two WTPs would be required: WTP #1 near the Open Pit; and WTP#2 near the Main WMP. WTP #1 would use chemical precipitation and filtration for metals removal. WTP#2 would use chemical precipitation followed by Reverse Osmosis (RO) for meeting total dissolved solids (TDS)/sulfate limits, and biological selenium removal.	☑ Proposed ☐ Alternative ☐ Dismissed
Enhanced Water Treatment	WTP-002	***Origination*** – Evaluation of an option that treats water for discharge to meet the water quality of the natural receiving waters was suggested during scoping. ***Description*** –This option would require the water quality of all discharged water to be the same as receiving water. Additional water treatment steps would likely be required to achieve this. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It appears this suggestion was made without an understanding of the regulations that apply to water discharges. PLP would be required—and has committed to achieving—applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the enhanced treatment would provide no meaningful environmental benefit making this option not reasonable. ***Why Dismissed*** – PLP would be required—and has committed to achieving—applicable water quality standards at the end of pipe (i.e., no mixing zones). The	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		standards are developed by ADEC to be protective of aquatic life; therefore, there is no meaningful environmental benefit of additional treatment of the water, making this option not reasonable.	
Enhanced Water Treatment – Zero Metal Discharge	WTP-003	***Origination*** – Evaluation of an option that would result in zero discharges of metals into the watershed was suggested during scoping. ***Description*** – This option would require there to be zero metal content in discharged water. To meet zero metal content, chemical precipitation followed by RO, and an additional ion exchange step would be required to completely remove the metals. The treatment system would essentially generate ultrapure water for discharge by providing a treatment that is well beyond what is required to meet the water quality standards, thereby resulting in "over treatment." This water is expected to have very low TDS or mineral content, and is likely to be "too clean" for discharge (i.e., some constituents have minimum standards). To address potential toxicity associated with this flow, addition of certain constituents is likely required to make it amenable for discharge resulting in some metal content. ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: It appears this suggestion was made without an understanding of the regulations that apply to water discharges. PLP would be required—and has committed to achieving—applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the additional treatment would provide no meaningful environmental benefit making this option not reasonable. ***Why Dismissed*** –PLP would be required—and has committed to achieving—applicable water quality standards at the end of pipe (i.e., no mixing zones). The	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ Option Details: Origination, Description ❖ Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test ❖ Why Dismissed (as applicable)	**Status**
		standards are developed by ADEC to be protective of aquatic life; therefore, there is no benefit of treating the water to make it cleaner than required, making this option not reasonable.	
Enhanced Water Treatment – Reverse Osmosis	WTP-004	***Origination*** – Evaluation of an option that would require RO for all water treatment was suggested during scoping. ***Description*** –This option would use chemical precipitation, followed by RO processing for water treatment at both WTPs (WTP#1 and WTP#2). ***Screening*** – 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: PLP would be required—and has committed to—achieving applicable water quality standards at the end of pipe (i.e., no mixing zones). The standards are developed by ADEC to be protective of aquatic life; therefore, the additional treatment would provide no meaningful environmental benefit making this option not reasonable. ***Why Dismissed*** – RO-based treatment is primarily required for TDS and sulfate removal. Because both TDS and sulfate are below the discharge limits in the influent water to WTP#1, RO is not required. Chemical precipitation followed by filtration would be sufficient to meet the discharge limits for WTP#1, and RO-based treatment can be limited to just WTP#2. The option of using RO at both WTPs is not reasonable, and would unnecessarily increase the carbon footprint, facility size, and the residual solids disposal requirements.	☐ Proposed ☐ Alternative ☑ Dismissed
Airtight Structure for Emissions Collection	AIR-001	***Origination*** – Evaluation of an option that covers the development with an airtight structure to contain ARD from getting into the air was suggested during scoping. ***Description*** – This option calls for the development and construction of an airtight structure that covers the Mine Site. Any fumes or gasses would be cleaned before	☐ Proposed ☐ Alternative ☑ Dismissed

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Table B-1: Preliminary List of Project Options Being Considered

Water Treatment and Air			
Option	**Option #**	**Option Details and Screening** ❖ **Option Details: Origination, Description** ❖ **Screening Criteria: 1. Purpose and Need Test, 2. Reasonable Test, 3. Practicable Test, 4. Environmental Impacts Test** ❖ **Why Dismissed (as applicable)**	**Status**
		the air can be re-released into the atmosphere. ***Screening*** **–** 1. Purpose and Need Test: Meets the purpose and need. 2. Reasonable Test: Design for this type of structure is not reasonable, because there is no air quality concern with emissions from ARD. An airtight structure would be the largest structure in the world. ***Why Dismissed*** **–** This option is dismissed because it is not reasonable, and the suggestion is based on a misunderstanding of potential ARD impacts.	

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Sources: AECOM; Pebble; USGS; ADNR

US Army Corps of Engineers

0 5 10 15 Miles

Options

- South Access Route (Road and Ferry) - ACC-001, 006, 010, 013
- North Access Route (Road Only) - ACC-002, 014, 017
- North Access Route (Road and Ferry) - ACC-003, 008, 009
- West Access Route - ACC-004
- Bristol Bay Access Route - ACC-005
- Kokhanok East Ferry Terminal - ACC-011
- Knoll Head/Iniskin Bay Port Site - ACC-015
- Fortification Bluff/Rocky Point Port Site - ACC-016
- Amakdedori Offshore Lightering - ACC-022
- Iniskin Offshore Lightering - ACC-023
- South Pipeline - POW-007
- North Pipeline - POW-010
- North Pipeline - POW-011

Other Features

- Proposed Mine Footprint
- Existing Roads
- Borough Boundary
- Bureau of Land Management
- Native Patent or IC; Native Selected
- State Patent or TA; State Selected
- State Game Refuge/Sanctuary
- National Wildlife Refuge
- National Park

PEBBLE MINE EIS

ACCESS OPTIONS

FIGURE B-1

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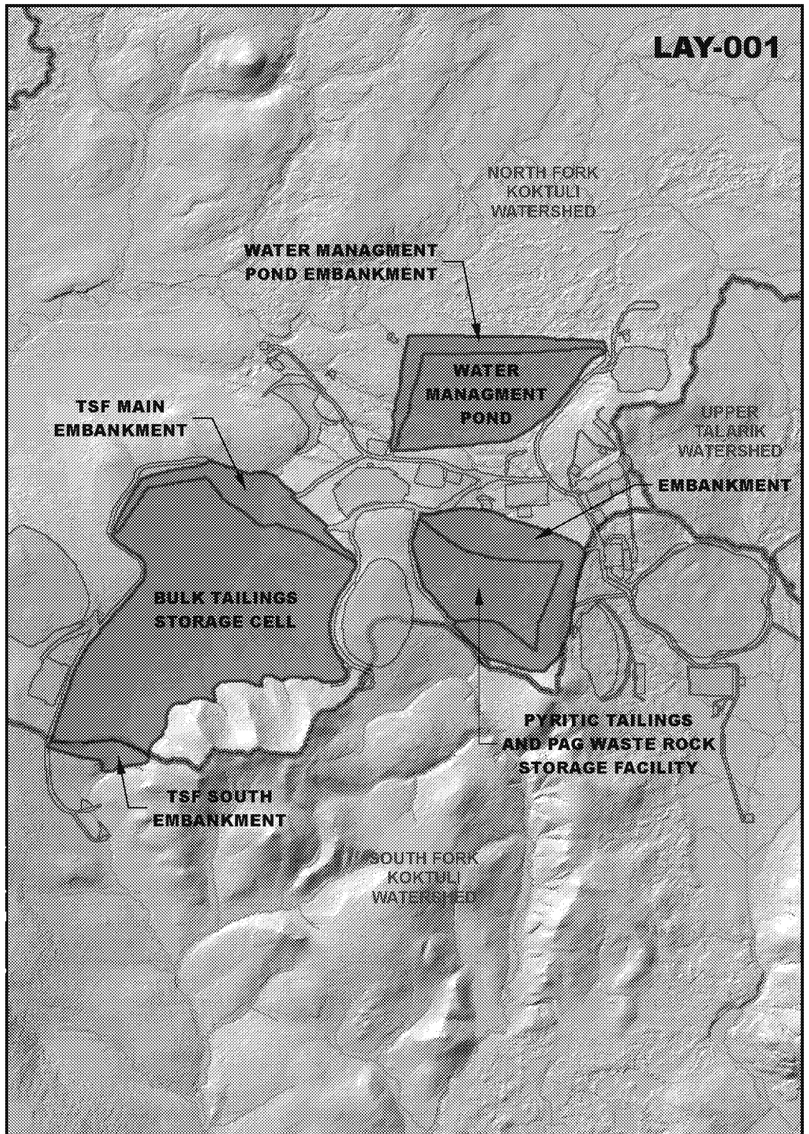

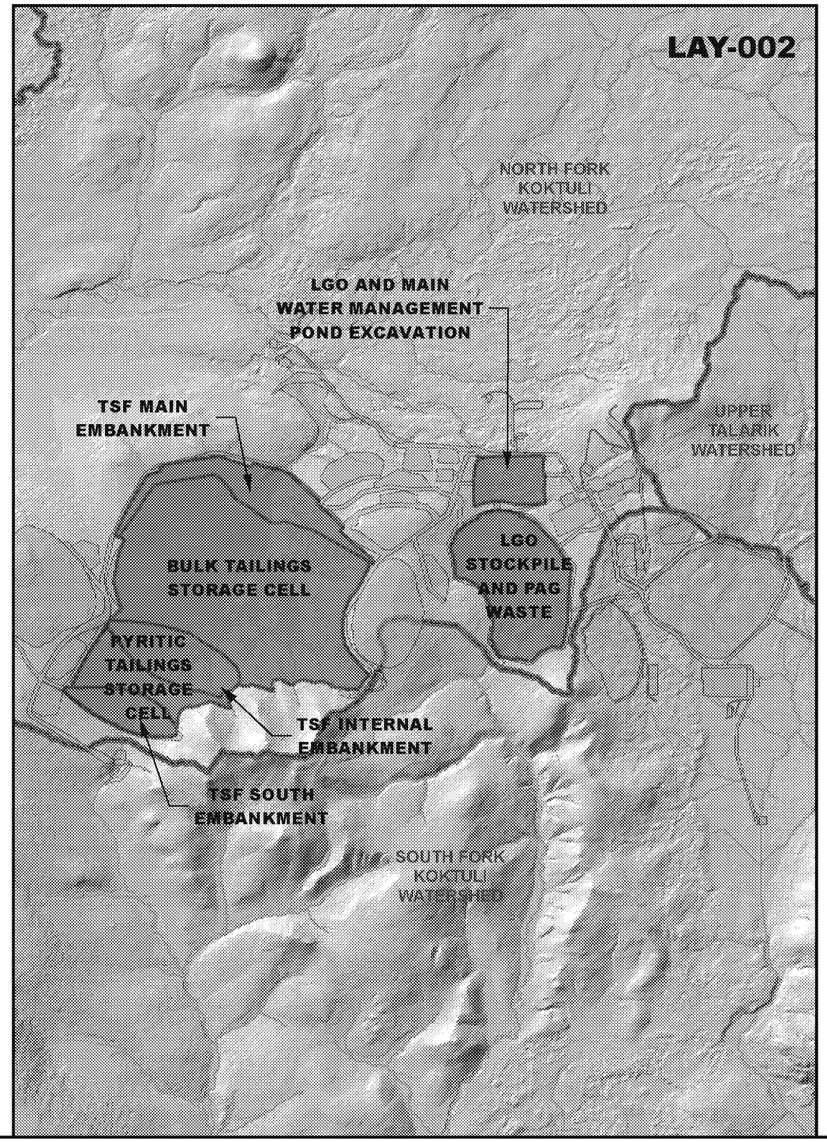

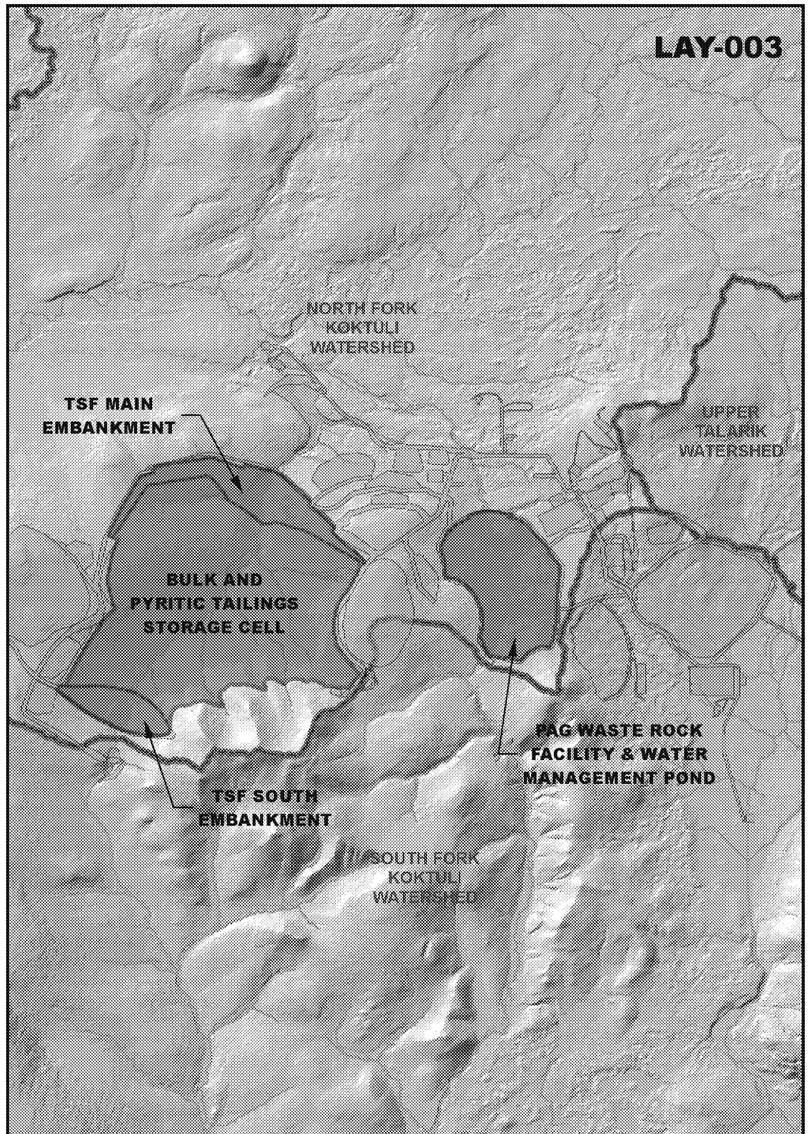

Sources: AECOM; Pebble; USGS; ADNR

US Army Corps of Engineers®

0 1 2
Miles

MINE LAYOUT OPTIONS

PEBBLE MINE EIS

FIGURE B-2

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155°30'0"W

NFK North

North Fork Koktuil River Watershed

UpperTalarik Creek Watershed

NFK East

NFK West

Open Pit

South Fork Koktuil River Watershed

N

0 0.5 1 2 3 Miles

155°30'0"W

TSF Location

Rejected

Selected

Open Pit

Watershed Boundary

THE pebble PARTNERSHIP

TSF Location Options	Figure: 4
File: Project Alts TSF	Date: 3/21/2018
Revision:	Author:

Document Path: G:\GIS\Arc\GIS_MXDs\ENVIRO\2018\Project Alts TSF.mxd

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/23/2018 6:03:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: Pebble EIS Updates
Attachments: 10_10_2018_Updated_ProjectDescription.pdf

Hello All,
I have a few updates to share regarding the Pebble EIS.

First, the Corps plans to distribute preliminary drafts of the DEIS chapters for review in November. We expect to receive all chapters by 11/9/18, although sections may be received in advance on a rolling basis. Comments on all sections will be due 11/21/18. This will be a very tight timeframe for review, as management review of our comments will be required, so please plan to review within a few days of receipt – I will provide a specific due date once sections have been received. The Corps has said they will share all sections of the document for context, although our comments are still only requested on those specific sections we have been assigned in the Cooperating Agency Workplan (the same ones we have seen early drafts of so far).

Second, the Corps has distributed a revised project description developed by Pebble. My understanding is that this revised project description aligns with the updates to the project that we learned about earlier this year (e.g., use of lightering at Amakdedori Port), but I have not had time to read it in detail myself. I recommend reading when you have time, as it will help us prepare for review of the draft chapters in November.

Please let me know if you have any questions.
Thank you,
Molly

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THE PEBBLE PROJECT

PROJECT DESCRIPTION

OCTOBER 2018

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
ADSP	Alaska Dam Safety Program
ANCSA	Alaska Native Claims Settlement Act
ANFO	ammonium nitrate and fuel oil
BMPs	best management practices
CFR	Code of Federal Regulations
cy	cubic yards
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
H:V	horizontal:vertical (horizontal to vertical)
IDF	Inflow Design Flood
ISO	International Organization for Standardization
ML	Metal Leaching
MW	megawatts
NEPA	National Environmental Policy Act
NFK	North Fork Koktuli River
NPAG	Non-Potentially Acid Generating
OCS	Outer Continental Shelf
PAG	Potentially Acid Generating
PHABSIM	Physical Habitat Simulation System
PMF	Probable Maximum Flood
PMP	Probably Maximum Precipitation
ROW	right-of-way
SAG	semi-autogenous grinding
SFK	South Fork Koktuli River
TSF	Tailings Storage Facility
TSS	Total suspended solids
USGS	U.S. Geological Survey
UTC	Upper Talarik Creek
WMP	Water Management Pond
WTP	Water Treatment Plant

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1. PROJECT OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. This project description summarizes information about the environmental setting, engineered facilities and operations for the proposed Pebble Project (Project) from initial construction through closure and reclamation. It is intended to support the National Environmental Policy Act (NEPA) review process and other permitting efforts for the Project.

1.1. PEBBLE PROJECT SUMMARY INFORMATION[1]

- Project operating life of 20 years.
- A total of 1.44 billion tons of material mined over the life of the Project.
- Final pit dimensions of 6,800 feet in length, 5,600 feet in width, and 1,970 feet in depth.
- Mining rate up to 73 million tons per year, average rate of 70 million tons per year.
- Milling rate up to 66 million tons per year.
- Average annual copper-gold concentrate production (dry concentrate) of 613,000 tons.
- Average annual molybdenum concentration production (dry concentrate) of 15,000 tons.
- Final bulk tailings storage facility (TSF) capacity of 1,140 million tons.
- Temporary storage of 155 million tons of pyritic tails in the pyritic TSF.
- Temporary storage of up to 50 million tons of Potentially Acid Generating (PAG) and/or Metal Leaching (ML) waste rock in the pyritic TSF until closure.
- Power plant generating capacity of 270 megawatts (MW).
- Project operating schedule of two 12-hour shifts per day for 365 days per year.
- An 83-mile transportation corridor from the mine site to a year-round port site located on Cook Inlet near the mouth of Amakdedori Creek consisting of:
  - A 30-mile private two-lane unpaved road from the mine site to a ferry terminal on the north shore of Iliamna Lake.
  - An 18-mile lake crossing utilizing an ice breaking ferry to a ferry terminal on the south shore of Iliamna Lake.
  - A 35-mile private two-lane unpaved road from the south ferry terminal to the Amakdedori Port.
  - Lightering of concentrate between Amakdedori Port and offshore lightering locations for loading onto bulk carriers.

[1] Design criteria as presented are approximate and have been averaged and rounded as appropriate for ease of reference.

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- Unpaved spur roads from the transportation corridor to the communities of Iliamna, Newhalen, and Kokhanok.
- A port facility and jetty with docking for lightering and supply barges.
  - Annual vessel traffic of up to 27 concentrate vessels and 33 supply barges.
- A 188-mile gas pipeline from the Kenai Peninsula across Cook Inlet to the Project site with a compressor station on the Kenai Peninsula.
- Employment of 850 to 2,000 personnel for operations and construction, respectively.

1.2. Background

The Project is located on land acquired by the State of Alaska in 1974 via a three-way land swap with the federal government and Cook Inlet Region, Inc. The land was selected by the state specifically for its mineral development potential. The initial discovery of the Pebble Deposit was made in 1988 by Cominco Alaska, a division of Cominco Ltd. (Cominco). Cominco (later acquired by Teck Resources Limited) discontinued work on the project in 1997, and in 2001 the Pebble claims were optioned by a subsidiary of Northern Dynasty Minerals Ltd. (Northern Dynasty).

Northern Dynasty began exploring the property, with significant success, expanding the Pebble Deposit from one billion to four billion tons by the end of 2004. An extensive environmental baseline data collection program commenced in that year, as well as geotechnical investigation and preliminary engineering studies. In 2005, Northern Dynasty exercised its option to acquire the Project and in the same year discovered a significant, higher grade eastern extension to the deposit. Over the next seven years, the Pebble Deposit was expanded through drilling.

In 2007, Northern Dynasty formed PLP with another company and placed the Project into the partnership. Over the next six years, PLP continued to advance the Project through additional drilling, environmental data collection, and engineering studies. In 2013, the other company left PLP and it reverted to a wholly owned subsidiary of Northern Dynasty.

To date, more than one million feet of drilling has been conducted on the Pebble Deposit.

Products from mining this deposit can supply important mineral resources for alternative energy and other purposes of strategic national significance. The Pebble Deposit has significant regional economic importance for southwest Alaska and the entire state through the creation of high-wage jobs and training opportunities, supply and service contracts for local businesses, and government revenue.

1.3. Project Design Considerations

Plans for the design and operation of the Project have focused on the avoidance and minimization of environmental impacts to waterbodies, wetlands, wildlife and aquatic habitat, areas of cultural significance, and areas of known subsistence use and addressing stakeholder concerns. In addition to meeting or exceeding local, state, and federal regulatory requirements, the Project incorporates the following concepts into the design:

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- The Project plan is to mine the near-surface portion of the Pebble Deposit. This has significantly reduced the footprint of the open pit, TSF, and mine facilities, as well as eliminated the need for a permanent waste rock storage facility.
- The layout is designed to consolidate the majority of site infrastructure in a single drainage — the North Fork Koktuli River (NFK) — and avoid placing waste rock or tailings in the Upper Talarik Creek (UTC) drainage.
- The transportation corridor incorporates a ferry crossing of Iliamna Lake to connect the mine site to a marine port on Cook Inlet, significantly limiting the total access road length and associated impacts relative to a longer access road around Iliamna Lake. The road alignment was further refined to avoid areas of known subsistence and recreational use and to minimize wetland impacts.
- A natural gas pipeline and gas-fired electrical generation are being used to power the Project, thereby eliminating the need to transport and store large amounts of diesel fuel for power generation.
- To address stakeholder concerns regarding the transportation and use of cyanide, there is no secondary recovery of gold from the pyritic tailings using a cyanide leach.

The Project adopts a design-for-closure philosophy that considers closure and post-closure site management requirements during all operating phases. Examples include:

- Segregated storage facilities for bulk and pyritic tailings. Bulk tailings will remain in place at closure.
- A lined pyritic TSF. Potentially acid generating (PAG) and metal leaching (ML) waste rock will be stored with pyritic tailings in the lined pyritic TSF during operations. At closure the stored waste rock will be backhauled to the pit and the pyritic tailings pumped to the pit for sub-aqueous storage in the pit lake. Storage of PAG/ML waste rock and pyritic tailings within the pit lake will avoid post-closure management of the pyritic TSF.

The Project will develop a comprehensive water management plan that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of stream flow fluctuations and minimizes impacts to fish habitat.

1.4. Project Areas

The Project is located in a sparsely populated region of southwest Alaska near Iliamna Lake, within the Lake and Peninsula and Kenai Peninsula boroughs (Figure 1-1). The Project comprises four primary areas: the mine site at the Pebble Deposit location, the port site at Amakdedori on Cook Inlet, the transportation corridor connecting these two sites, and a natural gas pipeline connecting to existing infrastructure on the Kenai Peninsula.

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The transportation corridor consists of a road from the mine site to a ferry terminal on the north shore of Iliamna Lake, a ferry route across Iliamna Lake to a landing on the south shore near the village of Kokhanok, and a road continuing southeast to the Amakdedori Port. Additional surface roads will connect the mine site to the villages of Iliamna, Newhalen, and Kokhanok (Figure 1-2). The gas pipeline will tie in to existing gas supply infrastructure at Anchor Point on the Kenai Peninsula, cross Cook Inlet, and parallel the transportation corridor to the mine site (Figure 1-1 and Figure 1-2).

The Bristol Bay watershed encompasses approximately 41,900 square miles and is defined by the Aleutian Range to the east and southeast, the Kuskokwim Mountains to the west, and a range of hills to the north that separate it from the Kuskokwim River watershed. The largest rivers that drain into Bristol Bay are the Nushagak and Kvichak rivers, which together drain 49 percent of the Bristol Bay watershed, or approximately 20,000 square miles (Figure 1-3).

1.4.1. Mine Site

The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit (Figure 1-2).

The fully developed mine site will include the open pit, bulk TSF, pyritic TSF, overburden stockpiles, material sites, water management ponds (WMPs), milling and processing facilities, and supporting infrastructure such as the power plant, water treatment plants, camp facilities, and storage facilities (Figure 1-4).

The site is currently undeveloped and not served by any transportation or utility infrastructure.

1.4.2. Amakdedori Port and Lightering Locations

The port site (Figure 1-5) will be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer.

The port site will include shore-based and marine facilities for the shipment of concentrate, freight, and fuel for the Project. The shore-based facilities will include separate facilities for the receipt and storage of containers for concentrate and freight. Other facilities will include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

The natural gas pipeline from the Kenai Peninsula will come ashore at the Amakdedori Port. An offtake will distribute natural gas to the port power generation facility.

The marine component includes an earthen access causeway extending out to a marine jetty located in 15 feet of natural water depth. One side of the jetty will be occupied by a roll-on/roll-off barge access berth; a separate berth for loading lightering barges will be located on the opposite side.

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The port site area is currently undeveloped and not served by any transportation or utility infrastructure.

Copper-gold concentrate containers will be loaded onto lightering barges at the Amakdedori Port and then transported to one of two lightering locations (Figure 1-5) for transfer to bulk carriers. The primary lightering location is approximately 12 miles offshore due east of the proposed Amakdedori port, the alternative lightering location is approximately 18 miles east-northeast of the proposed Amakdedori port between Augustine Island and the mainland. Wave heights in this area are reduced by Augustine Island and it would be used when required by sea conditions.

1.4.3. Transportation Corridor

The transportation corridor, which will connect the mine site to the Amakdedori Port on Cook Inlet, has three main components (Figure 1-2):

- A private, unpaved two-lane road extending 30 miles south from the mine site to a ferry terminal on the north shore of Iliamna Lake;
- An ice-breaking ferry to transport materials, equipment, and concentrate 18 miles across Iliamna Lake to a ferry terminal on the south shore near the village of Kokhanok; and
- A private, unpaved two-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port on Cook Inlet.

Separate roads will connect the transportation corridor to the villages of Iliamna, Newhalen, and Kokhanok. Apart from a small network of local roads near the villages, the transportation corridor area is undeveloped.

1.4.4. Natural Gas Pipeline Corridor

Natural gas, sourced through the existing natural gas supply infrastructure for the Cook Inlet area, will be the primary energy source for the Pebble Project. The gas pipeline alignment (Figure 1-1) will connect to existing infrastructure north of Anchor Point. Gas will be taken from the existing pipeline along the Sterling Highway and sent to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet, before turning west to a landfall at the Amakdedori Port. The pipeline then follows the transportation corridor from the port to the mine site, including across Iliamna Lake on the lake bed.

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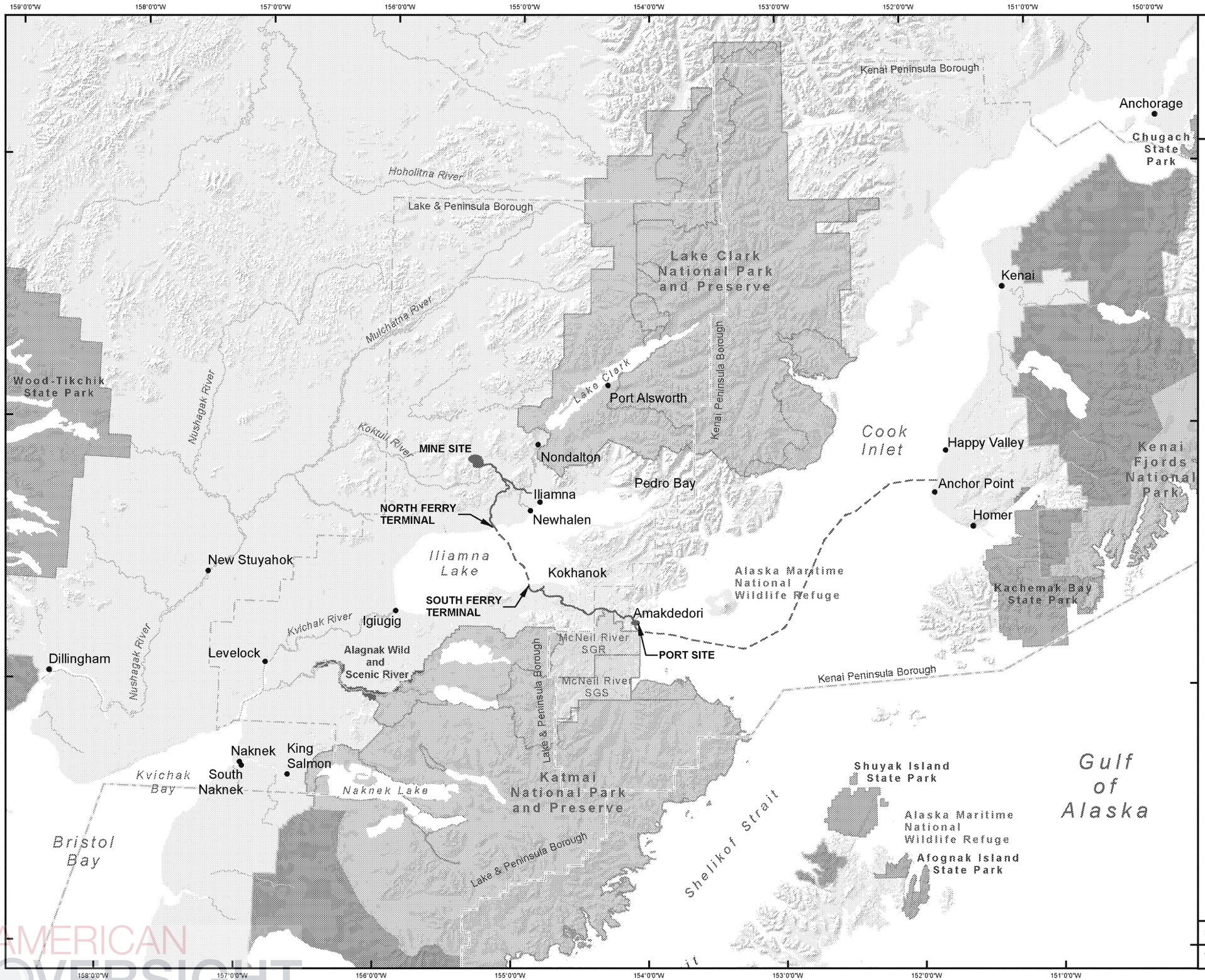

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FIGURE 1-1

Regional Map

- Project Features
- Transportation Corridor
- Natural Gas Pipeline
- National Park
- National WIldlife Refuge
- Alaska State Park
- Wild and Scenic River
- State Game Refuge/Sactuary
- Borough Boundary

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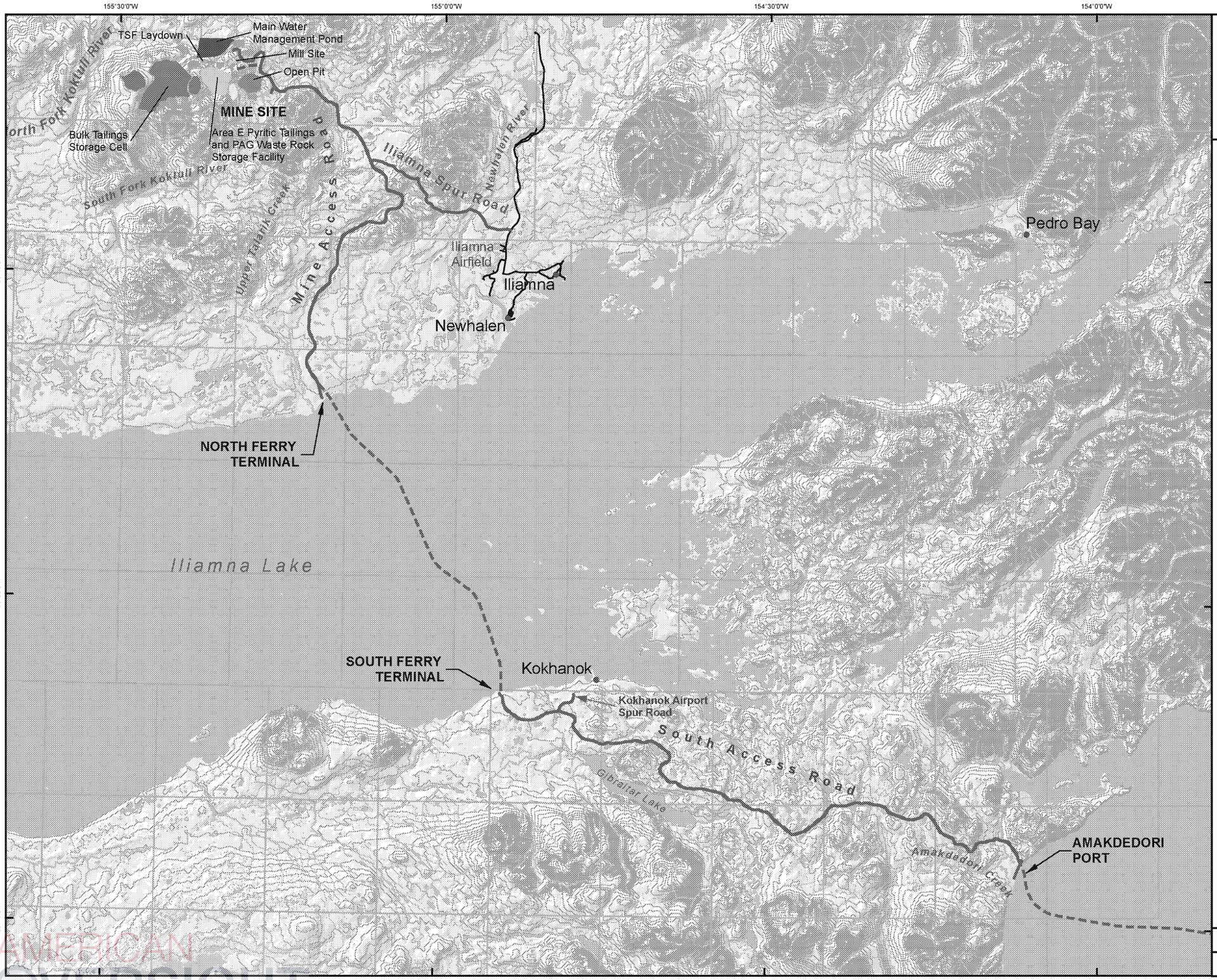

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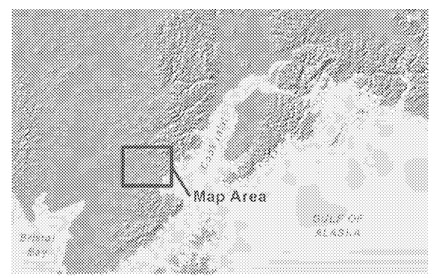
FIGURE 1-2

Project Area

- Bulk Tailings Storage Cell
- Water Managment Pond
- TSF Laydown
- Area E Pyritic Tailings and PAG Waste Rock Storage Facility
- Open Pit
- Overburden Stockpile
- Mill Site Process Plant
- Quarry
- Port Site Features
- Transportation Corridor
- Natural Gas Pipeline
- Local Roads
- Township Boundary



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Scale 1:325,000

Alaska State Plane Zone 5 (units feet)
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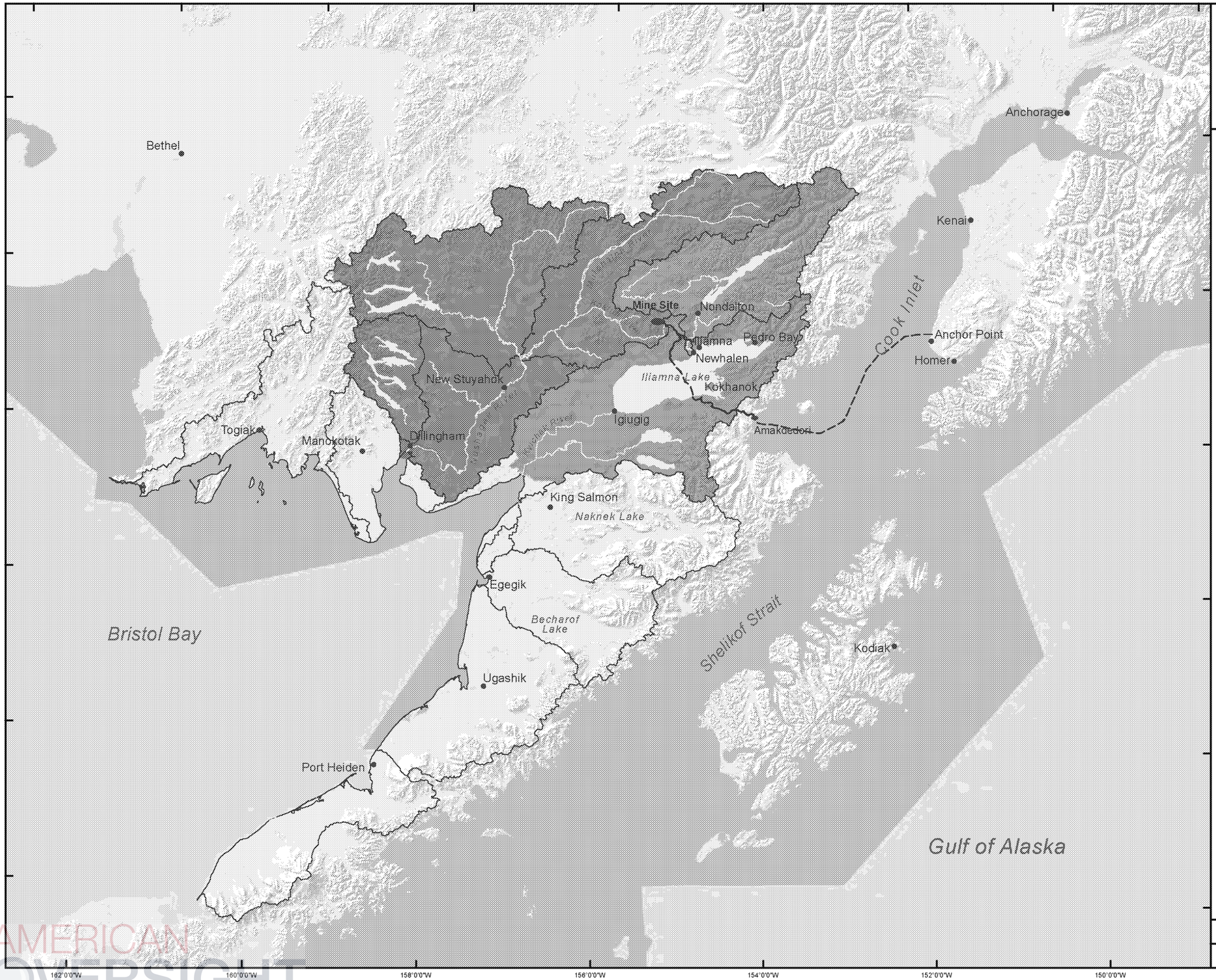

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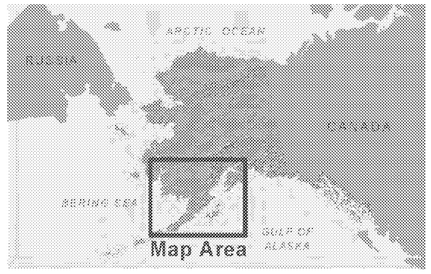
FIGURE 1-3

Bristol Bay Watershed

- Transportation Corridor
- Natural Gas Pipeline
- Nushagak Drainage
- Kvichak Drainage
- Subbasin (HUC8) Bristol Bay



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Scale 1:2,750,000

Alaska State Plane Zone 5 (units feet)
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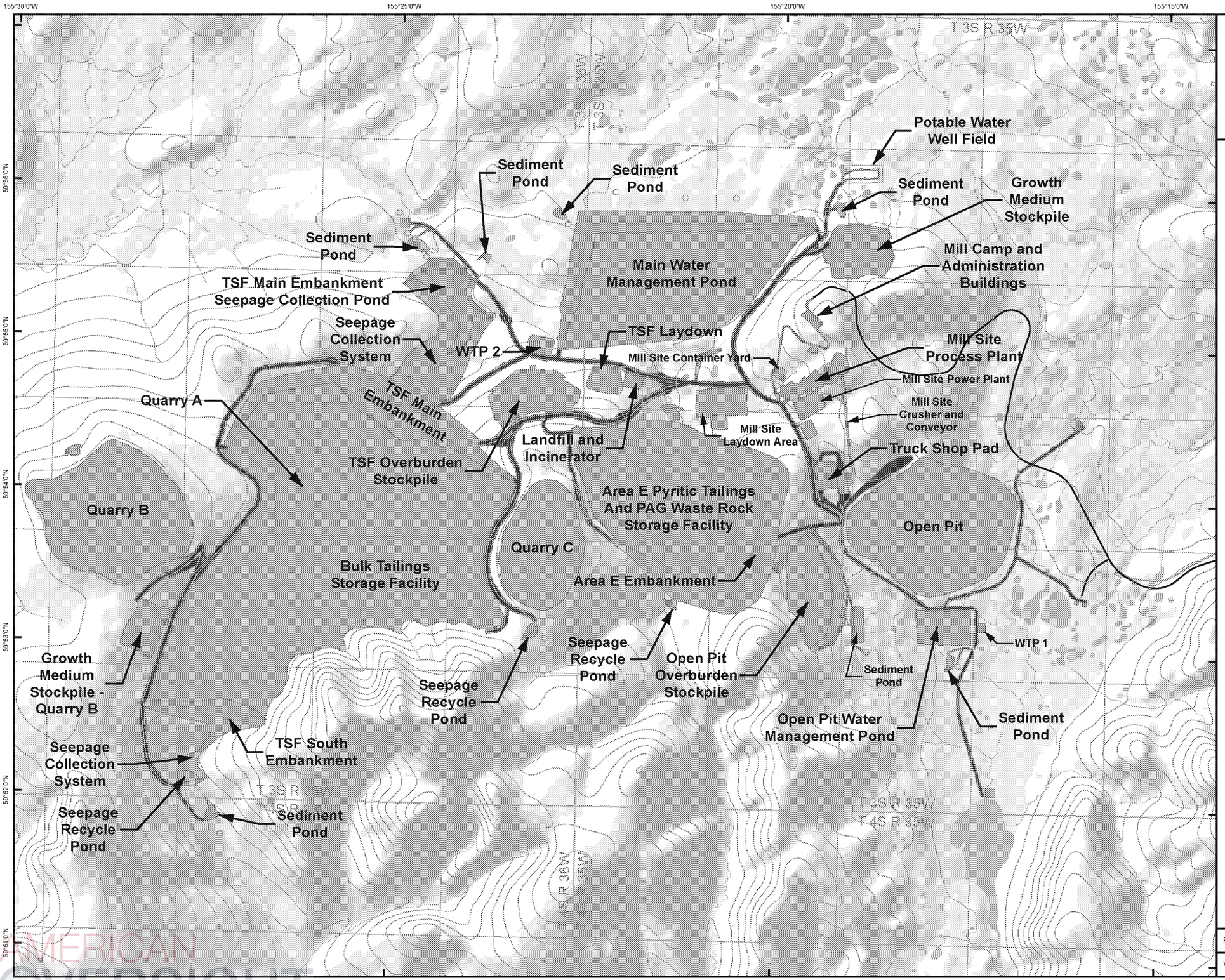

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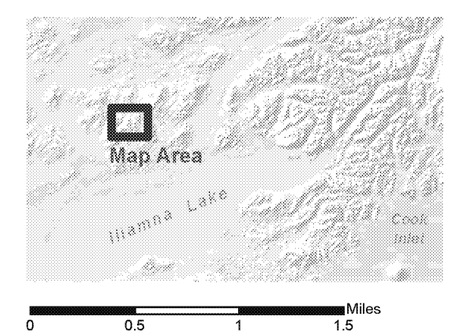
FIGURE 1-4

Mine Site Map

- Mine Site Footprint
- Mine Site Access Road
- 50' Contour (Existing)
- Township Boundary
- Section Boundary



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Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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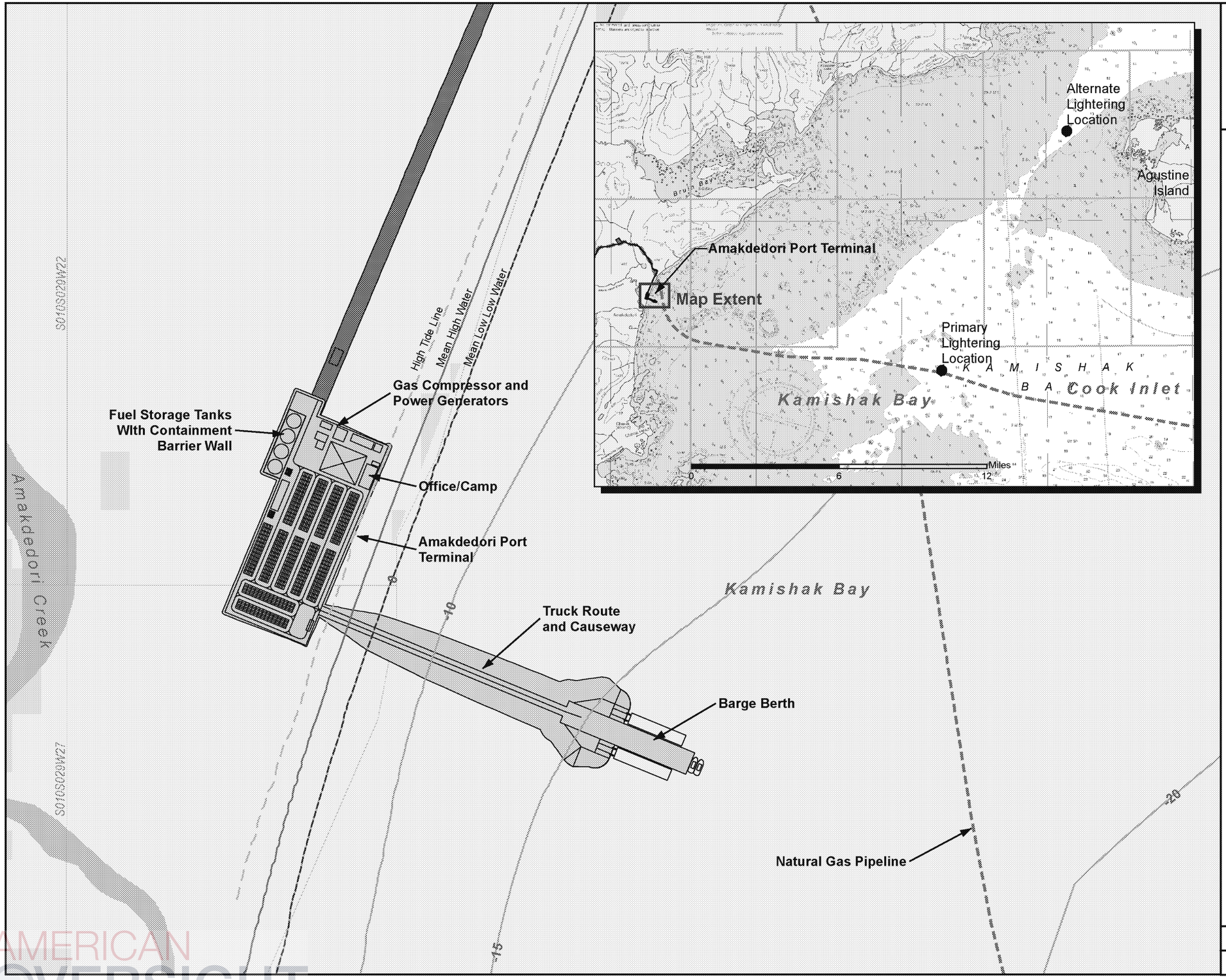

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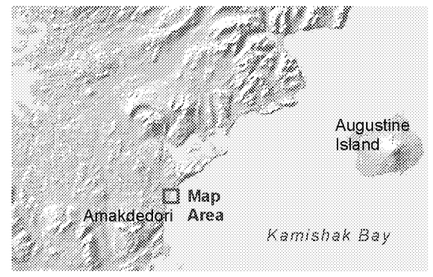
FIGURE 1-5

Amakdedori Port and Lightering Locations

- Amakdedori Port Site Footprint
- Primary / Alternate Lightering Locations
- Transportation Corridor
- Natural Gas Pipeline
- High Tide Line
- Mean High Water
- Mean Low Low Water (MLLW)
- Bathymetric Contours (Feet from MLLW)*

*Offshore contours developed from Terrasond bathymetric survey dated August 20 to 27, 2017. Elevations surveyed to geodetic datum (GEOID 99) and are shifted to mean lower low water (MLLW) level based on limited field measured tidal data. Preliminary shift between geodetic and MLLW is +8.37' (0' geodetic = 8.37' MLLW)



0 500 1,000 Feet

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Scale 1:6,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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1.5. Land Ownership and Mineral Rights

The Pebble Deposit is located on patented state land specifically designated for mineral exploration and development. The Pebble Deposit straddles parts of three management units described in the Alaska Department of Natural Resources (ADNR) 2005 *Bristol Bay Area Plan* (amended 2013). These management units, known as R06-23 (Pebble), R06-24 (Pebble Streams), and R10-02 (Pebble 2), total 110,080 acres and are designated for minerals extraction. This designation allows for mineral exploration and development with oversight from ADNR. The management intent for all three units also stresses the need to protect the anadromous fish streams in the upper Koktuli River corridor and to minimize or avoid effects from mining on habitat and recreational activities near the upper reaches of UTC.

The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of PLP and by a subsidiary of PLP's parent company, Northern Dynasty. Neither PLP nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Surface rights may be acquired from the state government once areas required for mine development have been determined and permits awarded.

The transportation corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act (ANCSA). Further detail is provided in Section 2.2.

1.6. Climate

The climate in the area of the Pebble Deposit/mine site is transitional. Winters are characterized by a continental climate as frozen waterbodies and sea ice in Bristol Bay create a land-like mass, while summers have a maritime climate due to the influence of the open water of Iliamna Lake and, to a lesser extent, the Bering Sea, Bristol Bay, and Cook Inlet. Mean monthly temperatures range from about 55 degrees Fahrenheit (°F) in summer to 2°F in winter. Precipitation in the NFK drainage averages approximately 57.4 inches per year and in the South Fork Koktuli River (SFK) drainage averages approximately 50.8 inches per year. About one-third of this precipitation falls as snow. The wettest months are August through October. White-out conditions and wind storms or periods of poor light/visibility can be expected in winter.

Winter weather systems, consisting of cool to cold saturated air, typically travel into the region from the Bering Sea (west), along the Aleutian Island chain (southwest) and the Gulf of Alaska (south), resulting in frequent clouds, rain, and snow. Less frequent incursions of frigid, stable Arctic air masses produce shorter periods of clear, but very cold conditions. During summer, warm air masses from interior Alaska can cause atmospheric instability, which results in cumulus clouds and thunderstorm activity.

1.7. Deposit Geology

The Pebble Deposit is hosted by Mesozoic, volcanically derived sedimentary rocks, called flysch, of the Kahiltna terrane, as well as a variety of intrusive igneous rocks emplaced into the flysch between approximately 99 and 90 million years ago during the mid-Cretaceous Period. Between 99 and 96 million years ago, early intrusions into the flysch comprised alkalic syenite to biotite

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pyroxenite bodies, along with subalkalic diorite and granodiorite sills. Kaskanak Suite intrusions were emplaced approximately 90 million years ago and are the most important igneous event in the area. The suite comprises a granodiorite batholith that is exposed west of, but extends beneath, the Pebble Deposit, as well as several smaller intrusive granodiorite apophyses that emanate from the underlying batholith; collectively these Kaskanak intrusions drove the large magmatic-hydrothermal system that formed the Pebble Deposit.

The Pebble Deposit is classified as a porphyry copper deposit and is hosted by the intrusive and sedimentary rock types described above. Copper, gold, molybdenum, and other metals were transported by hot fluids that emanated from the 90-million-year-old magmas as they cooled, and precipitated mostly as sulfide minerals in fractures, now preserved as veins, and as disseminations in the spaces between silicate minerals in the host rocks. The effects of the hot fluids are reflected by widespread hydrothermal alteration whereby some minerals originally present in host rocks were dissolved and replaced with suites of new minerals.

During the Late Cretaceous and Early Tertiary periods, the Pebble Deposit was uplifted by regional tectonic forces and eroded. The exposed deposit was rapidly covered by the Copper Lake Formation, a thick sequence of fine- to coarse-grained clastic sedimentary rocks and interbedded volcanic rocks. At a later point in the Tertiary Period, the eastern part of the Pebble Deposit was dropped up to 3,000 feet along normal faults into the East Graben, a structure that was progressively infilled by basalts, andesites, and subordinate clastic sediments as it grew. The Pebble Deposit and its host rocks were later tilted approximately 20 degrees to the east. The deposit was again uplifted in the later Tertiary Period, and its western part was scoured by Pleistocene glaciers that deposited a veneer of till, glacio-lacustrine, and outwash deposits that are mostly tens of feet thick or less, but which rarely are up to 300 feet thick in the vicinity of the Pebble Deposit. The present geometry of the Pebble Deposit comprises the West Zone, which is covered by thin glacial till and exposed in one small outcrop; the East Zone, which remains concealed by an eastward-thickening wedge of the Copper Lake Formation as well as overlying glacial till; and mineralization that extends an undetermined distance farther to the east but at great depth below the East Graben.

1.8. Resource

The current combined measured and indicated resource estimate for the total Pebble Deposit is approximately 7.1 billion tons containing 57 billion pounds of copper, 70 million ounces of gold, 344 million ounces of silver, and 3.42 billion pounds of molybdenum. In addition, the inferred component of the total deposit is approximately 4.9 billion tons, with 24.5 billion pounds of copper, 36 million ounces of gold, 170 million ounces of silver, and 2.2 billion pounds of molybdenum. The Pebble Deposit also contains important quantities of palladium and rhenium.

The Project will mine approximately 1.3 billion tons of mineralized material (measured, indicated, and inferred) over the 20-year mine life containing 7.4 billion pounds of copper, 398 million pounds of molybdenum, and 12.1 million ounces of gold. The metal content of the reported total resource and the 20-year open pit is presented in Table 1-1.

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Table 1-1. Pebble Deposit Estimated Resource (Measured, Indicated, and Inferred)

	Total Deposit		20-Year Open Pit	
	Weight	Grade	Weight	Grade
Copper	81.5 Blbs	0.34%	7.4 Blbs	0.29%
Molybdenum	5.64 Blbs	234 ppm	398 MMlbs	154 ppm
Gold	107.3 MMoz	0.31 g/t	12.1 MMoz	0.27 g/t

Blbs: billion pounds
MMoz: million ounces
MMlbs: million pounds
ppm: parts per million
g/t: grams per ton

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2. PROJECT SETTING

The environmental resources of the area surrounding the Pebble Deposit have been studied extensively by PLP. The *Pebble Project Environmental Baseline Document, 2004 through 2008*, which is available online at www.pebbleresearch.com, provides a complete report of environmental baseline studies conducted during those years. Pebble Project supplemental baseline data reports (2009-2013) provide data supplemental to the environmental baseline report and will accompany permit applications as appropriate.

2.1. MINE SITE

2.1.1. Physiography

The geographic location of the Pebble Deposit is described in Table 2-1.

Table 2-1. Pebble Deposit Geographic References

Item	Value
Pebble Deposit Centroid	59° 53' 51" N; 155° 18' 03" W
USGS Quadrangles	Iliamna D-6, D-7
Elevation:	
Minimum	775 ft amsl (SFK valley)
Maximum	2,760 ft amsl (Kaskanak Mountain)
Distance from:	
Cook Inlet	65 miles W
Iliamna Lake	16 miles N
Bristol Bay	100 miles W

amsl = above mean sea level
USGS = U.S. Geological Survey

The Pebble Deposit is located in the Nushagak-Big River Hills physiographic region. The area consists of low, rolling hills separated by wide, shallow valleys. Elevations range from approximately 775 feet in the SFK valley up to 2,760 feet on Kaskanak Mountain. Glacial and fluvial sediment of varying thickness covers most of the study area at elevations below approximately 1,400 feet, whereas the ridges and hills above 1,400 feet generally exhibit exposed bedrock or have thin veneers of surficial material. The hills tend to be moderately sloped with rounded tops. The valley bottoms are generally flat. No permafrost has been identified to date in the project area.

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2.1.2. Ecology

The Pebble Deposit area is ecologically diverse, with rivers, tundra, marshy lowlands, and ponds. Much of the land is covered by alpine tundra, shrubs, wetland and scrub communities, or areas of mixed broadleaf and spruce trees, depending on elevation and location.

Rivers near the Pebble Deposit provide habitat for five species of anadromous Pacific salmon. Rainbow trout and other species of fish, such as Dolly Varden and Arctic grayling, are also present. The streams in this area contain many features that support fish spawning and rearing, including complex off-channel habitats, river gravel that promotes spawning, beaver ponds, and combinations of run/glides and riffles. A higher diversity of species and abundance of fish, as well as the most spawning and rearing activity, is found in the lower and middle reaches of these streams, not in the headwater reaches at the Pebble Deposit site.

Various raptors and more than 40 species of water birds are found in the mine area and 22 species have been confirmed as breeding there. The many species of mammals that inhabit this region, while ecologically and economically important, are not particularly abundant. There are moderate densities of brown bear and low densities of black bear, moose, coyotes, wolves, river otters, and wolverines. The mine site is within the historical range of the Mulchatna caribou herd, but radio telemetry and aerial transect surveys suggest that high-density use of the area occurs only during the summer post-calving season when caribou move through the western edge of the project area. No habitat in the mine area has been classified as high value for caribou.

2.1.3. Hydrology

The Pebble Deposit straddles the upper reaches of the SFK and UTC drainages (Figure 2-1). The headwaters of the NFK are immediately north of the Pebble Deposit. The SFK drains south from the Pebble Deposit area, and then west and northwest, where it joins the NFK, which flows west from the Pebble Deposit area. At the confluence, these streams form the Koktuli River, which flows into the Mulchatna River, a tributary to the Nushagak River. The Nushagak River flows into Bristol Bay near the city of Dillingham. Upper Talarik Creek flows south from the Pebble Deposit area and then southwest into Iliamna Lake, which is the source of the Kvichak River.

2.1.3.1 Koktuli River

The NFK and SFK are two of 24 tributaries of similar or larger size in the 315-mile-long Nushagak River system. The north and south forks of the Koktuli River flow for 36 and 40 miles, respectively, to the main stem Koktuli River. The Koktuli River flows for approximately 39 miles before entering the Mulchatna River, which flows another 44 miles before entering the Nushagak River. The Nushagak River flows about 110 miles before it empties into Bristol Bay southwest of Dillingham (Figure 1-1). The total distances from the NFK and SFK headwaters to Bristol Bay are 228 miles and 232 miles, respectively.

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2.1.3.2 Kvichak River

The UTC drainage is in the 225-mile-long Kvichak River system. The headwaters of the Kvichak River system are approximately 109 miles northeast of the Pebble Deposit at the source of the Tlikakila River at Lake Clark Pass. UTC flows approximately 39 miles to Iliamna Lake (Figure 2-1). The lake empties into the Kvichak River, which flows approximately 70 miles to Bristol Bay. The total distance from the headwaters of UTC, across the lake, and to Bristol Bay is approximately 140 miles.

2.2. TRANSPORTATION CORRIDOR

The transportation corridor connects the Amakdedori Port to the mine site. It will include a private two-lane access road between the Amakdedori Port and the South Ferry Terminal on Iliamna Lake west of Kokhanok; a similar access road between the North Ferry Terminal on the north shore of Iliamna Lake and the mine site; and a purpose-built ice-breaking ferry connecting the two ferry terminals. The natural gas pipeline will parallel the transportation corridor from the port site to the mine site. Additional spur roads will be built to connect the access road to the villages of Iliamna, Newhalen, and Kokhanok. Approximately 65 percent of the corridor land is owned by the State of Alaska, with the remaining 35 percent divided among various ANCSA corporations, as shown in Table 2-2 and Figure 2-2.

Table 2-2. Transportation Corridor Land Ownership[a]

Land Ownership	Road Segments (Miles)	Percentage
Access Road	Total miles: 66	
State of Alaska	43	65
Alaska Peninsula Corporation	23	35
Iliamna Airport Spur	Total miles: 7	
State of Alaska	4	55
Iliamna Natives Limited	3	45
Iliamna Lake Crossing	Total Miles: 18	
State of Alaska	18	100
Kokhanok Airport Spur	Total miles: 1.5	
Alaska Peninsula Corporation	1.5	100
Total Road Miles	**75**	
Total Corridor Miles	**93**	

[a] Distances presented are approximate and have been rounded for ease of reference.

2.2.1. Physiography

The geographic location of the transportation corridor is described in Table 2-3.

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Table 2-3. Transportation Corridor Geographic References

Item	Value
USGS Quadrangles	Iliamna B-3, B-4, B-5, B-6 Iliamna C-6 Iliamna D-6, D-7
Elevation:	
Minimum	Near sea level (Amakdedori Port)
Maximum	1,700 ft (leaving mine site)

The transportation corridor is located within three physiographic divisions: Nushagak-Big River Hills, Nushagak-Bristol Bay Lowlands, and Aleutian Range. The terrain includes a range of types, from flat to moderately undulating near the Pebble Deposit, gently sloping and colluvial terrain along the north shore of Iliamna Lake, and mountainside slopes to narrow valley bottoms through the Aleutian Range. No permafrost has been identified in the transportation corridor.

2.2.2. Ecology

Much of the land at lower elevations south of Iliamna Lake is covered by dwarf shrub and broadleaf forest communities. At higher elevations where shallow bedrock occurs, dwarf shrub and alder shrub communities are prevalent. Wetland habitats are common in depressional areas, valley bottoms, and on slope benches and include wet meadows and scrub-shrub communities. Vegetation communities within the transportation corridor north of Iliamna Lake primarily consist of dwarf shrub, spruce woodland, mixed broadleaf and spruce forest, and shrubs. Wetland habitats dominated by willow shrub communities are common on floodplains of streams, while wet meadows and mixed shrub wetlands are common at toe slopes where groundwater discharge occurs.

Rivers along the transportation corridor provide habitat for five species of anadromous Pacific salmon. Rainbow trout and other species of fish, such as Dolly Varden and Arctic grayling, are also present.

Forest and wetland habitats in the transportation corridor support types of wildlife similar to those at the mine site. Brown bear density is somewhat higher in the transportation corridor, with densities increasing as the corridor approaches the coast. Black bears occur in very low densities along the transportation corridor. Small numbers of caribou from the Mulchatna herd may be found foraging at higher elevations following calving within the transportation corridor north of Iliamna Lake. The transportation corridor contains migratory stopover and breeding habitats for many species of songbirds, raptors, and waterfowl.

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2.2.3. Hydrology

The 84-mile-long access corridor crosses numerous streams within the Bristol Bay and Cook Inlet watersheds. The corridor originates in the Nushagak watershed at the mine site and traverses the Kvichak watershed; both are within the greater Bristol Bay watershed. The corridor terminates in the Tuxedni-Kamishak Bays watershed of the greater Cook Inlet watershed.

2.3. AMAKDEDORI PORT

2.3.1. Physiography

The port site is located just north of the mouth of Amakdedori Creek on the shore of Cook Inlet in the northern part of the Aleutian Range physiographic division. Topography is generally flat with dunes located closer to the gravel beach shoreline of Cook Inlet. The port location is in the Iliamna B-3 USGS Quadrangle.

2.3.2. Ecology

The western shorelines from Kameshak Bay north to Iniskin Bay are composed of diverse habitats, including steep rocky cliffs, cobble or pebble beaches, and extensive sand/mud flats. Eelgrass is found at a number of locations and habitats; eelgrass, along with macroalgae, is an important substrate for spawning Pacific herring. Much of the land is well-drained and covered by dwarf shrub communities with inclusions of alder shrub and grass-herb communities. Wetland habitats consisting of wet meadows and shrub communities are limited to the northwestern extent of the port site where groundwater discharge occurs and areas within the floodplain of Amakdedori Creek.

Preliminary data gathered at Amakdedori beach in 2013 indicate that Pacific herring are the predominant species present in the nearshore environment, with smaller populations of Dolly Varden and pink salmon. The port site is located within critical habitat for the Cook Inlet Beluga Whale and the Northern Sea Otter Southwest Distinct Population Segment (DPS). Cook Inlet Beluga Whale critical habitat includes nearshore waters out to two nautical miles and comprise important foraging areas in fall and winter. Northern Sea Otter critical habitat includes foraging areas and escape habitat from marine mammal predators found in Kamishak Bay.

2.3.3. Hydrology

The Cook Inlet basin is an expansive watershed surrounding the 180-mile-long Cook Inlet waterbody. Covering more than 38,000 square miles of southern Alaska, it receives water from six major watersheds and many smaller ones. More than ten percent of the basin is covered by glaciers and suspended sediment loading in glacier fed rivers without lakes is significant, leading to a high suspended sediment load in portions of Cook Inlet.

Lower Cook Inlet is connected to the Pacific Ocean southwest through Shelikof Strait, and southeast by the Gulf of Alaska and demonstrates complex circulation on variable timescales. The region has the fourth largest tidal range in the world; tidal fluctuations in Kamishak Bay average 13 feet. When the tide drops from mean high to mean low water, the inlet loses almost 10 percent of

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its volume, and exposes approximately 8 percent of its surface area. Most of these tidally exposed areas are in the arms at the north end of Cook Inlet and along the west side of the waterbody.

2.4. Natural Gas Pipeline Corridor

The natural gas pipeline connects the mine site and the port site to the Cook Inlet gas supply infrastructure. It ties to an existing pipeline near Anchor Point on the Kenai Peninsula, connecting to a compressor station, which is located on private land owned by the University of Alaska. The pipeline then crosses state and federal Outer Continental Shelf (OCS) waters in Cook Inlet to the Amakdedori Port before following the transportation corridor to the mine site (see Table 2-4).

Table 2-4. Natural Gas Pipeline Land Ownership[a]

Land Ownership	Road Segments (miles)	Percentage
Cook Inlet Crossing	Total miles: 104	
State of Alaska	24	23
Federal Waters – Alaska OCS	80	77
Iliamna Lake Crossing	Total miles: 18	
State of Alaska	18	100
Transportation Corridor Parallels	Total miles: 66	
State of Alaska	43	65
Alaska Peninsula Corporation	23	35
Total Miles	**188**	

[a] Distances presented are approximate and have been rounded for ease of reference.

2.4.1. Physiography

The geographic location of the initial portion of the natural gas pipeline corridor is defined in Table 2-5. The remainder is the same as the transportation corridor.

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Table 2-5. Natural Gas Pipeline Geographic References

Item	Value[a]
USGS Quadrangles	Iliamna B-2 Seldovia D-5
Elevation:	
Minimum	-230 ft
Maximum	1,700 ft

[a] All references in Table 2-3 apply to the natural gas pipeline, but are excluded from this table.

The pipeline is located in four physiographic regions—the Nushagak-Big River Hills, the Nushagak-Bristol Bay Lowlands, the Aleutian Range, and the Cook Inlet-Susitna Lowlands. The terrain includes a range of types, from flat to moderately undulating near the Pebble Deposit/mine site, gently sloping and colluvial terrain along the north shore of Iliamna Lake, mountainside slopes to narrow valley bottoms through the Aleutian Range, and coastal lowlands around Cook Inlet. No permafrost has been identified in the pipeline corridor.

2.4.2. Ecology

The Cook Inlet region is composed of marine, coastal, and estuarine habitats. Pelagic waters within Cook Inlet are influenced by riverine and marine inputs resulting in salinity gradients and horizontal mixing throughout the inlet. Deeper waters of Cook Inlet are characterized by highly variable conditions, ranging from large boulders beds, to dune fields, and unconsolidated sediments on a smooth bottom. Strong tidal currents are present. The variety of habitats in the region support lower trophic organisms, fish, shellfish, marine mammals, and birds. Fish and shellfish are important components of the Cook Inlet food web, as they feed on lower trophic organisms such as plankton, and serve as prey for other fish, birds, and marine mammals.

The Cook Inlet region is a migratory corridor and juvenile rearing area for all five species of Pacific salmon, Dolly Varden, and steelhead trout, which spawn in rivers and streams throughout the region. Nineteen marine mammal species known to occur in Cook Inlet, including the Cook Inlet Beluga whale, which use nearshore waters for feeding in fall and winter. A large seabird nesting colony lies within Kamishak Bay on the western shore of lower Cook Inlet. As outlined in Section 2.3.2 coastal areas of western Cook Inlet, including Kamishak Bay, include critical habitat for the Cook Inlet beluga whale and the Cook Inlet northern sea otter.

2.4.3. Hydrology

See section 2.3.3 for a discussion of Cook Inlet hydrology.

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155°30'0"W

155°0'0"W

60°0'0"N

59°45'0"N

North Fork Koktuli Watershed

TSF Laydown

Main Water Management Pond

Bulk Tailings Storage Cell

MINE SITE

Mill Site

Upper Talarik Creek Watershed

Open Pit

Area E Pyritic Tailings and PAG Waste Rock Storage Facility

North Fork Koktuli River

South Fork Koktuli Watershed

MINE SITE ACCESS ROAD

South Fork Koktuli River

Upper Talarik Creek

Newhalen River

Iliamna Airfield

Iliamna

Kaskanak Creek

Lower Talarik Creek

Pete Andrews Creek

Newhalen

NORTH FERRY TERMINAL

Iliamna Lake

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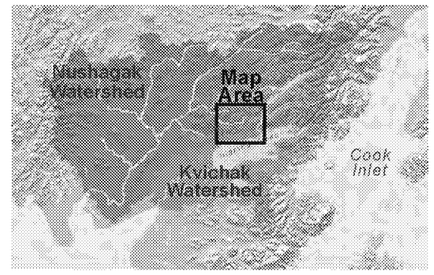
FIGURE 2-1

Mine Site Hydrography

- Bulk Tailings Storage Cell
- Water Managment Pond
- TSF Laydown
- Area E Pyritic Tailings and PAG Waste Rock Storage Facility
- Open Pit
- Overburden Stockpile
- Mill Site Process Plant
- Quarry
- Watershed Boundary
- Access Road
- Local Roads
- Township Boundary



0 2 4 6 Miles

N

Scale 1:180,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: PLP_PD_2_1_MineSiteHydrography.mxd	Date: 9/6/2018
Version: x	Author: HDR

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156°0'0"W
155°30'0"W
155°0'0"W
154°30'0"W
154°0'0"W
153°30'0"W
153°0'0"W
60°0'0"N
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N

Lake Clark National Park and Preserve

Lake & Peninsula Borough

Lake & Peninsula Borough

Kenai Peninsula Borough

MINE SITE

Iliamna

Newhalen

Pedro Bay

Pile Bay

Williamsport

Iniskin Bay

Knoll Head

Ursus Cove

NORTH FERRY TERMINAL

Iliamna Lake

SOUTH FERRY TERMINAL

Kokhanok

Igiugig

Rocky Pt.

Alaska Maritime National Wildlife Refuge

Bruin Bay

PORT SITE

McNiel River State Game Refuge

Alaska Maritime National Wildlife Refuge

Cook Inlet

Katmai National Park and Preserve

McNeil River State Game Sanctuary

Katmai National Park and Preserve

Alagnak Wild and Scenic River

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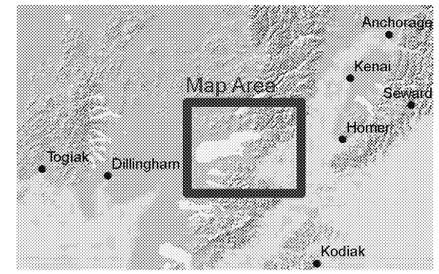
FIGURE 2-2

Regional Land Status

- Project Features
- Transportation Corridor
- Natural Gas Pipeline

Land Status

- Bureau of Land Management
- National Park
- National Wildife Refuge
- State Land
- State Game Refuge/Sactuary
- Wild and Scenic River
- ANCSA Lands
- Native Allotments
- Borough Boundary



0 5 10 15 20 Miles

N

Scale 1:600,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: PLP_PD_2_2_RegionalLandStatus.mxd	Date: 10/1/2018
Version: x	Author: HDR

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2.5. State and Federal Interest Lands

Several state and federally managed lands lie within a 100-mile radius of the mine site or Amakdedori Port (Figure 2-2). Two large national park units—Katmai National Park and Preserve and Lake Clark National Park and Preserve—lie to the south and northeast of the mine site, respectively. Both parks straddle the Bristol Bay/Cook Inlet watershed divide, although most recreational use in both parks occurs in the Bristol Bay drainage, west of the divide. The Alagnak Wild and Scenic River flows west from Katmai National Park and Preserve and into the Kvichak River, which flows into Bristol Bay. The McNeil River State Game Refuge and Sanctuary, which lies north of Katmai National Park and Preserve, is in the Cook Inlet watershed. West of the mine site is Wood-Tikchik State Park, which is in the Bristol Bay watershed.

2.6. Local and Regional Communities

The Pebble Deposit is located in southwest Alaska's Lake and Peninsula Borough, home to an estimated 1,600 people in 18 local villages. Distances to various communities are shown in Figure 1-1. At more than 30,000 square miles, the Lake and Peninsula Borough is among the least densely populated boroughs or counties in the country. There are no roads into the borough, and few roads within it, contributing to an extremely high-cost of living and limited job and other economic opportunities for local residents.

The communities closest to the mine site are Nondalton, Iliamna, and Newhalen. Igiugig, Pedro Bay, and Kokhanok, on the southern shore of Iliamna Lake, are also proximal to transportation infrastructure proposed for the Project. While PLP has generated employment for residents of villages throughout the Lake and Peninsula Borough and broader Bristol Bay region over the past decade, those communities surrounding Iliamna Lake have provided the greatest proportion of the local workforce.

With project infrastructure planned to connect the proposed mine site to the villages of Iliamna, Newhalen, and Kokhanok, residents of these and other communities are expected to continue to continue playing an important role in staffing the Project in the future.

The Bristol Bay Borough is the only other organized borough in the Bristol Bay region, with some 900 full-time residents in three villages. A significant portion of the Bristol Bay region is not contained within an organized borough; the Dillingham Census Area comprises 11 different communities. A total of about 7,500 people call the Bristol Bay region home, with the largest population centers in Dillingham, King Salmon, and Naknek.

Most Bristol Bay villages have fewer than 150–200 full-time residents. A majority of the population is of Alaska Native descent and Yup'ik or Dena'ina heritage. Virtually all of the region's residents participate to some degree in subsistence fishing, hunting, and gathering activities. Subsistence is central to Alaska Native culture and provides an important food source for local residents.

There are 13 incorporated first- and second-class cities in the Bristol Bay region and 31 tribal entities recognized by the U.S. Bureau of Indian Affairs. There are also 24 Alaska Native Village Corporations created under the ANCSA, two of which – Alaska Peninsula Corporation and

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Iliamna Natives Limited – hold surface rights for significant areas of land near the Pebble Deposit and along the proposed transportation infrastructure corridor.

The commercial fishing, guiding, and tourism-related sectors provide many jobs in the region, but the work is highly seasonal; year-round employment is the exception rather than the norm. A lack of employment and economic opportunity has contributed to a declining population in many Lake and Peninsula Borough and regional villages, resulting in the closure of several schools over the past decade.

2.7. Legal Description

The legal description of lands on which major project elements will be located is shown in Table 2-6. Sections are within the Seward Meridian Survey of the Public Land Survey System.

Table 2-6. Project Location (Public Land Survey System)

Range	Township	Section
14 West	3 South	7, 8, 18, 19, 30
15 West	3 South	25, 36
	4 South	1, 11, 12, 14, 15, 21, 22, 28, 29, 31, 32
16 West	5 South	1, 2, 10, 11, 15, 16, 17, 19, 20, 30
24 West	10 South	22, 23, 24, 27, 28, 29, 30
25 West	10 South	25, 32, 33, 34, 35, 36
26 West	10 South	31, 32, 33
28 West	10 South	19, 20, 26, 27, 28, 29, 31, 35, 36
29 West	10 South	6, 7, 8, 9, 10, 14, 15, 16, 17, 22, 23, 24, 26, 34, 35, 36
	11 South	2
30 West	9 South	31, 32, 33, 34
	10 South	1, 2, 3, 5, 6
31 West	9 South	31, 32
	10 South	1, 3, 4, 5, 10, 11, 12
32 West	9 South	15, 16, 17, 18, 22, 26, 27, 35, 36
33 West	4 South	19, 27, 28, 29, 30, 34, 35
	8 South	18, 19, 20, 29, 32, 33
	9 South	2, 3, 6, 7, 8, 9, 10, 11, 13, 14
34 West	3 South	19, 29, 30, 32
	4 South	4, 5, 9, 10, 14, 15, 23, 24, 26, 32, 33, 34, 35
	6 South	30, 31
	7 South	5, 6, 8, 9, 16, 21, 22, 26, 27, 35
	8 South	1, 2, 12, 13

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Range	Township	Section
35 West	3 South	15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 33, 34
	5 South	1, 12, 13, 14, 22, 23, 26, 27, 34, 35
	6 South	2, 3, 10, 11, 14, 23, 24, 25
36 West	3 South	11, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 33, 34

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3. PROJECT COMPONENTS AND OPERATIONS

This section describes the various project components and the operations associated with those components through the active life of the Project. Construction will last for approximately four years, followed by a commissioning period and 20 years of mineral processing. Mining preproduction will start during construction with removal of overburden and waste rock material and active mining from the pit will continue through the 20-year operations period. Figure 1-4 shows the layout of the mine site, including the major facilities and site infrastructure.

3.1. SUMMARY PROJECT INFORMATION

A summary of mining and process related information is shown in Table 3-1.

Table 3-1. Summary Project Information[a]

Item	Value
General Operation	
Construction	4 years
Open pit mining	20 years
Total project operations	20 years
Daily schedule	24 hours
Annual schedule	365 days
Mine Operation	
Preproduction mined volume	33 million tons
Average annual mining rate	70 million tons
Operations mined volume	1,440 million tons
Mine life strip ratio	0.12:1 (waste: mineralized material)
Open pit dimensions	6,800 x 5,600 ft, 1,970 ft deep
Process Operation	
Daily process rate	180,000 tons
Annual process volume	66 million tons
Copper-gold concentrate	613,000 tons per year (average)
Molybdenum concentrate	15,000 tons per year (average)
Pyritic Tailings Storage Facility	
Approximate capacity (tailings)	155 million tons
Approximate capacity (PAG waste)	50 million tons
South embankment (height)	305 feet
North embankment (height)	425 feet
East embankment	315 feet

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Item	Value
Bulk Tailings Storage Facility	
Approximate capacity	1,140 million tons
Main embankment (height)	545 feet
South embankment (height)	300 feet
Main Water Management Pond	
Approximate capacity	2,450 M cubic feet (56,300 ac-ft)
Embankment height	190 feet

[a] Design criteria as presented are approximate and have been averaged and rounded as appropriate for ease of reference.

3.2. MINING

3.2.1. Methods and Phasing

The Pebble Mine will be a conventional drill, blast, truck, and shovel operation with an average mining rate of 70 million tons per year and an overall stripping ratio of 0.12 ton of waste per ton of mineralized material.

The open pit will be developed in stages, with each stage expanding the area and deepening the previous stage. The final dimensions of the open pit will be approximately 6,800 feet long and 5,600 feet wide, with depths to 1,970 feet.

Mining will occur in two phases – Preproduction and Production.

The mine operation will commence during the last year of the Preproduction Phase and extend for 20 years during the Production Phase. During this period, 1,300 million tons of mineralized rock and 150 million tons of waste rock and overburden will be mined. Non-potentially acid generating (NPAG) waste rock will be used in construction of the tailings embankments. The PAG waste rock will be stored in the pyritic TSF until closure, when it will be back-hauled into the open pit. Fine- and coarse-grained soils will be stored southwest of the pit and north of the TSF embankments and will be used for reclamation during mine closure.

The Preproduction Phase consists of dewatering the pit area and mining of non-economic materials overlying the mineralized material from the initial stage of the open pit. Dewatering will begin approximately one year before the start of Preproduction mining. Approximately 33 million tons of material will be mined during this phase (Table 3-2).

Table 3-2. Mined Material—Preproduction Phase

Material Type	Quantity
Overburden	21.5 million tons
PAG waste rock	11.6 million tons

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The Production Phase encompasses the period during which economic-grade mineralized material will be fed to the metallurgical process plant that produces concentrates for shipment and sale. The Production Phase is planned to last for 20 years. Mineralized material will be mined and be fed through the process plant at a rate of 180,000 tons/day. The open pit will be mined in a sequence of increasingly larger and deeper stages. Approximately 1.4 billion tons of material are planned to be mined during the Production Phase (Table 3-3).

Table 3-3. Mined Material—Production Phase

Material Type	Quantity
Overburden	68 million tons
Mineralized material process plant feed	1,291 million tons
NPAG waste rock	13 million tons
PAG waste rock	39 million tons

3.2.2. Blasting

Most open pit blasting will be conducted using emulsion blasting agents manufactured on site. In dry conditions, a blend of ammonium nitrate and fuel oil (ANFO) can be used as the blasting agent. However, most ammonium nitrate will be converted to an emulsion blasting agent because of its higher density and superior water resistance. Initial operations during the Preproduction Phase may use pre-packed emulsion blasting agents or a mobile bulk emulsion manufacturing plant. After the explosives plant is completed, the emulsion-based ANFO explosive will be used as the primary blasting agent.

The ANFO will be stored separately as a safety precaution. All explosive magazines will be constructed and operated to meet mine safety and health regulations. The ammonium nitrate solution will be mixed with diesel fuel and emulsifying agents in a mobile mixing unit on the mining bench where blasting is to take place. The emulsion will become a blasting agent only once it is sensitized using the sensitizing agent while in the drill hole.

Based on knowledge of the rock types in the Pebble Deposit, blasting will require an average powder factor of approximately 0.5 pound per ton of rock. Blasting events during the Preproduction Phase will occur approximately once per day. The frequency will increase during the Production Phase, with events occurring as often as twice per day.

3.2.3. Waste Rock and Overburden Storage

Waste rock is mined material with a mineral content below an economically recoverable level that is removed from the open pit, exposing the higher-grade production material. Waste rock will be segregated by its potential to generate acid. NPAG and non-ML waste rock may be used for embankment construction. PAG and ML waste rock will be stored in the pyritic TSF until mine closure, when it will be back-hauled into the open pit. Quantities of material mined are outlined in Table 3-1 and Table Table 3-2 above.

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During the Preproduction Phase, approximately 33 million tons of non-mineralized and mineralized material will be removed from the open pit. Non-mineralized waste and overburden will be stockpiled or used in construction, mineralized waste will be stockpiled and relocated to the pyritic TSF once complete, or if grades are sufficient, stockpiled for milling once the mill is complete. Material will be stockpiled within the pit footprint, or in designated stockpiles as appropriate.

Overburden is the unconsolidated material lying at the surface. At the Pebble Deposit, the overburden depth ranges from 0 to 140 feet. Overburden removal will commence during the Preproduction Phase and will recur periodically during the Production Phase at the start of each pit stage. The overburden will be segregated and stockpiled in a dedicated location southwest of the open pit. A berm built of non-mineralized rock will surround the overburden to contain the material and increase stability. Overburden materials deemed suitable will be used for construction. Fine- and coarse-grained soils suitable for plant growth will be stockpiled for later use as growth medium during reclamation. Growth medium stockpiles will be stored at various locations around the mine site and stabilized to minimize erosion potential.

3.2.4. Equipment

The Project will use the most efficient mining equipment available in the production fleet to minimize fuel consumption per ton of rock moved. Most mining equipment will be diesel-powered. This production fleet will be supported by a fleet of smaller equipment for overburden removal and other specific tasks for which the larger units are not well-suited. Equipment requirements will increase over the life of the mine to reflect increased production volumes and longer cycle times for haul trucks as the pit is lowered (Table 3-4). All fleet equipment will be routinely maintained to ensure optimal performance and minimize the potential for spills and failures. Mobile equipment (haul trucks and wheel loaders) will be serviced in the truck shop; track-bound equipment (shovels, excavators, drills, and dozers) will be serviced in the field under appropriate spill prevention protocols.

Table 3-4. Production Phase Equipment

Equipment Unit	Class	Year 1 Quantity	Average Quantity	Peak Quantity
Electric shovel	73 cy	1	2	2
Diesel hydraulic shovel	53 cy	1	1	1
Wheel loader	53 cy	1	1	1
Electric drill	12.25 in	1	2	2
Diesel drill	12.25 in	1	1	1
Diesel drill	6.5 in	1	1	1
Diesel haul truck	400 ton	7	11	17
Diesel haul truck	150 ton	5	5	5

cy = cubic yards

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Track-mounted electric shovels will be the primary equipment unit used to load blasted rock into haul trucks. Each electric shovel is capable of mining at a sustained rate of approximately 30 million tons per year. Diesel hydraulic shovels, due to their greater flexibility, will be used to augment excavation capacity, depending on the mining application.

Wheel loaders are highly mobile, can be rapidly deployed to specific mining conditions, and are highly flexible in their application. Diesel off-highway haul trucks will be used to transport the fragmented mineralized material to the crusher.

Track-mounted drill rigs are used to drill blast holes into the waste rock and mineralized material prior to blasting. Hole diameters will vary between 6 and 12 inches. Drill rigs may be either electrically powered, as is the case for the larger units, or diesel powered.

This equipment will be supported by a large fleet of ancillary equipment, including track and wheel dozers for surface preparation, graders for construction and road maintenance, water trucks for dust suppression, maintenance equipment, and light vehicles for personnel transport. Other equipment, such as lighting plants, will be used to improve operational safety and efficiency.

3.2.5. Mining Supplies and Materials

Fuel, lubricants, tires, and blasting agents (Table 3-5) will be the primary materials used in mining.

Table 3-5. Mining Supplies

Consumable	Use	Shipping
Diesel fuel	Vehicles and blasting	6,350-gallon ISO tank-containers
Lubricants	Vehicles and equipment	Drums and totes in containers
Ammonium nitrate prill	Blasting	Bulk containers
Primers, detonators, and detonating cord	Blasting	Specialized packaging as required
Blasting emulsion ingredients	Blasting	Specialized packaging as required
Packaged explosives	Blasting	Specialized packaging as required
Haulage truck & other tires	Vehicles	Bulk containers/break bulk
Ground-engaging tools	Drilling and loading	Bulk containers

ISO = International Organization for Standardization

3.3. Mineral Processing

Mineral processing facilities will be located at the mine site. Blasted mineralized material from the open pit will be fed to a crushing plant to reduce the maximum particle size to approximately six inches. This crushed material will be conveyed to a coarse ore stockpile, which in turn feeds a grinding plant within the process plant. In the grinding plant, semi-autogenous grinding (SAG) mills and ball mills further reduce the plant feed to the consistency of very fine sand. The next step is froth flotation, in which the copper and molybdenum minerals are separated from the remaining material to produce concentrates. The concentrates are then filtered for shipment. Gravity

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concentrators will be placed at strategic locations to recover free gold, which will be shipped off site for refining.

The copper-gold concentrate will be loaded into covered bulk shipping containers; the molybdenum concentrate will be packaged in bulk bags and loaded into shipping containers. Other economically valuable minerals (palladium and rhenium) will be present in the concentrates and may be recovered at the refineries. Figure 3-1 shows the process flowsheet.

The concentrate containers will be transported by truck to the Amakdedori Port on Cook Inlet. The contents of the copper-gold concentrate containers will be directly unloaded into the holds of Handysize bulk carriers for shipment, while the molybdenum containers will be loaded directly onto barges or other ships.

Over the life of the Project, approximately 1.3 billion tons of mineralized material will be fed to the process plant at a rate of 180,000 tons/day. On average, the process plant will produce approximately 613,000 tons of copper-gold concentrate per year, containing approximately 318 million pounds of copper, 362,000 ounces of gold and 1.8 million ounces of silver, and approximately 15,000 tons of molybdenum concentrate, containing about 14 million pounds of molybdenum.

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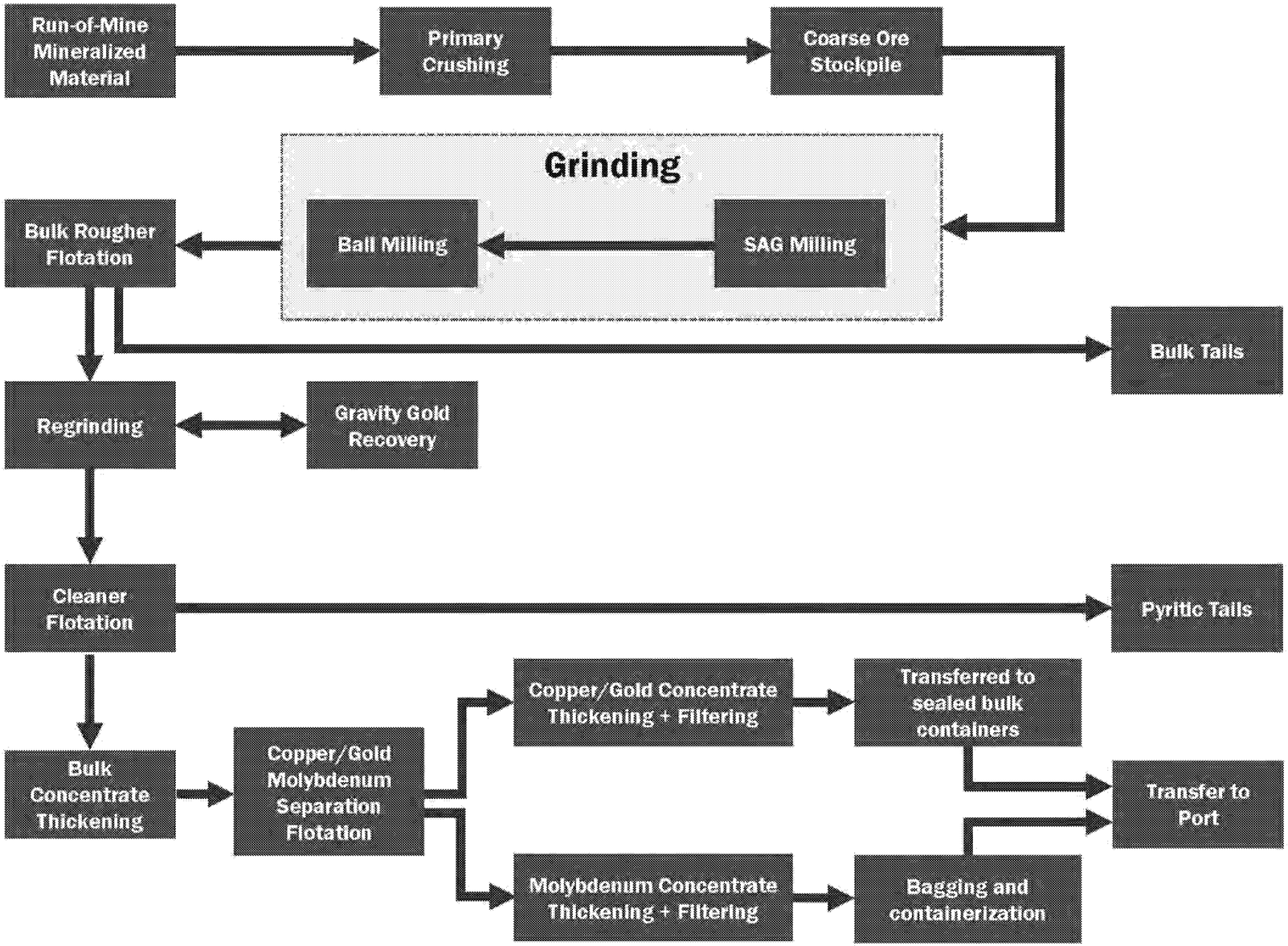

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FIGURE 3-1
Process Flow Sheet

File: PLP_PD_ProcessFlowSheet.mxd	Date: 12/15/2017
Version: 1	Author: HDR

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3.3.1. Crushing

3.3.1.1 Primary Crushing

Mineralized material from the open pit will be delivered by 400-ton haul trucks to primary gyratory crushers located adjacent to the rim of the open pit. The crushers will reduce the mineralized material to a maximum size of six inches. The crushed mineralized material from both crushers is delivered via a single, covered, overland conveyor to the coarse ore stockpile.

3.3.1.2 Coarse Ore Stockpile

The coarse ore stockpile is contained within a covered steel frame building to minimize fugitive dust emissions and control mineralized material exposure to precipitation. The stockpile provides surge capacity between the crushers and the process plant, improving the efficiency of the latter and enabling it to operate if the feed from the crushers is not available.

The stockpiled material will be reclaimed by apron feeders mounted below the pile that deliver it onto two conveyor belts feeding the SAG mills. Baghouse-type dust collectors will be provided at each transfer point to control fugitive dust emissions. Water will be added to the process at the SAG mill, thereby eliminating the need for additional baghouses. A sump will be located in each reclaim tunnel to collect any excess water; however, such drainage is likely to be minimal, as it is preferable to handle coarse material dry to prevent freezing during cold conditions. An escape tunnel also will be provided for worker safety, with ventilation as required.

3.3.2. Grinding

The primary grinding circuit will use two parallel, 40-foot-diameter SAG mills and associated ball mills to grind mineralized material to the finer consistency necessary to separate the valuable minerals. Steel balls are added to the SAG mill to aid in grinding the mineralized material. Coarse mineralized material, water, and lime are fed into the SAG mills and the mineralized material is retained within the SAG mills by grates until the particles reach a maximum size of one to two inches.

Discharge from each SAG mill will be screened to remove larger particles ranging from one to two inches ("pebbles"). Material passing through the screens will be sent to the ball mills while the large particles will be conveyed to the pebble-crushing facility where they will be crushed and re-introduced to the SAG mill.

The next grinding step is ball milling. Ball mills have a lower diameter-to-length ratio than SAG mills and use a higher percentage of smaller steel balls compared to SAG mills, allowing them to grind the feed to a finer size. Two ball mills will be matched with each SAG mill.

The slurry from the ball mills will be pumped into the hydro-cyclones, which separate the finer material from the larger material through centrifugal force. The slurry with the coarser material will be recycled back to the ball mills for additional grinding. The slurry containing the finer material will be pumped to the flotation cells. Grinding circuit slurry pH levels will be adjusted to 8.5 by

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adding lime slurry to minimize corrosion on the mill liners and promote efficient mixing prior to flotation.

3.3.3. Concentrate Production

Copper-gold and molybdenum concentrates will be produced via flotation, which will separate the metal sulfides from pyrite and non-economic minerals. Two tailings streams will be produced: bulk tailings and pyritic tailings.

3.3.3.1 Bulk Rougher Flotation

The rougher flotation circuit is designed to separate the sulfide minerals, predominantly copper, molybdenum, and iron sulfides (pyrite) within the process plant feed from the non-sulfide minerals. Slurry from the ball mills is split between two banks of bulk rougher flotation cells. Reagents added to the slurry promote mineral separation by inducing mineral particles to attach to air bubbles created by blowing air through the flotation cells. Additional reagents are added to promote froth bubble stability. This froth, with the mineral particles attached, rises to the surface and is collected as a bulk rougher concentrate for the next phase of flotation.

Bulk rougher concentrate slurry is then routed to the regrind circuit. Material that does not float – the bulk flotation tailings from which most of the sulfide minerals have been removed – will be pumped to two tailings thickeners.

3.3.3.2 Regrind

The bulk rougher concentrate is reground to sufficiently liberate minerals and enable the separation of the copper-molybdenum sulfide minerals from iron and other sulfides, thus producing concentrates with commercially acceptable grades. A gravity gold recovery circuit is attached to the regrind circuit to recover free gold that might otherwise be lost.

3.3.3.3 Cleaning

Reground bulk rougher concentrates will be upgraded through a two-stage cleaning process. The concentrate from the cleaning process will report to copper-molybdenum separation, while the tailings will report to the pyritic tailings thickener for thickening prior to pumping to the pyritic tailings storage cell in the TSF. The same reagents used in the rougher flotation circuit will be used in the cleaning circuit, with additional reagents used to aid in the suppression of gangue minerals. The cleaning stage is operated at an elevated pH—through lime addition—to suppress pyritic minerals, which would lower the grade of final concentrates.

3.3.3.4 Bulk Concentrate Thickener

Water will be removed from the bulk concentrate in a conventional thickener. This will remove as much of the bulk flotation reagents as possible before the slurry enters the copper-gold/molybdenum separation circuit, thus increasing separation process efficiency. Reagents will be recycled to the rougher process with the thickener overflow. The resulting slurry will contain 50 percent solids by weight and will go forward to copper-gold/molybdenum separation.

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3.3.3.5 Copper-Gold/Molybdenum Separation Flotation

The final flotation process is designed to separate copper-gold and molybdenum concentrates by adding reagents. The concentrate from the separation stage is the molybdenum concentrate, while the tailings comprise the final copper-gold concentrate.

3.3.3.6 Concentrate Dewatering, Filtration, and Packaging

The upgraded copper-gold concentrate will be thickened to 55 percent solids by weight in a high-rate thickener. The thickener overflow will return to various circuits for use as process water. The thickener underflow will be fed to a pressure filter to reduce the moisture to approximately eight percent. The filter product will be conveyed to specialized bulk cargo containers with removable locking lids that prevent dust emissions and incidental spills while maintaining product quality through the logistics chain.

The molybdenum concentrate will be thickened in a high-rate thickener to 55 percent solids by weight. The thickener underflow will be pumped to the molybdenum concentrate filter press, where the moisture content will be reduced to 12 percent. The filtered concentrate will be further dewatered by a dryer to five percent moisture before being bagged, containerized, and shipped offshore.

3.3.4. Processing Reagents and Materials

Table 3-6 provides a list of commonly used reagents for this type of process, along with their typical packaging for transportation. The final reagent list will be determined during detailed design.

Table 3-6. Processing Reagents and Materials

Reagent	Use	Shipping/Preparation
Calcium Oxide (quick lime)	pH modifier; depresses pyrite in the copper-molybdenum flotation process.	Calcium oxide pebbles (80 percent) shipped in specially adapted shipping containers. Pebbles will be crushed and mixed with water to form lime slurry at the lime plant.
Sodium Ethyl Xanthate	Copper collector; used in the rougher flotation circuit.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to form 20 percent solution and stored in collector storage tank. Mix and storage tanks vented externally with fans.
Fuel Oil (Diesel)	Used in the flotation process.	Shipped in tanker trucks and stored in the main head tank in the copper-molybdenum concentrator area.
Sodium Hydrogen Sulfide (NaHS)	Copper depressant used in the copper-molybdenum separation processes.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to form 20 percent solution and stored in the NaHS storage tank.

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Reagent	Use	Shipping/Preparation
Carboxy Methyl Cellulose	Depressant; anionic polymer used to depress clay and related gangue material in the bulk cleaner flotation circuit.	Pelletized reagent shipped in 1-ton bags. Mixed with process water in the agitated dispersant tank to form 20 percent solution and stored in dispersant storage tank.
Methyl Isobutyl Carbinol	Frother; maintains air bubbles in the flotation circuits.	Shipped in 20-foot specialized ISO containers and stored in the frother storage tank.
Depressant (sodium silicate)	Clay or silica gangue mineral depressant used in the copper-molybdenum separation process.	Pelletized reagent shipped in 1-ton bags. Mixed with process water to form 20 percent solution and stored in the sodium silicate storage tank.
Anionic polyacrylamide	Thickener aid.	Pelletized reagent shipped in 1-ton bags. Vendor package preparation system composed of a bag breaking enclosure to contain dust, dry flocculent metering, and a wet jet system to combine treated water with the powdered flocculent in an agitated tank for maturation. Prepared in small batches and transferred to a flocculent storage tank.
Polyacrilic acid	Antiscalant for the lime production process.	Viscous pale amber liquid shipped in 35-cubic-foot specialized container tanks within protected rectangular framework.
Nitrogen	Nitrogen used in the molybdenum flotation circuit to depress copper sulfides.	Nitrogen will be provided by a vendor-supplied pressure swing adsorption nitrogen plant. This equipment separates nitrogen from air for use in the mineral-process plant.

3.3.5. Process Water Supply System

Process water will be drawn from the main WMP and the tailings thickener overflow streams. The primary process water source is the bulk tailings thickener overflow. Precipitation runoff will either be diverted by non-contact water diversion channels, or collected in sediment ponds as appropriate, and pumped to the main WMP. Some treated water will be diverted to the process for pump glands and other similar applications.

3.3.6. Tailings Production

Processing mineralized material to recover copper, gold, and molybdenum will produce two types of tailings: bulk flotation and pyritic. Bulk flotation tailings will be pumped to the bulk tailings thickener, where flocculant will be added as necessary to help the settling process. Tailings

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thickener underflow, at approximately 55 percent solids, will be pumped to the bulk TSF. The pyritic tailings will be thickened, mixed with WTP sludge, and pumped to the pyritic TSF. The overflow streams from each thickener will be returned to the process. Supernatant water in the bulk and pyritic TSFs will be reclaimed to the mill site WMP. Some of this water will be pumped to the process water tank for re-use in the process plant. Any surplus water will be treated in the WTP and discharged.

3.4. TAILINGS STORAGE FACILITIES

Separate TSFs will be constructed for the bulk and pyritic tailings located primarily within the NFK watershed (Figure 1-4). Total TSF capacity will be sufficient to store the 20-year mine life tailings volume (1.3 billion tons). Approximately 88 percent 1,140 million tons) of the tailings will be bulk tailings, and approximately 12 percent (155 million tons) will be pyritic tailings.

The unlined bulk TSF has two embankments, the main and south embankments. The pyritic TSF will be lined and has three embankments – north, south, and east.

Starter embankments for both facilities will be constructed as part of the initial TSF construction. The main embankment of the bulk TSF will function as a permeable structure to maintain a depressed phreatic surface in the embankment and in the tailings mass in proximity to the embankment. A basin underdrain system will be constructed at various locations throughout the bulk TSF basin to provide preferred drainage paths for seepage flows. The pyritic TSF will be a fully lined facility.

The pyritic TSF, which will also contain the PAG waste, will have a full water cover during operations, while the bulk tailings cell will have a relatively small supernatant pond, located away from the embankments, to promote large tailings beach development upstream of the embankments.

The bulk TSF downstream embankment slopes will be maintained at approximately 2.6H:1V (horizontal:vertical), including buttresses established at the downstream toe of the main embankment. The final embankment crest elevation will be approximately 1,730 feet above sea level for bulk TSF. Embankment heights, as measured from lowest downstream slope elevation, will be 545 feet (main) and 300 feet (south).

The pyritic TSF embankment slopes will be maintained at 2.6H:1V. The final crest elevation will be 1,710 feet above sea level. The north embankment height will be 425 feet, the south embankment height will be 305 feet, and the east embankment height will be 315 feet.

3.4.1. Siting Criteria

PLP conducted a multi-year, multi-disciplinary evaluation to select TSF locations that meet all engineering and environmental goals while allowing for cost-effective integration into the site waste and water management plans. During this evaluation, more than 35 tailings disposal options were tested against a range of siting criteria, including:

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- **Minimize potential impact to environmental resources.** The selected sites are within valleys supporting mixed uplands and wetland shrub/herbaceous shrub. The valleys include tributaries to the NFK that have experienced intermittent flows. Index counts indicate lower fish presence than at other locations. Potential impacts to waterfowl are likewise reduced by avoiding areas with high-value habitats for nesting, breeding, molting, or migration.
- **Provide adequate storage capacity.** The sites will accommodate tailings for the 20-year life of the Project.
- **Reasonable proximity.** The sites minimize the distance to the process plant, which reduces power consumption and the overall project footprint.
- **Facilitate closure.** Segregating the pyritic tailings and PAG waste allows for placement of both in the pit at the end of the mine life, thus eliminating this structure from the long-term closure plan.

3.4.2. Design Criteria

The TSFs will be designed to meet or exceed the standards of the updated 2017 *Guidelines for Cooperation with the Alaska Dam Safety Program* (ADSP) prepared by ADNR. The TSFs will be designed to the standards of a Class I hazard potential dam (the highest classification).

The final TSF designs will incorporate the following:

- Permanent, secure, and total confinement of bulk tailings solids within an engineered disposal facility.
- Secure, and total confinement of pyritic tailings and PAG waste rock within a fully lined, engineered facility, with these materials relocated to the pit at closure.
- Control, collection, and recovery of tailings water from within the tailings impoundments for recycling to the process plant operations as process water, or treatment prior to discharge to the environment.
- Providing seepage collection systems below the impoundment structures to prevent adverse downstream water quality impacts.
- The inclusion of sufficient freeboard within the bulk TSF that the entire volume of the Inflow Design Flood (IDF) will not flood the entire tailings beach, maintaining the beach between the maximum operating pond and the bulk TSF embankments.
- Limiting the volume of stored water within the bulk TSF and keeping the operating pond away from the dam face.
- Maintaining the pyritic tails and PAG waste in a sub-aqueous state to prevent oxidation.
- The consideration of long-term closure management at all stages of the TSF design process.

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- The inclusion of monitoring instrumentation for all aspects of the facility during operations and after closure.
- The design includes flattened slopes to increase the static factor of safety.

3.4.3. Tailings Deposition

Each tailings stream will be delivered to its respective TSF using two pump stations, one located in the process plant and one booster station positioned approximately mid-way along the pipeline route. The bulk tailings will be discharged via spigots spaced at regular intervals along the interior perimeter of the bulk tailings cell to promote beach development, which will allow the supernatant pond to be maintained away from the main embankment.

PAG waste rock will be placed in a ring around the interior of the pyritic TSF. Pyritic tailings from the cleaner scavenger flotation circuit will be discharged into the pyritic TSF at sub-aqueous discharge points, with the level maintained just below the upper bench level for the PAG waste being stored. The sub-aqueous discharge is necessary to prevent oxidation and potential acid generation.

3.4.4. Construction

A "Certificate of Approval to Construct a Dam" is required from ADNR for the construction of impounding structures meeting the minimum height or impounding thresholds. The TSFs, seepage collection ponds, and WMPs will be jurisdictional dam structures regulated by ADSP. The certificate will include any special conditions or limitations on the construction.

The embankments will be constructed using suitable rockfill or earthfill materials, including quarried rock, NPAG and non-ML waste rock excavated from the open pit, if available, and stripped overburden.

3.4.4.1 Bulk TSF

Main Embankment

The main embankment will be constructed using the centerline construction method with local borrow materials. The centerline construction method provides a high level of embankment stability while reducing the embankment material requirements associated with the downstream method.

The embankment foundation will be prepared by removing overburden materials to competent bedrock prior to the placing structural fill materials. Construction begins with a cofferdam to capture upstream runoff during starter embankment construction. The starter embankment will be constructed to a height of approximately 265 feet and provide capacity to store tailings for the first 24 months of operation.

The material for the starter embankments will be sourced from a quarry located within the impoundment area. The bulk TSF embankments will be raised progressively during the mine life.

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After the quarry within the impoundment is inundated with tailings, material will be sourced from two quarries immediately west and east of the impoundment.

The earthfill/rockfill embankment will include engineered filter zones and a crushed or processed aggregate drain at the topographic low point. This drain will provide a preferable seepage path from the tailings mass to downstream of the embankment toe. Additional underdrains running parallel to the embankment will allow for drainage of seepage collected along the embankment.

South Embankment

The south embankment will be constructed using the downstream construction method to facilitate lining of the upstream face, which is constructed at a 3H:1V slope. The downstream slope will be at 2.6H:1V. Overburden materials will be removed to competent bedrock below the embankment. The earthfill/rockfill embankment will include engineered filter zones and a grout curtain to reduce seepage below the embankment.

3.4.4.2 Pyritic TSF

The embankments will be constructed using the downstream method with an overall downstream slope of 2.6H:1V. The embankments will be constructed using select borrow materials and include a liner bedding layer, overlain by a liner, on the upstream slope and over the entire internal basin. Basin underdrains will collect and convey any seepage to the downstream seepage collection ponds.

3.4.4.3 Main Water Collection Pond

The Main Water Management Pond is the primary water management structure at the mine site. It will be a fully lined facility and constructed using quarried rockfill materials. The embankment is approximately 190 ft high with an overall downstream slope of approximately 2H:1V and an upstream slope of 3H:1V to accommodate the liner. It will be constructed to its final height during the initial construction period. The Main Water Management Pond embankment design concept requires that any potential weak foundation conditions encountered in the overburden materials are addressed by excavating that material. Any potential mitigation requirements (including the removal of the overburden if required) will be addressed based on the geotechnical and hydrogeological information collected for the area during site investigations.

3.4.4.4 TSF Embankment Lifts

TSF embankments will be constructed in stages throughout the life of the Project, with each stage providing the required capacity until the next stage is completed. A 'Certificate of Approval to Modify a Dam' is required from ADSP for each construction lift. Planned embankment raises will be evaluated each year and sized according to a review of the process plant throughput, actual tailings settled densities (TSF ponds are typically sounded to establish the size of the supernatant pond and the density of the deposited tailings in the TSF), and water storage requirements.

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3.4.5. Freeboard Allowance

All stages of embankment design include a freeboard allowance above the maximum operating TSF pond level and tailings beach. The freeboard allowance includes containment of the IDF and wave run-up protection, as well as an allowance for post-seismic embankment settlement. The IDF for the facility has been selected as the Probable Maximum Flood (PMF).

The embankment freeboard requirements will be reviewed as part of each dam lift and dam safety review, and will be adjusted, as required to reflect actual mine water management conditions.

3.4.6. Surface Water

The IDF is the primary hydrologic input to the TSF design. The IDF for the TSF, pyritic TSF, and the main WMP is the PMF. The design PMF volume is based on the 24-hour Probable Maximum Precipitation (PMP) event, plus the snow water equivalent from a 1-in-100-year snowpack. Available storage, or freeboard, will always be maintained within the storage facilities to account for the IDF. Maximum operating conditions will not encroach on the freeboard allowance.

Pumps located at the bulk tailings cell supernatant pond will control the water level by transferring excess water to either the seepage control pond or the main WMP.

The pyritic TSF will be a fully lined, water retention facility. The primary means of controlling the water level within pyritic TSF will be by pumping from this cell to the main WMP or the mill.

The main WMP will be a fully lined, water retention facility used to store surplus water for milling, or for managing surplus water from other impoundment and seepage structures. The primary means of controlling the water level in the main WMP is by pumping to the mill or treating surplus water and discharging to the environment.

3.4.7. Seepage

The main embankment of the bulk TSF will be designed to promote seepage to the seepage collection pond, thereby minimizing the volume of water contained within the impoundment.

For the other embankments, seepage controls will include grout curtains, liners, and low-permeability zones. The low-permeability zones, in conjunction with the low-permeability tailings mass, will function as the primary seepage control barriers of the internal and east embankments.

The seepage management system will also include seepage control measures downstream of the TSF embankments. These include seepage recycle ponds with grout curtains and low-permeability core zones, and downstream monitoring wells. Embankment runoff and TSF seepage collecting in the downstream seepage collection ponds will ultimately be transferred to the main WMP to be used in mining operations or treated for discharge.

3.5. Mine Site Infrastructure

Due to the remote location and the absence of existing infrastructure, the Project will be required to provide basic infrastructure, as well as the support facilities typically associated with mining

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operations. These facilities require reasonable access from the Pebble Deposit, and they have been situated foremost for stability and safety. Figure 1-4 shows the mine site layout.

3.5.1. Power Generation and Distribution

There is no existing power infrastructure in the Project vicinity. All required generating capacity, distribution infrastructure, and backup power will be developed by the Project.

To meet the projected power requirement while providing sufficient peaking capacity and N+1 redundancy (one generating unit held in reserve for maintenance or emergency use) will require a plant with an installed nameplate capacity of 270 MW. The plant will use high-efficiency combustion turbine generators operating in a combined-cycle configuration. The units would be fired by natural gas provided to the site via pipeline. Design-appropriate controls will be used to manage airborne emissions and meet Alaska Department of Environmental Conservation (ADEC) air quality criteria and best management practices (BMPs). Unused waste heat will be rejected through a closed-loop, water cooled system that circulates water through the steam condenser to a mechanical draft cooling tower.

The various mine load centers would be serviced by a 69-kilovolt distribution system using a gas-insulated switchgear system located at the power plant.

Emergency backup power for the mine site will be provided by both standby and prime-rated diesel generators connected into electrical equipment at areas where power is required to ensure personnel safety, avoid the release of contaminants to the environment, and allow for the managed shutdown and/or ongoing operation of process-related equipment.

3.5.2. Heating

Waste heat from the power plant will be used to heat mine site buildings and supply process heating to the water treatment plant. Low-pressure steam, via heat exchangers, will heat a closed-loop glycol system that distributes heat to various buildings. Warm water from the steam condenser discharge will be routed to the water treatment plant to provide process heating.

3.5.3. Shops

The truck shop complex will house a light-vehicle maintenance garage, a heavy-duty shop that can accommodate 400-ton trucks, a truck wash building, a tire shop and a fabrication and welding shop. The layout is designed to maintain optimal traffic flow and minimize the overall complex footprint. An oil-water separation system will be designed for water collected from the wash facility and floor drains.

3.5.4. On-site Access Roads

There will be several access roads within the mine site area, including a road from the gatehouse to the mine site and secondary roads linking with the various facilities around the mine. Roads will be sized according to the operating requirements and the types of equipment using them.

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3.5.5. Personnel Camp

The first camp to be constructed at the mine site will be a 250-person fabric-type camp to support early site construction activities and throughout the Preproduction Phase as required for seasonal peak overflows. The main construction camp will be built in a double-occupancy configuration to accommodate 1,700 workers. This facility will later be refurbished for 850 permanent single-occupancy rooms for the operations phase. The camp will include dormitories, kitchen and dining facilities, incinerator, recreation facilities, check-in and check-out areas, administrative offices and first aid facilities.

The mine will operate on a fly-in, fly-out basis, except for those personnel residing in the communities connected to the access road corridor. Non-resident personnel will be flown in and out of the Iliamna Airport and transported to the site by road. Workers will remain on site throughout their work period. Site rules will prohibit hunting, fishing, or gathering while on site to minimize impacts to local subsistence resources.

3.5.6. Potable Water Supply

A series of groundwater wells located north of the mine site will supply potable water to the mine site. Preliminary tests indicate that minimal water treatment will be required. Treatment will likely include multimedia filtration, chlorination with sodium hypochlorite, and pH adjustment with sodium hydroxide. The treatment plants will be designed to meet federal and state drinking water quality standards.

Potable water will be distributed through a pump and piping network to supply fresh water to holding tanks at the personnel camp and process plant. Holding tank capacity will be sufficient for a 24-hour supply. Diesel-fired backup pumps will also be installed to provide potable water during an electrical outage.

3.5.7. Communications

Communications to site will be via fiber optic cable with satellite backup for critical systems. The fiber optic cable will connect to existing fiber optic infrastructure in the region or a dedicated fiber optic cable laid in conjunction with the gas pipeline.

The process plant communication system will use a dedicated ethernet network to support mine process control system communications. A separate network will connect various main components of the fire-detection and alarming system. Closed-circuit television, access control, and voice over internet protocol telephone systems will be integrated with the local area network. Mine operations will use two-way radios, cell phones, and similar equipment for communications.

3.5.8. Laboratories

Two laboratories will operate at the mine site during the Production Phase.

Staff affiliated with the process plant will operate the metallurgical laboratory to support process plant operations. This work will include routine operations support tests to confirm the metallurgical response of near-term plant feed, and development analysis to evaluate alternate

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treatment strategies. The laboratory will use state-of-the-art equipment and have fully equipped facilities for sample receiving and storage, sample preparation, and flotation.

The assay laboratory will be equipped with the necessary analytical instruments to provide routine assays to support mine and process plant operations. Some environmental samples will also be tested in this laboratory, although many of these samples will likely be submitted to external, third party laboratories.

Each laboratory will be equipped with fume hoods (with exhaust treatment, if required) and drains connected to a central receiving tank. Chemical wastes will be disposed of in accordance with all applicable laws and regulations.

3.5.9. Fire and Emergency Response

The mine site, Amakdedori Port site, and both ferry terminals will be equipped for fire and emergency response. Water for fire suppression will be stored within the freshwater supply tanks at the mine and port and distributed via an insulated pipeline system that meets all pertinent code requirements. A fire truck and ambulance will be located at the mine site. An ambulance will be located at the Amakdedori Port and a pump truck will be used to deliver fire suppression water. A senior member of the safety and health management team, with appropriate training and experience, will have designated responsibility for emergency response. Emergency response teams at the mine and Amakdedori Port sites will be staffed by volunteers and will be trained in fire suppression and mine rescue in accordance with regulations.

Both the mine and Amakdedori Port site will be staffed with an emergency medical technician to provide advanced medical care; appropriate facilities will be established at both locations. As necessary, this person may draw on the capabilities of the existing clinic in Iliamna. Arrangements will be made in advance for emergency evacuation via the airports in Iliamna and Kokhanok. Designated locations for helicopter pads will be defined at the mine and Amakdedori Port sites.

Equipment will be installed at the mine site, Amakdedori Port, and the two ferry terminals to deal with oil spills; crews will be appropriately trained for such response.

3.6. Material Management and Supply

General supplies and bulk reagents will typically be stored in, or adjacent to, the areas where they will be used. The location of the explosives storage and emulsion manufacturing plant is based on the need to minimize transfer distances and to provide a safety buffer between the explosives plant and other facilities. Descriptions of mining and process related supplies are provided in Table 3-5 and Table 3-6. Average annual quantities of fuel, mining, milling, and miscellaneous consumables are listed in Table 3-7.

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Table 3-7. Supply Quantities

Supply	Average Annual Quantity
Fuel	16 million gallons
Ammonium Nitrate	17,500 tons
Grinding Media, Reagents, and Miscellaneous Supplies	250,000 tons

3.6.1. Diesel Fuel

Diesel fuel to support the mining operation, as well as the trucking and ferry logistics systems, will be imported to the Amakdedori Port using marine barges. The expected maximum parcel size for delivery is four million gallons, which will allow for extended periods between shipments in winter months. The Amakdedori Port will accommodate sufficient bulk fuel storage to provide one month of buffer and allow for the offloading of bulk fuel carriers.

Diesel fuel will be transferred from the Amakdedori Port to the mine site using ISO tank-container units, which have a capacity of 6,350 gallons. These units will be loaded at the port and transported by truck and ferry to the mine site. These tank-containers will also be used for local fuel distribution at the ferry terminal sites and for fuelling the ferry itself. Additional containers will be stored at the mine site and ferry terminals to provide for a fuel reserve in the event of a supply disruption.

The main mine site fuel storage area will contain fuel tanks in a dual-lined and bermed area designed to meet regulatory requirements. Sump and truck pump-out facilities will be installed to handle any spills. There will also be pump systems for delivering fuel to the rest of the mine site. Dispensing lines will have automatic shutoff devices, and spill response supplies will be stored and maintained on site wherever fuel will be dispensed.

Fuel will be dispensed to a pump house located in a fuel storage area for fueling light vehicles. It will also be dispensed to the fuel tanks in the truck shop complex, which are used for fueling mining equipment. These tanks will also be in a lined and bermed secondary containment area.

3.6.2. Lubricants

Lubricants will be packaged in drums and/or totes and stored on site within a secondary containment area.

3.6.3. Explosives

The materials used to manufacture blasting agents include ammonium nitrate prill, fuel oil, emulsifying agents, and sensitizing agents (gaseous). The containers used to transport the prill will be offloaded, using a container tilter, to a bucket elevator, which will unload the prill to three silos, each sized for 150,000 pounds. As a safety precaution, ammonium nitrate prill will be stored and prepared for use at a location approximately 0.75 mile southeast of the final pit rim. Electrical delay detonators and primers will be stored in the same general area, but in a separate magazine

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located apart from each other and separate from the prill. All facilities will be constructed and operated to meet mine safety and health regulations as set forth in 30 CFR 77.1301.

Other explosives required for the mining operation include detonating cord, which connects to each blast hole and fires a detonator, initiating the explosion in each blast hole. The detonators, in turn, fire explosive primers, which propagate the explosion to the blasting agent. Small amounts of pre-packaged blasting agents and minor amounts of other explosives may be used for specific purposes.

3.6.4. Reagents

Reagents will arrive at the mine site by truck in 20-ton containers, depending on the reagent. They will be stored in a secure bulk reagent storage area and segregated according to compatible characteristics. The reagent storage area will be sufficient to maintain a two-month supply at the mine site. As needed, reagents will be loaded onto a truck and delivered to the appropriate reagent receiving area.

Reagents will be used in very low concentrations throughout the mineral processing plant and are primarily consumed in the process; low residual reagent quantities remain in the tailings stream and will be disposed in the TSF where they will be diluted and decompose.

The metallurgical and assay laboratories will also use small amounts of reagents. Any hazardous reagents imported for testing will be transported, handled, stored, reported, and disposed of as required by law, in accordance with manufacturers' instructions, and consistent with industry best practices.

3.7. Waste Management and Disposal

3.7.1. Used or Damaged Parts

Used tires and rubber products will be reused to the extent practicable. Additional used tires, along with other damaged parts and worn pipes, will be packaged and back-loaded into empty containers for shipment and disposal off site. Wood pallets and packaging will be incinerated with domestic waste. Scrap steel, such as broken grinding balls and used mill liners, truck body liners and ground engaging tools, will be shipped off-site to appropriate disposal sites.

3.7.2. Laboratory Waste

Most inorganic aqueous wastes from the metallurgical and assay laboratories will be collected in a sump, with the remainder routed to the domestic sewage treatment plant. Fugitive organics will be skimmed from the surface of the sump prior to discharging the aqueous portion to the and main WMP. Generally, non-aqueous waste will be collected in specific and separate bulk containers before being returned to an appropriate place in the plant. If there is no suitable place in the main plant, it will be sent to the general waste storage area where it will be packaged and sent off site for disposal at an appropriate facility.

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3.7.3. Waste Oils

Waste oil will be reused as fuel in used oil heaters to augment heating in the truck shop and/or other buildings on site. Waste oils not suitable for burning, including lubricants, will be collected into drums, sealed, and stored in containers for shipment to be recycled or disposed of off-site at an approved facility.

3.7.4. Truck Wash Wastewater

Water from the truck wash will be routed to the main WMP for use in the mill and processing plan or treated for discharge.

3.7.5. Reagent Packaging

Reagent packaging will include wooden boxes, bulk poly-propylene containers, bulk bags, laboratory packaging, and/or glass containers. Spent reagent packaging will be evaluated against applicable regulations, permits and health and safety plans for possible incineration in the on-site incinerator. Glass containers will be rinsed and packed for removal and disposal off site. Broken sharp products will be collected and packaged appropriately for removal and disposal off site.

3.7.6. Hazardous Waste

Miscellaneous hazardous wastes that may accumulate on site, such as paint, used solvents, and empty reagent containers with residual chemicals, will be managed and shipped off site to approved facilities according to applicable BMPs and regulations.

3.7.7. Nuclear Instrumentation

Nuclear instrumentation such as densitometers will be shipped off site to approved facilities in accordance with applicable BMPs and regulations.

3.7.8. Domestic Refuse

Domestic refuse from the camp kitchen, living quarters, and administration block will be disposed of on site in a permitted landfill, or shipped off-site to appropriate disposal sites. Some wastes, including putrescible wastes, will be incinerated on site, and the remaining ashes will be disposed of in accordance with applicable BMPs and regulations.

3.7.9. Sewage and Domestic Wastewater Disposal

Separate sewage treatment plants will be located at the camp and the process plant. Plans for each plant will be reviewed and approved by ADEC prior to construction.

Personnel accommodations will produce grey water from the kitchen, showers, and laundry facilities that will be treated in a water treatment plant (WTP). The WTP will be designed to remove biological oxygen demand, total suspended solids (TSS), total phosphate, total nitrogen, and ammonia to meet ADEC domestic waste-discharge criteria. Treated water will be discharged to the TSF.

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The process plant sewage WTP will receive effluent that may have metallic residues from the workers' change house and associated laundry. This WTP will be designed for metals removal in addition to biological oxygen demand, TSS, total phosphate, total nitrogen, and ammonia to meet ADEC domestic waste-discharge criteria. The treated water will be discharged to the TSF.

Sludge from both plants will be stabilized and disposed of on site.

3.8. Transportation Corridor

The location of the Pebble Project mine site is physically separated from the marine terminal location by Iliamna Lake, which is roughly 75 miles long and up to 20 miles across, with no existing roadway networks around it. To avoid the environmental impact of constructing new roads around the lake, an all-season ice-breaking ferry will be used to cross the lake between ferry landings on each shore, which are connected to the mine site and Amakdedori Port by access roads.

The transportation corridor was designed to avoid wetlands where feasible, minimize disturbance area, minimize stream crossings, avoid geological and avalanche hazards, avoid culturally significant sites, minimize effects on subsistence hunting and gathering, optimize the alignment for the best soil and geotechnical conditions, and minimize road grades.

The main access road will run southward from the mine site to the north shore of Iliamna Lake. Ferry terminals will be located on the north and south shores. From the south shore, the access road will run to the marine port site on Cook Inlet at Amakdedori. Spur roads will connect to the villages of Iliamna, Newhalen, and Kokhanok (Figure 1-2).

3.8.1. Road Design

The main access road will be a private 30-foot-wide gravel road, which will enable two-way traffic, and will be capable of supporting anticipated development and operational activities during construction and truck haulage of concentrate from the mine to the port.

The access roads will include eight bridges, six of which will be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There will be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River. Road culverts at stream crossings are divided into categories based on whether the streams are fish bearing. Culverts at streams without fish will be designed and sized for drainage only, in accordance with ADOT&PF standards. Culverts at streams with fish will be designed and sized for fish passage in accordance with ADOT&PF and Alaska Department of Fish and Game (ADF&G) standards.

A natural gas pipeline and fiber optic cable will be buried adjacent to the main access road. For river crossings, the gas pipeline will either use horizontal directional drilling or be attached to the bridge structures.

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3.8.2. Iliamna Lake Ferry

A custom designed ferry will transit Iliamna Lake between the North and South ferry terminals, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates, backhauled waste, and empty containers. The one-way ferry trip is about 18 miles and will take approximately three hours to complete in ice conditions, or 1.5 hours in open water. On average, one round trip per day across the lake will be required.

The vessel is designed to operate year-round, in all ice conditions. Cargo will be carried on the vessel deck. The vessel is symmetrical forward and aft with two icebreaking bows, allowing operation in open water or ice in either direction without the need to turn the vessel around at each terminal. Each bow will be fitted with a ramp that provides access to shore. The diesel-electric propulsion system has four azimuthing propellers providing 100 percent thrust over a full 360 degrees, which will provide propulsion, station keeping in all wind conditions, and ice management (clearing ice away from the hull) when needed. Accommodation for 12 crew members is included on the vessel.

The generator engines comply with the highest applicable U.S. Environmental Protection Agency (EPA) emission standards. The hull is subdivided by watertight bulkheads so that even if one compartment is damaged and flooded, the vessel will remain afloat, upright and stable, and operational, capable to return to shore facilities for repairs. Fuel and other potential contaminants will be stored in tanks inside the hull and away from the shell to prevent spills in the unlikely event of damage to any of the hull's compartments.

Bilge water will be pumped through oil-water separation equipment installed on the vessel and then discharged back to Iliamna Lake. The sludge from the system will be transferred to a shore storage tank and ultimately transported to the mine site for disposal in the mine site incinerator.

The ferry terminals will initially serve as trans-shipment points for construction barge traffic across Iliamna Lake, using small temporary barges until the ferry is assembled. The south ferry terminal site includes the ferry assembly site. The ferry will be assembled from pre-fabricated components barged to the Amakdedori Port and then transported across the road. The vessel will be assembled in a cradle that rests on a series of heavy rails. Once assembled, the cradle will be pushed along the rails into the lake until the ferry floats away. The cradle will then be retrieved. The assembly site will remain intact to enable regular vessel surveys and maintenance as required.

The permanent facilities at the ferry terminals include container handling and storage facilities, office and maintenance buildings, and local power supply. Each ferry terminal facility will have space for a minimum of two days of storage of the average concentrate container traffic. The patio surface will be finished as semi-permeable gravel. An access ramp will be built out from shore as a rock and aggregate causeway structure to provide approximately 40 feet of roadway surface for trucks and forklifts to access the ferry.

During normal operations the ferry will be moored with a pair of lines to bollards at the end of the causeway. The vessel drive equipment will maintain the ferry in place during loading and unloading, even during high wind conditions. When the ferry is parked it will be moored to a set of

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buoys outside of the causeway. The design of these structures will allow for the engines to be turned off while also maintaining vessel security.

3.8.3. Transportation Corridor Traffic

To facilitate efficient cargo movement and optimize ferry space, most material will be transported in shipping containers. At each ferry terminal, a container yard with forklift trucks will be provided to stage empty and loaded containers for loading on/off the ferry, and truck transfer. Some cargo will be handled as break-bulk if it does not fit into containers.

Inbound Project cargo and consumables will be transported using standard ISO containers for ocean freight (either 20- or 40-foot size). Diesel fuel will be transferred from the Amakdedori Port to the mine site using ISO tank-container units, which have a capacity of 6,350 gallons. Copper-gold concentrate will be loaded into specialized bulk cargo containers, each containing about 38 tons of concentrate, with removable locking lids. Truck/trailer units will be designed to haul up to three loaded containers per trip.

Daily transportation of concentrate, fuel, reagents and consumables will require up to 35 round trips per day for each leg of the road, including three loads of fuel per day. The ferry will require one round trip across the lake per day.

3.9. Amakdedori Port and Lightering Locations

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site. To a lesser extent, some supplies, such as perishable food, may be transported by air to the Iliamna Airport and trucked to the mine site. Concentrate in specialized containers will be lightered by barge from the Amakdedori Port to Handysize bulk carriers at offshore mooring points. The port facilities layout is shown in Figure 1-5. The proposed lightering location and an alternate that might be used under certain sea conditions are also shown in Figure 1-5.

3.9.1. Port Design

The Amakdedori Port will include shore-based facilities to receive and store containers and fuel, as well as two, 2-MW dual-fuel natural gas/diesel power generators, maintenance facilities, employee accommodations, and offices. The shore-based complex will be constructed on an engineered fill pad at an elevation sufficient to address tidal surge from major storms and potential tsunamis.

The marine component includes an earthen access causeway extending out to a marine jetty located in 15 feet of natural water depth. On one side will be a roll-on/roll-off barge access berth and a separate berth on the opposite side for the lightering barges. The jetty is expected to be constructed as a sheet pile cell structure filled with granular material. A floating dock, on the jetty but separate from the cargo handling berths, will be provided for ice-breaking tug moorage.

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3.9.2. Port Operations

Copper-gold concentrate will be transported from the mine site to the Amakdedori Port by truck in covered bulk cargo containers and stored between vessel sailings on a dedicated laydown pad adjacent to the jetty. The containers will be transported by barge to alongside the bulk carriers at the mooring points, and then lifted by crane into the open hold of the receiving ship. Once inside the hold, the container lid will be opened and the container turned upside down to unload the concentrate into the ship's hold. The container will be lowered as close as possible to the bottom of the hold to minimize the drop distance and the potential for dust generation during ship loading. About ten trips by the lightering barges will be required to load a bulk carrier, which would be anchored for four to five days at the lightering location. The bulk carrier ships will transport the concentrate to out of state smelters. This containerized bulk handling system minimizes dust emissions and the risk of spills.

The empty containers will be cleaned of any residue on the outside while at the port, and then returned to the laydown pad. They will then be returned to the mine site and reused for transporting concentrate.

Up to 27 Handysize ships will be required annually to transport concentrate. Up to 33 marine line-haul barge loads of supplies and consumables will be required annually. Two ice-breaking tug boats will be used to support marine facility operations.

3.10. Natural Gas Pipeline

Natural gas will be supplied to the Amakdedori Port and the mine site by pipeline (Figure 1-1). The pipeline will connect to the existing gas pipeline infrastructure near Anchor Point on the Kenai Peninsula and will be designed to provide a gross flow rate of approximately 50 million standard cubic feet per day. A fiber optic cable will be ploughed in, or buried in a shallow trench, adjacent to the pipeline.

A metering station will be constructed at the offtake point that connects to a compressor station located on a land parcel on the east side of the Sterling Highway. The steel pipeline will be designed to meet all required codes and will be a nominal 12 inches in diameter.

The compressor station will feed a 104-mile subsea pipeline that will be constructed using heavy wall nominal 12-inch-diameter pipe designed to have negative buoyancy and provide erosion protection against tidal currents. Horizontal directional drilling will be used to install pipe segments from the compressor station out into waters that are deep enough to avoid navigation hazards. From this point, the heavy wall pipe will be laid on the sea floor and anchored or supported as required.

The pipeline will come ashore at the Amakdedori Port, where natural gas will be fed to the port site power station and used for site heating. The distance from the Amakdedori Port to the mine site is approximately 81 miles and will consist of three sections. The first section will follow the access road to the South Ferry Terminal. The pipeline will be buried in a trench adjacent to the road prism. At the South Ferry Terminal, gas will be fed from the pipeline to the facilities for

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power supply and facility heat. At this point, the pipeline will enter Iliamna Lake for the next section, an approximate 18-mile lake crossing. The design of this section of the pipe, transitions, and burial will be similar to the Cook Inlet crossing. The pipeline will come ashore at the North Ferry Terminal. Natural gas will be used to provide power and heat at ferry terminal facilities. From this point, the pipeline will follow the road route 28 miles to the mine site.

Long-term corrosion protection and control will be provided by an external coating on the pipeline and components, combined with an impressed current and/or galvanic current cathodic protection system. The cathodic protection system will be installed and activated, as soon as is practical, after pipe installation to maximize the effect of corrosion protection. Anode bed and rectifier locations will be determined based on specific local conditions and field observations. Metering stations and pig launching and receiving facilities would be located at the compressor stations and offtake points as appropriate. Mainline sectionalizing valves will be installed as required by code, with a spacing of no more than 20 miles for the onshore sections of the pipeline.

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4. WATER MANAGEMENT

PLP recognizes the importance of effectively managing water resources in the area surrounding the Pebble Deposit and will implement a comprehensive water management program that will minimize impacts to water flow and quality, and will minimize and mitigate impacts associated with all waters affected or used by the Project.

4.1. MINE SITE

The main objective of water management at the mine site is to manage, in an environmentally responsible manner, water that originates within the project area while providing an adequate water supply for operations. A primary design consideration is to ensure that all contact water that requires treatment prior to release to the environment will be effectively managed. This includes carefully assessing the Project facility layout, process requirements, area topography, hydrometeorology, aquatic habitat/resources, and regulatory discharge requirements for managing surplus water

All runoff water contacting the facilities at the mine site and water pumped from the open pit will be captured to protect the overall downstream water quality. The ultimate Project design will incorporate a detailed analysis of water collection and management, including quantity and quality estimates, water treatment options, water management facility design, and strategic discharge of treated water. The water management plan will enable the plant to operate without requiring additional water from off-site sources. Mine site water management systems will be designed for the entire life cycle of the Project, from initial construction through the preproduction phase, operation, and closure.

4.1.1. Water Balance Model

The foundation of the water management program is the water balance. The Pebble Water Balance Model is comprised of three primary modules: the Watershed Module, the Groundwater Module, and the Mine Plan Module. These three modules, which are all numerical water balance models, are very different, yet complementary. They collectively provide the means of quantifying the numerous water flows in the streams, in the ground, and in the various pipes, ponds, and mine structures associated with the mine development. The Watershed Module focuses on water flows throughout the NFK, SFK, and UTC drainages. The Groundwater Module focuses on the detailed simulation and understanding of groundwater flows within those drainages, and serves to inform the watershed module, and vice versa. The Mine Plan Module focuses on mine site water inflows and uses.

Complementing the water balance modules is an instream fish habitat-flow model, which was used to assess the effects of changes in water flow to the fish habitat in the adjacent streams.

4.1.1.1 Watershed Module

The Watershed Module for the NFK, SFK, and UTC drainages considers both surface and groundwater. This module incorporates all key components of the hydrologic cycle, including

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precipitation as rain and snow, evaporation, sublimation, runoff, surface storage, and groundwater recharge, discharge, and storage. The primary input is monthly precipitation and temperature data collected at the Iliamna Airport from 1942 through 2017. The model was calibrated to measured site flow data collected at various locations in all three drainages over a nine-year period. The Watershed Module also provided input for the instream fish habitat-flow model, as well as the initial boundary parameters associated with groundwater recharge and runoff conditions for the groundwater module.

4.1.1.2 Groundwater Module

The Groundwater Module focuses on the sub-surface movement of water within the NFK, SFK, and UTC drainages. It models hydrogeological conditions in a more sophisticated and detailed manner than the Watershed Module, and its outputs provide a check of reasonableness for the Watershed Module. In addition, the Groundwater Module simulates groundwater flow rates and groundwater-surface water interactions throughout the study area, whereas the Watershed Module considers surface and groundwater flow rates only at the streamflow gaging stations.

4.1.1.3 Mine Plan Module

The Mine Plan Module focuses on water movement within the Pebble Project footprint area. The Mine Plan Module is a site-wide water balance and considers all mine facilities including the bulk TSF, pyritic TSF, open pit, process plant, and the WMPs. This module tracks water movement throughout the Pebble Project footprint area including runoff from the mine facilities, water contained in the ore, groundwater inflows, evaporation and water stored in the tailings voids.

The Mine Plan Module is used to predict the flow regime on the mine site and whether there is a water surplus or deficit. It will also be used to estimate the water storage capacity requirements for the mine under normal operating conditions.

4.1.1.4 Physical Habitat Simulation System (PHABSIM) Instream-flow Model

The PHABSIM model is an integral component of the site water balance design and is used to determine the most effective way of releasing the treated contact water that is surplus to the project needs. This model assesses the effects of changes in water flow to the instream fish habitat in streams downstream of the project site. It quantifies the areal extent of specific habitat changes that result from changes in flow throughout the year:

- for each of the three streams in the area (NFK, SFK, and UTC),
- at multiple locations throughout the whole length of each stream,
- for different salmon and resident fish species within each stream, and
- for different life history stages of each species.

Output from the model, together with a consideration of site-specific fish production limiting factors, will be used to inform and optimize the discharge of water from the site to minimize the effects of reduced flow and/or enhance instream fish habitat below the discharge points.

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4.1.2. Preproduction Phase

The water management and sediment control plan during the preproduction phase consists of multiple aspects that will focus on minimizing contact water volumes. Runoff and associated sediment control measures will be managed with BMPs and adaptive control strategies. Where water cannot be diverted, it will be collected, treated, and discharged.

4.1.2.1 Water Management Plan

The water management plan during the Preproduction Phase can be summarized as follows:

- Water diversion, collection, and treatment systems will be installed around the site to address the effect of construction ground disturbance.
- Water management and sediment control structural BMPs, including temporary settling basins and silt fences, will be installed to accommodate the initial mine site construction.
- Among the first permanent facilities to be constructed will be the water management structures that will be maintained for use in adaptive management during operations, such as diversion and runoff collection ditches to minimize water contact with disturbed surfaces, and sediment control measures such as settling ponds to stop sediment from reaching downstream water courses.
- Preproduction Phase mining cannot commence until the water table in the open pit area has been lowered by groundwater pumping. The open pit dewatering system will be installed prior to Preproduction Phase mining to provide sufficient time to draw down the water table in the area. This will allow uninterrupted overburden removal in preparation for production mining of mineralized material. A series of dewatering wells will be drilled into and around the perimeter of the open pit, with the exact well number and location determined by testing the overburden aquifers. The number of wells will include an allowance for wells with poor or no water yields and wells lost through sanding, equipment loss, or other interference with water production. Pump sizes for each well will be based on well-specific yields. Water will be discharged to the environment if it meets water quality criteria; otherwise, it will be treated in a modular water treatment plant prior to discharge.

Design considerations for the Preproduction Phase water management structures include the following:

- Diversion channels, berms, and collection ditches, will be sized for the 100-year, 24-hour rainfall event.
- Diversion channels, berms, and collection ditches will be constructed with erosion-control features, such as geotextile or riprap lining, as appropriate, for site-specific condition. Energy dissipation structures, such as spill basins or similar control

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measures, will be included where required to reduce erosion at the outlets of the diversion channels and collection ditches.

- Sediment control ponds will be sized to attenuate and treat up to the 10-year, 24-hour rainfall event volume and to safely manage the 100-year, 24-hour rainfall event.
- Water management and sediment control ponds will be constructed using non-PAG rock and earthen fill embankments.
- A temporary cofferdam will be constructed upstream of the main TSF embankment to manage water during the initial construction phase. Runoff from the undisturbed upstream catchment will be collected behind the cofferdam will be pumped downstream of all construction activities and released within the same watershed.

4.1.2.2 Water Treatment

Minimal water storage will be available on site until initial construction activities are completed. Therefore, prior to completion of the TSF embankments and water management structures, all water that does not meet water quality standards will be treated and released. Water from the following sources and activities are expected to require treatment prior to release:

- Preproduction Phase pit dewatering (dewatering of the overburden aquifer near the pit may require treatment).
- Water, primarily from precipitation, accumulating in the open pit during Preproduction Phase mining.
- Runoff from TSF embankment construction.
- Runoff from excavation for site infrastructure such as the process plant, camps, power plant, or storage areas will be routed to settling ponds prior to release.
- Prior to the operations WTPs being brought on-line, modular WTPs will be used to treat contact water that does not meet discharge requirements.

4.1.3. Production Phase

The water management and sediment control plan during the Production Phase focuses on minimizing contact water. Runoff and associated sediment control measures will be managed with BMPs and adaptive control strategies. Where water cannot be diverted, it will be collected for use in the mining process or treated and discharged.

4.1.3.1 Water Management Plan

The water management plan during the Production Phase can be summarized as follows (Figure 4-1 shows a simplified schematic of the site water balance):

- Water collected from the pit dewatering wells and the open pit will be pumped to the open pit water management pond (WMP). From there, water will be pumped to the open pit WTP for treatment and discharge. WTP sludge will be directed to the

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process plant where it will be added to the pyritic TSF via the pyritic tailings slurry line.

- Bulk tailings slurry from the mill will be directed to the bulk TSF. Additionally, precipitation and runoff water will collect in the TSF. The bulk TSF will maintain a small operating pond.

- The main bulk TSF embankment will operate as a flow-through facility. Water collecting in the bulk tailings storage cell will flow through the embankment to the main embankment seepage collection pond. From there, water will either be directed to the main WMP for use in the mill or to the main WTP for treatment and discharge. Any excess surface water in the bulk tailings TSF will be pumped to the main WMP.

- Contact water will be pumped to the main WMP. Water treatment by-product sludge and reject water will be directed to the process plant and added to the pyritic TSF via the pyritic tailings slurry line. A portion of the treated water from the main WTP will be returned for use in the process plant and power plant cooling towers.

- Pyritic tailings slurry from the mill will be directed to the lined pyritic TSF. Additionally, precipitation and runoff water will collect in the pyritic TSF. A pond will be maintained in the pyritic TSF, fully submerging the pyritic tailings and all but the upper lift of the PAG waste rock. Excess water from the pyritic TSF will be pumped to the main WMP.

- A water surplus for the Production Phase is anticipated under normal and wetter-than-normal climatic conditions. Although the mine site will have a water surplus, the water volume available to discharge will be less than the pre-mine flows within the mine footprint as some water will be consumed in the tailings voids and some will be lost to evaporation and other minor uses. The site water surplus will vary during operations as the mine footprint expands and additional site runoff is collected. The annual average surplus is estimated at approximately 29 cubic feet per second (cfs) for the maximum mine site footprint. Surplus water will be treated and discharged throughout the year.

- The accuracy of water balance models is limited by many factors, including the stochastic nature of the inputs and the potential effects of climate change. In recognition of these limitations, an adaptive water management strategy is planned. Adaptive water management includes the ability to provide additional temporary water storage capacity in the TSFs, to provide surplus storage capacity within the WMPs, and to provide for expansion of the WTP treatment rate by building in excess capacity. In addition to the redundancy built into the pumping and treatment systems, additional storage capacity is available under extreme flood conditions by directing water to the open pit, allowing it to flood until the pumping and treatment systems can restore the water stored in the system to its design level.

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- A comprehensive water management system will be implemented to monitor water quantity and quality. All discharged waters will be monitored for compliance with state and federal permit requirements. Water from both water treatment plants will be strategically discharged to optimize fish habitat in the downstream reaches of nearby streams. Discharge locations for the treated water have been identified in the NFK, SFK, and UTC. The treated water discharge will be distributed to these locations in a manner that best optimizes downstream aquatic habitat conditions. Optimal conditions will be determined using a Physical Habitat Simulation System (PHABSIM) habitat instream-flow model and in accordance with ADEC and Alaska Department of Fish and Game (ADF&G) permit conditions.

Design considerations for the Production Phase water management include the following elements:

- Diversion channels, berms, and collection ditches will be sized for the 100-year, 24-hour rainfall event.
- Diversion channels, berms, and collection ditches will be constructed with erosion-control features, such as geotextile or riprap lining, as appropriate, for site-specific conditions. Energy dissipation structures, such as spill basins or similar control measures, will be included where required to reduce erosion at the outlets of the diversion channels and collection ditches.
- Sediment control ponds will be sized to attenuate and treat up to the 10-year, 24-hour storm event volume and to safely manage the 100-year, 24-hour rainfall event.
- Water management and sediment control ponds will be constructed using non-mineralized rock and earthen fill embankments.
- IDF for all WMPs will be the 100-year, 24-hour rainfall event; IDF for the TSFs and main WMP will be the 24-hour PMP plus the 100-year snow pack equivalent water volume.
- Surplus water will be treated to meet the specified water quality criteria prior to discharge.

Water collection, management, and transfer will be accomplished through a system of water management channels, ponds, and pump and pipeline configurations. These systems will be designed to handle the large flows that occur during spring freshet and late summer/fall rains. Spare parts for pump systems will be maintained on site to maintain continuous and effective water management. Leak detection systems that report to a central control system will be employed, as will monitoring systems to control pump cycling, high and low water-level switches, no-flow (or low-flow) alarms, vibration overheating alarms, and other systems as appropriate to monitor water management systems.

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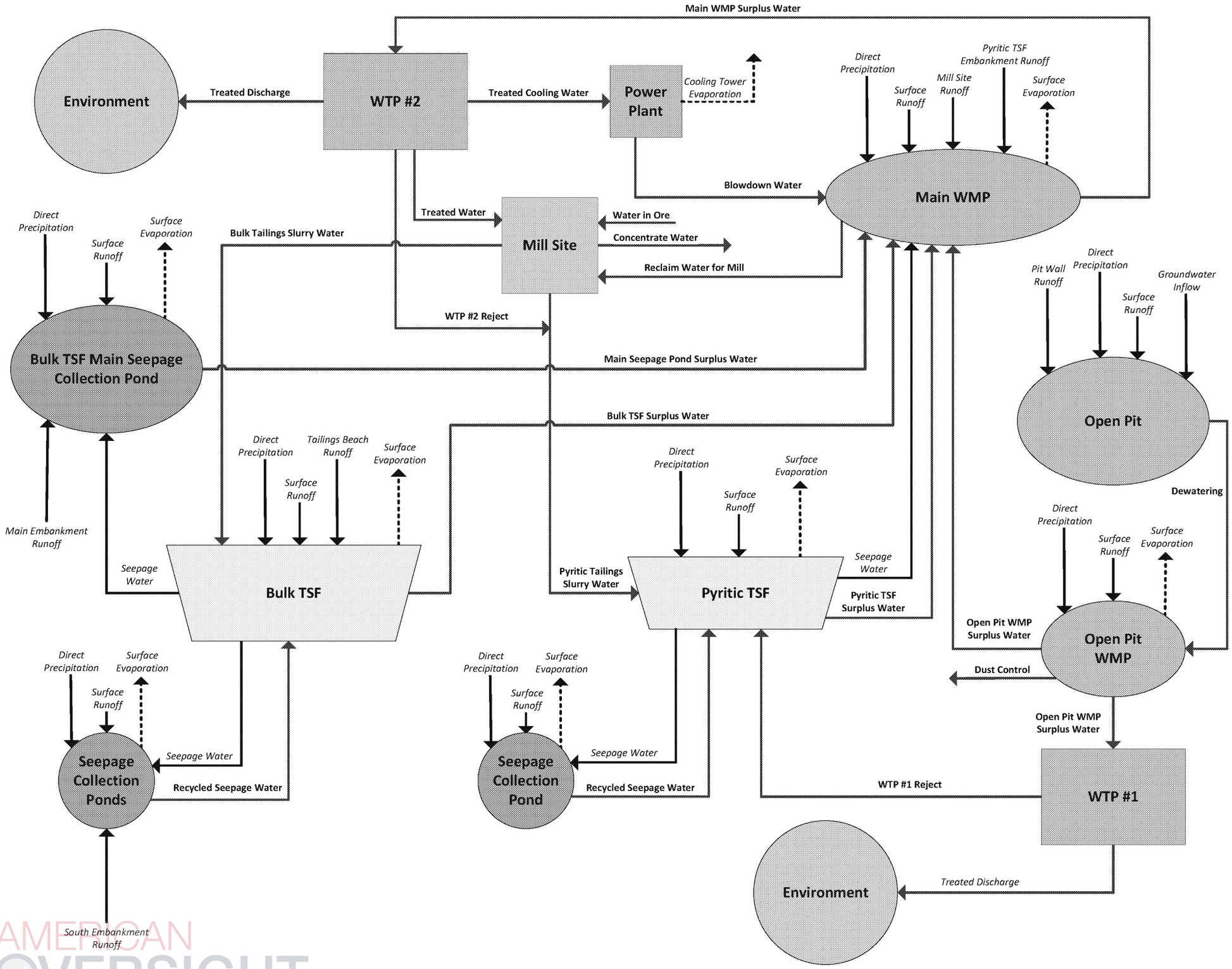

Figure 4-1

Water Balance Flow Schematic - Operations

Pumped Flow Pathway

Runoff, Groundwater, or Seepage Pathway

Evaporation

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Rev: 0	Author: PLP

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4.1.3.2 Water Treatment

Water collected around the mine area and Amakdedori Port site will require treatment prior to discharge to the environment. Treatment methods will include a mixture of settling for sediment removal, chemical additions to precipitate trace elements, filtration, reverse osmosis, and evaporation to meet final discharge criteria.

The mine area will have two water treatment plants: the main WTP and the open pit WTP. Both will be constructed with multiple, independent treatment trains, which will enable ongoing water treatment during mechanical interruption of any one train.

Main Water Treatment Plant

The main WTP will treat water from the main WMP. Figure 4-2 shows a simplified schematic of the treatment process. Key treatment steps occur in the following sequence:

1. Dissolved metals will be oxidized with air, ferric sulfate, and potassium permanganate, followed by co-precipitation with lime. Flocculators/clarifiers will be used to separate out the co-precipitated solids.
2. The clarified water will flow into a membrane feed tank, where sodium hydrogen sulfide or an organosulfide will be added to complete the precipitation process. Supplemental lime and sulfuric acid will be added as needed to maintain the water pH for optimal precipitation and membrane feed.
3. Ultrafiltration (UF) membranes will be used to filter precipitated metals and protect downstream high-pressure membranes.
4. Nanofiltration (NF) membranes will provide additional metals removal as well as removal of TDS and sulfate. Permeate from the NF membranes may require alkalinity adjustment prior to discharge.
5. Reject from the NF membranes will have a high concentration of dissolved sulfate and other divalent ions. To prevent overloading the mine water balance with dissolved sulfate, sulfate must be precipitated from the reject before transferring to the pyritic TSF. Sulfate from the NF reject will be precipitated as calcium sulfate with a lime softening process. The calcium sulfate sludge will be transferred to the pyritic TSF. Based on the expected pH in the pyritic TSF, the calcium sulfate sludge is not expected to re-dissolve.
6. Decant from the calcium sulfate precipitation process will contain high levels of TDS, a portion of which will need to be removed from the WTP process to avoid continual buildup. It will be necessary to split the decant stream as follows:
    a. Approximately three-quarters of the decant stream will be returned to the beginning of the WTP for reprocessing.
    b. The remainder of the decant stream will be concentrated with RO membranes. RO permeate is blended with treated water from the NF membranes (step 4) for discharge. RO reject will be sent to evaporators for further concentration

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of TDS. The evaporators will yield a liquid stream of concentrated TDS and evaporate. The liquid stream of concentrated TDS will be transferred to the pyritic TSF. The evaporate is condensed and the condensate blended with treated water from the NF membranes (step 4) for discharge.

Open Pit Water Treatment Plant

The open pit WTP will treat water from the open pit WMP with treatment plant processes commonly used in the mining industry around the world. Figure 4-3 shows a simplified schematic of the treatment process. Major treatment steps are outlined in sequence below.

1. Dissolved metals will be oxidized with potassium permanganate, followed by co-precipitation with ferric chloride. Hydrochloric acid and sodium hydroxide or lime will be added as needed to maintain the water pH for optimal precipitation. Flocculators/clarifiers will be used to separate out the co-precipitated solids.
2. Clarified water will then be treated with sodium hydrogen sulfide, sodium hydroxide or lime, and ferrous sulfate to further co-precipitate remaining metals under reducing conditions. Clarifier solids will be thickened and transferred to the pyritic TSF.
3. Water from the sulfide reaction tanks will be filtered with UF membranes to remove precipitated metals. Reject from the UF membranes will be thickened and transferred to the pyritic TSF.
4. A portion of the UF membrane permeate water will be treated with RO membranes to further remove selenium to a concentration that is safely below the discharge limit. Permeate from the RO will be recombined with the main effluent stream for discharge to the environment.
5. Reject brine from the RO, which will be high in soluble selenium, will be further treated with a biological reactor to enable separation of selenium as a solid. Discharge from the biological reactor will be transferred to the flocculators/clarifiers (step 1) for separation of selenium solids, which are thickened with the rest of the clarifier solids and transferred to the pyritic TSF.

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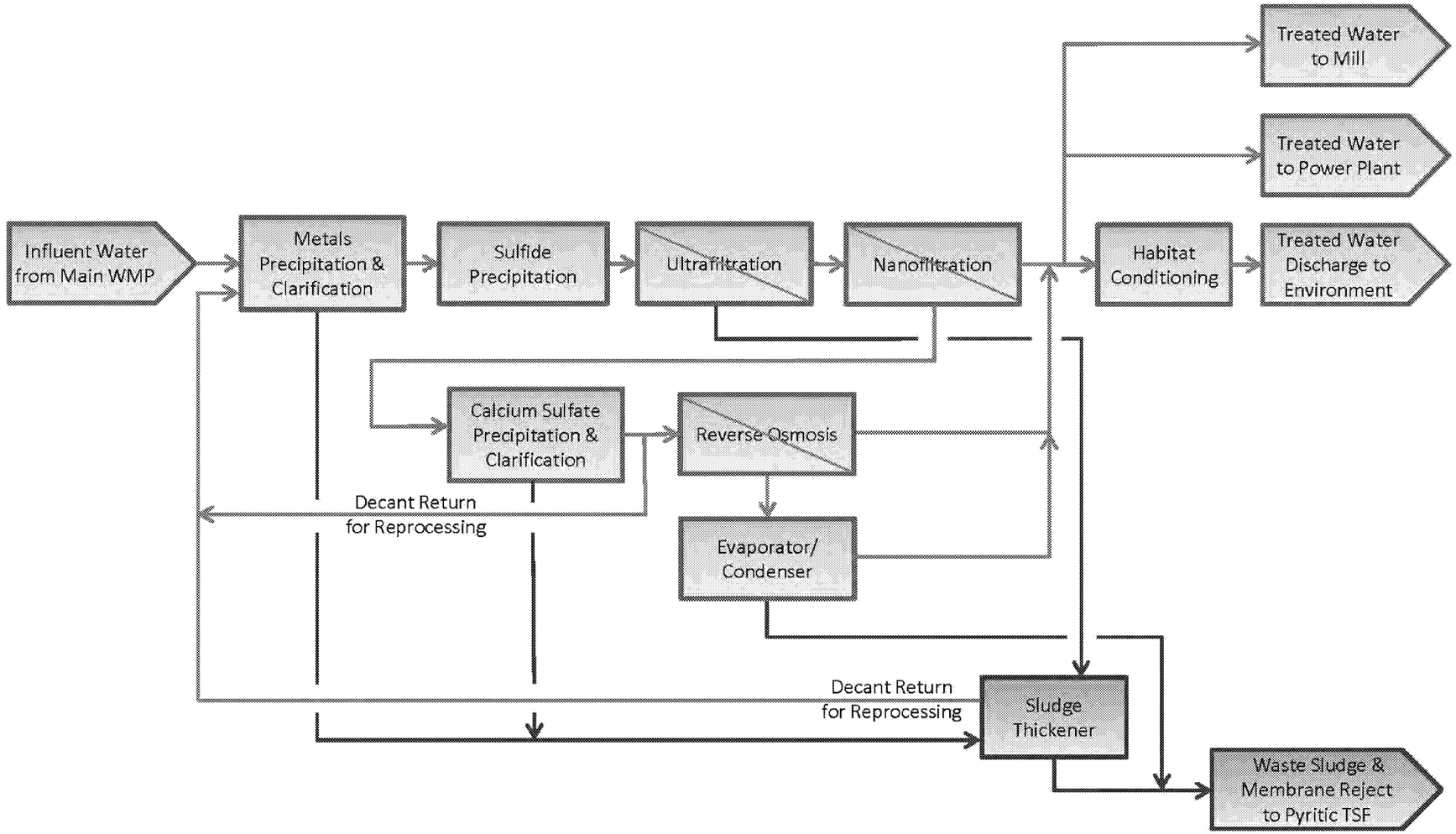

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FIGURE 4-2

Main Water Treatment Plant

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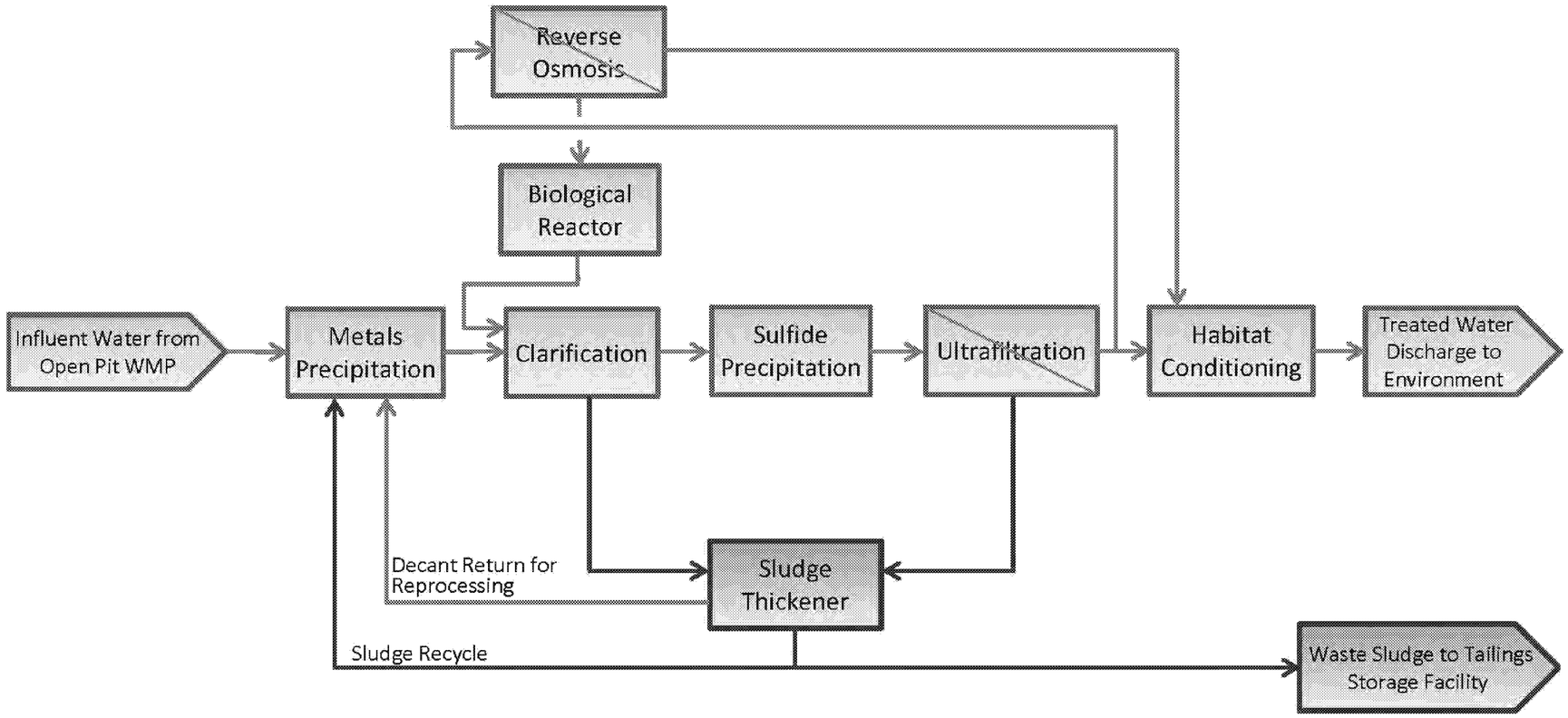

THE pebble PARTNERSHIP

FIGURE 4-3

Open Pit Water Treatment Plant

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4.1.4. Closure/Post-Closure Phase

Closure and post-closure water management addresses both the immediate physical closure of the site and associated reclamation activities, as well as the long-term post-closure period and associated maintenance and monitoring activities. Additional details on reclamation and closure are provided in Section 6.

4.1.4.1 Water Management Plan

The water management plan during the closure and post-closure phases can be summarized as follows:

- Years 0-15
  - The open pit WTP is reconfigured to treat contact water.
  - Excess and seepage water from the bulk TSF is pumped to the main WMP.
  - Seepage water from the pyritic TSF is pumped to the main WMP.
  - Surplus water from the main WMP is treated at the main WTP and release to the downstream environment.
  - Surplus water from the open pit is pumped to the open pit WTP to maintain the placement of the PAG waste rock in the dry.
  - Treated water from the open pit WTP is released to the downstream environment
  - The open pit WMP is reclaimed.
- Years 16 until the pit is full (approximately Year 20).
  - The main WTP is decommissioned once it is no longer required.
  - The pyritic TSF and associated seepage collection ponds are reclaimed and surface water runoff from the area is discharged to the downstream environment.
  - The main WMP is reclaimed and surface water runoff from the area is discharged to the downstream environment.
  - Bulk TSF and seepage collection pond water is pumped to the open pit.
  - The open pit fills to the maximum management level.
  - The basis for the current analysis is that no water will be treated during this phase, however an adaptive management strategy would be utilized, and water would be directed to the open pit WTP for treatment and release if required to maintain downstream flows.
- Year 20 until the bulk TSF consolidation is complete (approximately Year 50).
  - Bulk TSF seepage and runoff water is pumped to the open pit.
  - Water levels in the open pit are maintained below the main management level by treating and releasing surplus water from the open pit.
- Post Closure
  - Runoff water is directly discharged from the reclaimed bulk TSF to the NFK catchment once it has been demonstrated to meet water quality criteria.

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- Bulk TSF seepage water is pumped to the open pit.
- Water levels in the open pit are maintained below the main management level by treating and releasing surplus water from the open pit.

4.1.4.2 Water Treatment

Water treatment during this phase will utilize the facilities as outlined in Section 4.1.4.1. Water quality will be closely monitored, and changes and adjustments to the treatment process will be made as needed. The reclamation and closure bond package will include provisions for periodic replacement of water treatment facilities and ongoing operating and monitoring costs over the long-term, post-closure period.

4.2. AMAKDEDORI PORT

The WTP at the Amakdedori Port will treat surface runoff from the port facilities, including truck wash bays. The treatment process will include dissolved metal oxidation using potassium permanganate, followed by co-precipitation with ferric chloride. Water from the co-precipitated solids will flow into flocculators/clarifiers to separate out solids. The clarified water will then be treated with sodium hydrogen sulfide, sodium hydroxide and ferrous sulfate to further co-precipitate remaining metals under reducing conditions. The solids that are removed will be thickened and disposed of appropriately. The treated water will be suitable for discharge.

A potable WTP and a sewage treatment plant will also be located at the port site.

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5. PROJECT CONSTRUCTION

The Project will take approximately four years to construct. Construction will occur on the four main project components – mine site, transportation corridor, Amakdedori Port, and natural gas line across Cook Inlet, with the focus shifting between these components depending on the stage of construction. Several temporary elements will be built during the Preproduction Phase to facilitate construction of the permanent facilities. These temporary facilities will be either repurposed or removed and reclaimed when construction is complete.

5.1. CONSTRUCTION OVERVIEW

5.1.1. Site Access

Key first steps will be to establish transportation infrastructure to access the site, to install those environmental protection systems that will service the Preproduction Phase, and to construct temporary facilities that enable the construction crews to live and work at the sites.

The initial construction effort will be at the Amakdedori Port. A beachhead will be established using small landing craft style barges for access. As described more fully below, it will consist of a temporary camp, environmental protection features, the port site airstrip, and service facilities. Temporary diesel generators will be used for power supply. While this work is underway, crews will be housed on vessels moored near the site.

A temporary road will be constructed within the permanent alignment from the established beachhead to the first material site, approximately three miles from the port site. This material will be used to expand the pads for facilities. Pioneer road construction will continue during this phase, extending the road toward the South Ferry Terminal near Kokhanok.

Larger equipment will be landed once the completed jetty is in place, allowing full-scale road construction to commence. The goal will be to establish a connection to the south shore of Iliamna Lake to facilitate construction of a temporary barge landing site near Kokhanok and to build the road to the east abutment of the crossing of the Gibraltar River.

With access gained to Iliamna Lake, small barging equipment will be used on the lake to establish beachheads at the two ferry terminal sites, in a process similar to the one used at the Amakdedori Port. Commercial operators utilizing existing access through Pile Bay at the east of Iliamna Lake and the road connecting to Williamsport on Cook Inlet may be used to support the beachheads.

The beachheads at the ferry terminal sites will enable road construction to advance from those points. Temporary bridges will be used at the smaller crossings, while the major crossings at the Gibraltar River and the Newhalen River will have to be constructed to their full size because of the spans required. These larger spans will be completed during the second construction year.

Initial access to the mine site should be complete within one year.

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A key component of the construction plan is to establish year-round access across Iliamna Lake using the permanent ice-breaking ferry. Fabrication of the ferry components will commence off-site early in the Preproduction Phase. Once the South Ferry Terminal has been established, preparation of the ferry construction facility will begin and the pre-fabricated components will be delivered to site. The goal is to have the ferry constructed and launched during the second construction year.

5.1.2. Mine Site

Construction activities will commence at the mine site with completion of the initial access and the construction of temporary accommodation and service facilities. Earthworks will be the primary initial activity. The level of this activity will expand over the next year, with structure construction commencing as the associated earthworks are complete. The focus will be on establishing the process and power plant sites, the open pit WMP, the main WMP, the pyritic TSF, and the bulk TSF. Support facilities, such as accommodations, fuel storage, and power generation, will expand as the site activity increases. Laydown areas and access roads for construction will be placed within the future footprint of the open pit to minimize impacts.

Following on from this, process plant and power plant foundations will be well advanced and equipment deliveries commenced. The accommodations facility will be completed for construction and access roads built. The initial bulk TSF main embankment construction will be well advanced, with the goal of ensuring that at least one year's worth of water is stored to facilitate process plant startup.

The later construction years will entail significant activity at the site. During this period, the bulk TSF main embankment will be completed, the process plant building erected, and pyritic TSF foundation and liner installed. The WTPs will be ready for initial use and the power plant construction advanced. The initial open pit development will commence with mine service facilities constructed and initial pit dewatering systems installed and operating. Production mining equipment will be delivered and commissioned as required. WMPs will be constructed during the third year.

A major activity during the final year of construction will be the open pit Preproduction Phase mining. The remaining process and power plant construction will be completed, as will the remaining embankments in the TSF.

5.1.3. Gas Pipeline

The natural gas line installation will be the other major activity occurring during the second and third construction years. Three separate centers will comprise this overall pipeline: the compressor station and transition section on the Kenai Peninsula, the marine section between the Kenai Peninsula and the Amakdedori Port, and the overland/Iliamna Lake section paralleling the access road. These activities can generally proceed independently of each other, with a target of having natural gas to the mine site by the end of the third construction year.

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5.2. Commissioning Overview

Following construction, the process plant undergoes the following activities to transfer the project from a construction site to a fully operational process plant.

5.2.1. Construction Completion

In the lead up to the completion of the construction phases, pipelines will be pressure tested and all mechanical, civil, structural and electrical installations will be checked to ensure that they are installed according to design and can operate safely. The completions process includes structured and rigorous Quality Assessment and Quality Control procedures to resolve any remaining construction issues prior to pre-commissioning.

5.2.2. Pre-commissioning

This phase involves the testing and inspection of individual plant sub-systems, and associated equipment and facilities to confirm that they are safe and ready for the wet commissioning stage. This includes things such as motor rotations, testing and energisation of power and control systems, field instrument calibrations and adjustments, verification of safety devices and alarms, and first fills of lubricants. Testing of safety systems may involve unit process emergency procedures and live testing.

5.2.3. Wet Commissioning

During wet commissioning, plant operations are simulated, using water where applicable, to test equipment, piping, instrumentation and control systems, and interlocking to the maximum extent possible prior to the introduction of mineralized material. The water testing will check that fluid systems perform to their design intent and meet their design specifications prior to the introduction of mineralized material during process commissioning.

5.2.4. Process Commissioning

This phase comprises the initial operation of the plant facilities using mineralized material and process reagents. The objective is to have the process plant operating in a steady and consistent manner prior to the ramp-up phase. During this phase, differing results or any unforeseen issues with the scale up from test work to full-scale operation of the process plant will be identified. During this phase, plant or infrastructure modifications, or process reconfiguration, may be required to improve the process or enhance efficiency.

5.2.5. Ramp Up

The ramp-up phase may last several months, during which the process plant will be ramped up to its full design capacity and performance levels. This phase may also entail infrastructure modifications or process reconfiguration as identified by the commissioning and operations teams.

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5.3. TEMPORARY FACILITIES

Many of the facilities installed during initial construction activities will be converted to permanent use. However, a number of these will be decommissioned and removed during or following construction.

The initial construction camps at the Amakdedori Port and mine site will likely be fabric-covered or transportable facilities. The construction camp at the mine will be located near the mill laydown area. The construction camp at the port will be located in an area that will be used for port operations and will not require a separate footprint. The Amakdedori Port temporary camp will house the crews for the pioneer road construction. Once the road is through to Iliamna Lake, the existing camp at Kokhanok will be utilized for road crews and for the crew establishing the ferry landings.

Temporary camps will be established at the ferry landings to support road construction and, at the south ferry landing, assembly of the ferry. These camps will remain in place until the natural gas line construction is complete. The north ferry landing camp will likely be augmented using existing facilities in Iliamna and Newhalen. During the exploration phase, PLP employed more than 200 staff in Iliamna/Newhalen in these existing accommodations. Until the access road crossing the Newhalen River is complete, the crews will be shuttled to their workplaces by boat or by helicopter.

The temporary construction camp at the mine site will be expanded during the initial phase of construction at this location. Construction crews will utilize this camp and the permanent accommodations complex when it is complete. As construction is completed and crew sizes reduce, they will transition to the temporary camp only. This will enable the accommodations complex to be refurbished to single-room occupancy for the mine operations staff.

All temporary construction facilities will be removed after construction, and the sites, unless being used for permanent facilities, will be reclaimed.

5.4. ENVIRONMENTAL PROTECTIONS DURING CONSTRUCTION

5.4.1. Wastewater and Stormwater

Appropriate ADEC discharge permits or authorizations under general permits will be obtained for all wastewater discharges prior to construction. Stormwater runoff will be properly controlled at all construction sites using structural and non-structural BMPs. No construction will begin without coverage under applicable ADEC general stormwater permits and an approved stormwater pollution prevention plan. Routine inspections and monitoring will ensure the proper functioning of all stormwater BMPs throughout the construction period.

5.4.2. Fuel Management

Fuel management will include appropriate containment and practices, in accordance with ADEC and EPA regulations and approved spill prevention and response plans. Construction equipment

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and construction-camp power generation will use diesel fuel. Diesel storage will include a variety of tank types and sizes ranging from approximately 10,000 to 50,000 gallons. Aviation fuel for helicopters will be stored at the mine site, Amakdedori Port, and other satellite locations as necessary. Fuel will be distributed to the smaller camps and individual work sites from the main storage locations by fuel truck.

5.4.3. Wildlife Management

Protocols will be developed with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to protect marine mammals from high noise-generating activities at the port sites. Observers will be employed to determine marine mammal presence during construction, and mitigation measures will be established by the appropriate regulatory agency through the permitting process. The U.S. Fish and Wildlife's national bald eagle management guidelines will be followed to minimize any potential for disturbance or impacts. A nest relocation or non-purposeful take permit will be requested only when work cannot be limited in the vicinity of a protected nest.

5.4.3.1 Environmental Construction Windows

Work in anadromous fish streams and in Iliamna Lake will comply with Anadromous Fish Act regulations and ADF&G guidance. Resident fish will require site-specific protections under the Alaska Fish Passage Act. Stream surveys conducted as part of the environmental baseline studies will inform the establishment of permit conditions. Mitigation measures will be determined during the permitting process.

Ground-clearing activities will be conducted prior to construction work and will be timed to avoid bird-nesting periods in accordance with the U.S. Fish and Wildlife Service's Migratory Bird Treaty Act guidance. Nesting periods are generally spring and summer but vary according to habitats and species.

5.4.3.2 Helicopter Protocols

PLP protocols to ensure that helicopters and fixed-wing planes do not harass wildlife have been well established during the exploration phase of the project. These protocols, listed below, will remain in place throughout construction and the life of the mine.

- Do not harass or pursue wildlife.
- Fly 500 feet above ground level or higher when possible and safe to do so.
- When wildlife (especially bears, caribou, moose, wolves, raptor nests, flocks of waterfowl, seabirds, or marine mammals) are observed, avoid flying directly overhead and maximize lateral distance as quickly as possible.

5.4.3.3 Hunting and Fishing Restrictions

PLP employees and contractors will not be allowed to fish, hunt, or gather while on their work rotation during the construction and operation of the Pebble Project facilities.

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6. CLOSURE AND RECLAMATION

PLP's core operating principles are governed by a commitment to conduct all mining operations, including reclamation and closure, in a manner that adheres to socially and environmentally responsible stewardship while maximizing benefits to state and local stakeholders. PLP has adopted a philosophy of "design for closure" in the development of the Project that incorporates closure and long-term post-closure water management considerations into all aspects of the project design to ensure that all regulatory requirements, as well as private landowner obligations, are met at closure.

Considerations incorporated into the project design include:

- A separate pyritic TSF allows potentially acid generating tailings and PAG/ML waste rock to be relocated into the open pit and stored sub-aqueously during closure, preventing acid mine generation from this material and allowing reclamation of the pyritic TSF footprint.
- Quarried and waste rock will be geochemically tested prior to being used in construction to avoid the potential for contaminated drainage during operations and post-closure.
- Growth media and overburden will be salvaged during construction for use as growth medium during reclamation.
- TSF embankment slopes will be 2.6H:1V to provide long-term stability and facilitate the placement of growth medium.
- The overall project footprint will be minimized to facilitate physical closure and post-closure water management.

Reclamation and closure of the Project falls under the jurisdiction of the ADNR Division of Mining, Land, and Water, and the ADEC. The Alaska Reclamation Act (Alaska Statute 27.19) is administered by the ADNR; it applies to state, federal, municipal, and private land and water subject to mining operations. Except as provided in an exemption for small operations, a miner may not engage in a mining operation until the ADNR has approved a reclamation plan for the operation. The landowner participates in the planning process with regard to determining and concurring with the designated post-mining land use.

6.1. PHYSICAL RECLAMATION AND CLOSURE

The physical site closure work will commence as operations end.

- Active mining and pit dewatering will stop. Pit water levels will be maintained to provide safe access for placement of pyritic tailings and PAG waste rock.
- Pyritic tailings and PAG waste rock will be placed into the pit for long term storage below water. Once the material has been transferred to the open pit, the water will be allowed to rise to the maximum management level. The mill, pyritic TSF, main WMP,

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and other infrastructure not required for post-closure will be removed and/or reclaimed.

- The bulk tailings will have a dry closure and be allowed to fully consolidate. Once runoff is demonstrated to meet water quality criteria it will be directly discharged to the NFK catchment area. Bulk TSF seepage water will be pumped to the open pit.
- The open pit water level will be maintained at a level to insure inward flow of surrounding groundwater and prevent contact water from getting into the groundwater.
- Once physical closure activities are completed, site access infrastructure will be reconfigured to support long-term post closure activities.

All mill and support facilities not required for post-closure, including the pyritic TSF, main WMP, and open pit WMP embankments and liners, will be dismantled and removed. Concrete pads and foundations will be broken up so that they do not act as an impermeable impediment to water flows. Inert materials will be disposed of in an on-site monofill that will be sited within the disturbed footprint, while others will be shipped off site for disposal as appropriate. Disturbed areas will be recontoured, graded, ripped, and scarified. Top soil and growth media will be placed as needed, and sites will be seeded for revegetation. Surface runoff from the disturbed areas will be collected and either treated in the WTPs or directed to the pit lake until it is found to be suitable for direct discharge to the downstream drainages.

A spillway will be constructed from the bulk TSF. Late in the operating phase, tails in the bulk TSF will be spigoted to allow for surface drainage toward the closure spillway. As milling operations cease, free water will be pumped from the surface of the bulk tails, and they will be allowed to consolidate until the surface is suitable for equipment traffic on the surface. The tails will be re-graded as needed to facilitate drainage. A capillary break and growth media will be placed over the surface of the tails prior to seeding for revegetation. Growth media will also be placed on the bulk TSF embankments prior to seeding for revegetation.

Seepage water from the bulk TSF embankment seepage collection systems will be collected and directed to the pit lake.

The road system will be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. The Iliamna Lake ferry facilities will be removed, and all supplies will be transported across the lake utilizing a summer barging operation. The Amakdedori Port facilities will be removed, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. The natural gas pipeline will be maintained until such time as it is no longer required to provide energy to the project site. If no longer required, the pipeline will be pigged and cleaned before being abandoned in place. Surface facilities associated with the pipeline will be removed and reclaimed.

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6.2. Post-Closure Management

The pit lake will fill during the closure period. Surface runoff from the walls will result in leaching of accumulated metals from the walls. Water quality is expected to be acidic with elevated metals due to overall oxidation of the pit walls. Pit lake water quality will be monitored, and appropriate precautions will be taken to manage wildlife activity on the lake. Once the level of the pit lake has risen to about 890 feet elevation, water will be pumped from the pit, treated as required, and discharged to the environment. By maintaining the water level at this elevation, which is at least 50 feet below the elevation at which groundwater flow would be directed outward from the open pit, upset conditions resulting in an unplanned discharge can be avoided, as there is time to address any problems with the WTP before flows reverse.

Long-term discharge from the bulk TSF seepage collection systems will be pumped to the pit lake.

6.3. Financial Assurance

Prior to commencing construction, the Project Reclamation and Closure Plan approval and associated financial assurance mechanisms will need to be in place. The Reclamation and Closure Plan and financial assurance obligations will be updated on a 5-year cycle in accordance with regulatory requirements to address any changes in closure and post-closure requirements and cost obligations.

A detailed reclamation and closure cost model will be developed to address all costs required for both the physical closure of the Project and the funding of long-term post closure monitoring, water treatment, and site maintenance. The estimate will include the costs of closure planning and design, and mobilization of third-party equipment to site; detailed estimates of equipment and labor requirements for physical closure; capital, sustaining capital, and operating costs for water treatment and other long-term post-closure operations; and appropriate indirect costs and contingencies developed following ADNR guidance.

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7. ENVIRONMENTAL PERMITTING

Numerous environmental permits and plans will be required by federal, state, and local agencies. PLP will work with applicable permitting agencies and the State of Alaska large mine permitting team to provide complete permit applications in an orderly manner.

Because the Pebble Project involves a federal permit—U.S. Army Corps of Engineers Section 404/10 permit for the filling of wetlands and placement of structures in navigable waters—the provisions of NEPA will apply to this Project. There are provisions within NEPA, as well as within the permitting processes for many of the individual permits, that will provide for public review and comment on the Project.

Table 7-1 lists the types of permits that are expected to be required for the Pebble Project. Multiple permits of certain types may have to be applied for to accommodate the full scope of facilities.

Table 7-1. Environmental Permits Required for the Pebble Project

Agency	Approval Type	Project-related Examples
Federal		
BATF	License to Transport Explosives	Construction explosives acquisition and use
	Permit and License for Use of Explosives	Construction explosives acquisition and use
BSEE	Right-of-Way Authorization for Natural Gas Pipeline	Subsea natural gas pipeline in OCS waters
DHS	Airport Security Operations Plan	Iliamna Airport
	Port Facility Security Coordinator Certification	Port site
	Port Security Operations Plan	Port site
EPA	Facility Response Plan (required to be submitted to EPA, however EPA does not provide plan approvals)	Fuel storage facilities, fuel transport on the mine roadway
	RCRA Registration for Identification Number	Storage and disposal of hazardous wastes
	Spill Prevention, Control, and Countermeasure (SPCC) Plan (SPCC plans are not required to be submitted or approved by EPA. The plan will be reviewed and certified by a Professional Engineer licensed in Alaska)	Fuel storage facilities

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Agency	Approval Type	Project-related Examples
FAA	Notice of Controlled Firing Area for Blasting	Construction and mining blasting activity
FCC	Radio License	Radios
MSHA	Mine Identification Number	Mine site
	Notification of Legal Identity	Mine site
NMFS	Magnuson-Stevens Fishery Conservation and Management Act Consultation documentation	Necessary in areas where mine, road, or port site activity affect essential fish habitat
USACE	Clean Water Act Section 404 permit for Discharge of Dredge or Fill Material into Waters of the U.S.	Fill into wetlands for a variety of facilities at the mine, road, pipelines, port site
	Rivers and Harbors Act Section 10 Construction of any structure in or over any Navigable Waters of the U.S.	Road bridges and causeway; port site docking and ship-loading facilities and maintenance dredging.
USCG	Clean Water Act Section 10 Permit for construction of any structure in or over any Navigable Water of the U.S.	Road bridges and causeway; port site docking and ship-loading facilities and maintenance dredging
	Facility Response Plan	Fuel storage facilities
	Fuel Offloading Plan; Person in Charge Certification	Offloading fuel from barges at the port
	Hazardous Cargo Offloading Plan; Port Operations Manual Approval	Offloading hazardous cargo from ships
	Navigation Lighting and Marking Aids Permit	Port facilities
	Rivers and Harbors Act Section 9 Construction Permit for a Bridge or Causeway across Navigable Waters	Bridges along road
USDOT	Registration for Identification Number to Transport Hazardous Wastes	Transport of hazardous wastes to approved disposal site
USFWS	Bald and Golden Eagle Protection Act Programmatic Take Permit	May be necessary in areas where mine, road, or port site activity may disturb eagles
	Migratory Bird Treaty Act Consultation documentation	May be necessary in areas where mine, road, or port site activity may disturb migratory birds

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Agency	Approval Type	Project-related Examples
USFWS/NMFS	Endangered Species Act Incidental Take Authorization	May be necessary at the port site and for sub-sea pipeline construction where activities could disturb northern sea otter, Beluga whale, Steller sea lion, Steller's eider
	Marine Mammal Protection Act Incidental Take Authorization; Letter of Authorization	May be necessary at port site where activities could disturb northern sea otter, Beluga whale, Steller sea lion, harbor seal, Dall's porpoise
State		
ADEC	Alaska Solid Waste Program Integrated Waste Management Permit/Plan Approval	Tailings disposal, waste rock disposal, landfills
	Alaska Solid Waste Program Solid Waste Disposal Permit; Open Burn Permit	Construction waste material disposal
	Approval to Construct and Operate a Public Water Supply System	Mine and port, and construction camps
	Clean Air Act Air Quality Control Permit to Construct and Operate – Prevention of Significant Deterioration	Power plant and other non-mobile air emissions; fugitive dust; applicable to mine, road, and port
	Clean Air Act Title V Operating Permit	Power plant and other non-mobile air emissions; fugitive dust; applicable to mine and road
	Clean Air Act Title I Operating Permit	Non-mobile air emissions; stationary sources, fugitive dust; applicable to port and Kenai compressor station
	Clean Water Act Section 402 Alaska Pollutant Discharge Elimination System Water Discharge Permit	"End of Pipe" water discharges from water treatment plants at the mine, along with domestic water treatment plants at the mine and port
	Clean Water Act Section 402 Stormwater Construction and Multi-Sector General Permit; Stormwater Discharge Pollution Prevention Plan	Surface water runoff discharges at mine, road, and port site
	Food Sanitation Permit	Mine and port, and construction camps

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Agency	Approval Type	Project-related Examples
	Oil Discharge Prevention and Contingency Plan (ODPCP or "C" Plan)	Fuel storage and transfer facilities, port and mine
ADF&G	Fish collection permits for monitoring	May be necessary for long-term monitoring
	Fish Habitat Permit	Water withdrawal in an anadromous fish waterbody, stream diversion, installation of culverts and bridges
ADNR	Alaska Dam Safety Program Certificate of Approval to Construct a Dam	Tailings dam, seepage control dams
	Alaska Dam Safety Program Certificate of Approval to Operate a Dam	Tailings dam, seepage control dams
	Lease of other State Lands	Any miscellaneous other state lands to be used by the Pebble Project – none identified at this time
	Material Sale on State Land	Materials removed from quarry sites for construction
	Mill Site Permit	All facilities on state lands
	Mining license	All facilities on state lands
	Miscellaneous Land Use Permit	All facilities on state lands
	National Historic Preservation Act Section 106 Review	Area of Potential Effect
	Pipeline Right-of-Way permit	Natural gas pipeline between the mine and port and in state waters
	Powerline Right-of-Way permit	Powerlines to support electric power distribution
	Road Right-of-Way permit	Road between mine and port site
	Temporary Water Use Permit; Permit to Appropriate Water	Surface and groundwater flow reductions
	Tidelands Lease	Port structures below high tide line
	Upland Mining Lease	All facilities on state lands
ADOL	Certificate of Inspection for Fired and Unfired Pressure Vessels	
ADOT&PF	Driveway Permit	Road
	Utility Permit on Right-of-Way	Natural gas pipeline on the Kenai Peninsula

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Agency	Approval Type	Project-related Examples
ADPS	Approval to Transport Hazardous Materials	Transport of hazardous materials along the road
	Life and Fire Safety Plan Check	Mine and port
	State Fire Marshall Plan Review Certificate of Approval	For each individual building
Local		
KPB	Conditional Use Permit	
	Floodplain Development Permit	
	Multi-Agency Permit Application	
L&PB	Lake and Peninsula Borough Development Permit	Mine and road area within the Lake and Peninsula Borough

ADEC = Alaska Department of Environmental Conservation
ADF&G = Alaska Department of Fish and Game
ADOT/PF = Alaska Department of Transportation and Public Facilities
ADPS = Alaska Department of Public Safety
BATF = U.S. Bureau of Alcohol, Tobacco, and Firearms
DHS = U.S. Department of Homeland Security
EPA = U.S. Environmental Protection Agency
FAA = Federal Aviation Administration
FCC = Federal Communications Commission
FERC = Federal Energy Regulatory Commission
L&PB = Lake and Peninsula Borough
MSHA = U.S. Mine Safety and Health Administration
NMFS = National Marine Fisheries Service
RCRA = Resource Conservation and Recovery Act
SHPO = State Historic Preservation Officer
USACE = U.S. Army Corps of Engineers
USCG = U.S. Coast Guard
USDOT = U.S. Department of Transportation
USFWS = U.S. Fish and Wildlife Service

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Chapter 4, Environmental Consequences, describes the potential impacts on the environmental resources addressed in Chapter 3, Affected Environment, that would occur under the No Action Alternative, the Applicant's Proposed Alternative, and other action alternatives.

Each of the resource sections in Chapter 4 (Section 4.2 through Section 4.26) discusses:

- Direct and indirect impacts characterized by four factors of analysis (see "Types of Effects Considered" and "Impact Characterization [Four Factors]" sections below) of each alternative, for each resource described in Chapter 3, Section 3.2 to Section 3.26.
- Cumulative effects to each resource for each alternative.

A discussion of other resources or topics that are not specifically addressed in Section 4.2 through Section 4.26 is included below in the "Other Resources or Topics" section. Chapter 4 also includes Section 4.27, Spill Risk, which analyzes diesel, concentrate, reagent, and tailings spill scenarios.

In this document, the terms "effect" and "impact" have the same meaning and are used interchangeably.

4.1.1 Impact Characterization (Four Factors)

Adverse and beneficial effects of the project were evaluated and described for each of the resources. Each resource section provides context for analyzing impacts by considering them generally in relation to four dimensions:

Magnitude: The intensity of the impact.

Duration: How long the impact would be expected to occur or last.

Geographic extent: Where the impact would be expected to occur.

Potential: How likely the impact is to occur.

Not every resource considers every dimension. The level of quantified or qualified information presented is appropriate to the context of the resource. In each of the resource subsections, the methods applied for analysis are described.

Project component values, such as road lengths and pad acreage, are approximations based on best available data. Due to differences in data processing systems (e.g., Geographic Information System [GIS]) and methodologies (e.g., number rounding), the values presented in the Environmental Impact Statement (EIS) may differ slightly from values presented in other project-related documents, such as permit drawings. These differences have been reviewed, and were determined to be unimportant to the analysis, as well as to the overall permitting process.

See Section 3.1, Introduction to Affected Environment, for a description of project components and project area terms.

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4.1.2 Time Periods (Phases)

Impacts on some resources may vary depending on the phase of the proposed project. Accordingly, the impact assessment was divided into three time periods:

Construction phase: The period of construction of mine infrastructure prior to operations.

Operations phase: The 20-year period of mine operations.

Closure or post-closure phase: Any activity occurring after mine operations cease.

Division of analysis into these three time periods works well for some resources, but is less relevant for others, such as socioeconomics or recreation.

4.1.3 Types of Effects Considered

The National Environmental Policy Act (NEPA) requires three types of impacts to be evaluated. These include direct, indirect, and cumulative impacts as defined below.

Direct Effects: Effects caused by the action and occurring at the same time and place (40 Code of Federal Regulations [CFR] 1508.8). Limited to the proposed action and alternatives.

Indirect Effects: Effects that are "caused by an action and are later in time or farther removed, but are still reasonably likely. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8). Indirect effects are caused by the project, but do not occur at the same time or place as the direct effects. Limited to the proposed action and alternatives.

Cumulative Effects: Additive or interactive effects that would result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions (RFFAs) regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). This includes incremental impacts of the proposed action and alternatives when added to other past, present, and RFFAs. Interactive effects may be either greater or less than the sum of the individual effects; therefore, the action's contribution to the cumulative case could increase or decrease the net effects. Assessing the cumulative impacts from multiple projects/activities requires considering the impacts of their combined potential area of effects and associated actions. It also requires a logical nexus with the potential effects of the proposed action.

Past actions include activities that may have been initiated in the past, but could also involve present operations such as infrastructure development and non-mining related actions. They may have lingering effects in degrading the environment or may influence trends in the physical, biological, or social environment.

Present actions include mining projects and related activities that may have just come online or are currently underway and are causing impacts. They may also include other non-mining related projects, such as transportation, oil and gas development, or community development that are currently in progress.

For this analysis, RFFAs are existing plans, permit applications, and fiscal appropriations that are external to the proposed action, and likely (or reasonably certain) to occur. See Table 4.1-1 for a comprehensive list of potential RFFAs that were examined for this project. Actions are considered reasonably foreseeable if they are proximate to the project area and are anticipated to enter the permitting process in the next 5 years, are identified in planning documents as scheduled for development, or if significant resources have been committed to the proposed

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action. Proximity is based on natural geographic boundaries of potentially affected resources and the period of time that the project's impacts would persist.

Direct, indirect, and cumulative impacts are analyzed in each of the resource sections in Chapter 4. Cumulative effects are described in a separate subsection in each resource section for the proposed action and, if applicable, other action alternatives, based on applicable RFFAs listed in Table 4.1-1 that were evaluated as being "reasonably foreseeable."

4.1.3.1 Past and Present Actions

Past and present actions that have either lingering effects or influence trends in the environment with a nexus to the project are relatively limited, and are described below.

Commercial and Subsistence Harvest of Fish and Wildlife. Past and present harvest of fish and wildlife for commercial and subsistence purposes put some degree of pressure on those resources. While commercial fishing in the Bristol Watershed started in the 1880s, the period from the turn of that century through the adoption of Alaska Limited Entry Act by the State of Alaska in 1972, saw incremental changes in both fishing technology and the understanding of the salmon fishery resource. It was likely that there were historic instances of overharvest, with implications for the overall salmon resource. Similarly, local residents have historically harvested fish and wildlife in pursuit of traditional subsistence activities. However, fish and wildlife resources are managed by the Alaska Department of Fish and Game (ADF&G) and federal land managers to maintain sustainable populations, and there are no long-term adverse effects or trends affecting the resource.

Commercial Recreation and Tourism. Southwest Alaska, including the Bristol Bay region and the area around the project, is renowned for sport fishing, hunting, boating, and wildlife viewing opportunities, and there is a long history of these activities in area. Similar to commercial fishing, the sport harvest of fish and game is managed by ADF&G and federal land managers to maintain sustainable populations, and there are no long-term adverse effects or trends affecting the resource. These activities take place primarily from late spring to early fall, and there may be small plane, helicopter, and boat traffic associated with access that can contribute to the disturbance of wildlife, as well as recreation and subsistence activity experience.

Mining Exploration Activities. There are a number of mineral claims and resources in the Bristol Bay watershed that have been subject to mineral exploration activities. Exploration activities have been intermittent, depending on the specific claim or resources, and there has been small plane, helicopter, and boat traffic associated with exploration that can contribute to the disturbance of wildlife, as well as recreation and subsistence activity experience. In the immediate area of the project, there has been no mineral production activity that has had lingering adverse effects on the environment.

Williamsport-Pile Bay Road. Construction of the Williamsport-Pile Bay Road in the 1930s provided access between Cook Inlet and the Bristol Bay via a 15.5 mile road to Iliamna Lake and down the Kvichak River. The road allows transportation of fishing vessels bound for Bristol Bay commercial fisheries, as well as some goods and supplies for lake and river communities, contributing to road and lake traffic during the summer season. The road is owned and maintained by the State of Alaska.

4.1.3.2 Reasonably Foreseeable Future Actions Considered

The following categories of reasonably foreseeable future activities were considered for the cumulative effects analysis:

- Mineral Exploration and Mining

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- Oil and Gas Exploration and Development
- Transportation and Infrastructure
- Energy and Utilities
- Commercial Fishing
- Subsistence
- Tourism, Recreation, Hunting and Fishing
- Scientific Research and Surveys
- Contaminated Sites and Industrial Pollutants

With regard to mineral and oil and gas resources, a distinction was made between exploration and development activities. Many of the mineral projects assessed are on lands open to mineral entry and have been the subject of exploration activities for over 30 years, but have not been developed. Similarly, oil and gas lease sales have been held in waters of Cook Inlet for over 50 years, but not all exploration activities have led to oil and gas development. The decision to take resources from exploration to development depends on many factors.

Activities associated with commercial and subsistence harvest, viewing, and scientific study of fish and wildlife have the potential to contribute to cumulative effects of developing the project. Effects can include mortality and injury on an individual and population level, and disturbance and changes in distribution and migration, which can affect availability to various users.

Events such as large oil spills, chronic pollution, and historic contaminated sites can contribute to cumulative effects in several ways. Effects can include mortality and injury to fish on an individual and population level, avoidance and changes in distribution and migration, and contamination with regard to human consumption by subsistence, commercial, and recreational harvesters.

Finally, climate change and other changes in the natural environment can contribute to cumulative effects through past, present, and RFFAs. The way in which this EIS addresses climate change is discussed in Section 3.1, Introduction to Affected Environment.

The following parameters are used to identify potential reasonably foreseeable future activities for the cumulative effects analysis:

- Geographic timeframe. Typically only projects with dedicated funding, currently in or scheduled to undergo federal, state, or local permitting, and with a medium to high probability of occurring, are included. However, the USACE has determined that expansion of the Pebble Project to develop 55 percent of its reserves over a 78 year period, as outlined in the Wardrop 2011 Preliminary Assessment Technical Report, will be analyzed under the cumulative effects analysis (see Table 4.1-1 for further discussion). Therefore, other reasonably foreseeable future activities that may occur in the 78 year time period will also be considered. However, in order to be considered reasonably foreseeable within this time frame, potential RFFAs need to meet the subsequent criteria.
- Projects located on lands open to mineral entry or development. When lands are classified as open to mineral development, it facilitates obtaining permits and other approvals for exploration and development activities. However, in order to be considered reasonably foreseeable for development within this time frame, potential reasonably foreseeable future actions need to meet the subsequent criteria.
- Projects with dedicated funding, currently in the permitting process, undergoing a state or federal environmental assessment, or listed in a planning document with a specific time frame for development. Projects may be considered reasonably

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foreseeable for development if they have dedicated funding and a schedule for development; have federal, state, or local permit applications under review or approved; are currently being evaluated through a federal NEPA compliance effort of State Best Interest Finding Effort; or are identified in a planning document (such as scheduled lease sales) with a specific project description and time frame for development. However, potential projects on land open to mineral entry or classified to allow mining are not considered reasonably foreseeable without meeting additional criteria described in this section.

- Information to support the feasibility of development has been documented. The project has conducted extensive exploratory drilling and analysis in order to compile information on mineral reserves in terms of measured, indicated, and inferred resources, along with characterization of the grades of ore in the deposit (Wardrop 2011). Estimated costs associated with developing the deposit were also prepared for three development scenarios, although that information was based on a different project configuration and is several years old. The potential feasibility for development of other projects is evaluated based on the published information on result of drilling and delineation of measured, indicated, inferred, and grade of reserves. To the extent they are available, estimated costs associated with development are also assessed.
- Proximity to the project infrastructure and factors affecting co-use by other parties. The question of whether development of the project would facilitate development of other nearby mineral deposits depends in part on proximity to the project and ability to use project infrastructure. Construction of access to project transportation infrastructure is expensive and also depends on land ownership access and sensitivity of environmental resources along the access route. Project infrastructure would be privately funded and co-use of mining and port facilities dependent on permission from Pebble Limited Partnership (PLP). While the access road would be privately funded on State land, the State of Alaska would likely require allowing access to other mineral deposit owners if an agreement could be reached with PLP regarding operation and maintenance costs, based on the precedent set in state permit conditions for granting Pogo Mine Access (S. Buckley, personal communication 2018).
- Geographic nexus with the direct and indirect effects of project development on specific resources evaluated in the EIS. Along with the factors previously described, there would need to be interactive and synergistic effects of an RFFA on resources directly and indirectly affected by development of the project in a specific geographic range that varies by resource.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Pebble Project – develop 55% of delineated resources over a 78-year period	Expansion of the Pebble Project to develop 55% of its reserves over a 78-year period, as outlined in the Wardrop 2011 Preliminary Assessment Technical Report. It would likely use the same transportation facilities, power plant, and natural gas pipeline facilities, but would need additional tailing storage and possibly processing facilities. It is not part of the proposed action and would require additional permits and separate NEPA compliance.	Potential project expansion. Expansion identified as option in Wardrop 2011 report and analyzed in the Environmental Protection Agency (EPA) Watershed Assessment (EPA 2014) on the basis of lands being classified as open for mineral exploration and development and assuming access to Pebble Project infrastructure.	Wardrop 2011	Yes - for continued exploration and development. The Pebble Project has conducted extensive exploratory drilling and analysis in order to compile a feasibility assessment level on information on mineral reserves in terms of measured, indicated, and inferred resources, along with characterization of the grades component ore in the deposit (Wardrop 2011). If permitted, the project processing and transportation infrastructure would be in place, and development of 55% of the Pebble Project resources is considered reasonably foreseeable in the 78-year time frame outlined in Wardrop 2011.
Pebble South	A 142 square kilometer (km^2) porphyry copper deposit/claim ~15 kilometers (km) southwest of Pebble Deposit. Prospect is part of the PLP/Northern Dynasty Minerals (NDM) Limited (Ltd.) claim block and includes the 38 and 308 zone prospects. Primary additional development would include the mine pit, mineral processing, tailings storage and waste rock areas, and a new transportation corridor to existing Pebble Project transportation system, power supply, and natural gas infrastructure.	Potential project expansion. Expansion identified as option in Wardrop 2011 report and analyzed in for cumulative effects in the EPA Watershed Assessment based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable within the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and utilize the Pebble Project transportation system.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Big Chunk South	A 119 km² porphyry copper deposit/claim ~20 km north of the Pebble project area. The claim block is entirely in the Chulitna River drainage, which flows into Lake Clark National Park and Preserve. Potential development includes Tailings Storage Facilities (TSFs), mill, and other facilities for mining. Multiple build-out scenarios.	Undergone some airborne surveys and limited drilling to delineate the resource. Claims transferred to NDM Ltd. in 2014. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and use the Pebble Project transportation system.
Big Chunk North	Porphyry copper deposit ~34 km northwest of the Pebble project area. The claim block straddles the drainage divide between the Nushagak and Kvichak River watersheds. Potential development would include TSFs, mill, and other facilities for mining.	Claims transferred to NDM Ltd. in 2014. Analyzed for cumulative effects in the EPA Watershed Assessment based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Because claims are currently owned by NDM Ltd., if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and utilize the Pebble Project transportation system.
Fog Lake	Gold, copper in volcanic rocks	As of 2008, exploration	EPA 2014	Yes - for further exploration.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	located southeast of the Pebble Prospect and south of Iliamna Lake.	was occurring but drilling had not been initiated. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.		No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. Note: Given the proximity to the proposed Pebble Project transportation corridor, if future drilling and resource delineation indicate that it is feasible to develop the project, it is possible that construction and operations could access and use the Pebble Project transportation system if an arrangement could be reached with PLP.
Groundhog	317 km² porphyry copper claim ~6 km from the Pebble project area.	Exploration drilling underway. Hard rock exploration permit issued by Alaska Department of Natural Resources (ADNR) in 2017. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014	Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame.
Humble	Also known as Kemuk, a 280 km² gold and porphyry copper deposit/claim considered geologically similar to Pebble Deposit. Deposit is ~135 km	Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit	EPA 2014 Millrock Resources, Inc. 2018	No - for further exploration. No - for development. This project has been removed from the Millrock Resources

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	southwest of the Pebble Project area. Potential development includes TSFs, mill and other facilities for mining.	and assuming access to Pebble Project infrastructure.		website and no longer appears to be active. It is not considered reasonably foreseeable in the 78-year time frame.
Iliamna	183 km² porphyry copper claim block ~90 km southwest of the Pebble project area in the Kvichak River watershed.	Millrock Resources began exploration in 2012. Analyzed for cumulative effects in the EPA Watershed Assessment (EPA 2014) based on land classification of the deposit and assuming access to Pebble Project infrastructure.	EPA 2014 Bristol Exploration Co., Inc. 2011	No - for further exploration. No - for development. This project has been removed from the Millrock Resources and TNR Gold Corp websites and no longer appears to be active. It is not considered reasonably foreseeable in the 78-year time frame.
Kamishak	Porphyry copper in a breccia pipe roughly 80 km southeast of the Pebble Project area.	There were 18 holes drilled between 1990 and 1991, and an additional 5 holes were drilled in 2006. As of 2008, reserves had not been identified.	AERI 2008	No - for further exploration. No - for development. Resource delineation has not progressed sufficiently to forecast development, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame
Shotgun	Quartz-feldspar porphyry deposit with gold as the primary interest, located roughly 160 km northwest of the Pebble Project, 90% owned by TNR Gold Corporation. If developed, Shotgun could access tide water via barge transport from Dillingham (150 km away) up the Nushagak River to Koliganek, New Stuyahok, or Ekwok (80, 110, and 120 km away, respectively). It would not be practicable to connect to Pebble	There have been extensive drilling programs since the late 1980s through 2012, and as of 2013, inferred mineral resources were estimated at 20.7 million tons, with a grade of 1.06 gram of gold per ton, with a cut-off grade of 0.50 gram per ton of gold.	TNR Gold Corp. 2011, 2012, 2018 ADNR 2012	Yes - for further exploration. Yes - for development. Mineral exploration has delineated inferred mineral resources, but it is unclear to what extent they are measured or indicated. The prospect is not currently subject to development permitting or in a planning document. However, given the extent of delineated resources, for the purposes of this analysis, the

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Project infrastructure.			Shotgun prospect is considered reasonably foreseeable in the 78-year time frame.
Johnson Tract	Gold rich poly-metallic deposit located roughly 80 miles east of the Pebble Project, owned by Cook Inlet Region, Incorporation (CIRI) and subject to an exploration agreement with Constantine Metals Resources Ltd. CIRI has access rights through Lake Clark National Park and Preserve to a port site at Tuxedni Bay on Cook Inlet.	Discovered by Anaconda in 1982, 90 holes have been drilled but no exploration has occurred in more than 20 years. Constantine Metals has agreed to resume exploration and take the project to the point of evaluating feasibility of developing the mine.		Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame.
Copper Joe	Porphyry copper located significantly north of the Pebble Project, in close proximity to the Whistler Deposit.	Kiska Metals / First Quantum Minerals Ltd. conducted exploration work in 2016.		Yes - for further exploration. No - for development. Resource delineation has not progressed sufficiently, is not subject to development permitting or in a planning document, and is not considered reasonably foreseeable in the 78-year time frame. In addition, there is no geographic nexus with the Pebble Project.
Proposed Mining and Mineral Projects in Southwestern and Southcentral Alaska				
Donlin Gold	Open pit hard rock mine in the Kuskokwim River watershed, 277 miles west of Anchorage. The proposed mine would have a total footprint of approximately 16,300 acres. Includes a 312-mile long pipeline to carry natural gas from Cook Inlet to the mine site.	Final EIS issued in April 2018. USACE and Bureau of Land Management (BLM) have issued a Joint Record of Decision (JROD) granting major federal permits.	USACE 2018	Yes – for further exploration. Yes - for development. Final EIS on the project has been completed and the JROD was signed in August 2018. The project is considered reasonably foreseeable in the 78-year time frame.
Diamond Point Rock Quarry	Proposed granite quarry project near the convergence of Cottonwood and	An application for development of a rock	USACE 2010	Yes – for development. Reserves of quarry rock have been

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Iliamna bays on the west side of Cook Inlet. Project involves modification of shoreline to construct a staging area and dock facility. Dredging would be required in Iliamna Bay	quarry at Diamond Point was submitted to the USACE in 2009. The site is currently undeveloped. Proposed coastal infrastructure includes constructing a 20 acre fill for staging equipment, stockpiling aggregate, and barge loading facilities.		estimated and a permit application was filed for development. The project is considered reasonably foreseeable in the 78-year time frame.
Potential Oil and Gas Exploration and Development				
Project/Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Alaska Stand Alone Pipeline Project	Proposed 737-mile natural gas pipeline from Prudhoe Bay to Point McKenzie, Alaska. The project involves the construction of a liquefied matural gas (LNG) extraction plant on the western side of Cook Inlet at Point McKenzie.	A Final EIS was completed in 2018. A ROD is expected soon.	Alaska Stand Alone Pipeline (ASAP) 2018	Yes – for development. The project is considered reasonably foreseeable in the 78-year time frame. However, it would not be built if the Alaska LNG project is funded for development.
Alaska Liquefied Natural Gas Project (Alaska LNG)	Proposed 800-mile natural gas line from Prudhoe Bay to Nikiski, where the gas will be liquefied and shipped to foreign markets. Involves a natural gas pipeline crossing Cook Inlet and will result in increased marine traffic in Cook Inlet.	Federal Regulatory Energy Commission (FERC) application filed. A Draft EIS is under development for release in 2019; a Final EIS would be released in 2020. Construction would begin after 2020. The project does not have funding to proceed.	Alaska LNG 2018	Yes – for development. While funding for development is not currently available, the project is considered reasonably foreseeable in the 78-year time frame.
Drift River Oil Pipeline Transportation Project	Proposes to repurpose an existing natural gas pipeline crossing Cook Inlet to an oil pipeline. Involves the installation of 9 miles of new cross-inlet pipeline between Beluga and	Project is in the permitting phase. Decommissioning of the Drift River Terminal was initiated in 2017.	KDLL, Public Radio for Central Kenai, 2018	Yes – for development. The project is in the permitting phase and scheduled for execution. It is considered reasonably foreseeable in the 78-year time

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
	Nikiski.			frame.
Cook Inlet Oil and Gas Lease Sales	In 2015, the Alaska Oil and Gas Association estimated there were 600 million barrels of recoverable oil and 19 trillion cubic feet of recoverable natural gas in Cook Inlet. There are a total of 16 platforms with 8 operators as of 2016. Exploration activities continue with future development anticipated. The Bureau of Ocean and Energy Management is responsible for leasing oil and gas in federal waters, and ADNR has the same responsibility for state waters.	In 2017, Federal Lease 244 resulted in bids for 14 tracts in Cook Inlet. Federal Lease Sale 258 for Cook Inlet is scheduled for 2021. ADNR released a preliminary Best Interest Finding on the Cook Inlet Area-wide Oil and Gas Lease Sale in June 2018. Oil and gas exploration and development activities in Cook Inlet are ongoing and likely to continue.	BOEM 2018	Yes – for exploration. Yes – for development.
Hydrocarbon Exploration Licensing and Leasing Program	ADNR, Lake and Peninsula Borough (LPB), Bristol Bay Borough, and Aleutians East Borough have signed a Memorandum of Understanding (MOU) in support of oil and gas lease sales and licensing on state land in the analysis area. Similar MOUs exist between ADNR and the Aleut Regional Native Corporation and Bristol Bay Native Corporation.	Exploration underway.	Bristol Bay Area Plan for State Lands 2015	Yes – for exploration. No – for development. Exploration activities are underway, but given the lack of previous oil and development in the region, development and production are not reasonably foreseeable in the 78-year time frame.
Transportation and Infrastructure				
LPB Transportation Projects	Several road improvement and new transportation corridors currently being studied. Studies include the Williamsport-Pile Bay road upgrade, Nondalton–Iliamna River Road Corridor and Bridge, Kaskanak Road /Cook Inlet to Bristol Bay (Igiugig).	Ongoing.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
LPB Community Development and Capital Improvement Projects	Village infrastructure development projects including power plant upgrades, sewer and water improvement projects, transmission upgrades and energy efficiency initiatives.	Ongoing. List of projects from LPB 2017 capital improvement projects.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.
Rural Alaska Village Grant Program	US Department of Agriculture Rural Development program to improve rural sanitization. Grant money used to improve water and sanitation services.	Ongoing	USDA Rural Development 2018	Yes – for development These projects are considered small-scale community improvements.
Energy and Utilities				
Lake and Peninsula Borough and other regional Renewable Energy Initiatives	LPB and other communities and electrical generation cooperatives are studying renewable energy projects to help combat high fuel costs. Studies include wind, hydroelectric, river, and tidal energy alternatives. Igiugig has a permit for a removable in-river power generation facility in the Kvichak River.	Studies ongoing. Igiugig has been installing its pontoon-mounted power generator annually in the Kvichak River. The Tazimina Run of River Hydro Project upgrade has been completed, 12 miles northeast of the village of Iliamna The village of Kokhanok has received funding to refurbish its existing wind diesel power plant.	LPB Comprehensive Plan 2017	Yes – for development. These projects are considered reasonably foreseeable in the 78-year time frame.
Nushagak Electric Cooperative Village Intertie Project	The Nuyakuk Run of River Hydro Project would connect the communities of Dillingham, Levelok, New Stuyahok, Koliganek, Aleknagik, and Ekwok with power and fiber optics with operation projected for 2024.	Nushagak Cooperative has submitted a preliminary permit application to FERC for their hydro project on the Nuyakuk River in Wood Tikchik State Park. Pedro Bay is pursuing permitting for the Knutson	US Department of Energy FERC 2018 (83 FR 15826)	Yes - for development. This project is considered reasonably foreseeable in the 78-year time frame.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
		Creek Run of River Hydroelectric Project.		
Commercial Fishing				
Bristol Bay - Nushagak and Naknek/Kvichak State Management Districts - Salmon Lower Cook Inlet Management Area - Salmon and Herring	Continued stock assessment and allocation decisions under existing management plans.	Ongoing. Anticipate a continuation of commercial fishing in the analysis area.	ADF&G Commercial Fishing Management Reports 2018	These actions will occur in response to annual stock assessments and direction from management plans.
Subsistence Activities				
Villages of Iliamna, Newhalen, Pedro Bay, Port Alsworth, Nondalton, Igiugig, Kokhanok, Koliganek, Levelock, New Stuyahok, King Salmon, Naknek, Aleknagik, Clarks Point, Manokotak, Dillingham, Ninilchik, and Seldovia	Past, present, and foreseeable subsistence activities are described in Section 3.9, Subsistence.	Ongoing. Anticipate a continuation of subsistence practices within the analysis area.	See Section 3.9, Subsistence.	Subsistence harvest of fish, wildlife, and plants will continue for the foreseeable future.
Tourism, Recreation, Hunting and Fishing				
National Parks and Preserves Wildlife Refuges State of Alaska Special Management Areas Alaska Native	Hiking, camping, wildlife viewing and photography. Sport fishing is the primary recreational activity that occurs in the EIS analysis area. Hunting, primarily for moose, caribou, and bear, is a major recreation activity in the region.	Activities are expected to continue in the EIS analysis area.		Tourism, recreation, hunting, and fishing will continue for the foreseeable future.

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Table 4.1-1: Potential RFFAs Evaluated for Cumulative Effects

Potential Mineral Deposits in Southwest and Southcentral Alaska				
Prospect, Project, or Activity	**Description**	**Status**	**References**	**Reasonably Foreseeable?**
Corporation Lands				
Industrial Pollutants and Contaminated Sites				
Communities in project area	Identified sites with low levels of contamination have been identified in many Alaskan communities. Communities with site entries in the immediate vicinity of the project include Nondalton, Iliamna, Pedro Bay, Newhalen, and New Stuyahok. Many of the sites are associated with fuel storage tanks/power generation	Many of the sites in the Alaska Department of Environmental Conservation database have been cleaned up. The primary potential nexus with activities proposed by the Pebble Project would be in communities where Pebble proposes construction and operations support activities.	ADEC 2018	There is a potential for interaction with contaminated sites in Iliamna.
Scientific Surveys and Research				
Federal, state, institutional, and private surveys and research	Scientific surveys and research conducted by government, institutional, and private parties have the potential to disturb wildlife, as well as interfere with subsistence and recreational activities and experience. Activities conducted by aircraft typically have created the most potential for conflict.	While some agencies and organizations conduct annual surveys, others are difficult to forecast.		There is a potential to disturb wildlife, and for interaction with subsistence and recreational activities and experience.

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4.1.4 Issues Selected for Analysis

The US Army Corps of Engineers (USACE) and cooperating agencies selected substantive impact topics for further analysis, and eliminated others from evaluation. Based on scoping comments, issues were selected for analysis, and are organized by social, physical, or biological environment.

These issues are briefly described in this section and documented as Statements of Concern in the Scoping Report (Appendix A). Comments indicated that the EIS should analyze impacts on:

Social Resources:

- Socioeconomics
- Subsistence
- Traditional way of life
- Archaeological and cultural resources
- Land ownership, management, and use
- Transportation and navigation
- Recreation
- Environmental justice
- Public health and safety
- Visual resources
- Wilderness characteristics
- Food and fiber

Physical Resources:

- Air quality
- Geology and seismic activity
- Surface and groundwater hydrology impacts
- Noise impacts
- Hazardous materials stored and transported to and from the mine site
- Natural gas supply and pipeline safety
- Tailings dam
- Water quality and quantity

Biological Resources:

- Vegetation and ecosystems
- Fish and aquatic resources
- Wetlands and special aquatic sites
- Wildlife, birds, and mammals
- ESA-listed threatened and endangered species

Other Concerns:

- Climate change
- Invasive species
- Fuel spill risks and releases

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4.1.5 Other Resources or Topics

This section provides a summary of analysis of other resources or topics that are not addressed specifically in Section 4.2 through Section 4.27.

4.1.5.1 Conservation (33 CFR 320.4[a], [m], [n])

Conservation is a broadly defined concept that typically includes the wise and efficient use, management, and protection of a natural resource; avoidance of wasteful or unnecessary use of the resource; and sustainability of the resource for future or alternate use. The conservation aspects of a large mineral resource extraction project are multi-faceted and complex. They involve the efficient extraction and use of copper, gold, and molybdenum minerals, temporary and permanent losses or gains in other affected resources, and a variable duration of impacts on those resources.

Overall, the project will result in adverse short-term impacts on natural resource conservation, and in variable (generally adverse to neutral) long-term effects on natural resource conservation; including mineral resources, fish and wildlife, water supply, wetlands, and energy. Supporting discussions regarding impacts on the conservation of each of these resources are provided in other appropriate sections of this EIS. Project-related impacts on the conservation of each of these resources will vary in intensity and duration; many of the effects will be temporary.

4.1.5.2 Energy Needs (33 CFR 320.4[n])

Energy conservation and development are major national objectives. The project is not an energy production facility, but will have effects on energy needs. There is no existing power infrastructure in the project vicinity. Due to the remote location and lack of current infrastructure, the project would be required to provide basic infrastructure in addition to support facilities typically associated with mining operations. The project will create new base load electric demand for ore extraction and processing. The peak electrical load for the project will be approximately 270 megawatts (MW). Project energy requirements represent additional base and peak load electrical demand. Various mine load centers would be serviced by a 69 kilovolt distribution system using a gas-insulated switchgear system located at the power plant. Waste heat from the power plant would be used to heat buildings and supply process heating to the water treatment plant.

Natural gas sourced through the existing natural gas supply infrastructure will be the primary energy source for the project. Natural gas pipeline infrastructure would include a compressor station on the Kenai Peninsula side, and a second compressor station located at a Cook Inlet port site. The port site would include two 2 MW natural gas power generators with an emergency diesel generator. Natural gas would be fed to the port site power station to be used for heating. A lake ferry would include generator engines. The mooring system design would allow engines to be turned off while parked.

4.1.5.3 Mineral Needs

Society has demands and uses for molybdenum, copper, and gold, and for the mining of these resources. PLP's stated purpose for the project is to provide for increased domestic copper, gold, and molybdenum production to meet world demand. PLP presented information demonstrating that these minerals are important precious metal used worldwide for electronics, jewelry, currency/bullion, and medical purposes. Direct mining products include copper concentrates, molybdenum concentrate, and gravity-recovered gold. The project will ultimately result in production of molybdenum, copper, and gold. These metals are highly conductive to

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electricity and are used in electrical wiring in some high-energy applications, circuitry, and other uses; they are more efficient than other metals for these applications.

The project represents a needed exploitation and use of these metals, but also represents an irretrievable and irreversible commitment of the use of copper, gold, and molybdenum ore resources. The project will result in a short-term, beneficial effect on mineral needs.

4.1.5.4 General Environmental Concerns (33 CFR 320.4[a][1] and 33 CFR 320.4[p])

During the formal scoping period, many issue-specific comments were received from the public as well as local, state, and federal agencies. Concerns addressed under "general environmental concerns" include those not addressed elsewhere. The USACE has identified climate change and traditional ecological knowledge (TEK) as matters of general environmental concern not addressed in a specific resource section. Discussion of both of these topics is integrated into the descriptions in Chapter 3, and the analysis in Chapter 4; see Section 3.1, Introduction to Affected Environment, for information on how these topics were discussed and analyzed.

[Provide summary of TEK and climate change analysis, as applicable, after completion of Chapters 3 and 4].

4.1.6 Unavoidable Adverse Effects

The Council on Environmental Quality (CE!Q) guidelines require agencies to evaluate "any adverse environmental effects which cannot be avoided should the proposal be implemented" (40 CFR 1502.16). Unavoidable adverse effects are those remaining after the project has complied with applicable stipulations and mitigation measures. A detailed discussion of beneficial and adverse effects is presented for each resource in Section 4.2 through Section 4.26. Unavoidable adverse impacts to resources in the EIS analysis area are described below.

4.1.7 Irreversible and Irretrievable Commitment of Resources

CEQ guidelines require an evaluation of "any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). A commitment of resources is irreversible when the impacts of the proposed action or alternatives would limit the future options for use of the resource. This applies primarily to non-renewable resources or to processes or resources that are renewable over long periods of time. Irretrievable commitments apply to loss of production or use of renewable resources. These opportunities are foregone for the period of the proposed action, during which the resource cannot be used. These decisions are reversible, but the utilization opportunities foregone are irretrievable. Irreversible and irretrievable commitments of resources for the alternatives analyzed in this EIS include:

- Ground disturbance, particularly due to project construction and operations, would cause irreversible impacts including land to be permanently altered, soils and bedrock to be permanently displaced, vegetation to be permanently removed, and wetlands to be permanently altered or filled. Any inadvertent effects to cultural resources or historic property would also result in an irreversible commitment of resources.
- Incidental or induced mortality of fish and wildlife resulting from project construction and operations, as well as any reduction in habitat value, could result in localized irretrievable commitment of these resources during the life of the project. Subsistence harvesting and recreational activity in areas occupied by facilities would not be possible during the life of the project, resulting in an irretrievable commitment of related resources.

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- Funds and labor would be irretrievably committed for project permitting and development.
- Consumption of renewable and non-renewable resources would be required for infrastructure development, including metals, aggregate, cement, wood, and other materials.
- Non-renewable resources (e.g., gasoline, diesel, natural gas, and electrical power generated from these fuels) would be irreversibly committed for project construction, operations, and closure. Fuels would be required to operate aircraft, motor vehicles, barges, vessels, machinery, and mining equipment.
- Water would be irretrievably committed for milling and processing.

4.1.8 Financial Assurance and Bonding

The State of Alaska will require financial assurance to ensure completion of reclamation and closure activities, including long-term post-closure management requirements, and for management of wastes to prevent water pollution.

PLP would be required to fully bond the project upfront, and would meet financial assurance obligations as the trust is being funded to the amount approved by the Alaska Department of Environmental Conservation and Alaska Department of Natural Resources (ADNR) (e.g., through a letter of credit or surety bond).

Prior to commencing construction, the PLP would develop and submit for approval a Project Reclamation and Closure Plan. PLP would also have associated financial assurance mechanisms in place. The Reclamation and Closure Plan and financial assurance obligations would be updated on a 5-year cycle in accordance with regulatory requirements to address any changes in closure and post-closure requirements and cost obligations.

PLP would develop a detailed reclamation and closure cost model to address all costs required for both the physical closure of the project and the funding of long-term post closure monitoring, water treatment, and site maintenance. The estimate would include the costs of closure planning and design, and mobilization of third-party equipment to site; detailed estimates of equipment and labor requirements for physical closure; capital, sustaining capital, and operating costs for water treatment and other long-term post-closure operations; and appropriate indirect costs and contingencies developed following ADNR guidance.

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/5/2018 9:33:15 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: draft CH 3
Attachments: 05_16_2018_PreDraft_Sec3.14_Soils.docx; 05_16_2018_PreDraft_Sec3.17_Groundwater.docx; 05_16_2018_PreDraft_Sec3.18_WaterQuality.docx; 05_16_2018_PreDraft_Sec3.22_Wetlands.docx; 3_14_01_Soil_Type_Distribution.pdf; 3_16_01_Bristol_Bay_Watershed.pdf; 3_16_02_Mine_Watershed.pdf; 3_16_03_Surface_Hydrology_Stations.pdf; 3_16_04_Meteorlogical_Monitoring_Stations.pdf; 3_16_05_Stream_Gaging_Stations_and_Watersheds.pdf; 3_17_02_Cross_Section_E10.pdf; 3_17_03_Cross_Section_L1.pdf; 3_17_04_Cross_Section_M1.pdf; 3_17_05_Cross_Section_S1.pdf; 3_17_06_Shallow_Groundwater_Contours.pdf; 3_17_07_Hydraulic_Conductivity_Deposit_Area.pdf; 3_17_08_Hydraulic_Conductivity_Outside_Deposit_Area.pdf; 3_17_09_Hydraulic_Conductivity_Deep_Bedrock.pdf; 3_17_10_Piezometric_Elevations_MW-11.pdf; 3_17_11_Piezometric_Elevations_MW-5.pdf; 3_22_01_Wet_Mapping_Overview.pdf; 3_22_02_Wet_Mapping_Mine.pdf; 3_22_03_Transportation_North.pdf; 3_22_04_Transportation_South.pdf; 3_22_05_Amakdedori_Port.pdf; 3_22_06_PipelineKenai.pdf; 3_26_01_Veg_Mapping_Overview.pdf; 3_26_02_Veg_Mapping_Mine.pdf; 3_26_03_Transportation_North.pdf; 3_26_04_Transportation_South.pdf; 3_26_05_Amakdedori_Port.pdf; 3_26_06_PipelineKenai.pdf; 05_11_2018_Updates_to_Proposed_Project.pdf; 05_16_2018_PreDraft_Sec3.1_Intro.docx; 05_16_2018_PreDraft_Sec3.5_Recreation.docx; 05_16_2018_PreDraft_Sec3.11_Aesthetics.docx

-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US) [mailto:Shane.M.Mccoy@usace.army.mil]
Sent: Tuesday, June 05, 2018 9:55 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: draft CH 3

Attached are the draft sections of Ch 3 for your agency to assist in developing.

Shane

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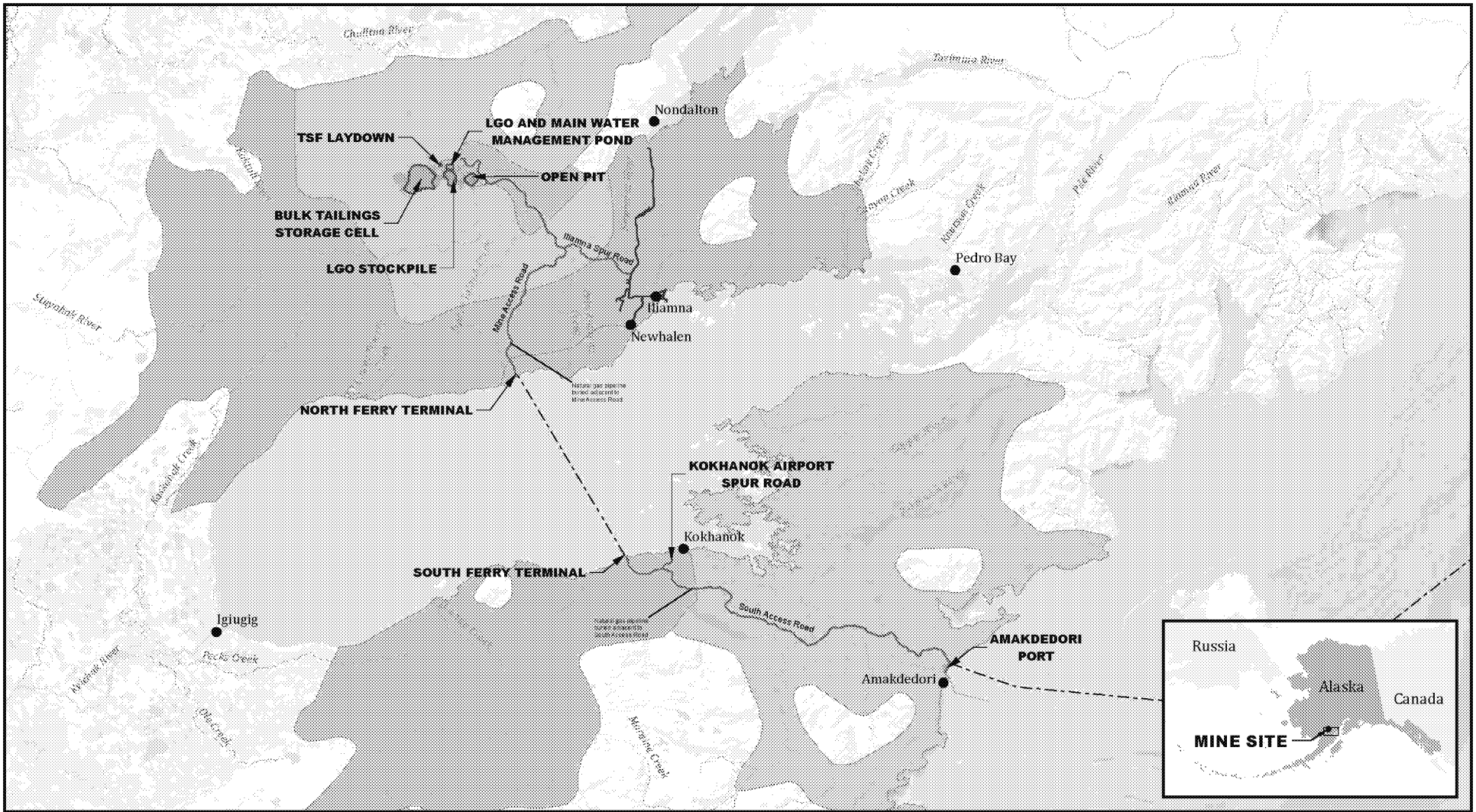


Sources: USDA SCS 1979

US Army Corps of Engineers

5 0 5 10
Miles

Project Components

- Project Features
- Transportation Corridor
- Natural Gas Pipeline

Exploratory Soil Survey of Alaska (USDA SCS, 1979)

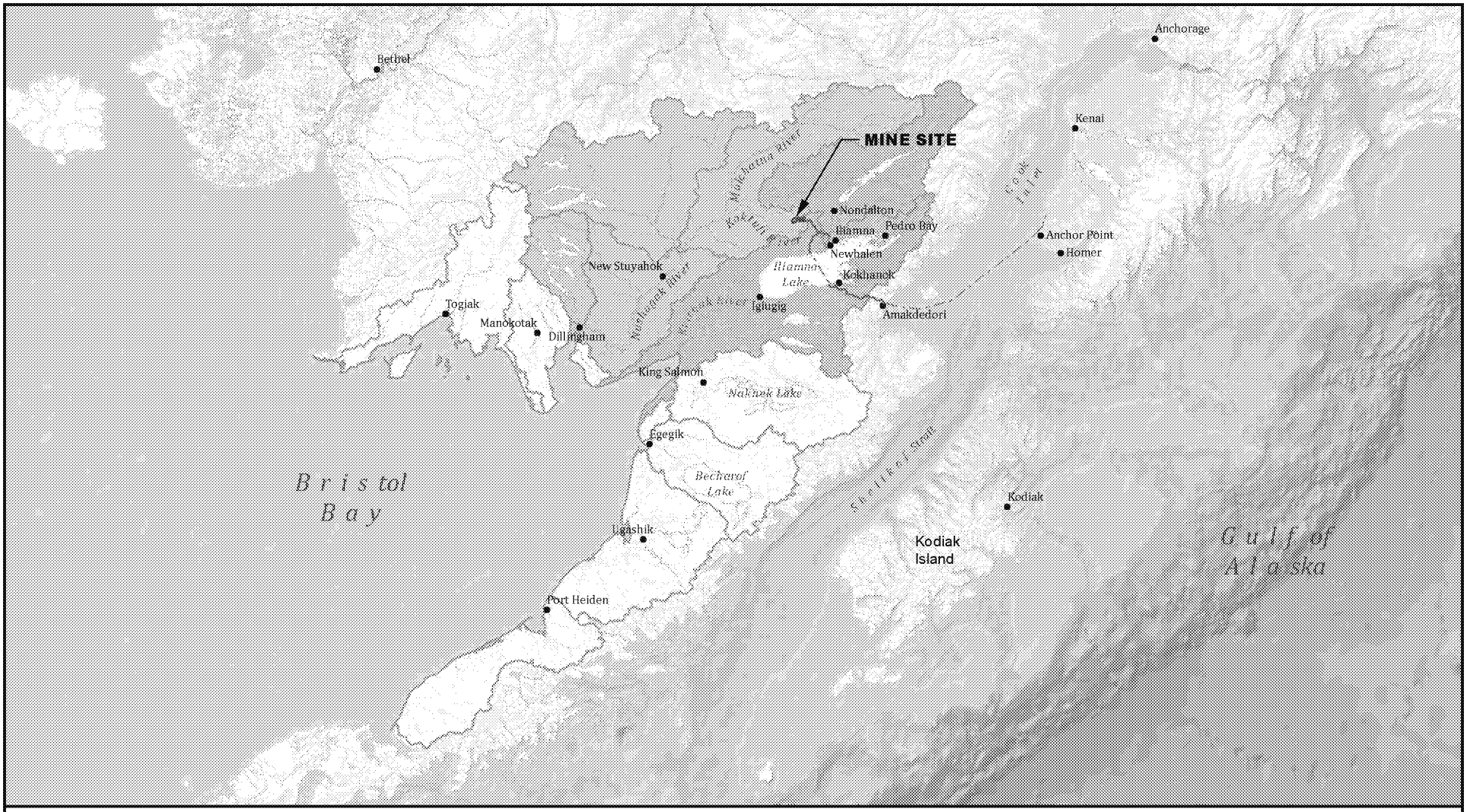
- HY4 - Pergelic Cryofibrists, nearly level
- IA7 - Cryandepts, very gravelly, nearly level to rolling-Pergelic Cryofibrists, nearly level.
- IA9 - Typic Cryandepts, very gravelly, hilly to steep association
- IA17 - Dystric Lithic Cryqndepts, loamy, hilly to steep association

SOIL TYPE DISTRIBUTION

PEBBLE MINE EIS

FIGURE 3.14-1

AMERICAN OVERSIGHT



Sources: USGS 2017

US Army Corps of Engineers

25 0 25 50

Miles

Project Components

- Project Features
- Natural Gas Pipeline
- Transportation Corridor

Watersheds

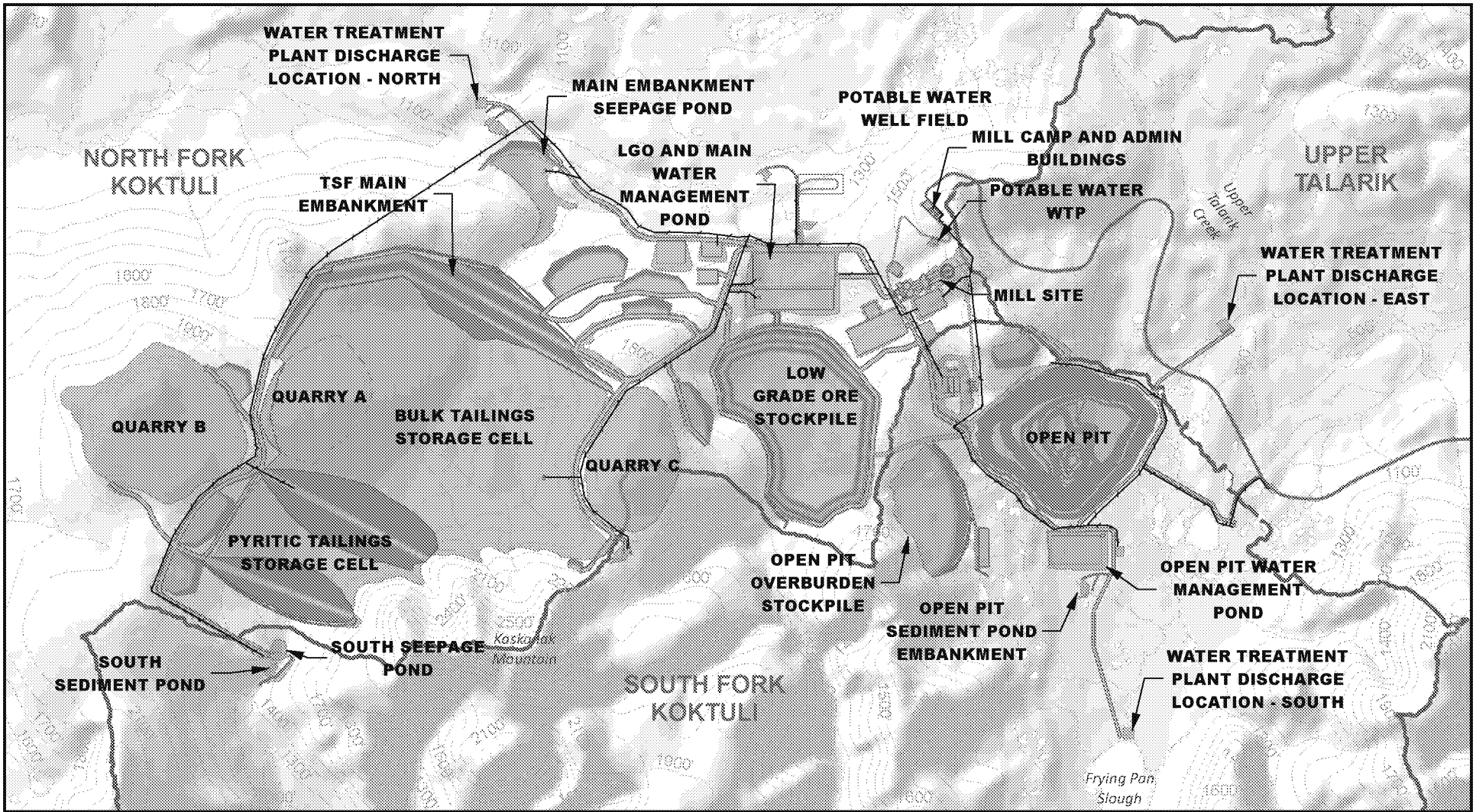
- Nushagak Drainage
- Kvichak Drainage
- Subbasin (HUC8) Bristol Bay

BRISTOL BAY WATERSHED

PEBBLE MINE EIS

FIGURE 3.16-1

AMERICAN OVERSIGHT



Sources: HDR 2012

US Army Corps of Engineers

0.5 0 0.5 1
Miles

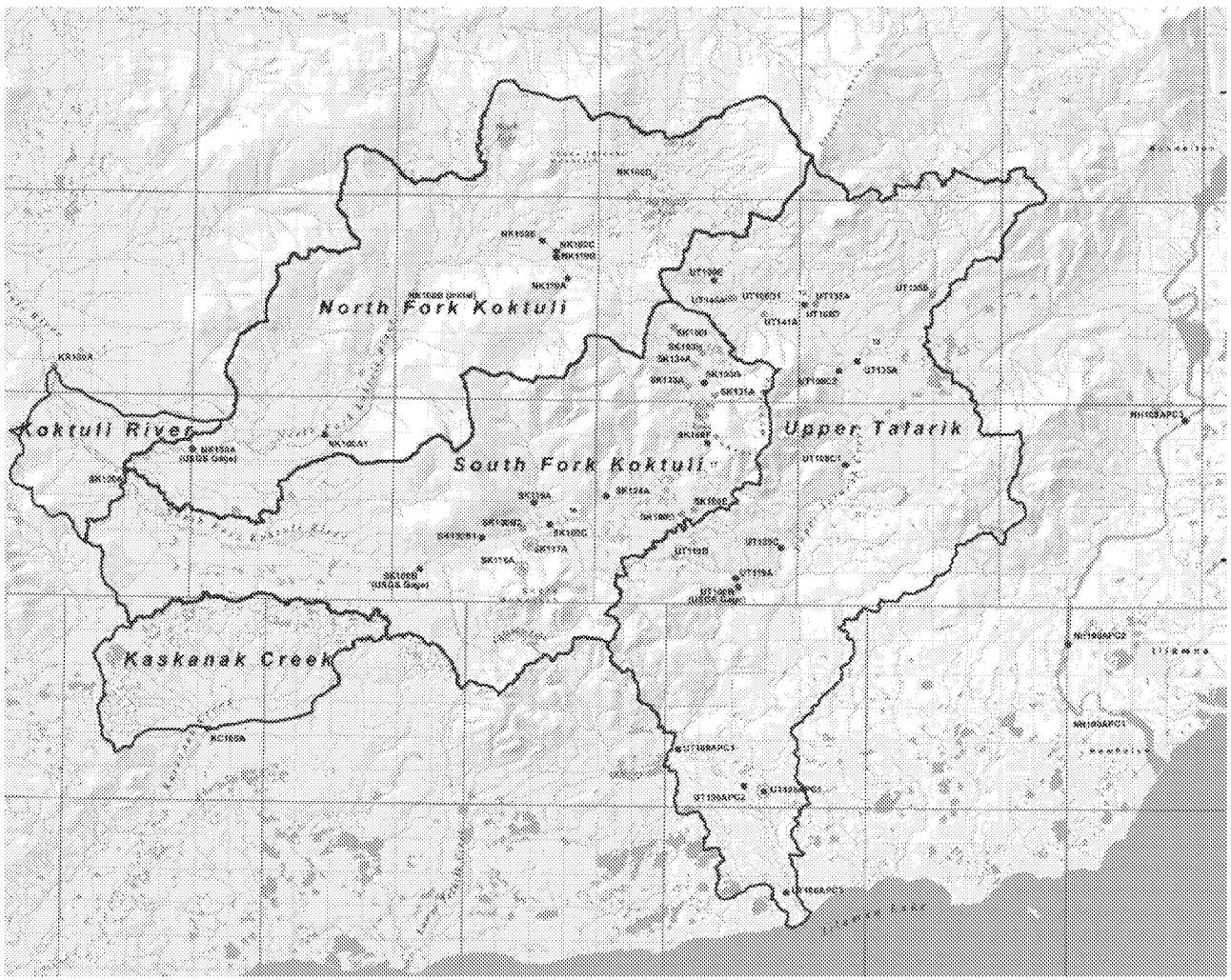
Project Components
- Project Features
- Natural Gas Pipeline
- Transportation Corridor
- Watershed
- 100' Contour (Existing)

WATERSHEDS AT THE MINE SITE

PEBBLE MINE EIS

FIGURE 3.16-2

AMERICAN OVERSIGHT



Sources: Pebble

US Army Corps of Engineers

SK100B2: Example of Hydrologic Station Identification Number

Baseline Hydrologic Stations

- Continuous
- Instantaneous
- Cominco Stations
- New 2008 Stations

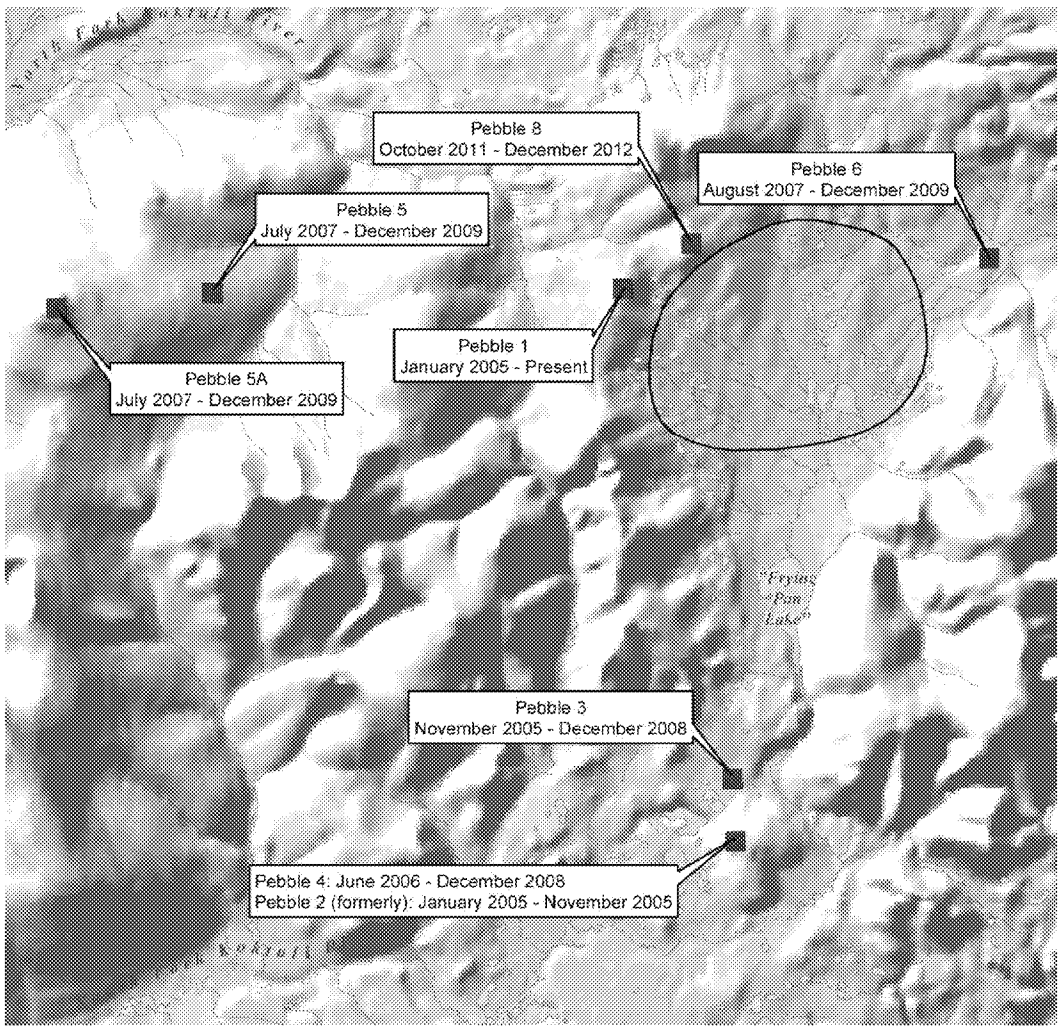
- Major Drainage Boundary
- Stream
- Water Feature
- General Deposit Location
- Village Corporation Boundary

SURFACE HYDROLOGY STATIONS IN THE MINE STUDY AREA

PEBBLE MINE EIS

FIGURE 3.16-3

AMERICAN OVERSIGHT



Sources: Pebble

US Army Corps of Engineers

Legend

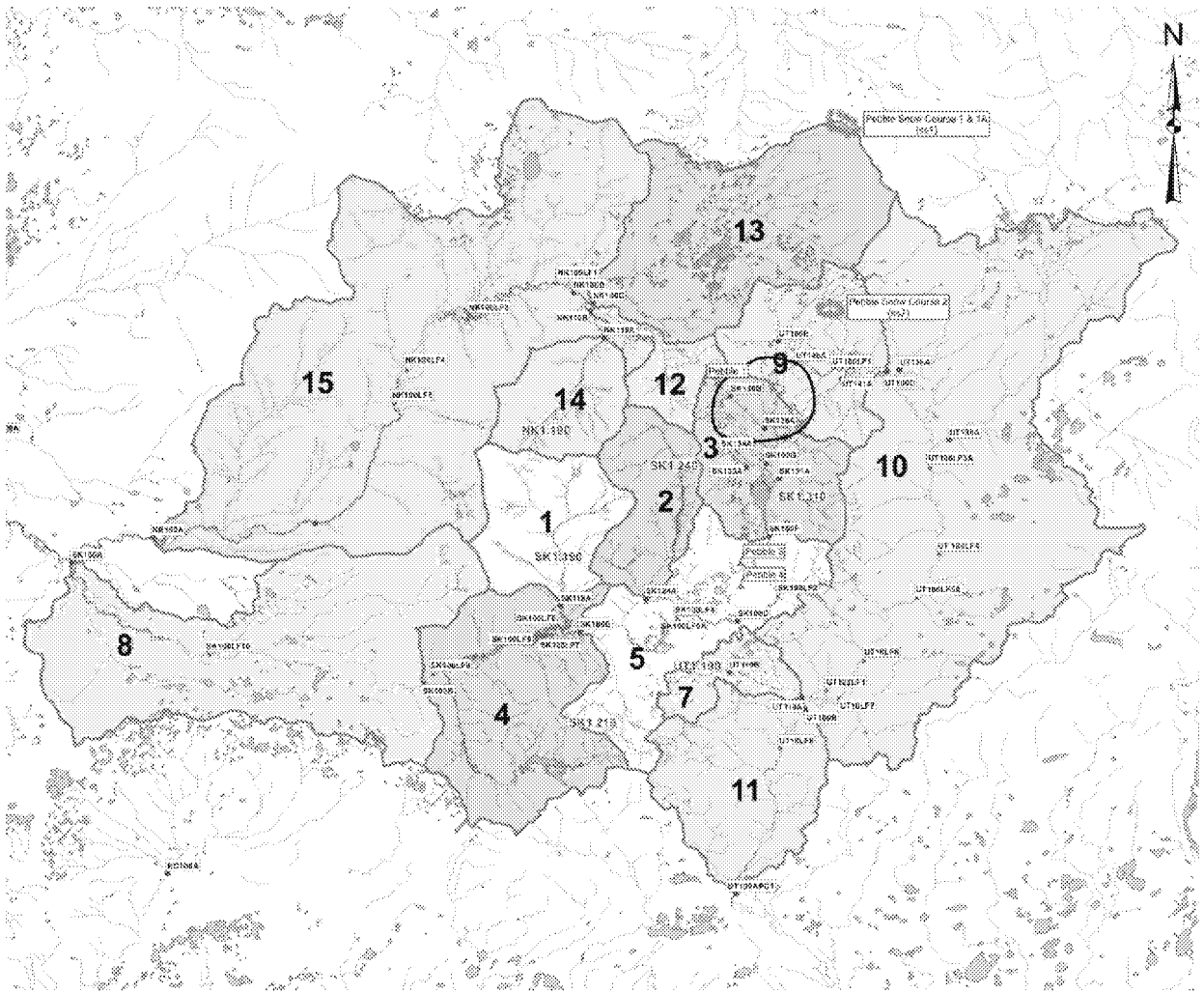
- Meteorological Stations
- General Deposit Location

METEOROLOGICAL MONITORING STATIONS IN THE MINE STUDY AREA

PEBBLE MINE EIS

FIGURE 3.16-4

AMERICAN OVERSIGHT



Sources: Pebble

US Army Corps of Engineers

- Snow Course Station
- Meteorological Station
- Stream Gaging Station
- Low Flow Stream Gaging Station

- General Deposit Location
- Lakes
- Rivers
- Subcatchment

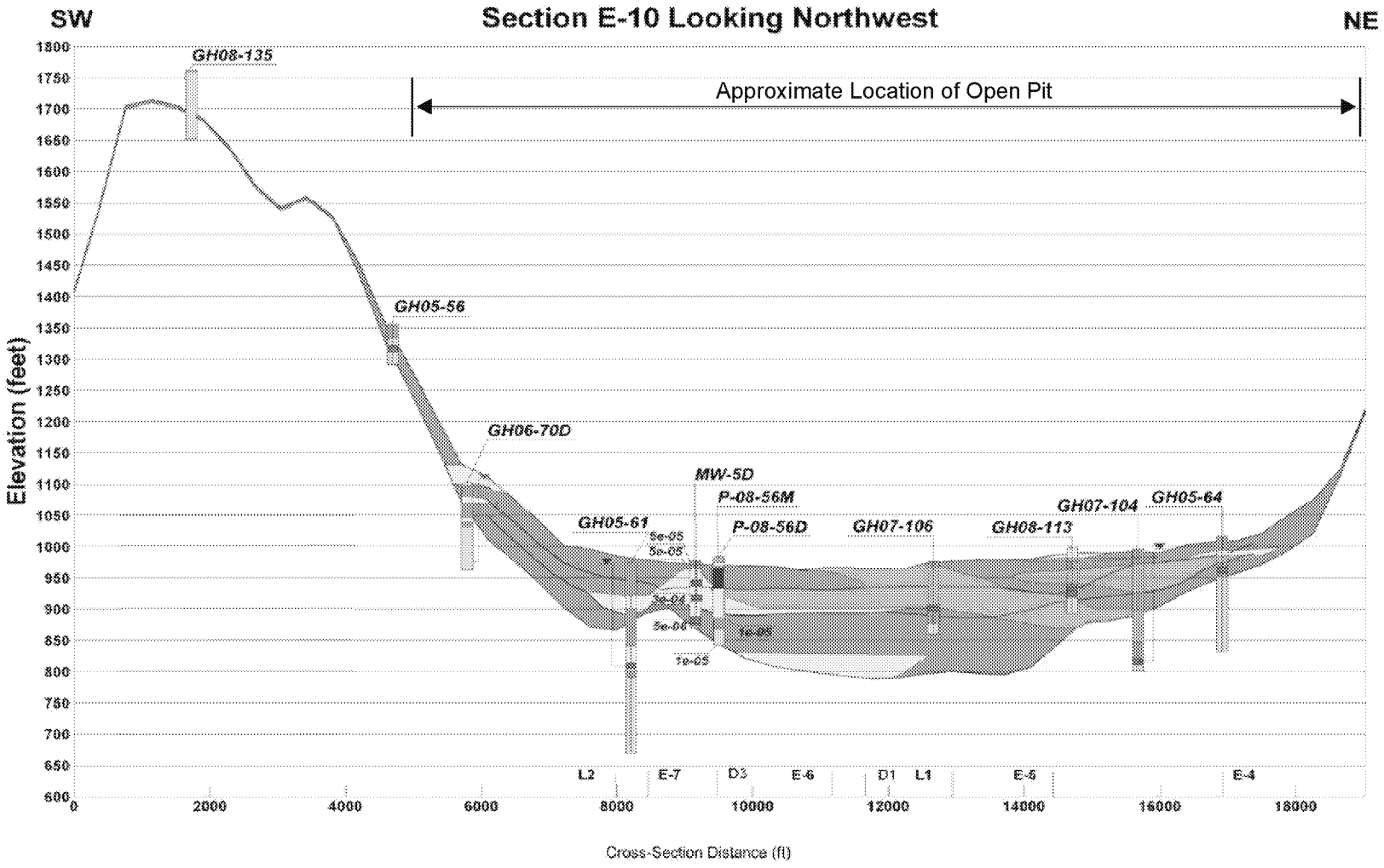
Note - numbers inside subcatchment denote the subcatchment number

STREAM GAGING STATIONS AND WATERSHED BOUNDARIES

PEBBLE MINE EIS

FIGURE 3.16-5

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

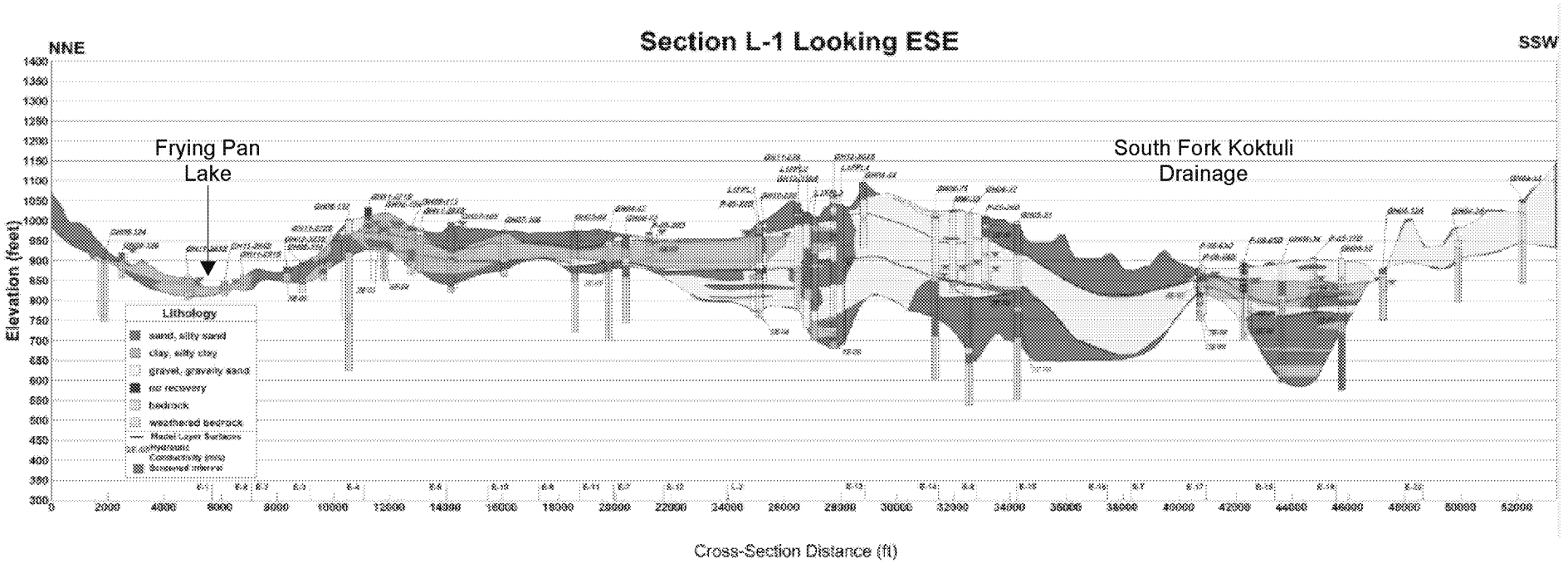
- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- Hydraulic Conductivity (m/s)
- Screened Interval
- Well Name
- Intersecting Cross-Section

CROSS SECTION E-10
PEBBLE DEPOSIT AREA

PEBBLE MINE EIS

FIGURE 3.17-2

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

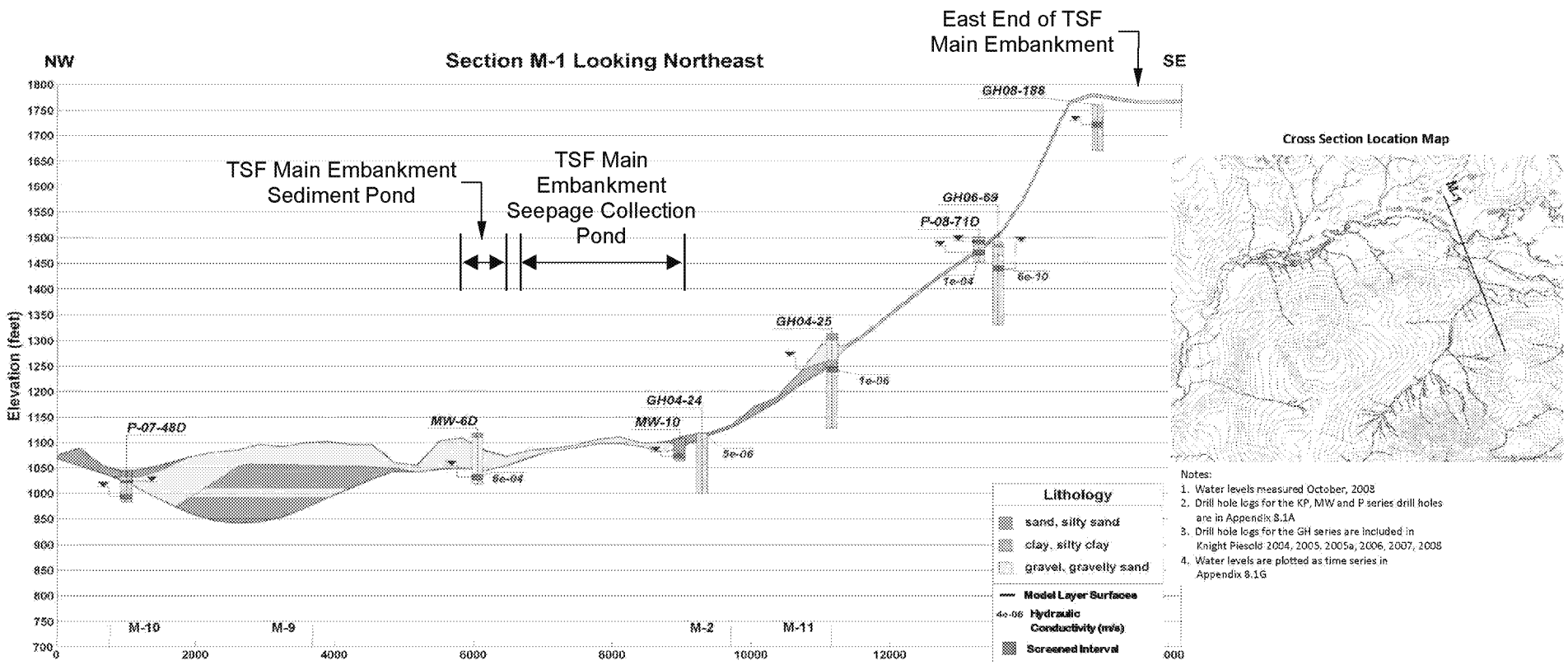
- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- 4e-05 Hydraulic Conductivity (m/s)
- Screened Interval
- Well Name
- Intersecting Cross-Section

CROSS SECTION L-1
FRYING PAN LAKE AND SOUTH FORK KOKTULI DRAINAGE

PEBBLE MINE EIS

FIGURE 3.17-3

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

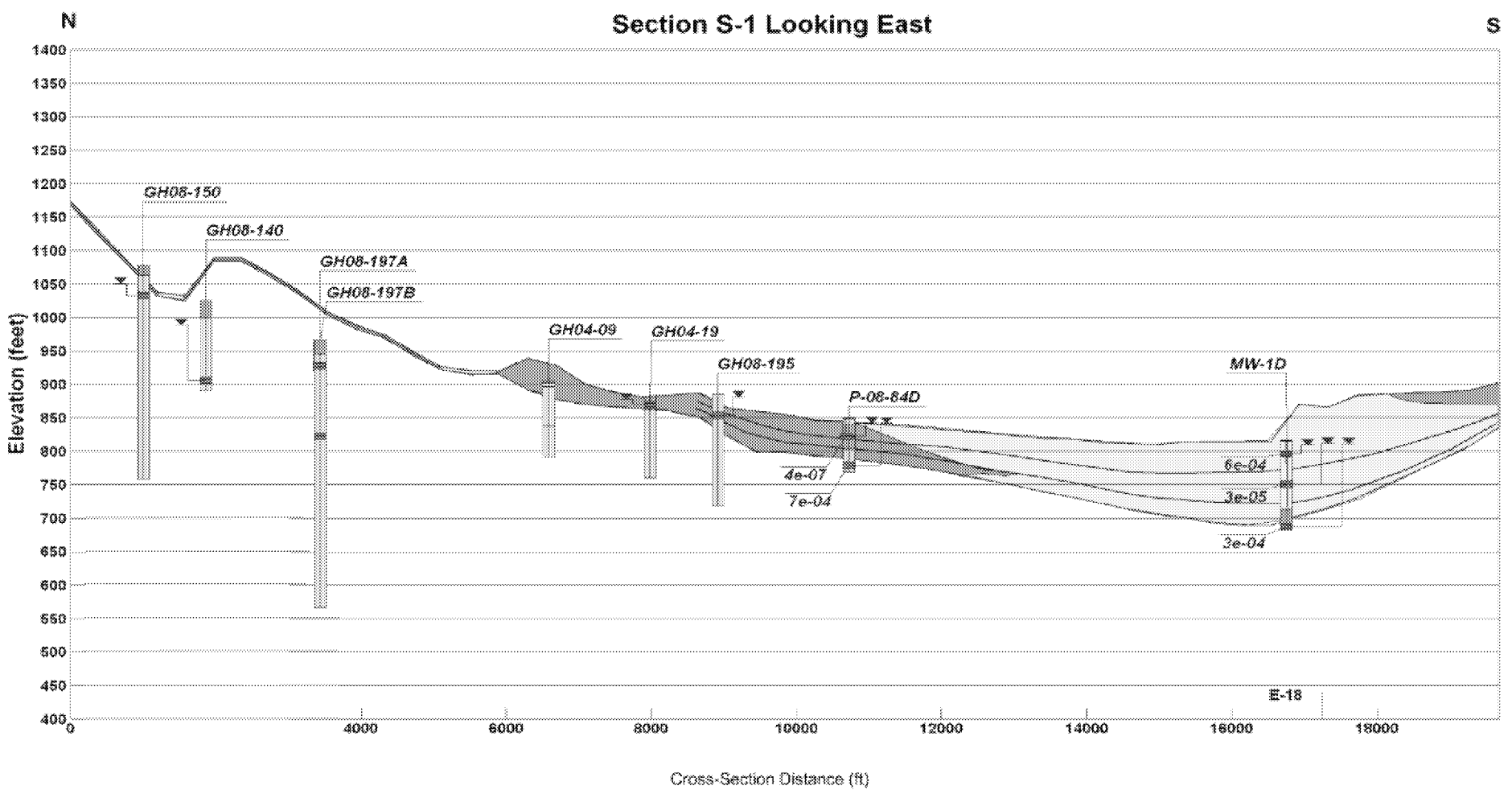
US Army Corps of Engineers

CROSS SECTION M-1
NORTH FORK KOKTULI DRAINAGE

PEBBLE MINE EIS

FIGURE 3.17-4

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

Lithology

- sand, silty sand
- clay, silty clay
- gravel, gravelly sand
- no recovery
- bedrock
- weathered bedrock

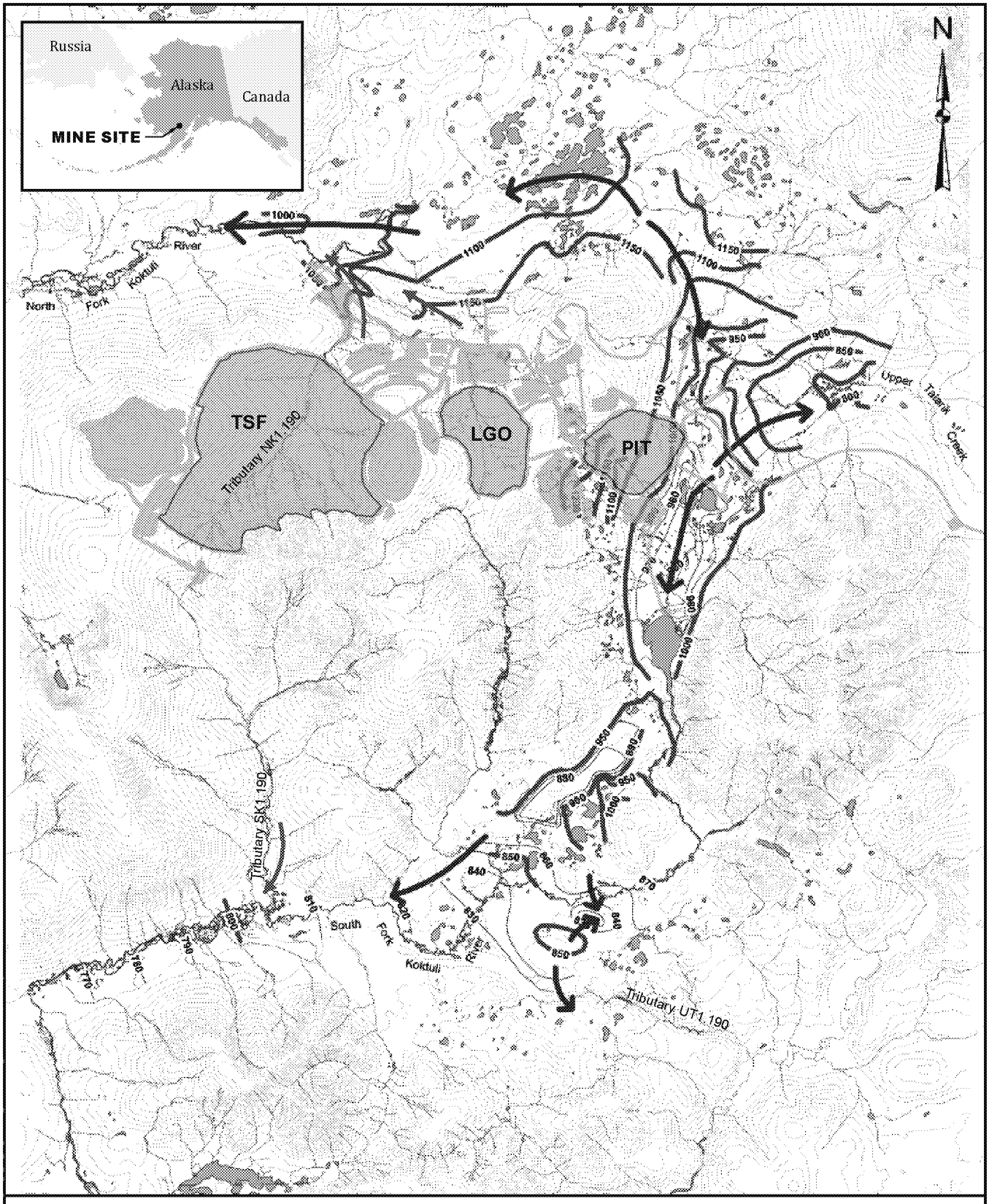
- Water level elevation (data from October, 2008)
- Model Layer Surfaces
- 4e-05 Hydraulic Conductivity (m/s)
- Screened Interval
- GH08-xx Well Name
- Intersecting Cross-Section

CROSS SECTION S-1
SOUTH FORK KOKTULI DISCHARGE AREA

PEBBLE MINE EIS

FIGURE 3.17-5

AMERICAN OVERSIGHT



Sources: Pebble; USGS; ADNR

US Army Corps of Engineers

0.5 0 0.5 1

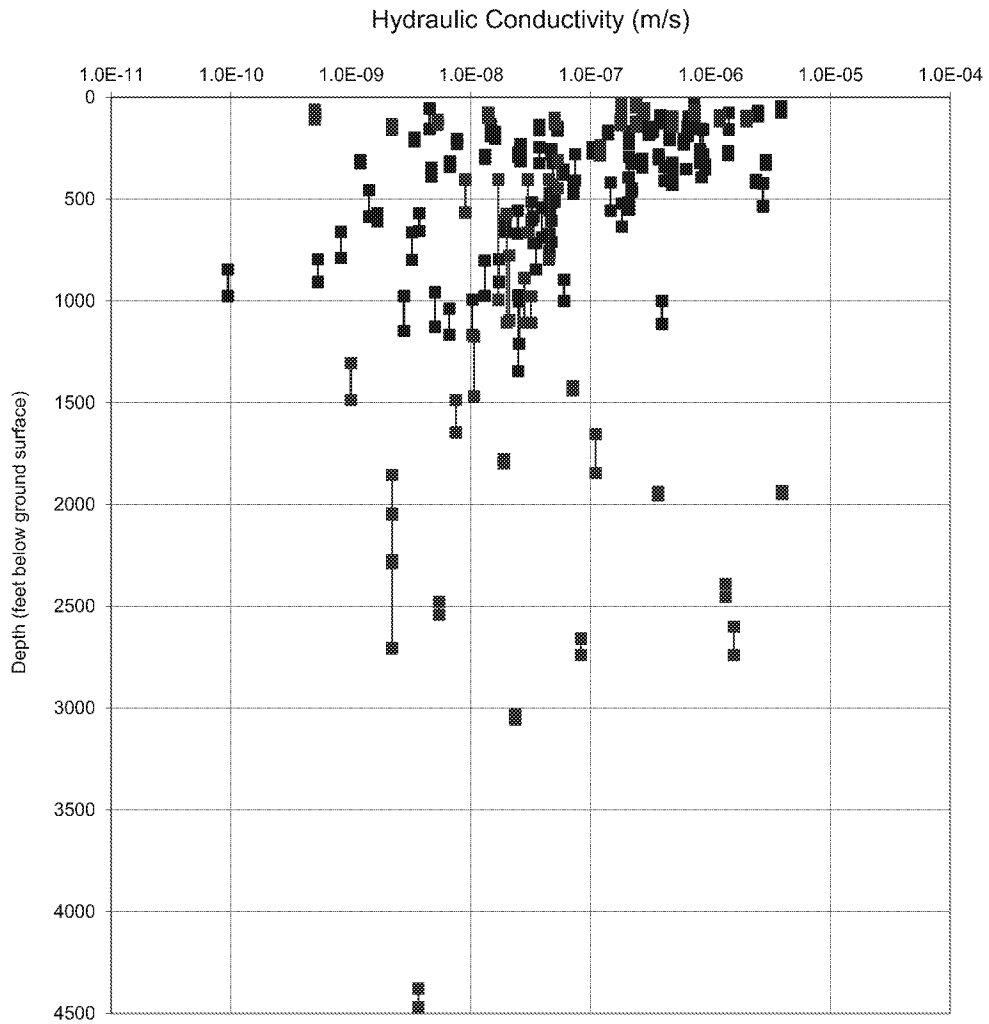
Miles

- Project Features
- Shallow GWE Contours
  - 10 ft
  - 100 & 50 ft
- Lakes
- Rivers
- 50-ft Contour Interval
- Groundwater Flow Direction

SHALLOW GROUNDWATER CONTOURS
APRIL 2011 SEASONAL LOW WATER

PEBBLE MINE EIS **FIGURE 3.17-6**

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

Packer Testing Interval Collected by Knight Piesold (2004 to 2012)

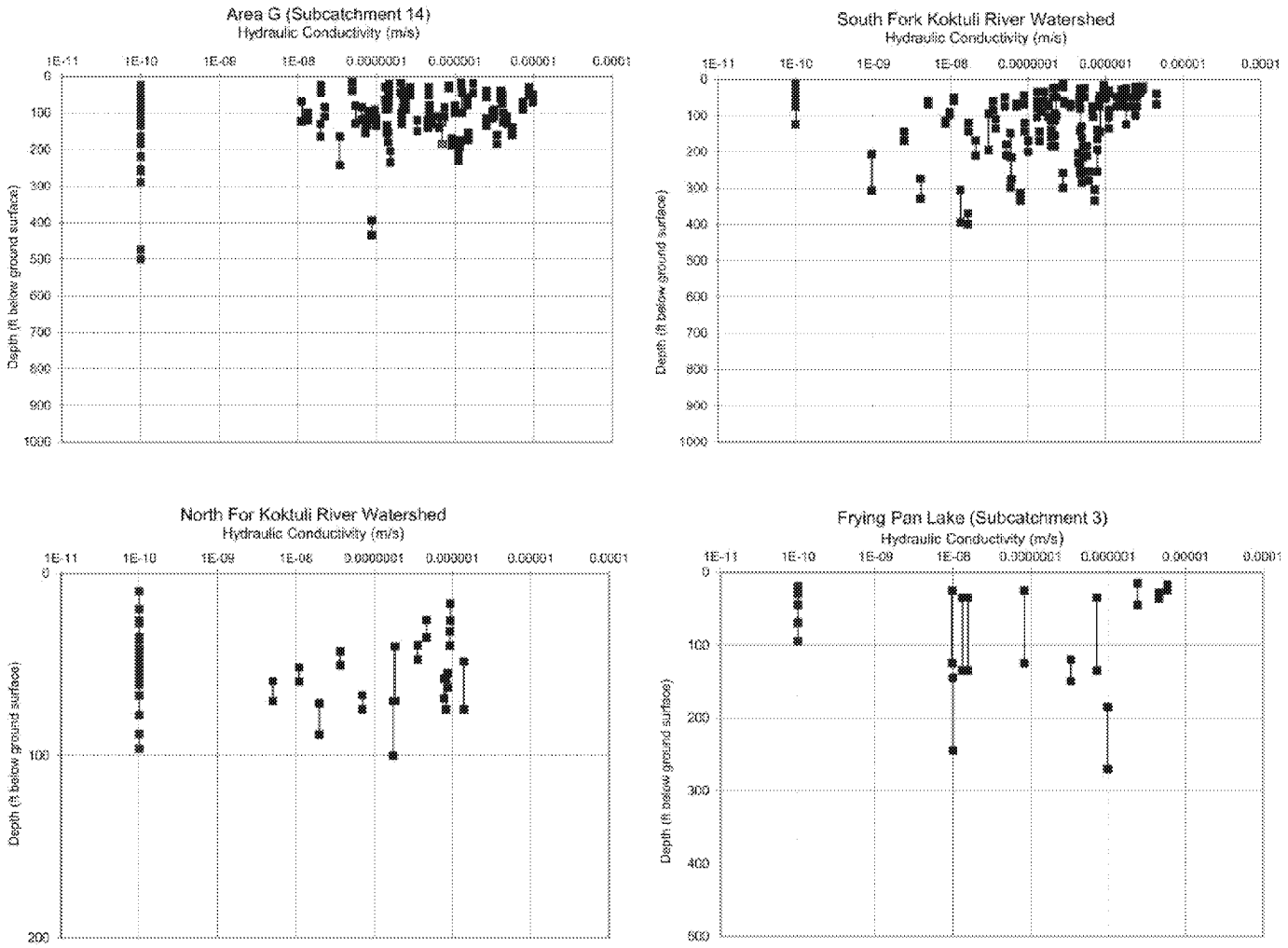
Packer Testing Interval Collected by SLR

HYDRAULIC CONDUCTIVITY MEASUREMENTS IN PEBBLE DEPOSIT AREA

PEBBLE MINE EIS

FIGURE 3.17-7

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

Packer Testing Intervals Collected by Knight Piesold (2004 to 2012)

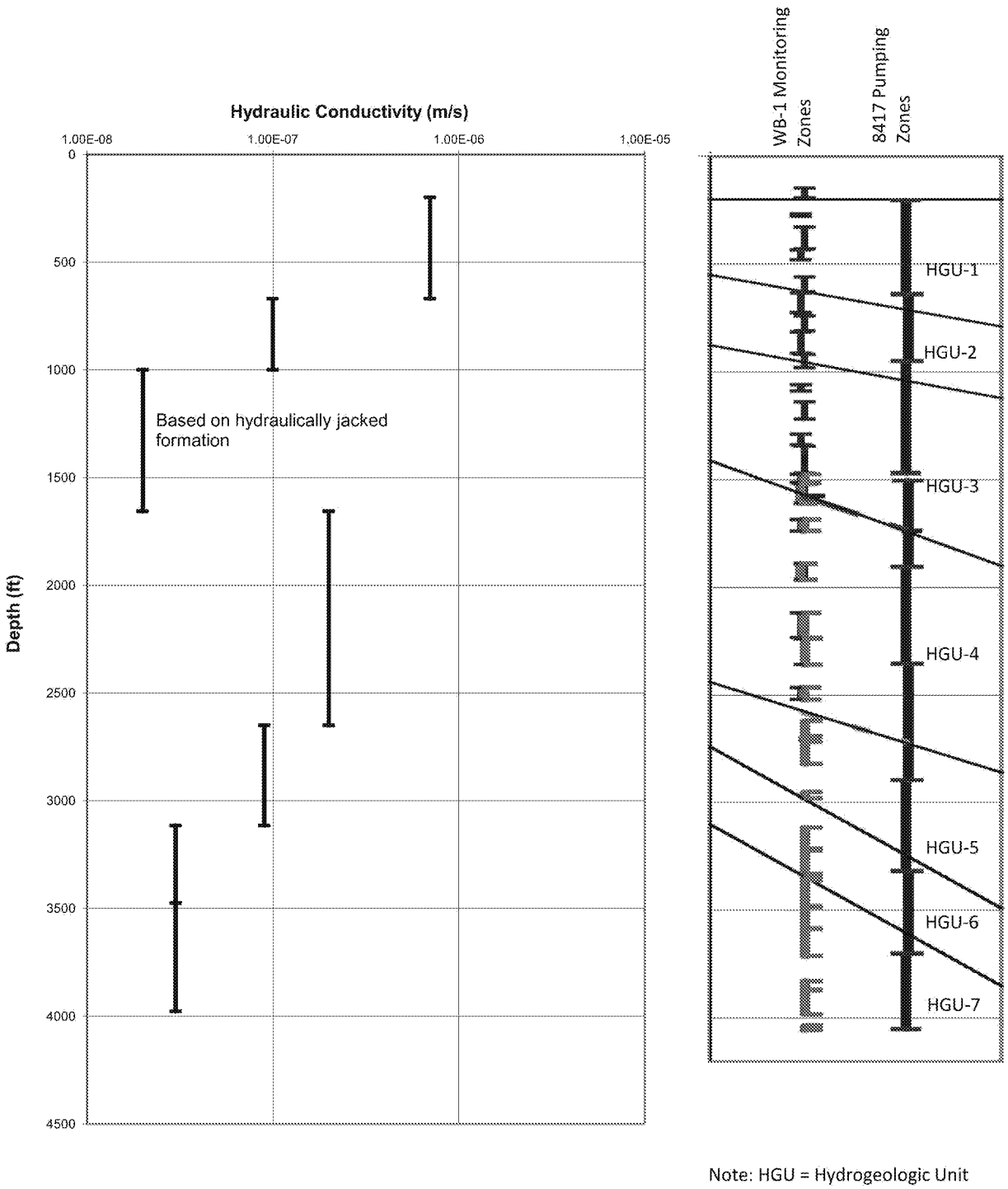
Packer Testing Interval with No Water Take

HYDRAULIC CONDUCTIVITY MEASUREMENTS OUTSIDE OF PEBBLE DEPOSIT AREA

PEBBLE MINE EIS

FIGURE 3.17-8

AMERICAN OVERSIGHT



Note: HGU = Hydrogeologic Unit

Sources: Schlumberger Water Services 2015

US Army Corps of Engineers

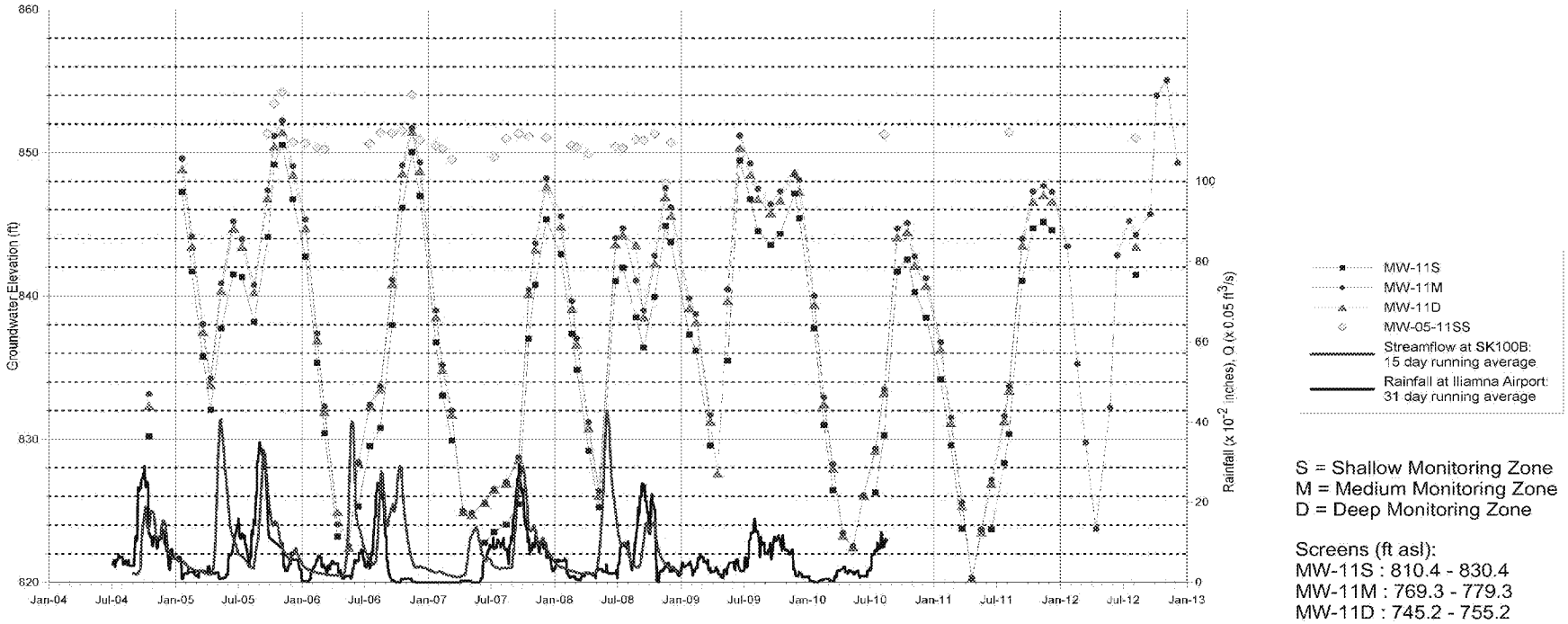
Avg K in Depth Interval measured at WB-1
top of HGU
bottom of HGU
pump test intervals
1st Set of Probes
2nd set of probes
ZE
ZEC

HYDRAULIC CONDUCTIVITY PROFILE FOR DEEP BEDROCK

PEBBLE MINE EIS

FIGURE 3.17-9

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

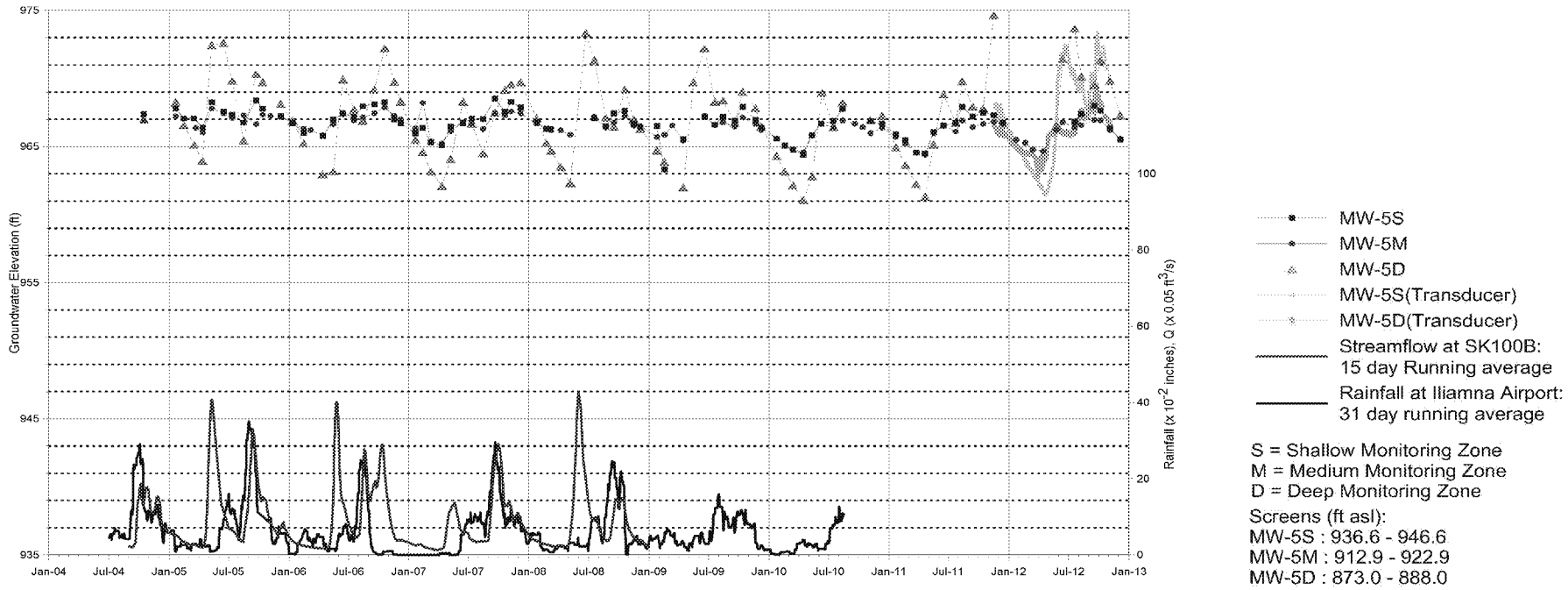
US Army Corps of Engineers

TIME SERIES OF PIEZOMETRIC ELEVATIONS AT MW-11, SOUTH FORK KOKTULI FLATS AREA

PEBBLE MINE EIS

FIGURE 3.17-10

AMERICAN OVERSIGHT



Sources: Schlumberger Water Services 2015

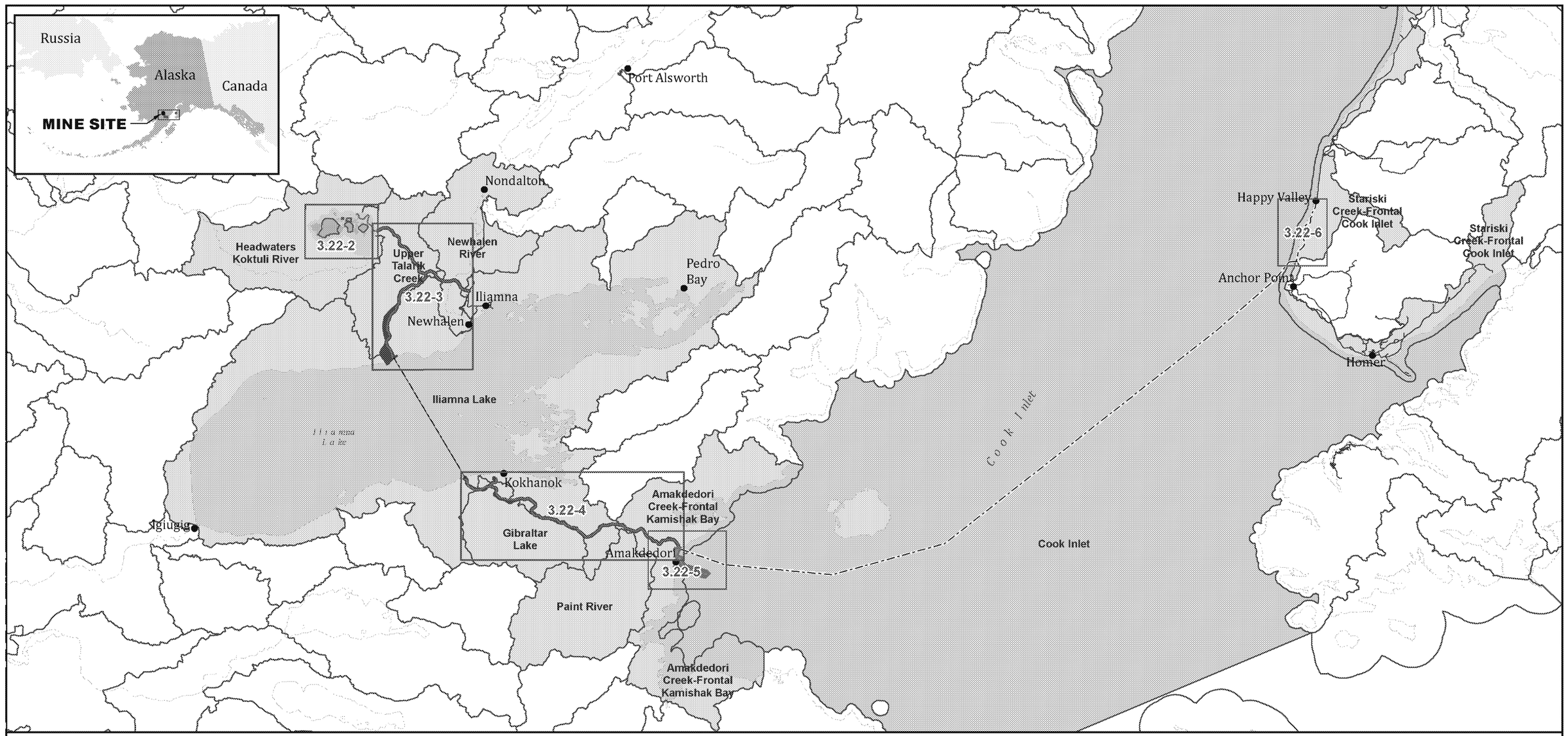
US Army Corps of Engineers

TIME SERIES OF PIEZOMETRIC ELEVATIONS AT MW-5, PEBBLE DEPOSIT AREA

PEBBLE MINE EIS

FIGURE 3.17-11

AMERICAN OVERSIGHT



Sources: HDR 2017; USGS 2017

US Army Corps of Engineers

0 10 20 30
Miles

Wetlands Mapping Study Areas
- Mine Site Mapping Area
- Transportation and Natural Gas Pipeline Corridor Mapping Area
- Amakdedori Port Mapping Area
- Natural Gas Pipeline Mapping Area

Project Components
- Project Features
- Natural Gas Pipeline
- Transportation Corridor

Other Features
- Roads
- Project Watershed Boundaries (HUC10)
- Watershed Boundaries (HUC10)
- Map Page Index

WETLANDS MAPPING AREA OVERVIEW

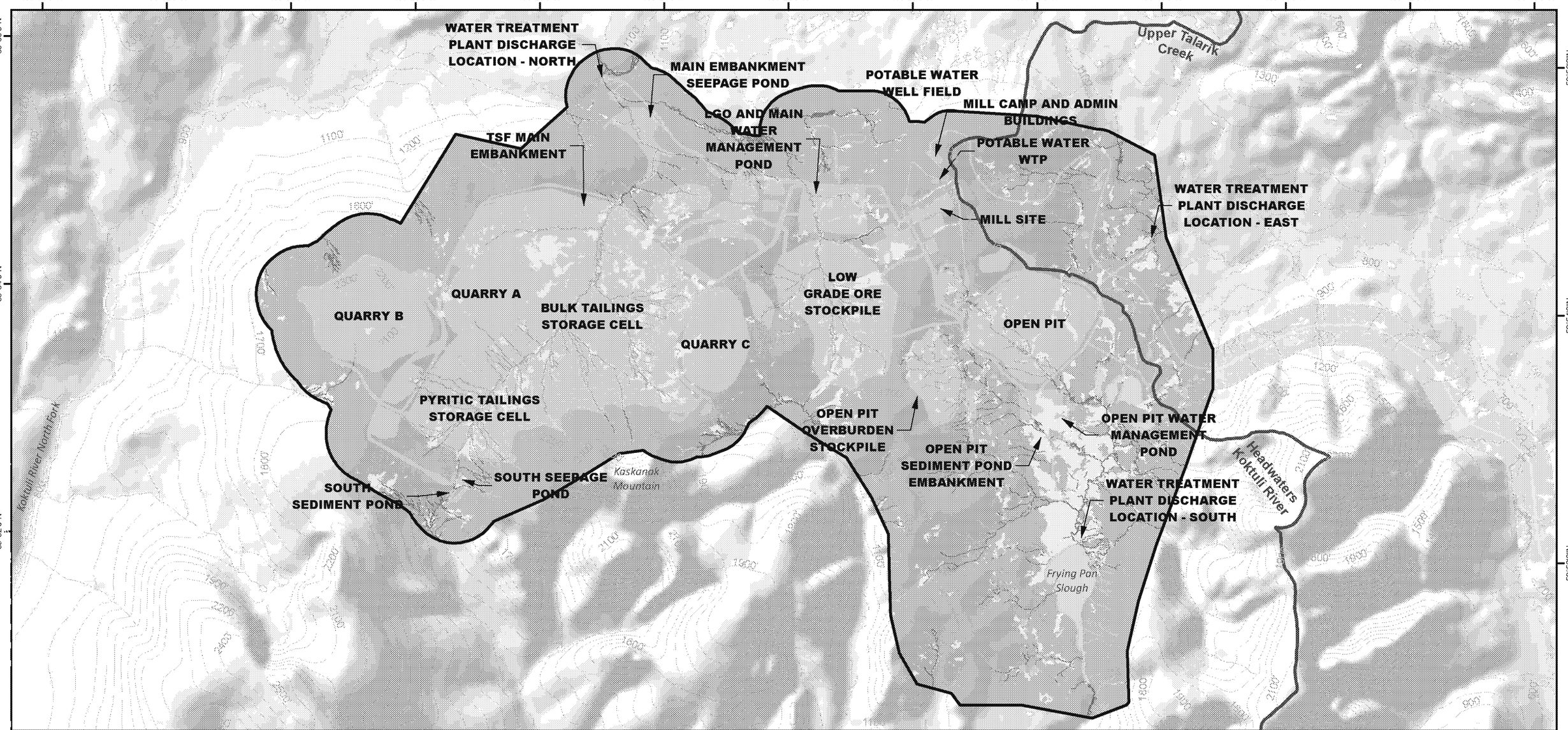
PEBBLE MINE EIS

FIGURE 3.22-1

AMERICAN OVERSIGHT

155°34'0"W 155°32'0"W 155°30'0"W 155°28'0"W 155°26'0"W 155°24'0"W 155°22'0"W 155°20'0"W 155°18'0"W 155°16'0"W 155°14'0"W 155°12'0"W 155°10'0"W

59°56'0"N 59°54'0"N 59°52'0"N



Sources: HDR 2017; USGS 2017

US Army Corps of Engineers®

0 0.5 1 1.5 Miles

NWI Class

- Aquatic Bed
- Broad Leaved Deciduous Shrubs
- Deciduous Forest
- Herbaceous
- Lakes
- Ponds
- Rivers/Streams (Intermittent)
- Rivers/Streams (Perennial)
- Upland
- Mine Site Mapping Area

Project Components

- Project Footprint

Other Features

- 100' Contour (Existing)
- Watershed Boundary (HUC10)

WETLANDS MAPPING
MINE SITE MAPPING AREA

PEBBLE MINE EIS

3.22-2

AMERICAN OVERSIGHT

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N 59°35'0"N

154°55'0"W 155°0'0"W 155°5'0"W 155°10'0"W 155°15'0"W

MS-N03
NEWHALEN RIVER RD
Newhalen
AIRPORT RD
Pike Lake
Newhalen River
NEWHALEN RIVER BRIDGE
MS-N02
Newhalen River
Upper Talarik Creek
Newhalen River
Upper Talarik Creek
ILIAMNA SPUR ROAD
Newhalen River
Iliamna Lake
MS-N01
Pete Andrews Creek
Iliamna Lake
MS-N01
Middle Chulitna River
MINE ACCESS ROAD
NORTH FERRY TERMINAL
UPPER TALARIK CREEK BRIDGE
MS-T02
MS-T04
MINE ACCESS ROAD
MS-T07
Upper Talarik Creek Headwaters Koktuli River
MS-T01
Upper Talarik Creek Headwaters Koktuli River
Upper Talarik Creek
Iliamna Lake
Upper Talarik Creek
NATURAL GAS PIPELINE
MS-T05
MS-T06

Sources: HDR 2017; USGS 2017

US Army Corps of Engineers

0 0.5 1 1.5 Miles

NWI Class
- Aquatic Bed
- Broad Leaved Deciduous Shrubs
- Deciduous Forest
- Evergreen Shrubs
- Herbaceous
- Lakes
- Ponds
- Rivers/Streams (Intermittent)
- Rivers/Streams (Perennial)
- Upland

Transportation and Natural Gas Pipeline Corridor Mapping Area

Project Components
- Project Footprint

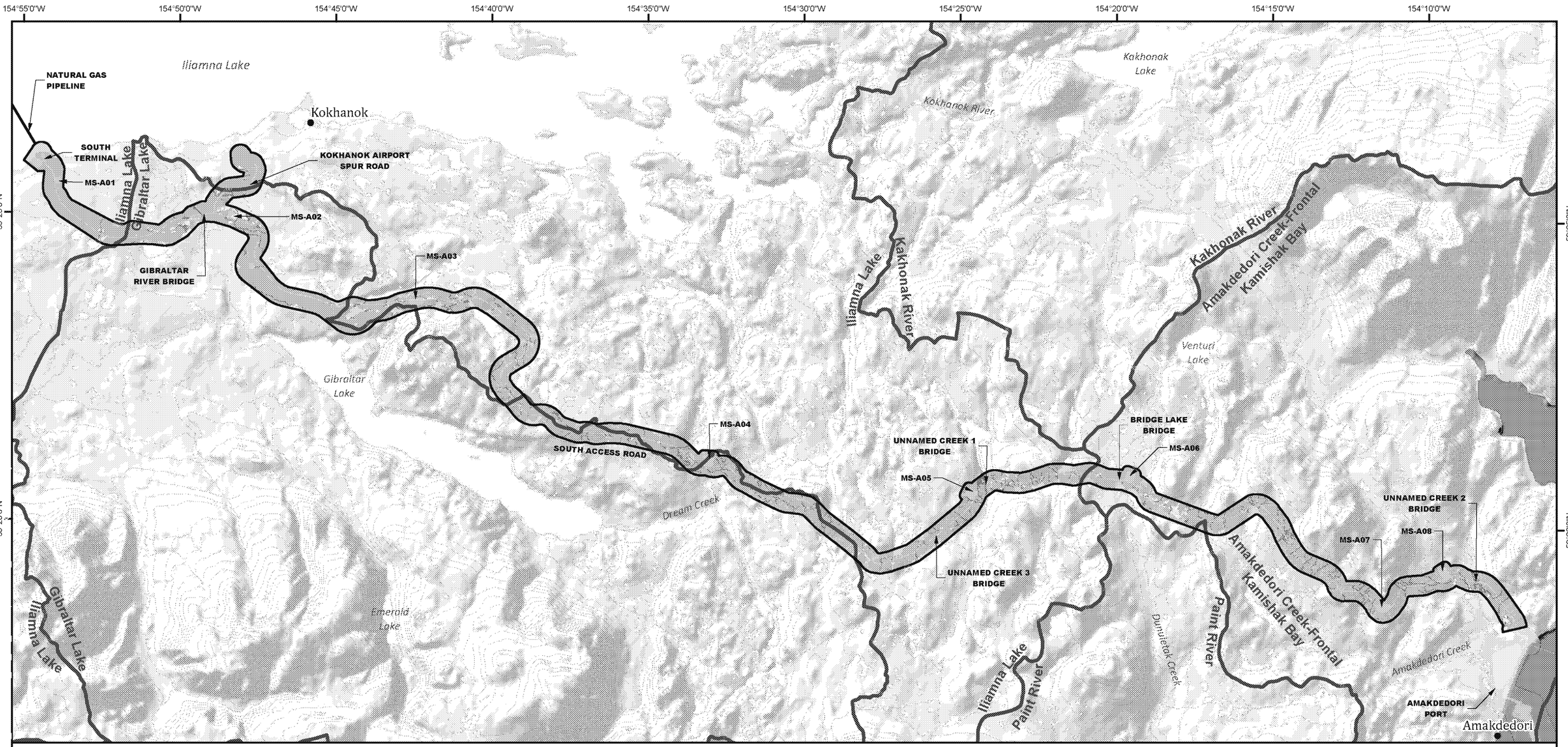
Other Features
- 100' Contour (Existing)
- Roads
- Watershed Boundary (HUC10)

WETLANDS MAPPING TRANSPORTATION AND NATURAL GAS PIPELINE CORRIDOR MAPPING AREA NORTH OF ILIAMNA LAKE

PEBBLE MINE EIS

3.22-3

AMERICAN OVERSIGHT



Sources: HDR 2017; USGS 2017

US Army Corps of Engineers

0 1 2 3 Miles

NWI Class

- Aquatic Bed
- Broad Leaved Deciduous Shrubs
- Deciduous Forest
- Evergreen Shrubs
- Herbaceous
- Lakes
- Marine (Intertidal)
- Marine (Subtidal)
- Ponds
- Rivers/Streams (Intermittent)
- Rivers/Streams (Perennial)
- Upland

- Transportation and Natural Gas Pipeline Corridor Mapping Area

Project Components

- Project Footprint

Other Features

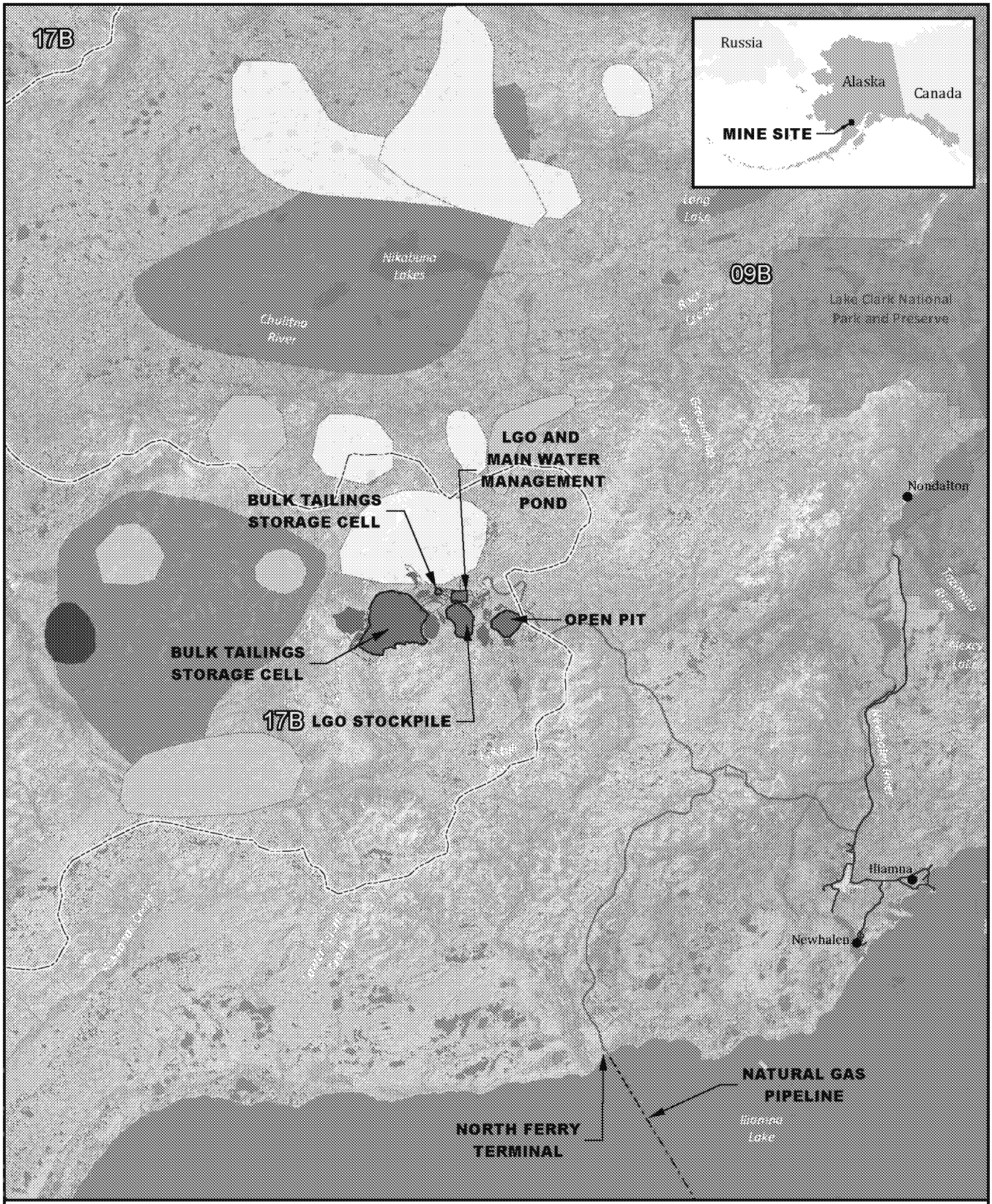
- 100' Contour (Existing)
- Watershed Boundary (HUC10)

WETLANDS MAPPING TRANSPORTATION AND NATURAL GAS PIPELINE CORRIDOR MAPPING AREA SOUTH OF ILIAMNA LAKE

PEBBLE MINE EIS

3.22-4

AMERICAN OVERSIGHT



Sources: Pebble 2005

US Army Corps of Engineers

1 0 1 2
Miles

Game Management Units

Caribou Group Size
- 7,500 - 30,000
- 30,001 - 70,000
- 70,001 - 100,000
- > 100,000

Project Components
- Project Features
- Natural Gas Pipeline
- Transportation Corridor

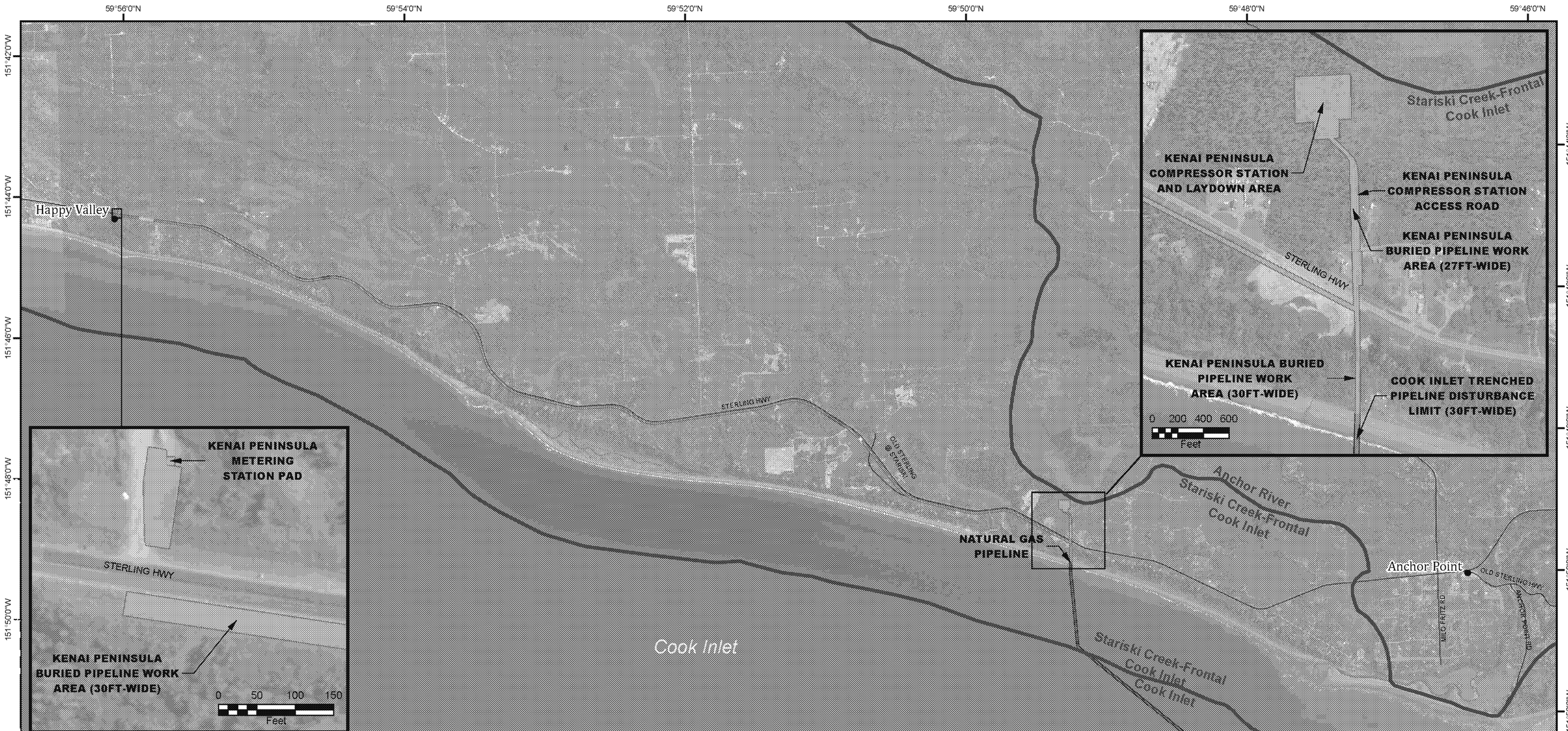
Other Features
- Roads
- City/Town
- National Park

CARIBOU GROUP LOCATIONS FROM RADIO-TELEMETRY SURVEYS NEAR THE MINE SITE

PEBBLE MINE EIS

FIGURE 3.23-5

AMERICAN OVERSIGHT



Sources: Kenai Watershed Forum 2013; HDR 2017; USGS 2017

US Army Corps of Engineers

0 2,000 4,000 6,000
Feet

NWI Class
- Forest
- Herbaceous
- Marine (Intertidal)
- Marine (Subtidal)
- No Wetlands Data Available
- Rivers/Streams (Intermittent)
- Rivers/Streams (Perennial)
- Shrub

Project Components
- Project Footprint

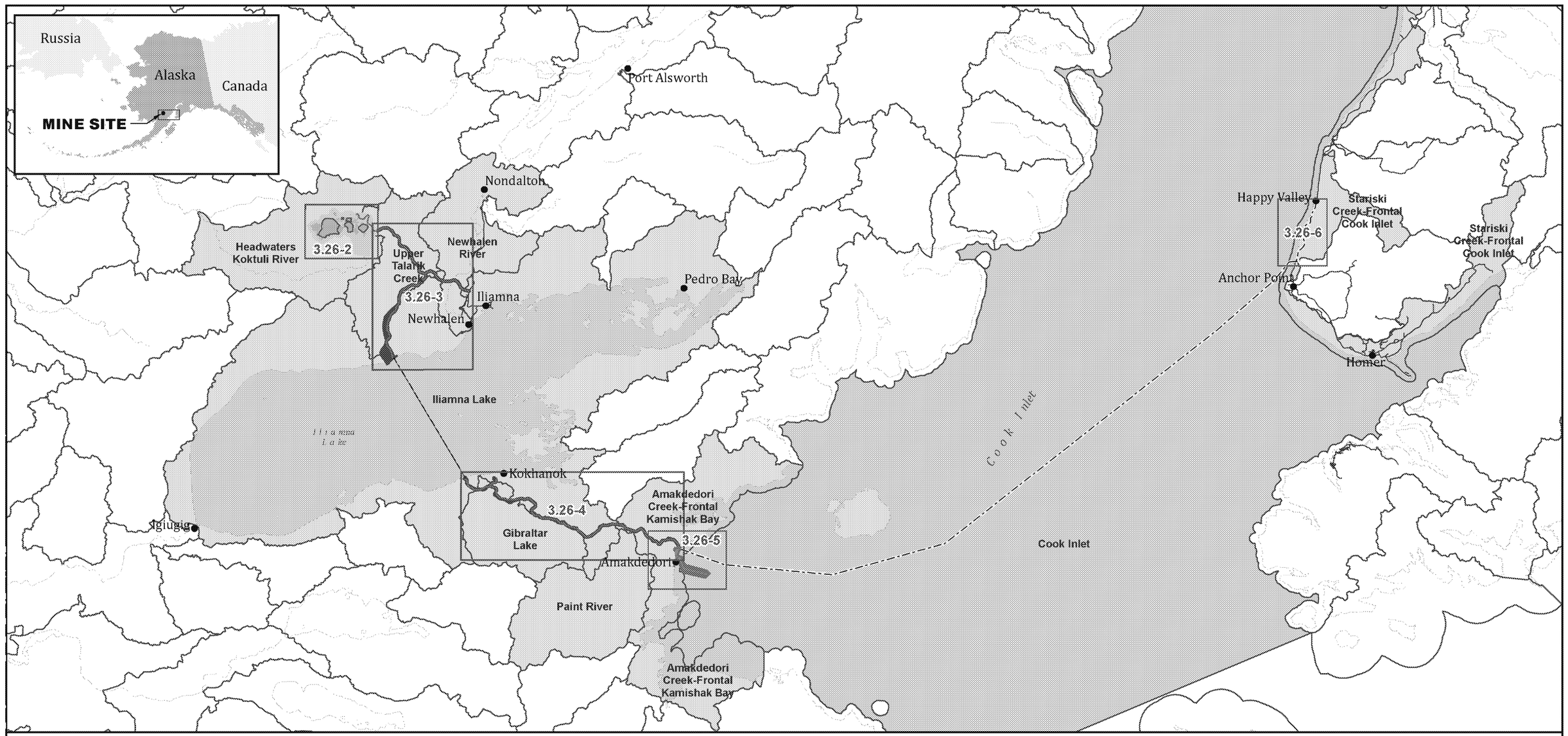
Other Features
- Roads
- Watershed Boundary (HUC10)

WETLANDS MAPPING
NATURAL GAS PIPELINE MAPPING AREA
(KENAI PENINSULA)

PEBBLE MINE EIS

3.22-6

AMERICAN OVERSIGHT



Sources: HDR 2017; USGS 2017

US Army Corps of Engineers®

0 10 20 30
Miles

Vegetation Mapping Study Areas
- Mine Site Mapping Area
- Transportation and Natural Gas Pipeline Corridor Mapping Area
- Amakdedori Port Mapping Area
- Natural Gas Pipeline Mapping Area

Project Components
- Project Features
- Natural Gas Pipeline
- Transportation Corridor

Other Features
- Roads
- Project Watershed Boundaries (HUC10)
- Watershed Boundaries (HUC10)
- Map Page Index

VEGETATION MAPPING AREA OVERVIEW

PEBBLE MINE EIS

FIGURE 3.26-1

AMERICAN OVERSIGHT

155°34'0"W 155°32'0"W 155°30'0"W 155°28'0"W 155°26'0"W 155°24'0"W 155°22'0"W 155°20'0"W 155°18'0"W 155°16'0"W 155°14'0"W 155°12'0"W 155°10'0"W

59°56'0"N

59°54'0"N

59°52'0"N

WATER TREATMENT PLANT DISCHARGE LOCATION - NORTH

MAIN EMBANKMENT SEEPAGE POND

POTABLE WATER WELL FIELD

MILL CAMP AND ADMIN BUILDINGS

EGO AND MAIN WATER MANAGEMENT POND

TSF MAIN EMBANKMENT

POTABLE WATER WTP

WATER TREATMENT PLANT DISCHARGE LOCATION - EAST

MILL SITE

Upper Talarik Creek

Headwaters Koktuli River

QUARRY A

QUARRY B

BULK TAILINGS STORAGE CELL

LOW GRADE ORE STOCKPILE

OPEN PIT

QUARRY C

PYRITIC TAILINGS STORAGE CELL

OPEN PIT OVERBURDEN STOCKPILE

OPEN PIT WATER MANAGEMENT POND

OPEN PIT SEDIMENT POND EMBANKMENT

SOUTH SEEPAGE POND

SOUTH SEDIMENT POND

Kaskanak Mountain

WATER TREATMENT PLANT DISCHARGE LOCATION - SOUTH

Koktuli River North Fork

Sources: AKNHP 2016; HDR 2017; USGS 2017

US Army Corps of Engineers®

0 0.5 1 1.5 Miles

Vegetation Categories

- Closed Low Shrub
- Closed Tall Shrub
- Dry to Moist Herbaceous
- Dwarf Shrub
- Open Low Shrub
- Open Tall Shrub
- Open Water
- Open/Closed Forest
- Other
- Wet Herbaceous
- Mine Site Mapping Area

Project Components

- Project Footprint

Other Features

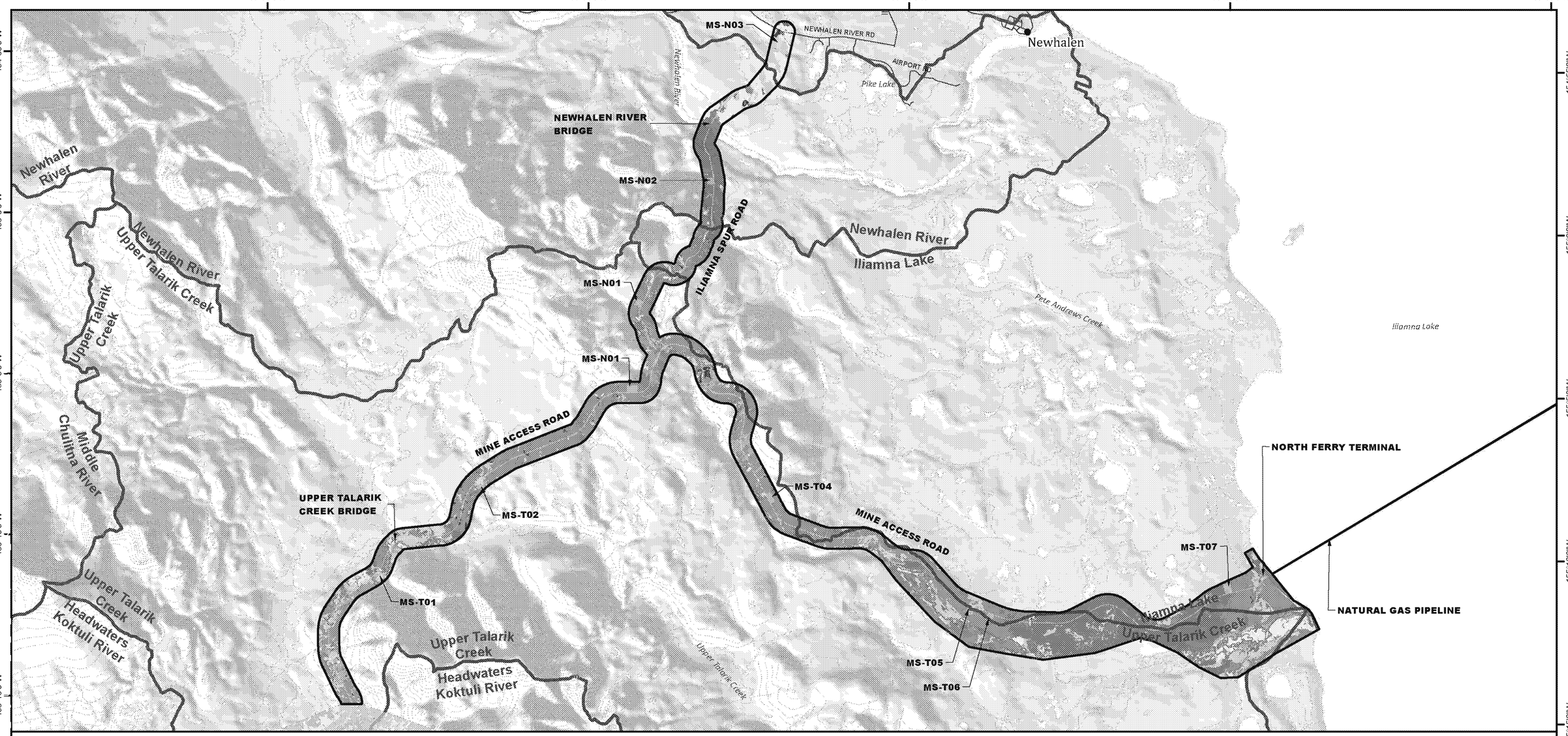
- 100' Contour (Existing)
- Watershed Boundary (HUC10)

PEBBLE MINE EIS

VEGETATION MAPPING
MINE SITE VEGETATION MAPPING AREA

3.26-2

AMERICAN OVERSIGHT



Sources: AKNHP 2016; HDR 2017; USGS 2017

US Army Corps of Engineers

0 0.5 1 1.5 Miles

Vegetation Categories

- Closed Low Shrub
- Closed Tall Shrub
- Dry to Moist Herbaceous
- Dwarf Shrub
- Open Low Shrub
- Open Tall Shrub
- Open Water
- Open/Closed Forest
- Other
- Wet Herbaceous
- Transportation and Natural Gas Pipeline Corridor Mapping Area

Project Components

- Project Footprint

Other Features

- 100' Contour (Existing)
- Roads
- Watershed Boundary (HUC10)

VEGETATION MAPPING TRANSPORTATION AND NATURAL GAS PIPELINE CORRIDOR MAPPING AREA NORTH OF ILIAMNA LAKE

PEBBLE MINE EIS

3.26-3

AMERICAN OVERSIGHT

154°55'0"W 154°50'0"W 154°45'0"W 154°40'0"W 154°35'0"W 154°30'0"W 154°25'0"W 154°20'0"W 154°15'0"W 154°10'0"W

59°25'0"N

59°20'0"N

NATURAL GAS PIPELINE

SOUTH TERMINAL

MS-A01

KOKHANOK AIRPORT SPUR ROAD

MS-A02

MS-A03

GIBRALTAR RIVER BRIDGE

MS-A04

SOUTH ACCESS ROAD

MS-A05

UNNAMED CREEK 1 BRIDGE

BRIDGE LAKE BRIDGE

MS-A06

UNNAMED CREEK 2 BRIDGE

MS-A07

MS-A08

UNNAMED CREEK 3 BRIDGE

AMAKDEDORI PORT

Kokhanok

Amakdedori

Iliamna Lake

Kokhanok River

Kakhonak Lake

Kakhonak River

Venturi Lake

Amakdedori Creek-Frontal Kamishak Bay

Gibraltar Lake

Gibraltar River

Dream Creek

Emerald Lake

Paint River

Dunuletok Creek

Amakdedori Creek

Sources: AKNHP 2016; HDR 2017; USGS 2017

US Army Corps of Engineers

0 1 2 3 Miles

Vegetation Categories

- Closed Low Shrub
- Closed Tall Shrub
- Dry to Moist Herbaceous
- Dwarf Shrub
- Open Low Shrub
- Open Tall Shrub
- Open Water
- Open/Closed Forest
- Other
- Wet Herbaceous
- Transportation and Natural Gas Pipeline Corridor Mapping Area

Project Components

- Project Footprint

Other Features

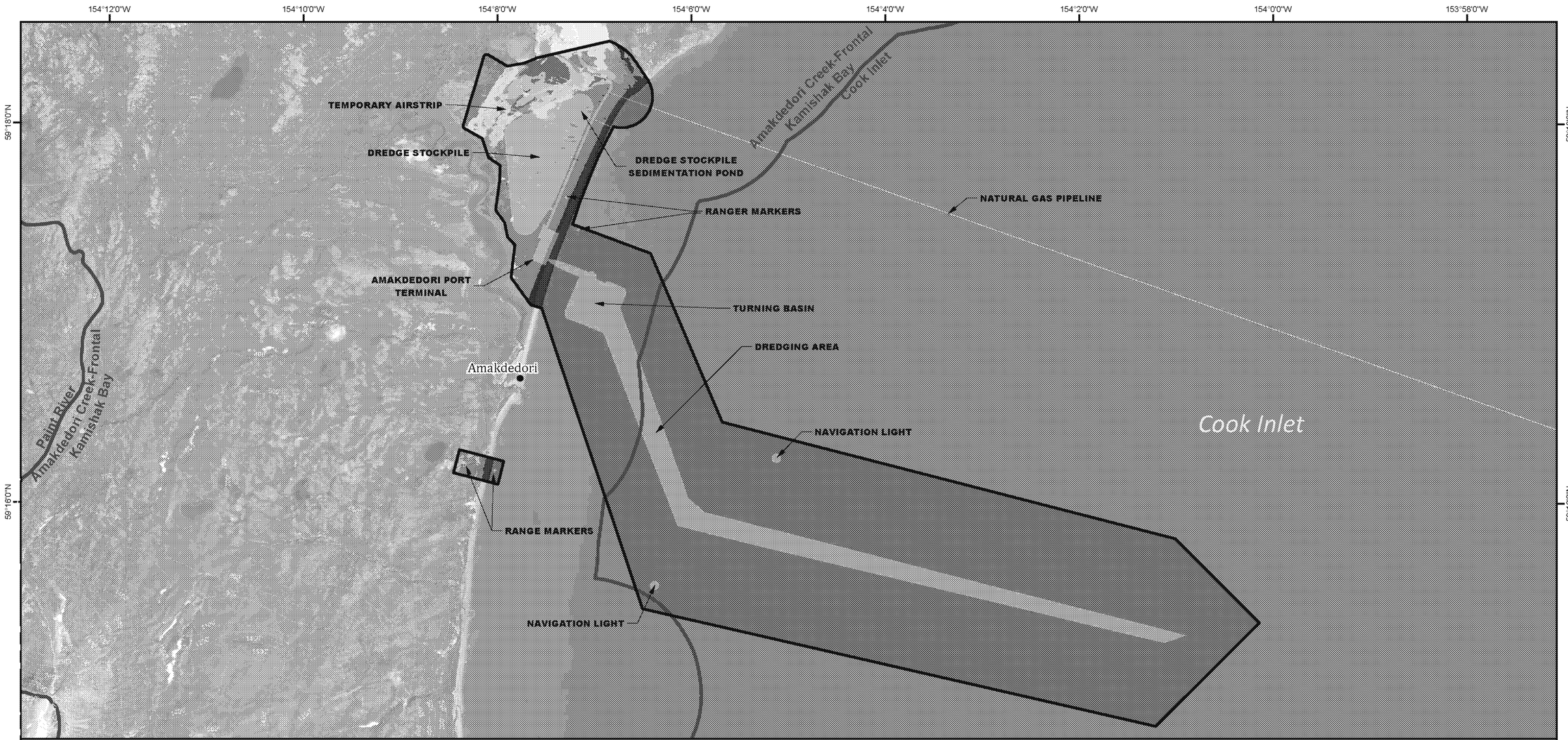
- 100' Contour (Existing)
- Watershed Boundary (HUC10)

VEGETATION MAPPING TRANSPORTATION AND NATURAL GAS PIPELINE CORRIDOR MAPPING AREA SOUTH OF ILIAMNA LAKE

PEBBLE MINE EIS

3.26-4

AMERICAN OVERSIGHT



Sources: AKNHP 2016; HDR 2017; USGS 2017

US Army Corps of Engineers®

0 2,000 4,000 6,000
Feet

Vegetation Categories

- Closed Low Shrub
- Closed Tall Shrub
- Dry to Moist Herbaceous
- Dwarf Shrub
- Open Low Shrub
- Open Tall Shrub
- Open Water
- Other
- Wet Herbaceous

- Amakdedori Port Mapping Area

Project Components

- Project Footprint

Other Features

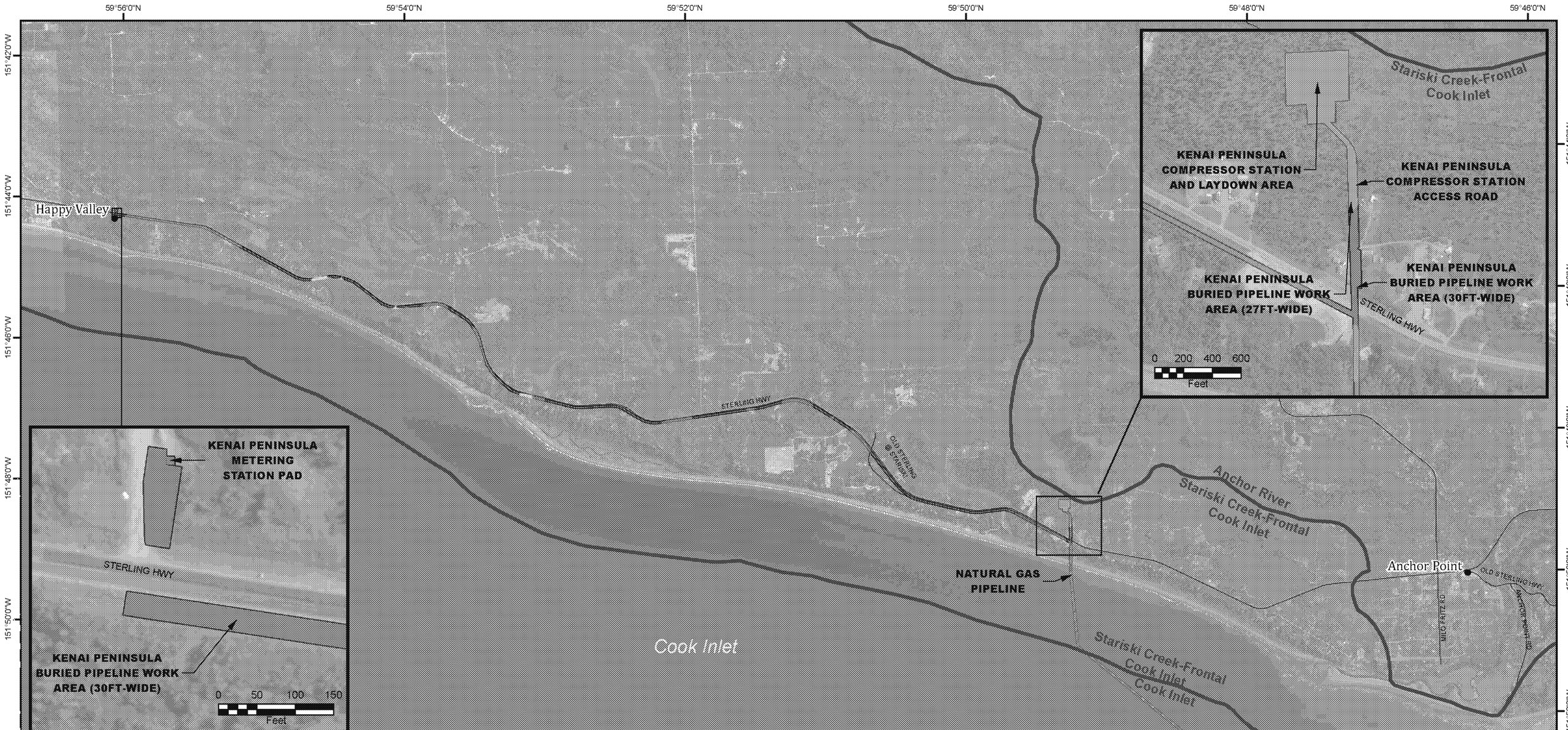
- 100' Contour (Existing)
- Watershed Boundary (HUC10)

VEGETATION MAPPING
AMAKDEDORI PORT
VEGETATION MAPPING AREA

PEBBLE MINE EIS

3.26-5

AMERICAN OVERSIGHT



Sources: AKNHP 2016; USGS 2017

US Army Corps of Engineers

0 2,000 4,000 6,000
Feet

Vegetation Categories

- Dry to Moist Herbaceous
- Open Water
- Open/Closed Forest
- Other
- Tall Shrub (Open-Closed)
- Wet Herbaceous

Project Components

- Project Footprint

Other Features

- Roads
- Watershed Boundary (HUC10)

VEGETATION MAPPING
NATURAL GAS PIPELINE
VEGETATION MAPPING AREA
(KENAI PENINSULA)

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From: James Fueg, Pebble Limited Partnership

To: Shane McCoy, US Army Corps of Engineers

Date: May 11th, 2018

Technical Note on Updates to PLP's Proposed Project

Since submittal of Pebble Limited Partnership's (PLP) Department of the Army Permit Application on December 22nd, 2017 PLP has continued to refine the proposed project by advancing engineering design and looking for practicable opportunities to further avoid and minimize potential adverse impacts. Additionally, PLP paid close attention to the ongoing public process regarding the project, reviewing both informal public comments and those submitted through the ongoing US Army Corps of Engineers (USACE) scoping process.

As a result of this work PLP has made several updates to the proposed project that we believe further enhance environmental protections through operations and closure, further reduce project impacts, and further allow for regional stakeholders to benefit from the project. This memo outlines the updates to the proposed project.

Project Updates

The following updates are described in this section:

1) Mining and milling schedule
2) Tailings storage facility layout
3) Main water management pond size and location
4) Natural gas pipeline throughput alignment, and origin
5) Amakdedori port and concentrate loading

Mining and Milling Schedule

The original project had a peak mining rate of 90 million tons per year and a milling rate of 160,000 tons per day. Under this operating schedule the stockpiling of low grade ore (LGO) to feed the mill in later years was required, with the stockpile size peaking at 330 million tons. For the updated project the peak mining rate has been reduced to approximately 75 million tons per year and the milling rate has been increased to 180,000 tons per day, removing the requirement for the storage of large volumes of low grade ore during the first fourteen years of operation. These changes will not result in any substantive changes to the footprint associated with the mill and ancillary facilities.

Because of these changes, the following changes to the overall operating plan occur:

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1) The project operating life remains unchanged at twenty years, but mining and milling operations will both continue for the full twenty-year operating life of the project.
2) Total tons mined will increase to approximately 1.5 billion tons, of which approximately 1.3 billion tons is ore and 200 million tons is waste. Waste rock is either utilized to construct the tailings dams, or stored through operations for placement back into the pit at closure.
3) Tailings tonnages increase to approximately 1,150 million tons of bulk tails and approximately 150 million tons of pyritic tails.
4) Pit dimensions will increase slightly and the pit outline will change. The location of the open pit water management pond will move to the south.
5) To accommodate the increased mill throughput the powerplant installed nameplate capacity will increase to 270 MW.
6) Annual concentrate production will increase to approximately 660,000 tons of copper-gold concentrate and approximately 16,500 tons of molybdenum concentrate. This will result in an approximately 10% increase in some associated road and marine traffic, specifically:
    - Up to 27 Handysize ships for concentrate transport
    - Up to 33 marine line haul barges of supplies
    - Up to 39 truck round trips per day
    - Average annual fuel requirements will decrease to 12-15 million gallons annually.
    - Lake ferry round trips will not increase and will remain at one per day on average.

These changes provide the following advantages:

1) The need for construction of a large lined pad for the long-term storage of low grade ore is removed. Removal of this facility allows the location to be used for other purposes.
2) Above ground storage of the PAG low grade ore resulted in the requirement to treat significant amounts of poor quality run-off water and seepage collected from the LGO stockpile. Removal of the LGO will facilitate water treatment during operations.
3) Annual mobile equipment and fuel requirements are reduced due to the reduction in the peak mining rate and the removal of ore re-handling for the low-grade material, with associated reductions in emissions from mobile equipment.

Tailings Storage Facility (TSF) Layout

The original TSF design consisted of a single facility with separate cells for the bulk and pyritic tails located in the North Fork Koktuli (NFK) West site. The updated design consists of an unlined bulk TSF located in the NFK West site, with a separate lined pyritic TSF located in the NFK East site, which will also be used to store potentially acid generating (PAG) waste sub aqueously during operations. The bulk TSF southern embankment is moved approximately 2000 feet to the south to take better advantage of the existing terrain for the embankment construction. The main (northern) embankment of the bulk TSF remains a flow-through design to facilitate water management within the bulk TSF.

These changes provide the following advantages:

1) Location of the pyritic tails and PAG waste in a separate facility located closer to the open pit will facilitate the placement of PAG waste and pyritic tails back into the pit at closure. Following

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the cessation of operations, the pyritic tails and PAG waste will be relocated to the bottom of the open pit for permanent subaqueous storage below ground level, the pyritic TSF embankments will be breached, the liner will be removed, and the facility will be reclaimed. This provides three important long-term safeguards:

   a. The need for perpetual maintenance and water treatment of the pyritic facility is eliminated.
   b. Storage of the pyritic tails below ground level eliminates all potential for downstream failure impacts associated with the pyritic tails storage after closure.
   c. Storage of the pyritic tails and PAG waste rock below water at the bottom of the pit is the best means of providing for long term prevention of acid generation.

2) Location of the tails in two separate facilities significantly reduces overall embankment heights associated with the facilities and thereby reduces the amount of fill required to construct the facility.
3) The reduced embankment sizes and the additional waste rock from the pit available for use in embankment construction results in a reduction in the amount of quarry rock needed for construction.

Main Water Management Pond Size and Location

The original layout had two collocated water management ponds (WMPs): the main WMP and the LGO WMP north of the LGO stockpile. These facilities have been replaced by a single, significantly larger, main WMP located in the NFK North site. This facility would be fully lined and constructed using rock fill embankments like the TSFs. Following the cessation of operations and once the facility is no longer needed for water storage prior to treatment, the embankments would be breached, the liner would be removed, and the facility would be reclaimed.

These changes provide the following advantages:

1) The ability to store significant additional process contact water separate from the TSF facilities. This change has further improved the project's ability to deal with multi-year climatic precipitation variability.
2) Maintaining a conservative maximum normal operating level for the main WMP provides significant capacity for additional water storage in the event of water treatment facility problems or extreme precipitation events.
3) Maintaining adequate minimum storage levels within the main WMP will provide additional certainty for the supply of process water during dry conditions.
4) The large storage volume available will allow for flexibility in water treatment and release and improve the ability to optimize discharges and minimize downstream impacts.

Natural Gas Pipeline Throughput, Alignment, and Origin

Ongoing work on the natural gas pipeline alignment and engineering design have led to the conclusion that a 10-inch diameter pipeline is not optimal. This is driven by several considerations:

1) The increase in mill throughput that requires more power.
2) The potential for use of LNG (produced at site from natural gas) as a future truck fuel.

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3) Accommodation for potential regional energy requirements given that this this will be an open access pipeline (most likely a contract carrier).
4) The associated compression requirements and line operating pressures are not optimal with a 10-inch line.

The current design utilized a 12-inch pipeline for the marine and lake portions of the alignment for buoyancy reasons. Th updated design incorporates a 12-inch diameter line for the marine, lake, and land portions of alignment. This results in a reduction in compression requirements and associated air and noise emissions, without any increase in the ROW footprint.

The proposed method for the installation of the deep-water (at least 12 feet or deeper) portions of the natural gas pipeline has been modified to use heavy-wall and/or concrete coated pipe and placement over the existing bottom surface, rather than placement of the pipe in a trench such that the top of the pipe is below the natural bottom. The use of heavy wall pipe to address pipe protection:

1) Meets code requirements for the Pipeline and Hazardous Materials Safety Agency (PHMSA).
2) Better addresses pipeline protection in consideration of Cook Inlet's tide and current conditions.
3) Is consistent with techniques used on other Cook Inlet pipelines.
4) Minimizes impacts associated with trenching the sea and lake bottom during construction.

Several changes have also been made, or are being considered, to the proposed pipeline alignment. These changes will be further refined and confirmed by fieldwork proposed for this summer.

1) The pipeline origin point is now at the compressor station location north of Anchor Point. Further discussion with gas pipeline operators on the Kenai confirmed that the existing pipeline network currently extends far enough south along the Sterling Highway and has sufficient excess capacity to supply gas directly to the proposed compressor station location north of Anchor Point, removing the requirement for the first nine miles of pipeline construction along the Sterling Highway ad reducing the overall pipeline length and associated footprint.
2) In addition to the proposed pipeline route that starts with an HDD from the compressor location directly into Cook Inlet, PLP is evaluating an alternative route that utilizes an alignment that runs down the Sterling Highway from the compressor station to the Anchor River Recreation Area and then out into Cook Inlet utilizing a trench located adjacent to the road through the recreation area, removing the need for an HDD off the bluff. A final decision on the preferred alignment will be made following additional fieldwork this summer.
3) The alignment has been routed further to the south of Augustine Island to address potential pipeline geohazard concerns related to Augustine Volcano. Additional adjustments to the offshore alignment are anticipated as the ongoing geophysical data collection advances.

Amakdedori Port and Concentrate Loading

Ongoing engineering and logistical studies now support a conclusion that the shipment of concentrate from the Amakdedori port site can be accomplished using barges to lighter the concentrate containers to deeper water. The bulk carrier would anchor at established mooring points and the containers would be unloaded directly into the hold of the bulk carrier using a crane mounted on the barge. Two locations for lightering have been identified:

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1) Approximately 12 miles offshore due east of the proposed Amakdedori port. This would be the primary lightering location.
2) Approximately 18 miles east-northeastof the proposed Amakdedori port between Augustine Island and the mainland. Wave heights in this area are reduced by Augustine Island and it would be used when required by sea conditions.

Both locations are located outside of the designated Beluga Whale and Cook Inlet Sea Otter critical habitat.

Two or three lightering vessels (depending on the location) would be required to move concentrate between the port and ship. About ten trips by the lightering vessels would be required to load the bulk carrier, which would be anchored for four to five days at the lightering location. The containers would be picked up using a crane mounted on the lightering vessel, dumped into the hold of the bulk carrier, and then returned to the deck of the lightering vessel. Loading would be interrupted when sea and weather conditions preclude operations. All consumables and fuel for the operation would be barged directly into the Amakdedori Port using marine line haul barges. No lightering of fuel or supplies would be required.

These changes provide the following advantages:

1) The requirement for dredging and subsequent maintenance dredging of a deep-water access channel is eliminated.
2) The requirement to store up to 20 million cubic yards of dredged material at the Amakdedori port site is eliminated.
3) Bulk carrier navigation and handling requirements are simplified as they no longer have to transit the access channel and maneuver in the turning basin.

PLP will continue to investigate options for a restricted access (high tide only) port facility to reduce dredging requirements to address the questions raised in RFI-033.

Conclusion

PLP believes that the outlined updates to the proposed project will further enhance environmental protections through operations and closure, further reduce project impacts, and preserve potential for regional stakeholders to benefit from the project. Please feel free to contact me if there are any questions regarding these changes or any additional information that is required.

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3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

Chapter 3 describes the existing environment that would be affected by the proposed project and alternatives under consideration in this Environmental Impact Statement (EIS). This chapter is intended to help the lay reader and agency decision maker find the information they need to evaluate the affected environment and understand the impacts and consequences discussed in Chapter 4.

Each of the 25 resource sections in Chapter 3 discusses:

- The types of potential impacts typically associated with the proposed project for that resource;
- The EIS analysis area for that resource (consistent with the project area unless otherwise specified; for some resources, the EIS analysis area is larger than the project area because potential effects extend beyond the project boundary);
- The applicable regulations, in context of the resource; and
- The overall existing condition of the resource, including the natural and physical environment.

A brief description of general project physical setting and other resources is included below.

3.1.1 Physical Setting

3.1.1.1 Location

The proposed Pebble Project location is primarily within the Bristol Bay watershed in southwest Alaska, a rolling, permafrost-free terrain, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Project deposit location. The Bristol Bay watershed encompasses approximately 41,900 square miles (mi^2) and is defined by the Aleutian Range to the east and southeast, the Kuskokwim Mountains to the west, and a range of hills to the north that separate it from the Kuskokwim River watershed. The largest rivers that drain into Bristol Bay are the Nushagak and Kvichak rivers, which together drain 49 percent of the Bristol Bay watershed, or approximately 20,000 mi^2. A portion of the proposed Pebble Project is located within the Cook Inlet watershed, which encompasses the city of Anchorage and various communities on the Kenai Peninsula and around the Cook Inlet coastal shoreline.

3.1.1.2 Climate & Meteorology

The climate in the area of the proposed Mine Site is transitional. Winters are characterized by a continental climate as frozen waterbodies and sea ice in Bristol Bay create a land-like mass, while summers have a maritime climate due to the influence of the open water of Iliamna Lake and, to a lesser extent, the Bering Sea, Bristol Bay, and Cook Inlet.

Mean monthly temperatures range from about 55 degrees Fahrenheit (°F) in summer to 2°F in winter. Precipitation in the North Fork Koktuli (NFK) River drainage averages approximately 57.4 inches per year, and 50.8 inches per year in the South Fork Koktuli River (SFK). About one-third of this precipitation falls as snow. The wettest months are August through October. White-out conditions and wind storms or periods of poor light/visibility occur in winter.

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Winter weather systems, consisting of cool to cold saturated air, typically travel into the region from the Bering Sea (west), along the Aleutian Island chain (southwest) and the Gulf of Alaska (south), resulting in frequent clouds, rain, and snow. Less frequent incursions of frigid, stable arctic air masses produce shorter periods of clear, but very cold conditions. During summer, warm air masses from Interior Alaska can cause atmospheric instability, which results in cumulus clouds and thunderstorm activity. No permafrost has been identified to date in the project area.

3.1.1.3 Topography

The area consists of low, rolling hills separated by wide, shallow valleys. Elevations range from approximately 775 feet in the SFK valley up to 2,760 feet on Kaskanak Mountain. Glacial and fluvial sediment of varying thickness covers most of the area at elevations below approximately 1,400 feet, while ridges and hills above 1,400 feet generally exhibit exposed bedrock or have thin veneers of surficial material. Hills are generally moderately sloped with rounded tops, and valley bottoms are generally flat.

The terrain includes a range of types, from flat to moderately undulating near the Mine Site, gently sloping and colluvial terrain along the north shore of Iliamna Lake, and mountainside slopes to narrow valley bottoms through the Aleutian Range. No permafrost has been identified in the Transportation Corridor. The corridor spans the Nushagak watershed at the Mine Site and traverses the Kvichak watershed, both within the greater Bristol Bay watershed. The corridor continues through the Tuxedni-Kamishak Bay's watershed of the greater Cook Inlet watershed.

The Amakdedori Port site is located just north of the mouth of Amakdedori Creek on the shore of Cook Inlet in the northern part of the Aleutian Range physiographic division. Topography is generally flat with dunes located closer to the gravel beach shoreline of Cook Inlet.

The geographic location of the first portion of natural gas pipeline corridor is located on the Kenai Peninsula, and crosses Cook Inlet. The remainder is the same as the Transportation Corridor. The terrain includes a range of types, from flat to moderately undulating near the Mine Site, gently sloping and colluvial terrain along the north shore of Iliamna Lake, mountainside slopes to narrow valley bottoms through the Aleutian Range, and coastal lowlands around Cook Inlet.

3.1.1.4 Land Cover

The Mine Site and Pebble Deposit area is ecologically diverse, with rivers, tundra, marshy lowlands, and ponds. Much of the land is covered by alpine tundra, shrubs, wetland and scrub communities, or areas of mixed broadleaf and spruce trees, depending on elevation and location. Much of the land at lower elevations south of Iliamna Lake is covered by dwarf shrub and broadleaf forest communities. At higher elevations where shallow bedrock occurs, dwarf shrub and alder shrub communities are prevalent. Wetland habitats are common in depressional areas, valley bottoms, and on slope benches and include wet meadows and scrub-shrub communities.

Vegetation communities within the Transportation Corridor north of Iliamna Lake primarily consist of dwarf shrub, spruce woodland, mixed broadleaf and spruce forest, and shrubs. Wetland habitats dominated by willow shrub communities are common on floodplains of streams, while wet meadows and mixed shrub wetlands are common at toe slopes where groundwater discharge occurs. The Transportation Corridor crosses numerous streams within the Bristol Bay and Cook Inlet watersheds.

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The western shorelines from Kameshak Bay north to Iniskin Bay are composed of diverse habitats, including steep rocky cliffs, cobble or pebble beaches, and extensive sand/mud flats. Eelgrass is found at a number of locations and habitats; eelgrass, along with macroalgae, is an important substrate for spawning Pacific herring. Much of the land is well-drained and covered by dwarf shrub communities with inclusions of alder shrub and grass-herb communities. Wetland habitats consisting of wet meadows and shrub communities are limited to the northwestern extent of the port site where groundwater discharge occurs and areas within the floodplain of Amakdedori Creek.

The Cook Inlet region is composed of marine, coastal, and estuarine habitats. Pelagic waters within Cook Inlet are influenced by riverine and marine inputs resulting in salinity gradients and horizontal mixing throughout the inlet. Deeper waters of Cook Inlet are characterized by unconsolidated sediments on a smooth bottom and strong tidal currents. The variety of habitats in the region support lower trophic organisms, fish, shellfish, marine mammals, and birds. Fish and shellfish are important components of the Cook Inlet food web, as they feed on lower trophic organisms such as plankton, and serve as prey for other fish, birds, and marine mammals.

3.1.1.5 Hydrology

The Pebble Deposit straddles the upper reaches of the SFK and Upper Talarik Creek (UTC) drainages. The headwaters of the NFK are immediately north of the Pebble Deposit. The SFK drains south from the Pebble Deposit area, and then west and northwest, where it joins the NFK, which flows west from the Pebble Deposit area. At the confluence, these streams form the Koktuli River, which flows into the Mulchatna River, a tributary to the Nushagak River. The Nushagak River flows into Bristol Bay near the city of Dillingham. Upper Talarik Creek flows south from the Pebble Deposit area and then southwest into Iliamna Lake, which is the source of the Kvichak River.

The NFK and SFK are two of 24 tributaries of similar or larger size in the 315-mile long Nushagak River system. The north and south forks of the Koktuli River flow for 36 and 40 miles, respectively, to the main stem Koktuli River. The Koktuli River flows for approximately 39 miles before entering the Mulchatna River, which flows another 44 miles before entering the Nushagak River. The Nushagak River flows about 110 miles before it empties into Bristol Bay southwest of Dillingham. The total distances from the NFK and SFK headwaters to Bristol Bay are 228 miles and 232 miles, respectively.

The UTC drainage is in the 225-mile-long Kvichak River system. The headwaters of the Kvichak River system are approximately 109 miles northeast of the Pebble Deposit at the source of the Tlikakila River at Lake Clark Pass. UTC flows approximately 39 miles to Iliamna Lake. The lake empties into the Kvichak River, which flows approximately 70 miles to Bristol Bay. The total distance from the headwaters of UTC, across the lake, and to Bristol Bay is approximately 140 miles.

The Cook Inlet basin is an expansive watershed surrounding the 180-mile-long Cook Inlet waterbody. Covering more than 38,000 mi^2 of southern Alaska, it receives water from six major watersheds and many smaller ones. More than 10 percent of the basin is covered by glaciers and suspended sediment loading in glacier fed rivers without lakes is significant, leading to a high suspended sediment load in portions of Cook Inlet. Lower Cook Inlet is connected to the Pacific Ocean southwest through Shelikof Strait, and southeast by the Gulf of Alaska and demonstrates complex circulation on variable timescales. The region has the fourth largest tidal range in the world; tidal fluctuations in Kamishak Bay average 13 feet. When the tide drops from mean high to mean low water, the inlet loses almost 10 percent of its volume, and exposes

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approximately eight percent of its surface area. Most of these tidally exposed areas are in the arms at the north end of Cook Inlet and along the west side of the waterbody.

3.1.2 Other Resources

3.1.2.1 Conservation *(33 CFR 320.4[a], [m], [n])*

Conservation is a broadly defined concept that typically includes the wise and efficient use, management, and protection of a natural resource; avoidance of wasteful or unnecessary use of the resource; and sustainability of the resource for a future or alternate use. The conservation aspects of a large mineral resource extraction project are multi-faceted and complex. They involve the efficient extraction and use of copper, gold, and molybdenum minerals, temporary and permanent losses or gains in other affected resources, and a variable duration of impacts on those resources. Some of the adverse impacts are partially or wholly reversible, such that the resource values that were temporarily altered can return over time for future conservation and sustainable use.

Society has demands and uses for copper, gold and molybdenum, and for the mining of these resources. The project represents a needed exploitation and use of these metals but also represents an irretrievable and irreversible commitment of the use of copper, gold, and molybdenum ore resources.

[Note: Conservation needs in the project area will be further defined at a later time.]

3.1.2.2 General Environmental Concerns *(33 CFR 320.4[a][1] and 33 CFR 320.4[p])*

Concerns addressed under "general environmental concerns" include those not addressed elsewhere. The USACE has identified matters of general environmental concern not addressed in a specific public interest topic and has chosen to address these topics in this section. The project will result in short-term and long-term effects on general environmental concerns.

[Note: General environmental concerns in the project area will be further defined at a later time.]

3.1.2.3 Energy Needs *(33 CFR 320.4[n])*

Energy conservation and development are major national objectives. The project is not an energy production facility, but will have effects on energy needs. There is no existing power infrastructure in the project vicinity. Due to the remote location and lack of current infrastructure, the project would be required to provide basic infrastructure as well as support facilities typically associated with mining operations. The project will create new base load electric demand for ore extraction and processing. The peak electrical load for the project will be approximately 230 megawatts. Project energy requirements represent additional base and peak load electrical demand. Various mine load centers would be serviced by a 69-kilovolt distribution system using a gas-insulated switchgear system located at the power plant. Waste heat from the power plant would be used to heat Mine Site buildings and supply process heating to the water treatment plant.

Natural gas sourced through the existing natural gas supply infrastructure will be the primary energy source for the project. The Natural Gas Pipeline Corridor would include a compressor station near Anchor Point. A second compressor station would be located at the Amakdedori Port site. The Amakdedori Port would include two 2-MW natural gas power generators with an emergency diesel generator. Natural gas would be fed to the port site power station to be used for heating. A second gas-fired compressor station would be located at the port site. The Iliamna

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Lake ferry would include generator engines. The mooring system design would allow engines to be turned off while parked.

The project will result in production of copper and gold. These metals are highly conductive to electricity and are used in electrical wiring in some high-energy applications, circuitry, and other uses; they are more efficient than other metals for these applications.

[Note: Energy needs in the project area will be further defined at a later time.]

3.1.2.4 Effects of Climate Change on the Project Area

[Note: Implications of climate change for the environmental effects of the proposed action in the project area will be further defined at a later time.]

Additional climate change trends are discussed as appropriate to the resource in Chapter 3. See Section 3.20, Air Quality, for information on the effect of the proposed action on climate change as indicated by GHG emissions. Effects on the proposed project infrastructure from climate change are discussed in appropriate Chapter 3 sections.

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3.5 RECREATION

The region around the project area is, for the most part, remote and undeveloped. These lands and waters support a wide variety of dispersed recreation activities including sport and trophy hunting, hiking, camping, and snowmachining. The premier recreation activity in this area is sport fishing which draws many anglers from Alaska and beyond to lodges, lakes, rivers, and estuaries in the region in search of freshwater, saltwater, and anadromous fish. Due to the economic importance of fishing in this region, recreational and commercial fishing are discussed in a separate section. See Section 3.6, Commercial and Recreational Fishing for more information.

3.5.1 Recreation Management

3.5.1.1 Federal Lands

National Parks Service

The following section provides information on the management of the three National Park Service (NPS) units within the regional recreation area of the project. Commercial use of all three units are subject to commercial use authorizations (CUAs), which authorize suitable commercial services to park visitors (NPS 2018c). CUAs may not exceed two years per term and provide for incidental use of the park by commercial service operators where services originate and terminate outside of the park boundary (NPS 2018c). CUAs are authorized under Section 418 of the National Parks Omnibus Management Act of 1998, Public Law 105-391 (NPS 2018c).

Lake Clark National Park and Preserve

Lake Clark National Park and Preserve is managed according to the 1984 General Management Plan for the park and a 2014 amendment to this plan. The 1984 General Management Plan contains a management concept for visitor access, recreation and use within the park unit, including development, access, commercial use, visitor use, visitor information, and interpretive materials (NPS 1984). The 2014 amendment expanded visitor activities and interpretive services. The amendment included designating some existing cabins for public use, designating an informal water route on Lake Clark, providing a few improved visitor facilities, and providing limited new commercial services (NPS 2014).

The most current Superintendent's Compendium includes the designations, closures, permit requirements and other restrictions that have been adopted under the superintendent's discretionary authority (NPS 2017a).

There are currently 87 visitor service providers (CUA holders and concessioners) within this NPS unit for the following activities: air taxi, water taxi, backpacking/overnight camping, boating trips, bear viewing, group camping, hiking/walking tours, big game transport, incidental hunt transport, kayak tours, mountaineering, paddleboarding, photography, sportfishing, sport hunting, skiing, and snowshoeing (NPS 2018m).

Katmai National Park and Preserve

Katmai National Park and Preserve is managed under a variety of management plans. The 1986 General Management Plan discusses management of park access and circulation, visitor use and services, and potential development within the park unit (NPS 1986). The 2009 Long

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Range Interpretive Plan describes desired visitor experiences, existing interpretive resources, and includes recommendations to achieve the desired future interpretive program as well as implementation priorities (NPS 2009). The 2014-2018 Strategic Plan includes five year goals and strategies for management of three NPS units (NPS 2013). Similar to Lake Clark National Park and Preserve, the most current Superintendent's Compendium lists the designations, restrictions, closures, and permit requirements adopted under the superintendent's discretionary authority (NPS 2017b). The 2017 Compendium for Katmai National Park and Preserve also covers the Aniakchak National Monument and Preserve and Alagnak Wild River (NPS 2017b).

There are currently 122 visitor service providers (CUA holders and concessioners) within this NPS unit for the following activities: air taxi, backpacking/overnight camping, boating trips, bear viewing, charter boat service, group camping, hiking/walking tours, big game transport, incidental hunt transport, kayak tours, lodging and food service, photography, sportfishing, and sport hunting (NPS 2018g).

Alagnak Wild River

There are several management plans that discuss recreation within Alagnak Wild River. The 1983 Management Plan contains management objectives for visitor use and interpretation including access, accommodating hunting, and encouraging activities compatible with the natural environment (NPS 1983). The 2009 Long Range Interpretive Plan and 2014-2018 Strategic Plan described above under Katmai National Park and Preserve also apply to Alagnak Wild River (NPS 2009, NPS 2013).

There are currently 21 visitor service providers (CUA holders and concessioners) within this NPS unit for the following activities: air taxi, backpacking/overnight camping, boating trips, bear viewing, group camping, hiking/walking tours, photography, and sportfishing (NPS 2018d).

US Fish and Wildlife Service

Alaska Maritime National Wildlife Refuge

The Alaska Maritime National Wildlife Refuge (NWR) is managed by a comprehensive plan (USFWS 1988). The five purposes of the refuge (conservation, treaty obligations, subsistence use, scientific research, and water quality/quantity) protect of the wildlife resources that visitors go to see in the refuge for recreation. As stated in the Land Protection Plan for the NWR, "the Alaska Maritime Refuge is managed to conserve native fish and wildlife populations and their habitats, while providing opportunities for subsistence, compatible types of recreation, and research" (USFWS 2011). Some uses of the NWR, including commercial guides and outfitters, transporters such as water and air taxis and charters, cabins, and long-term tent camps require a special use permit from the USFWS. General public use of the NWR for hunting, wildlife viewing, photography, interpretation/environmental education, hiking, and camping do not require a special use permit (USFWS 2014b).

BLM

The BLM lands within the region are under the management of the Anchorage Field Office and are part of the Iliamna East planning block under the Bay Resource Management Plan (RMP) (BLM 2008b). Only one BLM tract within the Iliamna East area is unencumbered; the remainder of the BLM parcels are selected by the state, ANCSA corporations, or both (BLM 2008b). BLM manages these parcels until they are conveyed and is required to seek and consider comments from the relevant Native Corporation for any authorization to use Native-selected lands (Kevin Waring and Associates 2011). RMP recommendations for management of ANCSA selected

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lands would be implemented by BLM only if the land selections were relinquished to the federal government (Kevin Waring and Associates 2011).

Pertinent recreation management direction in the RMP includes:

- management of all unencumbered and selected lands (until they are conveyed) as semi-primitive motorized;
- opportunities for commercial recreation will be provided consistent with area objectives for recreation management;
- lands would be managed for dispersed recreation use and no facilities would be developed; and
- camping associated with commercial activities would be prohibited without BLM written authorization, though short-term camping not associated with commercial activities would be allowed for less than 14 days in one location (BLM 2008a).

3.5.1.2 State Lands

Alaska Department of Fish and Game

McNeil River State Game Refuge and Sanctuary

The 2008 Management Plan for the McNeil River State Game Refuge and Sanctuary includes statutory goals for the sanctuary and refuge, as well as policies regarding recreational topics such as access, information and education, recreation activities, camping, structures, boat storage, and trails (ADF&G 2008). Under Alaska Statute (AS) 16.20.162, access permits are required for entry into the McNeil River State Game Sanctuary. Permits are required for bear viewing, special access to the sanctuary (e.g., for scientific, educational and media purposes), transporters, and activities in the sanctuary other than viewing bears (non-viewing permits) (ADF&G 2018e).

Alaska Department of Natural Resources

Bristol Bay Area Plan

The Bristol Bay Area Plan covers state lands just inland of Cook Inlet west to Bristol Bay. The plan includes chapters on the goals and management guidelines for public recreation and tourism as well as public access. The project area is within Regions 6, 8, 9 and 10 of the plan area. In Region 6, the project area, specifically the Mine Area and a portion of the Transportation Corridor, would be within Units 23 and 24, both of which are designated Minerals, which is given to areas associated with significant resources that may experience minerals exploration or development. Permanent facilities related to commercial recreation are prohibited in Unit 23 (ADNR 2013).

In Region 9, the project area, specifically the Transportation Corridor, is within Units 7 and 7A. Unit 7 is designated General Use and is to be managed for a variety of uses, including dispersed recreation. General Use areas are not intended for intensive forms of development other than occasionally and at specific sites, usually associated with mining, oil and gas exploration or recreation. Unit 7A is designated as Habitat for protection of moose wintering habitat. The plan notes that development is not appropriate in this unit, other than utility, communication, road/bridge, or other public service-related development (ADNR 2013).

In Region 10, the project area, specifically the Transportation Corridor, is within Units 1 and 2. Unit 1 is designated General Use and is to be managed for a variety of uses including public

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recreation and tourism. Unit 2 is designated Minerals and Habitat. The plan specifically notes that the "general resource management intent for the Pebble Copper area is to consider mineral exploration and development, while ensuring the protection of important habitat areas." Specifically, upper Talarik Creek, in both Units 1 and 2, is to be protected for its recreation, habitat, and water resource values. Permanent commercial recreation-related facilities are prohibited in Unit 2. The plan also notes that impacts to dispersed recreation along Talarik Creek should be avoided in Unit 2 (ADNR 2013).

Lower Talarik Creek Special Use Area

The Lower Talarik Creek Special Use Area was established in 1999 and within this area the state has limited commercial recreation activities to day use only with registration. From August through October, camping for personal noncommercial use within this area is only allowed for no more than five days in a designated area adjacent to the ADF&G cabin (ADNR 2013).

Kenai Area Plan

The Kenai Area Plan covers state lands on the Kenai Peninsula and the west side of Cook Inlet. The plan documents the land management intent for the applicable lands and includes chapters on the goals and management guidelines for public recreation and tourism as well as trails and access. The project area is within Regions 7 and Region 12 of the plan area. In Region 12, the project area is within Unit 592, which is designated Habitat and will remain in state ownership. There is no mention of recreation use of this area. The project would also pass near Augustine Island. The island itself is under an Interagency Land Management Assignment to the University of Alaska for research and will be managed for scientific and education purposes. The plan states that any authorized recreation uses of the island should minimize impacts on research opportunities and natural processes on the island. Immediately south of the island, state lands are within unit 522A. The plan designates this unit as Public Recreation and Tourism and notes that these areas attract recreationists that range throughout the area and may have a high potential for dispersed recreation because of desirable recreation conditions (ADNR 2001).

3.5.1.3 Local Lands

Alaska Native Corporations Lands and Native Allotments

Land owned by Native corporations or and within Native Allotments are considered to be private property and therefore are not open for public recreation use. Permission and/or permits for access and seasonal recreation use of these lands must be obtained from the landowner.

3.5.2 Regional Recreation

For the purposes of this section, the region around the project site is defined as the area from Lake Clark National Park and Preserve south to Katmai National Park and Preserve and from the Mulchatna River east to the western Kenai Peninsula. Refer to Figure 3.2-01 for generalized land status.

The region around the project site is generally inaccessible by road, except for the Kenai Peninsula area near the east end of the gas pipeline. There is a limited road system that connects Iliamna with Newhalen and supports sports fishing activities and lodges. The few developed public recreation facilities that are present in the area are generally accessed via air or water. The main public recreation areas within region include the Nushagak River and the Mulchatna River, Lake Clark National Park and Preserve and Katmai National Park and Preserve, Alagnak Wild River, Alaska Maritime National Wildlife Refuge, McNeil River State

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Game Sanctuary and Refuge, scattered Bureau of Land Management (BLM) and State lands, and two state park units on the Kenai Peninsula.

The Nushagak River and the Mulchatna River headwaters are west of the Mine Site and managed by the Alaska Department of Natural Resources (ADNR 2005).

Lake Clark National Park and Preserve is about 15 miles northeast of the Mine Area and is not accessible by road. The park covers the eastern two-thirds of the park unit and the preserve is a north-to-south strip of land adjacent to the western side of the national park. Most of the park is designated wilderness and is the sixth largest park unit in the nation. Within the general park/preserve boundary, there are private inholdings (privately owned or selected by Alaska Native Claims Settlement Act [ANCSA] village or regional corporations) around the southwest third of Lake Clark, including the community of Port Alsworth, around Lower Tazimina Lake, and near the Cook Inlet coast (Kevin Waring and Associates 2011).

Katmai National Park and Preserve is located south of the project area. This NPS unit is primarily national park with the preserve located adjacent to the western part of the northern boundary of the park. Most of the park is designated wilderness and the park/preserve is the fifth largest park unit in the nation. There are also over 20,000 acres of privately-owned lands within the unit (Kevin Waring and Associates 2011).

The Alagnak Wild River consists of 67 miles of river corridor that is mostly (93 percent) federally owned, with some privately-owned Native allotments and other private inholdings within the river corridor. The Wild River begins downstream of Kukaklek Lake and flows westward, though the last 12 miles of the Alagnak River are outside the designated corridor. The River was designated a Wild River in 1980, and there is no road access to it (Kevin Waring and Associates 2011).

The Alaska Maritime National Wildlife Refuge (NWR) includes 3.4 million acres (USFWS 2013) from Forrester Island in southeastern Alaska to the tip of the Aleutian chain and almost to Utqiagvik on the Arctic Ocean (USFWS 2011). Within the project area, several islands in Cook Inlet are within the NWR.

The BLM lands within the region are scattered north, east and south of Iliamna Lake. Most of the BLM lands in the region have been selected by the state, ANCSA corporations, or both; there is only one small parcel tract that is unencumbered, which is located west of Lake Clark, 25 miles northeast of the Mine Area (Kevin Waring and Associates 2011).

The McNeil River State Game Sanctuary and Refuge is located immediately north and east of Katmai National Park and Preserve, south of Iliamna Lake, and inland of Kamishak Bay. The refuge portion of McNeil is located north of McNeil Falls and Camp and adjacent to Katmai National Preserve, while the sanctuary portion includes the visitor facilities for brown bear viewing at McNeil Falls and Camp and is adjacent to Katmai National Park.

On the Kenai Peninsula, there are two state park-managed recreation areas. One is a 60-acre state recreation site (Stariski) located five miles north of Anchor Point, and the other is the larger Anchor River State Recreation Area, at the mouth of the Anchor River. Both sites are accessible via the Sterling Highway.

There are also various state-owned land parcels and tracts throughout the project area that are primarily managed for minerals, habitat, and general use, which includes recreation.

3.5.2.1 Recreation Opportunities

The following subsections describe the main recreation opportunities and activities that occur within the region surrounding the project. .

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Sport Fishing

Sport fishing is the primary recreational activity that occurs in the EIS analysis area. Rivers like the Nushagak, Mulchatna, and the Kvichak, and Iliamna Lake support recreational fishing for species of salmon, rainbow trout, and other freshwater fish. The sport fishing use is increasing in the area; much public use is guided, with operators flying their clients to a place for the day from nearby lodges or base use out of camps established nearby. Sport fishing is managed by the Alaska Department of Fish and Game (ADF&G) through a permit system.

For information on recreational lodges and guiding operations, see Section 3.6, Recreational and Commercial Fisheries.

Sport Hunting and Trapping

Hunting, primarily for moose, caribou, and bear, is a major recreation activity within the region (Kevin Waring and Associates 2011). Much of the region is open to hunting, except Lake Clark National Park, Katmai National Park, and McNeil River State Game Sanctuary. However, hunting and trapping are allowed within the Lake Clark National Preserve, Katmai National Preserve and McNeil River State Game Refuge (ADF&G 2018e, NPS 2017g, NPS 2018v). Hunting and trapping are also allowed within the Alagnak Wild River and on certain islands within the Alaska Maritime NWR (NPS 2016a, USFWS 2014a). BLM lands are open to hunting, as are state-owned lands unless otherwise restricted by the ADF&G, which manages hunting in Alaska. Hunting on private property, including on village corporation lands and Native allotments, requires landowner permission.

The NPS and State of Alaska cooperatively manage wildlife resources within the three regional NPS units (Lake Clark, Katmai, Alagnak Wild River), and hunters in these units must follow current state hunting regulations and must have all required licenses and permits (NPS 2018v, NPS 2017g, NPS 2016a). The Lake Clark National Preserve is divided into three authorized hunting guide areas and there are currently two concessioners authorized to guide sport hunters in these areas (NPS 2017g). There are also two concessioners authorized to guide sport hunters at Katmai National Preserve (NPS 2018l). The McNeil River State Game Refuge is open to hunting and trapping of species except brown bears (ADF&G 2018e).

As noted in the BLM Bay Proposed RMP/Final EIS, “the BLM-managed portion of the upper Iliamna Lake region has world class recreational values, primary sport fishing and hunting”. Commercial guides under permit with the BLM frequent this area (BLM 2007).

The region is within Game Management Units 9 (most of the region) and 15C (Kenai Peninsula). The project area is specifically within Game Management Units (GMUs) 9B and 15C. The species hunted in GMU 9 include brown/grizzly bear, caribou, Dall sheep, moose, wolf and wolverine. Species hunted in GMU 15 include black bear, brown/grizzly bear, caribou, Dall sheep, moose, mountain goat, wolf and wolverine. In these two GMUs, non-resident sport hunters need a licensed hunting guide or hunt with an Alaska resident who is a close relative for brown bear, mountain goat, and Dall sheep.

Hunting seasons for the species available in these two GMUs vary. Table 3.5-1 lists the hunting seasons for each species by GMU.

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Table 3.5-1: General Hunting Season for Game Management Units 9B and 15C

Species	General Hunting Season*	
	GMU 9B	GMU 15C
Black bear	No closed season	No closed season
Brown/Grizzly bear	September 20 to October 21	September 1 to May 31
Caribou	August 1 to March 31	No open season
Mountain goat	NA	August 10 to October 15 and November 1-14
Moose	Resident: September 1 to September 15 Nonresident: September 5 to September 15	August 25 to September 30
Dall sheep	August 10 to September 20	August 1 to August 5, August 10-September 20
Wolf	August 10 to June 30	August 10 to April 30
Wolverine	September 1 to March 31	September 1 to March 31

Source: ADF&G 2017
*These are general seasons; specific seasons by sex/age/location are not presented here.

Water-Related Recreation (Boating)

Various forms of boating, including canoeing, kayaking, rafting and power boating, are popular within most recreation areas in the region. River kayaking and rafting opportunities abound in Lake Clark and Katmai national parks. The three Wild Rivers in Lake Clark National Park and Preserve (Chilikadrotna, Mulchatna, and Tlikakila rivers) are popular for rafting (NPS 2016e). The 80-mile Savonoski Loop out of Brooks Camp is a popular canoeing and kayaking route in Katmai National Park and Preserve (NPS 2018t). This park also has several popular rafting waterways. Both whitewater and non-whitewater river boating opportunities are available in both park units.

On Alagnak Wild River, whitewater and non-whitewater boating opportunities are also available. Trips often begin at Nonvianuk or Kukaklek Lakes with several take-outs available along the lower 30 miles of river (NPS 2015a).

Boating occurs on the Mulchatna River all the way to its confluence with the Nushagak River. The Koktuli River is also floated to its confluence with the Mulchatna River, both by individuals and as guided float trips.

River-based boating opportunities vary based on season, amount of rainfall and temperatures. Generally, river levels are lowest in spring and increase through spring and early summer as spring rains fall and snowmelt occurs with river levels generally peaking in July and then declining into the fall (NPS 2015a).

Due to lack of road access to the region, and because many visitors travel to the area by small plane, boating equipment that can be brought to the region by visitors is limited. Guided trips are available through approved concessioners in the national parks and via other companies in and around the region.

Lake boating opportunities occur during the ice free season, and are available on several lakes in both Lake Clark and Katmai National Parks and Preserves. Motorboating opportunities are available at Lake Clark and Crescent Lake in Lake Clark National Park and Preserve and Naknek Lake in Katmai National Park and Preserve (NPS 2017h, NPS 2018t). Due to the

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difficulty in getting motorboats to other lakes, motorboating is generally limited to these lakes (NPS 2017h). Lodges and commercial operators provide boat trips, charters, or rentals on these lakes. All three lakes are popular destinations for visitors. There are 10 companies authorized to provide boating trips within Lake Clark National Park and Preserve, three companies authorized for kayak tours, one company authorized for paddleboarding, and one company authorized as a water taxi (NPS 2018o, p, q, r). The Lake Camp area at Naknek Lake in Katmai National Park and Preserve is accessible via the road from King Salmon and contains a boat ramp, parking area, picnic area and restrooms (NPS 2018t). Within Katmai National Park and Preserve, there are 11 companies authorized to provide boating trips, six companies to provide charter boat services, and three companies authorized to provide kayak tours (NPS 2018i, j, k).

McNeil State Game Refuge is open to boating (ADF&G 2018e).

Powerboating, canoeing, and kayaking opportunities are available on Cook Inlet and particularly along the inlet edges such as along the Lake Clark National Park and Preserve where there are also bear viewing opportunities.

Boating opportunities are also available at Iliamna Lake, Alaska's largest body of freshwater (Van Lanen 2012), though most use of the lake is for sportfishing. Access is available from Iliamna and Newhalen.

Kayaking and boating opportunities are also available on the east side of the Cook Inlet near the terminus of the gas pipeline at the Anchor River State Recreation Area. Tractor-assisted boat launching is available at this location. These occur primarily during the summer months.

Wildlife and Nature Viewing

The region surrounding the project area offers highly valued opportunities for wildlife and nature viewing. The most popular wildlife viewing activity in the region is brown bear viewing, both inland and along the Cook Inlet, with the best opportunities provided at food-rich locations, such as major salmon rivers and along the Cook Inlet shoreline. Bear viewing is especially popular at Lake Clark and Katmai national parks, and McNeil State Game Refuge and Sanctuary. Popular locations for bear viewing at Lake Clark National Park and Preserve include Chinitna Bay, Crescent Lake, Silver Salmon Creek, Shelter Creek, and Tuxedni Bay (NPS 2017c). Katmai has many food-rich areas where bears tend to congregate, such as Brooks Camp, in the preserve, and along the Cook Inlet coast. Bears can be found in the Katmai backcountry as well feeding on sedges, clams and salmon (NPS 2018s).

McNeil State Game Refuge and Sanctuary was designated a wildlife sanctuary in 1967 to protect the world's largest concentration of wild brown bears (ADF&G 2018b). McNeil River Falls are located about a mile from the mouth of McNeil River and slow the movement of salmon heading upstream to spawning grounds, causing salmon to congregate at the falls (ADF&G 2018d). Large numbers of brown bears can be seen at McNeil State Game Refuge and Sanctuary in early July through mid-August (ADF&G 2018d).

Notable bird watching opportunities are also available at most recreation areas within the region. Raptors, waterfowl, seabirds, shorebirds, songbirds, and upland birds can be found throughout the region. For instance, 187 species of birds have been documented at Lake Clark National Park and Preserve (NPS 2017d) and millions of sea birds, endemics, and birds from Asia can be found within the Alaska Maritime NWR (USFWS 2016).

Though bear viewing opportunities are world-class within the region, opportunities for viewing other wildlife species are also available at all of the recreation areas within the region. For instance at McNeil State Game Refuge and Sanctuary, harbor seals, moose, caribou, wolves, and wolverines, red foxes, and arctic ground squirrels can also be seen (ADF&G 2018b). There

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are also wildlife viewing opportunities at Iliamna Lake, which contains a rare population of freshwater seals (Van Lanen 2012, ADNR 2013).

Other nature- and wildlife-related opportunities available within the region include nature photography, beach combing, clam digging, and berrypicking (Lake and Peninsula Borough 2018). Often these activities are combined with activities such as bear viewing, sightseeing, backpacking, hiking, camping, etc. during the summer and fall.

Flightseeing/Sightseeing

Due to the lack of road access in the region and the heavy use of small planes and floatplanes for transportation, there are many opportunities for flightseeing in the region. Flightseeing, or sightseeing by plane, is an effective way to see the broader landscapes of the region and even see wildlife and bird species, particularly within the two national park units, and occur primarily during the summer months from June through September. There are many authorized concessioners that offer flightseeing opportunities in Lake Clark and Katmai national parks, with most operators originating out of Anchorage, Homer, King Salmon, Kodiak and Soldotna (NPS 2018n, NPS 2018h). Many air taxis also provide flightseeing tours (NPS 2016c).

Camping/Backpacking/Hiking

Due to the relative lack of developed facilities or trails, and large expanses of wilderness, backcountry recreation activities such as backcountry camping, backpacking, and wilderness hiking are popular within the two national park units. There are also developed camping opportunities at both national parks. Between the two parks, there are very few developed trail opportunities, with less than 5 miles of trail in Katmai National Park and 6.8 miles of trail within Lake Clark National Park (NPS 2016b, NPS Undated 2).

Primitive camping opportunities are also provided within Alagnak Wild River (NPS 2015b). Developed, though low impact, camping and hiking opportunities are available within McNeil State Game Refuge and Sanctuary (ADF&G 2018c).

Camping is allowed on most of the Alaska Maritime NWR though no developed campgrounds exist within the NWR (USFWS 2014c).

Camping related to commercial activities is prohibited on BLM lands without written authorization from BLM. Short-term camping (less than 14 days in one location) not associated with commercial use is allowed.

On state land, access, travel, improvements and structures, and other miscellaneous uses are generally allowed and managed by the Division of Mining, Land and Water.

Camping is also available on the east side of the Cook Inlet near the terminus of the gas pipeline at the Stariski State Recreational Site and Anchor River State Recreation Area, which also offers hiking opportunities.

Due to harsh winter weather conditions within the region, camping, backpacking, and hiking activities are generally conducted during the summer months, from June through September.

Other Opportunities

Biking on ice using fat tire bikes is a new winter use in Lake Clark National Park and Preserve. There is currently no restriction on bike use within the park (NPS 2016d). Other winter activities include cross-country skiing, snowshoeing, trekking, and riding snowmachines.

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3.5.2.2 Recreation Facilities

Commercial Lodges

Commercial lodges are the main form of lodging within the region due to the lack of consistent visitation to support hotels and motels. There are clusters of commercial lodges at Port Alsworth, King Salmon, Naknek, Iliamna/Newhalen, Homer, Pedro Bay, and Kokhanok, as well as along the Kvichak, Mulchatna, and Alagnak rivers (ADNR 2013). There are also commercial lodges scattered around the region on private inholdings within Lake Clark and Katmai national parks (NPS 2017f, NPS 2015d). Often commercial lodges also provide guide services for hunting, fishing, and other recreation activities on private property, Native corporation land, and/or on public lands. Therefore, commercial lodges provide a home base for many recreationists and a starting point for trips onto public lands. Please see Section 3.6, Recreation and Commercial Fisheries for more details on the commercial lodges present within the region.

Public Recreation Facilities

Public recreation facilities within the region include lodges, campgrounds, cabins, a primitive camping area, trails, and visitor centers. The only public lodge facilities within the region are located at Katmai National Park. There are two lodges in the park, Brooks Lodge and Grosvenor Lodge, both operated by a concessioner (NPS 2015d). In addition to a lodge, Brooks Camp contains a campground for 60 people, a visitor center, ranger station, and an auditorium with daily ranger-led programs. Facilities at Brooks Camp are available from June 1 to September 18 (NPS 2018u). There is also a six-person public use cabin, Fures Cabin, on the Bay of Islands on Naknek Lake within Katmai National Park that is available from June 1 to September 17 (NPS 2015c). There are 5 miles of trail within the national park and one scenic overlook. The Lake Camp area at Naknek Lake in Katmai National Park and Preserve contains a boat ramp, parking area, picnic area and restrooms (NPS 2018t).

Developed facilities at Lake Clark National Park include a cabin and primitive camping area. The Priest Rock Public Use Cabin is a historic log cabin for six people on the north shore of Lake Clark and is accessible by float plane or boat (NPS 2017i). The Hope Creek Primitive Camping Area is located at Upper Twin Lake near the Proenneke Historic Site and does not provide any services (NPS 2017f). The maintained trails in the park are the Tanalian Trails that begin in Port Alsworth and continue to Tanalian Falls or Tanalian Mountain (NPS 2017e).

There are no developed facilities within the Alagnak Wild River, but the U.S. Fish and Wildlife Service (USFWS) has a visitor center nearby in King Salmon.

McNeil Camp at McNeil State Game Sanctuary provides 14 campsites, a public use cook cabin for food storage and cooking, restrooms, a washhouse and staff facilities (ADFG 2018c).

The Alaska Maritime NWR does not contain any recreation facilities in the region other than a visitor center in Homer (USFWS 2014c).

There are no developed facilities on BLM lands (unencumbered or selected).

The two state park units on the Kenai Peninsula near the terminus of the gas pipeline both contain camping and picnicking facilities. There are 13 campsites and some picnic sites at Stariski State Recreational Site and 186 campsites total in five separate campgrounds at Anchor River State Recreation Area, along with 20 picnic sites and a boat launch.

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3.5.2.3 Recreation Access

Overland Access

Road access to or within the public recreation areas in the region is limited to outside of and within Katmai National Park, in the vicinity of Iliamna/Newhalen, and from the Sterling Highway from Soldotna to Homer on the east side of the region. There are unpaved and paved (the Alaska Peninsula Highway) roads between the town of Naknek (located west of the park) and Lake Camp on Naknek Lake within the park (NPS Undated 1). These roads allow access from nearby towns to the boat ramp facility within the park on Naknek Lake. There is also an unpaved road from Brooks Camp to the Valley of Ten Thousand Smokes viewpoint at the Three Forks Overlook (NPS Undated 1). Daily bus tours are provided from Brooks Camp to the overlook when Brooks Camp is open (June 1 to September 18) by the Brooks Camp concessioner (NPS 2018u).

On the east side of the region, the Sterling Highway provides road access to the Stariski State Recreational Site and Anchor River State Recreation Area on the Kenai Peninsula.

Locally within the project area, skiffs, all-terrain vehicles (ATVs), and trucks are the primary modes of local surface transportation around Iliamna Lake (ADNR 2013).

Water-Based Access

Inland of Cook Inlet, water-based access to public recreation areas occurs on major rivers and lakes. Small boats can travel up the Naknek River to Lake Camp in Katmai National Park and boats can travel the Alagnak Wild River as well (Kevin Waring and Associates 2011; NPS 2015a). Lake Clark and Naknek Lake provide water-based access to portions of Lake Clark and Katmai national parks, respectively. Water-based access can also be provided at Iliamna and Nondalton. Within and along the shoreline of Cook Inlet, water-based access is essential to reaching public recreation destinations such as the eastern portions of Lake Clark and Katmai national parks and the Alaska Maritime NWR. Commercial boat operators need to be authorized to operate in the three NPS units and Alaska Maritime NWR (NPS 2018i, NPS 2018o, NPS 2018f, USFWS 2014b).

Air-based Access

Air-based travel via small plane or floatplane is the main form of access to recreation areas in the region, primarily from Anchorage, Homer, Iliamna, King Salmon, Port Alsworth, Kodiak, Dillingham, and Soldotna. Airport facilities located near the project area include Iliamna, Igiugig, Levelock, Big Mountain, Koggiung, Kvichak/Diamond J, Kokhanok, and Pedro Bay (DNR 2013). Only certain air taxi services are allowed to operate within the three NPS units, McNeil State Game Refuge and Sanctuary, and Alaska Maritime NWR (NPS 2018h, NPS 2018n, NPS 2018e, USFWS 2014b, ADF&G 2018f). Different air taxi providers can land on different surfaces depending on the landing gear of the plane (e.g., floats/amphibious gear, wheels, skis/wheeled skis) and therefore have various seasons and conditions in which they can operate.

3.5.2.4 Recreation Settings

Apart from a few developed sites previously described, the regional public recreation areas generally provide a primitive, remote recreation setting where solitude is common and there are no lights or sounds from human development. In popular areas (primarily popular bear viewing locations), the few developed sites such as Lake and Brooks camps, and areas closer to villages/towns, the recreation setting may include views of limited human development and other visitors, though the setting is still primarily remote and primitive.

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3.5.2.5 Recreation Use and Users

Given the lack of easy access and limited, dispersed development within the region, overall recreation use is estimated to be relatively low for all public recreation areas in the region. The Bristol Bay Area Plan notes that southwest Alaska shows among the lowest level of tourism compared to other areas of the state in general, with only 17 percent of visitors to Alaska traveling to southwest Alaska and only three percent traveling to southwest Alaska as their sole destination, with the majority of these visits to Katmai National Park and Wood-Tikchik State Park (ADNR 2013).

Between 2008 and 2017, Katmai National Park and Preserve has seen an average of 36,825 visitors per year. During the same period, Lake Clark National Park and Preserve averaged 13,402 visitors per year. According to monthly visitation data, peak use of these two areas is from June to September, when the majority of annual use occurs, especially at Katmai National Park and Preserve where 97 to 100 percent of the park's visitation occurs during these months. In the last six years, about 80 percent or more of the visitation to Lake Clark National Park and Preserve has been during the peak season (June to September). These months are the peak season months for the entire region due primarily to the accessibility, weather conditions, and wildlife present during these months. The Long Range Interpretive Plan for Katmai National Park and Preserve notes that most of the park's visitors participate in two primary activities, bear viewing and sport fishing, and there are virtually no drop-in visitors due to the effort needed to reach the park (NPS 2009).

The number of bear-viewing visitors at McNeil River Camp was an average of 178 people per year between 2008 and 2017. The number of bear-viewing visitors at McNeil River Camp is capped at 257 visitors per year. In 2017, there were 1,092 user days (the participation in a recreation activity at a given resource during a 24-hour period by one person) associated with the bear-viewing program at McNeil River Camp in McNeil State Game Refuge and Sanctuary and another 513 user days reported by guides or the public using the Kamishak River and Chenik Creek areas of the refuge and sanctuary, primarily for fishing and bear viewing (ADF&G 2018a). The annual visitation to the Kamishak River and Chenik Lake areas likely varies due to the number of commercial transporter permits issued and used at each of these areas each year. There are no visitation estimates available for Alagnak Wild River, Alaska Maritime NWR, BLM lands or state lands/park sites.

Overall, due to the remoteness and lack of easy access and lodging facilities, it is expensive to visit the recreation areas within the region. As stated in the Alaska Maritime NWR Land Protection Plan, "recreational use is limited by the difficult logistics and expense of visiting remote islands. However, it is possible that the demand for visitor services will increase in the future as adventure travel becomes increasingly popular" (USFWS 2011). This may be true for other areas as well.

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AESTHETICS AND VISUAL RESOURCES

This section describes the aesthetics and visual recourse baseline conditions, the management framework as it relates to these resources, the visual setting and landscape character of the area, and important viewing locations and viewers in the area.

Land use and management plans are used to guide the discussion of landscape character, subsistence activities, recreation and landscape setting to describe the importance and function of the visual resource attributes. Additional details on recreational and subsistence uses of lands within the EIS analysis area are found in the related Sections 3.4, Subsistence, and Section 3.7, Recreation.

3.1.1 EIS Analysis Area

The visual resources analysis area extends eastward from Happy Valley on the Kenai Peninsula of Bristol Bay and Cook Inlet drainages to the eastern side of the Insikin Peninsula, encompassing Iliamna Lake and the surrounding communities (Figure 3.11-1). The analysis area consists of a viewshed of a 50-mile radius from the Mine Site; 15-mile radius from the ferry terminals, 20-mile buffer from the Transportation Corridor and Natural Gas Pipeline, and 25-mile radius around Amakdedori Port. The analysis area for aesthetic and visual resources was developed to address indicators of change including potential direct and indirect effects to landscape character (including naturalness), recreation setting, cultural and historic setting, subsistence activities, and socioeconomics (tourism).

[Note: Figure 3.11-1 is under development and will include geographic locations of visual importance.]

3.1.2 Methods for Establishing Baseline Conditions

Data collection was implemented across the analysis area as part of the project's environmental baseline study program. The area was evaluated using both desk top and field observation and considered impacts over four seasons. Components supporting this study include: viewshed modeling of major project components (Mine Site, access roads, Amakdedori Port, Natural Gas Pipeline right-of-way, and north and south ferry terminals at Iliamna Lake), interdisciplinary coordination, identification of Key Viewing Areas (KVAs), characterization of viewer groups and related sensitivity to change in landscape character, and baseline data collection on visual and aesthetic resources (visual quality, visual distance zones).

Baseline visual resource conditions were established by: 1) implementing a viewshed analysis; 2) completing a regulatory and management review to establish areas where visual resources are managed by federal, state, or local planning documents; and, 3) assessing visual resource attributes, potential viewer groups, and visual distance zones (visibility) within the analysis area.

Locations from which the project could be seen within the analysis area were determined by implementing a viewshed analysis using geographic information system (GIS). This analysis determines project visibility based on the relationship between topography, height of project components, average eye height of the viewer, and height of vegetation. The resulting "seen area" or viewshed represents area that may contain views of proposed project features. However, it does not represent any measure of detectability of these features.

[Note: Specifics of the viewshed analysis are pending RFI 34]

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Figure 3.11-1: Title

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The viewshed analysis was also used to assess how project features would be seen within the larger context of the analysis area. For example, viewers moving through the landscape may experience intermittent views of proposed project components where topography is variable and more prolonged views where topography is flat.

The regulatory and management framework review included federal, state, and local planning documents for planning areas with a geographic nexus to the project area. The review focused on identifying specific regulations or planning objectives pertaining to visual resources or scenery management.

Visual resource attributes were assessed by first dividing the analysis area into geographic units defined by prevailing physiography (Wahrhaftig 1969), then assessing landscape character in each geographic unit. Landscape character attributes were described in terms of landscape character typology the basic elements of form, line, color, and texture of prevailing landform, water, vegetation, and cultural modification. This approach was applied across the analysis area to ensure that baseline data in visual resources was collected consistently across all jurisdictions.

Viewer groups were identified through coordination with recreation, cultural, and subsistence resources, and review of scoping comments. These sources were used to understand how specific locations within the analysis area are used, and the types of viewer groups that may be associated with those uses. Characteristics of identified viewer groups, such as seasonality, amount of use, and predominant viewer activity were in this inventory.

Project visibility, or distance zones, was assessed by subdividing into three zones based on relative distance from travel routes or observation points. Common travel routes included common commercial flight paths and common local flight paths. Distance zones were classified as: foreground (0 to 1/2 mile from view point), middle ground (1/2 to 5 miles), and background (over 5 miles). Visual clarity applies to all distance zones.

3.1.3 Viewshed Analysis

[Note: Information regarding the viewshed analysis is pending RFI 34]

3.1.4 Regulatory and Management Framework

The project area is set within the Alaska Department of Natural Resources Bristol Bay and Kenai Planning Units (ADNR 2013; ADNR 2000). These areas are managed per the Bristol Bay Area Plan (ADNR 2013) and the Kenai Area Plan (ADNR 2000) to “maintain the quality and diversity of the natural environment and protect heritage resources and the character and lifestyle of the community.”

The project area also considers lands owned by seven Alaska Native Claims Settlement Act (ANSCA) corporations. ANSCA does not provide provisions for the protection or management of visual resources.

3.1.5 Landscape Character

The landscape setting within the visual resources analysis area includes mountain ranges surrounded by river valleys, rivers, shrub tundra, marshy lowlands, wetlands, coastal shoreline, estuaries and ocean inlet environments. Primary river drainages intersecting the analysis area include the Mulchatna, the Nushagak, and Koktuli rivers. While the Mulchatna and the Nushagak have been federally determined as “navigable,” the Koktuli has been determined navigable by the state. The waterways provide access to remote recreation and subsistence areas. Human development within the analysis area is generally limited to areas in and around

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geographically isolated communities, and small fishing and hunting lodges. Development includes roads, airstrips, and docks.

The visual resources analysis area falls within portions of four different physiographic units: Nushagak – Big Hills, Nushagak – Bristol Bay Lowland, Aleutian Range, and Alaska Range (USGS 1965). The landscape character of each physiographic unit is influenced by the fluvial geomorphologic, hydrologic, vegetation cover, elevation and landforms within each area, as described below.

3.1.5.1 Physiographic Units

The **Nushagak—Big River Hills** are characterized by flat-topped ridges ranging in elevation from 1,500 feet to the west, 2,500 feet to the east, and 4,200 feet to the north. The Big River Hills unit drains to the Kuskokwim River from primary tributaries. The southern section of the physiographic unit drains to the Mulchatna and Nushagak rivers. Vegetation communities consist of spruce, birch and cottonwoods along riparian corridors (USGS 1969, ADNR 2005).

The **Nushagak—Bristol Bay Lowland** is dotted with moraine lakes rising from sea-level to an altitude of 300 to 500 feet at its high point. Linear narrow belts of elevated topography enclose large glacial lakes fed by upland hydrology. The lowland is drained by the Nushagak and other rivers flowing to the estuaries of Bristol Bay. This physiographic unit is of the marine phase of the tundra climate with mild winters and short cool summers. Dominant vegetation includes moist wet tundra plant communities. Standing water, mosses, sedges, and low-growing shrubs cover the landscape with clumping stands of alder, willow, and patches of stunted spruce and birch growing along the riparian edges of major streams and rivers (USGS 1969, Baily 1995).

The **Aleutian Range** consists of heavily glaciated U-shaped valleys, rugged ridges and mountain peaks anchored between the Pacific Ocean and the Bearing Sea. It runs west to Aleutian Island with an elevation ranging from 1,000 to 4,000 feet. The Aleutian Range is flanked by large volcanic peaks elevating upward to 8,500 feet. Steep rivers drain south to the Pacific Ocean while braded meandering rivers run slowly to the Bearing Sea. The west end of the Aleutian Range drains into the Bristol Bay Lowland feeding hundreds of small lakes and ponds. Vegetation is sparse consisting of spruce, birch and cottonwoods along riparian corridors and a spattering of open low shrub tundra as the elevation increases (USGS 1969, Gates 2018, EB 2015).

To the east, the **Alaska Range** connects with the Aleutian Range between Iliamna Lake and Mount Spurr. The mountain range extends over 600 miles to the Canadian border. The heavily glaciated mountain ranges average between 7,000 to 10,000 feet in elevation with a number of peaks exceeding 10,000 feet. The Alaska Mountain range is the divide for rivers flowing from the Yukon Territory south to the Gulf of Alaska. The southern section drains through glacial streams to the Kuskokwim River and to the Nushagak or Kvichak rivers and eventually flowing into Cook Inlet (USGS 1969, EB 2015).

3.1.6 Landscape Setting

3.1.6.1 Mine Site

The proposed Mine Site would be located within the southern section of the Nushagak – Big River Hills physiographic unit. The landscape is large in scale, with views from ridge tops largely panoramic; however there is more enclosure in drainages and low elevation areas. Topography is dominated by numerous rounded hills that appear as consistent and well-defined by the converging lines of drainages. As elevation increases, trees become stunted and vegetation becomes intermixed with short alpine tundra and exposed rock outcrops.

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The upper sections of Talarik Creek and Koktuli rivers meander through eroded, braided wetlands and tundra flowing into Iliamna Lake to the Kvichak River before draining to into Bristol Bay. The Talarik Creek floodplain is characterized by exposed flat grasslands and low sand dune created from strong winds with little diversity of vegetation. These river systems not only provide habitat for salmon but important travel routes to remotes areas for subsistence uses in the summer and winter.

The four major mountains located near the Mine Site are Sharp Mountain, Pig Mountain, Kaskanak Mountain, and Groundhog Mountain. All of these mountains are focal from neighboring Iliamna Lake and rising to an elevation of 3,500 feet. The rounded tops and linear traverse of the mountain set a distinct backdrop to the ground moraines, sediment deposits and alluvial fans that make up the basis of the landscape.

Viewer groups in this area are limited to individuals engaged in subsistence or recreation and tourism activities, and exposure is low due to remoteness of area and lack of access and infrastructure. These individuals experience the landscape from fixed points while fishing or viewing wildlife and can be transient as they move through the landscape on foot, snowmachine, or aircraft. Small aircraft are used to provide access for fishing and hunting areas and to a lesser extent, provide tours for nature viewing. Areas on the flight paths provide an expansive view of the landscape settings. During winter months, overland travel (via snowmachine) is more common as the ground is frozen.

3.1.6.2 Transportation Corridor

The proposed transportation corridor is a linear system that cuts through the Nushagak – Big River Hills, and Nushagak – Bristol Bay Lowland physiographic units.

Iliamna Lake sits within the Bristol Bay Lowlands southwest of Lake Clark National Park and Preserve and the northwestern edge of the Alaska Range. Iliamna Lake is approximately 100 miles long by 30 miles wide and is the largest fresh water lake in Alaska. The shallow shoreline is made up of long fine edges, meandering inlets and checkered islands. The low topographic relief provides extensive panoramic views extending across the tundra to Iliamna Lake. Within the immediate foreground the wet shrub tundra presents limited obstruction to vast views of the surrounding landscape. To the west is the Bristol Bay lowlands made of wet shrub tundra, marsh lands and hundreds of small lakes. Northern views feature the rounded mountains of the Nushagak–Big River Hills.

From Iliamna Lake the viewing position is either from the shoreline or from a boat on the water. Access to the surrounding landscape for commercial, subsistence and recreation uses are through the main airport and community of Iliamna. Air transportation is the dominant form of travel in the area. From the elevated position within an aircraft the viewer can relate to the expansive undisturbed landscape setting.

Flowing into Iliamna Lake from the north is the Lower Talarik Creek. The State of Alaska established the Lower Talarik Creek Special Use Area in 1999 as a high value resource for fish and wildlife habitat and subsistence harvest as well as local and commercial recreation.

Lake Clark National Park and Preserve is located at the northwestern edge of the Alaska Range to the south east of the Pebble Mine Project access road. The park is the start of the long string of mountains tied together through glaciers and snow covered peaks. The features are viewed by aircraft while traveling in and out of the park, and local communities.

Roadhouse Mountain is a popular summer hiking route that is located to the southwest of the Mine Site along the border of Lake Clark National Park and Preserve and the north end of Iliamna Lake. Expansive 360 degree panoramic views dominate the viewer experiment from the

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top of Roadhouse Mountain. Significant visual features include Iliamna Lake and its district shoreline. The marshy wet lowlands and the river valleys of the Nushagak – Big River Hills dominate the foreground view while Sharp, Groundhog and Kaskanak mountains frame the background views.

Lake Clark National Park and Preserve contains recreation and commercial recreation services. Hiking to the view point at the top of Roadhouse Mountain is a popular activity within the park providing expansive views of the surrounding area.

3.1.6.3 Amakdedori Port

The proposed Amakdedori Port site is located on State lands designated for habitat use in the Kenai Borough area boundary. The area located to the northern end of the Aleutian Range is considered wet shrub tundra collecting runoff forming wet meadows, bogs, and hundreds of small lakes.

This area is noteworthy because of its close proximity to the Katmai National Park and Preserve, the McNeil River State Game Sanctuary, and Kamishak Bay and the steep mountain Peaks of Katmai National Park.

As described in Section 3.5, Recreation, the McNeil State Game Refuge and Sanctuary is a premier destination for bear viewing and is home to the largest bear populations in Alaska. McNeil River Falls, which is located about a mile from the mouth of the McNeil River, slows the movement of salmon. Large numbers of brown bears can be seen at McNeil State Game Refuge and Sanctuary in early July through mid-August (ADF&G 2018d).

Viewer positons take into account the elevation and whether the viewer is in a fixed or a moving status. Private outfitters run single and multi-day commercial tours to the Kenai National Park and Preserve from May through September. Single day adventures tours are offered from as far away as Anchorage and as close as Homer.

Single day tours are almost exclusively accessed through aircraft. Visitors are flown into the park over the proposed project area to access bear viewing locations along the coastline, within the estuaries and up the streams corridors and over the Glaciers of Four Peaks Mountain. Multiday commercial tours either stage outside the park on large boats within Kamishak Bay or at lodges within the Park.

3.1.6.4 Natural Gas Pipeline

The Pipeline interfaces with the entire physiographic unit system tying the Cook Inlet – Susitna Lowlands to the Nushagak – Big River Hills. The Sterling Highway winds its way along the steep shoreline of Susitna Lowlands terminating in the town of Homer. Vast panoramic views of the Cook Inlet and the rocky beaches are consistent along this linear corridor. The area is populated with residents, recreationists and tourists and commercial operators utilizing the Cook Inlet and Kenai Peninsula as base to access the natural and remote setting of Bristol Bay, Iliamna Lake and the National Parks and Preserves.

Viewer groups on the Kenai Peninsula are more apt to interact with the linear Pipeline due to the relative increase in population and the position along the Sterling Highway. The popular travel corridor brings many tourists during the summer months.

3.1.6.5 Viewer Groups and Visual Sensitivity

There is seasonal variation in the number and type of viewers within the analysis area. According to Section 3.5, Recreation, a majority of visitors come to experience the “naturalness”

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and "abundance of resources" from May through October. This seasonal access corresponds with fishing and hunting activities and is the high season for recreation, tourism and subsistence activities. Access to fishing and hunting grounds for recreation and subsistence use is from air travel, boat and off road vehicles.

Although the majority of recreation and tourism occurs in the summer, ongoing subsistence activity and inter-village travel occurs in the winter. As the marshy grounds freeze, travel via snowmachine provides access to areas not available in the warmer seasons. Commercial activities consist of fisheries, recreation, and tourism.

As shown in Figure 3.2-01A, the Alagnak River is designated as a Wild River. The Alagnak River is located to the about 30 miles west of the proposed mine site and 10 miles from Iliamna Lake. The Alagnak provides some of the most remote and scenic traditional Alaska experience in the area. The Alagnak River is accessed by aircraft and from the east side of the Katmai National Park and Preserve. The river has a reputation of being a world-class fishery and is considered to be one of the most popular fly-in fishing destinations in southwest Alaska.

Commercial recreation fishing lodges and camps are located on the Kvichak and Alagnak Rivers. Several lodges on the main stem of the Alagnak, at the outlet of Nonvianuk Lake, and one on the Kulik River provide guided fishing services. Together these lodges support the majority of the visitation for fishing in the area. Access to the fishing lodges and camps are through aircraft or motorized boat transportation. The elevated position provides a contextual experience, allowing the viewer to see broad expanses of the landscape.

Viewer groups within the analysis area include local residents and communities, and those engaging in subsistence activities, recreationists, and travellers.

Local Communities. Local Communities are located throughout the analysis area. Communities along the shoreline of Iliamna Lake consist of Iliamna, Newhalen, Pedro Bay, Kokhanok, and Igiugig. To the north at the edge of Lake Clark National Park and Preserve is the town of Nondalton. The landscape is dominated by vast panoramic views of Iliamna Lake, with a backdrop of the mountains of the Big River Hills.

Subsistence Areas. See Section 3.9, Food and Fiber Production – Subsistence, for subsistence activity locations. Summer access to these areas is primarily by boat and aircraft, while in winter travel follows the frozen rivers and tundra by snowmachine. Air travel is also prevalent in the throughout the year.

Recreation Areas. Recreation extends from the fishing camps along Iliamna Lake into Lake Clark National Park and Preserve, Katmai National Park and Preserve, and up the Koktuli River Watershed and into the tundra of the Big River Hills. Outfitters provide guide service from fishing and hunting camps to remote locations within the Big River Hills and fishing areas on Iliamna Lake, and Kamishak Bay within the Cook Inlet.

Transportation Routes. Several transportation routes used by industry, local communities, and subsistence and recreation users are limited to air travel and boat. Short unimproved roads connect the communities of Newhalen and Iliamna to Nondalton.

Air Travel. Low-altitude local aircraft may fly over the project area during scheduled air service or en route to remote communities or hunting/fishing destinations.

3.1.6.6 Key Observation Points

Key Observation Points (KOPs) representing common and/or sensitive viewer locations were established within the analysis area. These locations represent point-based (vistas), linear (roadways), and area-based viewer locations characterized by residential, subsistence or

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recreational uses discussed above. The KOPs were used as standard locations from which to describe existing visual resources at a localized scale, and to assess potential effects that may result from the proposed project. KOPs are described in Table 3.11-1 by viewer group. Note that more than one viewer group may use an area represented by a KOP.

Table 3.11-1: Key Observation Points

Number	Location (Physiographic Zones and estimated Lat/Long)	Analysis Factors	Viewer Sensitivity	Viewer Duration
1	• Kenai • 59°56'4.13"N 151°44'48.51"W • Deep Creek State Recreation Area	Natural gas pipeline shoreline infrastructure	• Foreground, middle ground • Low to moderate visual sensitivity • Focal as the Pipeline follows the scenic Sterling Highway	Intermittent
2	• Kenai • 59°46'40.41"N 151°51'52.06"W • Anchor Point State Recreation Area	Natural gas shoreline infrastructure	• Foreground • Potential for high sensitivity • Visibility: focal; dominant Pipeline and substation • Recommended as a KVA	Intermittent
3	• Kenai • 59°30'50.09"N 153°16'41.31"W Kamishak Bay Augustine Island North	Amakdedori Port facilities; increased shipping traffic	• Immediate foreground, middle ground • High sensitivity • Visibility: focal; co-dominant Augustine Island • Recommended as a linear KVA approach by boat to the KVA	Prolonged
4	• Kenai • 59°13'47.27"N 153°37'27.40"W • Kamishak Bay Augustine Island South	Amakdedori Port facilities; increased shipping traffic	• Immediate foreground, middle ground • High sensitivity • Visibility: focal; co-dominant with background views of the McNeil River Wildlife Refuge, Augustine Island and glacial mountain peaks • Recommended as a linear KVA – approach by boat to the KVA	Prolonged
5	• Kenai • 59°15'35.49"N 154° 8'22.11"W • Nordyke Islands Adjacent to McNeil River State Game Sanctuary (SGS) and State Game Refuge (SGR)	Amakdedori Port facilities; increased shipping traffic	• Foreground and middle ground • Moderate to high sensitivity • Recommended as a linear KVA – approach by boat to the KVA	Prolonged

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Table 3.11-1: Key Observation Points

Number	Location (Physiographic Zones and estimated Lat/Long)	Analysis Factors	Viewer Sensitivity	Viewer Duration
6	• Kenai • 59°15'35.49"N 154° 8'22.11"W • McNiel River State Game Refuge	Amakdedori Port facilities; increased shipping traffic	• Immediate foreground • High sensitivity from the shoreline at the mouth of McNeil River • Dominant/focal view • Mouth of McNeil River highly scenic, highly visited area • Recommended as a KVA	Prolonged
7	• Nushagak –Bristol Bay Lowland • 59° 0'57.74"N 156°12'53.24"W • Alagnak Wild River	Mine Site, ferry terminals and icebreaker ferry	• Background • Low sensitivity from the fixed viewpoint along the river • High sensitivity from elevated view point while traveling to the river • Visibility: bare earth; low due to distance and scale of project • Recommended as a KVA due to its status as Wild River	Intermittent
8	• Nushagak – Bristol Bay Lowland • 59°29'51.72"N 155°16'3.57"W • Iliamna Lake South	Mine Site, ferry terminals and icebreaker ferry	• Foreground: ferry terminals and icebreaker ferry • Middle ground: Pipeline and transportation corridor • Background: Mine site operations • Low sensitivity from the fixed viewpoints at the south end of the lake • High sensitivity from elevated view point while traveling to the river • Visibility: bare earth; low due to distance and scale of project • Visibility: focal; co-dominant • Recommended as a KVA	Intermittent
9	• Nushagak – Bristol Bay Lowland • 59°31'56.87"N 154°49'45.94"W • Iliamna Lake North	Mine Site, ferry terminals and icebreaker ferry	• Foreground: ferry terminals and icebreaker ferry • Middle ground: Pipeline and transportation corridor • Background: Mine site operations • Low sensitivity from the fixed viewpoints at the south end of the lake • High sensitivity from elevated viewpoint while traveling to the river • Visibility: bare earth; moderate to high due to proximity, distance and scale of project • Visibility: focal; co-dominant • Recommended as a KVA	Intermittent

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Table 3.11-1: Key Observation Points

Number	Location (Physiographic Zones and estimated Lat/Long)	Analysis Factors	Viewer Sensitivity	Viewer Duration
10	• Nushagak – Bristol Bay Lowland • 59°44'5.94"N 154°57'52.55"W Newhalen River	Mine Site, ferry terminals and icebreaker ferry. Transportation Corridor	• Foreground: Mine site operations and the Transportation Corridor • Middle ground: ferry terminal and icebreaker • High sensitivity within the foreground setting • Moderate sensitivity in the middle ground setting • Visibility: bare earth; moderate to high due to proximity, distance and scale of project • Visibility: focal; dominant • Recommended as a KVA	Intermittent
11	• Alaska Range • 59°15'35.49"N 154° 8'22.11"W • Roadhouse Mountain trail overlook	Mine Site, ferry terminals and icebreaker ferry. Transportation Corridor	• Background • Moderate sensitivity • Visibility: bare earth; moderate due to proximity, distance and scale of project • Recommended as a KVA	Prolonged
12	• Alaska Range • 60°11'57.47"N 154°20'31.12"W • Port Alsworth: Lake Clark National Park	Mine Site and Transportation Corridor	• Background • Moderate sensitivity from the elevated position • Visibility: bare earth; moderate to high due to proximity, distance and scale of project • Recommended as a KVA	Intermittent
13	• Alaska Range • 59°57'10.05"N 154°52'2.07"WPort • Nondalton South Iliamna Lake	Mine Site and Transportation Corridor	• Background • Moderate to high sensitivity from the elevated position • Visibility: bare earth • Recommended as a KVA	Intermittent

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3.14 SOILS

This section describes the affected environment and current conditions related to three soil subresources:

1. Soil types and disturbance/removal;
2. Erosion; and
3. Soil chemical quality (Mine Site only).

Available literature directly associated with the Mine Site and Transportation Corridor components is limited to the Exploratory Soil Survey of Alaska (ESS), which was completed by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS; formerly known as the Soil Conservation Service) (Rieger et al. 1979). Literature provided by the NRCS generally covers a variety of baseline soil data intended to assist in land resource planning and management, including classifications based on soil taxonomy, drainage, slopes, vegetative growth potential, and suitability for various land uses and development.

The ESS is not sufficient for site-specific interpretations, but is useful as a general soils map. Soil taxonomy is periodically updated; therefore, some information provided in the ESS does not translate directly to the current 2006 classification system, *Keys to Soil Taxonomy, 10th edition* (Soil Survey Staff 2006). For example, two additional soil orders, which represent the highest categorical level, have been added since the ESS in 1979. Both additional soil orders occur in the project area: Andisols and Gelisols. Where applicable, soil descriptions from the ESS have been translated to current 2006 classification system equivalents (3PPI 2011). Corresponding equivalents are based on available ESS descriptions and extrapolations from other nearby studies for the village of Nondalton and Chisik Island (Table 3.14-1).

Table 3.14-1: Corresponding ESS and 2006 Classifications for Applicable Soils

ESS Map Units	1979 Classification	2006 Classification
HY4, SO11, IA7	Pergelic cryofibrists	Typic fibristels
SO11	Humic cryothods	Typic humicryods
IA7, IA9	Typic crandepts	Typic haplocryands Typic vitricryands

Notes:
ESS = Exploratory Soil Survey of Alaska
Source: Excerpt from Pebble Project EBD 2004 through 2008, Chapter 5. Soils, Table 5-2.

Descriptions of unconsolidated overburden at the Mine Site and other project components are provided in Section 3.15-Geohazards.

3.14.1 Common Soil Conditions

Common soil conditions that are considered to have minimal or no significance in the project area include permafrost occurrence and documented soil impairments from anthropogenic sources.

3.14.1.1 Permafrost

[Note: Section may be updated pending RFI information.]

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To date, investigations and exploration programs in the project area (including all project components) have not reported permafrost. Permafrost may discretely occur in the project area; however, occurrence is presumed to be relict permafrost from prior glacial periods (Knight Piésold 2011).

Portions of the project area are near the reported southern limit of sporadic permafrost, which varies from 0 to 50 percent of the landscape subsurface (Ferrians 1965). More recent estimates indicate isolated permafrost distribution that coincides with project components on the western side of Cook Inlet (Jorgenson et al. 2008). Isolated permafrost varies from greater than 0 to 10 percent of the landscape subsurface. No permafrost occurrence is anticipated to coincide with project infrastructure on the eastern side of Cook Inlet. An assessment of existing thermokarst landscape features and future areas susceptible to thermokarst processes in the project footprint are generally considered low in coverage (Olefeldt et al. 2016). Thermokarst features are the result of permafrost freeze and thaw processes that create distinctive landforms; however, these features can also be residual expressions of where permafrost no longer exists.

Frozen ground conditions have been observed in near-surface soils in a few test pits and soil borings, but conditions were indiscernible from active layer processes that freeze and thaw annually at depths of up to 10 feet. Thermistor string (i.e., ground temperature) measurements from within the Mine Site study area reported a mean temperature of 39.1 degrees Fahrenheit (°F). Groundwater temperature measurements from the deposit area were also above freezing throughout the year. Although such conditions do not preclude the discrete occurrence of permafrost, current conditions do not support permafrost aggradation (e.g., development) or significant occurrence. Where present, relict permafrost is likely limited to areas where one or more favorable conditions exist, including shaded areas and north-facing slopes; poorly drained shallow surface soils overlain with insulative organics; and deep, coarse-grained soils (3PPI 2011). Based on information provided in the ESS, principal components associated with Pergelic Cryofibrists (HY4) and Typic Cryandepts (IA7) soil types in the project footprint may coincide with relict permafrost occurrence in areas of very poorly drained organic soils (e.g., fibrous sedge and muskeg) of nearly level association that include depressions and valley bottoms.

3.14.1.2 Soil Impairments

A review was conducted of the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program database. The database lists known contaminated sites and leaking underground storage tanks throughout Alaska. The database provides information regarding the type of contaminant released to the environment, the type(s) of media (air, water, soil, and rock) affected by the contaminant, the potential responsible party for the documented release, and the location where the release occurred (ADEC 2018a). One contaminated site (ADEC File Number 2333.38.031) is within 0.25 mile of the pipeline alignment on the eastern side of Cook Inlet. The nature of the release involved a 200-gallon fuel oil spill at a private residence. Based on the release description, impairments to soils within the project footprint are not likely.

[Note: Section may be updated pending RFI 011 information.]

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3.14.2 Mine Site

3.14.2.1 Soil Types

Each soil map unit (Figure 3.14-1) denotes the major soils components and one or more minor components. Because of the map scale, the minor components were not mapped separately. The soil types (i.e., primary principal component) and the corresponding acreages associated with the Mine Site are listed below.

- IA9 Typic Cryandepts – 4,960 acres: Very gravelly, hilly to steep association. Soils are well-drained, strongly acidic, and formed in volcanic material with a thin surface cover of decomposed plant matter mixed with volcanic ash. Common vegetation includes alder, grasses, or low shrubs.
- IA7 Typic Cryandepts – 1,915 acres: Very gravelly, nearly level to rolling Peregelic Cryofibrists, nearly level association. Soils are also associated with rolling plains bordering Iliamna Lake and rolling ground moraines, terminal moraines, outwash plains, and paleo beach ridges, small lakes, and muskegs. Typic Cryandepts are well-drained, acidic, and formed in shallow volcanic material over gravelly glacial material dominated by low-tundra vegetative species. Shallow permafrost can reportedly be associated with a Pergelic Cryofibrists component (where present) consisting of sedge peat muskegs and coarse acid moss.

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Figure 3.14-1: Soil Types Associated with Mine Site and Transportation Components

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3.14.2.2 Erosion

Erosion resulting from surface and subsurface soil disturbances would be attributed to both wind and hydraulic processes. Exposed finer-grained soils are generally more susceptible to removal and transport by wind. Flowing water over ground surfaces results in hydraulic erosion that also removes and transports soils. Downslope movement of surface materials from other slope instability processes (e.g., landslides, solifluction) are presented in Section 3.15-Geohazards.

Numerous conditions can influence a soils' susceptibility to wind and hydraulic erosion. Such conditions include weather (e.g., wind, precipitation), season (e.g., ground freeze), soil type and slope angles, and severity of disturbance. In most circumstances, soil disturbances and subsequent exposure would accelerate erosion by wind and water. Possible consequences of erosion include sediment loading in surface water runoff, and alteration of soil profile characteristics and ecological communities.

Measures of soil susceptibility to wind erosion provided by NRCS include (where present) a "hazard of erosion" description and a published wind erodibility group (WEG) value; hazard of erosion descriptions range from none (i.e., N/A) to slight, moderate, and severe. The WEG is based on soil surface layer characteristics, and ranges between 1 and 8. Soils most susceptible to wind erosion have a WEG value of 1, while those least susceptible (e.g., bedrock, frozen soils, or saturated soils) would have a WEG value of 8. Neither of these soil erosion descriptors for wind is provided in the ESS.

Multiple conditions can influence hydraulic erosion, including specific soil properties such as texture, cohesion and vegetative cover, as well as seasonal conditions, precipitation, slope angle and length, and flow velocities. Finer-grained soil types such as silt and sand are generally more susceptible to erosion than gravels and coarser material.

Measures of soil susceptibility to hydraulic erosion provided by NRCS include (where present) a "hazard of erosion" description and K-factor values (erosion factor values); hazard of erosion descriptions range from none to slight, moderate, and severe. The K-factor is a relative index of soil susceptibility removal and transport due to runoff. Where available, erosion factor (Kw) was preferentially used to evaluate hydraulic erosion susceptibility. The Kw value indicates the erodibility of the whole soil. K-factor values are grouped into 14 classes ranging from 0.02 to 0.69. Higher values correspond to increased erosion vulnerability. Erosion factor values (K) that are indicative of increased erosion rates and runoff susceptibility are generally greater than 0.4 (IWR 2002). None of these soil erosion descriptors for water are provided in the ESS.

The ESS does not provide wind and water erosion descriptors (i.e., suitability ratings) for all soil types; and where present, are limited to unique physical conditions or soil types. None were listed for map units corresponding to the Mine Site; however, inferences can be made assuming surface cover is removed or disturbed. Both soil types are associated with the presence of alternating layers of finer-grained volcanic ash with coarser gravel materials. Fine-grained volcanic ash constituents would be more susceptible to erosion by both water and wind relative to coarser gravel materials (where present). Wind erosion susceptibility is anticipated to be similar for both soil conditions in the Mine Site area. Erosion by water would be greater for soils on hilly to steep associations (i.e., IA9), in comparison to nearly level or rolling terrain (i.e., IA7).

[Note: Section above may be updated pending updated project description information.]

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3.14.2.3 Soil Chemistry

A baseline soil chemistry description is provided for the Mine Site to compare anticipated effects resulting from the deposition of fugitive dust from sources of concern. Fugitive dust sources of concern at the Mine Site include mining operations; material (e.g., rock) storage, processing, and handling (including concentrate); tailings storage; and repurposing materials derived from the Mine Site (e.g., aggregates).

Upland soil chemistry baseline data are not included in this discussion for the Transportation Corridor and Natural Gas Pipeline Corridor. Neither of these components under planned operations have significant mechanisms or chemical sources that could result in adverse impacts to soil conditions. Potential sources that could impact soils associated with these components may include dust from road bed aggregates or transported concentrates, but neither is considered a significant mechanism or source. Material (e.g., aggregate) sites in the Transportation Corridor and Natural Gas Pipeline Corridor are well outside the Pebble Deposit. Therefore, pending material suitability evaluations, the material sources are not expected to introduce significant chemical impairments to soil. Transportation of concentrates from the Mine Site will be in sealed containers with locking lids, and transfers would be conducted at offshore facilities. Furthermore, surface soil conditions associated with the Transportation Corridor and Natural Gas Pipeline Corridor are chemically consistent with those described for the Mine Site study area (SLR Alaska Inc. et al. 2011a).

A total of 237 primary surface soil samples was collected from 117 locations in the Mine Site study area to evaluate naturally occurring constituents (NOCs) (Figure 3.14-2). Surface samples were collected to a depth of 0.5 foot. The presence of trace elements, cyanide, and sodium was analyzed at 237 surface soil locations; anions and cations at 235 degree surface sample locations; petroleum hydrocarbons as diesel-range organics (DRO) and residual-range organics (RRO) at 23 surface soil locations; and total organic carbon (TOC) at 53 surface sample locations. The sample locations were considered representative of undisturbed baseline conditions. A list of NOCs (i.e., analytes) evaluated as part of the surface soil studies is presented in Table 3.14-2 and Table 3.14-3.

All trace elements (mostly metals) evaluated were detected in some of the surface samples above detection limits. Although reported concentrations of most NOCs were generally low and consistent with undeveloped areas of Bristol Bay drainages, some locations reported elevated NOCs at levels considered adverse in literature. Variations in up to 16 different landform types and seven different habitat types reportedly influenced the ranges of elemental concentrations throughout the study area (SLR Alaska Inc. et al. 2011b).

Iron and aluminum are the most abundant elements reported throughout the Mine Site study area surface soils, followed by calcium and magnesium (Table 3.14-2). Concentrations of other trace elements were substantially lower. Trace elements with the lowest average concentrations included mercury and silver. The relative distribution of trace elements in the Mine Site study area surface soils is generally consistent with those reported across the United States, based on published U.S. Geological Survey evaluations. Comparison of co-located shallow subsurface soil sample results (i.e., 18 inches in depth) reported similar relative and mean concentrations of trace elements; however, less variability among sample locations was observed (where present). Notable deviations include those associated with bismuth and mercury. The mean concentration of bismuth and mercury in surface soil is 13 and two times greater, respectively, than shallow subsurface soil (SLR Alaska Inc. et al. 2011a).

Anions and cations evaluated in surface soil samples included chloride, cyanide, fluoride, sulfate, ammonia (as nitrogen) and sodium. The highest mean concentration among evaluated

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ions was ammonia, followed by sodium. The lowest mean concentration among evaluated ions was cyanide. Depth-based variations in ion concentrations were apparent based on comparison to co-located shallow subsurface soil sample results. Mean concentrations of cyanide and ammonia were greater in surface samples, while mean sulfate concentrations were greater in shallow subsurface samples (SLR Alaska Inc. et al. 2011a).

RRO hydrocarbons were detected at all 23 surface sample locations, and DRO was detected at 13 surface sample locations. Mean concentrations of 209 milligrams per kilogram (mg/kg) and 2,028 mg/kg were reported for DRO and RRO, respectively (Table 3.14-3). The elevated presence and wide range of reported hydrocarbon concentrations are attributed to naturally occurring biogenic sources, based on absence of prior disturbances, analytical fingerprint methods, and presence of TOC (SLR Alaska Inc. et al. 2011b). Similarly, mean hydrocarbon concentrations in corresponding shallow subsurface samples (where present) were significantly lower due to the absence of biogenic influences (SLR Alaska Inc. et al. 2011a).

Similar to hydrocarbons, reported TOC concentrations varied significantly. TOC concentrations varied from 0.36 percent to 65.1 percent among surface soil locations. The wide range is attributed to variable quantities of organic material retained in sampled matrices during collection. A mean TOC concentration of 6.51 percent was reported for the Mine Site study area. Mean TOC concentrations in corresponding shallow subsurface samples (where present) were also lower due to a diminished presence of biogenic influences (SLR Alaska Inc. et al. 2011a).

Because arsenic, copper, and lead are considered key trace elements associated with the deposit, additional depth-based statistical evaluation and temporal variation in concentrations at select sample locations were performed. No significant findings were identified through these activities (SLR Alaska Inc. et al. 2011a). Fugitive dust concerns associated with the Mine Site are further evaluated in Chapter 4, Environmental Consequences.

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Figure 3.14-2: Mine Site Study Area Surface Soil Sample Locations

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Table 3.14-2: Mine Site Study Area Surface Soil Trace Elements and Cations

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c] (mg/kg)
Trace Elements										
Aluminum	237/237	100%	932-109000	.67 – 100	2.14 – 500	17644	16400	12175	0.69	N/A
Antimony	211/237	89%	0.040 – 2.14	0.033 – 2.13	0.11 – 6.86	0.24	0.20	0.22	0.93	41
Arsenic	227/237	96%	1.03 – 73.8	0.30 – 21.3	0.50 – 68.6	10.2	8.07	10.1	0.99	8.8 (inorganic)
Barium	237/237	100%	14.8 - 576	0.050 – 10.0	0.30 – 50.0	84.9	65.5	67.1	0.79	20,000
Beryllium	224/237	95%	0.051 – 5.89	0.033 – 2.13	0.11 – 6.86	0.41	0.34	0.45	1.09	200
Bismuth	105/237	44%	0.073 – 1.05	0.066 – 20.0	0.21 – 100	1.30	0.13	4.26	3.27	N/A
Boron	65/237	27%	0.54 – 9.34	0.36 – 50.0	1.16 – 117	4.82	3.45	4.62	0.96	N/A
Cadmium	146/237	62%	0.072 – 3.06	0.050 – 4.26	0.21 – 13.7	0.24	0.16	0.32	1.33	92 (Diet)
Calcium	237/237	100%	222 – 31100	10.0 – 645	31.9 – 2060	2577	1700	2993	1.16	N/A
Chromium	233/237	98%	1.15 – 113	0.050 – 8.24	0.30 – 27.5	17.7	14.7	14.5	0.82	1.0×10^5 (Cr^3) 3.9 (Cr^6)
Cobalt	232/237	98%	0.45 – 24.2	0.030 – 10.3	0.10 – 34.3	6.55	5.63	4.60	0.70	N/A
Copper	236/237	100%	2.65 – 197	0.19 – 12.4	0.64 – 41.2	27.4	16.3	35.2	1.28	4100
Iron	237/237	100%	588 – 103000	2.00 – 452	4.00 – 1460	20694	19300	13532	0.65	N/A
Lead	236/237	100%	0.66 – 78.4	0.050 – 4.26	0.21 – 13.7	8.74	7.54	8.85	1.01	400
Magnesium	237/237	100%	74.1 – 9930	10.0 – 795	31.9 – 2540	3076	2930	2022	0.66	N/A
Manganese	237/237	100%	5.43 – 6560	0.066 – 50.0	0.21 – 300	388	279	559	1.44	N/A
Mercury	224/237	95%	0.014 – 0.72	0.013 – 0.30	0.042 – 2.00	0.12	0.072	0.12	0.98	3.1 (elemental)
Molybdenum	179/237	76%	0.40 – 68.1	0.30 – 21.3	1.00 – 68.6	1.82	0.92	4.71	2.59	N/A

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Table 3.14-2: Mine Site Study Area Surface Soil Trace Elements and Cations

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c] (mg/kg)
Nickel	235/237	99%	0.59 – 53.8	0.066 – 4.26	0.21 – 13.7	9.16	7.42	7.10	0.77	1,700 (soluble salts)
Potassium	224/237	95%	100 – 5510	30.0 – 2130	106 – 6860	621	511	523	0.84	N/A
Selenium	219/237	92%	0.18 – 79.3	0.050 – 10.3	0.30 – 34.3	2.76	1.10	7.34	2.66	510
Silver	117/237	49%	0.030 – 1.45	0.030 – 2.13	0.10 – 6.86	0.11	0.059	0.20	1.80	510
Thallium	179/237	76%	0.0099 – 5.00	0.0066 – 5.00	0.021 – 30.0	0.24	0.088	0.61	2.53	1.0 (soluble salts)
Tin	27/237	11%	1.06 – 2.90	0.33 – 21.3	1.06 – 100	1.94	0.96	2.99	1.54	N/A
Vanadium	210/237	89%	4.67 – 227	0.10 – 64.5	0.50 – 206	46.4	47.0	31.1	0.67	510
Zinc	235/237	99%	2.77 – 228	0.33 – 21.3	1.06 – 68.6	43.9	40.0	33.2	0.76	30,000
Anions and Cations[d]										
Ammonia (as nitrogen)	214/235	91%	0.50 – 2200	0.50 – 120	3.00 – 382	363	179	440	1.21	N/A
Chloride	158/237	67%	0.40 – 28.3	0.30 – 30.0	0.98 – 100	2.74	1.50	3.73	1.36	N/A
Cyanide	199/237	84%	0.028 – 0.75	0.024 – 4.00	0.049 – 20.0	0.19	0.15	0.18	0.92	34 (CN^-)
Fluoride	54/235	23%	0.33 – 39.3	0.30 – 18.4	0.98 – 59.5	0.88	0.36	2.67	3.04	N/A
Sodium	215/237	91%	56.2 – 1860	30.0 – 2130	106-6860	208	153	181	0.87	N/A
Sulfate	211/237	90%	0.41 – 1820	0.30 – 30.0	0.98 – 100	19.8	4.26	122	6.19	N/A

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the reporting limit.

c. Where provided, comparative action level is based on ADEC 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, November 7, 2017, Table B1. Method Two – Soil Cleanup Levels, Human Health, Under 40 Inch Zone (ADEC 2018b).

d. All data presented on a dry-weight basis.

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mg/kg = milligram per kilogram
Min = minimum
Max = maximum
N/A = none available
Source: Excerpt: Pebble Project EBD 2004 through 2008, Chapter 10. Trace Elements and Other Naturally Occurring Constituents Bristol Bay Drainages, Table 10.1-3.

Table 3.14-3: Mine Site Study Area Surface Soil Diesel Range Organics and Residual Range Organics, and Total Organic Carbon

Analyte	Frequency of Detection[a]	Percent Detected	Range of Detects (mg/kg) (Min-Max)	Range of Method Detection Limits (mg/kg) (Min-Max)	Range of Method Reporting Limits (mg/kg) (Min-Max)	Mean[b] (mg/kg)	Median[b] (mg/kg)	Standard Deviation[b]	Coefficient of Variation	Comparative Action Levels[c]
DRO[d]	13/23	57%	11.7 – 1300	2.01 – 127	20.1 – 1270	209	72.5	299	1.43	10,250
RRO[d]	23/23	100%	32.7 – 12,300	2.01 – 127	20.1 – 1270	2,028	1150	2,895	1.43	10,000
TOC[d,e]	53/53	100%	0.3% – 65.1%	0.00026% – 2.08%	0.0061% – 4.16%	6.51%	2.20%	12.6%	1.93	N/A

Notes:
a. Number of samples with detectable concentrations / total number of samples analyzed.
b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.
c. Where provided, comparative action level is based on ADEC 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, November 7, 2017, Table B2. Method Two – Petroleum Hydrocarbon Soil Cleanup Levels, Ingestion, Under 40 Inch Zone (ADEC 2018b).
d. All data presented on a dry-weight basis.
e. For TOC, unit of measure is percentage rather than milligrams per kilogram (mg/kg).
DRO = diesel range organics
mg/kg = milligram per kilogram
Min = minimum
Max = maximum
N/A = none available
RRO = residual range organics
TOC = total organic carbon
Source excerpt: Pebble Project EBD 2004 through 2008, Chapter 10. Trace Elements and Other Naturally Occurring Constituents Bristol Bay Drainages, Table 10.1-5.

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3.14.3 Transportation Corridor and Amakdedori Port

3.14.3.1 Soil Types

Because land-based portions of the Natural Gas Pipeline Corridor on the western side of Cook Inlet would be buried in the road bed prism of the Transportation Corridor, soil types for both the Transportation and Natural Gas Pipeline corridors are collectively described in this section, in addition to those present at the Amakdedori Port.

The ESS recognized five soil map units in the Transportation Corridor study area within the Bristol Bay region. The map units are delineated on Figure 3.14-1 and are described below.

The soil types and the corresponding acreages associated with transportation components are as follows:

- IA7 Typic Cryandepts – 443 acres (see Section 3.14.1.2-Soil Impairments for description);
- IA9 Typic Cryandepts – 210 acres (see Section 3.14.1.2-Soil Impairments for description)
- IA17 Dystric Lithic Cryandepts – 640 acres: Hilly to steep association. Soils are associated with low hill and ridges bordering mountainous areas. Well-drained loamy soils are formed in thixotropic ash over shallow (20 inches) metamorphic bedrock or gravelly till, and overlain with a thin layer of organic material.
- HY4 Pergelic Cryofibrists – 32 acres: Nearly level association. Soils are associated with nearly level, broad, wet lowlands near lakes and coastal margins. Organic-rich sedge and moss (i.e., muskeg) soils underlain by silt and sand mixtures are poorly drained and can reportedly be associated with the presence of shallow permafrost. Vegetation includes water-tolerant sedges, low shrubs, and black spruce.

The Amakdedori Port site is on the western shore of Cook Inlet north of Amakdedori Creek; is generally level; and includes upland (shore-based) soil types that transition seaward to intertidal dunes and a gravel-lined shoreline. Soil types associated with the Amakdedori Port and immediate area are limited to soil map unit IA17.

3.14.3.2 Erosion

The ESS does not provide wind and water erosion descriptors (i.e., suitability ratings) for all soil types, and where present, are limited to unique physical conditions or soil types. None were listed for map units corresponding to the Transportation Corridor; however, generalized inferences can be made assuming surface cover is removed or disturbed. Soil conditions associated with soil map unit IA17 are likely the most susceptible to wind and hydraulic erosion processes in the Transportation Corridor (including Amakdedori Port). This is attributed to the presence of finer-grained, loamy materials overlying shallow bedrock on hilly to steep slopes. Soils associated with soil map unit IA9 would also be more susceptible to hydraulic erosion, based on the occurrence in hilly to steep terrain. Soils associated with soil map units IA7 and HY4 are likely the least susceptible to hydraulic erosion in the Transportation Corridor, based on associations with nearly level terrain. However, information provided in the ESS is broadly based, and is not intended to be used for site-specific information.

3.14.4 Natural Gas Pipeline Corridor

[Note: Section may be updated pending updated project description information.]

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3.14.4.1 Soil Types

The Natural Gas Pipeline Corridor on the eastern side of Cook Inlet extends from Alaska Department of Transportation & Public Facilities (ADOT&PF) land north of Anchor Point to tie in with an existing pipeline near Happy Valley, and parallels the Sterling Highway right-of-way (ROW). The most detailed resource for soil data along this pipeline segment is the USDA NRCS Soil Survey of Western Kenai Peninsula Area, Alaska. A total of 11 detailed soil map units coincides with the pipeline footprint (Figure 3.14-3). The soil descriptions provided below address soil map units that cover more than 1 acre of the 30-foot-wide operational corridor ROW footprint. Soil map units that cover less than 1 acre are also provided, with water and wind erosion descriptors only.

- 572 – Island silt loam, forested, 0 to 8 percent slopes, 15 acres: Medial over loamy, amorphic over mixed, superactive Pachic Fulvicryands. Soils are associated with till plains supporting a lutz spruce forest with willow and bluejoint reedgrass understory. Soils consist of a very fine sandy loam, silt loam overlain by a thin interval of plant material. Soils are well–drained with no flooding or ponding, with a slight hazard of erosion for water, but severe by wind.
- 640 – Qutal silt loam, 0 to 4 percent slopes, 8 acres: Medial over loamy, amorphic over mixed, superactive Aquandic Haplocryods. Soils are associated with moraines on till plains and depressions on till plains dominated by a spruce-birch forest spruce-willow community. Soils consist of very gravelly sand overlain with silt loam and a thin interval of decomposed plant material. Soils are somewhat poorly drained with no flooding or ponding, with a slight hazard of erosion for water, but severe by wind.
- 617 – Mutnala silt loam, 0 to 4 percent slopes, 6 acres: Medial over loamy, amorphic over mixed, superactive Andic Haplocryods. Soils are associated with moraines on till plains dominated by spruce-birch forest. Soils consist of gravelly sandy loam overlain with silt loam and decomposed plant material. Soils are well–drained with no flooding or ponding, with a slight hazard of erosion for water, but severe by wind.
- 568 – Island silt loam, 0 to 4 percent slopes, 3 acres: Medial over loamy, amorphic over mixed, superactive Pachic Fulvicryands. Soils are associated with till plains dominated by shallow kettles. Soils consist of gravelly sandy loam overlain with silt loam and a thin interval of decomposed plant material. Soils are well-drained with no flooding or ponding with a slight hazard of erosion for water, but severe by wind.
- 570 – Island silt loam, 8 to 15 percent slopes, 1 acre; severe hazard of erosion for water and wind; well-drained.
- 611 – Killey and Moose River soils, 0 to 2 percent slopes, 1 acre; slight hazard of erosion for water, severe by wind; poorly drained.
- 618 – Mutnala silt loam, 4 to 8 percent slopes, 1 acre; moderate hazard of erosion for water, severe by wind; well-drained.
- 619 – Mutnala silt loam, 8 to 15 percent slopes, 1 acre; severe hazard of erosion for water and wind; well–drained.
- 698 - Tuxedni silt loam, warm, 0 to 8 percent, 1 acre; slight hazard of erosion for water, severe by wind; somewhat poorly drained.
- 706 – Whitsol silt loam, 0 to 4 percent slopes, 1 acre; slight hazard of erosion for water, severe by wind; well-drained.
- 707 – Whitsol silt loam, 4 to 8 percent slopes, 1 acre; moderate hazard of erosion for water, severe by wind; well-drained.

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3.14.4.2 Erosion

Available NRCS data for the area include a land capability classification. This classification provides a general suitability index for agriculture or farming (USDA 2005). Land capability classifications for all soils in the pipeline footprint are considered to have severe limitations.

Soils in the pipeline footprint are predominantly susceptible to wind erosion, assuming disturbance and removal of surface cover. All soil map units greater than 1 acre have a severe hazard of erosion rating for wind, and WEG ratings of 2 that correspond to highly erodible soils. All soil map units greater than 1 acre are considerably less susceptible to erosion by water, with hazard of erosion ratings of "slight." This corresponds to erosion factors (Kw) ranging from 0.24 to 0.47.

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Figure 3.14-3: Soil Types for West Cook Inlet Natural Gas Pipeline Corridor

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3.17 HYDROGEOLOGY

The project area is in a sparsely populated area of southwestern Alaska near Iliamna Lake, and comprises four primary components with diverse hydrogeological settings: the Mine Site where the Pebble Deposit is located, a Transportation Corridor, a Natural Gas Pipeline, and a port site at Amakdedori on Cook Inlet. A description of groundwater flow processes and the hydrogeology of each of these areas are provided below. Permafrost is not found in the project area.

3.17.1 Mine Site

This section focuses on existing groundwater conditions in areas of the Mine Site that are anticipated to be the most affected by project activities. The open pit and associated dewatering pose the most significant risk to groundwater quantity, because the pit would be relatively large and deep, requiring extraction of water to allow for mining operations. Dewatering would create a relatively large zone of influence around the open pit, in which groundwater levels and groundwater, surface water interactions, and surface water flows would be affected. Groundwater withdrawal for potable water supply or mineral processing may also influence groundwater and surface water levels and flow. Groundwater seepage and flow pathways away from the tailings storage facility (TSF), low-grade ore (LGO) stockpile, and water management ponds are also of concern with regard to potential contaminant migration. An evaluation of existing groundwater quality is provided in Section 3.18-Water Quality.

The physiography and geology of the Mine Site are presented in Section 3.13-Geology, and are summarized here to describe the hydrogeologic setting. The Pebble Deposit area straddles a watershed divide between the headwaters of the South Fork Koktuli River and Upper Talarik Creek, and is primarily on an east-facing slope and valley floor ranging in elevation from 950 feet to 1,400 feet.

Bedrock includes a mixture of mineralized sedimentary, volcanic, and intrusive rocks, which are overlain by overburden on both the eastern and western sides, as shown on Figure 3.13-1 and Figure 3.13-2. The mineralized bedrock is overlain by Tertiary sedimentary rocks on the eastern side of the Mine Site, which form a wedge that thickens toward the east to approximately 1,500 feet. Further east, where the Tertiary sedimentary rocks have been downthrown by approximately 4,000 feet, a narrow graben structure has been filled with volcanic flows. West of the graben is a well-cemented conglomerate overlain by interbedded sedimentary and volcanic rocks. The definition of the bedrock surface was established through drilling at the Mine Site between 2004 and 2012 (Schlumberger 2011, 2015).

The surficial geology in the Iliamna Quadrangle has previously been described by Detterman and Reed (1973) and Detterman (1986). In the Mine Site analysis area, the surficial deposits have been described by Hamilton and Klieforth (2010), and are discussed in detail in Schlumberger (2011). More recent drilling investigations have resulted in minor refinements to surficial geology in Schlumberger (2015), which are reflected on Figure 3.13-2. The overburden at the Mine Site consists primarily of interbedded glaciolacustrine and glaciofluvial sediments.

3.17.1.1 Groundwater Flow Processes

Inputs to the groundwater flow system include precipitation (groundwater recharge) and leakage from surface water features. The primary outputs from the groundwater flow system at the Mine Site include discharge to surface water features and springs. The water table is generally a subdued replica of ground surface topography, whereby it is deepest below ridge tops, and near ground surface in valley bottoms.

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Precipitation is primarily the result of marine storm systems, which are greatest from late summer to early winter. Precipitation is greater on upland areas than in lowland areas due to orographic effects. The measured long-term average annual precipitation is approximately 27 inches at the Iliamna Airport, and is estimated to be on the order of 50 inches near the Pebble Deposit. Additional climate data are provided in Section 3.20-Air Quality.

Groundwater generally flows from upland areas to valley bottoms according to horizontal and vertical hydraulic gradients, eventually discharging to surface water features. Upper-elevation seeps have been observed in some areas due to the presence of fine-grained deposits in valley bottoms, which restrict groundwater discharge. The majority of the groundwater flow is in the most permeable deposits, which include valley bottom outwash sands and gravels, and the uppermost 50 feet of bedrock that is highly fractured due to physical and chemical weathering since retreat of the glaciers in the area. Groundwater flow in deep bedrock is limited by lower hydraulic conductivity. Although higher-permeability faults and fractures have been identified, the flow pathways along the faults are localized and appear to terminate in the study area. Therefore, they are not anticipated to function as preferential groundwater flow pathways at the regional scale.

3.17.1.2 Hydrogeological Characterization

The objectives of the hydrogeological characterization program at the Mine Site (Schlumberger 2011, 2015) were to characterize the existing groundwater flow regime in the study area, and define how the local groundwater flow regime interacts with the regional groundwater flow system. A complementary objective was to evaluate the nature and degree of interactions between groundwater and surface water to inform the understanding of aquatic, fish resource, and wetlands habitat. To meet these objectives, a significant amount of hydrogeological characterization work has been undertaken. The results of these characterization programs form the basis for a baseline groundwater flow model and a water balance and water quality model.

Hydrogeological data were collected during the course of several field programs between 2004 and 2012, which involved logging of borings, installation of pumping wells, piezometers, and monitoring wells, permeability testing, streamflow gauging, monitoring of meteoric inputs and routine monitoring of groundwater levels, and collection of streamflow and groundwater quality data (Figure 3.17-1).

Boreholes were advanced using a variety of drilling techniques, including mud rotary, air rotary ODEX, and rotary sonic, with sampling and logging conducted according to standard methods defined by the American Society for Testing and Materials (ASTM), and consistent with best industry practice.

Instrumentation installed prior to 2008 included the following: 39 nested monitoring wells at 21 locations, 240 nested piezometers at 103 locations, 216 single piezometers, one deep multi-level groundwater instrumentation system, nine cross-hole aquifer test wells at eight locations, and 70 piezometers installed as part of the wetlands program. In 2011, an additional 43 boreholes were drilled in the deposit area for geotechnical purposes, and several response tests were conducted to determine bedrock permeability. In 2012, an additional 18 boreholes were drilled to further investigate hydrogeology.

Piezometers were installed to depths of up to 232 feet below ground surface to collect information on stratigraphy, hydraulic conductivity, and groundwater levels at each site. Vertical groundwater gradients were also characterized where a cluster of piezometers was installed near the same location. A number of piezometers were also installed as part of the geotechnical characterization program for the purposes of water level monitoring and permeability testing.

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Figure 3.17-1: Location of Hydrogeologic Investigations at the Mine Site

Note: Figure under development, GIS data requested in RFI.

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Between 2004 and 2008, a total of nine pumping wells was installed using air rotary drilling techniques and telescopic well screens targeting the most permeable features encountered during drilling. In 2012, a further four pumping wells were installed using sonic drilling techniques to understand the requirements for pit dewatering, but these wells have not yet been tested.

[Note: RFI 019 requests groundwater model results based on the proposed mine plan in PLP (2017). This section will be updated after receipt of response with data collected since 2012 that may be incorporated into the current groundwater model.]

Single-well response tests were completed by displacing groundwater in the well and monitoring recovery until water levels stabilized. Prior to commencement of each test, static water levels were measured, and pressure transducers installed. Falling and rising head slug tests were conducted on monitoring wells and piezometers to determine the hydraulic conductivity of the surrounding overburden or bedrock formations.

In 2006, a multi-level piezometer system (WB-1) was installed in the Pebble Deposit area in a borehole drilled to a depth of 4,050 feet for mineral exploration purposes. After flushing the borehole, an assembly of 50 hydraulic head measurement ports and 24 sampling ports were installed to facilitate monthly monitoring of hydraulic head and groundwater quality to significant depths below the deposit. Cross-hole testing was also completed to allow for measurement of hydraulic conductivity for a larger volume of rock, as compared to response testing and packer testing.

In 2010, an additional multi-level piezometer system (WB-3) was installed to a depth of approximately 600 feet to improve characterization of the area between tributaries NK1.190 and SK1.190. The primary objective was to characterize groundwater levels and gradients, and confirm groundwater flow directions. In 2012, a third multilevel system (WB-4) was installed in the pre-Tertiary bedrock in the western portion of the Pebble Deposit area to a depth of 2,250 feet. The primary objective was to characterize groundwater levels and gradients in the deposit area.

Larger-scale pumping tests were conducted in three areas, including the area around the Pebble Deposit, at four locations downgradient of the Pebble Deposit near the South Fork Koktuli River, and in the North Fork Koktuli drainage area. Pumping tests were conducted in both overburden and bedrock using air lift pumping techniques for between 6 and 24 hours. Step tests were completed to determine the specific capacity of the pumping wells and a pumping rate for the constant-rate tests. Water levels and pumping well discharge were monitored in both the pumping wells and nearby monitoring wells using pressure transducers and manual water level meters during both pumping and recovery phases to allow for determination of aquifer properties.

Monthly water level monitoring was conducted in monitoring wells from 2005 through 2012 using manual water level probes; or calculated based on piezometric pressure measurements by vibrating wire piezometers, and at measurement ports in the multi-level piezometer systems.

In support of the characterization of the physical groundwater flow system, a groundwater quality characterization program was also conducted. The program involved sampling of groundwater and seepage quality on a quarterly schedule, and is described in Section 3.18-Water Quality. Field chemistry and flow measurements were collected at weirs to support development of the site water balance and water quality modeling.

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Hydrostratigraphic Units

Twenty-six cross-sections were produced to illustrate the distribution of hydrogeologic units in overburden (Schlumberger 2015: Appendix 8.1B]). Four of these cross-sections are shown on Figure 3.17-2 through Figure 3.17-5 to provide a representative depiction of these units at the Mine Site. In addition, a groundwater contour map is provided on Figure 3.17-6 to illustrate flow patterns described below. The cross-sections illustrate that the surficial geology is variable—both laterally, and with depth—which is consistent with regional geologic mapping. The distribution and characteristics of the overburden and bedrock aquifers in the study area are summarized in Table 3.17-1.

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Figure 3.17-2: Cross-section E-10 – Pebble Deposit Area

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Figure 3.17-3: Cross-section L-1 – Frying Pan Lake and South Fork Koktuli Drainage

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Figure 3.17-4: Cross-section M-1 – North Fork Koktuli Drainage

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Figure 3.17-5: Cross-section M-1 – South Fork Koktuli Discharge Area

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Figure 3.17-6: Shallow Groundwater Contours, April 2011, Seasonal Low Water

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Table 3.17-1: Summary of Hydrostratigraphic Units

Drainage/ Catchment	Area/ Sub-Catchment (*Project Facility*)	Overburden or Bedrock	Aquifers	Description
South Fork Koktuli Drainage	Pebble Deposit Area (*Open Pit*)	Overburden	Surficial Aquifer (multiple)	Clean sand; sand and gravel.
			Intermediate Aquifer	Sand and gravel between silty deposits.
			Deep Aquifer	Not described.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of bedrock. Felsenmeer[1] where exposed.
			Upper Bedrock Aquifer	Below weathered bedrock, from 50 to 600 feet in depth.
			Fault Zones	Functions as both conduits and barriers to groundwater flow.
	Frying Pan Lake Area (*South WTP Discharge*)	Overburden	Surficial Aquifer (multiple)	Clean sand; sand and gravel.
			Intermediate Aquifer	Sand and gravel between silty deposits.
			Deep Aquifer	Sand and gravel overlying bedrock thickens toward Frying Pan Lake.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 30 feet of bedrock.
	South Fork Koktuli Flats	Overburden	South Fork Koktuli Valley Aquifer	Clean sand and gravel moraine from silty terminal moraines downstream of Frying Pan Lake. Continuous with outwash, terrace, and alluvial sand and gravel deposits in valley to west.
			South Fork Koktuli Channel Aquifer	Gravels of alluvial and glaciofluvial origin along the channel from downstream of Frying Pan Lake to bedrock high to the east.
			MW11 Aquifer	Sand and gravel near monitoring well MW11.
			Surficial Aquifer	Outwash sand and gravel between South Fork Koktuli River and slope of Upper Talarik Creek Valley.
			Intermediate Aquifer	Below surficial aquifer; conveys majority of flow from South Fork Koktuli River Aquifer and MW11 Aquifer to Upper Talarik Creek Tributary UT1.190[2].
			Deep Aquifer	Sand and gravel; silty sand.
	South Fork Koktuli Discharge Area	Overburden	South Fork Koktuli Valley Aquifer	Outwash sands and gravels; terrace gravels; alluvium. Extends from approximately 1 mile upstream of the confluence of the South Fork Koktuli River and SK1.190 to approximately 2.4 miles downstream.
North Fork Koktuli Drainage	Big Wiggly Basin	Overburden	Surficial Aquifer	Sand and gravel. Limited characterization of lateral and vertical extent.

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Table 3.17-1: Summary of Hydrostratigraphic Units

Drainage/ Catchment	Area/ Sub-Catchment (*Project Facility*)	Overburden or Bedrock	Aquifers	Description
	Area E (*LGO Stockpile*)	Overburden	Intermediate Aquifer	Sand and gravel below glacial till.
		Bedrock	Weathered Bedrock Aquifer	Uppermost portion of bedrock.
	Area G (*TSF*)	Overburden	Surficial Aquifer	Thin aquifer composed of colluvium, drift, undifferentiated gravel, and undifferentiated drift.
		Bedrock	Weathered Bedrock Aquifer	Uppermost portion of bedrock.
	North Fork Glacial Outwash Area (*TSF Main Embankment Seepage Collection and Sediment Ponds*)	Overburden	North Fork Outwash Aquifer	Outwash sand and gravel; alluvium.
			Terrace and Alluvial Deposits	Sand and gravel downstream of North Fork Outwash Aquifer.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of bedrock.
Upper Talarik Creek Drainage	Upper Talarik Creek (*East WTP Discharge*)	Overburden	Glacial Outwash Aquifer	Outwash sand and gravel upstream of stream gauge UT100E.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of bedrock.
	Talarik Creek Outwash Plain	Overburden	Surficial Aquifer	Glacial deposits, including deltaic, outwash, ice-contact sands, and sand and gravel east of Upper Talarik Creek. Underlain by a low-permeability aquitard.
			Intermediate Aquifer	Extension of aquifer originating in South Fork Koktuli Flats drainage. Located below surficial aquifer and conveys majority of flow from South Fork Koktuli River Aquifer and MW11 Aquifer to Upper Talarik Creek Tributary UT1.190. Discharges to surface upstream of stream gauge UT100B.
		Bedrock	Weathered Bedrock Aquifer	Uppermost 10 to 50 feet of bedrock.

Source: Schlumberger (2011, 2015)

1. Frost-weathered boulders at the surface.
2. Numbered tributaries named for stream gaging stations (See Figure 3.16-3).

The Frying Pan Lake area and the upper reaches of tributary UT1.190 are characterized by thick, silty layers. In contrast, silty layers are absent from the area along the South Fork Koktuli River south of Frying Pan Lake, and overburden consists of sand and gravel. Overburden is relatively thin and permeable beneath most valley floors, with valley walls dominated by colluvium and shallow bedrock, with the exception of some localized thin till deposits. The

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uppermost portion of the bedrock is typically fractured and able to yield moderate to large quantities of groundwater. Although fractures and faults are widespread in the deeper bedrock, the features are often infilled with fine-grained fault gouge and offset relative to one another. This has created a compartmentalized system of groundwater flow, thereby limiting the flow of regional groundwater through the area.

In the North Fork Koktuli River drainage for tributary NK1.190, overburden is relatively thin on the valley floor, and thicker on the lower slopes of the valley sides. Groundwater recharges on the upper slopes and migrates downslope toward the valley floor, with sustained discharge to numerous seeps at a range of elevations. The calculated average groundwater recharge rate is 11 inches per year. The relatively thin overburden on the valley bottom is inferred to limit groundwater discharge from the catchment, and most of the drainage is inferred to occur via surface discharge to the stream channel. Groundwater recharge in this area is anticipated to be low. Upstream of stream gauge NK1.00C, the headwater catchment for the North Fork Koktuli River is overlain by glacial drift and materials deposited under glacial lakes that have resulted in relatively thin but laterally continuous aquifers. A terminal glacial moraine is near the confluence of the main stem and tributary NK1.190. At this location, the surficial deposits transition to coarser glacial outwash materials that allow the North Fork Koktuli River to exchange water with the underlying aquifer.

In the South Fork Koktuli River drainage near the Pebble Deposit, there is groundwater discharge to the valley floor in relatively low-permeability silty sand and gravel deposits that are approximately 100 feet thick, with the exception of the eastern side of the catchment where a deeper bedrock channel is present. Groundwater gradients are vertically upward with a minimal horizontal component, indicating that groundwater in the vicinity of the Pebble Deposit discharges to the upper reaches of the South Fork Koktuli River near the deposit, and is unlikely to flow across groundwater divides or migrate appreciable distances down the valley. The calculated average groundwater recharge rate is 23 inches per year.

Bedrock near the Pebble Deposit has been extensively investigated. In this area, the uppermost 10 to 50 feet of bedrock is highly fractured and is much more permeable than the underlying bedrock. Deeper bedrock is less weathered and exhibits lower hydraulic conductivity values to depths of at least 500 feet. The groundwater flow system in this area is fed by groundwater recharge, which flows primarily through the overburden and shallow fractured bedrock prior to discharge to the South Fork Koktuli River.

South of the Pebble Deposit, the overburden materials thicken toward Frying Pan Lake. Groundwater elevations in shallow bedrock exhibit stronger seasonal fluctuations than the overlying sand and gravel. Groundwater gradients are upward following periods of groundwater recharge (i.e., snowmelt or rainfall) in the upland areas, and downward during the months prior to seasonal recharge events. This supports the conceptual model of groundwater flow involving recharge to the exposed fractured bedrock aquifer in upland areas, with subsequent migration toward valley bottoms, where the groundwater is eventually discharged to overlying surficial deposits or streams. A bedrock high and the presence of low-permeability sediments at the downstream end of Frying Pan Lake generally limits discharge from Frying Pan Lake to the underlying groundwater flow system. Groundwater gradients near the lake indicate shallow water levels and upward groundwater movement (groundwater discharge) toward the lake, while water levels downstream of the lake are up to 60 feet below the overlying stream, indicating strong downward groundwater gradients and losses from the stream. The results of groundwater level monitoring and a water balance assessment indicate that approximately two-thirds of the groundwater flowing through the aquifer downstream of Frying Pan Lake remains in the South Fork Koktuli River drainage, while the remaining one-third of the

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groundwater crosses the surface water divide and contributes to groundwater flow in UT1.190, and discharges to Upper Talarik Creek.

In the Upper Talarik Creek drainage, precipitation infiltrates the upper hillslopes and migrates downslope in the highly fractured shallow bedrock unit. The calculated average groundwater recharge rate is 16 inches per year. Where downslope groundwater movement is restricted by low-permeability sediments or discontinuities in the flow system, groundwater discharges to ground surface as springs. Springs are abundant in this drainage, and often occur at locations high on the hillslopes. Overburden deposits are variable in this drainage, and include silty sand and gravel to clean sand in the upper portion of the drainage. In the intermediate reaches of the drainage between UT1.135 and UT1.190, a large area has been filled with deltaic, glacial outwash, ice-contact sands, and sand and gravel. This area is inferred to be a groundwater recharge area. Tributary UT1.190 joins the Upper Talarik Creek drainage downstream of the groundwater recharge area, and is inferred to transmit the majority of groundwater that migrates across the surface water drainage from the South Fork Koktuli River drainage area. Most of the groundwater moves downgradient in the sand and gravel units and the weathered upper bedrock. Steep vertical gradients have been observed in some areas, suggesting the presence of fine sediments that restrict downward movement of groundwater.

Aquifer Properties: Hydraulic Conductivity and Specific Storage

Table 3.17-2 and Figures 3.17-6 through 3.17-8 provide a summary of hydraulic conductivity testing conducted at the Mine Site, based on individual testing results presented in Schlumberger (2015).

Table 3.17-2: Summary of Hydraulic Conductivity Testing Results

Hydrostratigraphic Unit	Statistic	Hydraulic Conductivity (m/s)				
		Pebble Deposit Area	Frying Pan Lake Area	South Fork Koktuli Area	North Fork Koktuli Area	Upper Talarik Area
Overburden	Number of Tests	33	6	45	22	4
	Geometric Mean	2.23×10^{-5}	6.40×10^{-5}	1.00×10^{-4}	9.74×10^{-5}	1.05×10^{-5}
	Median	3.00×10^{-5}	3.25×10^{-4}	4.00×10^{-4}	3.00×10^{-4}	1.45×10^{-5}
	Maximum	1.30×10^{-3}	8.70×10^{-4}	1.00×10^{-3}	1.78×10^{-3}	4.24×10^{-5}
	Minimum	5.10×10^{-8}	6.10×10^{-8}	7.00×10^{-8}	7.80×10^{-9}	1.60×10^{-6}
Bedrock	Number of Tests	52	10	20	50	8
	Geometric Mean	1.78×10^{-5}	4.38×10^{-6}	2.00×10^{-5}	9.68×10^{-7}	1.86×10^{-6}
	Median	1.65×10^{-5}	8.50×10^{-6}	5.00×10^{-5}	9.15×10^{-7}	4.50×10^{-6}
	Maximum	1.40×10^{-3}	9.13×10^{-5}	3.00×10^{-3}	3.00×10^{-4}	2.00×10^{-5}
	Minimum	3.95×10^{-7}	1.60×10^{-8}	1.00×10^{-8}	9.40×10^{-9}	1.73×10^{-7}

Source: Schlumberger (2015: Tables 8.1-1 through 8.1-5).

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Figure 3.17-7: Hydraulic Conductivity Measurements in Pebble Deposit Area

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Figure 3.17-8: Hydraulic Conductivity Measurements Outside Pebble Deposit Area

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Figure 3.17-9: Hydraulic Conductivity Profile for Deep Bedrock

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Based on a total of 110 response tests, the hydraulic conductivity of overburden ranges from $7.8x10^{-9}$ to $1.78x10^{-3}$ meters per second (m/s) in the Mine Site. The hydraulic conductivity of overburden is similar throughout the Mine Site, with geometric mean values between $1.05x10^{-5}$ m/s and 1.0x10-4 m/s for each area. Hydraulic conductivity values for overburden materials in the Pebble Deposit and Upper Talarik areas were an order of magnitude lower than those measured in the rest of the Mine Site, based on the median values, likely due to the presence of silty glacial deposits in this area.

Based on a total of 140 response tests, the hydraulic conductivity of bedrock ranges from $9.4x10^{-9}$ to $3.0x10^{-3}$ m/s in the Mine Site. Similar to overburden, the hydraulic conductivity of the bedrock is about the same throughout the Mine Site, with geometric mean values between $9.7x10^{-7}$ and $2.0x10^{-5}$ m/s. Hydraulic conductivity values for bedrock in the Pebble Deposit and South Fork Koktuli areas are about 1 to 2 orders of magnitude higher than those measured in the North Fork Koktuli and Upper Talarik areas, possibly due to the presence of batholith granodiorite in parts of these areas.

Hydraulic conductivities range across 14 orders of magnitude in nature. Therefore, differences of 1 to 2 orders of magnitude are not considered large, and indicate that the overburden and bedrock are relatively homogeneous overall across the Mine Site.

Larger-scale hydraulic conductivity values were also assessed by conducting a total of nine pumping tests, and found that the hydraulic conductivity of overburden was almost 10 times higher than values derived from response tests (Schlumberger 2011). Pumping rates ranged from approximately 10 to 356 gallons per minute (gpm), and water level responses were observed at significant distances from the pumping well, allowing for a more robust analysis of transmissivity (hydraulic conductivity) and storativity (specific yield) parameters for individual aquifers than possible using response testing and packer testing alone. Detailed analyses and results are presented in Schlumberger (2011: Table 8.1-6). Calculated transmissivity values ranged from $8.0x10^{-5}$ to $1.1x10^{-1}$ m/s, indicating the aquifers are capable of conveying moderate to large quantities of groundwater. Calculated storativity values ranged from $1x10^{-5}$ to $2.5x10^{-2}$, which indicates the ability of individual aquifers to store water is moderate to high overall, but is limited for some aquifers. This indicates that response testing underestimates the hydraulic conductivity of the aquifer, which may be due to restrictions placed on pumping associated with the well screen, surrounding sand filter pack, and/or borehole damage during drilling. Pumping test results for wells completed in bedrock were similar to those for response tests.

Hydraulic conductivity values were also measured by conducting borehole packer testing and Lugeon tests as part of geotechnical investigations to depths of up to 4,500 feet near the Pebble Deposit, and at depths of up to 400 feet outside of the deposit area. The highest values were typically measured in the upper 500 feet, but similar values were also measured at considerable depths. Overall, bedrock hydraulic conductivity values are lower at depth than shallow bedrock in the deposit area.

Deep bedrock was investigated through the installation of three Westbay multi-level groundwater monitoring systems (WB-1, WB-3, and WB-4) at three locations to depths of 4,054 feet, 600 feet and 2,250 feet, respectively.

Groundwater Flow Systems

Groundwater level monitoring and interpreted contours revealed the presence of three groundwater divides in the study area (Figure 3.17-6). One divide is between the Upper Talarik Creek drainage and the North Fork Koktuli drainage. A second divide is near the Pebble Deposit between the South Fork Koktuli River drainage and the Upper Talarik Creek drainage. A third divide is between the South Fork Koktuli River drainage and the tributary UT1.190 drainage.

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Although the groundwater divides generally align with surface water drainage divides, there is evidence of some interbasin groundwater exchange from the North Fork Koktuli drainage to the Upper Talarik Creek drainage, and from the South Fork Koktuli drainage to the UT1.190 basin.

Hydrographs for two representative monitoring locations are presented on Figure 3.17-10 and Figure 3.17-11 to illustrate seasonal and vertical groundwater level fluctuations. These examples are in the South Koktuli Flats and Pebble Deposit areas, respectively, and show groundwater levels from three to four different screened intervals over a 9-year period compared to precipitation and stream flow.

The water table typically lies at the greatest depths below upland areas, and is near the surface in valley bottoms. The lowest groundwater levels were typically recorded in late winter immediately prior to spring freshet, while the highest water levels were typically observed during spring freshet or during fall rains, with water levels fluctuating on the order of 10 feet to 20 feet seasonally. Vertical groundwater gradients were found to be variable in both time and with depth, and generally support the conceptual model of compartmentalized groundwater flow. Similar to groundwater levels, measured discharge from seeps varied by a factor of between 3 and 10 seasonally, with a median flow of 44 gpm.

Based on the results of tritium analysis, the majority of the groundwater in Mine Site aquifers likely recharged after 1972, which indicates that groundwater moves through the aquifers relatively quickly. This interpretation is supported by the measurement of relatively high hydraulic conductivities in overburden and shallow bedrock, and the seasonal behavior of groundwater levels in response to rainfall and snowmelt.

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Figure 3.17-10: Time Series of Piezometric Elevations at MW-11, South Fork Koktuli Flats Area

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Figure 3.17-11: Time Series of Piezometric Elevations at MW-5, Pebble Deposit Area

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3.17.1.3 Site Water Balance Model

A site water balance model (WBM) was developed to inform the characterization of site hydrology, understand the nature and extent of groundwater-surface water interactions, and provide estimates of groundwater recharge for use during calibration of the Mine Site groundwater model. A detailed description of the model is provided in Schlumberger (2011: Appendix 8.1I). The model was also used to validate the meteoric data and the variability in precipitation across the site. Continuous streamflow records from a total of 12 gauging stations were used to calibrate the model for the period of time between 2004 and 2008. Sub-catchments were delineated and drainage areas calculated for each gauging station. Inputs to the model and calibration are further described in Section 3.16-Surface Water Resources.

The results of the WBM indicate that groundwater recharge varies from 11 to 23 inches per year for the North Fork Koktuli, Upper Talarik, and South Fork Koktuli drainages. The majority of groundwater that recharges in each catchment tends to discharge to surface within the same drainage, with the exception of the inter-catchment transfer of approximately 6 inches per year that occurs between the South Fork Koktuli River and Upper Talarik Creek drainages. Ongoing efforts are focused on validating and recalibrating the site WBM using data collected since 2008.

[Note: RFI 019 requests WBM predictions based on the proposed mine plan in PLP (2017). Following receipt of RFI response, this section will be updated with data collected since 2012 that may be incorporated into the current model.]

3.17.1.4 Mite Site Grounderwater Model

A numerical groundwater model was developed to simulate baseline groundwater conditions as described in detail in Schlumberger (2011: Appendix 8.1J). The model was calibrated to total recharge and discharge rates obtained from the WBM, described above. The total groundwater recharge and discharge calculated by the WBM includes meteoric recharge and losses from streams to the underlying groundwater flow system. The groundwater model was calibrated to observed groundwater elevations, estimated groundwater recharge, and estimated groundwater discharge obtained from the WBM.

The groundwater model domain encompasses the majority of the Mine Site and sub-catchments that were included in the WBM. The complex site geology was translated into the groundwater model using a five-layer structure, with three layers to represent variably thick overburden units, one layer to represent the uppermost 50 feet of bedrock, and one layer for the underlying bedrock to an elevation of -200 feet mean sea level.

Because groundwater levels and flow exhibit strong seasonality, the model was developed as a transient model with a simulation period of 37 months, from December 2004 to December 2007, to coincide with the WBM. The primary objective was to simulate the behavior of the groundwater flow system in the upper reaches of the South Fork Koktuli River, the upper reach of Talarik Creek, Upper Talarik Creek tributary UT1.190, and the upper reaches of the North Fork Koktuli River. The calibration effort was focused on the South Fork Koktuli River area, where data are most abundant.

The calibrated groundwater model produced water table elevations that follow the same general pattern as field measurements, and also reproduced inter-catchment flows between the South Fork Koktuli River catchment and Upper Talarik Creek catchment UT1.190. A total of 220 piezometers with up to 35 measurements prior to 2008 each was used to calibrate hydraulic

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heads and calculate hydraulic head residuals to judge the calibration of the model. Focus was placed on calibrating the model to periods of time when the aquifer was stressed during pumping tests.

Simulated groundwater elevations were very similar to measured groundwater elevations, as shown in Schlumberger (2011: Figure 8.1-20), whereby an ideal calibration is represented by equivalent modeled and measured hydraulic heads to produce a straight line. Hydraulic heads in bedrock beneath upland areas are predicted to be slightly lower by the model than measurements. When plotted over time, hydraulic head residuals continually increased in some areas, highlighting opportunities for model refinement; while in other areas, the model produced uniform residuals over the simulation period.

Calculated calibration statistics produced a Root Mean Squared Error (RMSE) of 3 percent, with values ranging between 4 and 12 percent for the focus areas of calibration, suggesting that calibration could be improved in the South Fork Koktuli discharge and tributary UT1.190 areas. RMSE values ranged from 5 to 25 percent for areas in the model domain that were not the focus of calibration. Lower RMSE values generally indicate a good match between the model and actual field data. The largest errors at the Mine Site typically occurred in the bedrock layers. The model was generally able to reproduce measurements of groundwater elevations over time, but was unable to reproduce the range of measured seasonal hydraulic head fluctuations near Frying Pan Lake, where fine sediments may not be adequately reflected in the numerical groundwater model. Although the average direction of vertical flow between overburden and bedrock was well simulated by the model, the seasonality of vertical hydraulic head differences was not well replicated by the model, and will be the focus of the next phase of calibration.

Recharge and discharge rates estimated by the groundwater model agreed fairly well with estimates calculated in the WBM. However, additional refinements are planned for some areas in the South Fork Koktuli River catchment where the WBM and groundwater model were not in agreement. The groundwater model simulates the exchange of water between streams and groundwater, and model estimates were compared with streamflow measurements during periods of time when flows were low, and primarily groundwater-derived. Overall, the groundwater model was able to reproduce measured hydraulic head calibration targets, and was in general agreement with recharge rates, inter-catchment flows, and local groundwater discharge rates estimated by the WBM with a reasonable degree of accuracy.

Schlumberger (2011) indicates that a refined numerical groundwater model is currently being developed to capture geologic information collected since 2008, and to better reflect groundwater-surface water interactions. The model will be calibrated to streamflow during low-flow periods and water levels collected in 2009 and 2010. Overall, there will be an effort to improve the calibration to transient fluctuations in water levels and vertical gradients. The updated modeling will involve a sensitivity analysis, and the predictive ability of the model will be validated using data collected in 2011 and 2012.

[Note: RFI 019 requests groundwater predictions based on the proposed mine plan in PLP (2017). Following receipt of RFI response, this section will be updated with more recent data that may be incorporated into the current model.]

3.17.1.5 Groundwater and Surface Water Interaction

Groundwater and surface water interaction was characterized based on detailed streamflow surveys and the site-wide WBM. The flow surveys were completed during periods of low streamflow, and are described in detail in Knight Piésold (2015). These surveys included eight gauges in the North Fork Koktuli River catchment, 12 gauges in the South Fork Koktuli River catchment, and 12 gauges in the Upper Talarik Creek catchment. Based on the results of the

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streamflow surveys, gaining and losing stream reaches were identified, and possible explanations for the variability in flows between gauges were provided. The majority of the stream reaches were found to be receiving groundwater discharge from the underlying aquifer (i.e., gaining). However, the North Fork Koktuli River was found to be losing water to the underlying aquifer between gauges NK100B and NK100LF1. The South Fork Koktuli River was found to be losing water to the underlying aquifer(s) from SK100G to SK100F, from SK100F to SK100C, and from SK100B to SK100LF10.

3.17.2 Transportation Corridor and Amakdedori Port

3.17.2.1 Hydrogeological Characterization

The sections below summarize baseline hydrogeological data, where available, across the 84-mile-long Transportation Corridor, spur roads, and Amakdedori Port. The road corridor spans multiple watersheds, from its starting point at the southeastern edge of the Nushagak watershed in the Mine Site, across the greater Kvichak watershed (including Iliamna Lake) to the Aleutian Range watershed divide, and finally entering the greater Cook Inlet watershed east of the divide.

The hydrogeology in the watersheds surrounding the Mine Site is well characterized, as described in Section 3.17.1.2. The northernmost segment of the Transportation Corridor (northern half of the Mine Access Road) is in the well-studied Upper Talarik Creek (UTC) watershed, for which abundant data are available. Limited data are available for the southern segment of the Mine Access Road. No known hydrogeological investigations have been conducted along the South Access Road or Amakdedori Port.

Climatic factors influencing groundwater across the corridor are the same or similar to those described above for the Mine Site. There are no glaciers in the road corridor watersheds. There is no known permafrost in the Transportation Corridor; however, permafrost has been observed in the general area (Detterman and Reed 1973), and may be present at depth in isolated zones, such as on north-facing slopes. Section 3.14-Soils further addresses permafrost.

Hydrostratigraphic Units

The road corridor begins at the Mine Site, which straddles the watershed divide between the SFK and UTC watersheds. The hydrostratigraphic units in the watersheds surrounding the Mine Site are well defined, as described in Section 3.17.1.2. Glacial sands and gravels generally host multiple, very active surficial and intermediate aquifers, while the uppermost 10 to 50 feet of weathered bedrock hosts less active aquifers in most areas (Schlumberger 2015: Appendix 8.1B).The northern half of the Mine Access Road is mostly in the UTC watershed, where groundwater is stored in surficial aquifers of glacial sediment and in fractured shallow bedrock.

The southern half of the Mine Access Road parallels First Creek, a tributary basin that drains southward into the main UTC catchment about 4 miles upgradient of Iliamna Lake. Hydrogeologic data for this southern half of the Mine Access Road are limited. Bedrock and surficial geology along this stretch of the Mine Access Road are similar to the corridor to the north, with Tertiary volcanic bedrock and thick deposits of surficial glacial sediments. Based on the similar geologic setting and topography across the Mine Access Road, it is likely that hydrostratigraphic units are likewise similar here. Permeable sands and gravels, which make up the abundant glacial till and outwash across this stretch of the Mine Access Road, as well as lake terrace and beach deposits within 1 to 2 miles of the North Ferry Terminal (Detterman and Reed 1973), likely host surficial and/or intermediate aquifers. It is possible that weathered bedrock stores additional groundwater at depth.

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No known hydrogeological investigations have been conducted south of Iliamna Lake, and hydrostratigraphic units have not been defined for this area. Lake terrace and beach deposits that occur in the South Ferry Terminal area (Detterman and Reed 1973) likely host shallow groundwater. The geologic environment along the rest of the South Access Road and the Kokhanok Airport Spur Road is somewhat distinct from that north of Iliamna Lake. Jurassic age intrusive bedrock is commonly exposed at the surface, and glacial sediments are less abundant. The water table approaches the surface in lowland areas, as evidenced by abundant kettle ponds and wetlands. Glacial deposits are significantly thinner along the South Access Road corridor compared to the Mine Access Road, but likely host shallow aquifers where present (Glass 1999). Shallow groundwater is likely present in surficial alluvium, alluvial fan, marine terrace, and beach deposits near Amakdedori Port (Detterman and Reed 1973). The degree of weathering and fracturing in bedrock is not well known along the South Access Road, and it is unknown if bedrock fractures host significant groundwater. It is also unknown if local fault zones host groundwater, or if they contain fine-grained breccias that may impede groundwater migration.

Aquifer Properties: Hydraulic Conductivity and Specific Storage

The aquifer properties in the northernmost segment of the Transportation Corridor near the Mine Site have been extensively studied, as described in Section 3.17.1.2. The northern half of the Mine Access Road is in the UTC watershed, where groundwater is held in surficial aquifers of glacial sediments and in fractured shallow bedrock. Hydraulic conductivities in surficial aquifers of the upper UTC watershed range from 2x10-6 to 4x10-5 m/s, and hydraulic conductivities in shallow bedrock in this area range from 2x10-7 to 2x10-5 m/s (Schlumberger 2013).

Continuing south, the corridor parallels the First Creek tributary basin, which drains southward into the main UTC basin above Iliamna Lake. No detailed studies have been conducted on aquifer properties here, but a similar geologic setting would suggest that groundwater storage occurs in both surficial sedimentary aquifers and fractured bedrock, as it does farther north. Hydraulic conductivity and storage capacity can vary significantly laterally, but especially in surficial glacial sediment aquifers.

No data on hydraulic conductivity or aquifer storage are available along the Transportation Corridor south of Iliamna Lake.

Groundwater Flow Systems

The groundwater flow systems in the northernmost corridor have been shown to have complex surface water/groundwater interactions (Schlumberger 2013). The UTC drainage basin has both gaining and losing reaches as groundwater migrates generally southeast across the area. Farther south along the Mine Access Road, the water table remains near the ground surface in lowland areas, and groundwater/surface water exchanges likely occur, as has been demonstrated in and around the Mine Site. Existing data and regional groundwater trends suggest a generally southward flow of groundwater along the southern half of the Mine Access Road (Schlumberger 2015: Appendix 8.1B).

There are no known studies on groundwater flow in the Transportation Corridor south of Iliamna Lake. Groundwater flow along the South Access Road corridor likely parallels surficial flow, following general hydrologic trends. In the Kvichak watershed, groundwater is expected to flow northwesterly toward Iliamna Lake. Across the Aleutian Range divide in the Tuxedni-Kamishak watershed, groundwater would likely flow southeasterly towards Kamishak Bay. Near Amakdedori Port, shallow groundwater in surficial deposits and bedrock (where present) likely

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flows from side hill slopes towards Amakdedori Creek and swamp deposits near the southern end of the road, then parallels creek flow south and southeast towards Kamishak Bay. Groundwater flow beneath beach deposits at the port site may have a diurnal directional component due to large tidal fluctuations.

3.17.3 Pipeline Corridor

No specific studies have been conducted on hydrostratigraphic units, aquifer properties, or groundwater flow systems in the Natural Gas Pipeline Corridor. Data for the hydrogeology of the Pipeline Corridor are the same as those discussed above for the Transportation Corridor, with the exception of the Cook Inlet crossing and the segment of corridor along the Kenai Peninsula. Groundwater beneath Kenai Peninsula is known to occur in multiple aquifers in thick glacial and alluvial deposits above Tertiary sedimentary bedrock (Karlstrom 1964, Nelson and Johnson 1981). Groundwater flow is generally to the west towards Cook Inlet, and seeps commonly occur along Cook Inlet bluff, where fine-grained glacial lake deposits form aquitards and support perched groundwater zones.

[Note: Recent project updates no longer include pipeline construction along the 9-mile stretch south of Happy Valley. This section will be updated in order to describe groundwater characteristics within the revised pipeline corridor.]

3.17.4 Groundwater Use

Most Bristol Bay communities rely on groundwater wells for their drinking water supply, including the nearby communities of Iliamna, Nondalton, and Newhalen (ADEC 2018; ADNR 2018). With the exception of wells in these local communities and exploration wells the Mine Site area, the project area encompasses remote regions with no documented groundwater use. There are no public wells in the Mine Site, and no known wells of any type in the Transportation and Natural Gas Pipeline corridors, or at the Amakdedori Port site (ADNR 2018).

Abundant groundwater wells have been installed by PLP across the Mine Site area for collecting data on aquifer properties, site water balance, and water quality (Schlumberger 2011, 2015). In the project area, groundwater use is currently limited to such sampling and hydrogeologic testing at the PLP wells. PLP has received multiple Temporary Water Use Permits (TWUPs) for exploration activities between 2004 and 2013. The TWUPs give PLP permission to withdraw up to a set number of gallons of water per day, up to a specified annual limit, from specified sources, mostly groundwater wells.

The Applicant's proposed project would include installation of potable groundwater water wells on the northern side of the Mine Site to serve mine site personnel. PLP has tested the groundwater quality at this site, with results showing that minimal water treatment would be required to develop the wells for a drinking water source (PLP 2017).

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3.18 WATER QUALITY AND GEOCHEMISTRY

3.18.1 Surface Water Quality Criteria

On February 27, 2004, the U.S. Environmental Protection Agency (EPA) partially approved revisions to Alaska Water Quality Standards (WQS), while taking no action on Alaska's proposed acute and chronic freshwater aquatic life criteria for mercury and selenium. Therefore, the new aquatic life criteria for mercury and selenium will not be in effect for CWA purposes until a decision is made by EPA about whether these criteria can be approved. In the interim, the previously approved aquatic life criteria for mercury (2.4 micrograms per liter [µg/l] acute and 0.012 µg/l chronic, both as total recoverable) and selenium (20 µg/l acute and 5 µg/l chronic, both as total recoverable) will remain the applicable CWA standards (65 Federal Regulations [FR] 24643).

In instances where the Alaska WQS have been approved by EPA, water quality in this section is described in relation to Alaska WQS, which include use classifications, numeric and narrative water quality criteria, and an anti-degradation policy. The usage classification system designates the beneficial uses that each waterbody within the state of Alaska is expected to support. In Alaska, all waterbodies are designated for all protected water use classes unless otherwise stated (18 Alaska Administrative Code [AAC] 70.050). The water quality data presented in this section are compared to the most stringent applicable State of Alaska water quality standards (for all designated water uses).

For most parameters, the most stringent criteria are the aquatic life criteria for fresh water. However, the most stringent criteria for antimony, arsenic, nitrate, and sulfate are for drinking water (ADEC 2008a; ADEC 2012d). The most stringent criterion for manganese is based on human health for consumption of drinking water and aquatic organisms (ADEC 2008a). The most stringent criteria for boron and cobalt are based on irrigation use (ADEC 2008a).

Criteria for some dissolved metals, including cadmium, chromium, copper, lead, nickel, silver, and zinc, are hardness-dependent, meaning that the acceptable concentrations of these metals depend on the hardness of the water. Hardness is a measure of the concentration of polyvalent cations, such as calcium (Ca^{2+}) and magnesium (Mg^{2+}), in the water. The polyvalent cations that contribute to water hardness reduce the bioavailability of certain trace metals by competing with the trace metal ions for binding sites within organisms. The extent of this effect varies according to which dissolved metals are present, and their oxidation states. To account for the influence of water hardness on the bioavailability and potential toxicity of certain dissolved metals, the numeric water quality criteria for those metals are calculated so that the allowable concentrations of the metals increase in proportion to the hardness of the water (ADEC 2008a). Therefore, the numeric water quality criteria for hardness-dependent parameters vary depending on the measured (or predicted) hardness value for the matrix water.

The Alaska Department of Environmental Conservation (ADEC) numeric water quality standard for ammonia depends on both the temperature and the pH of the matrix water, but not hardness.

3.18.2 Groundwater Quality Criteria

As specified in 18 AAC 70.050(a)(2), groundwater is protected for all uses in Class (1)(A), including drinking, culinary, and food processing; agriculture, including irrigation and stock watering; aquaculture; and industrial uses. Although ADEC does not regulate groundwater directly, they do regulate contaminated sites and underground storage tanks that may affect groundwater quality, and establish WQS that serve to protect groundwater.

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Drinking water from groundwater sources is regulated by 18 AAC 80 (ADEC 2012c) and by EPA (2013k, 2017c). EPA sets standards for approximately 90 contaminants in drinking water. These standards include National Primary Drinking Water Regulations, which set legally enforceable Maximum Contaminant Levels (MCLs) that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Secondary Drinking Water Standards are unenforceable federal guidelines regarding taste, odor, color, and certain other effects of drinking water. EPA MCLs for certain constituents (e.g., aluminum, chloride, iron, manganese, pH, sulfate, total dissolved solids [TDS], and zinc) are Secondary Drinking Water Regulations that set non-mandatory water quality standards. EPA recommends them to the states as reasonable goals, but federal law does not require compliance with them.

3.18.3 Sediment Quality Criteria

There are no regulations established for chemical concentrations in sediment. Sediment Quality Guidelines (SQGs) recommended by ADEC (2013d), as well as other sediment quality criteria used for comparison purposes in project studies, are discussed below, and focus on the Mine Site.

The sections regarding sediment quality address existing baseline characteristics of the substrate in ponds, lakes, rivers, streams, and the seafloor within the project area, where documented. See Section 3.22, Wetlands/Special Aquatic Sites and Waterbodies, for a discussion of wetlands substrate.

Waterbody substrates are included under "waters of the U.S." as defined in the Clean Water Act (CWA), and therefore are protected under CWA 404(b)(1); Subpart C, 230.20, Substrate. A determination of potential project impacts on waterbody substrates is addressed in Environmental Consequences Section 4.18., Water Quality, and Section 4.22, Wetlands/ Special Aquatic Sites and Waterbodies. Those sections include information on tailings and dredge spoils storage, as pertinent to CWA 404(b)(1).

Waterbody substrate data are limited within the project area. Baseline physical and chemical data on substrate/sediment from the major drainages and other waterbodies in the project area, including wetlands, were collected between 2004 and 2008 (Knight Piésold 2011; SLR Alaska 2011; R2 et al. 2011; HDR Alaska 2011; SLR Alaska et al. 2011; Three Parameters Plus and HDR 2011). The National Uranium Resource Evaluation (NURE) program collected a variety of substrate samples across the region in 1977 (Grossman 1998). NURE data include very basic physical substrate descriptions and thorough chemical analyses, as well as reporting of potential contaminant sources, and are included below.

3.18.4 Mine Site Area

The Mine Site would consist of an open pit; waste rock stockpiles; tailings storage facility (TSF); low-grade ore (LGO) stockpile; the mill and concentration facilities; and warehouses, offices, and housing. Of these Mine Site components, the open pit, LGO and waste rock stockpiles, and tailings pose the most significant risk to water quality because they expose fresh rock to oxidation and leaching processes that may generate acidic drainage and leach metals. ADNR (2014) states in their Overview of the Process for Large Mine Permitting in Alaska that "rock chemistry drives water quality and mine design."

Figure 3.18-1 depicts the mine site analysis area and extent of current surface water quality data.

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Figure 3.18-1: Locations of Water Quality Data

[Note: RFI in preparation for GIS data to prepare comprehensive figure with all surface water quality data locations] Figure will be based on EBD Figures 9.0-2 through Figure 9.0-6 from EBD, Chapter 9.

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The Pebble Deposit is a copper-gold-molybdenum porphyry deposit. The deposit formed about 90 million years ago, when older sedimentary and igneous rocks were intruded by a granitic magma laden with hot fluids carrying dissolved copper, gold, molybdenum, and silver, as well as quantities of rhenium and palladium. As the fluids cooled, concentrations of sulfide minerals, chalcopyrite (CuFeS¬2), molybdenite (MoS2), and pyrite (FeS2), hosting the copper, molybdenum, gold, and silver metals, precipitated in quartz veins and disseminated throughout the granitic and adjacent sedimentary and igneous rocks.

3.18.4.1 Geochemical Processes

In the natural environment, rocks are broken down into soil through exposure to air and water in a process called weathering. During weathering, minerals comprising the rocks react with air (oxidation) and water (dissolving into solution) to release some of their constituents (ions) into the surrounding environment. In many cases, the primary (original) minerals are transformed into secondary minerals during this process. The ions that go into solution may be transported away by overland runoff, streams, and groundwater. Therefore, weathering has a large influence on water quality. If a mineralized deposit is buried beneath other rocks, sediment, and soil, it naturally weathers very slowly. However, when a mineralized deposit is excavated during mining, the weathering process can increase substantially because previously unexposed rocks are broken up and exposed to rain, snow, and air at the surface.

Both ore and non-ore rocks contain minerals (typically pyrite, FeS2) that can produce acid during weathering. The sulfur in pyrite reacts with oxygen and water to form sulfuric acid (H2SO4) through the reaction: FeS2 +15/4 O2 +7/2 H2O = 2H2SO4 + Fe(OH)3. The resulting acidic water is known as acid rock drainage (ARD), which accelerates the weathering process. Metals and other potentially harmful constituents can also be released during weathering in a process called metal leaching (ML). Most metals are released more rapidly in acidic water. However, some other constituents, including metalloids such as arsenic, molybdenum, and selenium, and salts such as sulfate, can be released into the environment even if the water draining the rock has a neutral or basic pH (Smith 2007). The rate of acid generation is counteracted by minerals that neutralize the acid (such as calcite, CaCO3). The neutralization is generated through a reaction of calcite with the sulfuric acid: CaCO3 + H2SO4 = Ca2+ + SO42- + H2O + CO2. Acidification is typically delayed until the neutralizing minerals are exhausted.

The task of geochemical characterization at the proposed Mine Site is to identify the potential of the rocks in and surrounding the mineralized deposit to produce ARD and/or ML that could affect water quality in surface water and/or groundwater. The characterization process involves studies of the mineralogy of the rocks, the quantities of minerals with potential to generate or neutralize acid, the amounts of leachable constituents in the rocks, and the rates of weathering and release of these minerals and constituents expected during mining, and after mining ceases. Geochemical characterization was undertaken as part of environmental baseline studies over a number of years to evaluate the potential for ARD and/or ML for the Pebble Project. A brief summary of the results of these studies follows. Geochemical results described below are largely sourced from Chapter 11 Geochemical Characterization, Bristol Bay Drainages, of the Pebble Mine Environmental Baseline Document (SRK 2011).

3.18.4.2 Geochemical Characterization

The objectives of the geochemical characterization program were to predict the weathering and leaching behavior of rock, tailings, and other materials that would be produced during mining and processing. The data produced from geochemical testing are used to predict the chemistry of waters that contact the rock exposed in the open pit, stockpiled as LGO to be used later, or disposed as waste rock and tailings, and determine their ARD/ML potential.

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Samples for geochemical testing were selected from the numerous exploration cores drilled to outline the deposit. The samples included all the main Pebble Deposit rock types, and adjacent rock types that might be removed during mining. As of 2012, the program had included analysis of over 1,000 rock samples from the Pebble Deposit, and 26 samples of overburden materials. In addition, almost 60 tailings samples from test processing of ore composites have also been characterized (49 samples plus various quality control samples). To date, limited testing has been performed on the representative concentrate, because possible designs for a metallurgical process are still at an investigative stage.

The rock samples were tested for mineral abundance using transmitted and reflected light microscopy, and ARD potential, bulk chemical composition, and constituent mobility. Geochemical tests have included acid-base accounting (ABA), sequential net acid generation, shake flask extractions, meteoric water mobility, humidity cells, subaqueous (saturated) leach columns, and on-site field weathering (barrel and bag) tests to evaluate rates of oxidation, acid generation, acid neutralization, and element leaching.

In some mineralized deposits, rock type alone can be a good indicator of whether a rock will potentially produce ARD and/or ML. There are two main geological divisions at the proposed mine site. The mineralization is hosted by sedimentary and volcanic rocks of pre-Tertiary age. After the pre-Tertiary occurrence of mineralization, those rocks were partially eroded, then covered by other sedimentary and volcanic rock later in the Tertiary period. The later-Tertiary-age rocks at the Mine Site generally do not contain copper, gold, or other metals in formats that would be economically viable to recover at the present time.

ABA has determined that the pre-Tertiary mineralized rocks at the proposed mine site are predominantly Potentially Acid Generating (PAG). The acid-generating potential (AP) in these rocks is relatively high, as indicated by the total sulfur content of greater than 1percent, and the neutralization potential (NP) of these rocks is limited. In contrast, the majority of the Tertiary-age rocks that comprise the cover and overburden materials at the proposed mine site have sulfur concentrations of less than 0.1percent, which indicates low AP. The cover and overburden rocks also contain significant NP. As a result of the low AP and high NP in the cover and overburden, these materials are generally considered Non-potentially Acid Generating (NAG).

Most of the older pre-Tertiary sedimentary and igneous rocks hosting the Pebble Deposit were found to be PAG. The acid potential is largely derived from oxidation of pyrite and characterized by more than 1 percent sulfur content. The NP of the pre-Tertiary rock is limited. The majority of the younger Tertiary rocks and glacial overburden materials have low sulfur content (less than 0.1 percent) and significant NP. These materials are typically classified NAG.

To develop an understanding of weathering and leaching processes that might affect rocks exposed during mining (e.g., pit walls, stockpiled materials, and waste rock), additional laboratory and field geochemical tests were conducted. Laboratory tests included humidity cell tests and saturated columns. Humidity cell test data allow interpretation of long-term acid generation potential and neutralization rates. Humidity cell tests also confirm ABA criteria for segregating PAG from NAG rocks and waste, based on the NP to AP ratio. The NP/AP ratio that distinguishes PAG and NAG is 1.6, and is applicable to pre-Tertiary, Tertiary, and overburden materials.

The humidity cell tests also help to estimate the potential lag or delay in the onset of ARD. The delay occurs because acid-neutralizing minerals (e.g., calcite, feldspars, and micas) are not depleted instantly as acid is formed, but are consumed at different rates depending on their reactivity and abundance. Results show that rocks with low NP/AP ratios (less than 0.1) have little neutralization potential and are likely to generate acid within a few years. Rocks with NP/AP ratios of 1 have higher neutralization potential, which delays the onset of acid generation

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to more than 20 years. Paste pH results for aged rock cores stored at the site suggest that acidification maybe delayed up to 40 years. Given differences in the test conditions, laboratory and field test suggest that oxidized pre-Tertiary mineralized rock may take up to several decades for acidification to occur.

Element release rates indicated by kinetic tests were mainly a function of leachate pH rather than the element content of the samples. Leaching of copper accelerated as pH decreased; therefore, the potential for metal release is linked to the potential for acid generation, and ABA data can be used to assess the potential for copper leaching. However, for some elements (e.g., arsenic, molybdenum, and selenium), release is significant under neutral pH conditions. Tests on some samples of Tertiary rock showed relatively elevated leaching of these elements under non-acidic conditions.

Ore processing based on a conventional flotation process to recover chalcopyrite and molybdenite, the primary copper and molybdenum minerals, followed by treatment of pyrite to recover gold, will result in a low sulfide bulk tailing concentrate and a high-sulfide (pyrite-rich) tailing concentrate, respectively. Low sulfide tailings are expected to have low potential to generate ARD, provided the sulfide mineral content is less than about 0.2 percent. Element leaching from the low sulfide tailings occurred at low rates, and process supernatants were found to contain low levels of potential constituents relative to water quality standards. The pyrite concentrate tails are expected to be PAG, and are likely to leach metals at higher concentrations.

Because of the geochemical variability in the rocks, assessment of impacts resulting from geochemical processes requires consideration of the disposition and fate of the material that would be mined each year. The annual area mined can be estimated by developing a block model. (The block model is a computer model that shows the three-dimensional location of each type of rock and the likely order of mining.) Rock material is assessed based on whether the material would take a long time to react – developing acid or losing neutralizing potential – and whether the material would be processed to end up in tailings or set aside as waste rock, in order to design waste management strategies.

Based on the results obtained from integrating the geochemical studies with the block model, the majority of the rocks that would be mined from the deposit do not have the potential for acid generation, and could be considered substantially acid neutralizing. However, some rocks do have the potential to leach certain constituents; mainly, arsenic and sulfate. These results, and their influence on the existing baseline water quality at the site of the proposed mine, will be discussed in more detail in the next few sections.

3.18.4.3 Surface Water Quality

The Pebble Deposit is located in the headwaters of the Upper Talarik Creek (UTC) drainage and the South Fork Koktuli (SFK) River drainage, and adjacent to the headwaters of the North Fork Koktuli (NFK) River drainage. The NFK River drainage is immediately north of the project area. The Kasanak Creek (KC) drainage lies south of the SFK River drainage.

A water quality study was conducted to quantify chemical and physical parameters that describe the quality of the water in the Mine Site, and other areas that would potentially be impacted by the proposed action and alternatives. Water quality data were collected for rivers, lakes, and seeps in the project area, and throughout a 965-square-mile area that includes the NFK River, the SFK River, and UTC.

A comprehensive network of sampling stations was established in the project area for sampling surface water from streams, lakes, and seeps. Stream samples were collected from 44 locations

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during 50 sampling events from April 2004 through December 2008. Lake and pond samples were collected from 19 lakes once or twice per year during 2006 and 2007. Seep samples were collected from 11 to 127 sample locations, depending on the year, two to five times per year.

Altogether, between 2004 and 2008, over 1,000 samples were collected from streams, more than 600 samples from seeps, and approximately 50 samples from lakes. Additional samples were also collected during the supplementary water quality study period, which occurred from 2008 and 2013.

Results of analyses of samples collected from surface water resources in the project area indicate that the baseline surface water resources can generally be characterized as cool, clear waters with near-neutral pH that were well oxygenated, low in alkalinity, and generally low in nutrients and other trace elements. Water types ranged from calcium-magnesium-sodium-bicarbonate to calcium-magnesium-sodium-sulfate. Water quality occasionally exceeded the maximum criteria for concentrations of various trace elements. Additionally, cyanide was occasionally present in detectable concentrations, and there were consistently detectable concentrations of dissolved organic carbon. Concentrations of petroleum hydrocarbons, polychlorinated biphenyls (PCBs), and pesticides were all below the applicable limits of detection (LODs) for the analyses.

Some differences in water quality between watersheds and some trends in water quality along streams were noted. Sulfate, copper, zinc, nickel, and molybdenum concentrations were greatest in the SFK, consistent with the headwaters of this river passing through the deposit area, and multiple sample locations present in this area. Significantly higher concentrations of copper, molybdenum, nickel, zinc, and sulfate were present in the SFK than in the NFK, consistent with the SFK's proximity to the deposit area. Total dissolved solids (TDS), pH, sodium, alkalinity, hardness, nitrogen (total nitrate+nitrite), and nickel concentrations were greatest in the UTC drainage. The uppermost reach of UTC passes through a portion of the general deposit area, and also had significantly higher concentrations of all of these naturally occurring constituents, except copper, than in the NFK. Total suspended solids (TSS), potassium, chloride, iron, and arsenic concentrations were highest in KC, while cadmium and lead concentrations were highest in the NFK drainage. These characteristics of KC and NFK likely indicate that these parameters are unrelated to the deposit area, and represent water quality signatures that are distinct from the other drainage areas. The following paragraphs discuss some of the specifics of the sample results and trends.

The mean levels for TDS in streams, by watershed, ranged from 37 to 51 milligrams per liter (mg/L), which is 10 percent or less of the most stringent ADEC water quality maximum criterion. Of the three streams that originate close to the deposit area, the UTC and SFK had significantly higher TDS levels than the NFK. Furthermore, a decrease in the TDS levels with distance along the stream was more pronounced in the SFK and UTC watersheds than in the NFK watershed.

Higher TDS in the UTC and SFK watersheds with decreasing trends downstream were expected, because the deposit area lies within their watersheds, and the oxidation of sulfide minerals associated with the deposit would release dissolved solids. The mean levels for TDS in lakes and seeps were similar to those for streams, with values of 49 and 42 mg/L, respectively.

The highest value for TSS was in KC, and the lowest was in the NFK. The mean for TSS in lakes and seeps was similar to that for streams.

The pH values in surface water were close to neutral. The mean pH for streams, by watershed, ranged from 6.7 to 7.0. Therefore, even though the oxidation of sulfide minerals was expected to be releasing acid in the deposit area, carbonate minerals appear to provide effective pH buffering. The mean pH values for lakes and seeps were 7.2 and 6.5, respectively. Although the

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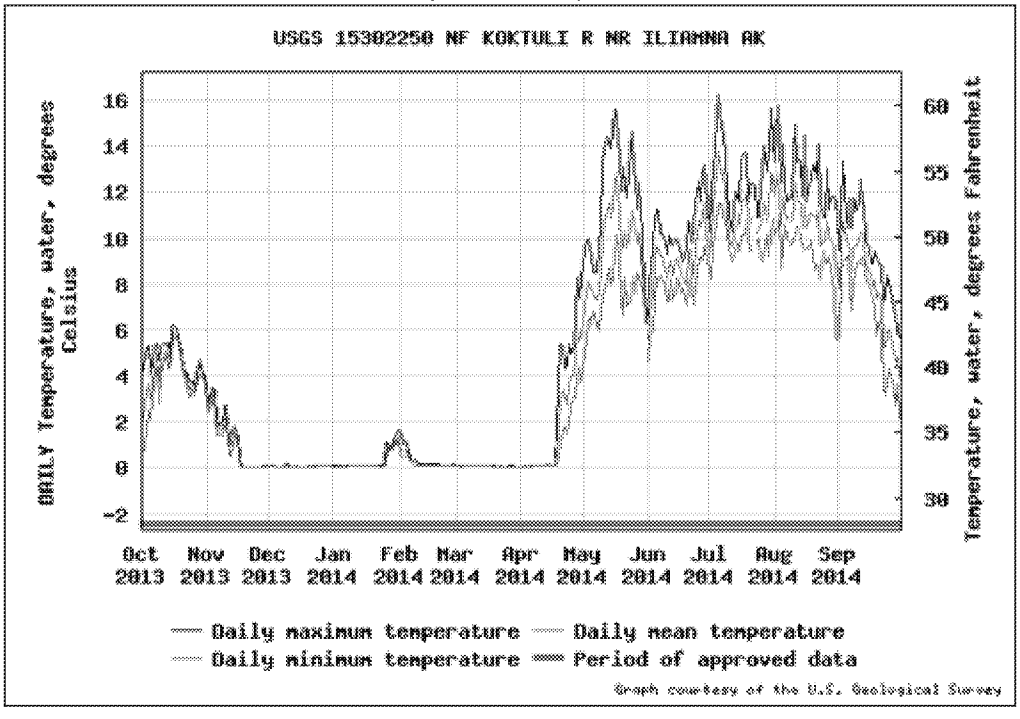
mean pH values fell within the range for pH specified in the most stringent ADEC criterion, 34 percent of all individual water quality samples did not meet the water quality criteria for pH. The frequency of this trend in seeps was at least double that of streams, depending on the watershed.

The alkalinity of the surface water samples was low. The mean alkalinity for streams, by watershed, ranged from 17 to 32 mg/L. The mean alkalinity for lakes and seeps was 19 and 23 mg/L, respectively. Alkalinity was the parameter that was most frequently detected outside the range of the most stringent ADEC criterion. In all, 43 percent of all surface water samples were below the most stringent ADEC minimum criterion for alkalinity. The frequency with which alkalinity values for lakes and seeps were below the minimum criterion was 10 to 20 percent higher than the frequency for streams.

Temperature

The mean water temperature in streams ranged from 4.0 to 4.8 degrees Celsius (°C), depending on the watershed. The coefficient of variation was close to 1 for each watershed. In other words, the standard deviation of the temperature values measured in each watershed was approximately equal to the mean of the values, indicating a high level of variability.

Figure 3.18-2: Daily water temperatures in the NFK at 59°50'35.4"N, 155°42'58.9"W, 3.5 miles upstream from the mouth, and 28.5 miles northwest of Iliamna. The temperature record shows the pattern in water temperatures over the period of 1 year from October 2013 to September 2014. (USGS 2018).



[Note: Figure 3.18-2 will be prepared as .pdf]

The lakes were considerably warmer, with a mean temperature of 12°C, and the seeps were slightly cooler, with a mean temperature of 3.4°C.

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Dissolved Oxygen

Dissolved oxygen (DO) concentrations in streams were very similar in all watersheds, with mean concentrations that ranged from 10.2 to 10.5 mg/L. These values are close to the theoretical solubility of oxygen of 12.3 mg/L at 900 feet amsl, and a water temperature of 4°C. Although most samples indicated high DO, 7 percent of the samples had DO concentrations lower than the most stringent ADEC minimum criterion.

Major Ions

The water type of most samples from the streams ranged from calcium-magnesium-sodium-bicarbonate to calcium-magnesium-sodium-bicarbonate-sulfate. The cation composition was dominated by calcium and was relatively consistent. The anion composition had a wider range, with most stream samples being dominated by carbonate. The average water type of the lakes and seeps was generally the same as the streams; however, the seeps had a slightly greater range of water types, and the distribution of water types was slightly different. Specifically, the seeps included samples with a higher proportion of sulfate, and the samples also were distributed more evenly across the spectrum of anion composition, rather than being weighted toward the bicarbonate end of the spectrum.

Nutrients

Nutrients, which included total ammonia, nitrate+nitrite, total phosphorous, and orthophosphate, had generally low concentrations, especially in lakes and seeps. Orthophosphate was generally not present at detectable levels, with one exception in the KC watershed. Total ammonia was detected in 19 to 36 percent of all surface water samples, and mean concentrations ranged from 0.03 to 0.05 mg/L, depending on whether the samples were from streams, lakes, or seeps. Nitrate+nitrite and phosphorous were detected in 66 to 98 percent of all surface water samples. Mean concentrations of nitrate+nitrite ranged from 0.1 to 0.3 mg/L, and mean concentrations of total phosphorous ranged from 0.02 to 0.04 mg/L. None of the nutrient concentrations exceeded the most stringent ADEC maximum criterion. The coefficients of variation for nutrients were high compared to most other parameters, often in the range of 1 to 2.

Trace Elements

The trace elements aluminum, antimony, arsenic, barium, cadmium, copper, iron, lead, manganese, molybdenum, mercury, nickel, and zinc were detected in surface water, although at low concentrations. The frequency of detection depended on the watershed, and on whether the sample was collected from a stream, a lake, or a seep. Total and dissolved aluminum, barium, copper, iron, manganese, and molybdenum were typically the most frequently detected trace elements in the streams and lakes; the frequency of detection generally ranged from 85 to 100 percent. The most frequently detected elements in the seeps were generally the same as those for the streams and lakes, but the frequency of detection was lower in the seeps (53 to 99 percent, rather than 85 to 100 percent). Exceptions to this general pattern included a frequency of detection for total and dissolved arsenic in KC of more than 98 percent.

The trace elements arsenic, lead, nickel, and zinc had an intermediate frequency of detection, with the exception of zinc, which had a higher frequency of detection (98 percent) in lakes.

Cadmium had the lowest frequency of detection. Some trace element concentrations in stream samples exceeded the most stringent ADEC maximum criteria. Copper from the SFK watershed exceeded the water quality criterion most frequently, with total copper exceeding the criterion in 42 percent of samples, and dissolved copper exceeding the criterion in 34 percent of samples. In contrast, copper had one of the lowest frequencies of exceedance in other watersheds. The

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relatively high frequency of exceedance in the SFK watershed is probably related to the proximity of the deposit. Total aluminum exceeded the most stringent ADEC maximum criterion in 12 to 22 percent of the stream samples from the SFK, UTC, and KC watersheds; and in 6 percent of the samples from the NFK watershed. In contrast, dissolved aluminum exceeded the criterion in only 1 percent of the stream samples, and only in the UTC watershed; therefore, aluminum exceedances seem to be almost exclusively associated with suspended solids. Total lead exceeded the most stringent criterion in 8 to 16 percent of the stream samples, and was generally the next most frequently exceeded criterion after total aluminum. Dissolved lead exceeded the criterion in 1 to 6 percent of the stream samples, and was second only to copper for frequency of exceedance for dissolved elements. Total manganese exceeded the criterion in 15 percent of the stream samples from the SFK and UTC watersheds, in 3 percent of the samples from the NFK watershed, and in none of the samples from the KC watershed. Similar to aluminum, manganese exceedances appear to be associated with suspended solids.

Concentrations of total antimony, cadmium, iron, mercury, and zinc for the stream samples rarely exceeded the criteria (0.3 to 4 percent).

In samples from lakes and seeps, exceedances of the most stringent maximum criteria included total and dissolved aluminum, total and dissolved copper, total and dissolved iron, total and dissolved nickel, total and dissolved lead, total and dissolved cadmium, and dissolved manganese.

Cyanide was occasionally detected in the surface water samples. Total cyanide was detected in 2 to 15 percent of all samples, and weak acid dissociable cyanide was detected in 5 to 13 percent of all samples, depending on whether the samples were collected from streams, lakes, or seeps. Concentrations of weak acid dissociable cyanide in samples were compared with the most stringent ADEC maximum criterion, and exceeded this criterion in 1 to 3 percent of the stream samples, depending on the watershed.

Dissolved organic carbon was detected in 93 to 100 percent of the stream samples, and the mean concentrations ranged from 1 to 2 mg/L, depending on the watershed.

Concentrations of petroleum hydrocarbons, volatile and semi-volatile organic compounds, polychlorinated biphenyls, and pesticides were not detectable above the method reporting limit.

3.18.4.4 Groundwater Quality

Thirty-nine groundwater monitor wells with depths up to 200 feet below ground surface were installed in the project area (Note: Information to be updated based on Supplemental EBD). One deep drill hole (DH-8417) was used for sampling at depths ranging from 640 to 4,050 feet. The results for groundwater are discussed here as median values for individual wells. Most groundwater samples from depths of 200 feet or less were typically characterized by median levels of TDS less than 100 mg/L (comparable to surface water), median pH values between 5.8 and 7.4, median DO concentrations greater than 8 mg/L, and concentrations of trace elements below the most stringent ADEC water quality maximum criteria. Concentrations of TDS in groundwater generally decreased with distance from the deposit area. Monitor well MW-14D in the SFK watershed was the only well with a relatively high TDS level that was not consistent with this general pattern. Most of the groundwater samples had a composition that ranged from calcium-bicarbonate to calcium-magnesium-bicarbonate to calcium-sodium-bicarbonate. Some samples from relatively close to the deposit area had a higher proportion of sulfate, suggesting that the groundwater in this area is influenced by oxidation of the sulfide minerals that are associated with the deposit. As the sulfide minerals oxidize, iron, sulfate acid, and probably trace elements are released. The acid is neutralized by carbonate minerals such as calcite and dolomite, which release calcium, magnesium, manganese, carbonate, and usually some trace

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elements. This series of geochemical reactions increases the concentration of TDS and the proportion of sulfate in the groundwater.

Although sulfides appear to be oxidizing in the deposit area, the groundwater is not acidic. The lowest median pH values were 4.9 and 5.3. All other median pH values were greater than 5.8. Eight of the wells (six completed in overburden, two in bedrock) had median pH values greater than 7.0, and three of these wells (all completed in overburden) had the highest median TDS concentrations.

The DO measured in the groundwater was usually quite high. Twenty-seven of the 39 wells had median DO concentrations of 8 mg/L or greater.

The wells with relatively high TDS also generally had relatively high concentrations of arsenic, barium, and molybdenum compared with other wells in the analysis area. All of the wells with more than two trace metals at relatively high concentrations were located closer to the deposit area.

Some systematic differences in concentrations were observed with depth, as indicated by the differences in concentration between wells that were completed in overburden and those that were completed in bedrock. Specifically, the concentrations of antimony, arsenic, copper, iron, manganese, and molybdenum tended to be higher in wells in bedrock than in wells in overburden. Conversely, the concentrations of DO and nickel tended to be lower in wells in bedrock than in wells in overburden.

3.18.4.5 Sediment Quality

Physical Substrate and Sediment Description

Waterbody substrate data coverage within the Mine Site includes the SFK, the NFK, and UTC. Streambed sediment from these drainages is dominated by medium to coarse gravels to small cobbles, with boulders present in stretches of rapids. In areas of low water velocity and pools, sands and silts are more common, and organic sediments are present in some areas (Knight Piésold 2011; R2 et al. 2011). The NURE program collected a variety of substrate samples across the region in 1977 (Grossman 1998). NURE data include basic physical substrate descriptions and thorough chemical analyses, as well as reporting evidence for potential local contaminant sources. Twelve samples of pond substrate collected by NURE within approximately 20 miles of the Mine Site were all reported as mud/fine sediment (Grossman 1998). Limited data from the shores of Frying Pan Lake show a sand, silt, and gravel substrate (R2 et al. 2011).

Chemical Substrate and Sediment Quality

Between 2004 and 2007, 198 samples of sediment from lakes, ponds, seeps, and major and minor drainages in the analysis area were sampled and analyzed for their content of naturally occurring trace elements, anions, and cations (SLR Alaska 2011). Of the 26 trace elements for which samples were analyzed, all were present above detection limits in at least some of the samples, with aluminum, iron, calcium, and magnesium present at substantially higher concentrations than the other elements. Mercury content of sediment samples was the lowest level detected, at a mean concentration of 0.040 milligrams per kilogram (mg/kg). Comparing sediment from the major drainages, copper was the only element showing significant variation, likely due to the difference in rock composition across the drainages. Copper concentrations were particularly high in substrate of the SFK, likely due to copper-rich bedrock at the headwaters. Sediments from ponds and minor drainages in the Mine Site area showed higher concentrations of anions and cations such as sulfate, ammonia, and sodium than did other

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waterbodies. Total cyanide concentrations were the lowest of the analyzed anions on average, with a mean concentration of 0.39 mg/kg (SLR Alaska 2011). Of the 12 pond substrate samples analyzed by the NURE within 20 miles of the Mine Site area, none showed evidence of contamination (Grossman 1998).

3.18.5 Amakdedori Port

The port site is just north of the mouth of Amakdedori Creek on the western shore of Cook Inlet. The Cook Inlet basin is an expansive watershed surrounding the 180-mile-long Cook Inlet waterbody. Covering more than 38,000 square miles of southern Alaska, it receives water from six major watersheds and many smaller ones. More than 10 percent of the basin is covered by glaciers, and suspended sediment loading in glacier-fed rivers without lakes is significant, leading to a high suspended sediment load in portions of Cook Inlet.

Lower Cook Inlet is connected to the Pacific Ocean southwest through Shelikof Strait, and southeast by the Gulf of Alaska, and demonstrates complex circulation patterns. The region has the fourth largest tidal range in the world; tidal fluctuations in Kamishak Bay average 13 feet. When the tide drops from mean high to mean low water, the inlet loses almost 10 percent of its volume, and exposes approximately 8 percent of its surface area. Most of these tidally exposed areas are in the arms, at the north end of Cook Inlet and along the west side of the waterbody.

3.18.5.1 Surface Water Quality

The area surrounding Cook Inlet is the most populated and industrialized region of Alaska. Therefore, its waters are influenced by urban (and a small amount of agricultural) runoff, oil and gas activities (accidental spills, discharges of drilling muds and cuttings, production waters, and deck drainage), effluent from municipal wastewater treatment facilities, oil and other chemical spills, offal from seafood processing, and other regulated discharges (NMFS 2016).

Water quality in the Iliamna/Iniskin Estuary during the period from 2004 through 2008 appeared to be dominated by tidal exchange with Cook Inlet and Kamishak Bay, with smaller, localized effects from freshwater inputs and local wind waves. Observed gradients in salinity between the inner (lower salinity) and outer (higher salinity) portions of Iliamna Bay are consistent with this conclusion. Average salinity was observed to decrease from the outer stations of Iliamna Bay to the inner stations. This is likely a result of freshwater inputs at the head of Iliamna Bay. Salinity decreases from spring to late summer, and increases again in the fall, thereby providing an additional indicator of the influence of regional water on the bays. A certain amount of stratification was observed during both the spring snowmelt season and during the warmer summer months, particularly during calmer weather and in more sheltered portions of the bays.

Snowmelt or significant rain events create a freshwater surface lens a few centimeters deep in areas adjacent to freshwater inputs; these lenses rapidly diminish as a result of tidal and wind driven mixing.

Analysis of available data indicates that turbidity is generally moderate, and does not exhibit any obvious trends that indicate point-source inputs. On a monthly basis, average turbidity remained relatively constant over the analysis period, generally ranging between 3.1 and 13.0 Nephelometric Turbidity Units.

Analyses of hydrocarbon concentrations in marine water from the Iliamna/Iniskin Estuary in 2004, and of metal and trace element concentrations in 2008, showed little to no connection to anthropogenic effects. Concentrations of all inorganic constituents were less than water quality maximum criteria recommended by the EPA and others for marine habitat, many by orders of

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magnitude. Organic constituents were similarly at low levels, and appeared to be derived from biologic, petrogenic, and anthropogenic sources.

The data provide some support for a relationship between increased concentrations of inorganic constituents and TSS, but demonstrate no strong patterns with respect to depth in the water column, to geography, or to tidal elevation.

Data analyses show the marine waters of the Iliamna/Iniskin Estuary to be high-quality habitat for marine biota. For example, waters free from toxins or other agents of a type or amount harmful to Cook Inlet beluga whales are considered a principal component of the Cook Inlet beluga whale critical habitat in the Amakdedori Port area. The National Marine Fisheries Service (NMFS; 2016) discussed that the comparatively low levels of contaminants documented in Cook Inlet belugas, as well as in chemical analyses of water and dredged sediments, suggest that the relative concern of known and tested contaminants to Cook Inlet belugas is most likely low.

3.18.5.2 Groundwater Quality

A large aquifer system is found beneath much of the Cook Inlet region, including the Amakdedori Port area. Groundwater also occurs in saturated fractures in the bedrock, and provides most of the water in streams near the port area during winter (Glass 1999). Aquifers are primarily situated within glacial till, glacial outwash, and fluvial deposits overlying sedimentary and low-grade metamorphic bedrock. Glacial deposit aquifers have been described as "irregular in distribution and highly variable both in composition and in their ability to provide water to wells" (Brabets 1999).

3.18.5.3 Sediment Quality

Physical Substrate and Sediment Description

Amakdedori Port would be constructed on the southwestern shore of Lower Cook Inlet, on Kamishak Bay. Significant dredging of shallow offshore sediments would be required for construction of a marine vessel channel (estimated initial dredge volume of 10,000,000 cubic yards), and maintenance dredging of the channel would continue throughout two decades of production at the mine (PLP 2017). Placement of dredged sediments is subject to CWA (404)(b)(1), and is addressed in Section 4.18.X.

No known offshore sediment sampling has been conducted to date at the port site. Sediment samples from the estuarine environments of Iliamna and Iniskin bays, about 30 miles northeast of the port site, revealed substrates of fine sediment (SLR Alaska et al. 2011). Offshore sediments at the port site would likely be more coarse-grained than the estuarine substrate, because of the strong current and tidal influences of the open water environment, which tend to keep fine sediments in suspension. Geophysical surveys and sediment sampling in Kamishak Bay are scheduled for the 2018 field season to characterize dredge spoils that would be generated from development of the port site (PLP 2018). This section will be updated as new data are received.

Studies from other sites within Upper and Lower Cook Inlet have provided a general characterization of seafloor substrate and sediment properties. Lower Cook Inlet is a tidal embayment with a substrate of abundant glacial sediments, predominantly cobbles, pebbles and sand, with minor amounts of silt and clay (Sharma and Burrell 1970). Large ice-rafted boulders are also present in some areas (Thurston and Choromanski 1994). Over 40,000,000 tons of sediment are discharged per year into the inlet by the surrounding major drainages (Rember and Trefry 2005). Sediment transport in some areas of Upper Cook Inlet has been shown to be exceptionally high, with 10,000 to 100,000+ cubic yards of sediment moving in and

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out of the Port of Anchorage area in a matter of days or weeks (USACE 2013). A combination of shallow water, high tidal fluctuations, and strong currents constantly mobilize seafloor sediments in the inlet, keeping sediments in suspension, resulting in highly turbid water, and inhibiting deposition of fine-grained sediments (Rember and Trefry 2005). Fine sediments introduced by major rivers feeding into Upper Cook Inlet are carried in suspension, and have been shown to be deposited as far as 150 miles south in Lower Cook Inlet (ADL 2001).

Waterbody substrate data from the onshore environment at the Amakdedori Port site are limited. Sediment from two ponds, one about 0.5 mile north and the other approximately 3 miles south, was described as mud/fine (Grossman 1998).

Chemical Substrate and Sediment Quality

Although numerous studies have been conducted on water quality in Cook Inlet, data on sediment quality in the inlet are sparse. Limited data from dredging operations and sediment sampling in Cook Inlet suggest that sediments generally have low concentrations of contaminants and potential toxins (USACE 2013; ADL 2001). Low levels of hydrocarbons have been detected at multiple sites in the inlet, potentially connected with offshore oil development, past oil spills, or natural oil seeps. Glacial sediments, which are continually transported into the inlet by the major drainages, may contain associated metals and hydrocarbons. Municipal discharges and seafood processing also contribute potential contaminants to Cook Inlet substrate. Extreme tidal fluctuations and strong currents constantly disperse and dilute potential pollutants in the inlet (ADL 2001).

No known sediment sampling has been conducted to date at the proposed port site. Sediment sampling in Kamishak Bay is scheduled for the 2018 field season to characterize dredge spoils (PLP 2018). This section will be updated as new data are received. Samples of fine sediment were collected from the offshore estuarine environments of Iliamna and Iniskin bays, 30 miles northeast of the port site. Some of the samples showed arsenic, copper, nickel and zinc levels higher than the threshold of biological response, and measurable hydrocarbons. There is no significant development in the area, but there is minor marine vessel traffic from Williamsport at the head of Iliamna Bay. Estuarine sediments are generally more fine-grained than what is expected at the offshore Amakdedori Port site, which is more exposed to open water. Fine grained sediments generally retain chemical pollutants more than coarse-grained sediments, due to higher surface area to volume ratios.

Chemical substrate data from the onshore environment at the Amakdedori Port site are limited. Sediment from two ponds, one within 0.5 mile to the north and one about 3 miles south of the port site, were analyzed by NURE and were reported to have no contamination source (Grossman 1998).

3.18.6 Transportation Corridor

The Transportation Corridor would connect the Amakdedori Port site to the Mine Site. The corridor would include a private double-lane access road between the Amakdedori Port and the South Ferry Terminal on Iliamna Lake west of Kokhanok; a similar access road between the North Ferry Terminal on the north shore of Iliamna Lake and the mine site; and a purpose-built ice-breaking ferry connecting the two ferry terminals. The Natural Gas Pipeline would parallel The Transportation Corridor from the Amakdedori Port site to the Mine Site. Additional spur roads would be built to connect the access road to the villages of Iliamna, Newhalen, and Kokhanok.

The 84-mile-long access corridor would cross numerous streams within the Bristol Bay and Cook Inlet watersheds. The corridor originates in the Nushagak watershed at the Mine Site, and

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traverses the Kvichak watershed; both are within the greater Bristol Bay watershed. The corridor terminates in the Tuxedni-Kamishak bays watershed of the greater Cook Inlet watershed.

3.18.6.1 Surface Water Quality

Sixteen surface water sampling stations were established and sampled in the Transportation Corridor analysis area during 2004 and 2005. The surface water sampled at these stations was characterized by low levels of TDS (2 to 126 mg/L), mostly near-neutral pH (4.6 to 8.8), and high DO concentrations (9 to 19 mg/L). During months when surface water samples were collected, the temperature ranged from 0.1ºC to 23ºC. The full annual range of water temperatures could not be characterized because samples were not collected during November, December, or January. The cation composition of the water samples was dominated by calcium. The anion composition was typically dominated by bicarbonate, but some samples were dominated by sulfate. The water composition at most stations was consistent between sampling events, but a few stations had an anion composition that varied over time. Concentrations of nutrients were low; specifically, most ammonia and phosphorous concentrations were below the method reporting limit. Total nitrate+nitrite averaged 1 mg/L. Concentrations of the trace elements aluminum, copper, lead, and zinc were above the most stringent ADEC maximum criterion in a few cases.

Iliamna Lake

The sample data suggest that Iliamna Lake has water quality conditions similar to the natural conditions of other regional lakes. Only aluminum, copper, iron, lead, manganese, zinc, and alkalinity were detected at concentrations that were outside the most stringent ADEC water quality criteria. Cation and anion dominance was generally characteristic for temperate lakes. Concentrations of major ions did not vary with depth, suggesting that the water at the sampling sites were well mixed. The concentrations of several major ions and TDS were lower earlier in the summer, peaked in September, and declined again in October. These temporary increases may be associated with the influence of inflow from streams and precipitation.

3.18.6.2 Sediment Quality

The Transportation Corridor crosses numerous streams in the Bristol Bay and Cook Inlet watersheds, and includes an 18-mile traverse of Iliamna Lake. Substrate sediments intersected include a wide range of fine to coarse sediments, with little to no known existing contamination (Grossman 1998). Sediments at the northern end of the corridor overlap with those of the Mine Site. Please see discussion of data in Section 3.18.4, Mine Site.

The Transportation Corridor crosses numerous streams in the Bristol Bay and Cook Inlet watersheds, and includes an 18-mile traverse of Iliamna Lake. Substrate sediments intersected include a wide range of fine to coarse sediments, with little to no known existing contamination (Grossman 1998). Sediments at the northern end of the corridor overlap with those of the Mine Site. Please see discussion of data in Section 3.18.4, Mine Site.

Physical Substrate and Sediment Description

Mine Access Road and Iliamna Spur Road

The Mine Access Road would include a bridge over UTC, and the Iliamna Spur Road includes a bridge across the Newhalen River. General data for UTC substrate (not site-specific to bridge crossing) shows medium to coarse gravels to small cobbles, with some boulders, sands, and silts (Knight Piésold 2011; R2 et al. 2011) No data are currently available on stream or pond

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substrates crossed by the Mine Access Road or Iliamna Spur Road bridges. [Note: Additional information on substrates has been requested in RFI 036; section to be revised when received.].

Iliamna Lake

A small number of nearshore and deeper water sediment samples from Iliamna Lake were collected between 2004 and 2008. No specific sediment descriptions were provided, except that sediment analyzed was fine-grained material (HDR Alaska 2011). Additional sediment sampling from Iliamna Lake is scheduled for the 2018 field season (PLP 2018). This section will be augmented with new data as they are available.

Southern Access Road

The Southern Access Road traverses five bridges, including the Gibraltar River Bridge, Unnamed Creeks 1, 2, and 3 Bridges, and Bridge Lake Bridge. No data are currently available on stream substrate for these drainages. [Note: Additional information on substrates has been requested in RFI 036; section to be revised when received.]. Samples of substrate from four ponds within approximately 5 miles of the Southern Access Road were all recorded as mud/fine sediment (Grossman 1998).

Chemical Substrate and Sediment Quality

Mine Access Road

Of the 12 pond substrate samples analyzed by NURE within approximately 20 miles of the Mine Access Road, none showed evidence of contamination (Grossman 1998).

Iliamna Lake

A small number of nearshore and deeper water sediment samples from Iliamna Lake were analyzed for trace elements (HDR Alaska 2011). Sediment data showed levels for copper, lead, aluminum, iron, and manganese that were outside the ADEC freshwater criteria. This is likely due to the highly mineralized local geology, and is similar to chemistry in other area lakes. Additional sediment sampling from Iliamna Lake is scheduled for the 2018 field season (PLP 2018). This section will be augmented with new data as they are available.

Southern Access Road

Of the four pond substrate samples analyzed by NURE within approximately 5 miles of the Southern Access Road; none showed any evidence of contamination (Grossman 1998).

3.18.7 Natural Gas Pipeline Corridor

The Natural Gas Pipeline would parallel the Transportation Corridor from the Amakdedori Port site to the Mine Site. The surface water, groundwater, and sediment resources within the Natural Gas Pipeline Corridor are a subset of those resources that are within the Transportation Corridor, with the addition of the short stretch of pipeline that would be constructed along the western shore of the Kenai Peninsula and the subsea pipeline in Cook Inlet.

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3.18.7.1 Physical Substrate and Sediment Description

Kenai Peninsula

Potential waterbody crossings along the Kenai Peninsula stretch of the Natural Gas Pipeline Corridor would be limited to minor drainages. Limited sediment sampling from one stream in the area reveals a substrate of fine-grained sediment (Grossman 1998).

Cook Inlet

A general description of Cook Inlet physical substrate and sediment is provided under Section 3.18.5, Amakdedori Port, above. As the Natural Gas Pipeline Corridor traverses 94 miles across Cook Inlet, and publically available information regarding the substrate of CI in this area is sparse, at best. Additional discussion of deeper offshore sediments in Cook Inlet will be included here if data become available.

Water depths in the center of Cook Inlet range from about 50 to over 500 feet (NOAA nautical chart #16660). Numerous oil and natural gas pipelines currently span the bottom of Cook Inlet. Pipeline damage has previously been documented from boulders mobilized on the seafloor by strong tides and currents.

3.18.7.2 Chemical Substrate and Sediment Quality

Kenai Peninsula

Potential waterbody crossings along the Kenai Peninsula stretch of the Natural Gas Pipeline Corridor would be limited to minor drainages. Sediment sampled from one stream in the area did not show evidence of contamination (Grossman 1998).

Cook Inlet

No known sediment quality data are currently available for the Natural Gas Pipeline Corridor Cook Inlet crossing. Sediment sampling at the proposed Amakdedori Port site in Kamishak Bay, 2 miles south of the western terminus of the proposed pipeline Inlet crossing, is scheduled for the 2018 field season (PLP 2018). Seafloor substrate in Lower Cook Inlet generally has low toxicity (ADL 2001).

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3.22 WETLANDS / SPECIAL AQUATIC SITES AND WATERBODIES

This section addresses the existing conditions of wetlands/special aquatic sites and waterbodies in the Environmental Impact Statement (EIS) Analysis Area. The Analysis Area for wetlands and waterbodies encompasses the major watersheds that could potentially be directly or indirectly impacted by the Pebble Project. These watersheds are defined by the United States Geologic Survey (USGS) Hydrologic Unit Code (HUC) level 5, designated as HUC 10 watersheds. There are a total of nine HUC 10 watersheds that make up the analysis area, with a total area of approximately 6,420,000 acres. Detailed information on all wetlands and waterbodies within this large area is not available. A subset of this area was therefore chosen for detailed study and mapping, referred to hereafter as the "mapping area." The mapping area is comprised of four subsets that correlate to the main project components: the Mine Site mapping area, the Transportation/Natural Gas Pipeline Corridor mapping area, the Amakdedori Port mapping area, and the Natural Gas Pipeline Corridor mapping area (Figure 3.22-1 through Figure 3.22-6). The mapping area exceeds project area, the area of the direct project disturbance footprint.

The description of wetlands and waterbodies in the mapping areas is based on information provided in Chapters 14 and 39 of the Environmental Baseline Document (EBD) (3PPI and HDR 2011, HDR and 3PPI 2011), as well as more recent information provided in the Preliminary Jurisdictional Determination (PJD) Report (HDR 2018) (Appendix J) and associated Geographic Information System (GIS) database that reflects changes in the project area since publication of the EBD. The analysis of environmental consequences in Chapter 4 makes use of publically available environmental data for the component watersheds within the analysis area in order to contextualize project impacts.

Wetlands and waterbodies encompass a number of disciplines that are addressed more fully in other sections of this EIS, including soils (Section 3.14), hydrology (Sections 3.16 and 3.17), and vegetation (Section 3.26). Wetland and waterbody functions and values that overlap with and are developed in other sections include water and sediment quality (Section 3.18), wildlife values and threatened and endangered species (Sections 3.23 and 3.25), aquatic species habitat (Sections 3.23, 3.24, and 3.25), and food and fiber production (subsistence) (Section 3.9).

The affected environment for wetlands and waterbodies includes vegetated wetlands, ponds, lakes, streams, rivers and marine waters that may be directly or indirectly affected by the project. Wetlands and waterbodies will be described in terms of the extent and characteristics of predominant types found in the main project component mapping areas.

3.22.1 Substrate (Wetlands)

Wetlands and waterbodies are considered "waters of the U.S.," which are defined in the Clean Water Act as "surface waters, including streams, streambeds, rivers, lakes, reservoirs, arroyos, washes, and other ephemeral watercourses and wetlands" (33 Code of Federal Regulations [CFR] Part 328.3[a]). Special aquatic sites are a subset of waters of the U.S. that are large or small areas possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values (40 CFR 230.3). Special aquatic sites present in the vicinity of the analysis area include wetlands (defined below), mud flats, vegetated shallows, and riffle and pool complexes.

Mud flats occur in some of the intertidal portions of Cook Inlet. They are composed of fine sediments and organic material, and are either unvegetated or vegetated only by algal mats. They have not been documented in the mapping area, as the intertidal zone is composed mostly of sand and gravel. Vegetated shallows are permanently inundated areas that support

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rooted aquatic vegetation. They include some of the aquatic bed types defined by the National Wetland Inventory (NWI) system (described below) occurring in freshwater ponds and lake margins. These are of very limited extent in the mapping area, and are described together with other vegetated wetlands. Eelgrass beds are a relatively common type of vegetated shallows that do occur in parts of the nearshore environment of Cook Inlet. However, they have not been documented within the mapping area.

Riffle and pool complexes occur in steep gradient sections of streams within the mapping area. Riffles are defined by rapid flow over a coarse substrate that produces high levels of dissolved oxygen in the water. Pools are deeper, slower sections of water with a finer substrate. Major streams in the analysis area have been characterized for habitat types, including riffle and pool habitats and associated fish resources (R2 Resource Consultants et al. 2011). Baseline mapping of streams did not specifically identify riffle and pool complexes in the mapping area. Streams were characterized mainly by flow regime (lower perennial, upper perennial and intermittent). Riffle and pool complexes would be expected to occur most frequently in the upper perennial and intermittent zones where stream beds are predominantly gravel or coarser. Stream morphology and associated fish habitat in the analysis area is addressed in Section 3.24 of this EIS.

Wetlands are special aquatic sites defined as, “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]). Unvegetated areas such as streams, ponds, and lakes are not considered “wetlands” under this definition.

Wetland determinations followed guidance from the U.S. Army Corps of Engineers (USACE). Wetland determinations from 2004 through 2008 were based on the 1987 Wetland Delineation Manual (USACE 1987), while determinations after 2013 were based on the 1987 Manual in conjunction with the 2007 Alaska Regional Supplement (USACE 2007). Both manuals use field indicators to determine presence of vegetation, soils and hydrology characteristic of wetlands. Detailed descriptions of the field indicators used for wetland determinations in the mapping area are provided in Chapters 14 and 39 of the EBD (3PPI and HDR 2011, HDR and 3PPI 2011), and in the PJD Report (HDR 2018).

3.22.2 Analysis Methodology (Categories, Classes, and Functions)

The wetlands and waterbodies mapping area for the Pebble Project encompass approximately 45,000 acres. To facilitate wetlands and waterbody mapping, a GIS database was constructed that incorporates several project-specific layers, including existing NWI mapping, USGS topographic mapping, land use and land cover mapping, existing vegetation mapping, soil survey data from the Natural Resources Conservation Service (NRCS), and several sources of aerial and Light Detection and Ranging (LiDAR) imagery.

Field survey protocols were developed to collect pertinent field data over several growing seasons (2004-2008, 2013 and 2017). A total of 684 wetland determination field plots were surveyed. Detailed information on vegetation, soils, and hydrology were collected at each plot. Additional photo and data points were collected at waterbodies and stream crossings. Additional vegetation data was also collected to support vegetation type classification and mapping. Field data was recorded on Global Positioning System (GPS) units, digital cameras, field forms and field notebooks. Field data was used in GIS with other data layers, to digitally map wetland and waterbody polygons.

Mapping was digitized on aerial photography at a scale between 1:1,200 and 1:1,500, for wetlands, and 1:400 for open water. Mapping of wetlands relied heavily on interpretation of

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"photographic signatures" associated with vegetation types (see Appendix C in HDR 2018,) (see PJD included as Appendix J). Interpretation of topography was also important in mapping wetlands and waterbodies. Topographic depressions, toeslopes and flat areas were often associated with wetlands, while convex slopes were indicative of potential uplands. Topography was also used to assess potential hydrologic connections between wetlands and surface waters, and to determine potential locations of groundwater seeps.

Each mapped wetland and waterbody polygon was further characterized using three classification systems. All polygons were first assigned a vegetation type based on the Alaska Vegetation Classification (Viereck et al. 1992), supplemented by Wibbenmeyer et al. (1982). Vegetation classification and mapping is discussed in detail in Section 3.26 of this EIS. Wetland and waterbody polygons were also classified based on NWI class (Cowardin et al. 1979) and Hydrogeomorphic (HGM) class (Brinson 1993), described below.

Field studies and mapping conducted as part of the environmental baseline program encompassed the portion of the mapping area within the Bristol Bay watershed, and the west side of the Cook Inlet watershed. This includes the Mine Site, the Transportation/Natural Gas Pipeline Corridor (including the ferry terminals and pipeline crossing at Iliamna Lake), and the Amakdedori Port. The pipeline crossing of Cook Inlet and the pipeline corridor and compressor station on the Kenai Peninsula were not included in the field studies and mapping prepared for the Pebble Project. Therefore, this analysis makes use of existing wetlands mapping that is publically available, primarily the Cook Inlet Lowlands wetland mapping prepared by the Kenai Watershed Forum (Gracz 2013). Wetlands were mapped on the Kenai Peninsula using stereo-paired aerial photography at a scale of 1:24,000, in conjunction with NWI maps and NRCS soils data. Approximately 10 to 20 percent of the wetland polygons were field checked.

The Cook Inlet Lowlands mapping utilized a project-specific wetland classification system (Gracz 2014). The system is largely based on hydrologic and geomorphologic factors, and is therefore similar to the HGM method. In order to make the data comparable to the data collected for the Pebble Project, the Cook Inlet wetland classes were reclassified with the best-corresponding HGM and NWI classes.

Pebble Limited Partnership (PLP) submitted geodatabases with the wetland and waterbody mapping to the USACE in December 2017 with a request for a PJD for the Pebble Project. The USACE issued their PJD on March 20, 2018, confirming the wetland and waterbody mapping.

3.22.2.1 National Wetland Inventory Classification

The NWI classification system has been used by the U.S. Fish and Wildlife Service since 1979 to classify and map wetlands and deepwater habitats throughout the U.S. Under this classification scheme, wetlands and deepwater habitats are grouped into systems based on shared hydrologic conditions. NWI systems occurring in the mapping area are palustrine, lacustrine, riverine, and marine.

Most vegetated wetlands within the mapping area classify as palustrine, which is further subdivided by dominant vegetation growth forms (trees, shrubs, emergent herbaceous, aquatic herbaceous, or moss/lichen) or bed type (for non-vegetated ponds less than 20 acres). Palustrine forested wetlands occur in a very small portion of the mapping area. These are represented primarily by broad leaved deciduous forests (PFO1) confined to valley bottoms. Primary tree species include alders (*Alnus incana, A. viridis*), various willows (*Salix sp.*), and balsam poplar (*Populus balsamifera*).

Palustrine scrub-shrub wetlands are the dominant NWI class in the mapping area. These include wetlands dominated by broad leaved deciduous shrubs (PSS1) such as birches *(Betula*

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glandulosa, B. nana), and willows; broad leaved evergreen shrubs (PSS3) such as sweetgale (*Myrica gale*), Labrador-tea (*Rhododendron tomentosum, R. groenlandicum*), bog-rosemary (*Andromeda polifolia*), black crowberry (*Empetrum nigrum*), and northern mountain-cranberry (*Vaccinium vitis-idaea*); and needle leaved evergreen shrubs (PSS4) represented by stunted black spruce (*Picea mariana*).

Palustrine emergent wetlands (PEM1) make up the second-most dominant NWI class in the mapping area. These include wetlands dominated by a large number of persistent, herbaceous species adapted to a wide range of saturation or non-permanent flooding. Common plants in the mapping area include bluejoint (*Calamagrostis canadanesis*), numerous sedges, rushes (*Juncus sp.*), horsetails (*Equisetum sp.*), cotton-grasses (*Eriophorum sp.*), and numerous other grasses and forbs.

Palustrine aquatic bed wetlands (PAB3) occur in small ponds and other semipermanently to permanently flooded areas. They are dominated by rooted, aquatic herbaceous species such as yellow pond-lily (*Nuphar luteum*) and pondweeds (*Potamogeton sp.*).

Waterbodies larger than 20 acres situated in depressions are classified as lacustrine, which are generally unvegetated but may include aquatic herbaceous species. Waterbodies contained within a channel (rivers and streams) are classified as riverine. Riverine classes are subdivided by flow regime (lower perennial, upper perennial and intermittent) and are mostly unvegetated in the mapping area. The marine system is mapped on shorelines of Cook Inlet, and is subdivided based on tidal regime (subtidal or intertidal).

NWI classification for the Pebble Project also utilized water regime modifiers for each polygon. Water regimes included temporarily flooded, saturated, seasonally flooded, semipermanently flooded, and permanently flooded. Water regimes are often difficult to determine based on a single field observation during one time of the year. Interpreting water regimes from aerial photography is also particularly difficult unless photography from multiple years and seasons are available. For these reasons, NWI water regime modifiers are not used in the analysis for this EIS.

3.22.2.2 Hydrogeomorphic Classification

The HGM classification groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many wetland functions. HGM classes observed in the mapping area include slope, riverine, depressional, flats and lacustrine fringe wetlands. Two additional HGM types were described for waterbodies in the Pebble Project: lacustrine waters and riverine channel waters. Estuarine/coastal fringe wetlands (e.g., salt marshes) occur along some of the tidally influenced shorelines of Cook Inlet and its estuaries, but have not been described in the mapping area (HDR and 3PPI 2011). Marine waters are described as either subtidal or intertidal, depending on whether they are normally flooded or exposed during periods of low tide. HGM classes are described below.

Slope Wetlands are the most common wetlands in the mapping area, occurring on hill or valley slopes where groundwater "daylights" and begins running along the surface, or immediately below the soil surface. While groundwater discharge is the primary water source, surface flow and precipitation also contribute water. Water in these wetlands flows in one direction only (i.e., down the slope), and the gradient is steep enough that the water is not impounded. The "downhill" side of the wetland is always the point of lowest elevation in the wetland. Water is lost through subsurface and surface outflow and evapotranspiration. Slope wetlands in the mapping area commonly occur as seeps on footslopes and toeslopes, and as headwaters and drainage ways in steep to rolling terrain where stream channels have not yet formed. Slope wetlands also occur as fens and string bogs.

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Riverine Wetlands are the second-most common wetlands in the mapping area, occurring in valleys associated with stream or river channels. They lie in active floodplains and riparian corridors and have important hydrologic links to the water dynamics of the river or stream. The distinguishing characteristic of riverine wetlands is that they are flooded by overbank flow from the stream or river at least every other year. Subsurface hyporheic flow, groundwater discharge, overland flow and precipitation can also provide important seasonal inputs. Water loss is through flow returning to the channel, subsurface discharge to the channel, seepage to groundwater, and evapotranspiration. Riverine wetlands range from broad floodplains along large meandering rivers to narrow zones along higher gradient rivers and streams. Riverine wetlands are often modified by beaver activity.

Riverine Channel includes wetlands and waters contained within the active channel of intermittent or perennial streams or rivers. Both bare and vegetated sand and gravel bars, and flowing waters with or without aquatic vegetation are included. The outer extent of the channels is defined by the ordinary high water mark (OHWM).

Depressional Wetlands occur in depressions where elevations within the wetland are lower than in the surrounding landscape. The shapes of depressional wetlands vary, but in all cases, the movement of surface water and shallow subsurface water is toward the lowest point in the depression. The depression may have an outlet, but the lowest point in the wetland is somewhere within the boundary, not at the outlet. Water sources include precipitation, groundwater discharge, and surface flow often with seasonal vertical fluctuations. Water loss is through intermittent or perennial outflow, evapotranspiration or seepage to groundwater. In the mapping area, depressional wetlands occur as abandoned river features on terraces (oxbows) above active floodplains or as kettles on moraine landforms. Depressional wetlands are often embedded within other HGM wetland classes.

Flats Wetlands occur in topographically flat or very gently sloping areas that are hydrologically isolated from surrounding ground or surface water. Precipitation provides the dominant source of water, with water loss from evapotranspiration, overland flow, and seepage to groundwater. In the mapping area, flats wetlands may occur on either mineral soil or accreted organic matter similar to extensive peatlands. They are present on broad ridgetops, glacial outwash terraces and remnant glacial lake beds. They may transition to slope wetlands at topographic breaks associated with groundwater discharge.

Lacustrine Fringe Wetlands occur next to lakes that maintain the water table in these wetlands; surface flow is bi-directional. Additional water sources are precipitation and groundwater discharge. Water loss is through flow returning to the lake and by evapotranspiration. These wetlands are of limited extent in the mapping area.

Lacustrine Waters include the unvegetated water in lakes that are greater than 20 acres in size or at least 6.6 feet deep at low water. The upper extent of this type is defined by the OHWM on the shore. Open water depressions that do not meet the size requirements of lakes are classified as ponds for this analysis.

3.22.2.3 Wetland Functions and Values

Wetlands provide numerous ecosystem services or functions that are considered valuable to society. They support numerous species of plants and provide necessary habitat for fish, wildlife, and insects throughout various stages of their life cycles. Wetlands provide feeding, breeding, rearing, and cover habitat for numerous animals. Wetlands also act as filters while providing flood control, sedimentation, erosion control, and the stabilization of shorelines (USACE 2009; Magee and Hollands 1998).

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A wetland functional assessment will be prepared as part of the permitting process for the Pebble Project, and is typically used to quantify wetland impacts and corresponding compensatory mitigation needs (USACE 2016). This section provides only a very general, qualitative overview of wetland functions in the mapping area based on the NWI and HGM classifications. Wetland functional capacity varies greatly depending on position in the watershed and linkages to other habitats, so a particular wetland polygon of a given class may not provide the same level of functions as others in the same class.

In particular, the following characteristics are considered indicative of high-functioning wetlands in the mapping area:

- Provide habitat for threatened or endangered species (see Section 3.25, Threatened and Endangered Species [TES], for information on TES species), or provide habitat for sensitive or important fish, wildlife, birds, or plant species;
- Are regionally scarce, or rare and high quality, within a given region. For example, forested wetlands, often found near streams, account for less than one percent of wetlands in the mapping area, but provide important food and cover for wildlife, and woody inputs important for stream dynamics; or
- Are undisturbed and difficult or impossible to replace within a lifetime such as certain bogs and fens with their unique plant communities that may take centuries to develop. Bogs make up approximately 12 percent of wetlands in the mapping area. Bog vegetation types include: ericaceous shrub bog, open dwarf birch bog-ericaceous shrub bog, and open sweetgale-graminoid bog (Viereck et al. 1992). Bogs, which occur primarily on flats and slope HGM positions, have also been shown to contribute substantially to stream base flows (Gracz 2017).

In addition to the ecosystem functions provided by wetlands, certain wetland types and locations are valued by Alaska Natives for their subsistence value (Hall et al. 1994; Jernigan n.d.). Some culturally important plants found mainly in wetlands include blueberries, cranberries, Labrador tea, and willows.

Primary wetland functions generally associated with each wetland class are described below.

Forested Wetlands – provide modification of flood flows, shoreline stabilization, water quality improvement, organic matter production and export, wildlife cover and browse, and fish habitat through cover and shade.

Scrub-Shrub Wetlands – tall shrubs provide water quality and shoreline stabilization functions similar to forested wetlands, and high quality wildlife browse (willows).

Emergent and Aquatic Bed Wetlands – persistent herbaceous vegetation provides removal of sediments and nutrients, production and export of organic matter, and habitat for aquatic invertebrates, fish, waterfowl and wetland-associated mammals (beavers and river otters).

Slope Wetlands – modification of groundwater discharge, mediation of surface and subsurface flows to other wetlands, and support of stream base flows which indirectly supports seasonal fish habitat.

Riverine Wetlands – floodwater storage, modification of stream flows, water quality improvement, and general fish habitat.

Depressional Wetlands – groundwater recharge, floodwater storage, and water quality improvement.

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Flats Wetlands – surface water storage, mediation of surface and subsurface flow to other wetlands and streams, production and export of organic matter, and maintenance of characteristic plant communities (bogs and fens).

Lacustrine Fringe Wetlands – floodwater storage, water quality improvement, shoreline stabilization, and habitat for aquatic invertebrates, fish, and waterfowl.

3.22.3 Wetlands in the Mapping Area

Approximately 35 percent of the mapping area was determined to be a wetland or waterbody, and assumed to be subject to USACE jurisdiction. Total vegetated wetland area was calculated as approximately 10,048 acres (22 percent). Statewide, approximately 43 percent of Alaska is estimated to be wetland (Hall et al. 1994). Many of the wetland polygons mapped for the Pebble Project contain inclusions of uplands. These "mosaics" occur in landscapes with often complex microtopography where wetland and upland components are too closely associated to be easily mapped separately (USACE 2007). During the mapping, wetland scientists estimated the proportion of wetland versus upland in each mosaic polygon, ranging from 10 to 90 percent wetland. Almost half of the wetland polygon area in the mapping area was mapped as mosaics. Scrub-shrub and forested wetlands were more often mapped as mosaics compared to emergent wetlands. For this analysis, all mosaics have been calculated as 100 percent wetland.

The majority of the mapping area is within the Bristol Bay drainage. This includes the Mine Site and supporting infrastructure, the mine access road and pipeline corridor from Iliamna Lake, the north and south ferry terminals on Iliamna Lake, and much of the south access road and gas pipeline corridor from the watershed divide to the south ferry terminal. The rest of the south access road and gas pipeline corridor, as well as Amakdedori Port, and the pipeline corridor on the Kenai Peninsula are within the Cook Inlet drainage. Wetland and waterbody areas and proportions are shown in Table 3.22-1.

A total of 50 different NWI types were observed and mapped across the entire wetland mapping area. For purposes of this analysis, these have been summarized into ten functionally similar groups (Table 3.22-2).

[Note: Numbers at this time throughout this section may not reconcile exactly with numbers presented in Section 3.26-Vegetation, due to refinements in the specific project area.]

Table 3.22-1: Wetland and Waterbody Comparisons by Project Component

Project Component	Mapping Area (acres)	Wetland (acres)	Wetland (%)	Waterbodies (acres)	Waterbodies (%)
Mine Site	20,526	7,067	34	503	2
Transportation/Natural Gas Pipeline Corridor[1]	20,127	2,930	15	1,275	6
Amakdedori Port	3,973	49	1	3,425	86
Natural Gas Pipeline Corridor[2]	377	2	1	341	91
Totals	45,003	10,048	22	5,544	12

Notes:

1 From the Amakdedori Port to the Mine Site, including the south and north ferry terminals and the crossing of Iliamna Lake.

2 Includes the section on the Kenai Peninsula and the crossing of Cook Inlet.

Source: HDR 2018

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Table 3.22-2: NWI Types and Groups in the Mapping Area

Deciduous Forest	Shrubs		Herbaceous	Aquatic Bed	Ponds	Lakes	Rivers/Streams	Marine
	Broad Leaved Deciduous	Evergreen						
PFO1	PSS1/4	PSS3/1	PEM1/SS1	PAB	PUB	L1UB	Perennial	Subtidal
PFO1/EM1	PSS1/3	PSS3	PEM1/SS3	PAB3	PUB/AB	L2UB	R2UB	M1UB
PFO1/EM2	PSS1	PSS3/EM1	PEM1	PAB3/EM2	PUB/AB3	L2US	R2US	
	PSS1/FO1	PSS4	PEM2	PAB3/UB	PUB/EM1	L2EM2	R3UB	Intertidal
	PSS1/FO4	PSS4/1	PEM1/ ML1	L2AB	PUS		R3US	M2US1
	PSS1/EM2		PEM1/2	L1UB/AB3	PUS/EM1			
	PSS1/ML1		PEM1/US		PUS/EM2		Intermittent	
	PSS1/ML2		PEM1/UB				R4SB	
	PSS1/US							
	PSS1/EM1							

Acres and proportions of the various NWI groups across the entire mapping area are provided in Figure 3.22-7. Broad Leaved Deciduous Shrubs, Marine Subtidal, and Herbaceous NWI groups combined make up approximately 88 percent of the mapping area. The acres and proportions of NWI vegetated wetland groups are provided in Figure 3.22-8. The Broad Leaved Deciduous Shrubs group makes up approximately 73 percent of all vegetated wetlands. Primary shrubs in this group include numerous willow species (e.g., *Salix pulchra, S. barcayi, S. alaxensis*), birches (*Betula nana* and others), and blueberries (*Vacinnium uliginosum* and others). It should be noted, however, that this group often included secondary vegetation types within its mapping units (Table 3.22-2). These included Needle Leaved Evergreen Shrubs (black spruce), Broad Leaved Evergreen Shrubs, Deciduous and Evergreen Forests, Herbaceous, and Moss-Lichen. In addition, the Broad Leaved Deciduous Shrubs group represents several water regimes.

Acres and proportions of HGM classes across the mapping area are shown in Figure 3.22-9. Slope wetlands make up 75 percent of all wetlands in the mapping area. Photographs of representative wetlands and waterbodies in the mapping area are provided in Figure 3.22-10.

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Figure 3.22-1: Wetlands Mapping Area Overview

Figure 3.22-2: Wetlands Mapping Mine Site Mapping Area

Figure 3.22-3: Wetlands Mapping Transportation and Natural Gas Pipeline Corridor Mapping Area North of Iliamna Lake

Figure 3.22-4: Wetlands Mapping Transportation and Natural Gas Pipeline Corridor Mapping Area South of Iliamna Lake

Figure 3.22-5: Wetlands Mapping Area Amakdedori Port Mapping Area

Figure 3.22-6: Wetlands Mapping Area Natural Gas Pipeline Mapping Area (Kenai Peninsula)

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Figure 3.22-7: Acres and Proportions of NWI Wetland and Waterbody Groups in the Mapping Area

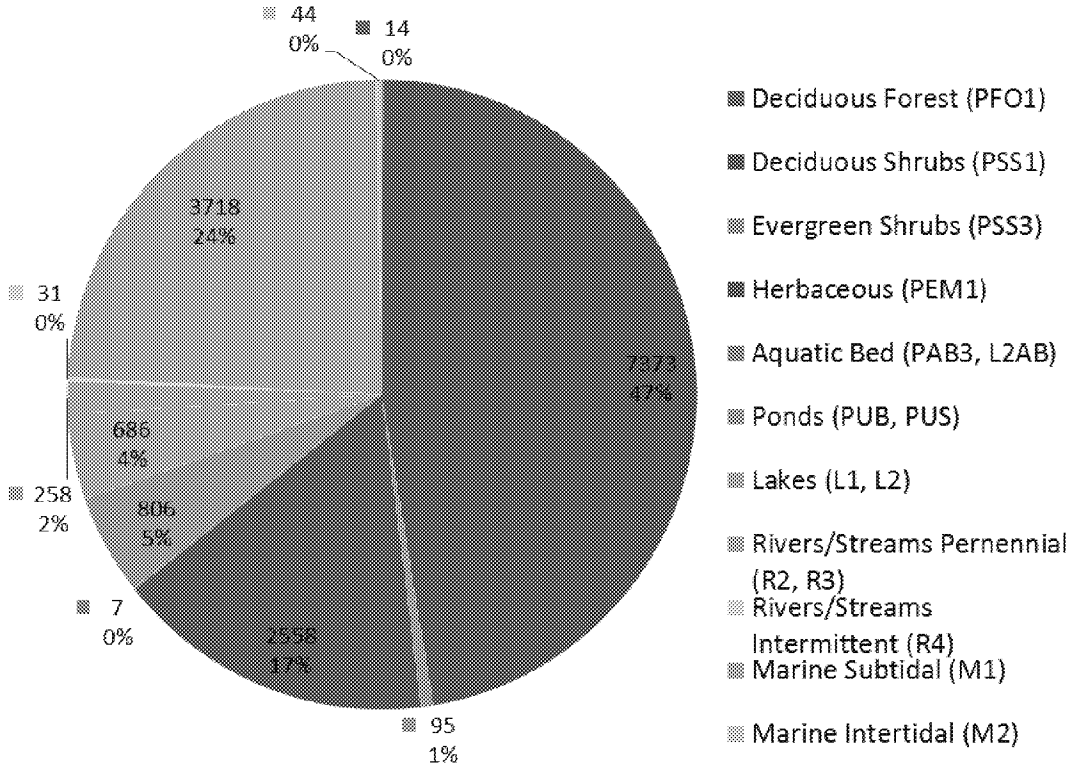

Figure 3.22-8: Acres and Proportions of NWI Vegetation Wetland Groups in the Mapping Area

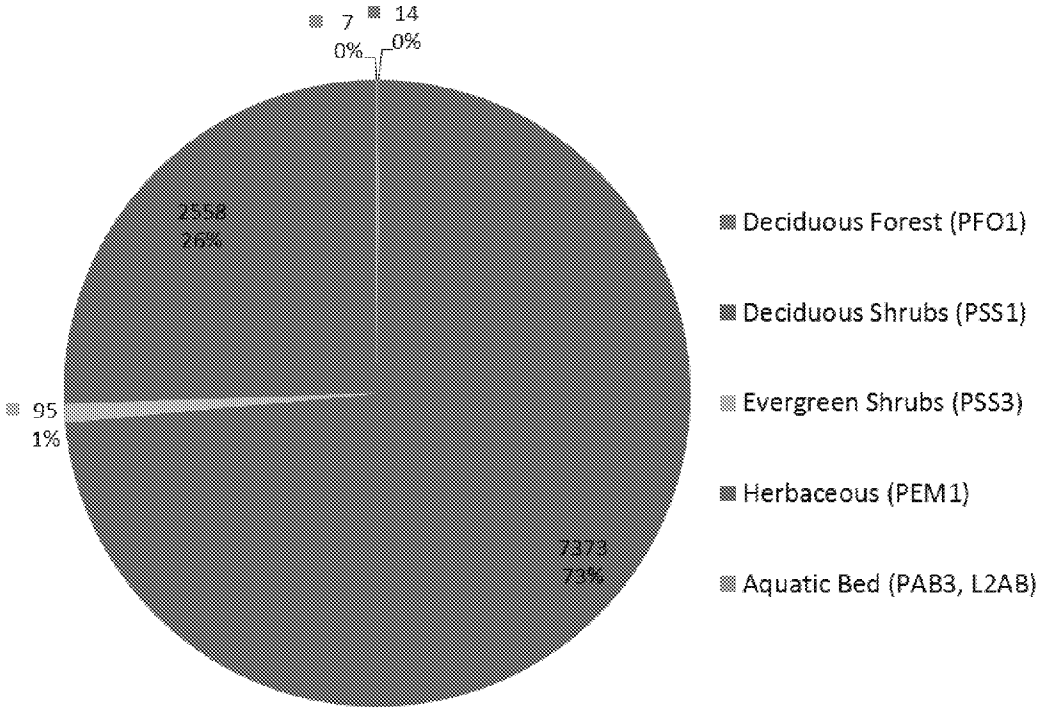

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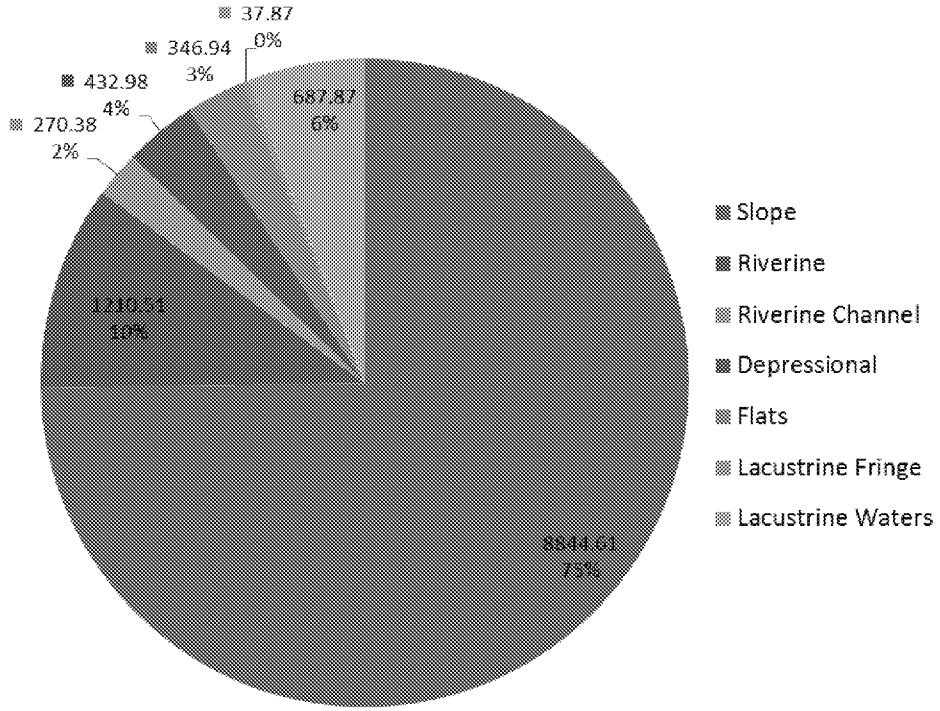
Figure 3.22-9: Acres and Proportions of HGM Classes in the Mapping Area



Notes:

Excludes marine waters, which are not classified by HGM.

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Figure 3.22-10: Common Wetland and Waterbody Types in the Mapping Area



Herbaceous Slope Wetland, PEM1F, Sedges



Herbaceous Flats Wetland, PEM1b, Cotton Grass/Peat



Perennial Stream, R3UBH



Herbaceous Slope Wetland, PEM1B, Sedges/Peat

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Evergreen Shrub Flats Wetland, PSS3b, Labrador Tea-Crowberry



Aquatic Bed Depressional Wetland, PAB3H



Herbaceous Lacustrine Fringe Wetland, PEM1F, Sedges-Rushes



Herbaceous Depressional Wetland, PEM1b, adjacent to Pond

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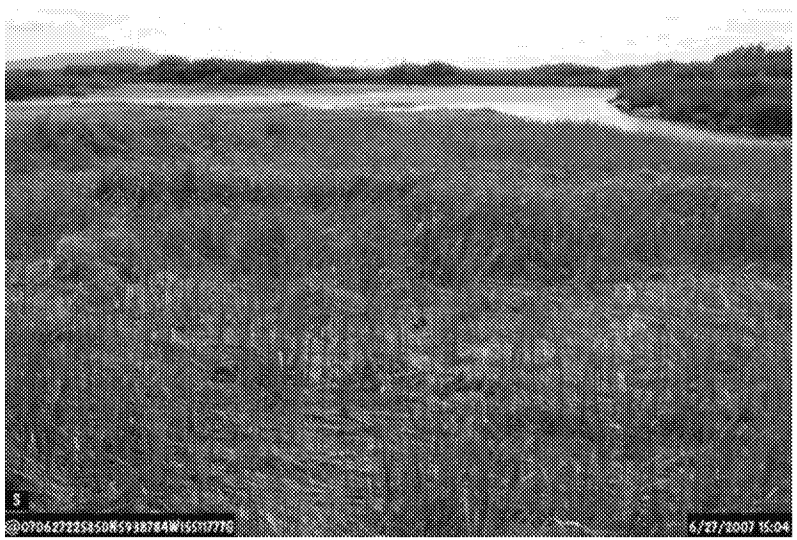
Deciduous Forest Riverine Wetland, PFO1C, Balsam Poplar/Bluejoint



Deciduous Shrub Slope Wetland, PSS1C, Willows/Bluejoint



Herbaceous Riverine Wetland, PEM1C, Sedge-Bluejoint



Evergreen Shrub Slope Wetland, PSS3b, Labrador Tea-Crowberry

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3.22.4 Mine Site Affected Environment

The mapping area for the Mine Site is approximately 20,526 acres. It was selected to provide coverage of potential development areas and alternative development areas as well as additional surrounding area to provide comparative context (3PPI and HDR 2011). The fully developed Mine Site would include an open pit, TSF, power plant, water treatment plants, and milling/processing facilities as well as supporting infrastructure. The watershed divide between the South Fork Koktuli River and Upper Talarik Creek is close to the dividing line between the Transportation/Natural Gas Pipeline Corridor mapping area and the Mine Site mapping area. The Mine Site encompasses the upper watersheds of both the North Fork and South Fork Koktuli River, which flows into Bristol Bay via the Mulchatna and Nushagak rivers. It also includes a small portion of the Upper Talarik Creek watershed. The mapping area is composed of glaciated, volcanic-ash influenced, hills and valleys free of permafrost.

Thirty-seven percent of the Mine Site mapping area is wetlands or waterbodies, comprised predominantly of broad leaved deciduous shrub wetlands (PSS1) in slope geomorphic positions (63 percent) (Table 3.22-3, Figure 3.22-11). These occur on both mineral and organic soils. Water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Although dominated by a deciduous shrub layer (willows, birches, blueberries), they usually also include small evergreen shrubs, with or without herbaceous wetland species. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats. The broad leaved deciduous shrub NWI group makes up 73 percent of the vegetated wetlands at the Mine Site. The slope HGM class accounts for 87 percent of the vegetated wetlands.

Herbaceous wetlands (PEM1) make up 21 percent of the Mine Site wetlands or waterbodies. These occur in seasonally to semi-permanently flooded depressions and shorelines, and on wetter positions on slopes and flats. Some 30 species of wetland sedges were observed in the mapping area and provide the dominant cover. Some of these sedges, along with cotton-grasses (*Eriophorum sp.*), form pronounced tussocks communities. Bluejoint (*Calamagrostis canadensis*) and horsetails (*Equisetum sp.*) are other locally common herbaceous wetland species.

Riverine wetlands occur along the north and south forks of the Koktuli River, as well as several smaller streams, making up six percent of the Mine Site wetlands and waterbodies. These are mostly seasonally flooded, deciduous shrub wetlands and sedge marshes. Aquatic bed wetlands occurred in depressions and ponded areas of slopes, accounting for less than one percent of wetlands and waterbodies. Deciduous forested wetlands were absent at the Mine Site.

Waterbodies accounted for seven percent of the Mine Site wetlands and waterbodies. Waterbodies included both perennial and intermittent stream channels, lakes, and ponds.

Human-caused soil or vegetation disturbance in the Mine Site mapping area was minimal and appeared to be limited to four-wheeler trails or campsites (3PPI and HDR 2011). Drill pads and other temporary disturbance from project exploration were not observed to alter wetland status or characteristics.

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Table 3.22-3: Mine Site Mapping Area Calculation of NWI Groups by HGM Classes

NWI Group	HGM Class (Acres/percent)[1]							Total Area[2] (Acres)	Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Deciduous Shrub Wetlands	4,736 **63%**	308 4%	0	27 <1%	204 3%	17 <1%	0	5,292	70
Herbaceous Wetlands	1,561 **21%**	150 2%	<1	25 <1%	21 <1%	15 <1%	0	1,772	23
Aquatic Bed Wetlands	2 <1%	0	0	1 <1%	0	0	<1	3	<1
Ponds	44 1%	25 <1%	0	124 2%	0	0	0	193	3
Lakes	0	0	0	0	0	<1	224 3%	224	3
Perennial Streams	0	0	80 1%	0	0	0	0	80	1
Intermittent Streams	0	0	6 <1%	0	0	0	0	6	<1
Wetland/ Water Totals	6,344	483	87	176	225	32	224	7,571	100
Area (%)	84	6	1	2	3	<1	3	37	
Uplands								12,955	63
Totals								20,526	100

Notes:

1 Includes percentage of all wetlands and waterbodies within the Mine Site mapping area.

2 The Mine Site mapping area overlaps with approximately 5 miles of the Transportation/Natural Gas Pipeline Corridor. That acreage is included here rather than in the Transportation/Natural Gas Pipeline Corridor mapping area.

Source: HDR 2018

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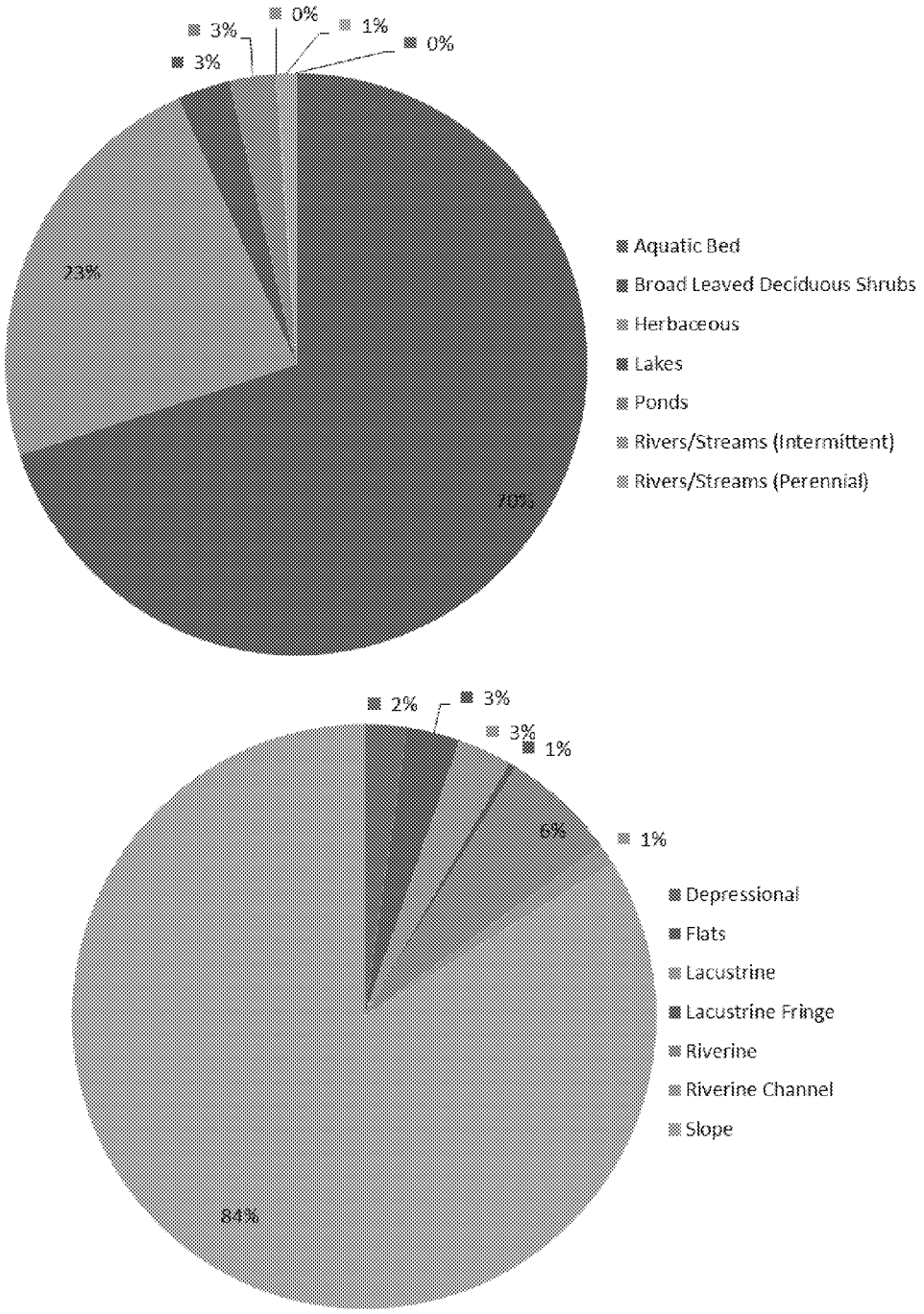
Figure 3.22-11: NWI Groups and HGM Classes at the Mine Site Mapping Area



3.22.5 Transportation/Natural Gas Pipeline Corridor Affected Environment

The mapping area for the Transportation/Natural Gas Pipeline Corridor is approximately 20,128 acres. The mapping area is generally 2,000 feet wide, centered on the proposed road centerline. It ranges up to 8,000-feet wide for approximately 8 miles on the north side of Iliamna Lake to account for other potential road alignments in this area. The corridor includes the Mine Access Road (29 miles) from the Mine Site to the north ferry terminal at Iliamna Lake, an 18-mile crossing of the lake to the south ferry terminal, and the South Access Road (37 miles)

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between the lake and Amakdedori Port on Cook Inlet. It also includes spur roads to Iliamna Airport (7 miles) and Kokhanok Airport (1 mile). The roads would have a 30-foot wide top width to enable two-way traffic. The pipeline would be buried adjacent to the road bed shoulder, and would either be routed under stream crossings or attached to bridge crossings. The pipeline would cross Iliamna Lake on the lake bed.

The transportation and pipeline corridor crosses numerous streams that feed into Iliamna Lake, which is connected to Bristol Bay via the Kvichak River. The major Bristol Bay watersheds include Upper Talarik Creek, Newhalen River on the north side of Iliamna Lake, Gibraltar Lake on the south side, and Iliamna Lake watershed on both sides of the lake. The major watershed draining to Cook Inlet is the Amakdedori Creek-Kamishak Bay watershed. The transportation and pipeline mapping area is dominated by glaciated, volcanic ash-influenced, mountains, hills, plains and valleys that are free of permafrost.

Twenty-one percent of the transportation and pipeline corridor mapping area is wetlands or waterbodies, comprised predominantly of broad leaved deciduous shrub wetlands (PSS1) in slope geomorphic positions (33 percent) (Table 3.22-4, Figure 3.22-12). These occur on both mineral and organic soils. Water regime is usually saturated, but also includes shallow flooding or ponding on very gradual slopes and in small swales and depressions located on the slopes. Although dominated by a deciduous shrub layer (willows, birches, blueberries), they usually also include small evergreen shrubs, with or without herbaceous wetland species. Bogs and fens co-dominated by ericaceous shrubs occur on slopes and organic flats. Evergreen shrub wetlands (PSS3, PSS4) account for 2 percent of wetlands and waterbodies, and occur primarily on slopes. The broad leaved deciduous shrub NWI group makes up 70 percent of the vegetated wetlands in the mapping area. The slope HGM class accounts for 70 percent of the vegetated wetlands.

Herbaceous wetlands (PEM1) make up 18 percent of the transportation and pipeline corridor wetlands and waterbodies. These occur in seasonally to semi-permanently flooded depressions and shorelines, and on wetter positions on slopes and flats. Some 30 species of wetland sedges were observed in the mapping area and provide the dominant cover. Some of these sedges, along with cotton-grasses (*Eriophorum sp.*), form pronounced tussocks communities. Bluejoint (*Calamagrostis canadensis*) and horsetails (*Equisetum sp.*) are other locally common herbaceous wetland species.

Riverine wetlands occur primarily along Upper Talarik Creek and Newhalen River, making up 17 percent of the mapping area wetlands and waterbodies. These are mostly seasonally flooded, deciduous shrub wetlands and sedge marshes. Deciduous forested wetlands and aquatic bed wetlands each accounted for less than one percent of the mapping area wetlands and waterbodies.

Waterbodies accounted for 30 percent of the transportation and pipeline corridor mapping area wetlands and waterbodies. Waterbodies included both perennial and intermittent stream channels, lakes and ponds.

Human-caused soil or vegetation disturbance in the transportation and pipeline corridor mapping area was minimal and appeared to be limited to four-wheeler trails, roads and building pads near the village of Iliamna, Kokhanok Airport, and the shore of Iliamna Lake.

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Table 3.22-4: Transportation/Natural Gas Pipeline Corridor Mapping Area Calculation of NWI Groups by HGM Classes

NWI Group	HGM Class (Acres/percent) [1]							Total Area [2] (Acres)	Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Deciduous Forest Wetlands	2 <1%	12 <1%	0	0	0	0	0	14	<1
Deciduous Shrub Wetlands	1,382 **33%**	581 **14%**	<1	10 <1%	83 2%	1 <1%	0	2,057	49
Evergreen Shrub Wetlands	94 2%	0	0	1 <1%	0	0	0	95	2
Herbaceous Wetlands	567 **13%**	108 3%	0	43 1%	39 1%	3 <1%	0	760	18
Aquatic Bed Wetlands	<1	<1	0	4 <1%	0	<1	0	4	<1
Ponds	404 **10%**	6 <1%	2 <1%	197 5%	<1	1 <1%	<1	610	15
Lakes	0	0	0	0	0	<1	463 **11%**	463	11
Perennial Streams	0	1 <1%	176 4%	0	0	0	0	177	4
Intermittent Streams	0	19 <1%	5 <1%	0	0	0	0	25	1
Wetland/ Water Totals	2,449	727	183	255	122	5	463	4,204	100
Area (%)	58	17	4	6	3	<1	11	21	
Uplands								15,923	79
Totals								20,128	100

Notes:

1 Includes percentage of all wetlands and waterbodies within the Mine Site mapping area.

2 The Mine Site mapping area overlaps with approximately 5 miles of the Transportation/Natural Gas Pipeline Corridor. That acreage is included here rather than in the Transportation/Natural Gas Pipeline Corridor mapping area.

Source: HDR 2018

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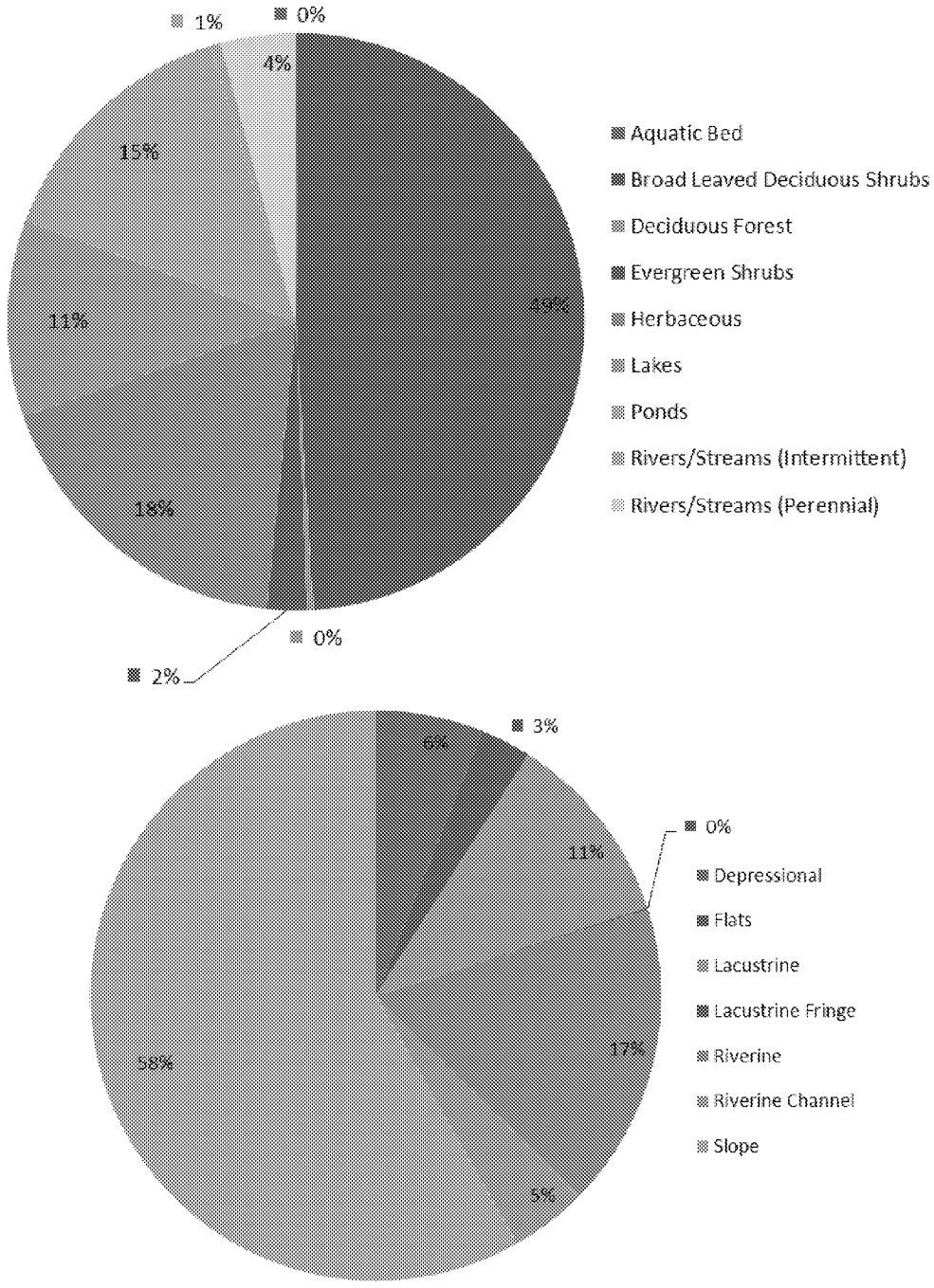
Figure 3.22-12: NWI Groups and HGM Classes at the Transportation/Natural Gas Pipeline Corridor Mapping Area



3.22.6 Amakdedori Port Affected Environment

The mapping area for Amakdedori Port is approximately 3,973 acres. The proposed port would be located on the shore of Kamishak Bay, Cook Inlet, near Amakdedori Creek. It would include shore-based facilities to receive and store shipping containers and fuel, as well as power generation equipment, a natural gas compressor station, maintenance facilities, employee accommodations, and offices. Waterside improvements would consist of an earthen access causeway extending out to a marine dock. A dredged channel would follow a navigation route

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approximately 4.2 miles out to deep water. Dredged material would be stockpiled on uplands behind the marine terminal.

Marine waters make up the vast majority of the mapping area (86 percent) (Table 3.22-5). These are dominantly subtidal, deep water habitats. Cook Inlet has a very large tidal fluctuation, regularly reaching 25 feet or more. At low tide, areas of mud flats and cobble and gravel shores are exposed. These intertidal habitats make up approximately 1 percent of the mapping area.

Vegetated wetlands account for only one percent of the mapping area, but nine percent of the non-marine habitats. Herbaceous and deciduous shrub wetlands make up approximately 50 percent and 43 percent, respectively, of the wetlands and waterbodies in the mapping area (Figure 3.22-13). Almost all (98 percent) of the wetlands and waterbodies were on the slope HGM class. Non-marine waterbodies include ponds and perennial and intermittent stream channels, which make up approximately 7 percent of the wetlands and waterbodies in the mapping area.

Table 3.22-5: Transportation/Natural Gas Pipeline Corridor Mapping Area Calculation of NWI Groups by HGM Classes

NWI Group	Area (acres)	Area (%)
Deciduous Shrub Wetlands	23	<1
Herbaceous Wetlands	26	<1
Ponds	3	<1
Lakes	<1	<1
Perennial Streams	<1	<1
Intermittent Streams	<1	<1
Marine Subtidal	3378	85
Marine Intertidal	44	1
Uplands	499	13
Total Area	3973	100
Wetland/ Water Totals	3474	87

Source: HDR 2018

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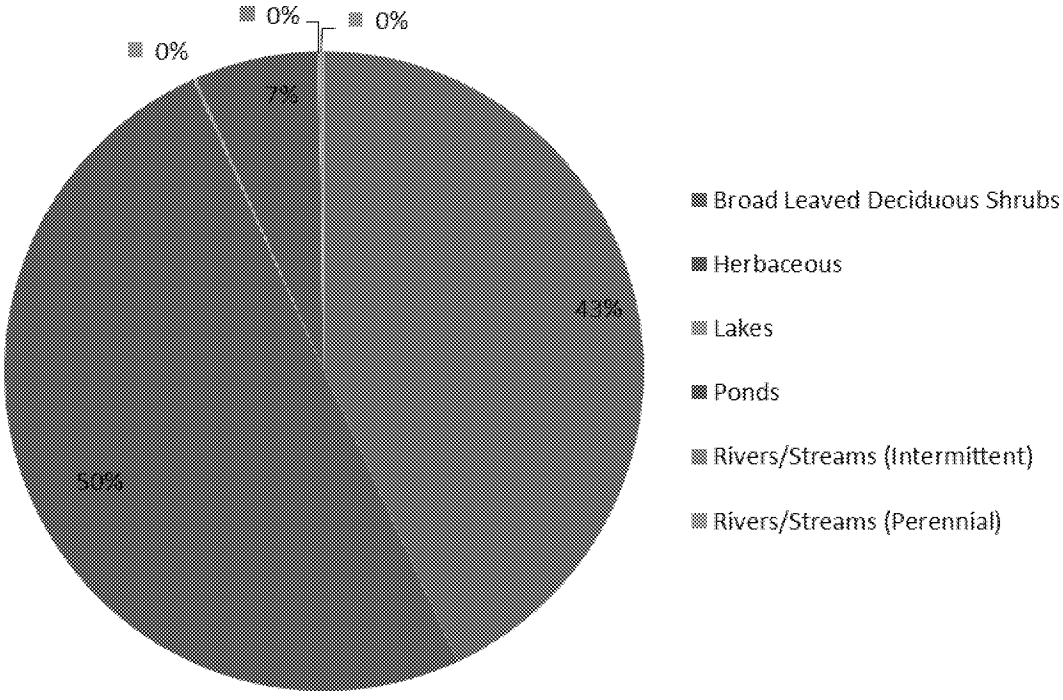
Figure 3.22-13:Non-Marine NWI Groups at the Amakdedori Port Mapping Area



3.22.7 Natural Gas Pipeline Corridor Affected Environment – Kenai Peninsula/Cook Inlet

The mapping area for the Natural Gas Pipeline Corridor on the Kenai Peninsula and across Cook Inlet is approximately 377 acres. This includes a 30-foot wide corridor to account for temporary construction impacts. A buried steel pipeline, 10 to 12 inches in diameter, would connect to an existing pipeline near Happy Valley on the Kenai Peninsula, and run for approximately 10 miles along the Sterling Highway right-of-way to Cook Inlet. The pipeline would then cross the sea floor of Cook Inlet for approximately 94 miles to Amakdedori Port. Beginning at the port, the pipeline would be located within the Transportation/Natural Gas Pipeline Corridor, which is discussed above.

[Note: configuration of the pipeline on the Kenai Peninsula may change, pending project design updates.]

The pipeline mapping area is located within the Lower Kenai Peninsula watershed. This area includes permafrost-free, coastal lowlands with rolling glacial till and outwash plains. Cook Inlet is characterized by nearshore and deep water habitats with unconsolidated sediments on a smooth bottom and strong tidal currents. Numerous tributary basins with active glaciers contribute to high suspended sediment load in portions of Cook Inlet.

Ninety-one percent of the Natural Gas Pipeline Corridor mapping area occurs in marine waters of Cook Inlet, predominantly subtidal waters with an unconsolidated cobble-gravel bottom (M1UBL). The terrestrial portion of the mapping area is predominantly uplands; wetlands and streams cover approximately two acres (five percent). Broad leaved deciduous shrub wetlands (PSS1) in depressional geomorphic positions account for approximately one-half of the wetlands (Table 3.22-6, Figure 3.22-14). Forested wetlands on slopes are the second most abundant wetland type (25 percent). Waterbodies are limited to perennial stream channels (R2UB, R3UB).

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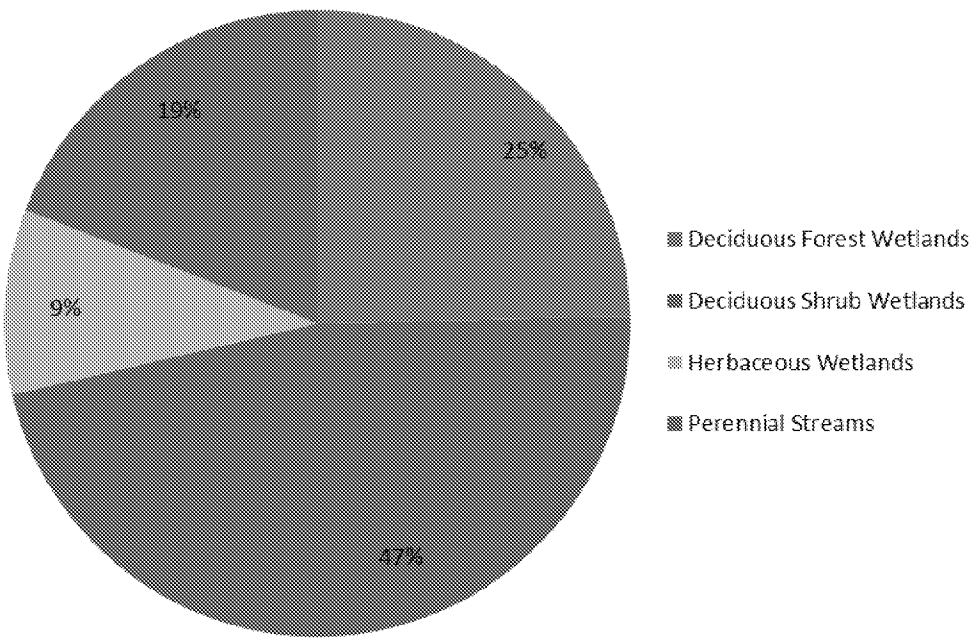
Human-caused soil or vegetation disturbance was not mapped for the pipeline corridor mapping area. Disturbance is expected to be common, given the location within the right-of-way of Sterling Highway.

Table 3.22-6: Natural Gas Pipeline Corridor Mapping Area (Kenai Peninsula/Cook Inlet) Calculation of Wetland Categories by HGM Classes

NWI Group	Area (acres)	Area (%)
Deciduous Forested Wetlands	<1	
Deciduous Shrub Wetlands	1	
Herbaceous Wetlands	<1	
Perennial Rivers & Streams	<1	
Intermittent Rivers & Streams	<1	
Marine Subtidal	341	
Marine Intertidal	<1	
Uplands	37	
Total Area	42	
Wetland/ Water Totals	342.86	

Source: HDR 2018

Figure 3.22-14:Non-Marine NWI Groups at the Natural Gas Pipeline Corridor Mapping Area (Kenai Peninsula/Cook Inlet)



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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/5/2018 9:29:50 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: draft Pebble EIS Outline).docx
Attachments: Pebble EIS Outline_2018.3.19 (002).docx

From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Tuesday, June 05, 2018 1:00 PM
To: Bob Loeffler <bobl@jadenorth.com>; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; Nathan Hill <manager@lakeandpen.com>; POA Special Projects <poaspecialprojects@usace.army.mil>; Pres William Evanoff <nondaltontribe@yahoo.com>; Wesley Furlong <wfurlong@narf.org>
Subject: draft Pebble EIS Outline).docx

AMERICAN OVERSIGHT

FRONT MATTER

COVER SHEET

TITLE OF APPLICANT'S PROPOSED ACTION

IDENTIFICATION OF LEAD AND COOPERATING AGENCIES

NAME AND CONTACT INFORMATION FOR CORPS PGM

DESIGNATION OF DOCUMENT STATUS

ONE PARAGRAPH ABSTRACT TO BE WRITTEN BY CORP

COMMENT PERIOD

EXECUTIVE SUMMARY FOR FINAL EIS

SUMMARY OF THE EIS STRESSING MAJOR CONCLUSIONS, AREAS OF CONTROVERSY (INCLUDING ISSUES RAISED BY AGENCIES AND THE PUBLIC) AND ISSUES TO BE RESOLVED (INCLUDING THE CHOICES OF ALTERNATIVES(PREFERRED (APPENDIX B) AND LEDPA). TO BE WRITTEN AFTER DRAFT EIS IS COMPLETED AND PRIOR TO PUBLIC COMMENT PERIOD.

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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

7.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT HAVE BEEN SENT

AMERICAN OVERSIGHT

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APPENDIX C – MAILING LIST

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APPENDIX K – ETC., TECHNICAL APPENDICES

AMERICAN OVERSIGHT

Appointment

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 6/5/2018 8:37:17 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/12/2018 4:00:00 PM
End: 6/12/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/20/2018 3:47:29 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Pebble EIS: Preliminary Alternatives Screening for Aug 22; Comments by 8/31/2018
Attachments: 08_17_2018_Preliminary_Alternatives_Screening.pdf

Good morning, Mark. Here is the alternatives info.

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, August 17, 2018 3:53 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: Pebble EIS: Preliminary Alternatives Screening for Aug 22; Comments by 8/31/2018

All,
Attached is the PRELIMINARY list of alternatives and the screening criteria used for considered by not analyzed in depth. This is the document we will discuss August 22, 2018 (1300-1500 AST). Please review for our meeting next wed. Please submit written comments by Friday 8/31/2018.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: Smith, Marla J. [Smith.MarlaJ@epa.gov]
Sent: 7/26/2018 10:02:27 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Reimbursement - Mark Douglas

I think it will be fine.

Thank you.

From: Mendelman, Krista
Sent: Thursday, July 26, 2018 2:01 PM
To: Smith, Marla J. <Smith.MarlaJ@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Reimbursement - Mark Douglas

HI Marla,

I am working at home. Does this electronic signature work for you? It is an electronic signature constructed through Adobe and not my actual electronic signature but it works for me if it works for you. Let me know.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: Smith, Marla J.
Sent: Thursday, July 26, 2018 1:56 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>
Subject: Reimbursement - Mark Douglas
Importance: High

Hi Krista,

In order to get Mark Douglas reimbursed for his travel to the Pebble Mine, July 9 – July 11, we have to do a direct bill memo (see attached).

Please sign and scan/return to me so I can attach to his voucher.

Thank you,

Marla Smith
Management Analyst
EPA/Region 10
Alaska Operations Office
(907) 271-1272

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Mendelman, Krista [Mendelman.Krista@epa.gov]
Sent: 7/26/2018 10:01:19 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Reimbursement - Mark Douglas
Attachments: M. Douglas - Reimbursement km.pdf

HI Marla,

I am working at home. Does this electronic signature work for you? It is an electronic signature constructed through Adobe and not my actual electronic signature but it works for me if it works for you. Let me know.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: Smith, Marla J.
Sent: Thursday, July 26, 2018 1:56 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>
Subject: Reimbursement - Mark Douglas
Importance: High

Hi Krista,

In order to get Mark Douglas reimbursed for his travel to the Pebble Mine, July 9 – July 11, we have to do a direct bill memo (see attached).

Please sign and scan/return to me so I can attach to his voucher.

Thank you,

Marla Smith
Management Analyst
EPA/Region 10
Alaska Operations Office
(907) 271-1272

AMERICAN OVERSIGHT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
ALASKA OPERATIONS OFFICE
Room 537, Federal Building
222 W. 7th Avenue, #19
Anchorage, AK 99513-7588

July 26, 2018

MEMORANDUM

SUBJECT: Request for Reimbursement of Airfare/Lodging paid for with personal check

FROM: Mark Douglas
Environmental Scientist

THRU: Krista Mendelman
Unit Manager, Aquatic Resources Unit
Office of Environmental Review and Assessment

TO: Gregory Luebbering
Supervisory Accountant, CFC

I am requesting reimbursement in the amount of $1,434.00 for airfare and lodging (which includes meals) to Iliamna and the Pebble Mine site for 07/09/18 - 07/11/18, paid for by personal check.

The Pebble Partnership does not allow just any flight service to fly out to the mine site. The have a contract for air services with specific vendors and make those arrangements for travelers.

Lodging is extremely limited in Iliamna. the Pebble Partnership has an agreement with certain lodges to provide lodging and meals to folks coming out there.

The Pebble Partnership is not set up to take credit cards (personal or government). The only option for payment is by personal check or cash.

AMERICAN OVERSIGHT

Message

From: Smith, Marla J. [Smith.MarlaJ@epa.gov]
Sent: 7/26/2018 8:56:00 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]
Subject: Reimbursement - Mark Douglas
Attachments: M. Douglas - Reimbursement.pdf

Importance: High

Hi Krista,

In order to get Mark Douglas reimbursed for his travel to the Pebble Mine, July 9 – July 11, we have to do a direct bill memo (see attached).

Please sign and scan/return to me so I can attach to his voucher.

Thank you,

Marla Smith
Management Analyst
EPA/Region 10
Alaska Operations Office
(907) 271-1272

AMERICAN OVERSIGHT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
ALASKA OPERATIONS OFFICE
Room 537, Federal Building
222 W. 7th Avenue, #19
Anchorage, AK 99513-7588

July 26, 2018

MEMORANDUM

SUBJECT: Request for Reimbursement of Airfare/Lodging paid for with personal check

FROM: Mark Douglas
Environmental Scientist

THRU: Krista Mendelman
Unit Manager, Aquatic Resources Unit
Office of Environmental Review and Assessment

TO: Gregory Luebbering
Supervisory Accountant, CFC

I am requesting reimbursement in the amount of $1,434.00 for airfare and lodging (which includes meals) to Iliamna and the Pebble Mine site for 07/09/18 - 07/11/18, paid for by personal check.

The Pebble Partnership does not allow just any flight service to fly out to the mine site. The have a contract for air services with specific vendors and make those arrangements for travelers.

Lodging is extremely limited in Iliamna. the Pebble Partnership has an agreement with certain lodges to provide lodging and meals to folks coming out there.

The Pebble Partnership is not set up to take credit cards (personal or government). The only option for payment is by personal check or cash.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/26/2018 5:05:33 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Revised comment date for Chapter 3 and 4 sections to 31 August 2018

Hi Mark -- wanted to share this with you right away since I know you are scrambling to complete your review of the Ch. 4 sections. I'll also discuss at today's Pebble team meeting, and provide an updated internal due date a couple weeks out (after I've had a chance to look at the calendar and talk to Patty).

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 26, 2018 8:45 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Hobbie, David S CIV USARMY CEPOA (US) <David.S.Hobbie@usace.army.mil>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: Revised comment date for Chapter 3 and 4 sections to 31 August 2018

Cooperating Agencies,

Last week it came to my attention that I inadvertently omitted to distribute some sections of draft Chapters 3 and 4 to some cooperators. I had originally asked that cooperators submit comments on these draft chapters by 31 July for Chapter 4 and July 5 for comments for Chapter 3.

Given my oversight, I am now asking that the review for both Chapters 3 and 4 sections be submitted by August 31, 2018. This will also mean that the robust technical discussions will occur in October.

I would like to remind everyone, that at this stage of the development of the analysis, I am asking that your review be at a high level; meaning that we are asking your teams to identify gaps (did we miss something?). The team developing the sections will review the comments and may be reaching out to you for clarity. A more in detail review will be expected in October when the team has incorporated additional information based on your input and data gathered by the teams.

As we are all aware, there are many moving parts to any EIS and it is difficult to keep all things on track. I would greatly appreciate any issues being brought directly to my attention as soon as you identify them. Please email me or call me directly if you have concerns or questions about the flow of information so we can collaboratively ensure that errors are caught and corrected as soon as possible.

VR

Shane McCoy
Program Manager
907-753-2715

AMERICAN OVERSIGHT

Message

From: Smith, Marla J. [Smith.MarlaJ@epa.gov]
Sent: 7/25/2018 7:00:35 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Invoice from PLP

Glad you were able to get that.

From: Douglas, Mark
Sent: Wednesday, July 25, 2018 10:21 AM
To: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Niemiec, Maria J. <niemiec.maria@epa.gov>
Subject: Invoice from PLP

Passing this along, I'll submit the paperwork in the morning when I am back at the office.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/25/2018 6:55:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/26/2018 8:00:00 PM
End: 7/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda below, please feel free to suggest additional agenda topics

Agenda:

- Review of preliminary EIS sections – Molly
- Field verification site visit – Mark
- Upcoming agency meetings – Patty
- Schedule - Patty

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 6/26/2018 4:51:40 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint
Attachments: TM Comments on PreDraft Sec3.17 HydroGeo 6-25-18.docx; TM Comments on PreDraft Sec3.18 WaterQuality and GeoChem 6-25-18.docx

Hi Molly,

Attached are my comments on Sections 3.17 and 3.18.

Let me know if you have questions or need follow up information.

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Thursday, June 7, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website/ Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website/ Ex. 6

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**

AMERICAN OVERSIGHT

This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

  Internal Website/ Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website/ Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (e.g., use of lightering and elimination of dredging).
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Clear Form

THE pebble PARTNERSHIP

2017 SITE SERVICES REQUEST FORM

Two weeks advance notice is required prior to all site visits

DATE OF REQUEST: 6/6/2018		*For PLP Use only* Purchase Order #:
PROJECT LEADER: Mark Douglas	**CATEGORY/TASK #** Wetlands	___10ANC09 ___20SIT09 ___30ENG09 ___40ENV09 ___50BD09 ___50PA09 ___50SR09 ___50WF09
COMPANY: US EPA		
CONTACT PHONE/EMAIL: Douglas.Mark@epa.gov		

FLIGHT DETAILS: ALL FLIGHTS TO SITE MUST BE BOOKED THROUGH sitetravel@pebblepartnership.com

From/To	Airline	Date	Flight	Time
ANC/ILI	IAT	07/09/18		AM
ILI/ANC	IAT	07/11/18		PM

However, If arrangements are in place please provide details below

Names of Individuals in Group:	Affiliation	M	F	Special Dietary Requests / Food Allergies
1. Mark Douglas	USACE	◉	○	
2.		◉	○	
3.		◉	○	
4.		◉	○	
5.		○	○	
6.		○	○	
7.		○	○	
8.		○	○	
9.		○	○	
10.		○	○	

Purpose of Visit:

Wetlands field work

Scope of Work:

Field verification of mosaic wetlands with HDR wetlands crews.

Comments:

EPA staff will coordinate with USACE & HDR wetlands scientists to determine sites that will be visited and configuration of each field crew. All work will be conducted in the mine site/deposit area and will be based out of Iliamna.

AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

ADDITIONAL REQUIREMENTS		
Private Land Access:	**# People:**	**Dates:**
☐ APC		
☐ CIRI		
☐ INL		
☐ PBC		
☐ KIJIK		
☐ Other *(describe)*:		
Labor:	**# People:**	**Dates:**
☑ Bear Guard	1*	7/9-7/11
☐ Observer		
☐ Laborer		
☐ Local Knowledge Specialist		
☐ Other *(describe)*:		
Helicopter:	**# People:**	**#Hours/Day:**
☐		
☑ ASTAR	1*	Full
☐ 500		
☐ R44		
Other:	**Quantity:**	**Dates:**
☐ Boat *(describe)*:		
☐ Backhoe		
☐ Vehicle		
☐ Bicycle		

Comments:

Please arrange for individual rooms for EPA staff.
*Helicopter and bear guard needs should be coordinated with USACE/HDR request for the same days.

TO BE COMPLETED BY THE REQUESTING TRAVELER
Date: 6/14/18 Signature:

TO BE COMPLETED BY AUTHORIZING SUPERVISOR
Date: Signature:
Printed Name:

TO BE COMPLETED BY PERSON COMPLETING TRAVEL ARRANGEMENTS
Date Received: Date Completed:
Signature of person completing travel arrangements:
☐ Emailed to PLP Invoicing ☐ Emailed to traveler ☐ Faxed to traveler

PLEASE ATTACH MAPS AS THEY RELATE TO THE SCOPE OF WORK.

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/15/2018 12:30:32 AM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Smith, Marla J. [Smith.MarlaJ@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Request form
Attachments: MD Pebble Site visit form.pdf

Krista or Mary Anne,

Attached is the form Pebble sent for the site visit in July. Please sign it and send it back **Personal Matters / Ex. 6** but if you are able to sign it on Friday **Personal Phone / Ex. 6** to let me know it's ready and I'll log in and send it on to Pebble.

Thanks!

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 11/19/2018 8:13:01 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Draft Ch 2 comments for review

Molly,

I'd suggest [redacted]

Deliberative Process / Ex. 5

Thanks as always,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Monday, November 19, 2018 10:35 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Pebble Draft Ch 2 comments for review

Hi Mark – please take a look at Ashley's edits to the first comment in the table, also described in her email below, and let me know how you would like to finalize the comment.
Thanks,
Molly

From: Palomaki, Ashley
Sent: Monday, November 19, 2018 8:01 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly –

Thanks for the opportunity to review. My comments are attached. I have a problem in that I always fix nits if I see them ☺ but you should take it or leave it. I also flagged a couple places for you where you should edit the sentence b/c it isn't clear.

[redacted]

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

AMERICAN OVERSIGHT

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Friday, November 16, 2018 9:25 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly and Ashely –
Can you please consider my proposed revision to the introductory paragraph? Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Thursday, November 15, 2018 3:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Draft Ch 2 comments for review

AMERICAN OVERSIGHT

Hi Ashley,
I am so sorry for the delay in getting these comments to you for review. If you will no longer be able to complete your review Friday, please let me know. I also apologize that some of the comments (particularly the last couple pages) are still a bit rough. So, please don't feel that you have to edit grammar, punctuation, etc., as I will do another read-through for that before sending this to Jill.

Patty – I've copied you here as well, so you can decide if you would prefer to do your final review of the compiled comments now, or at the same time as Jill's review.

Thank you very much in advance for your review!
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 11/9/2018 8:54:17 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Chapter 2 comments
Attachments: Ch 2 Pebble comments.docx

Molly,

Deliberative Process / Ex. 5

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/7/2018 6:22:59 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: RE: Pebble Trip

Perfect, thanks.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Mendelman, Krista
Sent: Thursday, June 07, 2018 10:22 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble Trip

Sure! I have a meeting at 11:30 that I need to get ready for. I will call you after that is done. 12:00ish my time.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: Douglas, Mark
Sent: Thursday, June 07, 2018 11:21 AM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: Pebble Trip

Krista,

Can you call me when you get a chance?

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency

AMERICAN OVERSIGHT

Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/7/2018 3:55:22 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: FW: Field Logistics

First of 2 emails for Pebble site visit logistics. The Corps informed me the flight they are taking over to Iliamna is apparently full so I'll have to find my way over there in time and the description of helicopter use and cost in the second email seems open ended.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

-----Original Message-----
From: Campellone, Estrella F CIV USARMY CEPOA (US) [mailto:Estrella.F.Campellone@usace.army.mil]
Sent: Wednesday, June 06, 2018 4:19 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Field Logistics

Hi Mark,

Our arrangements:
Iliamna Air Taxi Inc:
Arrival time @ Iliamna: July 9 (Monday) at 0900.
Departure time: July 11 @ 4:30 p.m.

Corps will disburse the company directly for hotel/helicopter costs.
Hotel:
Check in July 9th
Check out July 11th

Meals:
July 9th (- Diner)
July 10th (all meals)
July11th (breakfast & lunch).

Rooms are reserve through Tim Harvey:
Meals are cafeteria style. For our arrival day, we will bring our lunch. For the remaining days they will make a bag lunch at breakfast to bring with us to the field.

Company will provide in-town transportation to/from the airport each day in one of their vehicles. Work days are 12 hours, with 10 in the field and one hour on either end for muster, briefings, etc. Crews normally do not return to base during the work day unless weather limits flight operations. Low clouds and/or high winds are typically the only conditions that will restrict helicopter travel.

No firearms are permitted at any Pebble facility or in helicopters. Trained bear guards will be provided with each crew. Guards are in constant radio contact with site operations. Alcohol is prohibited at any Pebble facility.

Safety training and site orientation will take place as soon as we arrive. That should take about an hour, followed by a 20-minute helicopter safety briefing. They provide basic PPE (safety goggles, high visibility vest, hearing protection). You are welcome to bring your own as long as the operations manager approves. Field gear requirements are what we would normally bring.

Accommodations are 150/person/day. They will invoice you after your trip. their site staff does not have the ability to accept payments. Helicopter time will likewise be invoiced to you based on the per seat cost and number of flight hours logged. Cost may vary depending on which helicopter is available.

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 10/31/2018 10:19:41 PM
To: Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: FW: Bristol Bay - Pebble Limited Partnership 10/17/18 Letter to EPA
Attachments: 19-000-0691_(FYI).Correpsondence.Collier.pdf; 19-000-0691_Control Slip..pdf

FYI

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Wednesday, October 31, 2018 10:01 AM
To: Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FYI: Bristol Bay - Pebble Limited Partnership 10/17/18 Letter to EPA

FYI Pebble NEPA Team – the attached letter may be of interest as it pertains to the NEPA process for the project.
--Molly

From: Allnutt, David
Sent: Tuesday, October 30, 2018 2:10 PM
To: Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Bristol Bay - Pebble Limited Partnership 10/17/18 Letter to EPA

Seeing now that this did not go to you. Please share with the Pebble NEPA team as appropriate.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

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From: Peterson, Erik
Sent: Monday, October 29, 2018 1:12 PM
To: Allnutt, David <Allnutt.David@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Bristol Bay - Pebble Limited Partnership 10/17/18 Letter to EPA

FYI – See attached letter from PLP.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Kelly, Christine M
Sent: Monday, October 29, 2018 1:04 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Incoming CMS 19-000-0691 (FYI)

Erik,
Please find attached the FYI CMS that came in on Friday.

Christine Kelly
EPA- Region 10
206-553-2770

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/6/2018 6:10:23 PM
To: Mendelman, Krista [Mendelman.Krista@epa.gov]
Subject: FW: Travel requests

Krista,

Sorry for the additional email – I did update the Pebble related trip in the spreadsheet as well. It appears to be ARE funds set aside. Hopefully Patty will be able to find out the anticipated schedule today for the site visit this summer.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Douglas, Mark
Sent: Wednesday, June 06, 2018 9:37 AM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: Travel requests

Krista,

Minutes before the start of the Pebble meeting and while walking out the door, I was informed the Corps wasn't allowing me to participate in the meeting. The attendees are limited to the primary contacts.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office

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222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Mendelman, Krista
Sent: Wednesday, June 06, 2018 7:41 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Travel requests

Sure.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

From: Douglas, Mark
Sent: Wednesday, June 06, 2018 8:41 AM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: Travel requests

Krista,

It got a little busy here late yesterday, I put in an additional travel request but am headed out the door now, can I possibly add another trip request during our lunch break?

https://www.adn.com/alaska-news/anchorage/2018/06/05/anchorage-federal-building-evacuated-for-hazardous-materials-response-official-says/

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

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Phone (907) 271-1217

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/9/2018 11:19:46 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
Subject: RE: Fact sheets on AKLNG and ASAP
Attachments: ASAP Fact Sheet May 2018.docx

Second one coming in a minute.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Thiesing, Mary
Sent: Wednesday, May 09, 2018 2:53 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: Fact sheets on AKLNG and ASAP

Hi Mark,

Linda A-C would like fact sheets on these two projects. Can you update what you have and forward? I am putting together a briefing paper on the AK mitigation stuff and Pebble; Matt and Mark are preparing one on Donlin for their briefing tomorrow. I am sorry to have to ask this—I know how busy you are, but I don't have the same familiarity with the details as you do.

Thanks,

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 4/5/2018 5:57:08 PM
To: Linn, Jennifer [Linn.Jennifer@epa.gov]
Subject: Got your VM

Thanks for the reply! I'll pass along your thoughts for this effort to the 404 folks. In working with the AK District a large part of staff time is spent on the NEPA and EIS process for projects likek ASAP, AKLNG, Nanushuk, Donlin, and Pebble which can be challenging to capture fully in the 404 process.

I'm looking forward to helping with this effort in any way.

Thanks again,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

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Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

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Appointment

From: Douglas, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=23501ccdede34f148129c582fa1860b4-Mdougl02]
Sent: 9/27/2018 8:10:14 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 10/23/2018 4:00:00 PM
End: 10/23/2018 5:00:00 PM
Show Time As: Busy

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 8/22/2018 6:39:15 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: link to March 20 Pebble Technical note on Sharepoint

Thanks!

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Wednesday, August 22, 2018 10:39 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: link to March 20 Pebble Technical note on Sharepoint

For ease of locating this document:

Internal Website/ Ex. 6

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 7/25/2018 6:25:51 PM
To: Personal Email / Ex. 6
Attachments: Sec4.22_Wetlands_FINAL.docx

Mark Douglas
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Note to Reviewers

This section is an early stage preliminary draft, and has been prepared prior to the completion of scoping for the purpose of setting analytical direction and facilitating the project schedule for completing the EIS.

As an initial draft, it is incomplete in many ways, and contains numerous placeholders to be addressed as more information becomes available. The Scoping Comment Period has not closed, Alternatives to the Proposed Action have not been formally identified, information needed to complete the analysis is not yet fully available and in the process of being requested from the applicant, and the approach for topics such as spills/dam failures, traditional knowledge and cumulative effects has not been settled. In addition, supporting analysis and logic for determination of potential environmental consequences have not been fully developed. This draft is intended to frame the eventual section, and in doing so, allow USACE to see the intended topics and content for the eventual completed sections. Notes are included in many sections to identify where the analysis is incomplete.

4.22 WETLANDS/SPECIAL AQUATIC SITES

The project has the potential to result in the following direct and indirect effects to wetlands/special aquatic sites and waterbodies (henceforth, referred to as "wetlands"):

- Direct impacts from removal of wetland vegetation and soil
- Indirect impacts from:
  - Disruption of wetland hydrology
  - Alteration of surface water quantity or distribution
  - Alteration of subsurface water quantity and distribution
  - Erosion and sedimentation.

Project impacts have been assessed by watershed to place the impacts in an ecological context. U.S. Geological Survey (USGS) Hydrologic Unit Code Tenth Level (HUC10) watersheds have been used for this purpose, and define the environmental impact statement (EIS) analysis area for wetlands. Impact assessments were considered, analyzed, and determined from the perspective of overall regional Alaskan vegetation affected. To contextualize project impacts, the analysis for vegetation applied publicly available environmental data for the EIS analysis area for the nine HUC10 watersheds that could potentially be directly or indirectly affected.

The magnitude of impacts to wetlands were assessed in terms of percent of disturbance area to high-value wetlands or greater proportions of low-value wetlands in the EIS analysis area. Magnitude would be less for disturbance areas below five percent, and would be greater for disturbance areas above five percent, with greatest intensity for disturbance areas above 25 percent. Some areas of wetlands would be reclaimed, and some would not. The duration of impacts would be temporary, meaning wetland functions would be reduced during the construction phase; or permanent, meaning reduction or elimination of wetlands functions would occur after the construction phase, through the operations and into the closure and post-closure phase. The extent of impacts would be limited to areas of the project area in which wetlands would be removed or disturbed, or would affect wetlands outside of the project area, within one or more HUC 10 watersheds.

To assess the relative magnitude and extent of impacts, the relative proportion of common wetland types in each watershed was estimated. The National Wetland Inventory (NWI) mapping covers only about one-fourth of the watershed area, and was therefore not sufficient for this effort. The uniform vegetation mapping provided by the Alaska Center for Conservation Science (ACCS)

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provided the best available spatial data for estimating wetland coverage for the HUC10 watersheds.

Vegetation class descriptions from the Vegetation Map and Classification guidebooks (Boggs et al. 2016a, 2016b) were reviewed. Vegetation classes mapped in the watersheds were assigned to one of the following types in a crosswalk for comparison with wetlands mapped for the project: upland, forested wetland, shrub wetland, herbaceous wetland, aquatic bed wetland, or waterbody.

The descriptions of herbaceous vegetation classes included wetland status; therefore, these vegetation classes were directly crosswalked to herbaceous wetland or upland. The woody vegetation classes lacked wetland status, so it was not possible to directly crosswalk types. Because forested vegetation types were uncommon, an assignment was made for each mapped unit based on site characteristics.

Shrub vegetation classes were common; a shrub vegetation class was assigned to wetland or upland based on a review of site characteristics. The dwarf shrub class in particular was not broken out in the mapping to differentiate dry sites from wet sites. Therefore, the acreages and percentages for each watershed are used here for comparison purposes, and should be considered an approximation of the actual extent of wetlands.

4.22.1 No Action Alternative

Under the No Action Alternative the Pebble Project would not be constructed, and no new impacts to wetlands would occur.

4.22.2 Action Alternative 1 – Applicant's Proposed Alternative

4.22.2.1 Mine Site Direct Impacts

[Note: Section to be revised with updated numbers and descriptions based on updated project description.]

[Note: Temporary versus permanent impacts will be refined in all text and tables pending an updated project description].

Most project-related direct impacts to wetlands would be initiated during the construction phase and would result in temporary or permanent loss of wetlands or alteration in wetland functions. Primary direct construction-related impacts to wetlands and waterbodies would include:

- Clearing and removal of wetland vegetation
- Placement of fill in wetlands and waterbodies
- Excavation that eliminates wetlands and waterbodies
- Compaction, rutting, and mixing of wetland soils.

Excavation of the open pit, quarries, and sediment ponds and filling within the tailings storage facility (TSF) and stockpiles would occur throughout the active life of the mine. The maximum extents of all surface disturbance impacts were used to evaluate direct wetlands impacts for the Mine Site. Some wetland reclamation would begin shortly after the start of construction and would continue throughout operations and closure.

A total of 3,191 acres of wetlands and waterbodies would be directly affected by the proposed Mine Site facilities (Table 4.22-1). The greatest impacts would occur from the bulk tailings storage cell (1,083 acres), the TSF (548 acres), the open pit (178 acres), and the haul road (162 acres).

Within the Mine Site, most impacts to wetlands (XX acres) would occur within one of the HUC10 watersheds, named the "Headwaters Koktuli River watershed" (Figure 4.22-1; Table 4.22-1). Less

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than 10 of impacts to wetlands and waters would occur within the Upper Talarik Creek Watershed (Table 4.22-1). Direct impacts in these watersheds would affect primarily deciduous shrub wetlands on slopes (XX percent and XX percent, respectively) and herbaceous wetlands on slopes (XX percent and XX percent, respectively). Previous disturbance to wetlands in this area is minimal. Facilities have been sited to avoid and minimize wetland impacts and allow efficient reclamation of disturbed areas.

[Note: The above sections will be updated with an updated project footprint.]

Excavation, filling, and clearing of wetlands would alter or remove their capacity to provide hydrologic, biogeochemical, and biological functions. Construction-related disturbances may alter wetland modification of groundwater functions (recharge and discharge), and would decrease stormwater and floodwater storage and modification of streamflow functions by decreasing the wetlands' potential to dissipate energy and reduce peak flows. These altered hydrologic functions would extend to the streams connected to or downstream from the affected wetlands. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Construction on or through wetlands would decrease or remove the wetlands' potential to improve water quality by preventing erosion and settling sediments. Sediment barriers and erosion control planning would mitigate the loss of this wetland function. Vegetation clearing with no soil disturbance reduces the wetlands' ability to modify water quality and its contribution to the abundance and diversity of wetland fauna. It also may reduce the export of detritus and contribution to the abundance and diversity of wetland flora functions, depending on the extent of vegetation being cleared.

The Headwaters Koktuli River watershed is estimated to contain approximately 56,000 acres of wetlands and waterbodies (33 percent of the watershed). Approximately 45,000 acres (26 percent of the watershed), are shrub wetlands and 9,000 acres (five percent) are herbaceous wetlands. Forested wetlands (39 acres) and aquatic bed wetlands (132 acres) each cover less than one percent. Mine Site activities would affect 2,460 acres of shrub wetlands and 657 acres of herbaceous wetlands within the Headwaters Koktuli River watershed (Table 4.22-1). This represents approximately five percent and seven percent, respectively, of shrub and herbaceous wetlands in the watershed. No forested wetlands and one acre of aquatic bed wetlands would be affected.

[Note: Information on specifics of unique, rare, or high-value wetlands types will be added in a later version.]

Riverine wetlands are another potentially high-value wetland type because of their numerous functions, especially fish and wildlife habitat functions. A total of 176 acres of riverine HGM class wetlands in the Headwaters Koktuli River watershed would be affected by activities at the Mine Site. The extent of riverine wetlands in the watershed is not known. They account for approximately six percent of the Mine Site mapping area. The watershed contains the North Fork and South Fork Koktuli River and their numerous tributaries. It is expected that riverine wetlands would account for at least six percent of the watershed as a whole, or approximately 10,000 acres. Therefore, the area of impacts from Mine Site activities would represent approximately two percent of all riverine wetlands in the watershed. Less than one acre of riverine HGM class wetlands in the Upper Talarik Creek Watershed would be affected by activities at the Mine Site.

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Figure 4.22-1: Mine Site Area Watersheds Wetlands Impacts

[Note: Figure under development]

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[Note: Table to be updated with revised project description information.]

Table 4.22-1: Mine Site Wetlands Direct Impacts

NWI Group	HGM[1] Class (Acres/percent)							Impact Area (acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Headwaters Koktuli River Watershed									
Deciduous Shrub Wetlands	**2,247 71%**	**131 4%**	0	7 <1%	74 2%	<1	0	2,460	76
Herbaceous Wetlands	**607 19%**	40 1%	<1	3 <1%	6 <1%	<1	0	657	20
Aquatic Bed Wetlands	1 <1%	0	0	0	0	0	0	1	<1
Ponds	11 <1%	4 <1%	0	16 <1%	0	0	0	31	1
Lakes	0	0	0	0	0	0	<1	<1	<1
Perennial Streams	0	0	29 1%	0	0	0	0	29	1
Intermittent Streams	0	0	3 <1%	0	0	0	0	3	<1
Wetland/Water Totals	2,867	176	32	26	80	1	<1	**3,182**	100
Area (%)	90	5	1	1	2	<1	<1		
Uplands	3,658								
Totals	6,840								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Upper Talarik Creek Watershed									
Deciduous Shrub Wetlands	**6 67%**	<1	0	0	<1	0	0	6	67
Herbaceous Wetlands	**3 33%**	<1	0	<1	0	0	0	3	33
Aquatic Bed Wetlands	0	0	0	0	0	0	0	0	0
Ponds	0	0	0	<1	0	0	0	<1	<1
Lakes	0	0	0	0	0	0	0	0	0
Perennial Streams	0	0	<1	0	0	0	0	<1	<1
Intermittent Streams	0	0	<1	0	0	0	0	<1	<1
Wetland/Water Totals	9	<1	<1	<1	<1	0	0	**9**	100
Area (%)	100	<1	<1	<1	<1	0	0		
Uplands	25								
Totals	34								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									

[1]HGM = hydrogeomorphic

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Reclamation

Pebble Limited Partnership (PLP) has incorporated requirements for mine closure and long-term water management into the design of the project. During the permitting phase, a reclamation plan would be developed that would include reclamation of wetlands where feasible. The discussion below is based on generally accepted wetland reclamation practices for mine sites in Alaska. PLP has also provided some conceptual-level information on reclamation in its application and in subsequent responses to requests for information.

The Alaska Department of Natural Resources (ADNR) approves reclamation plans and associated financial assurances before construction. In its project description for the Department of the Army Application (December 2017), PLP has identified some of the design elements that would facilitate successful reclamation during and after the closure phase:

- Quarried and waste rock would be geochemically tested prior to being used in construction to avoid the potential for contaminated drainage during operations and post-closure.
- Topsoil and overburden would be salvaged during construction for use as growth medium during reclamation.
- TSF embankment slopes would be designed to provide long-term stability and facilitate the placement of growth medium.
- The overall project footprint would be minimized to facilitate physical closure and post-closure water management.

[Note: This section will be updated with information from RFI 024.]

Material sites constructed in valley bottoms or lowland sites are candidates to be reclaimed to create new ponds with emergent wetlands where sufficient water quality and hydrology are available. Final contouring around created ponds could focus on providing habitat at the water's edge and a complex interspersion between wetland and upland vegetation. Moderate to steeply sloping wetland or upland mosaics with wetland inclusions would be less feasible to restore to wetlands because of the marginal hydrology, and some fills may not be removed in these areas. Marginal wetland hydrology would be expected in areas where excavations and road cuts through colluvium and rock have reduced overland sheet flow.

Shrub wetland successional processes, generally initiated by natural disturbances such as wildland fires, gradually reestablish typical vegetation and eventually hydrologic characteristics. When construction disturbs wetlands, successional processes may be prolonged or may not occur. Construction disturbances differ from natural disturbances in that the organic mat and organic soil horizons are often removed completely, which removes seedbeds, and reduces surface and subsurface water storage capacity. The timing and extent of recovery likely depend on the intensity, extent, and duration of the disturbance. The time required for wetlands to return to pre-disturbance soil moisture and original vegetation cover has not been well documented in western Alaska.

Development of self-sustaining wetland plant communities on previously disturbed Alaska wetlands may occur within 10 to 30 years, but may be slowed in gravelly or sandy soils, and by years with failed seedling establishment or seed production. Revegetation success may be enhanced by conducting careful planning and management; minimizing disturbance; segregating and protecting materials to be used during reclamation; using the appropriate seed mixture and seeding rates; and monitoring for erosion and revegetation success.

Reclamation of wetland conditions may be complicated in areas where less permeable layers have been breached or removed. This would alter surface hydrology, causing previous wetland

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areas to drain. In these situations, restored wetlands are likely to differ in type and functional capacity from the original wetlands for decades to centuries.

Surface water resources available to wetlands would continue to be altered in distribution and abundance with an estimated return to within XX percent of predevelopment streamflows at the downstream end of the mine development (see Section 4.16, Surface Water Hydrology). These changes in surface water distribution and abundance could cause some wetlands to dry up while others would be inundated or become wetter.

The pit lake would continue to fill for a period of several decades post-closure. Once the water level reaches elevation 890 feet, water would be pumped from the pit. This elevation is at least 50 feet below the elevation at which groundwater flow would be directed outward from the open pit. As a result, a new equilibrium groundwater level would become established around the pit. Wetlands and streams above the pit lake level would potentially lose groundwater to the cone of depression created by the pit lake. This may result in long-term wetland and streamflow effects. Groundwater modeling would be used to assess potential wetland and stream dewatering, and to identify those wetlands and functions that are likely to be affected (see Section 4.17, Groundwater Hydrology, for details).

[Note: The above sections will be updated with an updated project footprint.]

4.22.2.2 Mine Site Indirect Impacts

[Note: Information on this topic to be added at a later time].

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.3 Amakdedori Port Direct Impacts

[Note: This section to be updated with revised project description information.]

Construction of Amakdedori Port would directly affect less than one acre of intertidal waters and 109 acres of subtidal waters in the Amakdedori Creek-Frontal Kamishak Bay watershed and 271 acres of subtidal waters in the Cook Inlet watershed (Table 4.22-2). The port terminal and associated facilities would be sited and designed to avoid most wetlands. Previous disturbance to wetlands or waterbodies in this area is minimal.

The Amakdedori Port facilities would be removed during closure, except for those required to support shallow draft tug and barge access to the dock for the transfer of bulk supplies. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation.

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Table 4.22-2: Amakdedori Port Wetlands Direct Impacts

NWI Group	Impact Area (acres)	Impact Area (%)
Amakdedori Creek–Frontal Kamishak Bay Watershed		
Marine Subtidal	109	99
Marine Intertidal	1	1
Wetland/Water Totals	110	100
Uplands	194	–
Total Area	305	–
Cook Inlet Watershed		
Marine Subtidal	271	100
Total Area	271	–

[Note: Table to be updated with revised project description information.]

4.22.2.4 Amakdedori Port Indirect Impacts

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.5 Transportation Corridor and Natural Gas Pipeline Corridor Direct Impacts

[Note: This section to be updated with revised project description information. Temporary versus permanent impacts will be addressed at that time, and a table with direct temporary impacts for the Natural Gas Pipeline Corridor will be included.]

Locations West of Cook Inlet

Construction of the Transportation and Natural Gas Pipeline corridors from Amakdedori Port to the Mine Site would directly and permanently affect XX acres of wetlands (Table 4.22-3). The south access road between the port and the south ferry terminal at Iliamna Lake would affect XX acres. The mine access road from the north ferry terminal to the mine site would affect ## acres of wetlands and waterbodies. The remaining XX acres of impacts would be from the Iliamna and Kokhanok Airport spur roads, material sites, and ferry landings.

Impacts would be permanent because the road would remain to facilitate long-term post-closure water treatment and monitoring. Previous disturbance to wetlands in this area is minimal. The corridor has been sited to avoid and minimize wetland impacts and allow for efficient reclamation of disturbed areas.

A total of XX miles of streams would be directly affected by construction, including XX miles of perennial streams and XX miles of intermittent streams (Table 4.22-3). The larger streams with a width at ordinary high water (OHW) of 16 feet or greater would be bridged. Bridge locations are shown in Figure 4.22-2. Site-specific designs have been developed for bridges. Smaller stream

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crossings would use a series of standardized, conceptual culvert design categories based on stream width and fish presence. See Section 4.16, Surface Water Hydrology, for a discussion of surface water hydrology impacts.

Activities in the Transportation and Natural Gas Pipeline corridors would affect wetlands in five HUC10 watersheds. The highest number of acres impacted (XX acres) would occur in the Upper Talarik Creek watershed (Figure 4.22-2; Table 4.22-3). Direct impacts in this watershed would affect primarily deciduous shrub wetlands on slopes (XX percent) and flats (XX percent), and along streams (XX percent).

The Upper Talarik Creek watershed is estimated to contain approximately 34,000 acres of wetlands and waterbodies (39 percent of the watershed). Approximately 31,000 acres (35 percent of the watershed) are shrub wetlands, and 1,200 acres (one percent) are herbaceous wetlands. Forested wetlands (636 acres) and aquatic bed wetlands (eight acres) each cover less than 1 percent. Activities in the Transportation and Natural Gas Pipeline corridors and in a small portion of the Mine Site would affect XX acres of shrub wetlands and XX acres of herbaceous wetlands in the Upper Talarik Creek watershed, which is estimated to be less than one percent of shrub and herbaceous wetlands in the watershed. No forested or aquatic bed wetlands would be affected.

Based on vegetation and wetland mapping for the project, five acres of bog vegetation would be affected by activities in the Transportation and Natural Gas Pipeline corridors in the Upper Talarik Creek watershed. The extent of bog vegetation in the watershed is not known.

A total of XX acres of riverine wetlands would be affected by activities in the Transportation and Natural Gas Pipeline corridors in the Upper Talarik Creek watershed (Table 4.22-3). The extent of riverine wetlands in the watershed is not known. They account for approximately four percent of the Transportation and Natural Gas Pipeline corridor mapping areas. Riverine wetlands are estimated to account for approximately four percent of the watershed as a whole, or 3,500 acres. The corridor impacts, therefore, would represent less than two percent of all riverine wetlands in the watershed.

Wetland and waterbody impacts in the other four watersheds would be relatively low from a watershed perspective. The Iliamna Lake watershed, excluding the lake itself, has an estimated 180,000 acres of wetlands and waterbodies (33 percent of the watershed). The project would result in direct impacts on XX acres of slope wetlands and one acre of riverine wetlands (Table 4.22-3). The Newhalen River watershed has an estimated 35,000 acres of wetlands and waterbodies (29 percent of the watershed); one acre of slope wetlands would be directly affected. The Gibraltar Lake watershed has an estimated 34,000 acres of wetlands and waterbodies (41 percent of the watershed); nine acres of slope wetlands would be directly affected. The Amakdedori Creek–Frontal Kamishak Bay watershed has an estimated 77,000 acres of wetlands and waterbodies (44 percent of the watershed); 15 acres of slope wetlands and one acre of riverine channel would be directly affected (Table 4.22-3). The Transportation Corridor does enter the Paint River watershed for a very short distance, but no wetland or waterbody impacts are anticipated.

[Note: Table to be updated with revised project description information.]

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Table 4.22-3: Transportation Corridor and Natural Gas Pipeline Corridor (West of Cook Inlet) Wetlands Direct Impacts

NWI Group	HGM Class (Acres/percent)							Impact Area (Acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Upper Talarik Creek Watershed									
Deciduous Shrub Wetlands	**34 64%**	**6 11%**	–	–	**5 9%**	–	–	46	87
Herbaceous Wetlands	**4 8%**	1	–	–	2	–	–	6	11
Wetland/ Water Totals	38	7	–	–	7	–	–	**53**	100
Area (%)	72	13	<1	<1	13	0	0		
Uplands	324								
Totals	377								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Newhalen River Watershed									
Deciduous Shrub Wetlands	1	–	–	–	–	–	–	1	100
Wetland/Water Totals	1	<1	<1	<1	0	0	0	**1**	100
Area (%)	100	<1	<1	<1	0	0	0		
Uplands	50								
Totals	52								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Iliamna Lake Watershed									
Deciduous Shrub Wetlands	**9 50%**	–	–	–	–	–	–	10	56
Evergreen Shrub Wetlands	1	–	–	–	–	–	–	1	6
Herbaceous Wetlands	**5 28%**	1	–	–	–	–	–	6	33
Ponds	1	–	–	–	–	–	–	1	6
Wetland/Water Totals	17	1	<1	<1	0	0	0	**18**	100
Area (%)	94	6	<1	<1	0	0	0		
Uplands	326								
Totals	**344**								

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Table 4.22-3: Transportation Corridor and Natural Gas Pipeline Corridor (West of Cook Inlet) Wetlands Direct Impacts

NWI Group	HGM Class (Acres/percent)							Impact Area (Acres)	Impact Area (%)
	Slope	Riverine	Riverine Channel	Depression	Flats	Lacustrine Fringe	Lacustrine Waters		
Gibraltar Lake Watershed									
Deciduous Shrub Wetlands	**3 33%**	–	–	–	–	–	–	3	33
Evergreen Shrub Wetlands	**2 22%**	–	–	–	–	–	–	2	22
Herbaceous Wetlands	**3 33%**	–	–	–	–	–	–	3	33
Ponds	1	–	–	–	–	–	–	1	11
Wetland/Waters Totals	9	0	<1	0	0	0	<1	**9**	100
Area (%)	100	0	<1	0	0	0	<1		
Uplands	132								
Totals	**142**								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									
Amakdedori Creek–Frontal Kamishak Bay Watershed									
Deciduous Shrub Wetlands	**6 38%**	–	–	–	–	–	–	6	38
Herbaceous Wetlands	**5 31%**	–	–	–	–	–	–	5	31
Ponds	**3 19%**	–	–	–	–	–	–	3	19
Streams	–	–	1	–	–	–	–	1	6
Wetland/Waters Totals	15	0	1	<1	0	0	<1	**16**	100
Area (%)	94	0	6	<1	0	0	<1		
Uplands	166								
Totals	182								
Perennial Streams (Miles)									
Intermittent Streams (Miles)									

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Figure 4.22-2: Upper Talarik Creek Watershed Impacts

[Note: Figure under development]

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Locations East of Cook Inlet

[Note: The following section to be updated with revised project description information.]

Activities in the Natural Gas Pipeline Corridor on the Kenai Peninsula would affect wetlands and waterbodies in the Stariski Creek–Frontal Cook Inlet watershed (Figure 4.22-3). Direct impacts on this watershed would affect primarily shrub wetlands.

The pipeline would cross approximately 94 miles of Cook Inlet, between Anchor Point and Amakdedori Port. Horizontal directional drilling would be used to install pipe segments from the compressor station out into waters that are deep enough to avoid navigation hazards. From this point, the pipe would be installed in a trench out to a water depth of 200 feet, and then laid on the sea floor. Direct temporary impacts on approximately 340 acres of marine subtidal waters and less than one acre of intertidal waters would occur (Table 4.22-4). The compressor station at Anchor Point would be located in an area that would avoid wetland impacts.

Reclamation

The road system would be retained as long as required for the transport of bulk supplies needed for long-term post-closure water treatment and monitoring. Once no longer needed, the road system would be reclaimed. Disturbed areas would be recontoured, graded, ripped, and scarified. Topsoil and growth media would be placed as needed, and surfaces would be seeded for revegetation. The Iliamna Lake ferry facilities would be removed during closure. Once it is no longer required to provide energy to the Mine Site, the natural gas pipeline would be pigged and cleaned before being abandoned in place. Surface facilities associated with the pipeline would be removed and reclaimed.

During closure and post-closure, wetlands would be reestablished wherever practicable. The geographic extent of direct and indirect effects would affect five HUC10 watersheds, but the majority of impacts (54 percent) would occur in the Upper Talarik Creek watershed, in the Bristol Bay basin. Most impacts throughout all watersheds would be on shrub (59 percent) and herbaceous (18 percent) wetlands on slopes, which are common throughout the region. There would be some impacts on riverine wetlands (eight acres) that are important for fish habitat, although this represents a relatively small portion of riverine wetlands across all watersheds.

[Note: Table to be updated with revised project description information.]

Table 4.22-4: Natural Gas Pipeline Corridor (East of Cook Inlet) Wetlands Direct Impacts

NWI Group	Impact Area (acres)	Impact Area (%)
Amakdedori Creek–Frontal Kamishak Bay Watershed		
Marine Subtidal	3	100
Cook Inlet Watershed		
Marine Subtidal	334	100
Stariski Creek–Frontal Cook Inlet Watershed		
Forested Wetlands	<1	20
Shrub Wetlands	1	20
Herbaceous Wetlands	<1	–
Perennial Streams	<1	–
Marine Subtidal	3	60

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Marine Intertidal	<1	–
Wetland/Water Totals	5	100
Uplands	37	–
Total Area	380	–

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Figure 4.22-3: Stariski Creek–Frontal Cook Inlet Watershed Impacts

[Note: Figure under development].

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4.22.2.6 Transportation Corridor and Natural Gas Pipeline Corridor Indirect Impacts

Fugitive Dust

[Note: Information on this topic to be added at a later time].

Dewatering

[Note: Information on this topic to be added at a later time].

4.22.2.7 Cumulative Effects

[Note: This section will be updated at a later time.]

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EPA-0135-0005059

Appointment

From: Darwin, Henry [darwin.henry@epa.gov]
Sent: 9/14/2018 12:20:32 PM
To: Darwin, Henry [darwin.henry@epa.gov]; Leopold, Matt (OGC) [Leopold.Matt@epa.gov]; Fotouhi, David [Fotouhi.David@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Discussion: Pebble
Location: WJCn 3412

Start: 9/14/2018 1:30:00 PM
End: 9/14/2018 2:00:00 PM
Show Time As: Busy

Sct: Connie Eng, 202 564 3279.

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Appointment

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 5/11/2018 12:31:29 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Fontaine, Tim [Fontaine.Tim@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]

Subject: Alaska Issue for the SAC Hearing Prep C **Conference Line/Code / Ex. 6**
Attachments: SAC draft ASAP.DOCX; SAC draft Donlin.docx; SAC draft AK Mitigation Memo.docx; Bristol Bay-Pebble Mine 404c_5-11-18.docx
Location: 3219B WJCE

Start: 5/11/2018 5:00:00 PM
End: 5/11/2018 6:00:00 PM
Show Time As: Busy

Recurrence: (none)

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FY 2019 CONGRESSIONAL HEARING
BRISTOL BAY PEBBLE MINE CWA SECTION 404(c) REVIEW

QUESTION: Why didn't EPA withdraw its 2014 CWA Section 404(c) Proposed Determination?

ANSWER:

- On January 26, 2018, EPA issued a decision that suspends the proceeding to withdraw the Proposed Determination (PD) and leaves that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble Limited Partnership (Pebble) has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.
- In making the decision regarding whether to withdraw the 2014 PD at this time, the EPA considered its relevant statutory authority, applicable regulations, and the input it received as part of the tribal consultation, ANCSA Corporation consultation, and public comment periods regarding the Agency's reasons for its proposed withdrawal, as well as recent developments, including Pebble's submittal of a Section 404 permit application to the U.S. Army Corps of Engineers in December of 2017.
- The EPA received more than one million public comments regarding its proposal to withdraw the 2014 PD, the overwhelming majority of which expressed opposition to withdrawal.

BACKGROUND:

- Since 2001, Northern Dynasty Minerals and its subsidiary Pebble have been planning a large-scale open pit mine at the Pebble deposit in the Bristol Bay watershed. The Bristol Bay watershed in southwest Alaska supports the largest sockeye salmon fishery in the world. The fishery is valued at $1.5 billion annually, supports about 14,000 jobs and has served as a significant subsistence fishery for Alaska Natives for over 4000 years.
- EPA's July 2014 CWA 404(c) PD outlines potential restrictions to limit the extent of salmon-supporting streams and wetlands that could be destroyed or degraded from the discharge of dredged or fill material related to mining the Pebble deposit.
- Pebble Lawsuits: In 2014 Pebble filed three lawsuits against EPA relating to EPA's work in the Bristol Bay watershed. A preliminary injunction associated with one of these lawsuits halted EPA's 404(c) review in November 2014. On May 11, 2017, Pebble and EPA reached a settlement agreement resolving the remaining lawsuits.
- As part of the settlement agreement, EPA agreed to initiate a process to propose to withdraw its 2014 CWA 404(c) PD.
- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps proposing to develop a mine at the Pebble deposit and the Corps initiated its Section 404 permit review and NEPA review processes.
- On January 26, 2018, the EPA made a decision to suspend the withdrawal of its 2014 CWA 404(c) PD regarding a potential mine at the Pebble deposit.

Originator: Tim Fontaine, OW, 202-564-0318
Approver: Benita Best-Wong, OW, 202-566-1159

May 11, 2018

AMERICAN OVERSIGHT

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

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Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 11/7/2018 8:55:15 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]
Subject: Meeting with Alaskan Native Group

Lee, recommend adding Karen Gude, our tribal coordinator, and John Goodin or Brian Frazer.

Subject: Meeting with Alaskan Native Group
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 2369B WJCE

Start: Wed 11/14/2018 9:30 AM
End: Wed 11/14/2018 10:15 AM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Forsgren, Lee
Required Attendees: peterrobertson@pebblepartnership.com

Categories: Blue Category

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation

Ventura Samaniego Kijik Corporation

Lisa Reimers Iliamna Development Corporation

Sue Anelon Iliamna Natives Limited

Chasity Anelon Pebble Employee/ Iliamna Resident

Rhiannon Nanalook Pebble Employee/ Iliamna Resident

Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

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This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 11/6/2018 1:20:39 AM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: FW: message to Henry

Lee:

This is a draft I would send to Henry. Thought you might have some input, if so don't hesitate to add or modify.

Deliberative Process / Ex. 5

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

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Message

From: Spraul, Greg [Spraul.Greg@epa.gov]
Sent: 6/14/2018 5:51:41 PM
To: Drummond, Laura [Drummond.Laura@epa.gov]; Klasen, Matthew [Klasen.Matthew@epa.gov]
CC: Best-Wong, Benita [Best-Wong.Benita@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; Borum, Denis [Borum.Denis@epa.gov]; Kaiser, Sven-Erik [Kaiser.Sven-Erik@epa.gov]; Skane, Elizabeth [Skane.Elizabeth@epa.gov]; Fontaine, Tim [Fontaine.Tim@epa.gov]; Woods, Terry [Woods.Terry@epa.gov]
Subject: RE: By noon Friday: Help respond to QFRs from April 26 Administrator HEC hearing (?s on 404(c), WIFIA, lead/LCR, PFAS)
Attachments: HAC CAL-028-032 404 Permit.docx

Matt – The attached includes minor changes requested by the Corps as part of the HAC QFR process OCFO is running. This version will be sent to OMB for final clearance.

You should probably have the HEC responses be consistent.

From: Drummond, Laura
Sent: Monday, June 11, 2018 10:06 AM
To: Klasen, Matthew <Klasen.Matthew@epa.gov>
Cc: Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Borum, Denis <Borum.Denis@epa.gov>; Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>; Skane, Elizabeth <Skane.Elizabeth@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>; Fontaine, Tim <Fontaine.Tim@epa.gov>; Woods, Terry <Woods.Terry@epa.gov>
Subject: RE: By noon Friday: Help respond to QFRs from April 26 Administrator HEC hearing (?s on 404(c), WIFIA, lead/LCR, PFAS)

Matt,

Sorry we are a little late on this. Our responses are attached. I do not believe that our office coordinated our responses with the Corps, but I will reach out to them to doublecheck. Let me know if you have any questions.

Laura Drummond
Program Analyst – PMF 2014
U.S. Environmental Protection Agency
Office of Water – Resource Management Staff
Phone – (202) 564-6561

From: Klasen, Matthew
Sent: Tuesday, June 05, 2018 3:13 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>; Fontaine, Tim <Fontaine.Tim@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Borum, Denis <Borum.Denis@epa.gov>; Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>; Skane, Elizabeth <Skane.Elizabeth@epa.gov>
Subject: By noon Friday: Help respond to QFRs from April 26 Administrator HEC hearing (?s on 404(c), WIFIA, lead/LCR, PFAS)

Ann, Tim, and Greg,

First – I'm sending this to all three of you because I'm not sure if this best flows through the special assistant or budget channels, especially given the SAC hearing the same day. We'll defer to you on that.

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Attached are Questions for the Record that recently came in from House Energy & Commerce after the Administrator's April 26 budget hearing. I've attached both the full set (for your context) and the OW-specific questions (which is probably the only attachment you need to forward to the offices – but defer to you on that). You can disregard any of the office assignments in the longer document that conflict with the shorter doc.

The attached subset has questions on **404(c), WIFIA, lead & LCR, and PFAS**. You'll see that Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Please send us proposed, cleared responses by noon Friday; our OCIR team is hoping to get all the responses compiled by the end of the week. Let us know if there's any way we can help.

Thanks,
Matt

Matt Klasen
U.S Environmental Protection Agency
Office of Congressional Affairs
WJC North 3443P
202-566-0780
Personal Phone / Ex. 6

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/13/2018 7:33:31 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Pebble Talking Points

Thank you.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 3:13 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: RE: Pebble Talking Points

Good job with this.

From: Campbell, Ann
Sent: Wednesday, June 13, 2018 2:06 PM
To: Ferguson, Lincoln <ferguson.lincoln@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble Talking Points

As requested.

Ann Campbell
Chief of Staff (acting)
Office of Water

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/13/2018 6:17:52 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Top level talking points on Pebble

Thanks Palmer. I got them to the Administrator's Office.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Hough, Palmer
Sent: Wednesday, June 13, 2018 1:54 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>
Cc: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: FW: Top level talking points on Pebble

Ann – Lee asked me to forward these to you so you can get them to the Administrator

From: Hough, Palmer
Sent: Wednesday, June 13, 2018 1:35 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: RE: Top level talking points on Pebble

Lee

John has reviewed the attached talking points and asked me to forward them to you. Please let us know if you need anything else.

Thanks, Palmer

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 11:50 AM
To: Goodin, John <Goodin.John@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: Top level talking points on Pebble

John,
I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.

Lee

AMERICAN OVERSIGHT

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/13/2018 6:05:44 PM
To: Ferguson, Lincoln [ferguson.lincoln@epa.gov]
CC: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: Pebble Talking Points
Attachments: Pebble TPs_6-13-18.docx

As requested.

Ann Campbell
Chief of Staff (acting)
Office of Water

AMERICAN OVERSIGHT

Date: June 13, 2018

Pebble Talking Points

- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps of Engineers proposing to develop a mine at the Pebble deposit.
- In January 2018, the Corps issued a public notice that provided Pebble's permit application to the public and stated that an Environmental Impact Statement (EIS) will be required as part of its permit review process consistent with National Environmental Policy Act (NEPA).
- At the invitation of the Corps, the EPA has agreed to be a cooperating agency in the Corps' EIS process and we are currently working with the Corps on the scoping phase of the EIS process.
- The Corps currently estimates that a draft EIS will be ready for public notice and comment by mid to late spring of 2019.
- On January 26, 2018, EPA issued its decision to suspend the proceeding to withdraw its 2014 CWA Section 404(c) Proposed Determination regarding the Pebble deposit and leave that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.

<u>Additional Background from R10</u>

- On May 25th, Quantum Minerals pulled out of the project. They had pledged $150 M in return for 50% equity.
- Tom Collier visited R10 last week to discuss the project. They are working on other investors. They are also looking at projects within the Bristol Bay Region to improve Public Relations, such as power projects, gas pipeline to villages, or a contribution to a fund that would act as insurance for fisherman during poor salmon returns.
- Bryce Edgmon, Speaker of the House for Alaska State Legislature, recently wrote a letter criticizing the Corps process in the Pebble Limited Partnership permitting process.

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/13/2018 5:58:55 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Top level talking points on Pebble

Lee, this is background. I can include it in the paper as such but won't incorporate it in to the TPS section.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 1:40 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Fwd: Top level talking points on Pebble

Sent from my iPhone

Begin forwarded message:

> **From:** "Hladick, Christopher" <hladick.christopher@epa.gov>
> **Date:** June 13, 2018 at 1:37:25 PM EDT
> **To:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> **Subject: Re: Top level talking points on Pebble**
>
> On May 25th Quantum Minerals pulled out of the project. They had pledged $150 M in return fro 50% equity.
>
> Tom Collier visited R10 last week to discuss project: they are working on other investors. They are looking at projects within the B.B. Region to improve Public Relations, such as power projects, gas pipeline to villages, or a contribution to a fund that would act as insurance for fisherman during poor salmon returns.
>
> Bryce Edgmon, Speaker of the House for Alaska State Legislature, recently wrote a letter criticizing Corps process in PLP permitting process.
>
> Sent from my iPhone
>
> On Jun 13, 2018, at 8:49 AM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:
>
> > John,
> > I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.
> >
> > Lee

AMERICAN OVERSIGHT

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/13/2018 5:53:48 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
CC: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: FW: Top level talking points on Pebble
Attachments: Pebble TPs_6-13-18.docx

Ann – Lee asked me to forward these to you so you can get them to the Administrator

From: Hough, Palmer
Sent: Wednesday, June 13, 2018 1:35 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: RE: Top level talking points on Pebble

Lee

John has reviewed the attached talking points and asked me to forward them to you. Please let us know if you need anything else.

Thanks, Palmer

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 11:50 AM
To: Goodin, John <Goodin.John@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: Top level talking points on Pebble

John,
I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.

Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Date: June 13, 2018

Pebble Talking Points

- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps of Engineers proposing to develop a mine at the Pebble deposit.
- In January 2018, the Corps issued a public notice that provided Pebble's permit application to the public and stated that an EIS will be required as part of its permit review process consistent with NEPA.
- At the invitation of the Corps, EPA has agreed to be a cooperating agency in the Corps' EIS process and we are currently working with the Corps on the scoping phase of the EIS process.
- The Corps currently estimates that a draft EIS will be ready for public notice and comment by mid to late spring of 2019.
- On January 26, 2018, EPA issued its decision to suspend the proceeding to withdraw its 2014 CWA Section 404(c) Proposed Determination regarding the Pebble deposit and leave that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.

AMERICAN OVERSIGHT

Message

From: Goodin, John [Goodin.John@epa.gov]
Sent: 6/12/2018 5:40:23 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Region 10 draft EIS response
Attachments: Pebble Project Scoping 060518 draft HQ Review 12June2018.docx

Here you go. The document was only sent as a SharePoint link (below) which you are welcome to use. The attached Word version has some edits from others in the document at the moment (the pdf was from the first clean version of the review document).
Thanks
John

Open Pebble Project Scoping 060518 draft HQ Review.docx

From: Forsgren, Lee
Sent: Tuesday, June 12, 2018 1:20 PM
To: Goodin, John <Goodin.John@epa.gov>
Subject: RE: Region 10 draft EIS response

John,

Deliberative Process / Ex. 5

Lee

From: Goodin, John
Sent: Tuesday, June 12, 2018 12:43 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Region 10 draft EIS response

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

AMERICAN OVERSIGHT

Message

From: Goodin, John [Goodin.John@epa.gov]
Sent: 6/12/2018 4:43:20 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Region 10 draft EIS response
Attachments: Pebble Project Scoping 060518 draft HQ Review.pdf

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

AMERICAN OVERSIGHT

Message

From: Gude, Karen [Gude.Karen@epa.gov]
Sent: 11/13/2018 7:05:46 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: 11/14 Meeting with Alaskan Native Group

Great. Thank you, Lee.

Karen

From: Forsgren, Lee
Sent: Tuesday, November 13, 2018 1:56 PM
To: Gude, Karen <Gude.Karen@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>
Subject: RE: 11/14 Meeting with Alaskan Native Group

Karen,

Non-Responsive – This is just a dog and pony show on the Pebble Mine. I am just going to sit quietly and listen.

Lee

From: Gude, Karen
Sent: Tuesday, November 13, 2018 1:47 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>
Subject: 11/14 Meeting with Alaskan Native Group

Lee,

I see that I was included on the invitation for tomorrow's meeting with the Alaskan Native Group. Unfortunately, the meeting conflicts **Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine** If there is anything that you might need from me in support of the meeting with the Alaskan Native Group and/or wish that I attend the meeting, please let me know.

Thank you,

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

Subject: Meeting with Alaskan Native Group

AMERICAN OVERSIGHT

Location:	1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 3233 WJCE
Start:	Wed 11/14/2018 9:30 AM
End:	Wed 11/14/2018 10:15 AM
Show Time As:	Tentative
Recurrence:	(none)
Meeting Status:	Tentatively accepted
Organizer:	Forsgren, Lee
Required Attendees:	peterrobertson@pebblepartnership.com; Gude, Karen; Frazer, Brian; Goodin, John
Optional Attendees:	Penman, Crystal

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation

Ventura Samaniego Kijik Corporation

Lisa Reimers Iliamna Development Corporation

Sue Anelon Iliamna Natives Limited

Chasity Anelon Pebble Employee/ Iliamna Resident

Rhiannon Nanalook Pebble Employee/ Iliamna Resident

Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

AMERICAN OVERSIGHT

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 11/9/2018 10:38:59 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Pebble

Am at my desk. My cell is at home

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

From: Forsgren, Lee
Sent: Friday, November 9, 2018 1:58 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: RE: Pebble

Only Ross and I are the only ones left here.

From: Hladick, Christopher
Sent: Friday, November 9, 2018 4:56 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Pebble

I am around. I might be the only one in the building here in R 10. HQ can't be much better. What is our problem?

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

From: Forsgren, Lee
Sent: Friday, November 9, 2018 12:54 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: RE: Pebble

Will call when I get out of my last meeting.

From: Hladick, Christopher
Sent: Friday, November 9, 2018 3:00 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Lee:

AMERICAN OVERSIGHT

I know you are probably slammed but any comments or additions to my e-mail on Pebble?

Happy Friday

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

AMERICAN OVERSIGHT

Message

From: Spraul, Greg [Spraul.Greg@epa.gov]
Sent: 10/10/2018 8:16:39 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: Re: Appropriators are asking about Pebble...

Sharon will drop by

On Oct 10, 2018, at 4:04 PM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:

> Am in 3233. Come see me.
>
> Sent from my iPhone
>
> On Oct 10, 2018, at 3:43 PM, Spraul, Greg <Spraul.Greg@epa.gov> wrote:
>
> > They want to know who the EPA decision official is since Wheeler is recused – I was
> > **Deliberative Process / Ex. 5**
> >
> > They are expecting an announcement in Dec. on 404(c) **Deliberative Process / Ex. 5**
> > **Deliberative Process / Ex. 5**
> >
> > Does this work?
> >
> > Anything else I should say?

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 5/17/2018 5:13:27 PM
To: Fontaine, Tim [Fontaine.Tim@epa.gov]; Best-Wong, Benita [Best-Wong.Benita@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Woods, Terry [Woods.Terry@epa.gov]; Spraul, Greg [Spraul.Greg@epa.gov]
Subject: RE: HAC QFRs - for Your Approval
Attachments: CAL-028-032- dlf comments.docx; CAL - 001-003_AC edits.docx; CAL -004_AC edits.docx; JOY -001_AC edits.docx; KAP -011-014_AC edits.docx; KAP -008-010_AC edits.docx

Attached please find edits to the QFRs. Lee and Benita have both approved.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Fontaine, Tim
Sent: Thursday, May 17, 2018 10:43 AM
To: Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Woods, Terry <Woods.Terry@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>
Subject: FW: HAC QFRs - for Your Approval

Benita, Ann and Lee,

We are getting some pressure from OCFO to submit our HAC QFRs. Please let us know if there is anything more we can do to support your review. Thanks

Tim Fontaine
EPA Office of Water
(202) 564-0318

From: Woods, Terry
Sent: Tuesday, May 15, 2018 12:24 PM
To: Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Cc: Fontaine, Tim <Fontaine.Tim@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>
Subject: HAC QFRs - for Your Approval

Hi Benita and Lee…..

Attached you will find the Office of Waters responses to the Questions for the Record [QFRs] from the House Appropriations Committee [HAC] hearing on April 26, 2018 for your approval.

I have placed a hard copy in your incoming box. Please let me know if you have any questions. Thank you!

¸.•´¯`•.¸><((((º> .•´¯`•.><((((º>.•´¯`•.><((((º>.•´¯`•.

Terry Woods
Office of Water
Resource Management Staff

AMERICAN OVERSIGHT

202-564-0326

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 6/5/2018 4:39:12 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Meeting Forward Notification: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM

Recurrence: (none)

Your meeting was forwarded

Fotouhi, David has forwarded your meeting request to additional recipients.

Meeting

Pebble Mine Meeting

Meeting Time

Tuesday, June 5, 2018 1:00 PM-1:45 PM.

Recipients

Schwab, Justin

All times listed are in the following time zone: (UTC-05:00) Eastern Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Appointment

From: Goodin, John [Goodin.John@epa.gov]
Sent: 6/5/2018 1:11:40 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Declined: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Giddings, Daniel [giddings.daniel@epa.gov]
Sent: 4/20/2018 3:14:23 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Spraul, Greg [Spraul.Greg@epa.gov]; Fontaine, Tim [Fontaine.Tim@epa.gov]; Woods, Terry [Woods.Terry@epa.gov]
Subject: RE: Administrator's Hearing Prep - Program Office Summary Sheets for Review
Attachments: 04-20-2018 - House Budget Hearing Program Cheat Sheets V5 OCIR_OWedit.docx

Lee,

Please find the Administrator's talking points for next week's hearings attached. The majority of the bullets were pulled

Deliberative Process / Ex. 5

I'd like to draw your attention to three edits that resulted from this process.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please do not hesitate to follow up with me, Tim, or Greg with any questions.

Best,

Danny Giddings
Resource Management Staff
Office of Water
U.S. Environmental Protection Agency
(202)-564-0320

Begin forwarded message:

> **From:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> **Date:** April 19, 2018 at 4:56:37 PM EDT
> **To:** "Campbell, Ann" <Campbell.Ann@epa.gov>, "Fontaine, Tim" <Fontaine.Tim@epa.gov>, "Spraul, Greg" <Spraul.Greg@epa.gov>, "Best-Wong, Benita" <Best-Wong.Benita@epa.gov>
> **Subject: Fwd: Administrator's Hearing Prep - Program Office Summary Sheets for Review**
>
> FYI
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Ringel, Aaron" <ringel.aaron@epa.gov>
> > **Date:** April 19, 2018 at 4:52:19 PM EDT
> > **To:** "Gunasekara, Mandy" <Gunasekara.Mandy@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>, "Traylor, Patrick" <traylor.patrick@epa.gov>, "Beck, Nancy"

AMERICAN OVERSIGHT

<Beck.Nancy@epa.gov>, "Kelly, Albert" <kelly.albert@epa.gov>, "Cook, Steven" <cook.steven@epa.gov>, "Yamada, Richard (Yujiro)" <yamada.richard@epa.gov>, "Bolen, Brittany" <bolen.brittany@epa.gov>, "Burke, Marcella" <burke.marcella@epa.gov>
Cc: "Greaves, Holly" <greaves.holly@epa.gov>, "Lyons, Troy" <lyons.troy@epa.gov>, "Shimmin, Kaitlyn" <shimmin.kaitlyn@epa.gov>, "Rodrick, Christian" <rodrick.christian@epa.gov>, "Palich, Christian" <palich.christian@epa.gov>, "Frye, Tony (Robert)" <frye.robert@epa.gov>, "Falvo, Nicholas" <falvo.nicholas@epa.gov>, "Hanson, Paige (Catherine)" <hanson.catherine@epa.gov>, "Feeley, Drew (Robert)" <Feeley.Drew@epa.gov>
Subject: Administrator's Hearing Prep - Program Office Summary Sheets for Review

Colleagues,

Attached is a program office summary document with topics we wanted to

Deliberative Process / Ex. 5

Please take a moment to review/make edits in your relevant areas. We are

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 Please feel free to reach out if you have any questions.

Best,
Aaron

_____

Aaron E. Ringel
Deputy Associate Administrator
Office of Congressional & Intergovernmental Relations
U.S. Environmental Protection Agency

W: 202.564.4373
Ringel.Aaron@epa.gov

<04-19-2018 - House Budget Hearing Program Cheat Sheets V5 OCIR.docx>

AMERICAN OVERSIGHT

PROGRAM OFFICE TOPICS SUMMARY

AIR AND RADIATION

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

CHEMICALS

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

WATER

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Bristol Bay-Pebble Mine CWA Sec. 404(c) Review

- EPA published its proposal to withdraw its CWA Section 404 (c) Proposed Determination (PD) in July 2017 and took public comment, held two public hearings in the Bristol Bay region, and consulted with tribal governments and Alaska Native Claims Settlement Act (ANCSA) Corporations from the Bristol Bay region.
- After reviewing all of the input and taking into consideration the recent developments regarding the submittal of Pebble Limited Partnership's (PLP) permit application, EPA has decided to suspend the withdrawal of the Proposed Determination at this time. This decision

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neither deters nor derails the application process of PLP's proposed project and proponents continue to enjoy the protection of due process and the right to proceed.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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OLEM/SUPERFUND

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

ORD

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Darwin, Henry [darwin.henry@epa.gov]
Sent: 9/13/2018 8:29:07 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Leopold, Matt (OGC) [Leopold.Matt@epa.gov]
Subject: FW: follow up

FYI – We can discuss when we meet.

Henry

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, September 12, 2018 3:15 PM
To: Darwin, Henry <darwin.henry@epa.gov>
Subject: follow up

Henry,

I wanted to thank you again for meeting with my CEO Tom Collier and me last month.

I've also just spoken with Steve Owens about your conversation, and am wondering whether you and I can follow up with a short phone call.

I'm happy to do it at nearly any time, including well after regular work hours if that best accommodates your busy daytime schedule. Let me know what might work best for you.

Thanks so much.

Sincerely,

Peter Robertson

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Darwin, Henry [darwin.henry@epa.gov]
Sent: 7/31/2018 12:48:31 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: FW: Pebble Mine
Attachments: Pebble Mine

Lee, this is the meeting I mentioned to you last week. If you can make it, that would be great. If not, please let me know whom else I should ask. As we discussed as well, please let the appropriate entities opposed to the mine know that I am meeting with Pebble, and if they'd like a meeting I am open to one.

Thanks

Henry

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Appointment

From: Darwin, Henry [darwin.henry@epa.gov]
Sent: 7/20/2018 8:18:16 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Pebble Mine

Start: 8/2/2018 2:00:00 PM
End: 8/2/2018 3:00:00 PM
Show Time As: Busy

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Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 7/26/2018 9:01:21 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: FOR YOUR REVIeW: Bristol Bay Presentation
Attachments: BB Presentation_AOO_20180727 (002).pptx; ATT00001.htm

Ann Campbell
Chief of Staff (acting)
Office of Water

Begin forwarded message:

> **From:** "Frazer, Brian" <Frazer.Brian@epa.gov>
> **Date:** July 26, 2018 at 4:18:47 PM EDT
> **To:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **Cc:** "Goodin, John" <Goodin.John@epa.gov>, "Huber, Patrick" <Huber.Patrick@epa.gov>
> **Subject: Bristol Bay Presentation**
>
> Ann – Here's the revised ppt presentation with the new title page.
>
> bf
>
> **********
> *Brian Frazer, Acting Director*
> *Oceans, Wetlands and Communities Division*
> *Office of Wetland, Oceans and Watersheds*
> *Office of Water*
> *USEPA*
> *1200 Pennsylvania Ave., NW*
> *Washington, DC 20460*
> *202-566-1652*

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EPA's Work in the Bristol Bay Watershed

Presentation for EPA's Acting Assistant Administrator
Henry Darwin
July 27, 2018

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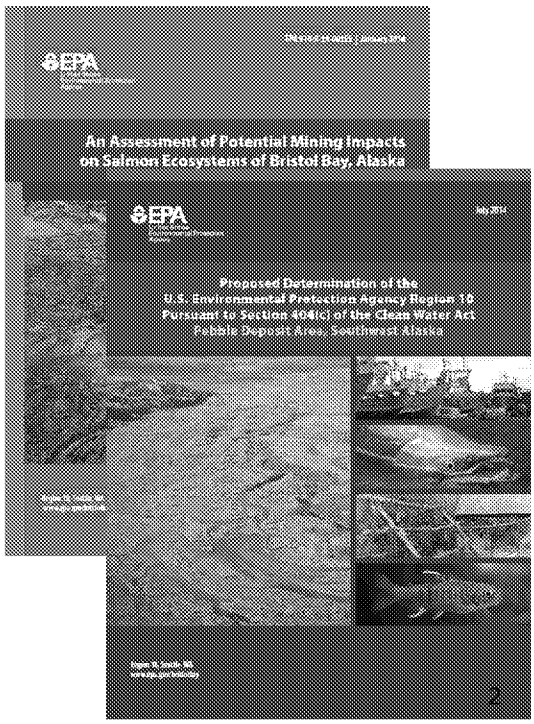
Overview

DRAFT

- EPA's Involvement History
- Science
- Section 404(c) Regulatory Response
- Section 404 Permitting and NEPA



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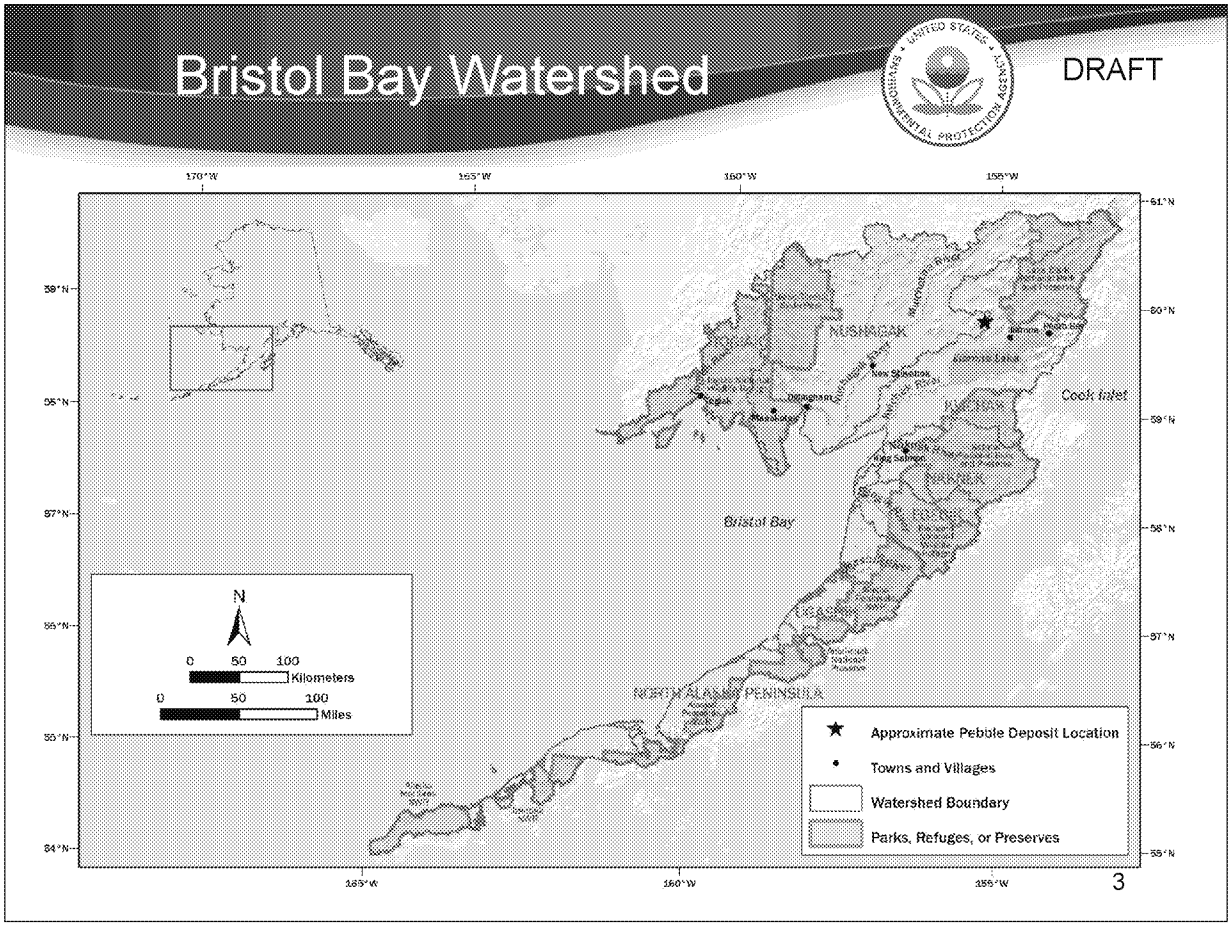

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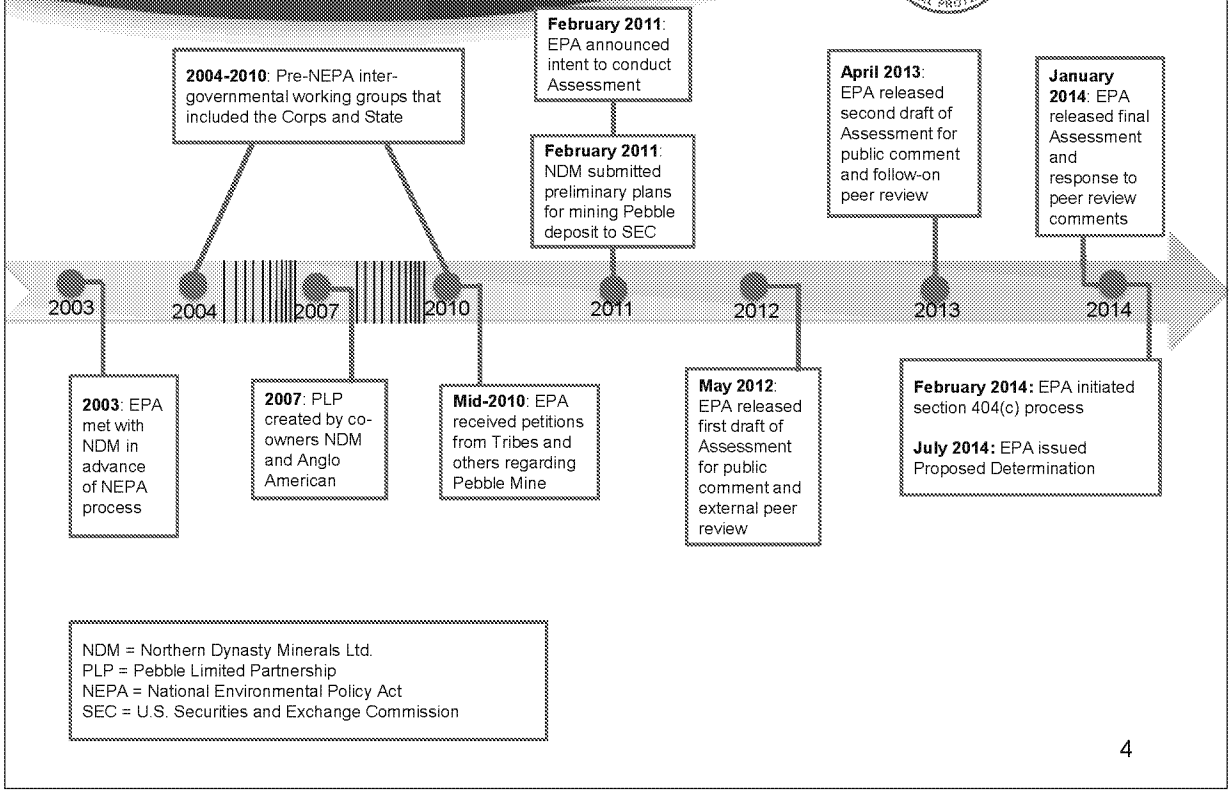
Timeline 2003 - 2014

DRAFT



NDM = Northern Dynasty Minerals Ltd.
PLP = Pebble Limited Partnership
NEPA = National Environmental Policy Act
SEC = U.S. Securities and Exchange Commission

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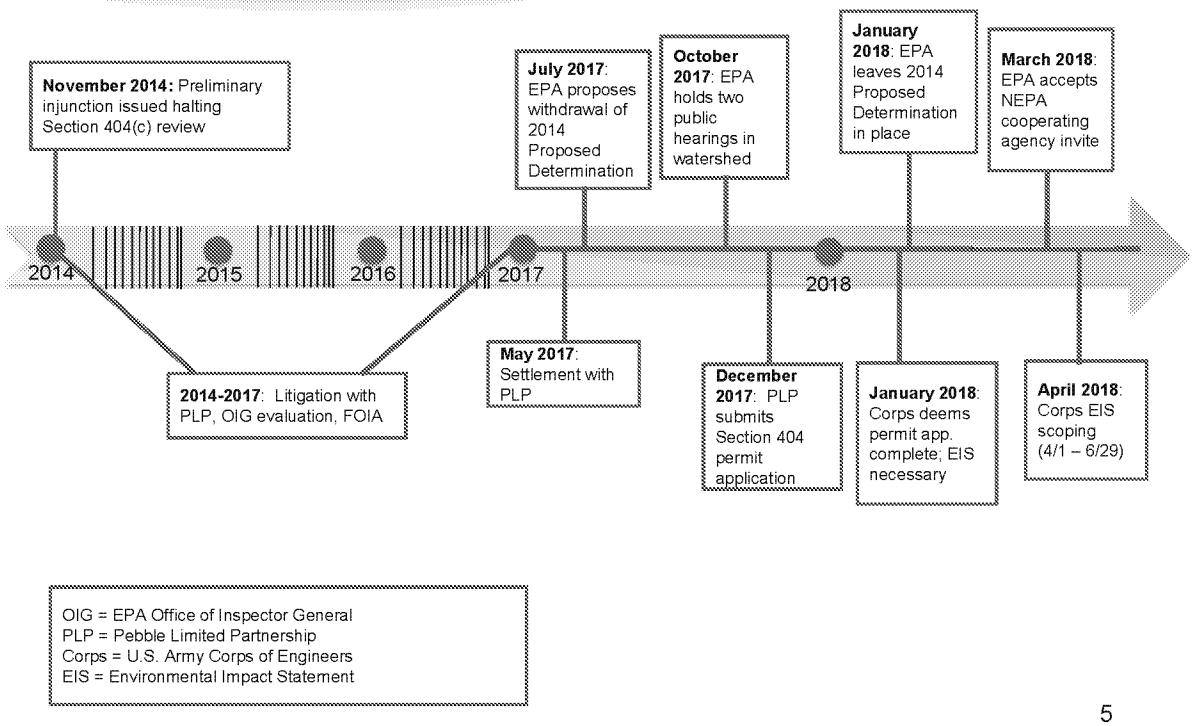
Timeline 2014 - Present

DRAFT



OIG = EPA Office of Inspector General
PLP = Pebble Limited Partnership
Corps = U.S. Army Corps of Engineers
EIS = Environmental Impact Statement

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Bristol Bay Watershed Assessment

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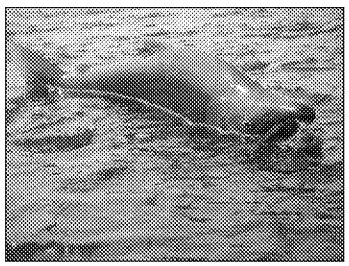
- Purpose:
  - Characterize the biological and mineral resources of the Bristol Bay watershed
  - Increase understanding of the potential impacts of large-scale mining on the region's fish resources
  - Inform future decision-making

- Scientific Ecological Risk Assessment evaluating potential impacts associated with:
  - Large-scale mine construction and operation
  - Accidents and failures



- Three-year scientific assessment effort
  - Independent external peer review
  - Stakeholder and public engagement
    - 8 public meetings
    - 2 rounds of public comment – over 1.1 million comments
  - Tribal consultations

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Bristol Bay Watershed Resources

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Biological Resources:

- Bristol Bay produces almost half of world's sockeye salmon
- Kvichak watershed world's largest producer of sockeye salmon
- Nushagak watershed frequently at or near world's largest producer of Chinook salmon

Biological Resources Support:

- 14,000 jobs, generates $480 million annually in direct economic expenditures and sales
  - Salmon fishery valued at $1.5 billion annually
- 4,000-year-old subsistence fishery for Alaska Natives

Geological Resources:

- At least 10 claims with more than minimal exploration, including Pebble.
- Pebble deposit: low-grade, with copper, gold, and molybdenum
- According to NDM, Pebble could:
  - Be largest mine of its type in North America
  - Produce 3,000 jobs in AK
  - Contribute $2.7 billion to US GDP annually
- Economics of mining the Pebble deposit are speculative
- Since 2001, five major mining companies have walked away from Pebble project

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Bristol Bay Watershed Assessment

- Mining scenarios informed by NDM plans submitted to U.S. Securities and Exchange Commission (SEC) in 2011
- Uses 3 potential stages of mine development at Pebble deposit
  - 0.25-billion-ton mine (worldwide median size porphyry copper deposit)
  - 2.0-billion-ton mine (smallest mine size proposed by NDM to SEC)
  - 6.5-billion-ton mine (largest mine size proposed by NDM to SEC)
- NDM says deposit is nearly 12 billion tons

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Bristol Bay Watershed Assessment

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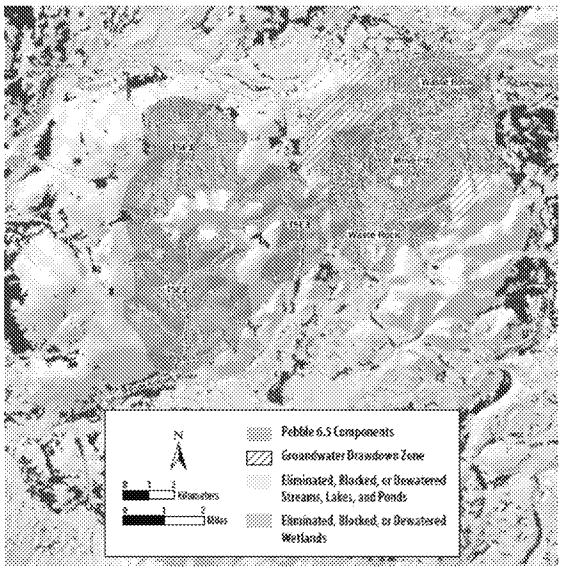
Mine Footprint Impacts:

- 24-94 miles of salmon-supporting streams destroyed
- 1,300-5,350 acres of wetlands, ponds, lakes destroyed
- 9-33 miles of salmon-supporting streams with altered streamflow likely to affect ecosystem structure and function

Other Impacts:

- Tailings dams need maintenance in perpetuity
- Routine operations and accidents would increase impacts on salmon habitat quality, both at the mining site and along the 86-mile transportation corridor.



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Clean Water Act Section 404

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- § 404(a) authorizes the Secretary of the Army to issue **permits**
  - For the discharge of dredged or fill material into waters of the U.S. at specified disposal sites
- § 404(b) directs the Secretary of the Army to apply **environmental criteria** developed by EPA when specifying disposal sites
  - § 404(b)(1) Guidelines [40 CFR Part 230]
- § 404(c) authorizes EPA to prohibit, deny or restrict (withdraw) the placement of dredged or fill material at defined sites in waters of the U.S.

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Limits of Section 404(c)

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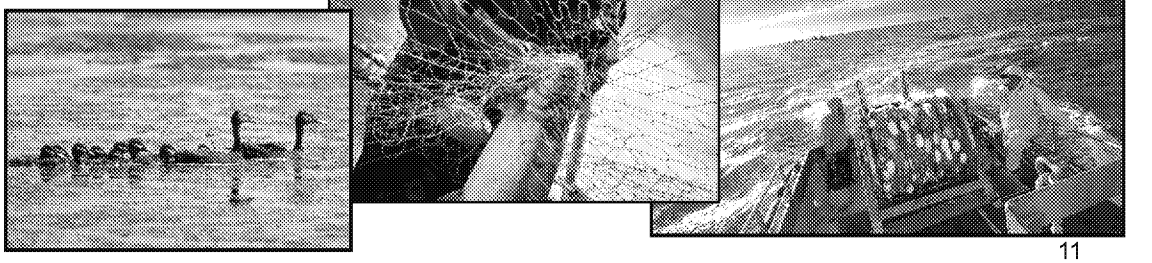
- **Whenever** it determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an **unacceptable adverse effect(s)** on:
  - Municipal water supplies; or
  - Shellfish beds and **fishery areas**; or
  - Wildlife; or
  - Recreation areas.



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Pebble Deposit 404(c) Process

DRAFT

Step 1

- 2/28/14: **Initiation by EPA Region 10 – "15-day letter"**
- Consulted with Corps, NDM/PLP, and State

Step 2

- 7/18/14: **Proposed Determination** released (PD) by EPA Region 10
- 8/12-15/14: 7 public hearings in Alaska
- > 670,000 written comments; > 99% (86% unique) supported Proposed Determination

Step 3

- EPA Region 10 will review the public comments
- EPA Region 10 will withdraw PD *or* prepare **Recommended Determination** (RD)

Step 4

- **Final Determination (FD) by EPA Assistant Administrator for Water**
- Consult again with Corps, NDM/PLP, and State
- Within 60 days of receipt of RD, issue FD affirming, modifying, or rescinding RD

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What Are the Proposed Restrictions?

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Restrict the discharge of dredged or fill material related to mining the Pebble deposit into waters of the U.S. that would, individually or collectively, result in the following:

1. **Loss of Streams.**
   a. The loss of 5 or more linear miles of streams with documented anadromous fish occurrence; **or**
   b. The loss of 19 or more linear miles of streams where anadromous fish are not currently documented, but that are tributaries of streams with documented anadromous fish occurrence; **or**

2. **Loss of Wetlands, Lakes, and Ponds.** The loss of 1,100 or more acres of wetlands, lakes, and ponds contiguous with either streams with documented anadromous fish occurrence or tributaries of those streams; **or**

3. **Streamflow Alterations.** Streamflow alterations greater than 20% of daily flow in 9 or more linear miles of streams with documented anadromous fish occurrence

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Response to Section 404(c) Proceeding

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- Office of Inspector General (OIG) Review
  - 17-month in-depth evaluation found no evidence of bias or a pre-determined outcome
  - Possible misuse of position for retired Region 10 employee noted
- PLP broad Freedom of Information Act (FOIA) requests
  - Approximately 18,000 documents produced
- PLP filed three lawsuits in 2014
  - Administrative Procedure Act (APA) challenge to initiation of 404(c) process
  - FOIA litigation
  - Federal Advisory Committee Act (FACA) litigation
- May 2017 settlement agreement
  - Resolved FOIA and FACA litigation and PLP's outstanding FOIA requests

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Settlement Agreement

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- Key terms of the May 11, 2017 settlement agreement between PLP and EPA:
  - EPA may use its Bristol Bay Watershed Assessment without limitation
  - EPA agrees to initiate a process to propose to withdraw its 2014 Proposed Determination by July 11, 2017
  - EPA agrees not to forward a Recommended Determination (the next step in the 404(c) review process) to EPA HQ until a Final EIS is noticed for the project or May 11, 2021, whichever is earlier
  - PLP drops remaining lawsuits and fee requests against EPA and agrees to file no new FOIA requests during the 2.5- to 4-year hiatus period

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Proposal to Withdraw 2014 Proposed Determination

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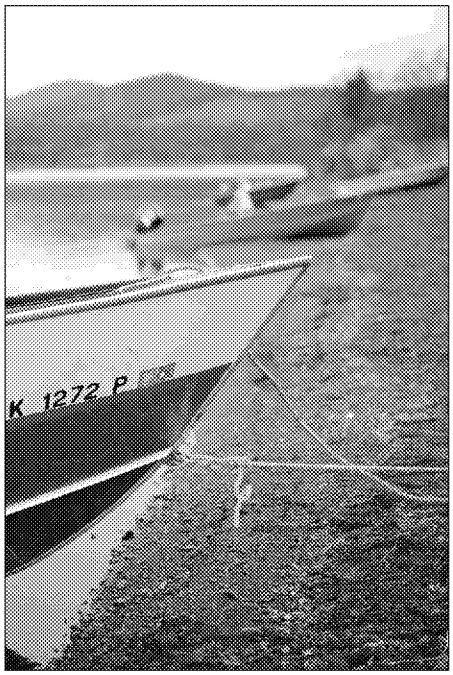
- July 2017: Withdrawal proposed based on policy rationale
  - EPA did not solicit comment on the proposed restrictions or on science or technical information underlying the Proposed Determination
- Outreach and Consultation
  - Proposal generated >1 million comments (~99% opposed)
  - 2 public hearings in watershed
  - Tribal and ANCSA Consultation
    - 16 tribal governments and 1 ANCSA Regional Corp. opposed
    - 1 tribal government and 2 ANCSA Village Corps. supported



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Section 404(c) Next Steps

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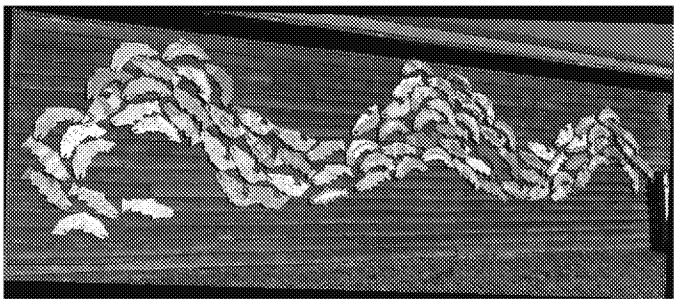
- In January 2018 EPA decided not to withdraw and suspended Section 404(c) process pending further review

- Settlement agreement obligations
  - EPA can issue a new/modified Proposed Determination at any time
  - EPA Region 10 cannot forward a Recommended Determination to EPA HQ until May of 2021 or until a final EIS is noticed, whichever comes first



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2017 Permit Application

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- PLP filed Department of Army (DA) permit application to the Corps in December 2017
  - Includes CWA 404 and RHA Section 10
  - Includes Project Description: mine, power supply, transportation
- Corps deemed application sufficient to begin NEPA



Pebble deposit area

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Project Description

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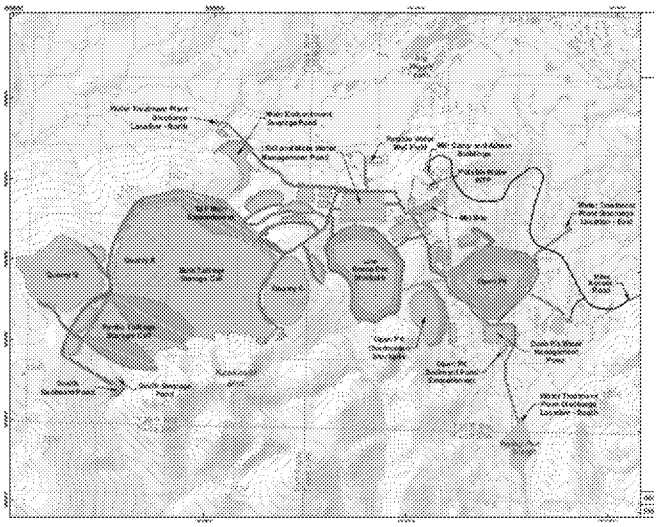
Mine Site

- 1.3 billion tons of ore mined over 20 years
- 160,000 tons/day of ore processed to produce:
  - Copper concentrate
  - Molybdenum concentrate
  - Gold via gravity separation
- Open pit mine, ore storage pile, 2 tailings impoundments
- 2 water treatment plants and 3 discharge outfalls
- Closure
  - PAG waste rock & pyritic tailings backfilled into open pit
  - Dry closure of bulk tailings
  - Long-term water treatment



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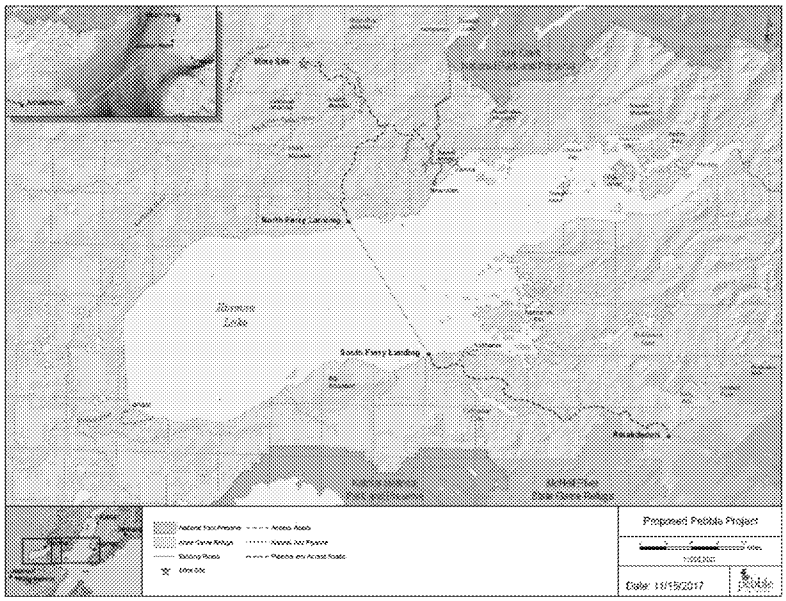
Project Description

Power

- 230 - 270 MW power plant at mine site
- 188 mile natural gas pipeline

Transportation

- 65 miles of roads
- Ferry across Lake Illiamna
- Cook Inlet port site



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Project Description

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- Proposed mine is:
  - Smaller than 2011 Preliminary Assessment to SEC
  - Larger than the EPA Assessment's 0.25 billion ton mine scenario, which is the basis for the 2014 Proposed Determination

2014 Proposed Determination
Loss of 5 or more miles of streams with anadromous fish; or
Loss of 19 or more miles of streams that are tributaries of anadromous fish streams; or
Loss of 1100 or more acres of wetlands, lakes and ponds contiguous with streams or tributaries to streams that have anadromous fish; or
Stream flow alteration > 20% of daily flow in 9 or more miles of streams with anadromous fish

2017 DA Application	
component	**wetlands filled**
Mine site	3190
Transportation (roads, ferry terminals, port)	480
Pipeline	408
TOTAL	4078

- Differences from 2011 Preliminary Assessment and EPA's Assessment:
  - Less waste rock mined
  - No cyanide leaching
  - Liners (pyritic tailings)
  - Advanced water treatment and "Physical Habitat Simulation System" to mitigate dewatering
  - Compensatory mitigation - TBD
- Project description could evolve during EIS and 404 review

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Initial Corps NEPA & 404 Process

DRAFT

- Corps issued informational Public Notice of application (January 5, 2018)
  - Did not request public comment at this time
- Corps Cooperating Agency Plan specifies agency involvement.
  - EPA's cooperating agency involvement is limited to Section 404(b)(1) issues
- EIS scoping occurred April 1 through June 29
  - EPA submitted scoping letter
- Corps is developing preliminary EIS sections
  - EPA reviewing and providing comments where requested

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Corps NEPA Schedule

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- Corps EIS schedule:
  - Draft EIS – January 2019
  - Final EIS – late 2019
  - Record of Decision – early 2020
- PLP has requested inclusion of the project in FAST 41 infrastructure & critical minerals streamlining

Corps' Pebble website
https://pebbleprojecteis.com/

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NEPA Cooperating Agencies

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- Federal
  - DOT Pipeline and Hazardous Materials Safety Administration
  - US Coast Guard
  - DOI Bureau of Safety and Environmental Enforcement
  - US Fish and Wildlife Service
  - National Park Service
  - Advisory Council on Historic Preservation
  - EPA
- State
  - Alaska Department of Natural Resources Office of Project Management and Permitting coordinates state agencies (ADNR, ADEC, ADFG, SHPO)
- Local Governments
  - Lake & Peninsula Borough & Kenai Peninsula Borough
- Tribes
  - Curyung Tribal Council
  - Nondalton Tribal Council

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EPA Response to Permit Application

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- EPA Role
  - NEPA
    - Cooperating agency
    - CAA 309 review of the Draft EIS
  - Clean Water Act
    - CWA 404 permit application & 404(b)(1) review
    - Oversight of State CWA 402 Alaska Pollutant Discharge Elimination System Permit
  - Clean Air Act
    - Oversight of State Air Quality Permit
- EPA has developed a cross-programmatic, multi-disciplinary team

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EPA Pebble Teams

DRAFT

R10 Management Team
- David Allnutt, OERA Director
- Krista Mendelman, Acting ARU Manager
- Jill Nogi, NEPA Unit Manager
- Cara Steiner-Riley, ORC Unit Manager
- Sue Detwiler, AOO Director
- Marianne Holsman, Public Affairs Director

CWA 404(c) Team
- Erik Peterson, Team lead
- Annie Whitley, ARU
- Palmer Hough, OW
- Brittany Bennett, OW
- Ashley Palomaki, ORC
- Heidi Nalven, OGC

NEPA/Permit Oversight Team
- Patty McGrath, Team lead
- Molly Vaughn, NEPA review
- Mark Douglas, ARU
- Palmer Hough, OW
- Justine Barton, ARU
- Mary Anne Thiesing, ARU
- Cindi Godsey, NPDES
- Jay McAlpine, Air
- Karl Pepple, Air
- Chis Eckley (geochemist), OERA
- Tim Maley (hydrogeologist), OERA
- Kate Schofield, ORD
- Joe Ebersole (fisheries), ORD
- Muluken Muche (hydrological modelling), ORD

Tribal, Press & Community Support to CWA 404(c) and NEPA/Permit Teams
- Neverley Wake, Tribal Coordinator
- Suzanne Skadowski, Press
- Andi Lindsay, Community Involvement Coordinator

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Questions

DRAFT



Upper Talarik Creek, one of three streams flowing from the Pebble deposit site

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Message

From: Burton, Tamika [burton.tamika@epa.gov]
Sent: 7/26/2018 7:49:46 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
CC: DeBell, Kevin [debell.kevin@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: RE: 072718: Bristol Bay/Pebble Mine Briefing Paper

Thank you!

Best Regards,
Tamika Burton
Staff Assistant to the Acting Deputy Administrator And Chief of Operations
Immediate Office of the Administrator
MC 1104A Room 3412 WJC North
(202) 564-4771 (d)
(202) 507-3630 (c)
burton.tamika@epa.gov

From: Campbell, Ann
Sent: Thursday, July 26, 2018 3:45 PM
To: Burton, Tamika <burton.tamika@epa.gov>
Cc: DeBell, Kevin <debell.kevin@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Penman, Crystal <Penman.Crystal@epa.gov>
Subject: 072718: Bristol Bay/Pebble Mine Briefing Paper

Please find attached the briefing paper for tomorrow's meeting with the Acting DA

Ann Campbell
Chief of Staff (acting)
Office of Water

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Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 7/26/2018 7:44:37 PM
To: Burton, Tamika [burton.tamika@epa.gov]
CC: DeBell, Kevin [debell.kevin@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: 072718: Bristol Bay/Pebble Mine Briefing Paper
Attachments: Bristol Bay-Pebble Mine 404c.docx

Please find attached the briefing paper for tomorrow's meeting with the Acting DA

Ann Campbell
Chief of Staff (acting)
Office of Water

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 4/23/2018 5:25:50 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: Re: Pebble

Deliberative Process / Ex. 5

Sent from my iPhone

On Apr 23, 2018, at 9:30 AM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:

> Not a surprise.
>
> Sent from my iPhone
>
> On Apr 23, 2018, at 12:27 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:
>
> > https://www.nrdc.org/experts/taryn-kiekow-heimer/pebble-mine-opponents-army-corps-wrong-mine-wrong-place
> >
> > Chris Hladick
> > Regional Administrator
> > U.S. Environmental Protection Agency, Region 10
> > Office: (206) 553-1234
> > Cell: (206) 247-2946
> > Fax: (206) 553-1809

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 11/2/2018 9:05:59 PM
To: Penman, Crystal [Penman.Crystal@epa.gov]
Subject: RE: meeting request for Alaskan Native Group

If we can work it in on the 13th. The 14th is too busy and I need to be able to leave for New Mexico late afternoon.

From: Penman, Crystal
Sent: Friday, November 2, 2018 3:40 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Re: meeting request for Alaskan Native Group

Lee, would you like to meet with this group?

Crystal M. Penman

Environmental Protection Agency

Office of Water

1201 Constitution Ave NW

Washington, DC 20004

202-564-3318

From: Peter Robertson <peterrobertson@pebblepartnership.com>
Sent: Thursday, October 18, 2018 4:15 PM
To: Forsgren, Lee; Penman, Crystal
Subject: meeting request for Alaskan Native Group

Lee and Crystal,

AMERICAN OVERSIGHT

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

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202-629-3392

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Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 10/29/2018 7:54:19 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: Re: Pebble

The CoE told me they were getting close to a draft but I was under the impression it would be early 2019. Maybe I misunderstood, and it was early FY-19.

Sent from my iPhone

On Oct 29, 2018, at 3:47 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:

> I am surprised you had not heard but know you are busy.
>
> Chris Hladick
> Regional Administrator
> U.S. Environmental Protection Agency, Region 10
> Office: (206) 553-1234
> Cell: (206) 247-2946
> Fax: (206) 553-1809
>
> **From:** Forsgren, Lee
> **Sent:** Monday, October 29, 2018 10:33 AM
> **To:** Hladick, Christopher <hladick.christopher@epa.gov>
> **Subject:** Re: Pebble
>
> Chris,
>
> Thanks for the heads up. We should talk about how to respond when we see the first elements of the EIS.
>
> Lee
>
> Sent from my iPhone
>
> On Oct 29, 2018, at 1:13 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:
>
> > Lee:
> >
> > Good morning! We have heard that we are going to see a draft of the Pebble EIS from the Corps on or about Nov 8. They have said they might send us rolling chapters beforehand but we only have about three weeks to comment. They started this process in January! Get ready for visits from Bristol Bay folks after the permit hits the street. We should talk when you get time this week.
> >
> > Onward through the fog!
> >
> > Chris Hladick
> > Regional Administrator
> > U.S. Environmental Protection Agency, Region 10

AMERICAN OVERSIGHT

Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

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From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/13/2018 5:51:42 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Pebble TPs_6-13-18.docx
Attachments: Pebble TPs_6-13-18.docx; ATT00001.txt

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/13/2018 5:51:16 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Fwd: Top level talking points on Pebble

Palmer

Send Ann the TPS so she can get them to the Administrator.

Lee

Sent from my iPhone

Begin forwarded message:

> **From:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **Date:** June 13, 2018 at 1:43:49 PM EDT
> **To:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> **Subject: RE: Top level talking points on Pebble**
>
> I need the original points from John. Can you send those. Thanks!
>
> Ann Campbell
> Chief of Staff (acting)
> Office of Water
>
> ---
>
> **From:** Forsgren, Lee
> **Sent:** Wednesday, June 13, 2018 1:40 PM
> **To:** Campbell, Ann <Campbell.Ann@epa.gov>
> **Subject:** Fwd: Top level talking points on Pebble
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Hladick, Christopher" <hladick.christopher@epa.gov>
> > **Date:** June 13, 2018 at 1:37:25 PM EDT
> > **To:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> > **Subject: Re: Top level talking points on Pebble**
> >
> > On May 25th Quantum Minerals pulled out of the project. They had pledged $150 M in return fro 50% equity.
> >
> > Tom Collier visited R10 last week to discuss project: they are working on other investors. They are looking at projects within the B.B. Region to improve Public Relations, such as power projects, gas pipeline to villages, or a contribution to a fund that would act as insurance for fisherman during poor salmon returns.

AMERICAN OVERSIGHT

Bryce Edgmon, Speaker of the House for Alaska State Legislature, recently wrote a letter criticizing Corps process in PLP permitting process.

Sent from my iPhone

On Jun 13, 2018, at 8:49 AM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:

> John,
> I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.
>
> Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/12/2018 5:41:30 PM
To: Goodin, John [Goodin.John@epa.gov]
Subject: RE: Region 10 draft EIS response

Thanks John!

From: Goodin, John
Sent: Tuesday, June 12, 2018 1:40 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Region 10 draft EIS response

Here you go. The document was only sent as a SharePoint link (below) which you are welcome to use. The attached Word version has some edits from others in the document at the moment (the pdf was from the first clean version of the review document).
Thanks
John

Open Pebble Project Scoping 060518 draft HQ Review.docx

From: Forsgren, Lee
Sent: Tuesday, June 12, 2018 1:20 PM
To: Goodin, John <Goodin.John@epa.gov>
Subject: RE: Region 10 draft EIS response

John,

Deliberative Process / Ex. 5

Lee

From: Goodin, John
Sent: Tuesday, June 12, 2018 12:43 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Region 10 draft EIS response

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 10/18/2018 8:44:48 PM
To: Penman, Crystal [Penman.Crystal@epa.gov]
CC: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Fwd: meeting request for Alaskan Native Group

Let's see if this is possible.

Sent from my iPhone

Begin forwarded message:

From: Peter Robertson <peterrobertson@pebblepartnership.com>
Date: October 18, 2018 at 4:15:02 PM EDT
To: "Forsgren, Lee" <forsgren.lee@epa.gov>, "Penman, Crystal" <Penman.Crystal@epa.gov>
Subject: meeting request for Alaskan Native Group

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter

AMERICAN OVERSIGHT



Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/5/2018 12:22:32 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Re: Pebble meeting

That is fine.

Sent from my iPhone

> On Jun 5, 2018, at 8:13 AM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:
>
> Lee, John has delegated this meeting down to Brian Frazer. question: would you also like Russ and Palmer to attend?
>
> Ann Campbell
> Chief of Staff (acting)
> Office of Water

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 5/30/2018 11:46:27 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]
Subject: Re: Pebble Mine Meeting

Good idea.

Sent from my iPhone

On May 30, 2018, at 2:09 PM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:

> Lee, recommending we add OGC (David F, perhaps Heidi Nalven) and John Goodin to this meeting. Thoughts?
> ---

Pebble Mine Meeting
1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

6/5/2018 1:00 PM
6/5/2018 1:45 PM

e: (none)

tatus: Meeting organizer

Forsgren, Lee
ttendees: Peter D. Robertson
ttendees: Campbell, Ann; Penman, Crystal

: Blue Category

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay

Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation

Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

AMERICAN OVERSIGHT

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 5/11/2018 7:59:02 PM
To: Penman, Crystal [Penman.Crystal@epa.gov]
Subject: FW: meeting request

Deliberative Process / Ex. 5

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Friday, May 11, 2018 3:47 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Penman, Crystal <Penman.Crystal@epa.gov>
Subject: meeting request

Dear Lee and Crystal,

I hope all is well. I'm reaching out to you because a group of Alaskan natives is coming to Washington for meetings on June 5 and 6 regarding the Pebble mine. They are hopeful that Lee would have time to meet with them. At this point, their schedule is free on both days, except for 1:00 on the 6th, when they meet with Representative Young.

The group includes:

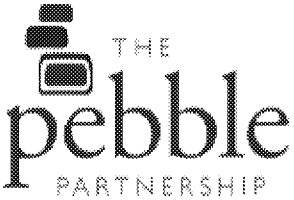
Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Can you let me know if Lee has has time on either of those days?

Thanks.

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 8/31/2018 9:09:43 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Pebble

Thanks Palmer.

From: Hough, Palmer
Sent: Friday, August 31, 2018 5:03 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: RE: Pebble

Lee

Attached is the most recent general one-pager I have on Pebble dated 7-23-18 (prepared for FY 2019 Congressional Hearing).

Let me know if you need something else.

Thanks, Palmer

From: Forsgren, Lee
Sent: Friday, August 31, 2018 4:20 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: FW: Pebble

Can one of gentlemen send me the one pager on Pebble.

From: Lovell, Will (William)
Sent: Friday, August 31, 2018 4:16 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Pebble

Understandable. Do you have those 1-pagers?

From: Forsgren, Lee
Sent: Friday, August 31, 2018 4:15 PM
To: Lovell, Will (William) <lovell.william@epa.gov>
Subject: RE: Pebble

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Lovell, Will (William)
Sent: Friday, August 31, 2018 3:51 PM

AMERICAN OVERSIGHT

To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Looks like Henry met w/them already. Would you care to join Brittany Tuesday morning at 10 am? I'll send the invite in case.

Also, were you able to find your handouts on the issue?

Will Lovell
Policy Advisor, Office of Policy
U.S. Environmental Protection Agency
(202) 564-5713
Lovell.William@epa.gov

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 9/17/2018 3:52:05 PM
To: Lovell, Will (William) [lovell.william@epa.gov]
Subject: Re: Pebble

Been in with the Administrator. Will call when I get back to the office

Sent from my iPhone

On Sep 17, 2018, at 11:20 AM, Lovell, Will (William) <lovell.william@epa.gov> wrote:

> Just tried.
>
> **From:** Forsgren, Lee
> **Sent:** Monday, September 17, 2018 8:41 AM
> **To:** Lovell, Will (William) <lovell.william@epa.gov>
> **Subject:** RE: Pebble
>
> Call me.
>
> **From:** Lovell, Will (William)
> **Sent:** Monday, September 17, 2018 8:36 AM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Subject:** RE: Pebble
>
> Good morning, Lee. Just wanted to circle back on this inquiry. Thank you.
>
> **From:** Lovell, Will (William)
> **Sent:** Thursday, September 13, 2018 5:13 PM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Subject:** RE: Pebble
>
> Lee,
>
> My apologies if we discussed this, but did y'all have a timeline for this issue?
>
> Thank you,
> Will
>
> **From:** Lovell, Will (William)
> **Sent:** Friday, August 31, 2018 5:16 PM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Subject:** RE: Pebble
>
> Thank you, Lee!
>
> **From:** Forsgren, Lee
> **Sent:** Friday, August 31, 2018 5:10 PM

AMERICAN OVERSIGHT

To: Lovell, Will (William) <lovell.william@epa.gov>
Subject: FW: Pebble

Will

Attached is the most recent general one-pager I have on Pebble dated 7-23-18 (prepared for FY 2019 Congressional Hearing).

Let me know if you need something else.

Thanks,
Lee

From: Forsgren, Lee
Sent: Friday, August 31, 2018 4:20 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: FW: Pebble

Can one of gentlemen send me the one pager on Pebble.

From: Lovell, Will (William)
Sent: Friday, August 31, 2018 4:16 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Pebble

Understandable. Do you have those 1-pagers?

From: Forsgren, Lee
Sent: Friday, August 31, 2018 4:15 PM
To: Lovell, Will (William) <lovell.william@epa.gov>
Subject: RE: Pebble

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Lovell, Will (William)
Sent: Friday, August 31, 2018 3:51 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Looks like Henry met w/them already. Would you care to join Brittany Tuesday morning at 10 am? I'll send the invite in case.

Also, were you able to find your handouts on the issue?

Will Lovell
Policy Advisor, Office of Policy
U.S. Environmental Protection Agency
(202) 564-5713
Lovell.William@epa.gov

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/18/2018 5:37:05 PM
To: Holsman, Marianne [Holsman.Marianne@epa.gov]
CC: Hladick, Christopher [hladick.christopher@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]
Subject: Re: news story

Let's talk about this when I get on the ground in Alaska. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Sent from my iPhone

On Jun 18, 2018, at 10:07 AM, Holsman, Marianne <Holsman.Marianne@epa.gov> wrote:

> In case you haven't already seen this...
>
> Marianne Holsman
> Public Affairs Director
> US EPA Region 10
> 206-450-5895
>
> Begin forwarded message:
>
> > **From:** "Allnutt, David" <Allnutt.David@epa.gov>
> > **Date:** June 18, 2018 at 9:27:54 AM PDT
> > **To:** "Holsman, Marianne" <Holsman.Marianne@epa.gov>, "Hough, Palmer" <Hough.Palmer@epa.gov>
> > **Subject: news story**
> >
> > Wanted to make sure you were aware of this:
> >
> > https://abcnews.go.com/Politics/rich-alaskan-donor-gave-250k-trump-epa-reversed/story?id=55697321
> >
> > safe travels.

<Picture (Device Independent Bitmap) 1.jpg>
<Picture (Device Independent Bitmap) 2.jpg> <Picture (Device Independent Bitmap) 3.jpg> <Picture (Device Independent Bitmap) 4.jpg>

R. David Allnutt, Director
Office of Environmental Review Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-314
(206) 553-2581

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 9/14/2018 12:34:03 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Discussion: Pebble
Location: WJCn 3412

Start: 9/14/2018 1:30:00 PM
End: 9/14/2018 2:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 9/14/2018 12:23:17 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Discussion: Pebble
Location: WJCn 3412

Start: 9/14/2018 1:30:00 PM
End: 9/14/2018 2:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 7/27/2018 3:30:44 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
CC: Ross, David P [ross.davidp@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]
Subject: Re: 404/Permitting Hearing TPS

I am fine with these talking points.

Sent from my iPhone

On Jul 27, 2018, at 9:41 AM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:

401 TALKING POINTS:

Nonresponsive: Unrelated to Bristol Bay/Pebble Mine."

PEBBLE/404c TALKING POINTS

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Ann Campbell
Chief of Staff (acting)
Office of Water

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 5/2/2018 8:12:21 PM
To: Drinkard, Andrea [Drinkard.Andrea@epa.gov]
Subject: Re: BB Questions

Come see me in Dave's Office on this.

Sent from my iPhone

On May 2, 2018, at 3:34 PM, Drinkard, Andrea <Drinkard.Andrea@epa.gov> wrote:

> Here's my first stab at responses to these questions. Let me know when you'd like to discuss. We could easily turn this into first person, which might be better for quote purposes.
>
> **Question 1:**
> - What is Lee's position on Pebble Mine and the 2014 Bristol Bay Watershed Assessment? We have heard he has told Bristol Bay community leaders that EPA has a statutory obligation to protect the waters of Bristol Bay. What does that look like?
>
> **Proposed response**
>
> **Deliberative Process / Ex. 5**
>
> **Questions 2 and 3:**
> Mr. Forsgren is focused on helping the agency follow the law and implement the Clean Water Act
>
> - We heard that Lee helped get Norman Van Vactor and Robin Samuelsen of the Bristol Bay Economic Development Corp their October meeting with Admin Pruitt. And sources have told us that he wanted the administrator to meet with them after attending the public meetings EPA held in Bristol Bay.
>   - Can you confirm this?
>   - Do you have any additional comment?
> - In particular, a few people have told us that they think that Lee and, in turn, Administrator Pruitt, were moved by hearing from members of the Bristol Bay fishing industry and the idea that the dispute in Bristol Bay is between two industries rather than between an industry and environmental concerns.
>   - Anything to add?
>
> **Proposed response**
>
> **Deliberative Process / Ex. 5**

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Question 4:
Also, we did find a few articles quoting Lee as a Congressional staffer in the early 1990s when one of the big policy issues in Alaska was whether or not compensatory mitigation should be required. (As I'm sure you know, compensatory mitigation is a potential obstacle for Pebble Mine). We wanted to let you know what they are before we run them, and give you the opportunity to comment—we understand that his views may have changed over the past 30 years. They are:

- To *Investors Business Daily* in 1993:
  - "They always show you in pictures nice marches, but most of what we're talking about any self-respecting duck would refuse to land on."
  - (About a bill that would have required compensatory mitigation requirements to be uniform nationwide), Lee said it was "terribly ironic and a little bit hypocritical" because Alaska was still developing while the lower 48 states had destroyed wetlands for 200 years prior to passage of the Clean Water Act.
  - "It's even more atrocious when you consider that the federal government has locked up over 80 million acres" in Alaska through National Parks and wildlife refuges, he said. "We could never reach the level California already has. For us to be subjected to de facto federal land use planning by federal bureaucrats because California has not done a good job is fundamentally unfair."
  - "Most of our permits are for people trying to build driveways or garages and the worst that happens is the ducks move 30 feet."
- To *Policy Review* in 1991:
  - (Speaking about President George H.W. Bush's 'no net loss of wetlands' policy): "We had more calls (from Alaska) related to (that) in the first few days than we had during the first few days of the Exxon Valdez oil spill."

Proposed response

Deliberative Process / Ex. 5

Andrea Drinkard
Communications Director
EPA Office of Water
Desk: 202.564.1601
Cell: 202.236.7765

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 4/25/2018 9:35:59 PM
To: Jackson, Ryan [jackson.ryan@epa.gov]; Fotouhi, David [fotouhi.david@epa.gov]
Subject: RE: Bristol Bay Watershed Assessment

Ryan,

We will review the letter.

Respectfully,
Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 5:28 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Bristol Bay Watershed Assessment

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 4:08 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Bristol Bay Watershed Assessment

Ryan,

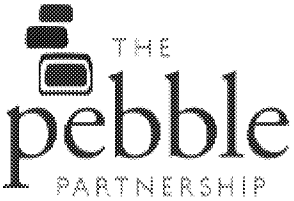
Another letter to the Administrator -- this one on the many flaws of the Bristol Bay Watershed Assessment, which the Administrator is relying on in sustaining the preemptive veto of the Pebble Mine.

AMERICAN OVERSIGHT

Please let me know if you have any questions.

Thanks.

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 4/11/2018 1:58:49 PM
To: Drinkard, Andrea [Drinkard.Andrea@epa.gov]
Subject: RE: Pebble letter, let's talk EOM

Come see me.

-----Original Message-----
From: Drinkard, Andrea
Sent: Wednesday, April 11, 2018 9:34 AM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble letter, let's talk EOM

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 7/23/2018 5:52:08 PM
To: Darwin, Henry [darwin.henry@epa.gov]
Subject: FW: Pebble Mine Briefing

Henry,

Can we have a chat about this privately before the briefing. There are a couple of issues I think you should be aware of.

Respectfully,
Lee

From: DeBell, Kevin
Sent: Monday, July 23, 2018 1:47 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Pebble Mine Briefing

Hi Ann:

We can have Chris participate by phone. I'll provide him with the number so he can just call in. I will also add the other names to the invitation.

A one-pager is perfectly fine. Again, if there is anything we can read ahead of time, perhaps a particularly good article or website, we would be happy to do a little homework.

Thanks,
Kevin

Kevin M. DeBell, Ph.D.
Senior Advisor to the Acting Deputy Administrator and Chief of Operations
U.S. Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue NW
William Jefferson Clinton Building North, Room 3313 (MC1101A)
Washington, DC 20460
202 566 1931
debell.kevin@epa.gov

I'm always open to feedback on my performance and service. Please provide your comments here: https://www.surveymonkey.com/r/debellfeedback. Your comments will be provided to me anonymously.

From: Campbell, Ann
Sent: Monday, July 23, 2018 12:11 PM
To: DeBell, Kevin <debell.kevin@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Pebble Mine Briefing

AMERICAN OVERSIGHT

Thanks Kevin. One question for you and Henry is whether you want to open the phone line for R10, Chris Hladick, to participate. Other than that if you could add David Fotouhi, John Goodin and Brian Frazer to the invite, that would be great.

We'll likely update a previously prepared one-pager for this briefing. If henry has a preferred format, please let me know.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: DeBell, Kevin
Sent: Monday, July 23, 2018 11:11 AM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: FW: Pebble Mine Briefing

Hi Lee:

I hope your week is starting well. I just sent a meeting request to you for a briefing for Henry on Pebble Mine. Due to **Deliberative Process / Ex. 5** At the meeting, please provide some background, the current status, and any upcoming decision points. Also, if you have any short documents that you would recommend we read before the briefing, please send those along to me.

I appreciate your assistance with this and look forward to seeing you on Friday.

Best,
Kevin

Kevin M. DeBell, Ph.D.
Senior Advisor to the Acting Deputy Administrator and Chief of Operations
U.S. Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue NW
William Jefferson Clinton Building North, Room 3313 (MC1101A)
Washington, DC 20460
202 566 1931
debell.kevin@epa.gov

I'm always open to feedback on my performance and service. Please provide your comments here: https://www.surveymonkey.com/r/debellfeedback. Your comments will be provided to me anonymously.

AMERICAN OVERSIGHT

Message

From: Leopold, Matt (OGC) [Leopold.Matt@epa.gov]
Sent: 6/18/2018 3:28:09 PM
To: Jackson, Ryan [jackson.ryan@epa.gov]
CC: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: Re:

Yes. Two minutes.

Sent from my iPhone

> On Jun 18, 2018, at 11:26 AM, Jackson, Ryan <jackson.ryan@epa.gov> wrote:
>
> Are you available to come down to talk to SP? Gold king and pebble.
>
>
>
>
>
>
>
> Ryan Jackson
> Chief of Staff
> U.S. EPA
> 202-564-6999
>

AMERICAN OVERSIGHT

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 4/25/2018 9:20:48 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Letter to the Administrator

Sounds good.

Steve Neugeboren
Associate General Counsel for Water
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
202 (564-5488)

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

AMERICAN OVERSIGHT

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter

THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 7/23/2018 10:06:53 PM
To: Leopold, Matt (OGC) [Leopold.Matt@epa.gov]

Subject: FW: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 3:30:00 PM
End: 7/27/2018 4:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Darwin, Henry
Sent: Monday, July 23, 2018 1:48 PM
To: Darwin, Henry; Campbell, Ann; DeBell, Kevin; Forsgren, Lee; Hladick, Christopher; Fotouhi, David; Goodin, John; Frazer, Brian
Cc: Burton, Tamika
Subject: Pebble Mine
When: Friday, July 27, 2018 11:30 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: WJCN 3412

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 9/14/2018 12:38:55 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Discussion: Pebble
Location: WJCn 3412

Start: 9/14/2018 1:30:00 PM
End: 9/14/2018 2:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 4/25/2018 9:32:46 PM
To: Schwab, Justin [schwab.justin@epa.gov]
Subject: FW: Bristol Bay Watershed Assessment
Attachments: 20180425160309.PDF

FYI

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 5:28 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Bristol Bay Watershed Assessment

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 4:08 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Bristol Bay Watershed Assessment

Ryan,

Another letter to the Administrator -- this one on the many flaws of the Bristol Bay Watershed Assessment, which the Administrator is relying on in sustaining the preemptive veto of the Pebble Mine.

Please let me know if you have any questions.

Thanks.

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 4/25/2018 9:32:40 PM
To: Schwab, Justin [schwab.justin@epa.gov]
Subject: FW: Letter to the Administrator
Attachments: 20180425125804.PDF

FYI

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

AMERICAN OVERSIGHT

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=febaf0d56aab43f8a9174b18218c1182-Fotouhi, Da]
Sent: 7/27/2018 12:40:30 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine - briefing material added*
Location: WJCN 3412

Start: 7/27/2018 4:30:00 PM
End: 7/27/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=febaf0d56aab43f8a9174b18218c1182-Fotouhi, Da]
Sent: 7/26/2018 5:45:18 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Tentative: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 4:30:00 PM
End: 7/27/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=febaf0d56aab43f8a9174b18218c1182-Fotouhi, Da]
Sent: 7/26/2018 5:43:40 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 5:30:00 PM
End: 7/27/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/13/2018 4:39:51 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: FW: Top level talking points on Pebble
Attachments: Pebble TPs_6-13-18.docx

Importance: High

Folks:

Per Lee's request, attached are six high-level TPs on Pebble. These are mostly cribbed from existing approved congressional factsheets and controls but I would appreciate your review before sending forward.

-Palmer

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 11:50 AM
To: Goodin, John <Goodin.John@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: Top level talking points on Pebble

John,
I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.

Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Date: June 13, 2018

Pebble Talking Points

- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps of Engineers proposing to develop a mine at the Pebble deposit.
- In January 2018, the Corps issued a public notice that provided Pebble's permit application to the public and stated that an EIS will be required as part of its permit review process consistent with NEPA.
- At the invitation of the Corps, EPA has agreed to be a cooperating agency in the Corps' EIS process and we are currently working with the Corps on the scoping phase of the EIS process.
- The Corps currently estimates that a draft EIS will be ready by mid to late spring of 2019.
- On January 26, 2018, EPA issued its decision to suspend the proceeding to withdraw its 2014 CWA Section 404(c) Proposed Determination regarding the Pebble deposit and leave that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.

Originator: Tim Fontaine, OW, 202-564-0318
Approver: Benita Best-Wong, OW, 202-566-1159

May 11, 2018

AMERICAN OVERSIGHT

Message

From: Kaiser, Russell [Kaiser.Russell@epa.gov]
Sent: 11/20/2018 10:27:57 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
Subject: Re: Action: Request for clarification on Pebble lead within the Administrator's office

Ok, I will try him tomorrow.

Sent from my iPhone

On Nov 20, 2018, at 5:07 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> Sure that would be great. David A made the request today during one of our regular Pebble calls.
>
> **From:** Kaiser, Russell
> **Sent:** Tuesday, November 20, 2018 5:04 PM
> **To:** Hough, Palmer <Hough.Palmer@epa.gov>
> **Cc:** Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>
> **Subject:** Re: Action: Request for clarification on Pebble lead within the Administrator's office
>
> Palmer,
>
> I would recommend that Chris call Lee on this question. If you want I can give David A a call tomorrow.
>
> Sent from my iPhone
>
> On Nov 20, 2018, at 4:28 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:
>
> > John/Brian/Russ
> >
> > Based on the notes from Lee's 11/14 meeting with PLP, it appears that it is again "not clear at this time if the Acting Administrator or Henry Darwin will be the decision-maker."
> >
> > R10 has asked for clarification regarding whether the Acting Administrator is or is not recused from Pebble matters. The Region has indicated that it needs this clarification in order to know who to target briefing materials for and to advise the RA regarding who the appropriate contact is within the Administrator's office is for this project. The Region is in the midst of reviewing portions of the preliminary draft EIS for Pebble and the Corps/PLP have indicated that they expect to issue a draft EIS as early as January.
> >
> > Based on all of this activity, the Region is seeking clarity regarding appropriate contacts within the Administrator's office.
> >
> > Thanks, Palmer
> >
> > _____
> > Palmer Hough, Environmental Scientist
> > office: 202.566.1374
> >
> > Office of Wetlands, Oceans, and Watersheds

AMERICAN OVERSIGHT

U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

<Bristol Bay Meeting Notes 11.14.2018 RLK.DOCX>

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/5/2018 12:42:15 PM
To: Frazer, Brian [Frazer.Brian@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: Template for notes from Pebble-related meetings
Attachments: Template for notes on Pebble-related meetings.docx

Ann/Brian/Russ

If folks want me to attend today's Pebble meeting I can do so and take notes, if not someone who participates needs to complete the attached template for notes during Pebble-related meetings. We keep track of all of these meetings in this consistent format.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

EPA Deputy AAOW Meeting XXXX
Topic:
Meeting Date:
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • XX
Did EPA decide which third parties would attend?: No – meeting at request of BBNC
List of EPA Attendees: • Lee Forsgren (Deputy AAOW) • XX
Agenda: None
Did EPA/Third Party Set the Agenda?:
Did EPA/Third Party Run the Meeting:
Notes from Discussion (including individual advice/feedback provided to Agency): • XXX •
Next Steps/Follow-up Discussed: XX

AMERICAN OVERSIGHT

Appointment

From: Goodin, John [Goodin.John@epa.gov]
Sent: 6/5/2018 12:39:58 PM
To: Frazer, Brian [Frazer.Brian@epa.gov]

Subject: FW: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Forsgren, Lee
Sent: Thursday, May 31, 2018 8:19 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal
Subject: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 4/26/2018 6:21:43 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Eisenberg, Mindy [Eisenberg.Mindy@epa.gov]
CC: Bennett, Brittany [bennett.brittany@epa.gov]
Subject: FYI - 2 letters from Pebble to Pruitt this week
Attachments: Pebble to Pruitt_4-24-18.pdf; PLP 4-25-18.pdf

FYI - Pebble sent the attached two letters to Pruitt this week. Ryan Jackson forwarded both to Lee F and David F. OGC shared them with us.

The letters are critical of the January 2018 decision not to withdraw the PD and argue it should be reconsidered and rehash past Pebble criticisms of the BBWA and PD.

Just wanted you to be aware in case they come up. Not clear if they will be put into CMS.

_____

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

April 24, 2018

The Honorable Scott Pruitt
Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Pruitt:

It is our understanding that you appeared before a group of non-governmental organizations and others last Wednesday, April 11, 2018. During the course of that meeting, you responded to a question about your decision to leave in place the Obama-era regulatory overreach and unprecedented preemptive 404(c) veto imposed on the Pebble mine.

We heard from several people who attended that meeting, who are very concerned about the EPA's use of a 404(c) preemptive veto, about your comments on Pebble and suspending the withdrawal of the "Proposed Determination."

According to participants, you also said we could bring new information about the mine to you. We appreciate your willingness to listen and respectfully request a meeting to do so. We will contact your staff to set up such a meeting. In advance of that discussion, we believe it is important to provide you with accurate information and provide our perspective on some of the issues you cited.

Flawed and Biased Science Was Created by Obama EPA to Justify Unprecedented 404(c) Action.

You noted that the decision was based on the data before you. You stated that the mine was in an area with two rivers, and that the mine could impact millions of fish. We assume that in making these statements, you are relying on the Bristol Bay Watershed Assessment ("BBWA"). That report was developed by the Obama Administration to support a predetermined decision to veto the Pebble Mine through an unprecedented

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THE pebble PARTNERSHIP

process before a permit application – containing an actual mine plan and other important aspects, such as proposed mitigation – had even been submitted for review. This discredited Obama EPA science is wholly insufficient to support making any regulatory decision, especially one of this significance, and that point was made by a number of EPA's own peer reviewers of the BBWA.

Moreover, The BBWA is an outdated, severely flawed study that used hypothetical mine plans in assessing potential impacts to the region. When EPA prepared the BBWA, it is important to remember that Pebble had never filed a mine plan or a Section 404 permit application. The BBWA assumed we would be in two river systems. As our permit application makes clear, major mining operations are only in one watershed. Pebble Project, Department of the Army, Application for Permit, POA-2017-271, p. 31, found at https://pebbleprojecteis.com/documents/background.

Former Senator and Secretary of Defense William Cohen undertook an independent review of EPA's actions. Among other things, he found that "EPA relied upon the BBWA in its Proposed Determination but acknowledged that there were significant gaps in its assessment and that it was not designed to duplicate or replace the Permit/NEPA Process." http://files.cohengroup.net/Final/Final-Report-with-Appendices-compressed.pdf.

The U.S. House of Representative's Committee on Science, Space, and Technology extensively reviewed the process used to veto the mine and the so-called science developed to support that process. The Chairman of the Committee wrote: "EPA employees colluded with third party Pebble Mine opponents. They sought to deliberately establish a record that pointed to one outcome: the Pebble Mine will be excluded from the regular permitting process and should be stopped." https://science.house.gov/sites/republicans.science.house.gov/files/documents/HHRG-114-SY-WState-S000583-20160428.pdf. The Committee also "determined that the pre-emptive action taken for the Pebble Mine Project was unprecedented under the Clean Water Act and was justified by a questionable assessment that relied on predetermined conclusions developed by EPA officials." https://science.house.gov/sites/republicans.science.house.gov/files/documents/02.22.17%20SST%20Letter%20to%20EPA%20Administrator%20Pruitt.pdf. Finally, the Committee found "that EPA employees inappropriately assisted outside groups in petitioning the

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agency to change the way they operate and use Section 404(c) to stop this project." https://science.house.gov/sites/republicans.science.house.gov/files/documents/02.22.17%20SST%20Letter%20to%20EPA%20Administrator%20Pruitt.pdf. The U.S. House Committee on Oversight and Government Reform came to a similar conclusion, stating in a November 2015 report "that EPA employees had inappropriate contact with outside groups and failed to conduct an impartial, fact-based review of the proposed Pebble mine." https://oversight.house.gov/wp-content/uploads/2015/11/Bristol-Bay-Pebble-Mine-Staff-Findings-Nov-2015-Final.pdf.

The Actual Pebble Mine Plan, Designed for Sustainability.

As our permit application sets out, "[t]he layout was designed to consolidate the majority of the site infrastructure in a single drainage, the North Fork Koktuli, and avoid the placement of waste rock or tailings in the Upper Talarik Creek drainage." Pebble Project, Department of the Army, Application for Permit, POA-2017-271, p. 31, found at https://pebbleprojecteis.com/documents/background. I took those steps explicitly for sustainability purposes, because the Upper Talarik Creek supports significantly greater numbers of salmon than does the North Fork Koktuli. However, your statement that "millions of salmon" occupy this area is simply incorrect. The average escapement of salmon (*i.e.*, those that return to these streams to spawn) for the years 2004-2009 is about 65,000 salmon/year.

This single point most perfectly exemplifies why this veto raises such serious concerns. President Obama's EPA initiated a preemptive veto, and the decision to leave it in place is evidently based on "facts" that our permit application and other data show are simply not true.

No Consultation with Project Proponent.

We understand that you stated that you sent "political advisers" to the area to investigate. While these Agency employees did attend public hearings, they did not speak with anyone from Pebble while in the state. It seems that if they wanted to get a comprehensive understanding of the issues involved, a meeting with the project proponent would have been advisable. We would have, of course, welcomed such a meeting.

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Withdrawal of Proposed Veto is Clearly a Discretionary Action.

We understand the concern that you could be sued if you withdrew the Obama-era proposed preemptive veto by a suit alleging that your decision was arbitrary and capricious under the Administrative Procedure Act. Such suits are common, and we understand why you would be concerned about such a suit. Such a case has no merit and would likely be thrown out by any court. The decision to initiate a veto or not to do so is entirely in your discretion. The case law on such actions is solid – they are not reviewable. In addition to being entirely within your discretion, a decision to withdraw the veto would not be final agency action, and therefore not subject to review by courts. We have attached a memorandum that addresses this issue. *See*, Attachment 1.

If you are concerned about any mining in the area, as some meeting participants indicated to us, it is important to remember that the Obama EPA acknowledged in the BBWA that a mine smaller than their .25 hypothetical mine would be allowed to go through the permitting process. Therefore, even the Obama Administration is on record as stating that some mine in the area could be approved.

Continued Denial of Due Process.

Just because Pebble can go through permitting, that does not mean that the project has due process. While the U.S. Army Corps of Engineers is reviewing our permit application, it cannot issue a permit while the proposed veto is still pending because the regulations prevent them from doing so. *See*, 33 CFR Sec. 323.6(b). This "overhang" represents a clear denial of due process and does not reflect the rule of law. We should not be subject to a requirement that a veto must be withdrawn before we can receive a permit. That was clearly not the way Congress designed the Clean Water Act, nor was it the intent of the settlement agreement we have with the Agency.

An Adverse Precedent for Resource Development in the U.S.

Many of your ardent supporters understand that the precedent purposely left in place can and likely will be cited by future administrations as justification for action on other projects. Environmentalists understand that it may take only a proposed, preemptive veto to stop a development project, thus weaponizing the 404(c) veto process. Such administrations could use the 404(c) authority to initiate one, or dozens, or hundreds of

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proposed preemptive vetoes. These vetoes could prevent permits from ever being issued whether EPA finalizes those vetoes or not. Because proposed vetoes are not final agency actions, project proponents would not be able to obtain judicial review of those proposed preemptive vetoes. EPA will have created a 'Catch 22' that could effectively stymie development. This seems inconsistent with your successful record of regulatory reform at the EPA.

This action also is completely inconsistent with the policy position articulated by President Trump on EPA's appropriate role on such matters. As you know, in the recent proposal to Congress concerning infrastructure financing and project streamlining, President Trump has proposed to repeal Section 404(c) of the Clean Water Act in its entirety.

Pebble Did Legally Challenge EPA's Authority.

Participants report that you said Pebble had not sued the Agency attacking EPA's authority to issue a preemptive veto. In fact, we did attack in court the statutory authority to issue such vetoes. The court dismissed the suit as not ripe because there was no final agency action. Interestingly, the Federal judge in Alaska hearing the three cases we filed requested briefing on both the merits and on the ripeness issue simultaneously. *See,* Attachment 2. We believe that the argument that the Agency lacks statutory authority to promulgate a preemptive veto is strong, and we commend these arguments to your attention.

The "proposed determination" left in place is exactly the same preemptive veto proposed by the Obama Administration. It is NOT based on an examination of our proposed mine plan, nor does it have a robust environmental impact statement to support it. Withdrawing this flawed preemptive veto does not prevent you from initiating a new one at the proper point in the process if you choose to do so, based on a full administrative record. Continuing with the Obama-era flawed veto, based on a discredited Bristol Bay Assessment, is to continue a preemptive veto.

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We look forward to discussing these issues with you further, and will be pleased to fully describe the mine plan that we have submitted for review, when we meet.

Sincerely,

Tom Collier
CEO

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Attachment 1

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Judicial Review of Withdrawal of Proposed Determination

- EPA would likely prevail on an APA or citizen suit challenging its decision to withdraw the Proposed Determination without reviewing public comments.

    - Under either APA, or CWA's citizen suit provision, a plaintiff seeking to challenge the withdrawal of EPA's Proposed Determination has to demonstrate that it is challenging a *nondiscretionary* duty. *See* 5 U.S.C. 701(a) (APA grants a court jurisdiction to review actions taken by an agency except to the extent "agency action is committed to agency discretion by law"); 33 U.S.C. § 1365 (citizen suits may be brought where there is an alleged "failure … to perform any act or duty under this Act which is not discretionary with the Administrator").

    - We have not found any case challenging EPA's decision to withdraw a Proposed Determination. However, several courts have dismissed suits claiming that EPA improperly failed to exercise its Section 404(c) authority, holding that such authority is committed to the discretion of the agency. The reasoning of these cases is persuasive here.

        - In *Preserve Endangered Areas of Cobb's History, Inc. v. United States Army Corps of Engineers*, 87 F.3d 1242, 1249-50 (11th Cir.1996), plaintiffs brought a CWA citizen suit against EPA for failing to veto the Corps' issuance of a 404 permit. The court dismissed the claim, holding that EPA's authority to veto a section 404 permit is discretionary. The court summarized the various reasons why Section 404(c) is best viewed as discretionary, including the statute's use of the word "authorized" in Section 404(c). *See* 33 U.S.C. § 1344(c) (the "Administrator is authorized to prohibit . . . and authorized to deny or restrict the use of any defined area for specification . . . ."). The court found that the use of the term "authorized" (as opposed to "shall") suggests a discretionary function. The court also pointed out that the discretionary nature of the EPA's veto authority is also the interpretation adopted by the agency, as seen in its regulations, which use the permissive "may," as opposed to the mandatory "must" or "shall." *See* 40 C.F.R. § 231.1(a) ("Under section 404(c), the Administrator may exercise a veto over the specification by the U.S. Army Corps of Engineers or by a state of a site for the discharge of dredged or fill material.").

        - Numerous courts have agreed with this reasoning. *See also Hill v. Boy*, 144 F.3d 1446, 1449 n. 7 (11th Cir. 1998) (upholding dismissal of citizen suit against EPA and the Corps for failing to use their authority to veto the Corps' issuance of a section 404 permit because authority to veto a section 404 permit is discretionary); *City of Olmstead Falls v. EPA*, 266 F. Supp. 2d 718, 722-23 (N.D. Ohio 2003) (court lacked jurisdiction under APA to review EPA's decision not to veto the Corps' decision to issue a Section

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404 permit because the EPA's "veto power as set forth in Section 404(c) is discretionary").

- Other courts have also noted in dicta that the use of Section 404(c) is discretionary. *See Mingo Logan Coal Co. v. EPA*, 70 F. Supp. 3d 151, 166 (D.D.C. 2014) (noting "section 404(c) contains *permissive, discretionary* language") (emphasis added); *Ctr. for Biological Diversity v. United States Army Corps of Engineers*, No. CV 14-1667, 2015 U.S. Dist. LEXIS 76653 at *8 (C.D. Cal. Feb. 4, 2015) (EPA "has the *discretionary* authority to veto that decision if it makes certain findings regarding the adverse effects of the permitted action.") (emphasis added).

- Despite this case law, two courts have permitted suits against EPA where the agency chose not to initiate a veto.

    - Relying on a Fourth Circuit case that held generally that EPA's ultimate responsibility for the protection of wetlands under the CWA was a non-discretionary duty, *Nat'l Wildlife Fed'n v. Hanson*, 859 F.2d 313 (4th Cir. 1988), one district court held that a plaintiff can maintain a suit where the "Administrator fails to exercise the duty of oversight imposed by" Section 404(c). *See South Carolina Coastal Conservation League v. United States Army Corps of Engineers*, No. 2:07-3802-PMD, 2008 U.S. Dist. LEXIS 69499 (D. S.C. Sept. 11, 2008).

    - In *Alliance to Save the Mattaponi v. United States Army Corps of Engineers*, 515 F. Supp. 2d 1 (D.D.C. 2007), the district court dismissed plaintiff's citizen suit alleging that EPA failed to veto a Corps permit, holding that "this veto power … is discretionary." However, it concluded that plaintiff's APA claim survived because the CWA provides a standard by which to judge EPA's discretion – whether the discharge will have an unacceptable adverse effect. Because in this case EPA had not based its decision on this standard, the court ultimately found that EPA had acted arbitrarily and capriciously, *Alliance to Save the Mattaponi v. United States Army Corps of Engineers*, 606 F. Supp. 2d 121 (D.D.C. 2009).

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Attachment 2

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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF ALASKA

PEBBLE LIMITED PARTNERSHIP and ALASKA PENINSULA CORPORATION,

Plaintiffs,

and

STATE OF ALASKA,

Intervenor-Plaintiff,

vs.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and DENNIS J. McLERRAN, in his official capacity as Regional Administrator of EPA Region 10,

Defendants.

No. 3:14-CV-0097-HRH

ORDER

Case Status

A status and scheduling conference was held in this case on July 11, 2014.

The court minutes of the foregoing conference are supplemented as follows for purposes of scheduling clarity.

Plaintiffs moved for reconsideration[1] of the court's order of July 7, 2014,[2] granting UTBB's motion to intervene. Plaintiff has responded to the motion for reconsideration.[3]

[1]Docket No. 71.

[2]Docket No. 69.

[3]Docket No. 72.

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EPA-0135-0005214

Reconsideration is granted. The court's July 7, 2014, order granting intervention is vacated. The court will entertain opposition to UTBB's motion to intervene if filed on or before July 18, 2014. Any reply shall be served and filed on or before July 23, 2014.

Nunamta Aulukestai has moved to intervene.[4] Any opposition to that motion shall be served and filed on or before July 18, 2014. Replies may be served and filed on or before July 23, 2014.

The defendants propose to file a motion to dismiss. That motion shall also be served and filed on or before August 11, 2014. Usual response and reply times shall be observed.

Defendants' response to plaintiffs' motion for preliminary injunction is currently due July 28, 2014.[5] A second motion for preliminary injunction by intervenor-plaintiff State of Alaska has been filed.[6] The time for defendants to respond to both motions for preliminary injunction is extended to August 11, 2014. Usual reply times shall be observed.

Defendants' response to the two motions for preliminary injunction may be consolidated, but the defendants' proposed motion to dismiss shall be separately briefed.

After consultation with counsel, the court has determined to invoke the provisions of Rule 65(a)(2), Federal Rules of Civil Procedure, which permits a court to consolidate proceedings on the merits of a case with proceedings on motion for preliminary injunction. That is, the court intends taking up first defendants' motion to dismiss and then the construction of § 404(c) of the Clean Water Act, 33 U.S.C. § 1344(c), and the State of Alaska's arguments based upon the Alaska Statehood Act, Pub. L. No. 85-508, 72 Stat. 339 (1958). The defendants' response to the motions for preliminary injunctions, as well as replies on those motions, should focus upon these legal issues. It is the court's perception that if the defendants' motion to dismiss is not dispositive of the case, a decision on the merits of the

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[4]Docket No. 77.

[5]Docket No. 70.

[6]Docket No. 61.

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EPA-0135-0005215

foregoing legal issues (the construction of § 404(c) and the Alaska Statehood Act) are likely to be dispostive.

DATED at Anchorage, Alaska, this 11th day of July, 2014.

/s/ H. Russel Holland
United States District Judge

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EPA-0135-0005216

THE pebble PARTNERSHIP

April 25, 2018

VIA ELECTRONIC MAIL

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: EPA's Continued Reliance on the Bristol Bay Watershed Assessment

Dear Administrator Pruitt,

I am writing in response to your decision in January to suspend the withdrawal of the Proposed Determination to restrict the discharge of dredged or fill material in Alaska's Bristol Bay watershed related to the Pebble deposit. Your decision was surprising and disappointing, especially in light of your public statements during your confirmation hearing affirming that preemptive federal vetoes – which the Proposed Determination unquestionably is – "could undermine both the administrative process and rule of law."[1] But even more concerning is the fact that your decision is based entirely and misguidedly upon the Bristol Bay Watershed Assessment ("BBWA"), a flawed and biased study that remains EPA's only attempt to evaluate the environmental impacts of a potential Pebble mine. Despite what some in EPA may have led you to believe, it is highly inaccurate to conclude "that any mining projects in the region will likely pose a risk to [Bristol Bay's] abundant natural resources."[2] That conclusion was in fact the starting point for the previous Administration's approach to the Pebble matter, and the BBWA was merely a tool to fulfill it. The document is the result of an unfair, pre-determined process and shoddy scientific work by "scientists" of questionable reputation determined to kill the Pebble mine at all costs. As the attached materials demonstrate in even greater detail, the BBWA is the ultimate example of bad science, and I encourage you to carefully examine EPA's record and consider allowing the normal legal permit application process to unfold without the cloud cast by a study as woefully inadequate as the BBWA.

The BBWA Sprung from Early EPA Efforts to Veto Pebble

Although EPA has repeatedly touted a petition purportedly submitted by six Alaska Native Tribes as the impetus for action in Bristol Bay, that petition was in fact the result of collusion between an EPA employee and the Tribes' attorney. That employee, Phil North, had

[1] Response to Questions for the Record from Scott Pruitt (Jan. 18, 2017), at 196.
[2] Press Release, EPA, *EPA Administrator Scott Pruitt Suspends Withdrawal of Proposed Determination in Bristol Bay Watershed, Will Solicit Additional Comments* (Jan. 26, 2018).

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been vocally advocating within EPA for a veto of the Pebble mine as early as 2009, and by 2010 had recruited at least two high-ranking EPA Region 10 officials to his cause. Officials in the region began drafting policy memoranda and budgets preparing for a veto and even convinced U.S. Fish and Wildlife Service employees to join the efforts. By the time the tribal petition was submitted in June 2010, which EPA's Inspector General concluded was the result of a "possible misuse of position," the Agency already had a running start on its veto efforts.

The BBWA Process Was Designed from the Start to Justify a Pebble Veto

The BBWA was never meant to be an objective study of the effects of copper mining on Bristol Bay. All of EPA's words and actions prove this. A 2010 memorandum outlined steps EPA could take to provide the appearance of public involvement to "deflect political backlash" and "derail opposition." Knowing that it needed a scientific record but unwilling to engage in a comprehensive and statutorily-required environmental impact statement upon Pebble's submission of a permit application, EPA instead developed a plan for its own "information gathering and analysis…in order to support a decision to formally initiate…404(c)." And when Senator Lisa Murkowski of Alaska suggested that EPA's decision to conduct the BBWA in February 2011 meant no pre-emptive action would occur until all the science had been evaluated, an EPA official stated "her statement would suggest no 404(c) would be done until all the science is in (EIS?). Obviously, that's not what we have in mind…"

EPA's close collaboration with environmental activists further demonstrate its bias. EPA officials communicated hundreds of times with anti-Pebble activists and scientists to share information, technical studies, and public relations strategies. One EPA employee even shared an outline of the BBWA with an anti-Pebble scientist a year before it was even announced. In particular, EPA became obsessed with a biased risk assessment conducted by The Nature Conservancy and scheduled several briefings to determine how that study could support EPA's efforts. All these communications stand in stark contrast to EPA's treatment of Pebble, as then-Administrator Lisa Jackson repeatedly refused to meet with Alaska Native interests close to the proposed mine that support due process for the project.

The BBWA Evaluates Fake, Unpermittable Mines to Bolster EPA's Case against Pebble

The BBWA analyzed hypothetical and implausible mine designs that did not reflect modern engineering or environmental standards. EPA knew that doing so would result in exaggerated environmental impacts and overstated risks, ensuring it could justify its preordained pre-emptive action. For example, any mine of Pebble's size would necessarily involve compensatory mitigation, which EPA's hypothetical mines conspicuously omitted. Peer reviewers noted this weakness, stating that the overall utility of the BBWA was "questionable" because of the inherent uncertainty involved with studying hypothetical design plans.

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The BBWA is Rife with Fake Science

EPA stacked the BBWA deck with anti-Pebble personnel and material. Richard Parkin, who not only admitted under oath to favoring a preemptive Pebble veto but also stated in a public meeting that politics were "as big or [a] bigger factor" than science in a Pebble decision, was installed as BBWA team leader. Phil North, fresh off his secret collusion that resulted in the tribal petition, was the BBWA's "technical lead." From outside EPA, the Agency brought in several other anti-Pebble extremists, most notably Ann Maest, who admitted in litigation related to the infamous *Chevron* case in Ecuador to having falsified scientific reports to fit her preferred, anti-development agenda. In perhaps its most brazen move, EPA carefully selected seven vehemently anti-Pebble studies and subjected them to an unannounced peer review so that their conclusions could be included in the BBWA.

Not surprisingly, these selections led to biased results, which peer reviewers repeatedly questioned, even concluding that the BBWA's conclusions were "not appropriate for a document that is intended to provide a scientific and technical foundation for future decision making." To further the bias of the BBWA's contents, EPA completely ignored the comprehensive environmental baseline studies that Pebble had conducted, the result of eight years of evaluation by 35 professional organizations and comprising about 27,000 pages and $150 million in investment.

EPA Even Tried to Short-Circuit the BBWA's Peer Review to Conceal its Flaws

EPA designed a peer review process that was contrary to its own regulations and guidelines so the many flaws in its BBWA study would remain hidden. For example, EPA officials had excessive contact with peer reviewers during the review period and limited oral and written submissions during public peer review meetings. When the second draft of the BBWA expanded from 339 pages to 618, and included an entirely new hypothetical mine scenario, EPA ignored requests that it conduct a full peer review of the new document. Several peer reviewers complained that the time given to review the Assessment was far too short to enable them to reach sound conclusions.

* * *

It is thus no surprise that virtually every independent investigation of EPA's conduct with respect to Pebble and the BBWA has concluded that there was wrongdoing. The U.S. House Committee on Oversight and Government Reform concluded that "EPA employees had inappropriate contact with outside groups and failed to conduct an impartial, fact-based review of the proposed Pebble mine" and that the pre-emptive veto was "without legal basis." Former U.S. Senator and Secretary of Defense William Cohen determined that the circumstances "raise serious concerns as to whether EPA orchestrated the process to reach a predetermined outcome; had inappropriately close relationships with anti-mine advocates; and was candid about its

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decision-making process." A federal court in Alaska granted a preliminary injunction halting all EPA work on the 404(c) veto after seeing just a fraction of the evidence of EPA misconduct. And the U.S. House Committee on Science, Space, and Technology found EPA's actions rife with misconduct and "determined that the pre-emptive action taken for the Pebble Mine Project was unprecedented under the Clean Water Act and was justified by a questionable assessment that relied on predetermined conclusions developed by EPA officials."

In addition to the BBWA's obvious flaws, the use of a preemptive veto under Section 404(c) of the Clean Water Act sets a dangerous precedent. In the history of the Clean Water Act, EPA has only exercised its veto authority 13 times. In each instance, EPA invoked Section 404(c) only after receipt of a permit application that described the scope and details of the project being proposed, the anticipated environmental impact, and techniques to be employed to mitigate or control that impact. EPA's campaign against Pebble throws that entire process into uncertainty, unsettling the legitimate business expectations of potential developers. By going its own way, EPA has sent the message, in the words of the National Mining Association, that "it can do whatever it wants. If it can decide to (preemptively veto a project) for this industry, there is no reason it can't ignore the legal process and preempt other projects from going forward."

In light of this overwhelming record and potentially catastrophic precedent, I strongly urge you to reconsider your reliance on such an obviously flawed study. You have not been shy to point out the errors made in the previous Administration's environmental policies and overreach. This is another opportunity for you to restore the rule of law and sound scientific analysis into environmental decision-making.

Sincerely,

Thomas C. Collier
CEO

Attachments: *EPA's Abuse of Due Process, Science, and its CWA 404(c) Veto Authority*

Comments of the Pebble Limited Partnership on the Proposal to Withdraw Proposed Determination to Restrict the Use of an Area as a Disposal Site; Pebble Deposit Area, Southwest Alaska (Oct. 17, 2017)

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 4/20/2018 12:54:54 PM
To: Kaiser, Russell [Kaiser.Russell@epa.gov]
CC: Frazer, Brian [Frazer.Brian@epa.gov]
Subject: Re: Draft notes from 4-18-18 meeting between Forsgren and BBNC

Good point I will add list of items they said were missing from permit application

Sent from my iPhone

On Apr 20, 2018, at 7:44 AM, Kaiser, Russell <Kaiser.Russell@epa.gov> wrote:

> Palmer – not sure if worth mentioning but they also felt that PN was incomplete and inadequate. For example, there was no discussion on mitigation – just that it would be discussed later in the process. Other than that, it looks good!
>
> Thanks

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Hough, Palmer
Sent: Thursday, April 19, 2018 12:39 PM
To: Kaiser, Russell <Kaiser.Russell@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Herbst, John <herbst.john@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>
Subject: Draft notes from 4-18-18 meeting between Forsgren and BBNC

Brian/Russ

Please let me know if you have any edits to the attached notes from yesterday's meeting with BBNC. We are keeping track of all Pebble-related meetings in this standard format.

-Palmer

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Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 7/26/2018 2:46:04 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
Subject: latest pebble factsheet
Attachments: 7-23-18 (OW 5) 7A1 - Bristol Bay-Pebble Mine 404c.docx

Brian

Per your request, attached is the latest version of the Pebble factsheet that I have, this is the final version I sent to Patrick on Tuesday after accepting John's edits and fitting it onto one page.

-Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
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Washington, DC 20460
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Message

From: Kaiser, Russell [Kaiser.Russell@epa.gov]
Sent: 6/14/2018 4:51:11 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
Subject: RE: Region 10 draft EIS response

Palmer – we can check with him at the meeting…

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
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C: 202.579.0421

From: Hough, Palmer
Sent: Thursday, June 14, 2018 12:17 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: RE: Region 10 draft EIS response

Have we seen any specific edits from Lee on the Pebble scoping letter?

I'm on a call with R10 and OGC about David F's comments on the Pebble letter.

I expect to be asked if/when Lee might be providing more comments?

From: Goodin, John
Sent: Tuesday, June 12, 2018 1:41 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Region 10 draft EIS response

Heads up…

From: Goodin, John
Sent: Tuesday, June 12, 2018 1:40 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Region 10 draft EIS response

Here you go. The document was only sent as a SharePoint link (below) which you are welcome to use. The attached Word version has some edits from others in the document at the moment (the pdf was from the first clean version of the review document).
Thanks

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John

Open Pebble Project Scoping 060518 draft HQ Review.docx

From: Forsgren, Lee
Sent: Tuesday, June 12, 2018 1:20 PM
To: Goodin, John <Goodin.John@epa.gov>
Subject: RE: Region 10 draft EIS response

John,

Deliberative Process / Ex. 5

Lee

From: Goodin, John
Sent: Tuesday, June 12, 2018 12:43 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Region 10 draft EIS response

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

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Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 7/24/2018 1:08:35 PM
To: Frazer, Brian [Frazer.Brian@epa.gov]
Subject: FW: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Brian – here is the Pebble story in a nutshell. We gave this overview briefing to the new director of EPA's AK ops office yesterday. There is a powerpoint and a script for each slide. Let me know if you have questions.

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/14/2018 2:02:34 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
CC: Topping, Brian [Topping.Brian@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Draft Table of Contents for Lee's AK Trip binder
Attachments: Alaska Prep Binder ToC_6-14-18_9AM-EDT.docx

Importance: High

John/Brian/Russ

Attached is the latest version of the Table of Contents for Lee's AK trip binder. Please let me know ASAP if you have edits or if you would like to see any of the materials listed in the TOC.

The OW comms team will be assembling this binder tomorrow for Lee.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Army-EPA Trip to Alaska Prep Binder

Table of Contents

Unrelated to Pebble/Non-responsive

Tab 5: Other

1) Other Alaskan Hot Topics (Pebble Mine, Tribal, etc.) **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**

Unrelated to Pebble/Non-responsive

Ta

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 7/23/2018 5:04:25 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
Subject: FW: Pebble Mine Briefing

Gentlemen, an invitation for this briefing which has been scheduled for Friday morning should be coming to you soon. It is not delegable. At this time, I think we should update the one-pager prepared previously for use in this briefing. If I get more guidance on a different format, I'll let you know.

Let me know if you have any questions.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: DeBell, Kevin
Sent: Monday, July 23, 2018 11:11 AM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: FW: Pebble Mine Briefing

Hi Lee:

I hope your week is starting well. I just sent a meeting request to you for a briefing for Henry on Pebble Mine. Due to **Deliberative Process / Ex. 5** At the meeting, please provide some background, the current status, and any upcoming decision points. Also, if you have any short documents that you would recommend we read before the briefing, please send those along to me.

I appreciate your assistance with this and look forward to seeing you on Friday.

Best,
Kevin

Kevin M. DeBell, Ph.D.
Senior Advisor to the Acting Deputy Administrator and Chief of Operations
U.S. Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue NW
William Jefferson Clinton Building North, Room 3313 (MC1101A)
Washington, DC 20460
202 566 1931
debell.kevin@epa.gov

I'm always open to feedback on my performance and service. Please provide your comments here: https://www.surveymonkey.com/r/debellfeedback. Your comments will be provided to me anonymously.

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/13/2018 5:31:49 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Top level talking points on Pebble

Yes for public notice and comment

Will do

From: Goodin, John
Sent: Wednesday, June 13, 2018 1:30 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Re: Top level talking points on Pebble

This looks good, Palmer. One clarification for 4th bullet: draft EIS "will be ready" ... for public notice and comment? If so, let's add that. Barring any other comments, please reply all with the bullets indicated my review.
Thanks for the quick work
John

Sent from my iPhone

On Jun 13, 2018, at 1:26 PM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Thanks, Palmer.
>
> **From:** Hough, Palmer
> **Sent:** Wednesday, June 13, 2018 1:24 PM
> **To:** Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
> **Subject:** RE: Top level talking points on Pebble
>
> Deleted the stray footer – please use this draft
>
> **From:** Hough, Palmer
> **Sent:** Wednesday, June 13, 2018 1:05 PM
> **To:** Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
> **Subject:** Re: Top level talking points on Pebble
>
> I just noticed there is a footer on the bottom of the page please delete that if you forward the word file.
>
> Sent from my iPhone
>
> On Jun 13, 2018, at 12:39 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:
>
> > Folks:

AMERICAN OVERSIGHT

Per Lee's request, attached are six high-level TPs on Pebble. These are mostly cribbed from existing approved congressional factsheets and controls but I would appreciate your review before sending forward.

-Palmer

From: Forsgren, Lee
Sent: Wednesday, June 13, 2018 11:50 AM
To: Goodin, John <Goodin.John@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Hladick, Christopher <hladick.christopher@epa.gov>
Subject: Top level talking points on Pebble

John,
I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.

Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

<Pebble TPs_6-13-18.docx>

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/13/2018 5:24:10 PM
To: Goodin, John [Goodin.John@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Top level talking points on Pebble
Attachments: Pebble TPs_6-13-18.docx

Deleted the stray footer – please use this draft

From: Hough, Palmer
Sent: Wednesday, June 13, 2018 1:05 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Re: Top level talking points on Pebble

I just noticed there is a footer on the bottom of the page please delete that if you forward the word file.

Sent from my iPhone

On Jun 13, 2018, at 12:39 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> Folks:
>
> Per Lee's request, attached are six high-level TPs on Pebble. These are mostly cribbed from existing approved congressional factsheets and controls but I would appreciate your review before sending forward.
>
> -Palmer
>
> **From:** Forsgren, Lee
> **Sent:** Wednesday, June 13, 2018 11:50 AM
> **To:** Goodin, John <Goodin.John@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
> **Cc:** Hladick, Christopher <hladick.christopher@epa.gov>
> **Subject:** Top level talking points on Pebble
>
> John,
> I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.
>
> Lee
>
> **D. Lee Forsgren**
> Deputy Assistant Administrator
> Office Of Water
> Environmental Protection Agency
> 1200 Pennsylvania Avenue, NW
> Room 3219 WJCE

AMERICAN OVERSIGHT

Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

<Pebble TPs_6-13-18.docx>

AMERICAN OVERSIGHT

Date: June 13, 2018

Pebble Talking Points

- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps of Engineers proposing to develop a mine at the Pebble deposit.
- In January 2018, the Corps issued a public notice that provided Pebble's permit application to the public and stated that an EIS will be required as part of its permit review process consistent with NEPA.
- At the invitation of the Corps, EPA has agreed to be a cooperating agency in the Corps' EIS process and we are currently working with the Corps on the scoping phase of the EIS process.
- The Corps currently estimates that a draft EIS will be ready by mid to late spring of 2019.
- On January 26, 2018, EPA issued its decision to suspend the proceeding to withdraw its 2014 CWA Section 404(c) Proposed Determination regarding the Pebble deposit and leave that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/13/2018 4:57:00 PM
To: Kaiser, Russell [Kaiser.Russell@epa.gov]; Goodin, John [Goodin.John@epa.gov]
Subject: RE: Top level talking points on Pebble

Sounds good.

bf

From: Kaiser, Russell
Sent: Wednesday, June 13, 2018 12:30 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>
Subject: RE: Top level talking points on Pebble

Me too before getting Brian's note. He will submit something soon. He is working on it now.

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Goodin, John
Sent: Wednesday, June 13, 2018 12:29 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Re: Top level talking points on Pebble

Folks— apologies...I called PH directly given the short deadline

Sent from my iPhone

On Jun 13, 2018, at 12:25 PM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Russ, Let's discuss.
>
> bf
> **********
> Brian Frazer, Acting Director
> Oceans, Wetlands and Communities Division
> Office of Wetlands, Oceans and Watersheds
> US Environmental Protection Agency
> 202-566-1652

AMERICAN OVERSIGHT

Sent from my iPhone

Begin forwarded message:

From: "Forsgren, Lee" <Forsgren.Lee@epa.gov>
Date: June 13, 2018 at 11:49:35 AM EDT
To: "Goodin, John" <Goodin.John@epa.gov>, "Hough, Palmer" <Hough.Palmer@epa.gov>, "Frazer, Brian" <Frazer.Brian@epa.gov>, "Kaiser, Russell" <Kaiser.Russell@epa.gov>
Cc: "Hladick, Christopher" <hladick.christopher@epa.gov>
Subject: Top level talking points on Pebble

John,
I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.

Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/6/2018 9:40:59 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Goodin, John [Goodin.John@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: Re: Lee is interested in more prep on "PEIS" aspect of AK trip ...

I'm available.

****
Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

> On Jun 6, 2018, at 5:13 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:
>
> I can be available on Friday. FYI - Lee and Ryan have a call with Joe Balash from DOI about the NS trip at 3 PM on friday
>
> -----Original Message-----
> From: Goodin, John
> Sent: Wednesday, June 06, 2018 4:47 PM
> To: Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>
> Subject: Lee is interested in more prep on "PEIS" aspect of AK trip ...
>
> Are folks available for a chat Friday w Lee? Mostly need to connect w DOI next week. May be an opportunity to rope in OFA too if they want to talk to OW anyway re R10's draft EIS response letter on Pebble.
> John

AMERICAN OVERSIGHT

Appointment

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/5/2018 12:43:04 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]

Subject: FW: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Forsgren, Lee
Sent: Tuesday, June 05, 2018 8:40 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal; Frazer, Brian
Subject: FW: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

-----Original Appointment-----
From: Forsgren, Lee
Sent: Thursday, May 31, 2018 8:19 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal
Subject: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

AMERICAN OVERSIGHT

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/5/2018 12:41:16 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: RE: Visit of Native Alaskans this week

Great! Thanks Ann.

From: Campbell, Ann
Sent: Tuesday, June 05, 2018 8:40 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Re: Visit of Native Alaskans this week

Yes, just now. He said it was fine to bring both Russ and Palmer.

Ann Campbell
Chief of Staff (acting)
Office of Water

On Jun 5, 2018, at 8:34 AM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Any word from Lee?
>
> ---
>
> **From:** Campbell, Ann
> **Sent:** Monday, June 04, 2018 3:03 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>
> **Subject:** Fwd: Visit of Native Alaskans this week
>
> Fyi
>
> Ann Campbell
> Chief of Staff (acting)
> Office of Water
>
> Begin forwarded message:
>
> > **From:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> > **Date:** June 4, 2018 at 2:13:34 PM EDT
> > **To:** Peter Robertson <peterrobertson@pebblepartnership.com>
> > **Cc:** "Penman, Crystal" <Penman.Crystal@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>
> > **Subject: Re: Visit of Native Alaskans this week**
> >
> > Happy to meet with them when they come in.
> >
> > Sent from my iPhone
> >
> > On Jun 4, 2018, at 2:12 PM, Peter Robertson <peterrobertson@pebblepartnership.com> wrote:

AMERICAN OVERSIGHT

Lee and Crystal,

We have had a change to the group of Native Alaskans that are visiting this week. Abe Williams and Margie Olympic are no longer able to come. The group still includes:

- Brad Angasan, President & CEO of Alaska Peninsula Corporation *(Represents Port Heiden, South Naknek, Ugashik, Kokhanok & Newhalen);*
- Ventura Samaniego, President & CEP of Kijik Corporation *(Represents Lake Clark area & Six Mile Lake); and*
- Henry Olympic, President of Newhalen Tribal Council *(Represents Newhalen).*

They will be accompanied by me and by Shalon Harrington, Chief of Staff for the Pebble LImited Partnership.

Please let me know if you have any questions. We look forward to seeing you.

Sincerely,

Peter

<Outlook-1517243019.png>

Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/4/2018 7:11:43 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: RE: Visit of Native Alaskans this week

OK, Thanks!

From: Campbell, Ann
Sent: Monday, June 04, 2018 3:08 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Re: Visit of Native Alaskans this week

Still need to check.

Ann Campbell
Chief of Staff (acting)
Office of Water

On Jun 4, 2018, at 3:06 PM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Does Lee want me and/or Russ to attend?
>
> **From:** Campbell, Ann
> **Sent:** Monday, June 04, 2018 3:03 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>
> **Subject:** Fwd: Visit of Native Alaskans this week
>
> Fyi
>
> Ann Campbell
> Chief of Staff (acting)
> Office of Water
>
> Begin forwarded message:
>
> > **From:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> > **Date:** June 4, 2018 at 2:13:34 PM EDT
> > **To:** Peter Robertson <peterrobertson@pebblepartnership.com>
> > **Cc:** "Penman, Crystal" <Penman.Crystal@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>
> > **Subject: Re: Visit of Native Alaskans this week**
> >
> > Happy to meet with them when they come in.
> >
> > Sent from my iPhone
> >
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AMERICAN OVERSIGHT

Lee and Crystal,

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They will be accompanied by me and by Shalon Harrington, Chief of Staff for the Pebble LImited Partnership.

Please let me know if you have any questions. We look forward to seeing you.

Sincerely,

Peter

<Outlook-1517243019.png>

Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 7/26/2018 7:36:50 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
CC: Goodin, John [Goodin.John@epa.gov]; Huber, Patrick [Huber.Patrick@epa.gov]
Subject: Fwd: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; ATT00001.htm; Bristol Bay Spript - AOO Briefing_20180723.docx; ATT00002.htm

Ann - Per our discussion. Here's the Pebble Mine ppt presentation.

bf

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

Begin forwarded message:

> **From:** "Hough, Palmer" <Hough.Palmer@epa.gov>
> **To:** "Frazer, Brian" <Frazer.Brian@epa.gov>
> **Subject: FW: AOO director briefing materials**
>
> Brian – here is the Pebble story in a nutshell. We gave this overview briefing to the new director of EPA's AK ops office yesterday. There is a powerpoint and a script for each slide. Let me know if you have questions.
>
> ---
>
> **From:** Palomaki, Ashley
> **Sent:** Monday, July 23, 2018 2:22 PM
> **To:** Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** FW: AOO director briefing materials
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> ---
>
> **From:** McGrath, Patricia
> **Sent:** Tuesday, July 17, 2018 11:32 AM
> **To:** Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
> **Subject:** AOO director briefing materials

AMERICAN OVERSIGHT

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 4/26/2018 6:27:35 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Eisenberg, Mindy [Eisenberg.Mindy@epa.gov]
CC: Bennett, Brittany [bennett.brittany@epa.gov]
Subject: RE: FYI - 2 letters from Pebble to Pruitt this week

Palmer, Thanks, for the heads up on this.

From: Hough, Palmer
Sent: Thursday, April 26, 2018 2:22 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>
Cc: Bennett, Brittany <bennett.brittany@epa.gov>
Subject: FYI - 2 letters from Pebble to Pruitt this week

FYI - Pebble sent the attached two letters to Pruitt this week. Ryan Jackson forwarded both to Lee F and David F. OGC shared them with us.

The letters are critical of the January 2018 decision not to withdraw the PD and argue it should be reconsidered and rehash past Pebble criticisms of the BBWA and PD.

Just wanted you to be aware in case they come up. Not clear if they will be put into CMS.

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 7/17/2018 8:49:41 PM
To: Huber, Patrick [Huber.Patrick@epa.gov]
Subject: Re: Pebble

Thanks!

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Jul 17, 2018, at 4:30 PM, Huber, Patrick <Huber.Patrick@epa.gov> wrote:

> Hi Brian,
> No problem. I will give him a heads up this evening and be ready if I don't get another message from you.
>
> Best,
> Patrick
>
> ---
>
> **From:** Frazer, Brian
> **Sent:** Tuesday, July 17, 2018 4:23 PM
> **To:** Huber, Patrick <Huber.Patrick@epa.gov>
> **Subject:** FW: Pebble
>
> Hi Patrick,
>
> I sent this email to Lee earlier today. If I don't hear back from him, can you add this a late addition to tomorrow's TPs for John? I will let you know by the morning if Lee replies back to me.
>
> Thanks.
>
> bf
>
> ---
>
> **From:** Frazer, Brian
> **Sent:** Tuesday, July 17, 2018 11:58 AM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Cc:** Goodin, John <Goodin.John@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** RE: Pebble
>
> Lee,

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Thanks,

bf

From: Forsgren, Lee
Sent: Monday, July 16, 2018 10:42 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Re: Pebble

That is great. Thanks.

Sent from my iPhone

On Jul 16, 2018, at 7:44 PM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Lee,
>
> We'll get it to you first thing in the morning.
>
> Thanks
>
> bf
>
> **********
> Brian Frazer, Acting Director
> Oceans, Wetlands and Communities Division
> Office of Wetlands, Oceans and Watersheds
> US Environmental Protection Agency

AMERICAN OVERSIGHT

202-566-1652

Sent from my iPhone

On Jul 16, 2018, at 5:18 PM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:

Brian,

Deliberative Process / Ex. 5

Regards,
Lee

From: John Clarke [
Personal Email / Ex. 6
Sent: Monday, July 16, 2018 5:15 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Deputy Assistant Administrator Forsgren,

I'm very concerned about former Administrator Pruitt's directive that the EPA start looking at curtailing its authority under section 404(c). At the same time the Pebble mine's application is moving forward to a draft Environmental Impact Statement.

What are we doing to reinforce our authority under section 404 (c) to stop this monstrosity from happening?? And if EPA does somehow prohibit itself from vetoing a mine, what is your plan to stop Pebble? I'm very concerned they will just say whatever they need to the Army Corps to get a clean EIS, and then the calls will grow louder to lift the PD. But we have said time & again: Wrong Mine, Wrong Place and they won't listen! You are our only hope here.

Looking forward to your reply.

John

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 7/11/2018 9:07:07 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Topping, Brian [Topping.Brian@epa.gov]; Lieberman, Paige [Lieberman.Paige@epa.gov]
Subject: Re: Talking points due COB today

Thanks, Palmer.

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Jul 11, 2018, at 5:01 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

Pebble Talking Points

- In December 2017, Pebble submitted its CWA Section 404 permit application to the Army Corps of Engineers proposing to develop a mine at the Pebble deposit.
- In January 2018, the Corps issued a public notice that provided Pebble's permit application to the public and stated that an EIS will be required as part of its permit review process consistent with NEPA.
- At the invitation of the Corps, EPA has agreed to be a cooperating agency in the Corps' EIS process and we are currently working with the Corps on the scoping phase of the EIS process.
- The Corps currently estimates that a draft EIS will be ready for public notice and comment by mid to late spring of 2019.
- On January 26, 2018, EPA issued its decision to suspend the proceeding to withdraw its 2014 CWA Section 404(c) Proposed Determination regarding the Pebble deposit and leave that Determination in place pending consideration of any other information that is relevant to the protection of the world-class fisheries contained in the Bristol Bay watershed, in light of the CWA Section 404 permit application that Pebble has now submitted to the Corps.
- EPA's January 2018 decision neither deters nor derails the Corps' review of Pebble's Section 404 permit application, which is currently ongoing. Pebble continues to enjoy the protection of due process and the right to proceed.
- In a June 26, 2018 memo, Administrator Pruitt directed EPA's Office of Water to revise its regulations regarding the use of its Section 404(c) authority. The memo requested that the rulemaking consider implementing a number of limitations on EPA's use of its 404(c) authority, including eliminating initiation of 404(c) actions before a permit application has been submitted to the Corps. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

From: Frazer, Brian
Sent: Wednesday, July 11, 2018 4:39 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>; Lieberman, Paige <Lieberman.Paige@epa.gov>
Subject: Re: Talking points due COB today

Brian T. is updating the Ak memo TPS.

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Jul 11, 2018, at 4:37 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> All:
>
> Both of these need updating – the MOA TPs don't provide what you are looking for and the BB TPs need to be updated as well.
>
> I will turn something around shortly.
>
> -Palmer

> **From:** Drinkard, Andrea
> **Sent:** Wednesday, July 11, 2018 4:36 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>
> **Cc:** Lieberman, Paige <Lieberman.Paige@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** RE: Talking points due COB today
>
> + Palmer who is taking a look now, too.

> **From:** Frazer, Brian
> **Sent:** Wednesday, July 11, 2018 4:32 PM
> **To:** Topping, Brian <Topping.Brian@epa.gov>
> **Cc:** Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Lieberman, Paige <Lieberman.Paige@epa.gov>
> **Subject:** FW: Talking points due COB today
>
> Brian – Can you review the tp for the AK mitigation guidance and Bristol Bay. Please send your comments directly to Andrea and Paige today.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

I have no comments on Bristol Bay.

Thanks

bf

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 4:22 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Talking points due COB today

Looping in Brian

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:49 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: RE: Talking points due COB today

Actually, I found the following from last month's Alaska trip prep. Let me know if you have anything to add. Thanks!

Alaska Mitigation Guidance/MOU

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

Bristol Bay

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

- <!--[if !supportLists]--><!--[endif]-->EPA received more than a million public comments on its withdrawal proposal. The overwhelming majority of these comments expressed opposition to the proposal to withdraw; similar levels of opposition were expressed at the public hearings and during the tribal/ANCSA consultation efforts.
- <!--[if !supportLists]--><!--[endif]-->After reviewing all of the public and tribal input and taking into consideration the recent developments regarding the submittal of Pebble's Section 404 permit application, EPA decided not to withdraw the 2014 Proposed Determination at this time.
- <!--[if !supportLists]--><!--[endif]-->The Army Corps of Engineers has initiated the process to develop an Environmental Impact Statement for Pebble's Section 404 permit application. EPA is a cooperating agency in this EIS process and will decide at a later date what impact, if any, the new permit application has on EPA's 2014 Proposed Determination.

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:30 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: Talking points due COB today

Hi Palmer –

We have an urgent request from the Administrator's Office to provide a few talking points for a meeting with Senator Murkowski tomorrow. Do you have anything you can share on the Alaska MOU -- specifically what we heard from stakeholders last month and next steps? I can pull from the press release for general TPs.

We are also looking for a few points on Bristol Bay – do you have a one-pager that is up to date?

Thanks,
Paige

Paige Lieberman
Acting Director of Stakeholder Engagement
Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 564-9957

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 7/11/2018 8:37:53 PM
To: Drinkard, Andrea [Drinkard.Andrea@epa.gov]
CC: Topping, Brian [Topping.Brian@epa.gov]; Lieberman, Paige [Lieberman.Paige@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Re: Talking points due COB today

Ok, Thanks.

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Jul 11, 2018, at 4:36 PM, Drinkard, Andrea <Drinkard.Andrea@epa.gov> wrote:

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> **Subject:** FW: Talking points due COB today
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AMERICAN OVERSIGHT

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Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
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Actually, I found the following from last month's Alaska trip prep. Let me know if you have anything to add. Thanks!

Alaska Mitigation Guidance/MOU

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

Bristol Bay

- <!--[if !supportLists]--><!--[endif]-->EPA published a proposal to withdraw its 2014 CWA Section 404 (c) Proposed Determination in July 2017 and took public comment, held two public hearings in the Bristol Bay region, and consulted with tribal governments and ANCSA Corporations from the Bristol Bay region.
- <!--[if !supportLists]--><!--[endif]-->EPA received more than a million public comments on its withdrawal proposal. The overwhelming majority of these comments expressed opposition to the proposal to withdraw; similar levels of opposition were expressed at the public hearings and during the tribal/ANCSA consultation efforts.
- <!--[if !supportLists]--><!--[endif]-->After reviewing all of the public and tribal input and taking into consideration the recent developments regarding the submittal of Pebble's Section 404 permit application, EPA decided not to withdraw the 2014 Proposed Determination at this time.
- <!--[if !supportLists]--><!--[endif]-->The Army Corps of Engineers has initiated the process to develop an Environmental Impact Statement for Pebble's Section 404 permit application. EPA is a cooperating agency in this EIS process and will decide at a later date what impact, if any, the new permit application has on EPA's 2014 Proposed Determination.

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:30 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: Talking points due COB today

AMERICAN OVERSIGHT

Hi Palmer –

We have an urgent request from the Administrator's Office to provide a few talking points for a meeting with Senator Murkowski tomorrow. Do you have anything you can share on the Alaska MOU -- specifically what we heard from stakeholders last month and next steps? I can pull from the press release for general TPs.

We are also looking for a few points on Bristol Bay – do you have a one-pager that is up to date?

Thanks,
Paige

Paige Lieberman
Acting Director of Stakeholder Engagement
Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 564-9957

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 7/24/2018 1:18:15 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: AOO director briefing materials

Perfect! Thanks.

From: Hough, Palmer
Sent: Tuesday, July 24, 2018 9:09 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: FW: AOO director briefing materials

Brian – here is the Pebble story in a nutshell. We gave this overview briefing to the new director of EPA's AK ops office yesterday. There is a powerpoint and a script for each slide. Let me know if you have questions.

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 8/31/2018 9:07:51 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: Re: Pebble

Thanks, Palmer

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Aug 31, 2018, at 5:02 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> Lee
>
> Attached is the most recent general one-pager I have on Pebble dated 7-23-18 (prepared for FY 2019 Congressional Hearing).
>
> Let me know if you need something else.
>
> Thanks, Palmer
>
> ---
>
> **From:** Forsgren, Lee
> **Sent:** Friday, August 31, 2018 4:20 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
> **Subject:** FW: Pebble
>
> Can one of gentlemen send me the one pager on Pebble.
>
> ---
>
> **From:** Lovell, Will (William)
> **Sent:** Friday, August 31, 2018 4:16 PM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Subject:** RE: Pebble
>
> Understandable. Do you have those 1-pagers?
>
> ---
>
> **From:** Forsgren, Lee
> **Sent:** Friday, August 31, 2018 4:15 PM
> **To:** Lovell, Will (William) <lovell.william@epa.gov>
> **Subject:** RE: Pebble

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Lovell, Will (William)
Sent: Friday, August 31, 2018 3:51 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Looks like Henry met w/them already. Would you care to join Brittany Tuesday morning at 10 am? I'll send the invite in case.

Also, were you able to find your handouts on the issue?

Will Lovell
Policy Advisor, Office of Policy
U.S. Environmental Protection Agency
(202) 564-5713
Lovell.William@epa.gov

<7-23-18 (OW 5) 7A1 - Bristol Bay-Pebble Mine 404c.docx>

AMERICAN OVERSIGHT

Message

From: Frazer, Brian [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=572986D047624669891DA90708433DA1-BRIAN FRAZER]
Sent: 6/14/2018 4:37:06 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Goodin, John [Goodin.John@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: Region 10 draft EIS response

I haven't seen Lee's edits, but I am aware that he has edits/comments.

From: Hough, Palmer
Sent: Thursday, June 14, 2018 12:17 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: RE: Region 10 draft EIS response

Have we seen any specific edits from Lee on the Pebble scoping letter?

I'm on a call with R10 and OGC about David F's comments on the Pebble letter.

I expect to be asked if/when Lee might be providing more comments?

From: Goodin, John
Sent: Tuesday, June 12, 2018 1:41 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Region 10 draft EIS response

Heads up…

From: Goodin, John
Sent: Tuesday, June 12, 2018 1:40 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: RE: Region 10 draft EIS response

Here you go. The document was only sent as a SharePoint link (below) which you are welcome to use. The attached Word version has some edits from others in the document at the moment (the pdf was from the first clean version of the review document).
Thanks
John

Open Pebble Project Scoping 060518 draft HQ Review.docx

From: Forsgren, Lee
Sent: Tuesday, June 12, 2018 1:20 PM
To: Goodin, John <Goodin.John@epa.gov>
Subject: RE: Region 10 draft EIS response

AMERICAN OVERSIGHT

John,

Deliberative Process / Ex. 5

Lee

From: Goodin, John
Sent: Tuesday, June 12, 2018 12:43 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Region 10 draft EIS response

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

AMERICAN OVERSIGHT

Appointment

From: Frazer, Brian [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=572986d047624669891da90708433da1-Brian Frazer]
Sent: 7/23/2018 6:14:24 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 3:30:00 PM
End: 7/27/2018 4:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [Hough.Palmer@epa.gov]
Sent: 6/5/2018 12:32:28 AM
To: Goodin, John [Goodin.John@epa.gov]
Subject: Pebble meeting

John

Did you want me to attend a Pebble meeting tomorrow with Lee? I don't have any details yet.

Palmer

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Huber, Patrick [Huber.Patrick@epa.gov]
Sent: 7/17/2018 8:31:17 PM
To: Goodin, John [Goodin.John@epa.gov]
Subject: FW: Pebble
Attachments: Western Caucus Response FINAL 6.27.18_new edits 7-17-18.docx

John,

Brian has not heard back from Lee on this yet so we may need to raise tomorrow. I will wait to hear from Brian this evening and if Lee doesn't get back to him, will send it first thing in the morning.

Best,
Patrick

From: Frazer, Brian
Sent: Tuesday, July 17, 2018 4:23 PM
To: Huber, Patrick <Huber.Patrick@epa.gov>
Subject: FW: Pebble

Hi Patrick,

I sent this email to Lee earlier today. If I don't hear back from him, can you add this a late addition to tomorrow's TPs for John? I will let you know by the morning if Lee replies back to me.

Thanks.

bf

From: Frazer, Brian
Sent: Tuesday, July 17, 2018 11:58 AM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Goodin, John <Goodin.John@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: Pebble

Lee,

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Thanks,

bf

From: Forsgren, Lee
Sent: Monday, July 16, 2018 10:42 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Re: Pebble

That is great. Thanks.

Sent from my iPhone

On Jul 16, 2018, at 7:44 PM, Frazer, Brian <Frazer.Brian@epa.gov> wrote:

> Lee,
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> We'll get it to you first thing in the morning.
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> Thanks
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> bf
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> **********
> Brian Frazer, Acting Director
> Oceans, Wetlands and Communities Division
> Office of Wetlands, Oceans and Watersheds
> US Environmental Protection Agency
> 202-566-1652
>
> Sent from my iPhone
>
> On Jul 16, 2018, at 5:18 PM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:
>
> > Brian,
> >
> > **Deliberative Process / Ex. 5**
> >
> > Regards,
> > Lee

AMERICAN OVERSIGHT

From: John Clarke **Personal Email / Ex. 6**
Sent: Monday, July 16, 2018 3:13 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Pebble

Deputy Assistant Administrator Forsgren,

I'm very concerned about former Administrator Pruitt's directive that the EPA start looking at curtailing its authority under section 404(c). At the same time the Pebble mine's application is moving forward to a draft Environmental Impact Statement.

What are we doing to reinforce our authority under section 404 (c) to stop this monstrosity from happening?? And if EPA does somehow prohibit itself from vetoing a mine, what is your plan to stop Pebble? I'm very concerned they will just say whatever they need to the Army Corps to get a clean EIS, and then the calls will grow louder to lift the PD. But we have said time & again: Wrong Mine, Wrong Place and they won't listen! You are our only hope here.

Looking forward to your reply.

John

AMERICAN OVERSIGHT

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/4/2018 10:56:15 AM
To: Goodin, John [Goodin.John@epa.gov]
Subject: Re: Next week

Understandable. Should not be an issue.

Ann Campbell
Chief of Staff (acting)
Office of Water

On Jun 1, 2018, at 5:33 PM, Goodin, John <Goodin.John@epa.gov> wrote:

> Afternoon, Ann—next week is starting to look a little crunched for me—would you confirm that Lee would be OK with Palmer or Russ covering the Tuesday Pebble meeting?
> Thanks,
> John

AMERICAN OVERSIGHT

Message

From: Weiler, Katherine [Weiler.Katherine@epa.gov]
Sent: 4/12/2018 3:05:22 AM
To: Goodin, John [Goodin.John@epa.gov]
Subject: For Your Review: NACWA Talking Points
Attachments: NACWA_Talking Points.docx

John,

Attached please find a draft of the NACWA Talking Points. Please feel free to mark up a hard copy tomorrow-Thursday and I can incorporate your changes on Friday while you are retreating. ☺

If you think we are close enough, I will plan to send a draft copy to Paige tomorrow in response to her ASAP request.

Hope the Wetlands meeting went well yesterday!

Katherine

Katherine Weiler | U.S. Environmental Protection Agency | Office of Wetlands, Oceans, and Watersheds
Special Assistant (Detail) | (202) 566-1280 | weiler.katherine@epa.gov

AMERICAN OVERSIGHT

NACWA
National Water Policy Fly-In
April 17, 2018

Washington Court Hotel
525 New Jersey Avenue
Washington, DC

Tuesday, April 17

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- CWA 404 Permitting Issues – Bristol Bay, Mining, Infrastructure

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Wall, Tom [Wall.Tom@epa.gov]
Sent: 8/21/2018 6:20:41 PM
To: Goodin, John [Goodin.John@epa.gov]; Connors, Sandra [Connors.Sandra@epa.gov]; Huber, Patrick [Huber.Patrick@epa.gov]
CC: Havard, James [Havard.James@epa.gov]; Yusuf, Istanbul [Yusuf.Istanbul@epa.gov]
Subject: FW: REVISED OW Hearing Docs -- got the Ches Bay paper from here to work from as well
Attachments: OW-5 Pebble and 404c.docx; OW-6 PFAS.7.26.18_.docx; OW-7 WIFIA.7.27.18.docx; OW-8 SmallDrinkingWaterSystems.7.26.18_.docx; OW-9 ANV.7.27.18.docx; OW-10 Conduit.7.27.18.docx; OW-1 WOTUS.7.25.18.docx; OW-2 LeadCopperRule.7.26.18_ (003).docx; OW-3 CBP.7.27.18.docx; OW-4 GLRI.7.27.18.docx; HABS.docx; 401 Certification.docx; SpCaseJurisdiction404.docx; 07.23.2018 Senate Letter to EPA Regarding Grassroots Technical Assistance Grants.pdf

From: Goodin, John
Sent: Friday, July 27, 2018 2:01 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>; Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>; Wall, Tom <Wall.Tom@epa.gov>; Connors, Sandra <Connors.Sandra@epa.gov>
Cc: Huber, Patrick <Huber.Patrick@epa.gov>
Subject: FW: REVISED OW Hearing Docs

Folks—here are the revised papers that went back up to the Administrator for his hearing prep. Not sure whether these **Deliberative Process / Ex. 5**
Thanks again for all of the drafting and background! We may yet have additional actions in the run-up to August 1, and doubtless some QFRs after that.
Thanks,
John

From: Campbell, Ann
Sent: Friday, July 27, 2018 1:15 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Shimkin, Martha <Shimkin.Martha@epa.gov>; Nagle, Deborah <Nagle.Deborah@epa.gov>; Connors, Sandra <Connors.Sandra@epa.gov>
Subject: FW: REVISED OW Hearing Docs

Thanks very much to everyone for your work on these overnight and early this morning. Attached are the final papers sent over to OCIR just now. Enjoy the weekend.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Campbell, Ann
Sent: Friday, July 27, 2018 1:12 PM
To: Frye, Tony (Robert) <frye.robert@epa.gov>; Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Palich, Christian <palich.christian@epa.gov>; Lyons, Troy <lyons.troy@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>
Subject: REVISED OW Binder Docs

AMERICAN OVERSIGHT

Tony, please find attached the revised Ow-1 through OW-10 papers. Per yesterday's discussion, I am also including a

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

If you could send to me the time and location of Monday's hearing prep so we can have folks there, that would be greatly appreciated. If you have any questions, please feel free to contact me.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Frye, Tony (Robert)
Sent: Thursday, July 26, 2018 6:13 PM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Cc: Palich, Christian <palich.christian@epa.gov>; Lyons, Troy <lyons.troy@epa.gov>
Subject: OW Binder Docs

Hello Team - **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5 Thank you in advance!

Tony Frye
Special Advisor
Office of Congressional & Intergovernmental Affairs
Environmental Protection Agency
Cell: **Personal Phone / Ex. 6**

AMERICAN OVERSIGHT

Message

From: Goodin, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3EAC342F280A4B9DB4079C81F66D1913-JGOODIN]
Sent: 7/27/2018 10:54:04 AM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: RE: Follow up actions from hearing prep

Non-Responsive: Unrelated to Bristol Bay/Pebble

From: Campbell, Ann
Sent: Friday, July 27, 2018 6:53 AM
To: Goodin, John <Goodin.John@epa.gov>
Subject: Re: Follow up actions from hearing prep

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Ann Campbell
Chief of Staff (acting)
Office of Water

On Jul 27, 2018, at 6:46 AM, Goodin, John <Goodin.John@epa.gov> wrote:

Ann—v **Non-Responsive: Unrelated to Bristol Mine** **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**
office s
Non-Responsive: Unrelated to Bristol , pebble, **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**
Thanks,
John

From: Campbell, Ann
Sent: Thursday, July 26, 2018 6:40 PM
To: Goodin, John <Goodin.John@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Stein, Raffael <Stein.Raffael@epa.gov>; Shimkin, Martha <Shimkin.Martha@epa.gov>
Cc: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>
Subject: Follow up actions from hearing prep

OCIR has asked us to update the papers by 8:30a tomorrow. From our updated TPs they will pull what they want into their master set of TPs for the Acting Administrator. Attached are the papers ocir provided. They may have made edits to what we submitted so we need to use these. Below are the notes I took on the edits needed:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble: combine pebble and 404c papers.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Ann Campbell
Chief of Staff (acting)
Office of Water

Begin forwarded message:

From: "Frye, Tony (Robert)" <frye.robert@epa.gov>
Date: July 26, 2018 at 6:13:09 PM EDT
To: "Ross, David P" <ross.davidp@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>
Cc: "Palich, Christian" <palich.christian@epa.gov>, "Lyons, Troy" <lyons.troy@epa.gov>
Subject: OW Binder Docs

Hello Team – Attached is the universe of binder documents I have for your office. Administrator Wheeler requested the updated documents for tomorrow morning. His first briefing is at 9, so by 830 at the latest would be greatly appreciated. Thank you in advance!

Tony Frye
Special Advisor
Office of Congressional & Intergovernmental Affairs
Environmental Protection Agency
Cell: 202.603.3225

<OW-3 CBP.7.25.18.esREV.docx>

AMERICAN OVERSIGHT

Message

From: Goodin, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3EAC342F280A4B9DB4079C81F66D1913-JGOODIN]
Sent: 7/27/2018 10:46:21 AM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: RE: Follow up actions from hearing prep
Attachments: OW-3 CBP.7.25.18.esREV.docx

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

pebble

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks,
John

From: Campbell, Ann
Sent: Thursday, July 26, 2018 6:40 PM
To: Goodin, John <Goodin.John@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Stein, Raffael <Stein.Raffael@epa.gov>; Shimkin, Martha <Shimkin.Martha@epa.gov>
Cc: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>
Subject: Follow up actions from hearing prep

OCIR has asked us to update the papers by 8:30a tomorrow. From our updated TPs they will pull what they want into their master set of TPs for the Acting Administrator. Attached are the papers ocir provided. They may have made edits to what we submitted so we need to use these. Below are the notes I took on the edits needed:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble: combine pebble and 404c papers.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Everyone was taking notes so please let me know if you have something different or additional.

Ann Campbell
Chief of Staff (acting)
Office of Water

Begin forwarded message:

AMERICAN OVERSIGHT

From: "Frye, Tony (Robert)" <frye.robert@epa.gov>
Date: July 26, 2018 at 6:13:09 PM EDT
To: "Ross, David P" <ross.davidp@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>
Cc: "Palich, Christian" <palich.christian@epa.gov>, "Lyons, Troy" <lyons.troy@epa.gov>
Subject: OW Binder Docs

Nonresponsive Unrelated to Pebble / Ex. 6

Tony Frye
Special Advisor
Office of Congressional & Intergovernmental Affairs
Environmental Protection Agency
Cell **Personal Phone / Ex. 6**

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Goodin, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3EAC342F280A4B9DB4079C81F66D1913-JGOODIN]
Sent: 6/12/2018 4:43:20 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Frazer, Brian [Frazer.Brian@epa.gov]; Russell Kaiser [Kaiser.Russell@epa.gov]; Palmer Hough [Hough.Palmer@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Region 10 draft EIS response
Attachments: Pebble Project Scoping 060518 draft HQ Review.pdf

Lee—as mentioned yesterday, attached is the latest version of the Region's draft EIS response letter due at the end of the month to the Corps.
Staff from the Region, ORC, OGC, OFA, and OWOW have provided input. The Region is planning to brief the RA soon. Let me know if you need anything else at this stage.
Thanks
John

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1124df96ce2c40bab3557b5857bcc87d-Gahner, Pam]
Sent: 11/14/2018 12:30:40 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Pirzadeh, Michelle (Pirzadeh.Michelle@epa.gov) [Pirzadeh.Michelle@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Nalven, Heidi [Nalven.Heidi@epa.gov]
BCC: R10SeaRA-Room-21Tahoma-VTC/R10-Rooms-Restricted [R10SeaRA-Room-21Tahoma-VTC@epa.gov]

Subject: Pebble Options/ C **Conference Line/Code / Ex. 6**
Location: R10SeaRA-Room-21Tahoma-VTC/R10-Rooms-Restricted

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 10:00:00 PM
Show Time As: Busy

POC David Allnutt

Patty McGrath
Palmer Hough (HQ-OW – by phone)
Ashley Palomaki
Erik Peterson
Allyn Stern
Cara Steiner-Riley
Michelle P.

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1124df96ce2c40bab3557b5857bcc87d-Gahner, Pam]
Sent: 11/13/2018 7:34:18 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Briefing paper for Col Borders Meeting
Attachments: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx

Start: 11/16/2018 4:30:00 PM
End: 11/16/2018 5:00:00 PM
Show Time As: Free

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1124df96ce2c40bab3557b5857bcc87d-Gahner, Pam]
Sent: 11/5/2018 5:29:44 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Discussion USACE MOU / Pebble
Location: Chris' Office

Start: 11/9/2018 9:00:00 PM
End: 11/9/2018 9:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Herbst, John [herbst.john@epa.gov]
Sent: 6/4/2018 6:04:54 PM
To: Herbst, John [herbst.john@epa.gov]; Hladick, Christopher [hladick.christopher@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Castanon, Lisa [Castanon.Lisa@epa.gov]; Wilson, Wenona [Wilson.Wenona@epa.gov]; Murphy, Stacy [Murphy.Stacy@epa.gov]; Davis, Michelle V. [Davis.MichelleV@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Wright, Felicia [Wright.Felicia@epa.gov]; Roose, Rebecca [Roose.Rebecca@epa.gov]
CC: Berrios, Lisa [Berrios.Lisa@epa.gov]

Subject: RTOC Quarterly Meeting
Attachments: Final June 2018 RTOC QM Agenda - 5.30.18.pdf; Strategic-Plan-2013-April-1-Revision.pdf; CLEAN-Operations-Guidance-Revisions-6.20.pdf; Final RTOC Charter - June 2016.pdf; RTOC Membership List - April 2018.pdf; 2017-Region-10-TELS_Report_Final.pdf; EPA Talking Points - RTOC June 2018.pdf; R10 Tribal Hot Topics for RTOC Summer 2018.pdf; RTOC Standing Issues - June 2018.pdf; RTOC Projects Table - June 2018.xlsx
Location: Westmark Baranof Hotel, Juneau, AK

Start: 6/5/2018 7:00:00 AM
End: 6/8/2018 7:00:00 AM
Show Time As: Tentative

Updated EPA Talking Points, R10 Tribal Hot Topics, RTOC Standing Issues, and RTOC Projects Table are now attached.

Attaching additional RTOC background/information.

JR

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Deliberative Process / Ex. 5

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FINAL AGENDA

Region 10 Tribal Operations Committee Quarterly Meeting

June 5th-7th, 2018
Westmark Baranof Hotel, Juneau, AK
All times listed in ALASKA TIME ZONE

All meetings will take place at the Westmark Baranof Hotel in Juneau, Alaska. Tribal Caucus meeting will be from 8a-12 noon on Tuesday 6/5, with the regular meeting beginning at 1pm on Tuesday 6/5. Regular meeting of RTOC will take place from 8am-5pm on 6/6, and continue on 6/7 from 8a-12pm. RTOC will be doing a glacier tour on Thursday morning from 9 am -12 pm.

Conference Line/Code / Ex. 6

Attendees:

TOC Members:

EPA Region 10: Michelle Pirzadeh - Deputy Regional Administrator, Michael Szerlog – Acting Director, Regional Administrator's Division, Wenona Wilson - Acting Sr. Tribal Policy Advisor, Stacy Murphy – TTAU Manager, JR Herbst – RTOC Coordinator, Michelle Davis – RTOC Coordinator

Presenters: Felicia Wright - AIEO Acting Director, Rebecca Roose – AIEO Sr. Advisor Tribal Capacity Development Team, Fred Hauchman - Office of Research and Development, Adam Baron – Region 10 Drinking Water Compliance Officer, Gabriela Carvalho – Region 10 Tribal Solid and Hazardous Waste Program, Kenneth Weitzel – Central Council of Tlingit and Haida Natural Resources Specialist, Jennifer Hanlon - Yakutat Tlingit Tribe

AMERICAN OVERSIGHT

Tuesday, June 5th, 2018

8:00 AM – 12:00 PM Tribal Caucus Members Only — Baranof Hotel Conference Room

RTOC Tribal Caucus/Consortium Business

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

11:30 - 11:40 AM Focus Session II: Alaska — TOC Members

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble

AMERICAN OVERSIGHT

Bristol Bay/Pebble Mine	NEPA: The Corps EIS scoping period is from April 1 to June 29, 2018. EPA has accepted the Corps' invitation to serve as a cooperating agency during EIS development. 404(c): EPA announced in the Federal Register on 2/28/18 its decision not to withdraw at this time the EPA Region 10 Proposed Determination (proposed restrictions) that was issued pursuant to Section 404(c) of the Clean Water Act. EPA intends at a future time to solicit public comment on what further steps, if any, the Agency should take under Section 404(c).	The Pebble Project involves a large copper-gold-molybdenum deposit located 200 miles southwest of Anchorage on State land. It includes a large open-pit mine, processing facility, and tailings disposal facilities at the mine site and access roads, natural gas pipeline, and port sites on Lake Iliamna and Cook Inlet. The Project Applicant (Pebble Limited Partnership) has submitted a CWA 404 application and the NEPA and CWA 404 permit processes have begun. In May of 2017, EPA entered into a settlement agreement with the Pebble Limited Partnership to resolve litigation from 2014. One of the key terms of the settlement agreement is that EPA agrees that it will not move to the next step in its CWA Section 404(c) process, which would be to issue a recommended determination (determination steps are: proposed, recommended, final), if such a decision is made, until May of 2021 or until the U.S. Army Corps of Engineers issues its final EIS, whichever comes first. For more information, visit EPA's Bristol Bay webpage: https://www.epa.gov/bristolbay, or, the Corps' project EIS website http://pebbleprojecteis.com/#/	The Corps' extended the EIS public comment scoping period which began on April 1 by an additional 60-days. The scoping period ends on June 29, 2018. The Corps estimated schedule is for a draft EIS in 2019.	Patty McGrath (EPA Region 10 Mining Advisor), McGrath.patricia@epa.gov; Erik Peterson (Bristol Bay 404c Team Project Manager), peterson.erik@epa.gov;

Non-Responsive: Unrelated to Bristol Bay/Pebble

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Non-Responsive: Unrelated to Bristol Bay/Pebble

AMERICAN OVERSIGHT

	Oregon	HIGH PRIORITY PROJECTS FOR TRIBES		
Project Name	**State of Action**	**Project Description**	**Public Comment Period**	**Contact**
Columbia River Crossing (CRC)	The Oregon Legislature did not reinstate construction funds for the CRC I-5 Bridge Replacement project and the project office is now closed. In April 2017, the State of WA Senate passed a bill indicating renewed interest in the CRC.	This project proposed a replacement bridge where I-5 crosses the Columbia River between Vancouver and Portland. On Dec. 7, 2011, the Federal Highway Administration and Federal Transit Administration signed a record of decision for the Columbia River Crossing project. Federal transportation agencies have given formal approval for the CRC plan with this decision, which validates the technical and public process to date and allows final design and construction planning to occur. Funding for the project has not been provide by State of WA. So project is in suspense. http://www.columbiarivercrossing.org/		Elaine Somers (Environmental Review) somers.elaine@epa.gov Yvonne Vallette (Clean Water Act §404) vallette.yvonne@epa.gov
Columbia River System Operations EIS	Between Scoping and Draft EIS	On September 30, 2016 the Corps, BPA and BOR jointly published a notice of intent to prepare an EIS on the system operation and maintenance of the 14 federal dams and related facilities in the Columbia River basin. The proposed Columbia River System Operations EIS will assess and update the approach for long-term system operations and configuration. The Action Agencies will evaluate a range of alternatives in the EIS that consider different system operations and additional structural modifications to existing projects to improve fish passage including breaching one or more dams. The EIS will also identify measures to avoid, offset or minimize impacts to resources affected by system operations and configuration.	Scoping period closed in March of 2017. EPA issued scoping comments. EPA has agreed to serve as a cooperating. The MOU to support cooperating agency status is still under development	Teresa Kubo (Environmental Review) kubo.teresa@epa.gov

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble

AMERICAN OVERSIGHT

RTOC Standing Issues – EPA Updates (June 2018)

Pebble Mine/404(c)

(EPA Contacts: Patty McGrath and Erik Peterson)

404(c): On May 11, 2017, EPA entered into a settlement agreement with the Pebble Limited Partnership (Pebble) to resolve litigation from 2014. As part of the settlement agreement, EPA agreed to propose to withdraw the EPA Region 10 Proposed Determination (proposed restrictions) that was issued pursuant to Section 404(c) of the Clean Water Act. On February 28, 2018, EPA announced in the Federal Register its decision not to withdraw its 2014 Proposed Determination at this time. EPA intends at a future time to solicit public comment on what further steps, if any, the Agency should take under Section 404(c).

In addition, now that Pebble has submitted its permit application to the U.S. Army Corps of Engineers, pursuant to the settlement agreement, EPA will not move to the next step in its CWA Section 404(c) process, which would be for EPA R10 to forward a signed Recommended Determination to EPA HQ (Determination steps are: Proposed, Recommended, Final), if such a decision is made, until May of 2021 or until EPA publishes a notice of the U.S. Army Corps of Engineers' final environmental impact statement (EIS) for Pebble's permit application, whichever comes first. For more information, see EPA's Bristol Bay webpage: https://www.epa.gov/bristolbay.

NEPA: EPA has accepted the Corps' invitation to serve as a cooperating agency during EIS development for the Pebble project.

The Corps began a 30-day scoping period for public comment on April 1, 2018 and has since extended the scoping period by 60 days to end on June 29, 2018. The scoping period is a time for the public and agencies to comment on the scope of the EIS. For more information on the EIS and 404 permit application, visit the Corps' project's EIS website http://pebbleprojecteis.com/#/.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=1124DF96CE2C40BAB3557B5857BCC87D-GAHNER, PAM]
Sent: 6/1/2018 4:38:39 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]

Subject: Tom Collier, Pebble Partnership
Location: Chris's Office

Start: 6/7/2018 9:00:00 PM
End: 6/7/2018 9:30:00 PM
Show Time As: Busy

POC Shalon 907-339-2603

Topic: Pebble Mining

AMERICAN OVERSIGHT

Message

From: Detwiler, Susan K. [detwiler.susan@epa.gov]
Sent: 11/27/2018 4:52:53 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: RE: Dunleavy selects Jason Brune for DEC Commissioner

I was on a FWS project selection panel with him. He had a lot of questions about why we do things the way we do.

From: Hladick, Christopher
Sent: Tuesday, November 27, 2018 7:51 AM
To: Detwiler, Susan K. <detwiler.susan@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>; Hamlin, Tim <Hamlin.Tim@epa.gov>; Kowalski, Edward <Kowalski.Edward@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>; Bilbrey, Sheryl <bilbrey.sheryl@epa.gov>; R10-AOO Mail Group <R10AOO_Mail_Group@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Dunleavy selects Jason Brune for DEC Commissioner

Yup I know Jason from RDC. His affiliation with Pebble is something I was not aware.

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

From: Detwiler, Susan K.
Sent: Tuesday, November 27, 2018 8:47 AM
To: Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>; Hamlin, Tim <Hamlin.Tim@epa.gov>; Kowalski, Edward <Kowalski.Edward@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>; Bilbrey, Sheryl <bilbrey.sheryl@epa.gov>; R10-AOO Mail Group <R10AOO_Mail_Group@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Dunleavy selects Jason Brune for DEC Commissioner

See Juneau Empire article below. Also see KTVA https://www.ktva.com/story/39540909/dunleavy-announces-environmental-health-commissioners

https://www.juneauempire.com/news/dunleavy-announces-environmental-health-commissioners/

Dunleavy announces environmental, health commissioners

- Monday, November 26, 2018 6:20pm

AMERICAN OVERSIGHT

Alaska Gov.-elect Mike Dunleavy's pick to lead the Department of Environmental Conservation has a resource development background. His pick for health commissioner is a workforce development company executive.

Dunleavy, a Republican former state senator, in a statement said the status quo "came to a screeching halt" with his election. He said his appointees with help deliver state services in "innovative ways.

Dunleavy takes office Dec. 3. Among the appointments he announced Monday were Jason Brune as Environmental Conservation commissioner and Adam Crum as health commissioner.

Brune is a former executive director of the Resource Development Council who worked in public affairs for a former partner in the Pebble Mine project. He most recently has worked for the Alaska Native corporation Cook Inlet Region, Inc., as senior director of land and resources.

Crum's bio, released by Dunleavy's transition, says he has degrees in psychology and public health. Crum told The Associated Press he is not a "health care policy guy" but is experienced in putting together and leading teams and working on projects.

He said there are talented people working in the state Department of Health and Social Services.

Crum, who said he applied for the job, is executive vice president with Northern Industrial Training LLC.

In his new role, he said a focus will be on "people, not programs," to make sure services are provided to those who need them most. Dunleavy has said he wants to review the state's Medicaid program to see if it's sustainable.

Becky Hultberg, president and CEO of the Alaska State Hospital and Nursing Home Association, said it's a bit unusual to hire someone who hasn't worked directly in the industry. But she said the department is big and complex and requires a leader with strong management skills. If Crum has those skills and surrounds himself with people who understand the complexities of health care, she said he could be a strong leader.

"I think we need to give him the benefit of the doubt," said Hultberg, a former state commissioner of Administration who remembers being called inexperienced. She said her agency got things done because of the talent on her team.

Dunleavy named Jonathan Quick his pick for commissioner of the Department of Administration and Donna Arduin as his budget director.

Arduin has worked with other Republican governors across the country, including as budget director for former Florida Gov. Jeb Bush.

The three commissioner picks are subject to legislative confirmation.

This is an Associated Press article by Becky Bohrer.

AMERICAN OVERSIGHT

Message

From: Ross, David P [ross.davidp@epa.gov]
Sent: 11/10/2018 11:01:25 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: Re: message to Henry

No worries Chris.

Sent from my iPad

On Nov 9, 2018, at 6:09 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:

> I now remember. I was cc'ing you to keep you in the loop but had a lapse of memory. So noted.
>
> Chris Hladick
> Regional Administrator
> U.S. Environmental Protection Agency, Region 10
> Office: (206) 553-1234
> Cell: (206) 247-2946
> Fax: (206) 553-1809
>
> ---
>
> **From:** Ross, David P
> **Sent:** Friday, November 9, 2018 3:08 PM
> **To:** Hladick, Christopher <hladick.christopher@epa.gov>
> **Cc:** Wheeler, Andrew <wheeler.andrew@epa.gov>; Darwin, Henry <darwin.henry@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
> **Subject:** Re: message to Henry
>
> Thanks Chris, but please keep me out of any Pebble conversations and off this and related correspondence. I'm recused on the matter. Thanks.
>
> Sent from my iPhone
>
> On Nov 9, 2018, at 5:59 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:
>
> > **Gentleman:** I'm writing to gauge your interest in receiving a background briefing on EPA's role with respect to the proposed Pebble gold and copper mining project in SW Alaska.
> >
> > I anticipate that EPA will be asked to weigh in over the next few months on the expected environmental impacts of the project, and it would be good to hear your perspectives as we prepare for these communications. EPA has been involved in various Clean Water Act and NEPA aspects of this project for more than a decade, and we would be happy to provide you with background on these efforts as well as on anticipated future actions. Similar briefings were provided in 2017 to members of the transition team and to political leadership of HQ's water and NEPA programs. I understand that you met with Tom Collier in August to hear his perspectives on the project, and we expect that other pro- and anti-mine interests will be reaching out to you as well. Because the acting Administrator is currently recused from participating in this matter, we'd like to offer you an overview of the project and EPA's role.

AMERICAN OVERSIGHT

As you're probably aware, Administrator Pruitt issued – but later suspended – a proposal to withdraw a 2014 Clean Water Act "proposed determination" that would have imposed certain restrictions on development of the Pebble deposit. Meanwhile, the Army Corps of Engineers is currently developing an environmental impact statement and considering an application for a Clean Water Act permit necessary to develop the mine. We anticipate that EPA will be asked to review and comment on both the EIS and the permit application in 2019. These reviews are likely to involve staff from Region 10 as well as from HQ's offices of water, policy, and general counsel.

The Corps is currently expecting to issue its draft EIS for public review and comment in January, so both Lee Forsgren and I believe a briefing in November or December would be timely.

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

AMERICAN OVERSIGHT

Message

From: Lyons, Troy [lyons.troy@epa.gov]
Sent: 10/19/2018 11:07:11 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: Re: AW WH Remarks

Please do. Any time. Personal Phone / Ex. 6

Sent from my iPhone

On Oct 19, 2018, at 6:13 PM, Hladick, Christopher <hladick.christopher@epa.gov> wrote:

> Can I give a call tomorrow? I know most of the folks on that list. Pebble will come up.
>
> Sent from my iPhone
>
> On Oct 19, 2018, at 1:17 PM, Lyons, Troy <lyons.troy@epa.gov> wrote:
>
> > Mike, Chris:
> >
> > Please be advised that Administrator Wheeler is expected to deliver remarks on Tuesday at the White House to elected officials from CA, AK, and HI. The purpose of this note is to 1) give you an advanced notice of the event, and 2) seek your input on any items the Administrator may want to address. In total he has 30 minutes for remarks and Q&A, so there is not a lot of time to go too deep into the weeds, but we want to ensure we do not miss any glaring actions/items.
> >
> > Please keep this memo close as it is still in draft form.
> >
> > Many thanks,
> >
> > Troy
> >
> > _____
> > **Troy M. Lyons**
> > Associate Administrator
> > Office of Congressional & Intergovernmental Relations
> > U.S. Environmental Protection Agency
> > Personal Phone / Ex. 6
> >
> > <Draft Briefing -- CA AK HI White House Conference v1.5.docx>

AMERICAN OVERSIGHT

Message

From: Holsman, Marianne [Holsman.Marianne@epa.gov]
Sent: 5/4/2018 8:26:40 PM
To: Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Hladick, Christopher [hladick.christopher@epa.gov]
Subject: Current draft NEBC talk...still needs some polish and a look at the internal/budget info.
Attachments: 2018 Hladick NEBC Cascade Chapter 051018.docx

Also, I see I still need info. on Puget Sound and Treaty Rights. Will remind folks that I need their input.

I can work on this on Sunday afternoon/evening if needed.

Marianne Holsman
Public Affairs Director
EPA Region 10
Desk: 206-553-1237
Cell: 206-450-5895

Follow us!



AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 4/25/2018 11:06:14 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]
Subject: Fwd: Another Letter from PLP to the Administrator
Attachments: 20180425160309.PDF; ATT00001.htm

Allyn Stern
Regional Counsel
US EPA Region 10
206-553-1223
stern.allyn@epa.gov

Begin forwarded message:

> **From:** "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>
> **Date:** April 25, 2018 at 2:45:06 PM PDT
> **To:** "Peterson, Erik" <Peterson.Erik@epa.gov>, "Allnutt, David" <Allnutt.David@epa.gov>, "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Stern, Allyn" <Stern.Allyn@epa.gov>, "Mendelman, Krista" <Mendelman.Krista@epa.gov>, "Bennett, Brittany" <bennett.brittany@epa.gov>
> **Cc:** "Hough, Palmer" <Hough.Palmer@epa.gov>
> **Subject: Another Letter from PLP to the Administrator**
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> **From:** Wehling, Carrie
> **Sent:** Wednesday, April 25, 2018 2:42 PM
> **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** Fwd: Bristol Bay Watershed Assessment
>
> But wait, there's more....
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> > **Date:** April 25, 2018 at 5:28:56 PM EDT
> > **To:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>
> > **Subject: FW: Bristol Bay Watershed Assessment**

AMERICAN OVERSIGHT

Another letter from PLP . . .

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 5:28 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Bristol Bay Watershed Assessment

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 4:08 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Bristol Bay Watershed Assessment

Ryan,

Another letter to the Administrator -- this one on the many flaws of the Bristol Bay Watershed Assessment, which the Administrator is relying on in sustaining the preemptive veto of the Pebble Mine.

Please let me know if you have any questions.

Thanks.

Peter

AMERICAN OVERSIGHT

Message

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 4/25/2018 8:29:55 PM
To: Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Hladick, Christopher [hladick.christopher@epa.gov]
Subject: FW: Letter to Administrator from Pebble re 404c
Attachments: 20180425125804.PDF

This just in. I haven't reviewed it yet.

Allyn L. Stern
Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue, Seattle, WA 98101
206-553-1223

From: Palomaki, Ashley
Sent: Wednesday, April 25, 2018 12:03 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Letter to Administrator from Pebble re 404c

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Wehling, Carrie
Sent: Wednesday, April 25, 2018 11:51 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Heads up re Letter to the Administrator

Heidi – looks like something for our weekly next week, if not sooner.
No specific to-do.
Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

AMERICAN OVERSIGHT

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

Ryan,

AMERICAN OVERSIGHT

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: DeBell, Kevin [debell.kevin@epa.gov]
Sent: 7/24/2018 3:34:52 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: RE: Phone for Friday

Henry. I'm happy to answer any questions you may have.

Best,
Kevin

Kevin M. DeBell, Ph.D.
Senior Advisor to the Acting Deputy Administrator and Chief of Operations
U.S. Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue NW
William Jefferson Clinton Building North, Room 3313 (MC1101A)
Washington, DC 20460
202 566 1931
debell.kevin@epa.gov

I'm always open to feedback on my performance and service. Please provide your comments here: https://www.surveymonkey.com/r/debellfeedback. Your comments will be provided to me anonymously.

From: Hladick, Christopher
Sent: Tuesday, July 24, 2018 11:26 AM
To: DeBell, Kevin <debell.kevin@epa.gov>
Subject: Re: Phone for Friday

Purpose to bring Henry up to speed or Administrator?

Sent from my iPhone

On Jul 24, 2018, at 8:02 AM, DeBell, Kevin <debell.kevin@epa.gov> wrote:

> Hi Chris:
>
> I hope all is well. I'm just letting you know that Henry's **Personal Phone / Ex. 6** 4. Please call us for the Pebble Mine briefing on Friday.
>
> Thanks,
> Kevin
>
> Kevin M. DeBell, Ph.D.
> Senior Advisor to the Acting Deputy Administrator and Chief of Operations
> U.S. Environmental Protection Agency
> Office of the Administrator
> 1200 Pennsylvania Avenue NW
> William Jefferson Clinton Building North, Room 3313 (MC1101A)
> Washington, DC 20460
> 202 566 1931

AMERICAN OVERSIGHT

debell.kevin@epa.gov

I'm always open to feedback on my performance and service. Please provide your comments here: https://www.surveymonkey.com/r/debellfeedback. Your comments will be provided to me anonymously.

AMERICAN OVERSIGHT

Message

From: Holsman, Marianne [Holsman.Marianne@epa.gov]
Sent: 5/9/2018 12:21:18 AM
To: Hladick, Christopher [hladick.christopher@epa.gov]
Subject: 2018 Hladick NEBC Cascade Chapter 051018 FINAL.docx
Attachments: 2018 Hladick NEBC Cascade Chapter 051018 FINAL.docx

In case you want to peruse this on your phone…

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 8/7/2018 7:56:00 PM
To: Darwin, Henry [darwin.henry@epa.gov]
Subject: Re: Pebble

Sounds good. Probably ECOS

Sent from my iPhone

On Aug 7, 2018, at 12:55 PM, Darwin, Henry <darwin.henry@epa.gov> wrote:

> Thanks for checking. No follow-up needed immediately. I will want to check in with you next time we have a face-to-face meeting.
>
> Henry
>
> **From:** Hladick, Christopher
> **Sent:** Tuesday, August 7, 2018 3:01 PM
> **To:** Darwin, Henry <darwin.henry@epa.gov>
> **Subject:** Pebble
>
> Henry:
>
> Hope your meeting with Collier went well. Let me know if you have any follow up you want me to do.
>
> Chris
>
> Chris Hladick
> Regional Administrator
> U.S. Environmental Protection Agency, Region 10
> Office: (206) 553-1234
> Cell: (206) 247-2946
> Fax: (206) 553-1809

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 7/27/2018 4:30:54 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine - briefing material added*
Location: WJCN 3412

Start: 7/27/2018 4:30:00 PM
End: 7/27/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 4/25/2018 9:15:37 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]
Subject: Re: Letter to Administrator from Pebble re 404c

Thanks

Sent from my iPhone

On Apr 25, 2018, at 1:30 PM, Stern, Allyn <Stern.Allyn@epa.gov> wrote:

> This just in. I haven't reviewed it yet.
>
> Allyn L. Stern
> Regional Counsel
> U.S. EPA, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> 206-553-1223
>
> **From:** Palomaki, Ashley
> **Sent:** Wednesday, April 25, 2018 12:03 PM
> **To:** Peterson, Erik <Peterson.Erik@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
> **Cc:** Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** Letter to Administrator from Pebble re 404c
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> **From:** Wehling, Carrie
> **Sent:** Wednesday, April 25, 2018 11:51 AM
> **To:** Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
> **Subject:** Heads up re Letter to the Administrator
>
> Heidi – looks like something for our weekly next week, if not sooner.
> No specific to-do.
> Thanks.
> Carrie
>
> Caroline (Carrie) Wehling

AMERICAN OVERSIGHT

Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

AMERICAN OVERSIGHT

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

202-629-3392

<20180425125804.PDF>

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 7/26/2018 9:26:01 PM
To: Gahner, Pamela [gahner.pamela@epa.gov]
Subject: FW: Henry Darwin BB-Pebble briefing
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Chris Hladick
Regional Administrator
U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 247-2946
Fax: (206) 553-1809

From: McGrath, Patricia
Sent: Thursday, July 26, 2018 1:56 PM
To: Hladick, Christopher <hladick.christopher@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Islam, Mahbubul <Islam.Mahbubul@epa.gov>
Subject: Henry Darwin BB-Pebble briefing

Hi Chris and Michelle-
Palmer informed us of a briefing tomorrow related to Pebble. The briefing materials are those used to brief Sue Detwiler on Monday.
It looks like Chris has been invited. Will you be able to participate? Please let me know if you need any support or have questions.
Patty

From: Hough, Palmer
Sent: Thursday, July 26, 2018 1:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: AOO director briefing materials

Folks:

I just wanted to give you a heads-up that the materials that you used to brief the new AOO will be used tomorrow to brief Henry Darwin, EPA's chief of operations.

It is my understanding that Lee Forsgren will be leading the briefing and John Goodin and Brian Frazer from OWOW will be present as well. Brian indicated that Chris Hladick has also been invited but it is not clear that he has accepted this invite.

That is basically all I know about this briefing.

-Palmer

AMERICAN OVERSIGHT

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 7/23/2018 9:47:49 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 3:30:00 PM
End: 7/27/2018 4:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Hladick, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B82D04419C42423A97BD7624A3A09908-HLADICK, CH]
Sent: 6/13/2018 5:38:26 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Fwd: Top level talking points on Pebble

Just sent to Lee

Sent from my iPhone

Begin forwarded message:

> **From:** "Hladick, Christopher" <hladick.christopher@epa.gov>
> **Date:** June 13, 2018 at 10:37:25 AM PDT
> **To:** "Forsgren, Lee" <Forsgren.Lee@epa.gov>
> **Subject: Re: Top level talking points on Pebble**
>
> On May 25th Quantum Minerals pulled out of the project. They had pledged $150 M in return fro 50% equity.
>
> Tom Collier visited R10 last week to discuss project: they are working on other investors. They are looking at projects within the B.B. Region to improve Public Relations, such as power projects, gas pipeline to villages, or a contribution to a fund that would act as insurance for fisherman during poor salmon returns.
>
> Bryce Edgmon, Speaker of the House for Alaska State Legislature, recently wrote a letter criticizing Corps process in PLP permitting process.
>
> Sent from my iPhone
>
> On Jun 13, 2018, at 8:49 AM, Forsgren, Lee <Forsgren.Lee@epa.gov> wrote:
>
> > John,
> > I need 4 or 5 high level talking points for the Administrator on Pebble by 2:00 pm. Generally that Pebble has submitted a permit, we are working with the COE on the scope of the EIS, we are waiting to see what the actual mine might look like as part of the EIS/404 permit process before moving ahead with additional comments and anything else you think relevant.
> >
> > Lee
> >
> > **D. Lee Forsgren**
> > Deputy Assistant Administrator
> > Office Of Water
> > Environmental Protection Agency
> > 1200 Pennsylvania Avenue, NW
> > Room 3219 WJCE
> > Washington, DC 20460
> > Phone: 202-564-5700
> > Forsgren.Lee@epa.gov

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/16/2018 10:03:50 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Butler, Barbara [Butler.Barbara@epa.gov]

Subject: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; F **Conference Line/Code / Ex. 6**

Start: 11/27/2018 5:00:00 PM
End: 11/27/2018 6:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

AMERICAN OVERSIGHT

Appointment

To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/11/2018 4:00:00 PM
End: 9/11/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: (none)

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 12/18/2018 5:00:00 PM
End: 12/18/2018 6:00:00 PM

Recurrence: (none)

Proposed Agenda – let Erik know if you have suggestions

Permit Oversight/ NEPA Review Team

NEPA Preliminary EIS Comments

Public Notice

PLP's draft Compensatory Mitigation Plan

404(c) Team

Hladick and Forsgren 12/12 Briefing

Bristol Bay NEPA and 404 Leadership Update for January 2019

CMS Pebble Limited Partnership

FOIA

Request for Correction or Withdrawal

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Thiesing, Mary [Thiesing.Mary@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 1/1/2019 5:00:00 PM
End: 1/1/2019 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/16/2018 5:11:27 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Canceled: Bristol Bay Check-in; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/1/2018 4:00:00 PM
End: 8/1/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/15/2018 4:00:00 PM
End: 8/15/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/29/2018 4:00:00 PM
End: 8/29/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/12/2018 4:00:00 PM
End: 9/12/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/26/2018 4:00:00 PM
End: 9/26/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/10/2018 4:00:00 PM
End: 10/10/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/24/2018 4:00:00 PM
End: 10/24/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM

End: 7/18/2018 5:00:00 PM

Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/13/2018 8:30:00 PM
End: 11/13/2018 9:30:00 PM

Recurrence: (none)

Agenda

FOIA

NEPA Coordination

Congressional Correspondence

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/20/2018 8:30:00 PM
End: 11/20/2018 9:30:00 PM

Recurrence: (none)

BB 404c Team,

I propose we meet on 11/20. See agenda below. Happy to hear feedback on the agenda.

Also, I'd like to discontinue sending the emails with the agenda. **Attorney Client / Ex. 5** and would prefer to add the agenda to the calendar invite. I will however try not to change it too many times, and I will either add an agenda to the calendar invite or send an update/cancel proposal at least the day before our team meeting. In other words, if this calendar event has not been canceled and has an agenda then we are planning on having the call. As we have been doing, review the agenda to determine relevance for you and your level of interest.

A huge ongoing thank you for your engagement on this important project.

Agenda

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA
- E&E News (011614)
- McKeaver FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence
- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting
- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/27/2018 8:30:00 PM
End: 11/27/2018 9:30:00 PM

Recurrence: (none)

We have enough going on where having the call will be helpful. Thank you for making the call if you can.

Agenda

NEPA preliminary EIS comments

FOIA

Information Quality Act Request for Correction or Withdrawal

June 2018 memo on 404c

DeFazio and Carper response

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Wake, Neverley [wake.neverley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]

Start: 12/11/2018 8:30:00 PM
End: 12/11/2018 9:30:00 PM

Recurrence: (none)

Hello Bristol Bay 404c Team,

I'd like to meet on 12/11.

Proposed Agenda

NEPA Preliminary EIS Comments

Plan for Hladick and Forsgren Briefing – 12/12

FOIA

Request for Correction or Withdrawal

CMS: BBNC, Thomas Allen, PLP

External Meeting

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 7/5/2018 9:34:07 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; R10AOO-ConfLnO365-Restricted-2051053 [R10AOO-ConfLnO365-Restricted-2051053@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: FW: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

-----Original Appointment-----
From: Fordham, Tami
Sent: Thursday, July 05, 2018 12:29 PM
To: Fordham, Tami; McGrath, Patricia; Palomaki, Ashley; Douglas, Mark; Detwiler, Susan K.; R10AOO-ConfLnO365-Restricted-2051053
Cc: Vaughan, Molly; Peterson, Erik; Steiner-Riley, Cara; Nogi, Jill; Mendelman, Krista; Szerlog, Michael; Anderson-Carnahan, Linda
Subject: Pebble Overview for AOO Director
When: Monday, July 23, 2018 10:00 AM-11:00 AM (UTC-09:00) Alaska.
Where: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Sue and I will be in Seattle, looking forward to seeing most of you in person. Thanks! Tami

→ Join Skype Meeting

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

Join by Phone

Conference Line/Code / Ex. 6

Help

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/16/2018 10:03:48 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 11/27/2018 5:00:00 PM
End: 11/27/2018 6:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/16/2018 8:07:40 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/27/2018 11:42:00 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Muche, Muluken [Muche.Muluken@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Butler, Barbara [Butler.Barbara@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble EIS water management plans and modeling

As discussed during our meeting this morning, below is a link to the Pebble Project EIS website where you will find the water management plans and modeling reports. Most of this will be found in responses to RFI 19 (including 19a, 19b, 19c, and 19d) and also RFI 21. You can filter the list of documents by searching on "19" or you can look through the entire list of information requests. The reference documents are available on the website as well.

https://pebbleprojecteis.com/documents/library

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 7/17/2018 2:51:56 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Kelly, Christine M [kelly.christinem@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM
End: 7/18/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 6/18/2018 11:15:15 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

OK – I'll take a look at those parts, and send you comments by end of the week. Have fun in AK!

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Monday, June 18, 2018 6:51 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: Re: REVIEW REQUEST and additional documents loaded to Sharepoint

Kate any input you can provide on any of the pieces with my name by them would be helpful. Priority are water resource related areas.

I'm in AK this week and leading a training next week. So I'm still trying to figure out when I'm gonna look at this.

Sent from my iPhone

On Jun 18, 2018, at 2:43 PM, Schofield, Kate <Schofield.Kate@epa.gov> wrote:

> Hi Palmer,
>
> Is there anything in particular you would like me to take a look at, in the info below? I'm not exactly sure what my role is here, but if you'd like to me to get eyes on something specific please just let me know.
>
> Thanks!
> Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

> **From:** Vaughan, Molly
> **Sent:** Thursday, June 7, 2018 3:13 PM
> **To:** McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
> **Subject:** REVIEW REQUEST and additional documents loaded to Sharepoint
>
> Hello Team,

AMERICAN OVERSIGHT

The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website/ Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website/ Ex. 6

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

  Internal Website/ Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.

AMERICAN OVERSIGHT

Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.

AMERICAN OVERSIGHT

The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (e.g., use of lightering and elimination of dredging).
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 7/17/2018 2:33:30 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Updated language proposed. Let me know if you want to discuss.

Deliberative Process / Ex. 5

Thanks.

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Tuesday, July 17, 2018 10:19 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Updated language proposed. Let me know if you want to discuss.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Nalven, Heidi
Sent: Tuesday, July 17, 2018 9:57 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Updated language proposed. Let me know if you want to discuss.

Please see my attached edits and comments.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Hough, Palmer
Sent: Tuesday, July 17, 2018 9:04 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: FW: Updated language proposed. Let me know if you want to discuss.
Importance: High

AMERICAN OVERSIGHT

From: Kaiser, Russell
Sent: Tuesday, July 17, 2018 6:41 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: FW: Updated language proposed. Let me know if you want to discuss.
Importance: High

Palmer … Pls review first thing. Note that we received additional guidance from Lee yesterday morning re: the language and he did want to go farther than you did. Are you comfortable with the additional sentence. Pls advise ASAP as Brian needs to move forward with DOC this AM.

Thanks much - Russ

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Kaiser, Russell
Sent: Tuesday, July 17, 2018 6:24 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: FW: Updated language proposed. Let me know if you want to discuss.

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Kaiser, Russell
Sent: Monday, July 16, 2018 10:09 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Updated language proposed. Let me know if you want to discuss.

AMERICAN OVERSIGHT

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

AMERICAN OVERSIGHT

Message

From: Kovatch, Charles [Kovatch.Charles@epa.gov]
Sent: 7/10/2018 9:10:00 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Laabs, Chris [Laabs.Chris@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: RE: 404 Activity Tracking table for 7/12
Attachments: Copy of Copy of 2018 0712 404 Activity Tracking draft_pfh_ck.xlsx

My edits.

From: Hough, Palmer
Sent: Tuesday, July 10, 2018 9:46 AM
To: Laabs, Chris <Laabs.Chris@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: RE: 404 Activity Tracking table for 7/12

Here you go – updated Pebble EIS **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**

From: Laabs, Chris
Sent: Tuesday, July 10, 2018 9:32 AM
To: Linn, Jennifer <Linn.Jennifer@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: 404 Activity Tracking table for 7/12

All,

Attached is the draft 404 Activity Tracking table for 7/12. Please review the cases you're working on and provide comments/updates no later than COB tomorrow, Wednesday 7/11.

Thanks!
Chris

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Region									
5									
5									
10									
10									
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10									
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.

AMERICAN OVERSIGHT

	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
Early Identification/Pre	

AMERICAN OVERSIGHT

Message

From: Dennis, Allison [Dennis.Allison@epa.gov]
Sent: 6/11/2018 9:46:47 PM
To: Holsman, Marianne [Holsman.Marianne@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Lieberman, Paige [Lieberman.Paige@epa.gov]
Subject: FW: request to help create one drive and briefing binder for Lee
Attachments: Draft press release Alaska Mitigation6.8.18.docx; Alaska MOA Roll Out 6.6.18.docx; Alaska Prep Binder ToC.docx

Just a head's up to Marianne and Andrea and Paige that we are starting a prep binder for Lee's trip to Alaska next week.
-Allison

From: Dennis, Allison
Sent: Monday, June 11, 2018 5:38 PM
To: Mayer, Lauren <mayer.lauren@epa.gov>
Subject: request to help create one drive and briefing binder for Lee

Hi Lauren,

I was wondering if you could help set up a one drive folder (and eventually the resulting binder) for Lee's Alaska trip next week? If you are swamped with other stuff, no worries! If you are up for the task, please read on:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Allison Dennis
Deputy Communications Director
Office of Water
U.S. Environmental Protection Agency
Office: 202-564-1985
Cell: 202-257-5629
Dennis.Allison@epa.gov

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

USACE-EPA Trip to Alaska Prep Binder

Table of Contents

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Tab 4: Other

1) Other Alaskan Hot Topics (Pebble Mine, Tribal, etc.) (Palmer re: Pebble; Region 10 for the rest?)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Ta

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/7/2018 12:02:18 AM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble wetlands coordination conversation
Location: R10AOO Conference /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Gude, Karen [Gude.Karen@epa.gov]
Sent: 5/16/2018 8:29:04 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
Subject: RE: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay

Palmer/Brittany,

Thank you! Let me work a little more on the agenda timing, and I'll try and confirm the session timing for you by early next week.

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

From: Hough, Palmer
Sent: Wednesday, May 16, 2018 2:51 PM
To: Gude, Karen <Gude.Karen@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Subject: RE: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay

Karen – I have a conflict on 6/6 from 10-11 and 12-1 but am otherwise free. I can also work with Brittany to provide her with talking pts so one way or the other we can have someone there when you need us on 6/6

From: Gude, Karen
Sent: Wednesday, May 16, 2018 2:39 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Subject: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay

Palmer and Brittany,

Hi. Hope you are both well. The National Tribal Water Council has scheduled its in-person meeting in DC June 5-7. I'm currently working with the Council and ITEP to draft the agenda for the NTWC-EPA portion of the meeting, which is scheduled for June 6 here at HQ. The NTWC has asked to receive updates on several OW-related efforts, including the latest on Bristol Bay. Understanding that ACOE is lead for reviewing the 404 permit from PLP and the EIS process is currently underway, there might not be too much to new news to share. Would it be possible for someone to give a 5 min (more if needed) summary of the current status of this and to answer any questions the Council may have?

I've attached an INTERNAL DRAFT agenda for the meeting on June 6. If you could please keep it close hold for the moment --- the draft includes my edits/comments to ITEP on their draft agenda, which they have yet to consider as well as my annotated notes on the various session topics from my discussions with ITEP and Ken. Additional changes to the agenda are likely, but this is the best information that I have at the moment. (I anticipate a revised agenda from ITEP within the next week.)

I've tentatively included an update on Bristol Bay within a series of OW Updates from 11:15 – 12:00 on Wednesday, 6/6. I can be flexible on timing, if needed. Also, just for context, and in case it's helpful, Dave Ross has tentatively agreed to kick the meeting off, but I don't anticipate that he will be there for the OW Updates portion of the discussion; it's possible that Benita may attend the OW updates session.

Happy to chat more. Thank you,

AMERICAN OVERSIGHT

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 7/10/2018 1:31:41 PM
To: Linn, Jennifer [Linn.Jennifer@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: 404 Activity Tracking table for 7/12
Attachments: 2018 0712 404 Activity Tracking draft.xlsx

All,

Attached is the draft 404 Activity Tracking table for 7/12. Please review the cases you're working on and provide comments/updates no later than COB tomorrow, Wednesday 7/11.

Thanks!
Chris

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EIS scoping extended until 6/29. Next Action- EPA drafting its EIS scoping letter.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Bennett, Brittany [bennett.brittany@epa.gov]
Sent: 5/16/2018 6:40:34 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay

Palmer – you're better suited for this since you're involved in the NEPA process, but I could attend if you give me some talking points.

B

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

From: Gude, Karen
Sent: Wednesday, May 16, 2018 2:39 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Subject: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay

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Hi. Hope you are both well. The National Tribal Water Council has scheduled its in-person meeting in DC June 5-7. I'm currently working with the Council and ITEP to draft the agenda for the NTWC-EPA portion of the meeting, which is scheduled for June 6 here at HQ. The NTWC has asked to receive updates on several OW-related efforts, including the latest on Bristol Bay. Understanding that ACOE is lead for reviewing the 404 permit from PLP and the EIS process is currently underway, there might not be too much to new news to share. Would it be possible for someone to give a 5 min (more if needed) summary of the current status of this and to answer any questions the Council may have?

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Happy to chat more. Thank you,

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

AMERICAN OVERSIGHT

Message

From: Gude, Karen [Gude.Karen@epa.gov]
Sent: 5/16/2018 6:38:55 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
Subject: NTWC In-Person Meeting Scheduled for 6/6 at EPA HQ --- Seeking update on Bristol Bay
Attachments: NTWC Mtg draft agenda_Jun 2018_Day 2 kgude internal annotated 5-10-18.docx

Palmer and Brittany,

Hi. Hope you are both well. The National Tribal Water Council has scheduled its in-person meeting in DC June 5-7. I'm currently working with the Council and ITEP to draft the agenda for the NTWC-EPA portion of the meeting, which is scheduled for June 6 here at HQ. The NTWC has asked to receive updates on several OW-related efforts, including the latest on Bristol Bay. Understanding that ACOE is lead for reviewing the 404 permit from PLP and the EIS process is currently underway, there might not be too much to new news to share. Would it be possible for someone to give a 5 min (more if needed) summary of the current status of this and to answer any questions the Council may have?

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Happy to chat more. Thank you,

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 6/11/2018 8:32:02 PM
To: Kovatch, Charles [Kovatch.Charles@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]
Subject: Action - Updates requested for the 404 Activity Tracking table by COB 6/13/18 Draft.xlsx
Attachments: 2018 0606 404 Activity Tracking Draft.xlsx

Importance: High

All,

Attached is the most recent version of the 404 tracking table. Please review your information and provide me with updates no later than 6/13/2018.

Thank you in advance for your time and effort,
Chris

AMERICAN OVERSIGHT

Region							
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
5							
10							
10							
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)				3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
9							
7							
4							
4							
8							
2							
2							

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Gude, Karen [Gude.Karen@epa.gov]
Sent: 6/6/2018 8:36:43 PM
To: Bennett, Brittany [bennett.brittany@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: NTWC - Responding to Pebble Project Questions

Brittany,

Thanks so much! Once the NTWC meeting wraps up tomorrow, I'll pull together all follow up information requested by the Council and send it out to them.

Karen Gude
Tribal Program Coordinator
U.S. EPA/Office of Water
Phone: (202) 564-0831

From: Bennett, Brittany
Sent: Wednesday, June 6, 2018 4:34 PM
To: Gude, Karen <Gude.Karen@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: NTWC - Responding to Pebble Project Questions

Hi Karen,

I was asked two questions that I had to follow up on with our R10 contact regarding the Pebble Project/Bristol Bay update I gave today. Below are the answers to be shared with NTWC.

Q1: Did the Army Corps invite tribes to be cooperating agencies in the EIS process?
A1: The Corps did not invite to the tribes to act as cooperating agencies. However, the Corps did receive requests from tribes to be cooperators. The Corps elevated those requests and two tribes are now cooperating agencies in the EIS process.

Q2: Will EPA provide training on the NEPA process as it relates to the mining process?
A2: There is currently no training plan in place, but EPA is open to considering training opportunities if requested. We have a 2016 Region 10 training online for free and available to the public. The three-part, archived training covers (1) Mining Fundamentals, (2) Mining Environmental Concerns and Issues, and (3) Regulatory Process and How the Public and Tribes can Engage. I've provided the web addresses below, and hyperlinked the topic list above. If tribes would like to request additional training opportunities or more information, they can contact Region 10's mining advisor, Patty McGrath, at mcgrath.patricia@epa.gov.

https://clu-in.org/conf/tio/NEPAandMining101-1_051216/
https://clu-in.org/conf/tio/NEPAandMining101-2_052416/
https://clu-in.org/conf/tio/NEPAandMining101-3_060816/

Thanks Karen!

B

Brittany K. Bennett
Ecologist

AMERICAN OVERSIGHT

U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:21:41 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:21:34 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 10/24/2018 4:00:00 PM
End: 10/24/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 5/29/2018 7:25:09 PM
To: Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: ACTION- Review and Update 404 Activity Tracking Draft by COB 5/30
Attachments: 2018 0531 404 Activity Tracking Draft.xlsx

All,

Attached is the draft 404 activity table. Please review your information and provide updates accordingly by COB 5/30 please. Brian needs this for a meeting with John on Thursday morning.

Thank you in advance for your time and effort.

Thx!
Chris

AMERICAN OVERSIGHT

10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)					3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:18:51 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 10/10/2018 4:00:00 PM
End: 10/10/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 5/7/2018 4:49:52 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: Action: Review and Update Action- Review and update 404 Activity Tracking by Thursday, 5/10 Table
Attachments: 2018 0514 404 Activity Tracking draft.xlsx

Importance: High

All,

I'm going to try to do this differently this week. Please update review and update your information in the weekly 404 Tracking Table by COB Thursday, May 10. This will give you more time to update the information and will allow you to consider activities occurring during the week.

Thanks!
Chris

From: Laabs, Chris
Sent: Monday, May 07, 2018 12:42 PM
To: Brian Frazer (Frazer.Brian@epa.gov) <Frazer.Brian@epa.gov>
Cc: Russell Kaiser (Kaiser.Russell@epa.gov) <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>
Subject: Action- Review and forward to OWOW/IO - - 404 Activity Tracking Table
Importance: High

Brian,

Attached is the 404 Activity Table. Katherine Weiler supplements the "weekly updates" with this information and needs it no later than Mondays.

Next Step- Your review and send up to OWOW/IO.

Call/email if you have any comments or concerns.

Thanks
Chris

AMERICAN OVERSIGHT

Region								
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine							
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10								
10								
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9								
7								
8								
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2								

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:15:52 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 9/26/2018 4:00:00 PM
End: 9/26/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:15:09 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center;

Conference Line/Code / Ex. 6

Start: 9/12/2018 4:00:00 PM
End: 9/12/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Kaiser, Russell [Kaiser.Russell@epa.gov]
Sent: 8/29/2018 6:56:21 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps

No comments – thanks Palmer

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Hough, Palmer
Sent: Tuesday, August 28, 2018 5:17 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps

Russ/Heidi:

On 6/5, you participated in a meeting that Pebble requested with Lee F. Pebble invited a number of AK Native reps who are supportive of the Pebble mine to come and share their thoughts with Lee F. Attached are draft notes from that meeting.

Please let me know if you have any comments by noon on Friday.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:14:53 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

Start: 8/29/2018 4:00:00 PM
End: 8/29/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Eisenberg, Mindy [Eisenberg.Mindy@epa.gov]
Sent: 5/10/2018 8:01:31 PM
To: Bennett, Brittany [bennett.brittany@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Re: Status of questions

Thanks Brittany. The timing is ok.

Sent from my iPhone

> On May 10, 2018, at 3:51 PM, Bennett, Brittany <bennett.brittany@epa.gov> wrote:
>
> Hi Mindy - I have a solid draft finished with OGC, ORC, and Palmer review. I'm currently taking a red (blue) pen to it, then I'm going to send it one more time to ORC, then to you! It might be later this evening because of the time zone. Would that be okay?
>
> B
>
> Brittany K. Bennett
> Ecologist
> U.S. EPA, Office of Water
> ph: 202.564.1896
> Bennett.Brittany@epa.gov
>
> -----Original Message-----
> From: Eisenberg, Mindy
> Sent: Thursday, May 10, 2018 3:49 PM
> To: Bennett, Brittany <bennett.brittany@epa.gov>
> Subject: Status of questions
>
> Hey Brittany,
> Just wanted to check in on the questions for the record related to Pebble.
>
> Thanks!
>
> Sent from my iPhone

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:14:38 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 8/15/2018 4:00:00 PM
End: 8/15/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 5/4/2018 11:33:40 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Action: Updates to the 404 Activity Tracking table

Thx

From: Hough, Palmer
Sent: Friday, May 04, 2018 7:07 PM
To: Laabs, Chris <Laabs.Chris@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: RE: Action: Updates to the 404 Activity Tracking table

No edits to Non-Responsive: Unrelated to Bristol Bay/Pebble Mine of Pebble EIS entries

From: Laabs, Chris
Sent: Friday, May 04, 2018 3:56 PM
To: Kovatch, Charles <Kovatch.Charles@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: Action: Updates to the 404 Activity Tracking table

All,

Attached is the 404 Activity table. Please provide me with updates or confirm the information is up to date as soon as you can. Apparently the IO expects this update on a weekly basis by the end of the week. I'll try to get on a better schedule and ask for updates every Tuesday or Wednesday. None of the dates in the table appear to be expiring or have expired.

Thanks!
Chris

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:14:23 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; C **Conference Line/Code / Ex. 6**

Start: 8/1/2018 4:00:00 PM
End: 8/1/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 8/9/2018 10:01:25 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

Hey – Just tried to call. Someone else got to me first. Just give me a call when you have a sec.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Thursday, August 09, 2018 2:35 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

sure

From: Palomaki, Ashley
Sent: Thursday, August 09, 2018 5:34 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

On the phone now but it should only take 10 min or so. Is that okay?

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Thursday, August 09, 2018 2:31 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

Can you give me a call when you have a moment

From: Palomaki, Ashley
Sent: Thursday, August 09, 2018 1:32 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

Hi Palmer – I added my edits – nothing major. Thanks.

AMERICAN OVERSIGHT

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Tuesday, August 07, 2018 5:15 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

Attached is the incoming from DeFazio and Carper in case you don't have it handy

From: Hough, Palmer [mailto:no-reply@sharepointonline.com]
Sent: Tuesday, August 07, 2018 8:12 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Hough, Palmer has shared 'Draft DeFazio Response 8.7.18'

Folks

Attached is our draft response to the 7-19-18 control from DeFazio and Carper which deals with both the 404c rulemaking and Pebble.

Please provide edits by NLT noon Thursday 8/9 so we can turn around a draft for management review by COB 8/9.

Thanks, Palmer

Open Draft DeFazio Response 8.7.18.docx

See more related to Hough, Palmer in Delve.


Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 5/15/2018 5:55:50 PM
To: Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: ACTION: Review and Update 404 Activity Tracking table by COB May 17, 2018 if possible
Attachments: 2018 0521 404 Activity Tracking draft.xlsx

All,

Attached is the most recent 404 activity table. Please review and update the information related to the project(s) you are following by COB May 17, 2018.

Thank you in advance for your time and effort.

Thx!
Chris

AMERICAN OVERSIGHT

Region								
	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine							
5								
5								
10								
10								
10								
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)					3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine							
9								
7								
8								
2								
2		vehicle parking area. This is very similar to the Tetlin 1 proposal.	Montgomery					Guidelines.

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 6/13/2018 6:13:31 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 5/22/2018 1:45:31 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Bristol Bay

Looks good to me. BTW, I just talked to David F. and he said that the Administrator is meeting with the House Western Caucus this afternoon and is not going to raise Pebble but wanted to know more about the status in case questions come up.
Thanks, all.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 9:37 AM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: FW: Bristol Bay

Carrie/Palmer/Ashley – Below is a draft response to David's request. Please let me know if you have any edits/comments:

******

Hi David – Below is a status update of PLP's permit application. I have attached the notice I quoted from just in case you wanted to see it. As you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

Heidi

+++++++

- Pebble's permit application is currently in the NEPA scoping phase.
- Substance: The Corps public notice announcing its intent to issue the EIS explained that "[s]coping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS."
    - The Corps' public notice indicated that the draft EIS will identify a range of alternatives and evaluate reasonable and practicable alternatives, including "the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, an mitigation measures not in the proposed action."

AMERICAN OVERSIGHT

- The notice identified significant issues that will be analyzed in the draft EIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation and closure. These significant issues include "wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental concerns, historic properties, navigation, and safety."

- Process: The Corps' public scoping period ends on June 29, 2018.
  - Region 10 is preparing a draft scoping letter.
  - The draft letter will come to headquarters (OW, OFA and OGC) for review June 4th-June 12th.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 5/22/2018 1:36:50 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Bristol Bay
Attachments: Corps NOI to prepare an EIS.pdf

Carrie/Palmer/Ashley – Below is a draft response to David's request. Please let me know if you have any edits/comments:

******

Hi David – Below is a status update of PLP's permit application. I have attached the notice I quoted from just in case you wanted to see it. As you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

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Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

AMERICAN OVERSIGHT

Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 5/4/2018 7:55:43 PM
To: Kovatch, Charles [Kovatch.Charles@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: Action: Updates to the 404 Activity Tracking table
Attachments: 2018 0507 404 Activity Tracking draft.xlsx

All,

Attached is the 404 Activity table. Please provide me with updates or confirm the information is up to date as soon as you can. Apparently the IO expects this update on a weekly basis by the end of the week. I'll try to get on a better schedule and ask for updates every Tuesday or Wednesday. None of the dates in the table appear to be expiring or have expired.

Thanks!
Chris

AMERICAN OVERSIGHT

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	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
5							
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10							
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)				3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
9							
7							
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Early Identification/Pre-App Meetings for Infrastruc

AMERICAN OVERSIGHT

Region										
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine									
5										
9										
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10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						1/9/18 Corps invites EPA to be cooperating agency (CA) on EIS with narrow role; 1/11 and 1/29 EPA sends letters expressing concerns with narrow CA role; 2/20 Corps responds that it will not expand EPA's CA role; 3/1 EPA sends response accepting narrow CA role but stating it is open to expansion in the future. Next Action- Initiation by Corps of EIS scoping.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine									
8										
2										
2										

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/1/2018 8:26:16 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: possible questions
Attachments: Potential questions_ACP.docx

Here's some suggestions. Thanks!

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Hough, Palmer
Sent: Friday, June 01, 2018 7:08 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: possible questions

Trying this again, also attached word doc. There is not much here yet, I'm just trying to get folks brainstorming.

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/28/2018 7:54:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 6/28/2018 8:00:00 PM
End: 6/28/2018 9:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Hi All.
Cancelling the meeting today so that we can focus on getting the scoping letter completed.

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 9/17/2018 6:48:37 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: Action - Update 2018 0917 404 Activity Tracking Draft.xlsx
Attachments: 2018 0917 404 Activity Tracking Draft.xlsx

Forwarding on to you – somehow I missed you on the original email.

Thx
Chris

From: Laabs, Chris
Sent: Monday, September 17, 2018 11:59 AM
To: Miller, Clay <Miller.Clay@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Jennifer Linn (Linn.Jennifer@epa.gov) <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>
Subject: Action - Update 2018 0917 404 Activity Tracking Draft.xlsx

All,

Attached is the draft of the 404 Activity Tracking Table for 9/17/18. Please review the information associated with your projects and ensure that it is up to date and accurate. If possible, send me corrections/updates no later than Wednesday, 9/19/18.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thank you in advance for your time and effort,
Chris

AMERICAN OVERSIGHT

404 - Related Activity - HQs Engagement

Region
10
10
10
10

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

404 - Related Activity - HQs Engagement

10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline. Neither the amount and type of impacts nor compensatory mitigation has been characterized at this time in the EIS effort.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.
4	[redacted]	**Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**							

AMERICAN OVERSIGHT

Appointment

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 6/25/2018 8:03:39 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 6/25/2018 8:03:07 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/23/2018 6:21:58 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Lieberman, Paige [Lieberman.Paige@epa.gov]
Sent: 7/12/2018 1:48:14 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Talking points due COB today

Thanks so much for pulling all of this together so quickly. It was exactly what we needed.

From: Hough, Palmer
Sent: Wednesday, July 11, 2018 4:52 PM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>; Lieberman, Paige <Lieberman.Paige@epa.gov>
Subject: RE: Talking points due COB today

Here are the AK MOA TPs – based on the July 2 MOA Lee sent out:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Frazer, Brian
Sent: Wednesday, July 11, 2018 4:39 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>; Lieberman, Paige <Lieberman.Paige@epa.gov>
Subject: Re: Talking points due COB today

AMERICAN OVERSIGHT

Brian T. is updating the Ak memo TPS.

****

Brian Frazer, Acting Director
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency
202-566-1652

Sent from my iPhone

On Jul 11, 2018, at 4:37 PM, Hough, Palmer <Hough.Palmer@epa.gov> wrote:

> All:
>
> Both of these need updating – the MOA TPs don't provide what you are looking for and the BB TPs need to be updated as well.
>
> I will turn something around shortly.
>
> -Palmer
>
> ---
>
> **From:** Drinkard, Andrea
> **Sent:** Wednesday, July 11, 2018 4:36 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>; Topping, Brian <Topping.Brian@epa.gov>
> **Cc:** Lieberman, Paige <Lieberman.Paige@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
> **Subject:** RE: Talking points due COB today
>
> + Palmer who is taking a look now, too.
>
> ---
>
> **From:** Frazer, Brian
> **Sent:** Wednesday, July 11, 2018 4:32 PM
> **To:** Topping, Brian <Topping.Brian@epa.gov>
> **Cc:** Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Lieberman, Paige <Lieberman.Paige@epa.gov>
> **Subject:** FW: Talking points due COB today
>
> Brian – Can you review the tp for the AK mitigation guidance and Bristol Bay. Please send your comments directly to Andrea and Paige today.
>
> **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**
>
> I have no comments on Bristol Bay.
>
> Thanks
>
> bf
>
> ---
>
> **From:** Lieberman, Paige
> **Sent:** Wednesday, July 11, 2018 4:22 PM
> **To:** Frazer, Brian <Frazer.Brian@epa.gov>

AMERICAN OVERSIGHT

Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: Talking points due COB today

Looping in Brian

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:49 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: RE: Talking points due COB today

Actually, I found the following from last month's Alaska trip prep. Let me know if you have anything to add. Thanks!

Alaska Mitigation Guidance/MOU

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Bristol Bay

- EPA published a proposal to withdraw its 2014 CWA Section 404 (c) Proposed Determination in July 2017 and took public comment, held two public hearings in the Bristol Bay region, and consulted with tribal governments and ANCSA Corporations from the Bristol Bay region.
- EPA received more than a million public comments on its withdrawal proposal. The overwhelming majority of these comments expressed opposition to the proposal to withdraw; similar levels of opposition were expressed at the public hearings and during the tribal/ANCSA consultation efforts.
- After reviewing all of the public and tribal input and taking into consideration the recent developments regarding the submittal of Pebble's Section 404 permit application, EPA decided not to withdraw the 2014 Proposed Determination at this time.
- The Army Corps of Engineers has initiated the process to develop an Environmental Impact Statement for Pebble's Section 404 permit application. EPA is a cooperating agency in this EIS process and will decide at a later date what impact, if any, the new permit application has on EPA's 2014 Proposed Determination.

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:30 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>

AMERICAN OVERSIGHT

Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: Talking points due COB today

Hi Palmer –

We have an urgent request from the Administrator's Office to provide a few talking points for a meeting with Senator Murkowski tomorrow. Do you have anything you can share on the Alaska MOU -- specifically what we heard from stakeholders last month and next steps? I can pull from the press release for general TPs.

We are also looking for a few points on Bristol Bay – do you have a one-pager that is up to date?

Thanks,
Paige

Paige Lieberman
Acting Director of Stakeholder Engagement
Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 564-9957

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/5/2018 7:47:45 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Bristol Bay Check-in

Palmer,

Molly sent me the letter and I will coordinate the review with OW and OGC, I will forward it to you now.

Best,
Megan

From: Hough, Palmer
Sent: Tuesday, June 05, 2018 3:47 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: RE: Bristol Bay Check-in

Molly – Has R10 sent the draft scoping letter to OW for review yet? I thought that review process would start on June 4.

From: Vaughan, Molly
Sent: Tuesday, June 05, 2018 3:30 PM
To: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

I will also miss tomorrow's check-in due to the conflict with the Cooperating Agency meeting here in Anchorage.
--Molly

From: Steiner-Riley, Cara
Sent: Tuesday, June 05, 2018 11:08 AM
To: Allnutt, David <Allnutt.David@epa.gov>; R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

I am not available tomorrow. Sorry.

AMERICAN OVERSIGHT

From: Allnutt, David
Sent: Tuesday, June 05, 2018 11:59 AM
To: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

Team – are we holding our regular check-in tomorrow? I know that Erik and Patty (and perhaps others) are out tomorrow. There are a couple of topics that I'd like to update the group on if possible.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn; Douglas, Mark
Subject: Bristol Bay Check-in
When: Wednesday, June 06, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/11/2018 3:47:27 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Personal Matters / Ex. 6

Personal Matters / Ex. 6

I'll move it - I've also been talking to molly and got a bigger meeting set up for next week so that we
Deliberative Process / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Hough, Palmer
Sent: Wednesday, April 11, 2018 4:23 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Personal Matters / Ex. 6

Personal Matters / Ex. 6 Can we postpone the pebble Scoping call?

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 4/27/2018 5:43:47 PM
To: Linn, Jennifer [Linn.Jennifer@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: ACTION: Review and Update of 404 Activity Tracking by COB April 30
Attachments: 2018 0424 404 Activity Tracking Draft.xlsx

All,

Attached is the latest version of the 404 Activity Tracking table. Please review your information to ensure if it is accurate and up to date. Your response by COB, Monday, April 30, 2018 is requested.

Thanks you in advance for your time and effort,

V/R
Chris

AMERICAN OVERSIGHT

Region							
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
5							
10							
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)				3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
9							
7							
10							
8							
2							
2							

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Appointment

From: Marshall, Vanessa [marshall.vanessa@epa.gov]
Sent: 4/25/2018 4:14:51 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 4/25/2018 4:00:00 PM
End: 4/25/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 7/26/2018 7:37:48 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: ACTION- Updates to 404 Activity Tracking NLT July 30, 2018 noon please
Attachments: 2018 0731 404 Activity Tracking draft.xlsx

All,

Attached is the most current version of the 404 activity table. Please review your case(s) and provide updates/corrections no later than noon, July 30, 2018.

Thanks!
Chris

AMERICAN OVERSIGHT

Region									
5	**Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**								
5									
10									
10									
10									
10									
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.

AMERICAN OVERSIGHT

10	**Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**
7	
9	
8	
2	
2	

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/20/2018 9:52:12 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Action: Request for clarification on Pebble lead within the Administrator's office

Excellent. Thanks Palmer.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 1:29 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: Action: Request for clarification on Pebble lead within the Administrator's office

FYI

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 4:29 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Action: Request for clarification on Pebble lead within the Administrator's office

John/Brian/Russ

Based on the notes from Lee's 11/14 meeting with PLP, it appears that it is again "not clear at this time if the Acting Administrator or Henry Darwin will be the decision-maker."

R10 has asked for clarification regarding whether the Acting Administrator is or is not recused from Pebble matters. The Region has indicated that it needs this clarification in order to know who to target briefing materials for and to advise the RA regarding who the appropriate contact is within the Administrator's office is for this project. The Region is in the midst of reviewing portions of the preliminary draft EIS for Pebble and the Corps/PLP have indicated that they expect to issue a draft EIS as early as January.

Based on all of this activity, the Region is seeking clarity regarding appropriate contacts within the Administrator's office.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)

AMERICAN OVERSIGHT

1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/3/2018 4:20:07 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]
Subject: Draft Response to PLP Letters
Attachments: Response to April 2018 Letters.docx

Hi –

Per David's and Carrie's request, attached a draft summary response to PLP's 4/24 and 4/25 letters. I used the prior

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Have at it!

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 5/8/2018 11:01:07 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Bristol Bay Check-in

Patty,

I also cannot make it for the call tomorrow because I am helping host the Public Service Awards.

Ashley will take the lead on the 404(c) items. Thank you Ashley!

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Hough, Palmer
Sent: Tuesday, May 08, 2018 3:51 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Bristol Bay Check-in

Patty – I'm on work travel in KY this week and may not be able to call in tomorrow. I will follow-up or feel free to shoot me an email if you need anything from me.

From: McGrath, Patricia
Sent: Tuesday, May 08, 2018 6:07 PM
To: R10-OERA Calendar ; Lindsay, Andrea ; Skadowski, Suzanne ; Nogi, Jill ; Peterson, Erik ; Nalven, Heidi ; Fordham, Tami ; Allnutt, David ; Anderson-Carnahan, Linda ; Palomaki, Ashley ; Steiner-Riley, Cara ; LaCroix, Matthew ; Vaughan, Molly ; Hough, Palmer ; Combes, Marcia ; Mendelman, Krista ; Szerlog, Michael
Cc: Stern, Allyn
Subject: RE: Bristol Bay Check-in

All-
Below is proposed agenda for the BB check-in call tomorrow.
Patty

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn
Subject: Bristol Bay Check-in
When: Wednesday, May 9, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

Agenda for the 5/9 check-in call:

FOIA
PLP letter to the Administrator
Scoping letter
ORD EIS support team assignments
DNR announcement regarding Bristol Bay Advisory Group

AMERICAN OVERSIGHT

Message

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 11/20/2018 8:23:46 PM
To: Ebersole, Joe [Ebersole.Joe@epa.gov]
CC: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: fish information

Try this link (let me know if you can't get in):

Internal Website/ Ex. 6

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | **202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Ebersole, Joe
Sent: Tuesday, November 20, 2018 3:22 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Re: fish information

Hey Palmer and Kate,
Great to hear from you! I've been wondering what was up with this, as I hadn't heard anything in months.
My schedule is packed, as I'm sure yours are too. I'll find some time to take a look. Where should I go to access these sections?
Joe

On Nov 20, 2018, at 12:01 PM, Schofield, Kate <Schofield.Kate@epa.gov> wrote:

> Sure, I can take a look and note any comments. Joe – do you have any time in the next two weeks to look at the draft EIS sections listed below?

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | **202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 1:14 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: fish information

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

There appear to be a number of sections that speak to fish on the sharepoint site including:

K3.24 FishValues
Sec 3.24 FishValues
Sec 4.24 FishValues
11_09_2018_Sec3.6_Com&RecFish
11_09_2018_AppK3.6_Com&RecFish

Would you and Joe have time in the next two weeks to review these?

From: Schofield, Kate
Sent: Tuesday, November 20, 2018 12:59 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: fish information

No, didn't see either of our names listed as needing to review anything. Are there sections you'd like us to look at?

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov **| 202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 12:38 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: fish information

Kate

Have you or Joe looked at the fish related sections of the preliminary EIS?

-Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 8/27/2018 1:50:11 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: 2018 0827 404 Activity Tracking draft.xlsx
Attachments: 2018 0827 404 Activity Tracking draft.xlsx

Palmer,

While you were out of town a few weeks ago, management requested that we add information about impacts and proposed mitigation (or lack thereof) for each of the projects in the table. Concurrent with the usual review and update can you add some information related impacts and proposed mitigation to Pebble? Pebble may not be at the stage where you have good numbers, but if you do . . .

Thanks!
Chris

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at	Palmer Hough (Patty McGrath)		

AMERICAN OVERSIGHT

		Amakdedori, transportation corridor, and a natural gas pipeline.			

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Laabs, Chris
Sent: Monday, August 27, 2018 9:46 AM
To: Kovatch, Charles <Kovatch.Charles@epa.gov>; Jennifer Linn (Linn.Jennifer@epa.gov) <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: 2018 0827 404 Activity Tracking draft.xlsx

All,

Attached is the draft 404 Activity Tracking table for 8/27. Please review the cases you're working on and provide comments/updates no later than COB Wednesday 8/29.

Thanks!
Chris

AMERICAN OVERSIGHT

Region									
5									
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10									
10									
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.
10									

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

9	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
8	
2	
2	

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Dennis, Allison [Dennis.Allison@epa.gov]
Sent: 6/15/2018 7:09:33 PM
To: cindy.s.barger [cindy.s.barger.civ@mail.mil]
CC: Hough, Palmer [Hough.Palmer@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Holsman, Marianne [Holsman.Marianne@epa.gov]
Subject: RE: [Non-DoD Source] RE: MOA Q&A
Attachments: Draft Internal Qs and As_AK Mitigation MOA_6-15-18_csb.docx

These changes work for us. Can you run the Q&As by your general counsel and let us know of any edits by Monday morning.

I'm including the updated Q&As attached in Lee's binder now but we can switch them out with the updated Q&As we get on Monday with an assist from our EPA Anchorage office.

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/26/2018 3:47:59 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 4/26/2018 8:00:00 PM
End: 4/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Here is agenda for our team meeting today. Please let me know if you have additional items:

Status of scoping letter – Molly
Scoping meetings – Molly, Neverley, Patty
ORD support – Patty
Next steps

AMERICAN OVERSIGHT

Message

From: Dennis, Allison [Dennis.Allison@epa.gov]
Sent: 6/15/2018 6:13:58 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: FW: [Non-DoD Source] RE: MOA Q&A
Attachments: Draft Internal Qs and As_AK Mitigation MOA_6-15-18_csb.docx

Do these work for you?

From: Barger, Cindy S CIV USARMY HQDA ASA CW (US) [mailto:cindy.s.barger.civ@mail.mil]
Sent: Friday, June 15, 2018 2:10 PM
To: Dennis, Allison <Dennis.Allison@epa.gov>
Subject: RE: [Non-DoD Source] RE: MOA Q&A

My initial edits

Hey what is your number? It may be better for me to call you. I just got notified I may be pulled into another call w/ the WH in a few minutes.

From: Dennis, Allison <Dennis.Allison@epa.gov>
Sent: Friday, June 15, 2018 1:51 PM
To: Barger, Cindy S CIV USARMY HQDA ASA CW (US) <cindy.s.barger.civ@mail.mil>
Subject: [Non-DoD Source] RE: MOA Q&A

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Cindy- can you hold on these until we chat? Please don't share.

From: Dennis, Allison
Sent: Friday, June 15, 2018 1:43 PM
To: cindy.s.barger <cindy.s.barger.civ@mail.mil>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: MOA Q&A

Cindy,

We developed a set of Q&As that we could use to jump start our response to media and others. Any way you can take a quick at these today? We don't plan to add these to the website.

Allison Dennis
Deputy Communications Director
Office of Water
U.S. Environmental Protection Agency
Office: 202-564-1985
Cell: 202-257-5629
Dennis.Allison@epa.gov < Caution-mailto:Dennis.Allison@epa.gov >

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/24/2018 4:34:56 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 5/24/2018 8:00:00 PM
End: 5/24/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Agenda:

Welcome Mark Douglas to the team
Status of scoping letter
Possible changes to project description
Next steps

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 6/19/2018 9:08:43 PM
To: Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]
Subject: ACTION - Updates to 404 Activity Tracking table by COB 6/20 if possible please
Attachments: 2018 0614 404 Activity Tracking final.xlsx

Attached is the weekly 404 activity table. Please send my updates by COB Wednesday, 6/20 if possible.

Thank you in advance for your time and effort,

Chris

AMERICAN OVERSIGHT

Region							
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
5							
10							
10							
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)				EPA accepted Corps invitation to be a Cooperating Agency on EIS. EIS scoping extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine						
7							
9							
8							
2							
2							

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: 4/26/2018 12:02:49 AM
To: Schofield, Kate [Schofield.Kate@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: PHABSIM

Kate is correct (of course!)
The Exhibit 4 comments reference the EBD (PLP 2011), where the PHABSIM approach is described in Chap 15 and associated appendices. The data and rating curves, etc. are in the very lengthy appendices.
So yes, rings a bell but it's been a long time since I've looked at this!
I would assume similar work would be done for the new scenarios/transportation corridors?

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: Schofield, Kate
Sent: Wednesday, April 25, 2018 2:51 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: RE: PHABSIM

Think this was Pebble's Exhibit 4 in the PD comments they submitted.

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov **| 202.564.2640**
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: Hough, Palmer
Sent: Wednesday, April 25, 2018 5:26 PM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Cc: Schofield, Kate <Schofield.Kate@epa.gov>
Subject: PHABSIM

Joe

Good to catch up with you yesterday. I seem to recall the at some point in time you reviewed a document (that I assume was generated by Pebble) that had some information about PHABSIM. I've been searching in my records for that just to refresh my memory on the tool, and what they may have said about how they plan to use it. I don't think that whatever they shared got into much detail b/c they were never forthcoming about it.

Does this ring any bells?

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW

AMERICAN OVERSIGHT

Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 8/16/2018 5:30:12 PM
To: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: Re: Media Inquiry re Bristol Bay

Thanks Suzanne. Sounds good- appreciate you keeping us all in the loop.

Jill

Sent from my iPhone

On Aug 16, 2018, at 10:27 AM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

FYI

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

From: Drinkard, Andrea
Sent: Thursday, August 16, 2018 10:02 AM
To: Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>
Cc: Lynn, Tricia <lynn.tricia@epa.gov>; Grantham, Nancy <Grantham.Nancy@epa.gov>; Fuld, John <Fuld.John@epa.gov>; Dennis, Allison <Dennis.Allison@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: Re: Media Inquiry re Bristol Bay

David F from OGC and Lee are good with this statement so we're good with what I suggested.

On Aug 15, 2018, at 10:36 PM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

Thank you Andrea!

I'll run this by our folks and get back to you ASAP.

Deliberative Process / Ex. 5

Suzanne Skadowski
U.S. Environmental Protection Agency

AMERICAN OVERSIGHT

Pacific Northwest Region 10
206-553-2160 Office
206-900-3309 Mobile

On Aug 15, 2018, at 6:30 PM, Drinkard, Andrea <Drinkard.Andrea@epa.gov> wrote:

> Here are a few edits. If this group is ok with this, I'll share it with my folks/OGC and the Corps. The Corps may prefer to respond.

Deliberative Process / Ex. 5

> On Aug 15, 2018, at 7:40 PM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Dennis, Allison [Dennis.Allison@epa.gov]
Sent: 6/15/2018 5:42:57 PM
To: cindy.s.barger [cindy.s.barger.civ@mail.mil]
CC: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: MOA Q&A
Attachments: Draft Internal Qs and As_AK Mitigation MOA_6-15-18.docx

Cindy,

We developed a set of Q&As that we could use to jump start our response to media and others. Any way you can take a quick at these today? We don't plan to add these to the website.

Allison Dennis
Deputy Communications Director
Office of Water
U.S. Environmental Protection Agency
Office: 202-564-1985
Cell: 202-257-5629
Dennis.Allison@epa.gov

AMERICAN OVERSIGHT

Message

From: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Sent: 8/16/2018 2:34:00 AM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Holsman, Marianne [Holsman.Marianne@epa.gov]
Subject: Bristol Bay Media Inquiry — draft Statement — Please Review

BB team:

Please review our proposed statement on the current status of EPA's review/process re Pebble Mine. I drafted the statement from our webpage blurb about the EIS and from the intro paragraph in our scoping comments letter.

Need a thumbs up from you. Thanks!

Suzanne Skadowski
U.S. Environmental Protection Agency
Pacific Northwest Region 10
206-553-2160 Office
206-900-3309 Mobile

Begin forwarded message:

> **From:** "Drinkard, Andrea" <Drinkard.Andrea@epa.gov>
> **Date:** August 15, 2018 at 6:30:25 PM PDT
> **To:** "Skadowski, Suzanne" <Skadowski.Suzanne@epa.gov>
> **Cc:** "Lynn, Tricia" <lynn.tricia@epa.gov>, "Grantham, Nancy" <Grantham.Nancy@epa.gov>, "Fuld, John" <Fuld.John@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Holsman, Marianne" <Holsman.Marianne@epa.gov>
> **Subject: Re: Media Inquiry re Bristol Bay**
>
> Here are a few edits. If this group is ok with this, I'll share it with my folks/OGC and the Corps. The Corps may prefer to respond.

Deliberative Process / Ex. 5

> On Aug 15, 2018, at 7:40 PM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 9/18/2018 7:21:09 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: BB related meeting notes

Cheers, thanks Palmer.

I uploaded these good notes to our sharepoint. For future reference, I don't need them for my records as an individual. But, we do need them on the sharepoint for all to have. I'm happy either way, if you send them to me, I'll put them on sharepoint, or you can put them there.

Internal Email Address / Ex. 6

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Hough, Palmer
Sent: Tuesday, September 18, 2018 12:02 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Herbst, John <herbst.john@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>
Subject: BB related meeting notes

Erik

Attached for your records are meeting notes from 6/5 and 9/11 Pebble-related meetings at EPA HQ.

-Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 8/15/2018 7:45:51 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 4/25/2018 9:41:31 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: Fwd: Bristol Bay Watershed Assessment
Attachments: Outlook-1517243019.png; ATT00001.htm; 20180425160309.PDF; ATT00002.htm

But wait, there's more....
Sent from my iPhone

Begin forwarded message:

> **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> **Date:** April 25, 2018 at 5:28:56 PM EDT
> **To:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>
> **Subject: FW: Bristol Bay Watershed Assessment**
>
> Another letter from PLP . . .
>
> **David Fotouhi**
>
> Deputy General Counsel
> Office of General Counsel
> U.S. Environmental Protection Agency
> Tel: +1 202.564.1976
> fotouhi.david@epa.gov
>
> ---
>
> **From:** Jackson, Ryan
> **Sent:** Wednesday, April 25, 2018 5:28 PM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
> **Subject:** FW: Bristol Bay Watershed Assessment
>
> ---
>
> **From:** Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
> **Sent:** Wednesday, April 25, 2018 4:08 PM
> **To:** Jackson, Ryan <jackson.ryan@epa.gov>
> **Subject:** Bristol Bay Watershed Assessment
>
> Ryan,
>
> Another letter to the Administrator -- this one on the many flaws of the Bristol Bay Watershed Assessment, which the Administrator is relying on in sustaining the preemptive veto of the Pebble Mine.

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Please let me know if you have any questions.

Thanks.

Peter

AMERICAN OVERSIGHT

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 9/18/2018 6:48:44 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps

No.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Hough, Palmer
Sent: Wednesday, September 12, 2018 10:32 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: FW: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps

Any comments?

From: Hough, Palmer
Sent: Tuesday, August 28, 2018 5:17 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps

Russ/Heidi:

On 6/5, you participated in a meeting that Pebble requested with Lee F. Pebble invited a number of AK Native reps who are supportive of the Pebble mine to come and share their thoughts with Lee F. Attached are draft notes from that meeting.

Please let me know if you have any comments by noon on Friday.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Eisenberg, Mindy [Eisenberg.Mindy@epa.gov]
Sent: 7/19/2018 4:21:35 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Valente, Betsy [Valente.Betsy@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]; Redford, David [Redford.David@epa.gov]
Subject: RE: ACTION: Update OW Fact Sheets for Administrator hearing by 7/23

Thanks Palmer!

Mindy Eisenberg
Associate Director, Oceans, Wetlands & Communities Division
Office of Wetlands, Oceans and Watersheds
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW, mailcode 4504T
Washington, DC 20460
(202) 566-1290
eisenberg.mindy@epa.gov

From: Hough, Palmer
Sent: Thursday, July 19, 2018 12:15 PM
To: Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>; Valente, Betsy <Valente.Betsy@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Redford, David <Redford.David@epa.gov>
Subject: RE: ACTION: Update OW Fact Sheets for Administrator hearing by 7/23

Mindy

The BB factsheet you sent was from April, I decided to start with the BB factsheet that was finalized for Congressional hearings in May (Dated May 11).

Let me know if you have comments/edits.

Thanks, Palmer

<< File: Bristol Bay-Pebble Mine 404c_7-19-18 redline.docx >>

From: Eisenberg, Mindy
Sent: Thursday, July 19, 2018 11:43 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Valente, Betsy <Valente.Betsy@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>; Redford, David <Redford.David@epa.gov>
Subject: ACTION: Update OW Fact Sheets for Administrator hearing by 7/23
Importance: High

Hi folks,
We've been asked to update some fact sheets for an upcoming hearing – Bristol, LIS disposal site, and permitting. Please send me your edits by noon Monday.

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Thanks!

<< File: OW-5.docx >> << File: OW-19.docx >> << File: OW-39.docx >>

Mindy Eisenberg
Associate Director, Oceans, Wetlands & Communities Division
Office of Wetlands, Oceans and Watersheds
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW, mailcode 4504T
Washington, DC 20460
(202) 566-1290
eisenberg.mindy@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 8/13/2018 11:16:05 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
CC: Bennett, Brittany [bennett.brittany@epa.gov]
Subject: RE: PLP Henry Darwin Meeting

All I know is that we expected the meeting to occur the week of 7/30. I don't have clear confirmation that a meeting was actually planned for that week or whether it happened.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Hough, Palmer
Sent: Monday, August 13, 2018 1:47 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Bennett, Brittany <bennett.brittany@epa.gov>
Subject: Re: PLP Henry Darwin Meeting

I don't have anything. Let me know when the meeting took place and I will follow up.

Palmer

Sent from my iPhone

On Aug 13, 2018, at 3:52 PM, Peterson, Erik <Peterson.Erik@epa.gov> wrote:

> Any news of this meeting? Do we have external meeting notes?

<image001.jpg>

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Bennett, Brittany [bennett.brittany@epa.gov]
Sent: 8/13/2018 8:54:04 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: PLP Henry Darwin Meeting

I checked in with John on this while you were out – he said he would follow up with Lee and get back to me, but I never heard from him on it.

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

From: Hough, Palmer
Sent: Monday, August 13, 2018 4:47 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Bennett, Brittany <bennett.brittany@epa.gov>
Subject: Re: PLP Henry Darwin Meeting

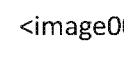
I don't have anything. Let me know when the meeting took place and I will follow up.

Palmer

Sent from my iPhone

On Aug 13, 2018, at 3:52 PM, Peterson, Erik <Peterson.Erik@epa.gov> wrote:

> Any news of this meeting? Do we have external meeting notes?



Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 8/13/2018 7:52:10 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
Subject: PLP Henry Darwin Meeting

Any news of this meeting? Do we have external meeting notes?

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 4/13/2018 7:31:47 PM
To: Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Action: Review and Update 2018 0413 404 Activity Tracking table by COB Monday, April 16

Thanks!

From: Hough, Palmer
Sent: Friday, April 13, 2018 3:19 PM
To: Laabs, Chris <Laabs.Chris@epa.gov>; Hurld, Kathy <Hurld.Kathy@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>
Subject: RE: Action: Review and Update 2018 0413 404 Activity Tracking table by COB Monday, April 16

Updated **Non-Responsi** Pebble EIS entries

From: Laabs, Chris
Sent: Friday, April 13, 2018 3:03 PM
To: Hurld, Kathy <Hurld.Kathy@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>
Subject: Action: Review and Update 2018 0413 404 Activity Tracking table by COB Monday, April 16

All,

Attached is the most current version of the 404 Activity table. Please review the information associated with your case(s) and update the information accordingly. Please note that some of the write ups have been simplified to convey a quick sound bite to management on what the issue of concern is – see final column. The feedback we are receiving is that the summary needs to be succinct and convey the action/timing.

Thank you in advance for your time and attention,

Chris

AMERICAN OVERSIGHT

Message

From: Kovatch, Charles [Kovatch.Charles@epa.gov]
Sent: 6/26/2018 8:45:39 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: RE: Updates requested by COB Wednesday 6/27 FW: 404 Activity Tracking 2018 0621
Attachments: Copy of 2018 0621 404 Activity Tracking final_ck.xlsx

With attachment.

From: Laabs, Chris
Sent: Sunday, June 24, 2018 9:27 PM
To: Landers, Timothy <Landers.Timothy@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: Updates requested by COB Wednesday 6/27 FW: 404 Activity Tracking 2018 0621

Attached is the most current version of the 404 activities table. Please review your information and respond back to me with any edits or corrections by COB Wednesday, June 27.

Thanks!
Chris

From: Laabs, Chris
Sent: Thursday, June 21, 2018 9:48 AM
To: Brian Frazer (Frazer.Brian@epa.gov) <Frazer.Brian@epa.gov>
Cc: Russell Kaiser (Kaiser.Russell@epa.gov) <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: 404 Activity Tracking 2018 0621

Brian,

Attached is the current 404 Activity Tracking Table. Call or email if you have any questions or concerns.

Thanks
Chris

AMERICAN OVERSIGHT

Region									
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine								
5									
10									
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EIS scoping extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine								
7									
10									
9									
8									
2									
2									

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/9/2018 3:59:07 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: RE: Bristol Bay Check-in

Thanks for letting us know Heidi. I'm working on a longer term effort to potentially change this time, helps to know this conflict

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Nalven, Heidi
Sent: Tuesday, October 09, 2018 8:51 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: Bristol Bay Check-in

All – This new time conflicts with my standing (and mandatory) water law office staff meeting. I know the purpose of these updates are for R10 management, so I don't view myself as essential but wanted to make sure you knew why I wasn't attending.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 7:15 PM
To: Peterson, Erik; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Fordham, Tami; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in
When: Tuesday, October 09, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

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FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Laabs, Chris [Laabs.Chris@epa.gov]
Sent: 4/2/2018 5:04:35 PM
To: Hurld, Kathy [Hurld.Kathy@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: ACTION: Updates to 404 Activity Tracking by noon Tuesday April 3, 2018 if possible
Attachments: 2018 0402 draft 404 Activity Tracking .xlsx

All,

Attached is the 404 activities table, please review your information and provide any edits/updates by noon Tuseday April 3, 2018.

Thank you in advance for you all your time and effort keeping it updated.

V/R
Chris

AMERICAN OVERSIGHT

Region	P								
5	N V N								
4	I N F								
5	P N 4								
9	R A								
10	A								
3	B N V								
5	S Ir								
5	H Ir								
7	S F N								
10	N								
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						1/9/18 Corps invites EPA to be cooperating agency (CA) on EIS with narrow role; 1/11 and 1/29 EPA sends letters expressing concerns with narrow CA role; 2/20 Corps responds that it will not expand EPA's CA role; 3/1 EPA sends response accepting narrow CA role but stating it is open to expansion in the future. Next Action- Initiation by Corps of EIS scoping.
10									
8									
2									
2									

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/17/2018 2:30:27 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: FW: Updated language proposed. Let me know if you want to discuss.
Attachments: Western Caucus Response FINAL 6.27.18_new edits 7-17-18.docx

FYI

From: Hough, Palmer
Sent: Tuesday, July 17, 2018 10:30 AM
To: Kaiser, Russell <Kaiser.Russell@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: RE: Updated language proposed. Let me know if you want to discuss.

Russ

Deliberative Process / Ex. 5

-Palmer

From: Kaiser, Russell
Sent: Tuesday, July 17, 2018 6:41 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: FW: Updated language proposed. Let me know if you want to discuss.
Importance: High

Palmer … Pls review first thing. Note that we received additional guidance from Lee yesterday morning re: the language and he did want to go farther than you did. Are you comfortable with the additional sentence. Pls advise ASAP as Brian needs to move forward with DOC this AM.

Thanks much - Russ

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds

AMERICAN OVERSIGHT

1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Kaiser, Russell
Sent: Tuesday, July 17, 2018 6:24 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: FW: Updated language proposed. Let me know if you want to discuss.

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

From: Kaiser, Russell
Sent: Monday, July 16, 2018 10:09 AM
To: Frazer, Brian <Frazer.Brian@epa.gov>
Subject: Updated language proposed. Let me know if you want to discuss.

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/10/2018 1:45:31 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: RE: 404 Activity Tracking table for 7/12
Attachments: Copy of 2018 0712 404 Activity Tracking draft_pfh.xlsx

Here you go – Non-Responsive: Unrelated to Bristol Bay/Pebble Mine and AK mitigation issues

From: Laabs, Chris
Sent: Tuesday, July 10, 2018 9:32 AM
To: Linn, Jennifer <Linn.Jennifer@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: 404 Activity Tracking table for 7/12

All,

Attached is the draft 404 Activity Tracking table for 7/12. Please review the cases you're working on and provide comments/updates no later than COB tomorrow, Wednesday 7/11.

Thanks!
Chris

AMERICAN OVERSIGHT

Region									
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10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.

Non-responsive Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
7	
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Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/29/2018 10:16:54 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: RE: ACTION- Review and Update 404 Activity Tracking Draft by COB 5/30
Attachments: Copy of 2018 0531 404 Activity Tracking Draft_pfh.xlsx

Updated **Non-Respo** entry, no changes to Pebble EIS entry

From: Laabs, Chris
Sent: Tuesday, May 29, 2018 3:25 PM
To: Kovatch, Charles <Kovatch.Charles@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: ACTION- Review and Update 404 Activity Tracking Draft by COB 5/30

All,

Attached is the draft 404 activity table. Please review your information and provide updates accordingly by COB 5/30 please. Brian needs this for a meeting with John on Thursday morning.

Thank you in advance for your time and effort.

Thx!
Chris

AMERICAN OVERSIGHT

Region							
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4							
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)				3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 11/26/2018 8:14:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Please Review - Pebble Wetlands Sections

Molly - got your vmm. Feel free to schedule something the week of 12/10. My calendar is mostly open b/c I reserved that week to finish drafting a set of interagency mitigation guidelines that are due 12/14 but I can certainly spare an hour to participate in the call with the Corps.

-Palmer

-----Original Message-----
From: Vaughan, Molly
Sent: Monday, November 26, 2018 2:31 PM
To: Douglas, Mark <douglas.mark@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Wetlands Sections

Hi Mark and Palmer,
We have received the draft wetlands sections for the Pebble EIS for review, and I have loaded the text and associated figures into the Sharepoint folders. A comment deadline has not yet been provided by the Corps, but I am expecting it to be similar to the new deadline for the other chapters. So, at this point assume that the internal deadline will be somewhere the week of Dec. 10. I will confirm a specific deadline once we hear back from the Corps. As usual, please use the attached comment table for your comments.
Thank you,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 23, 2018 11:37 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; Bella, Elizabeth <elizabeth.bella@aecom.com>
Subject: 3.22 and 4.22 with figures for review (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good Morning,

Attached are the review drafts for Sec3.22 and Sec4.22, Wetlands. There are no technical appendices with these sections.

Sec 3.22 has one standalone PDF figure (attached) and 7 embedded figures. Sec 4.22 has three standalone PDF figures (attached).

Cooperating agencies with special expertise on this section are USACE and EPA. Suspense date for comments will be provided on Monday.

v/r,

Katie McCafferty
Project Manager
Direct: 907-753-2692

U.S. Army Corps of Engineers-Alaska District Regulatory Division P.O. Box 6898 JBER, AK 99506 main office line: 907-753-2712

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/15/2018 7:41:04 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: ACTION: Review and Update 404 Activity Tracking table by COB May 17, 2018 if possible

No edits to **Non-Resp** Pebble EIS entries

From: Laabs, Chris
Sent: Tuesday, May 15, 2018 1:56 PM
To: Linn, Jennifer <Linn.Jennifer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Cc: Miller, Clay <Miller.Clay@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: ACTION: Review and Update 404 Activity Tracking table by COB May 17, 2018 if possible

All,

Attached is the most recent 404 activity table. Please review and update the information related to the project(s) you are following by COB May 17, 2018.

Thank you in advance for your time and effort.

Thx!
Chris

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/22/2018 5:27:30 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Bristol Bay

Not a problem as we will be developing this in close collaboration with OGC and R10

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 1:25 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: Bristol Bay

Please see David's request below.

From: Fotouhi, David
Sent: Tuesday, May 22, 2018 1:24 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Thanks again for this. Please let OW know that I'd like to review the draft response to the Western Caucus letter when it's ready.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Fotouhi, David
Sent: Tuesday, May 22, 2018 10:28 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Very helpful; thank you!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 10:04 AM
To: Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie

AMERICAN OVERSIGHT

<Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Hi David – Below is a status update of PLP's permit application. I have attached the FR notice I quoted from just in case you wanted to see it. Carrie mentioned that the Congressional Western Caucus is coming in for a meeting. I wanted to make sure you were of the attached letter from some Caucus members. OW is currently preparing a draft response. Also, as you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

Heidi

++++++++++

- Pebble's permit application is currently in the NEPA scoping phase.
- Substance: The Corps' public notice announcing its intent to issue the EIS explained that "[s]coping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS."
    - The Corps' public notice indicated that the draft EIS will identify a range of alternatives and evaluate reasonable and practicable alternatives, including "the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action."
    - The notice identified significant issues that will be analyzed in the draft EIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation and closure. These significant issues include "wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental concerns, historic properties, navigation, and safety."
- Process: The Corps' public scoping period ends on June 29, 2018.
    - Region 10 is preparing a draft scoping letter.
    - The draft letter will come to headquarters (OW, OFA and OGC) for review June 4th-June 12th.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/13/2018 7:19:21 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Hurld, Kathy [Hurld.Kathy@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]
Subject: RE: Action: Review and Update 2018 0413 404 Activity Tracking table by COB Monday, April 16
Attachments: Copy of 2018 0413 404 Activity Tracking draft_pfh.xlsx

Updated **Non-Responsi** Pebble EIS entries

From: Laabs, Chris
Sent: Friday, April 13, 2018 3:03 PM
To: Hurld, Kathy <Hurld.Kathy@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>
Subject: Action: Review and Update 2018 0413 404 Activity Tracking table by COB Monday, April 16

All,

Attached is the most current version of the 404 Activity table. Please review the information associated with your case(s) and update the information accordingly. Please note that some of the write ups have been simplified to convey a quick sound bite to management on what the issue of concern is – see final column. The feedback we are receiving is that the summary needs to be succinct and convey the action/timing.

Thank you in advance for your time and attention,

Chris

AMERICAN OVERSIGHT

Region								
5	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine							
5								
9								
10								
7								
10								
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)					3/1: EPA accepts Corps invitation to be a Coop. Agency on EIS. 4/1 Corps initiates EIS scoping, extended until 6/29. Next Action- EPA drafting its EIS scoping letter.
10	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine							
8								
2								
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Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

EPA Deputy AAOW Meeting with Pebble
Topic: Review process for Pebble's CWA Section 404 Permit Application
Meeting Date: June 5, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Peter Robertson, Pebble • Brad Angasan, VP of Corporate Affairs for AK Peninsula Corporation • Ventura Samaniego, President and CEO of Kijik Corporation • Henry Olympic, President of Newhalen Tribal Council
Did EPA decide which third parties would attend?: No – meeting at request of Pebble
List of EPA Attendees: • Lee Forsgren (Deputy AAOW) • Russell Kaiser (Chief, Freshwater and Marine Regulatory Branch (FMRB)) • Palmer Hough (Environmental Scientist, FMRB) • Heidi Nalven (OGC)
Agenda: None
Did EPA/Third Party Set the Agenda?: N/A
Did EPA/Third Party Run the Meeting: Pebble ran the meeting and described it as an opportunity for EPA to hear from Alaska Natives who are supportive of the proposed Pebble Mine.
Notes from Discussion (including individual advice/feedback provided to Agency): • Robertson kicked off the meeting and gave the floor to the Alaska Native reps that he invited to participate. Each rep shared thoughts on Pebble mine • Angasan – discussed jobs and other potential economic benefits of a mine at the Pebble deposit and noted the permit review process would be challenging and that Pebble deserved opportunity to go through review process • Ventura – noted that not all AK Native groups oppose Pebble mine, Kijik Corporation is also exploring mining claims and has experienced challenges raising money for its potential mining projects • Olympic – noted that before Pebble many in Newhalen were on welfare and drug use was high, after Pebble there are more work opportunities and more opportunities to support families in Newhalen
Next Steps/Follow-up Discussed: None

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/10/2018 6:14:40 PM
To: Bennett, Brittany [bennett.brittany@epa.gov]
Subject: RE: Read Please - Pruitt Hearing 404(c) Comments
Attachments: 2018 Appropriations Hearing Response DRAFT 5.10.18_pfh.docx

Looks good – just a few suggestions in attached

Thanks for taking the lead on this!!

From: Bennett, Brittany
Sent: Thursday, May 10, 2018 1:45 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: Read Please - Pruitt Hearing 404(c) Comments

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

From: Hough, Palmer
Sent: Thursday, May 10, 2018 1:42 PM
To: Bennett, Brittany <bennett.brittany@epa.gov>
Subject: Re: Read Please - Pruitt Hearing 404(c) Comments

I'm free now

Sent from my iPhone

On May 10, 2018, at 12:24 PM, Bennett, Brittany <bennett.brittany@epa.gov> wrote:

> Drop me a note just before you plan to read it and I'll send a local file of the most recent version.
>
> **Brittany K. Bennett**
> Ecologist
> U.S. EPA, Office of Water
> ph: 202.564.1896
> Bennett.Brittany@epa.gov
>
> **From:** Hough, Palmer
> **Sent:** Thursday, May 10, 2018 11:20 AM
> **To:** Bennett, Brittany <bennett.brittany@epa.gov>
> **Subject:** Re: Read Please - Pruitt Hearing 404(c) Comments
>
> Thx I will try and step out and look at these this afternoon
>
> Sent from my iPhone

AMERICAN OVERSIGHT

On May 10, 2018, at 11:01 AM, Bennett, Brittany <bennett.brittany@epa.gov> wrote:

Bennett, Brittany has shared a OneDrive for Business file with you. To view it, click the link below.

<image00001.png> 2018 Appropriations Hearing Response DRAFT 5.9.18.docx

Sending one more time just in case.

Palmer – We are drafting comments re: 404(c) authority and BB for Pruitt's appropriations hearing. I figure you would like to have your eyes and pen on this before it goes out. Ashley and Heidi have done a round of edits already. **A final draft is due to Mindy COB today,** but we can probably forward to her late tonight or first thing in the morning if you want to look after the conference day ends. I attached a Shared and local file.

B

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

<2018 Appropriations Hearing Response DRAFT 5.9.18.docx>

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/28/2018 9:16:36 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: ACTION: Draft notes from 6-5-18 meeting between Lee and Pebble + AK Native Reps
Attachments: Draft notes from 6-5-18 meeting between Deputy OWAA and Pebble.docx

Russ/Heidi:

On 6/5, you participated in a meeting that Pebble requested with Lee F. Pebble invited a number of AK Native reps who are supportive of the Pebble mine to come and share their thoughts with Lee F. Attached are draft notes from that meeting.

Please let me know if you have any comments by noon on Friday.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/28/2018 7:38:02 PM
To: Campbell, Ann [Campbell.Ann@epa.gov]
Subject: FW: FYI ONLY: EPA drafting rule to curb its veto power
Attachments: Template for notes on Pebble-related meetings.docx

Ann – can you confirm if someone will be providing these notes?

From: Hough, Palmer
Sent: Friday, August 17, 2018 1:54 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>
Cc: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Subject: FW: FYI ONLY: EPA drafting rule to curb its veto power

Ann:

It appears from this E&E article that Henry Darwin met with Pebble on August 2. Can you coordinate with whoever was present at this meeting to complete the attached template for documenting EPA meetings with Pebble?

Thanks, Palmer

From: Skadowski, Suzanne
Sent: Friday, August 17, 2018 1:26 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Frithsen, Jeff <Frithsen.Jeff@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Herbst, John <herbst.john@epa.gov>; Holsman, Marianne <Holsman.Marianne@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Murphy, Stacy <Murphy.Stacy@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Whitley, Annie <Whitley.Annie@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Owens, Kim <Owens.Kim@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FYI ONLY: EPA drafting rule to curb its veto power

EPA drafting rule to curb its veto power — sources

E&E News | August 17, 2018

EPA is working on a regulation to limit the agency's ability to nix water pollution permits.

AMERICAN OVERSIGHT

Agency sources told E&E News the regulation will follow limits outlined in a June memo from former EPA Administrator Scott Pruitt.

Under the Clean Water Act, the Army Corps of Engineers is the permitting agency for dredging and filling in waterways and wetlands, but Section 404(c) of the law grants EPA the ability to restrict or veto permits.

Until Pruitt, EPA policy did not explicitly prevent the agency from moving forward with vetoes before, during or after the permitting process.

The memo forbids EPA from acting before applications are filed with the Army Corps or after a permit is issued (Greenwire, June 27).

Pruitt's action came after years of conservative outrage over the Obama administration's two uses of the veto authority. In the case of the Spruce coal mine in West Virginia, the veto was issued years after the corps' permit was issued. In the case of the Pebble Mine in Alaska, action preceded a mining proposal.

Pruitt's memo earned its own outcry from environmental groups and Democrats.

Following his departure from the agency, Senate Environment and Public Works ranking member Tom Carper (D-Del.) and House Transportation and Infrastructure Committee ranking member Peter DeFazio (D-Ore.) wrote a letter to acting EPA Administrator Andrew Wheeler urging him to rescind the document.

The pair said the memo is "in opposition to the will of Congress" and that Section 404(c) of the Clean Water Act "provides EPA with clear authority" to veto a project whenever the agency determines it would have an unacceptable adverse effect on aquatic resources (E&E Daily, July 20).

EPA sources, who spoke with E&E News on the condition of anonymity, say the agency is planning to submit a proposed rule nixing pre-emptive and retroactive vetoes to the White House for review by the end of December.
Agency officials did not respond to a request for official comment.

Action against Spruce sparked debate, years of litigation and congressional efforts against retroactive vetoes. Ultimately, the U.S. Court of Appeals for the District of Columbia Circuit ruled they were legal under a strict reading of the law.

The debate over pre-emptive vetoes intensified in 2014, when the Obama EPA, relying on a watershed assessment, proposed restrictions to protect Alaska's Bristol Bay from mining. The proposal was made before the company behind the Pebble mine had formally submitted a permit application.

The Trump administration lifted that proposal long enough for Pebble LP to submit its permit application to the Army Corps, but has not completely withdrawn the watershed assessment. That move infuriated Pruitt's conservative allies, who are now taking their case to Wheeler (Greenwire, July 31).

Pebble opponents have called on the acting chief to recuse himself because his former lobbying firm set up the meeting between Pruitt and the mining company just before Pruitt ordered his staff to start the process of tossing the 2014 restrictions — a move he would later abandon. EPA said Wheeler would not be recusing himself from matters involving Pebble.

AMERICAN OVERSIGHT

On Aug. 2, Pebble leaders met with EPA's second in command, Henry Darwin, at agency headquarters in Washington, D.C., according to Darwin's online calendar.

Pebble CEO Tom Collier declined to comment on the meeting, but said a potential rulemaking was not discussed.

"From where I sit," he said, "I think that getting rid of retroactive and pre-emptive vetoes is a smart thing to do, and I hope they follow through with a rulemaking."

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/26/2018 8:28:01 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
CC: Miller, Clay [Miller.Clay@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]
Subject: RE: ACTION- Updates to 404 Activity Tracking NLT July 30, 2018 noon please

No changes **Non-Respons** Pebble EIS

From: Laabs, Chris
Sent: Thursday, July 26, 2018 3:38 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Cc: Miller, Clay <Miller.Clay@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: ACTION- Updates to 404 Activity Tracking NLT July 30, 2018 noon please

All,

Attached is the most current version of the 404 activity table. Please review your case(s) and provide updates/corrections no later than noon, July 30, 2018.

Thanks!
Chris

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/25/2018 8:09:55 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Heads up re Letter to the Administrator

It's interesting, they criticize the Obama administration for moving forward on the c action without a 404 permit application from Pebble "containing an actual mine plan and other important aspects, such as proposed mitigation" but they submitted their 404 permit application to the Corps in December with no compensatory mitigation plan.

From: Wehling, Carrie
Sent: Wednesday, April 25, 2018 2:51 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Heads up re Letter to the Administrator

Heidi – looks like something for our weekly next week, if not sooner.
No specific to-do.
Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

AMERICAN OVERSIGHT

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

AMERICAN OVERSIGHT

Best,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/27/2018 7:04:03 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]
Subject: RE: ACTION: Review and Update of 404 Activity Tracking by COB April 30

No edits to Pebble EIS o **Non-Responsive:**

From: Laabs, Chris
Sent: Friday, April 27, 2018 1:44 PM
To: Linn, Jennifer <Linn.Jennifer@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Subject: ACTION: Review and Update of 404 Activity Tracking by COB April 30

All,

Attached is the latest version of the 404 Activity Tracking table. Please review your information to ensure if it is accurate and up to date. Your response by COB, Monday, April 30, 2018 is requested.

Thanks you in advance for your time and effort,

V/R
Chris

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 11/20/2018 9:29:26 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: FW: Action: Request for clarification on Pebble lead within the Administrator's office
Attachments: Bristol Bay Meeting Notes 11.14.2018 RLK.DOCX

FYI

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 4:29 PM
To: Goodin, John <Goodin.John@epa.gov>; Frazer, Brian <Frazer.Brian@epa.gov>; Kaiser, Russell <Kaiser.Russell@epa.gov>
Subject: Action: Request for clarification on Pebble lead within the Administrator's office

John/Brian/Russ

Based on the notes from Lee's 11/14 meeting with PLP, it appears that it is again "not clear at this time if the Acting Administrator or Henry Darwin will be the decision-maker."

R10 has asked for clarification regarding whether the Acting Administrator is or is not recused from Pebble matters. The Region has indicated that it needs this clarification in order to know who to target briefing materials for and to advise the RA regarding who the appropriate contact is within the Administrator's office is for this project. The Region is in the midst of reviewing portions of the preliminary draft EIS for Pebble and the Corps/PLP have indicated that they expect to issue a draft EIS as early as January.

Based on all of this activity, the Region is seeking clarity regarding appropriate contacts within the Administrator's office.

Thanks, Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/27/2018 5:20:09 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]
Subject: RE: 2018 0827 404 Activity Tracking draft.xlsx
Attachments: Copy of 2018 0827 404 Activity Tracking draft_pfh.xlsx

Here you go.

Calendar is up to date if you want to grab time to talk about **Non-Responsive:**

From: Laabs, Chris
Sent: Monday, August 27, 2018 10:49 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: RE: 2018 0827 404 Activity Tracking draft.xlsx

Works for me. Everything else looks OK in the table?

Let me know if you have some time to **Non-Responsive:** Maybe 30-45mins.

Thanks
Chris

From: Hough, Palmer
Sent: Monday, August 27, 2018 9:54 AM
To: Laabs, Chris <Laabs.Chris@epa.gov>
Subject: RE: 2018 0827 404 Activity Tracking draft.xlsx

I recommend added something like the following:

Neither the amount and type of Impacts nor compensatory mitigation has been characterized at this time in the EIS effort.

From: Laabs, Chris
Sent: Monday, August 27, 2018 9:50 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: 2018 0827 404 Activity Tracking draft.xlsx

Palmer,

While you were out of town a few weeks ago, management requested that we add information about impacts and proposed mitigation (or lack thereof) for each of the projects in the table. Concurrent with the usual review and update can you add some information related impacts and proposed mitigation to Pebble? Pebble may not be at the stage where you have good numbers, but if you do . . .

Thanks!
Chris

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)		

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Laabs, Chris
Sent: Monday, August 27, 2018 9:46 AM
To: Kovatch, Charles <Kovatch.Charles@epa.gov>; Jennifer Linn (Linn.Jennifer@epa.gov) <Linn.Jennifer@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: 2018 0827 404 Activity Tracking draft.xlsx

All,

Attached is the draft 404 Activity Tracking table for 8/27. Please review the cases you're working on and provide comments/updates no later than COB Wednesday 8/29.

Thanks!
Chris

AMERICAN OVERSIGHT

Region									
5									
5									
10									
10									Marked for removal
10									
10									
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline. Neither the amount and type of impacts nor compensatory mitigation has been characterized at this time in the EIS effort.	Palmer Hough (Patty McGrath)						EPA accepted Corps invitation to be a Cooperating Agency on EIS. EPA submitted EIS scoping letter on 6/29/18. Next Action- support development of draft EIS, expected in spring 2019.
10									

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

404 - Related Activity - HQs Engagement

9	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
8	
2	
2	
Early Identification/Pre-App Meetings for Infrastructure Related	

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/11/2018 8:27:33 PM
To: Lieberman, Paige [Lieberman.Paige@epa.gov]
CC: Drinkard, Andrea [Drinkard.Andrea@epa.gov]
Subject: RE: Talking points due COB today

Just got out of a meeting. Sure I will pull this together.

From: Lieberman, Paige
Sent: Wednesday, July 11, 2018 2:30 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: Talking points due COB today

Hi Palmer –

We have an urgent request from the Administrator's Office to provide a few talking points for a meeting with Senator Murkowski tomorrow. **Non-Responsive: Unrelated to Bristol Bay/Pebble** **Non-Respon**

We are also looking for a few points on Bristol Bay – do you have a one-pager that is up to date?

Thanks,
Paige

Paige Lieberman
Acting Director of Stakeholder Engagement
Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 564-9957

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 6/20/2018 3:14:22 AM
To: Laabs, Chris [Laabs.Chris@epa.gov]
CC: Kovatch, Charles [Kovatch.Charles@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: Re: ACTION - Updates to 404 Activity Tracking table by COB 6/20 if possible please

Chris

No updates on the Pebble EIS letter

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sent from my iPhone

On Jun 19, 2018, at 1:08 PM, Laabs, Chris <Laabs.Chris@epa.gov> wrote:

> Attached is the weekly 404 activity table. Please send my updates by COB Wednesday, 6/20 if possible.
>
> Thank you in advance for your time and effort,
>
> Chris
> <2018 0614 404 Activity Tracking final.xlsx>

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/16/2018 8:26:59 PM
To: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Subject: RE: Bristol Bay Media Inquiry — draft Statement — Please Review

Looks fine to me

From: Skadowski, Suzanne
Sent: Wednesday, August 15, 2018 10:34 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Holsman, Marianne <Holsman.Marianne@epa.gov>
Subject: Bristol Bay Media Inquiry — draft Statement — Please Review

BB team:

Please review our proposed statement on the current status of EPA's review/process re Pebble Mine. I drafted the statement from our webpage blurb about the EIS and from the intro paragraph in our scoping comments letter.

Need a thumbs up from you. Thanks!

Suzanne Skadowski
U.S. Environmental Protection Agency
Pacific Northwest Region 10
206-553-2160 Office
206-900-3309 Mobile

Begin forwarded message:

> **From:** "Drinkard, Andrea" <Drinkard.Andrea@epa.gov>
> **Date:** August 15, 2018 at 6:30:25 PM PDT
> **To:** "Skadowski, Suzanne" <Skadowski.Suzanne@epa.gov>
> **Cc:** "Lynn, Tricia" <lynn.tricia@epa.gov>, "Grantham, Nancy" <Grantham.Nancy@epa.gov>, "Fuld, John" <Fuld.John@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Holsman, Marianne" <Holsman.Marianne@epa.gov>
> **Subject: Re: Media Inquiry re Bristol Bay**
>
> Here are a few edits. If this group is ok with this, I'll share it with my folks/OGC and the Corps. The Corps may prefer to respond.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

On Aug 15, 2018, at 7:40 PM, Skadowski, Suzanne <Skadowski.Suzanne@epa.gov> wrote:

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/25/2018 9:46:03 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Bristol Bay Watershed Assessment

Attorney Client / Ex. 5

From: Wehling, Carrie
Sent: Wednesday, April 25, 2018 5:42 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Fwd: Bristol Bay Watershed Assessment

But wait, there's more....
Sent from my iPhone

Begin forwarded message:

> **From:** "Fotouhi, David" <Fotouhi.David@epa.gov>
> **Date:** April 25, 2018 at 5:28:56 PM EDT
> **To:** "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>
> **Subject: FW: Bristol Bay Watershed Assessment**
>
> Another letter from PLP . . .
>
> **David Fotouhi**
>
> Deputy General Counsel
> Office of General Counsel
> U.S. Environmental Protection Agency
> Tel: +1 202.564.1976
> fotouhi.david@epa.gov
>
> ---
>
> **From:** Jackson, Ryan
> **Sent:** Wednesday, April 25, 2018 5:28 PM
> **To:** Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
> **Subject:** FW: Bristol Bay Watershed Assessment
>
> ---
>
> **From:** Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
> **Sent:** Wednesday, April 25, 2018 4:08 PM
> **To:** Jackson, Ryan <jackson.ryan@epa.gov>
> **Subject:** Bristol Bay Watershed Assessment

AMERICAN OVERSIGHT

Ryan,

Another letter to the Administrator -- this one on the many flaws of the Bristol Bay Watershed Assessment, which the Administrator is relying on in sustaining the preemptive veto of the Pebble Mine.

Please let me know if you have any questions.

Thanks.

Peter

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 9/18/2018 7:02:24 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Herbst, John [herbst.john@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]
Subject: BB related meeting notes
Attachments: BB Meeting Notes 9.11.2018 RLK (002).DOCX; Pebble and tribal reps 6-5-18 meeting with Deputy OWAA.docx

Erik

Attached for your records are meeting notes from 6/5 and 9/11 Pebble-related meetings at EPA HQ.

-Palmer

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

EPA Deputy AAOW Meeting with Pebble
Topic: Review process for Pebble's CWA Section 404 Permit Application
Meeting Date: June 5, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Peter Robertson, Pebble • Brad Angasan, VP of Corporate Affairs for AK Peninsula Corporation • Ventura Samaniego, President and CEO of Kijik Corporation • Henry Olympic, President of Newhalen Tribal Council
Did EPA decide which third parties would attend?: No – meeting at request of Pebble
List of EPA Attendees: • Lee Forsgren (Deputy AAOW) • Russell Kaiser (Chief, Freshwater and Marine Regulatory Branch (FMRB)) • Palmer Hough (Environmental Scientist, FMRB) • Heidi Nalven (OGC)
Agenda: None
Did EPA/Third Party Set the Agenda?: N/A
Did EPA/Third Party Run the Meeting: Pebble ran the meeting and described it as an opportunity for EPA to hear from Alaska Natives who are supportive of the proposed Pebble Mine.
Notes from Discussion (including individual advice/feedback provided to Agency): • Robertson kicked off the meeting and gave the floor to the Alaska Native reps that he invited to participate. Each rep shared thoughts on Pebble mine • Angasan – discussed jobs and other potential economic benefits of a mine at the Pebble deposit and noted the permit review process would be challenging and that Pebble deserved opportunity to go through review process • Ventura – noted that not all AK Native groups oppose Pebble mine, Kijik Corporation is also exploring mining claims and has experienced challenges raising money for its potential mining projects • Olympic – noted that before Pebble many in Newhalen were on welfare and drug use was high, after Pebble there are more work opportunities and more opportunities to support families in Newhalen
Next Steps/Follow-up Discussed: None

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/13/2018 8:47:13 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
CC: Bennett, Brittany [bennett.brittany@epa.gov]
Subject: Re: PLP Henry Darwin Meeting

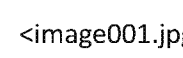
I don't have anything. Let me know when the meeting took place and I will follow up.

Palmer

Sent from my iPhone

On Aug 13, 2018, at 3:52 PM, Peterson, Erik <Peterson.Erik@epa.gov> wrote:

> Any news of this meeting? Do we have external meeting notes?



Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/2/2018 8:54:41 PM
To: Laabs, Chris [Laabs.Chris@epa.gov]; Hurld, Kathy [Hurld.Kathy@epa.gov]; Linn, Jennifer [Linn.Jennifer@epa.gov]; Kovatch, Charles [Kovatch.Charles@epa.gov]; Landers, Timothy [Landers.Timothy@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]
CC: Kaiser, Russell [Kaiser.Russell@epa.gov]; Miller, Clay [Miller.Clay@epa.gov]
Subject: RE: ACTION: Updates to 404 Activity Tracking by noon Tuesday April 3, 2018 if possible
Attachments: Copy of 2018 0402 draft 404 Activity Tracking_pfh.xlsx

Updated Non-Respo Pebble EIS entries

From: Laabs, Chris
Sent: Monday, April 02, 2018 1:05 PM
To: Hurld, Kathy <Hurld.Kathy@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Linn, Jennifer <Linn.Jennifer@epa.gov>; Kovatch, Charles <Kovatch.Charles@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Kaiser, Russell <Kaiser.Russell@epa.gov>; Miller, Clay <Miller.Clay@epa.gov>
Subject: ACTION: Updates to 404 Activity Tracking by noon Tuesday April 3, 2018 if possible

All,

Attached is the 404 activities table, please review your information and provide any edits/updates by noon Tuseday April 3, 2018.

Thank you in advance for you all your time and effort keeping it updated.

V/R
Chris

AMERICAN OVERSIGHT

Region								
5								
4								
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7								
10								
10	Pebble Mine/Bristol Bay Alaska	Copper, Gold, and Molybdenum Porphyry Mine - Pebble Limited Partnership proposes an open pit mine in Soutwest Alaska near Iliamna Lake, within the Bristol Bay watershed. The project includes four primary elements: a mine site, a port at Amakdedori, transportation corridor, and a natural gas pipeline.	Palmer Hough (Patty McGrath)					1/9/18 Corps invites EPA to be cooperating agency (CA) on EIS with narrow role; 1/11 and 1/29 EPA sends letters expressing concerns with narrow CA role; 2/20 Corps responds that it will not expand EPA's CA role; 3/1 EPA sends response accepting narrow CA role but stating it is open to expansion in the future. Next Action- Initiation by Corps of EIS scoping.
10								
8								
2								
2								

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Early Identification/Pre-App Meetings for Infrastructure Related Projects

AMERICAN OVERSIGHT

Message

Sent: 7/26/2018 8:24:21 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Folks:

I just wanted to give you a heads-up that the materials that you used to brief the new AOO will be used tomorrow to brief Henry Darwin, EPA's chief of operations.

It is my understanding that Lee Forsgren will leading the briefing and John Goodin and Brian Frazer from OWOW will be present as well.

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/27/2018 12:57:28 PM
To: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]; Tomiak, Robert [tomiak.robert@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]

Subject: Pebble and discuss Thursday OFA check-in
Location: 3521A

Start: 6/27/2018 4:45:00 PM
End: 6/27/2018 5:30:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/26/2018 4:41:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]
Subject: FW: Pebble Letter.

From: Kaiser, Russell
Sent: Tuesday, June 26, 2018 12:26 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Pebble Letter.

Megan,

Just left you a voice mail re: Pebble letter. In brief, **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Thanks

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/28/2018 10:03:39 PM
To: Barnhart, Megan [barnhart.megan@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]
Subject: Pebble

Just to report in **Personal Matters / Ex. 6** from what I can tell from the e-traffic we're privy to, Drew is running the show on giving the Region a final HQ-approved version. And we haven't seen an officially final one.

So maybe Allison can keep an eye out for that, and pass it along after the fact, but I'm guessing your best bet is Drew or the Region. Thanks.

Tom Marshall
Assistant General Counsel
Cross-Cutting Issues Law Office
Office of General Counsel
US EPA, Room 7340C WJCN
202.564.5549

AMERICAN OVERSIGHT

Message

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/27/2018 3:29:33 PM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: RE: Pebble letter

Thanks. Can I edit on this one?

From: Knight, Kelly
Sent: Wednesday, June 27, 2018 11:28 AM
To: Feeley, Drew (Robert) <Feeley.Drew@epa.gov>
Subject: FW: Pebble letter

OGC's comments

From: Nalven, Heidi
Sent: Wednesday, June 27, 2018 10:08 AM
To: Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble letter

Attached is a version with edits from OGC political management and with responses from attorneys from CCILO and WLO. We are still waiting for feedback on the responses and final OGC political management edits.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 9:03 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Pebble letter

Great. Thx.

Sent from my iPhone

On Jun 27, 2018, at 9:02 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> 11:00?
>
> **From:** Marshall, Tom
> **Sent:** Wednesday, June 27, 2018 8:55 AM
> **To:** Knight, Kelly <knight.kelly@epa.gov>
> **Cc:** Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi

AMERICAN OVERSIGHT

<Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Pebble letter

Any flexibility on the timing here, so we can coordinate internally? Thanks.

Sent from my iPhone

On Jun 27, 2018, at 7:09 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> Good Morning –
>
> Rob needs OGC's comments to share with Drew by 9am. Is that possible?
>
> Thanks
>
> Kelly Knight
> Director, NEPA Compliance Division
> Environmental Protection Agency
> 202-564-2141 (office)
> 202-594-6391 (cell)

AMERICAN OVERSIGHT

Appointment

From: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
Sent: 6/27/2018 2:58:28 PM
To: Tomiak, Robert [tomiak.robert@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]

Subject: Pebble and discuss Thursday OFA check-in
Location: 3521A

Start: 6/27/2018 4:45:00 PM
End: 6/27/2018 5:30:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/27/2018 2:57:58 PM
To: Feeley, Drew (Robert) [Feeley.Drew@epa.gov]
CC: Knight, Kelly [knight.kelly@epa.gov]

Subject: New Time Proposed: Pebble and discuss Thursday OFA check-in
Location: 3521A

Start: 6/27/2018 3:30:00 PM
End: 6/27/2018 4:15:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/27/2018 2:46:05 PM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: Most recent letter with HQ comments
Attachments: Pebble Project Scoping 060518 draft HQ Review.docx

……

Megan Barnhart
U.S. Environmental Protection Agency
Office of Federal Activities, NEPA Compliance Division
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-564-5936

AMERICAN OVERSIGHT

Appointment

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/27/2018 12:57:27 PM
To: Knight, Kelly [knight.kelly@epa.gov]

Subject: FW: Pebble and discuss Thursday OFA check-in
Location: 3521A

Start: 6/27/2018 3:30:00 PM
End: 6/27/2018 4:15:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Feeley, Drew (Robert)
Sent: Tuesday, June 26, 2018 5:24 PM
To: Feeley, Drew (Robert); Tomiak, Robert
Subject: Pebble and discuss Thursday OFA check-in
When: Wednesday, June 27, 2018 11:30 AM-12:15 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 3521A

AMERICAN OVERSIGHT

Message

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/27/2018 12:17:04 PM
To: Knight, Kelly [knight.kelly@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Hoppe, Allison [hoppe.allison@epa.gov]; Tomiak, Robert [tomiak.robert@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Re: Pebble letter

Heidi: CCILO is ok w you sharing OGC/ORC staff level comments w NEPA shop and Drew on Brittany's political team, per below, but wanted to coordinate w you. (All: They are not OGC comments, to be clear, since the document has yet to be processed by our FO, which is very aware of this and the timing.) Thanks.

Sent from my iPhone

On Jun 27, 2018, at 7:09 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> Good Morning –
>
> Rob needs OGC's comments to share with Drew by 9am. Is that possible?
>
> Thanks
>
> Kelly Knight
> Director, NEPA Compliance Division
> Environmental Protection Agency
> 202-564-2141 (office)
> 202-594-6391 (cell)

AMERICAN OVERSIGHT

Message

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/27/2018 11:06:02 AM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: Re: Pebble Letter.

Deliberative Process / Ex. 5

Thanks, Rob

On Jun 27, 2018, at 7:03 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

Rob –

Deliberative Process / Ex. 5

From: Marshall, Tom
Sent: Tuesday, June 26, 2018 1:45 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>
Subject: RE: Pebble Letter.

Hi, Megan. Copying Heidi re: your inquiry below, in case she has any update. (She has the Pebble lead in OGC; at least today, though, I know our FO is very jammed.) If not, I'm guessing it'll make sense for us to at least pass along word that **Deliberative Process / Ex. 5** **Deliberative** Thanks.

202.564.5549

From: Barnhart, Megan
Sent: Tuesday, June 26, 2018 12:44 PM
To: Marshall, Tom <marshall.tom@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Subject: FW: Pebble Letter.

Tom,

We just closed the loop with OW (see email below). Are there any updates from OGC?

Best,
Megan

From: Kaiser, Russell
Sent: Tuesday, June 26, 2018 12:26 PM

AMERICAN OVERSIGHT

To: Barnhart, Megan <barnhart.megan@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Pebble Letter.

Megan,

Just left you a voice mail re: Pebble letter. In brief, Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Thanks

Russell L. Kaiser
Chief, Freshwater and Marine Regulatory Branch
Oceans, Wetlands and Communities Division
Office of Wetlands, Oceans and Watersheds
1301 Constitution Ave., N.W.
Room 7114B West Bldg.
Washington, DC 20004
P: 202.566.0963
C: 202.579.0421

AMERICAN OVERSIGHT

Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/11/2018 8:35:19 PM
To: Knight, Kelly [knight.kelly@epa.gov]
Subject: RE:
Attachments: Pebble Project Scoping 060518 draft HQ Review.docx

I just granted Brian Frazer, Russ Kaiser, and John Goodin access to the SharePoint file per their request. I will keep you updated with edits from them and when I hear back from the Region.

-----Original Message-----
From: Knight, Kelly
Sent: Monday, June 11, 2018 4:23 PM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject:

Megan will you please email me the pebble letter as an attachment? Thanks

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Tomiak, Robert [tomiak.robert@epa.gov]
Sent: 6/11/2018 4:54:35 PM
To: Knight, Kelly [knight.kelly@epa.gov]; Tyler, Tom [Tyler.Tom@epa.gov]; Rountree, Marthea [Rountree.Marthea@epa.gov]; Gentile, Laura [Gentile.Laura@epa.gov]
Subject: Draft agenda for 15 June OP-OFA
Attachments: OFA-OP Bi-weekly Agenda 15 June 2018.docx; Project Forecast Report 31 May 2018.docx

Would like to aim for Wednesday to have the agenda (draft attached) firmed up…..let me know what else we should add. Page 2 of the agenda (June's accomplishments) will not be updated/submitted this time.

I've also attached the last version of the project list….please work from that to update…..and please also add a section titled "Projects that trigger OP elevation criteria" and annotate as appropriate.

Thanks, Rob

AMERICAN OVERSIGHT

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive – Material Unrelated to Bristol Bay/Pebble Mine

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Project Forecast Report
Updated May 31, 2018

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) PROJECT COORDINATION:

- **R10/USACE/Pebble Mine/Draft EIS/Anticipated Early 2019 – Litigation Hold**
  - **Background:** In December 2017, Pebble Limited Partnership (PLP) submitted a CWA 404 permit application to the U.S. Army Corps of Engineers (USACE) for development of the Pebble mine project. The USACE will prepare an environmental impact statement (EIS) and initiated scoping on April 1, 2018. The EPA accepted the USACE's invitation to serve as a cooperating agency and to provide special expertise related to Clean Water Act (CWA) Section 404(b)(1) issues. R10's

Deliberative Process / Ex. 5

  - **EPA Involvement:** In 2014, EPA issued the Bristol Bay Watershed Assessment, which assessed potential impacts to aquatic resources from three potential scenarios for mining the Pebble deposit. Also in 2014, based on the available information, including the Watershed Assessment, R10 initiated the CWA 404(c) process and issued a Proposed Determination to restrict the use of certain waters for disposal of

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dredged or fill material associated with mining the Pebble deposit. The Proposed Determination was not finalized, and based on a settlement agreement with PLP, the EPA proposed to withdraw the Proposed Determination in July of 2017. In January 2018, after a public review period, the Administrator decided not to withdraw the Proposed Determination at this time and suspended the withdrawal. The EPA is currently involved as a cooperating agency in the NEPA process and will be reviewing the EIS and the CWA 404 application.

- **Status:** The EIS scoping period ends on June 29, 2018. The schedule provided to date indicates that the draft EIS is currently anticipated for review in early 2019.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/16/2018 10:03:46 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Muluken Muche (muche.muluken@epa.gov) [muche.muluken@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
CC: Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa] **Conference Line/Code / Ex. 6**
Conference Line/Code / Ex. 6
Subject: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**
Start: 11/27/2018 5:00:00 PM
End: 11/27/2018 6:00:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/16/2018 7:56:28 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Prepare for Pebble AOO Briefing
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/17/2018 8:00:00 PM
End: 7/17/2018 8:45:00 PM
Show Time As: Busy

Proposing this meeting as an opportunity to talk through the presentation prior to the AOO Director Briefing. It would be useful for us to talk about how long we plan to take overall on the presentation and to discuss some of the transitions.

AMERICAN OVERSIGHT

Appointment

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 9/20/2018 3:49:55 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble Concentrate Pipeline
Location: R10Sea-Room-19C-OWW/R10-Rooms-Restricted

Start: 9/24/2018 5:00:00 PM
End: 9/24/2018 5:30:00 PM
Show Time As: Busy

I don't know why I reserved a room, I will be working at home and will call you.

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/14/2018 6:14:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Pebble Ch. 4
Location: R10AOO-Conf Conference Line/Code / Ex. 6

Start: 8/14/2018 7:30:00 PM
End: 8/14/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/26/2018 7:58:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble check-in
Location: Molly will call Patty

Start: 6/27/2018 9:00:00 PM
End: 6/27/2018 9:30:00 PM
Show Time As: Busy

Discuss agenda for PO/NEPA team meeting and status of comments on preliminary documents.

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/25/2018 4:06:53 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble site visit

Start: 7/31/2018 3:00:00 PM
End: 8/1/2018 1:00:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/21/2018 8:35:56 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble site visit

Start: 7/30/2018 3:00:00 PM
End: 7/31/2018 1:00:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/11/2018 4:00:00 PM
End: 9/11/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: (none)

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Thiesing, Mary [Thiesing.Mary@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 1/1/2019 5:00:00 PM
End: 1/1/2019 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 8:21:29 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]

Subject: Pebble check-in
Location: AOO

Start: 6/5/2018 10:00:00 PM
End: 6/6/2018
Show Time As: Busy

Molly and Mark –
Reserving this time to talk before the Pebble cooperating agency meeting on 6/6. I should be in the AOO office.

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/1/2018 4:00:00 PM
End: 8/1/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/15/2018 4:00:00 PM
End: 8/15/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/29/2018 4:00:00 PM
End: 8/29/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/12/2018 4:00:00 PM
End: 9/12/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/26/2018 4:00:00 PM
End: 9/26/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/10/2018 4:00:00 PM
End: 10/10/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/24/2018 4:00:00 PM
End: 10/24/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM

End: 7/18/2018 5:00:00 PM

Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/14/2018 11:25:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble CA meeting

Start: 6/6/2018 3:00:00 PM
End: 6/7/2018
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/5/2018 6:27:10 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: BB funds - Hydrologic Support
Location: Conference line enclosed

Start: 4/6/2018 5:00:00 PM
End: 4/6/2018 5:30:00 PM
Show Time As: Busy

<!--[if lte mso 15 || CheckWebRef]-->

Peterson, Erik has shared a OneDrive for Business file with you. To view it, click the link below.


Bristol Bay - 2018 Funding Needs(1).docx

<!--[endif]-->

Finalize the memo to Szerlog.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Join Skype Meeting

Trouble Joining? Try Skype Web App

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/3/2018 8:58:21 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Suter, Glenn [suter.glenn@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
CC: Lavoie, Emma [Lavoie.Emma@epa.gov]; Bierwagen, Britta [Bierwagen.Britta@epa.gov]; Hagerthey, Scot [Hagerthey.Scot@epa.gov]
BCC: [redacted] Conference Line/Code / Ex. 6 [redacted]epa.gov]
Subject: ORD support for Pebble EIS
Location: Conference Line/Code / Ex. 6
Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/3/2018 8:19:21 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; R10Sea-ConfLineMM-206-553-7072 [R10Sea-ConfLineMM-206-553-7072@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]

Subject: BB Funds - $80,410
Location: R10Sea-Room-20Cedar/R10-Rooms-Service-Center

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 8:30:00 PM
Show Time As: Tentative

<!--[if lte mso 15 || CheckWebRef]-->

Peterson, Erik has shared a OneDrive for Business file with you. To view it, click the link below.

Bristol Bay - 2018 Funding Needs(1).docx

<!--[endif]-->

Conference Line/Code / Ex. 6

Purpose

Work on BB 2018 funding update for HQ. Due April 6th to Michael Szerlog.

Agenda

Deliberative Process / Ex. 5

Background

Notes from 11/26 BB funds meeting and from 11/27 Peterson and Szerlog meeting

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

- Michael would like a final memo with basic recommendations on how the region will use the funds by **COB April 6th**

AMERICAN OVERSIGHT

Message

From: Herbst, John [herbst.john@epa.gov]
Sent: 5/10/2018 9:42:56 PM
To: Herbst, John [herbst.john@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Conversation with Herbst, John

Herbst, John 2:27 PM:
Hello! Does that time on 6/6 work for you to meet with the RTOC?
Herbst, John 2:27 PM:
1:30-3pm AK Time
McGrath, Patricia 2:29 PM:
Hi JR. I dont know. I am still waiting to hear whether I need to be in Anchorage on that day for an all-day Pebble meeting. That should be determined by friday. **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine** **Non-Responsive: Unrelated** I will let you know as soon as I find out more.
Herbst, John 2:30 PM:
thanks! we're working on the draft agenda and getting close to sending it out.
Herbst, John 2:30 PM:
maybe fly down to Juneau on your way back from Anchorage?

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/23/2018 6:33:47 PM
To: +1 (206) 553-8507 [+1 (206) 553-8507@epa.gov]; +1 (907) 271-1217 [+1 (907) 271-1217@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Overview for AOO Director

Pebble Overview for AOO Director

Douglas, Mark
ENVIRONMENTAL SCIENTIST , R10
Work: 9072711217
Work: 9072711217
Email: douglas.mark@epa.gov
IM: douglas.mark@epa.gov

+1 (206) 553-8507
Other: +1 (206) 553-8507

+1 (907) 271-1217
Other: +1 (907) 271-1217

Skype for Business

AMERICAN OVERSIGHT

Message

From: Fordham, Tami [fordham.tami@epa.gov]
Sent: 5/15/2018 10:14:38 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: TA for travel to Juneau, AK

Fordham, Tami 11:32 AM:
On the phone with the Extended ET.

McGrath, Patricia 11:35 AM:
ok. wanted to let you know that I am hoping to travel to anchorage for june 6 all-day pebble agency meeting and was hoping to check in with you regarding whether or not to add an extra day for meeting with new AOO director (if she is in place) to talk about mining.

Fordham, Tami 11:36 AM:
She won't be here until June 18th.

Fordham, Tami 11:36 AM:
Would love to see you.

McGrath, Patricia 11:36 AM:
ok. thanks

Fordham, Tami 3:04 PM:
I have to sign off, have a meeting with DRA

Fordham, Tami 3:05 PM:
Is Jim on his way?

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/29/2018 9:33:19 PM
To: Allnutt, David [Allnutt.David@epa.gov]
CC: Kelly, Christine M [kelly.christinem@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Re: final letter for formatting

Ok. I will await the signed version.

Sent from my iPhone

On Jun 29, 2018, at 1:08 PM, Allnutt, David <Allnutt.David@epa.gov> wrote:

> Patty to transmit to Corps once signed and pdf'd.

<Picture (Device Independent Bitmap) 1.jpg>
<Picture (Device Independent Bitmap) 2.jpg> <Picture (Device Independent Bitmap) 3.jpg> <Picture (Device Independent Bitmap) 4.jpg>

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

<Pebble Project Scoping 062818 compiled draft-rda.docx>

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/23/2018 7:38:43 PM
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Updated meeting room location – 14 Walla Walla

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/6/2018 9:34:03 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: TOC for EIS
Attachments: Pebble EIS Outline_2018.3.19 (002).docx

Hi Ashley – There is a slightly more recent version. The main difference is that it reflects the Corps' final decisions on who would be assigned each section (the version you found included my notes from the discussion at the Cooperating Agency meeting on section assignments in red). I've attached the updated version here in case it is helpful.
--Molly

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 12:44 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: TOC for EIS

Hi –

Thanks for the call, Molly. This is the version that I found via the FOIA collection.

Best,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 12:35 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: TOC for EIS

Hi –

Do either of you have an updated table of contents for the preliminary draft EIS? I didn't see it on the Sharepoint.

Thanks!

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/15/2018 11:51:41 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Draft Ch 2 comments for review
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 111518draft.docx

Hi Ashley,
I am so sorry for the delay in getting these comments to you for review. If you will no longer be able to complete your review Friday, please let me know. I also apologize that some of the comments (particularly the last couple pages) are still a bit rough. So, please don't feel that you have to edit grammar, punctuation, etc., as I will do another read-through for that before sending this to Jill.

Patty – I've copied you here as well, so you can decide if you would prefer to do your final review of the compiled comments now, or at the same time as Jill's review.

Thank you very much in advance for your review!
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/25/2018 7:04:43 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Review of Pebble section 3.1

Hi Patty –
As you are working through your own review of the draft sections due next week, I wanted to share my comments so far as well. I have reviewed Sections 3.5, 4.5, and 3.1 so far, and will get to 4.1 on Monday.

Deliberative Process / Ex. 5

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Appointment

From: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]
Sent: 8/22/2018 11:30:47 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Declined: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM

Recurrence: (none)

Your request was declined because there are conflicts.

The conflicts are:

Organizer and Time of Conflicting Meeting

Marshalonis, Dino - Thursday, August 23, 2018 8:00:00 AM to Thursday, August 23, 2018 5:00:00 PM

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/21/2018 7:33:39 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: My suggestions on Pre Draft Ch 2
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 112118.docx

Hi Jill,
Thank you for your review. I've made the requested edits (including incorporating Patty's recommendations) and the attached version was just transmitted to the Corps.
Regards,
Molly

From: Nogi, Jill
Sent: Tuesday, November 20, 2018 5:13 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: My suggestions on Pre Draft Ch 2

Internal - Deliberative

Hi team –
Thank you for your review of preliminary draft chapter 2 and for developing our comments. This looks very thorough. You did a nice job preparing our comments. I appreciate the opportunity to review and provide suggestions for

Deliberative Process / Ex. 5

any questions about my suggestions, you can try to reach me on my work cell while we're in the car tomorrow. I'd be happy to discuss.

Thanks again,
Jill

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/2/2018 11:31:02 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Bristol Bay Allnutt Check in - 11/6/18 Draft Agenda

Patty, Ashley, and Molly,

I propose we keep the Allnutt check-in for 11/6 at 9 am. Please send your feedback/suggestions on this draft agenda by mid-day 11/5. Thank you!

Agenda

404(c)

FOIA – HQ role in FOIA responsibilities

Permit Oversight/ NEPA Review Team

NEPA Review

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/5/2018 9:44:09 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: TOC for EIS
Attachments: Pebble EIS Outline_Chapter Assignments.pdf

Hi –

Thanks for the call, Molly. This is the version that I found via the FOIA collection.

Best,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Monday, November 05, 2018 12:35 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: TOC for EIS

Hi –

Do either of you have an updated table of contents for the preliminary draft EIS? I didn't see it on the Sharepoint.

Thanks!

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

FRONT MATTER

COVER SHEET

TITLE OF APPLICANT'S PROPOSED ACTION

IDENTIFICATION OF LEAD AND COOPERATING AGENCIES

NAME AND CONTACT INFORMATION FOR CORPS PGM

DESIGNATION OF DOCUMENT STATUS

ONE PARAGRAPH ABSTRACT TO BE WRITTEN BY CORP

COMMENT PERIOD

EXECUTIVE SUMMARY FOR FINAL EIS

SUMMARY OF THE EIS STRESSING MAJOR CONCLUSIONS, AREAS OF CONTROVERSY (INCLUDING ISSUES RAISED BY AGENCIES AND THE PUBLIC) AND ISSUES TO BE RESOLVED (INCLUDING THE CHOICES OF ALTERNATIVES(PREFERRED (APPENDIX B) AND LEDPA). TO BE WRITTEN AFTER DRAFT EIS IS COMPLETED AND PRIOR TO PUBLIC COMMENT PERIOD.

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AMERICAN OVERSIGHT

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Etc.

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Location

Configuration

Methods

Etc.

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Etc.

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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

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3.5.6.1 Recreation and Tourism

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AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

3.8.1.2 Amakdedori Port AE

3.8.1.3 Transportation Corridor AE

3.8.1.4 Natural Gas Pipeline Corridor AE

3.9 FOOD AND FIBER PRODUCTION (SUBSISTENCE) LAKE&PEN, STATE, FWS, EPA?

3.9.1 Food and Fiber Production

3.9.2 Subsistence Values and Beliefs

3.9.3 Subsistence Harvest Patterns

3.9.3.1 Mine Site AE

3.9.3.2 Amakdedori Port AE

3.9.3.3 Transportation Corridor AE

3.9.3.4 Natural Gas Pipeline Corridor AE

3.10 HEALTH AND SAFETY STATE, PHMSA

3.10.1 Assumptions and Limitations

3.10.2 Demographic Summary of Potentially Affected Communities

3.10.3 Baseline Community Health Conditions

3.10.4 Mine Site AE (HECs 1-8)

3.10.5 Amakdedori Port AE (HECs 1-8)

3.10.6 Transportation Corridor AE (HECs 1-8)

3.10.7 Natural Gas Pipeline Corridor AE (HECs 1-8; must include Pipeline Safety)

3.11 AESTHETICS EPA, STATE

3.11.1 Methods for Establishing Baseline Conditions

3.11.2 Mine Site AE

3.11.3 Amakdedori Port AE

3.11.4 Transportation Corridor AE

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3.11.5 Natural Gas Pipeline Corridor AE

3.12 TRANSPORTATION AND NAVIGATION LAKE&PEN?

3.12.1 Transportation

3.12.1.1 Mine Site AE

3.12.1.2 Amakdedori Port AE

3.12.1.3 Transportation Corridor AE

3.12.1.4 Natural Gas Pipeline Corridor AE

3.12.2 Navigation

3.12.2.1 Amakdedori Port AE

3.12.2.2 Transportation Corridor AE

3.12.2.3 Natural Gas Pipeline Corridor AE

3.13 GEOLOGY STATE

3.13.1 Regional Geologic Setting

3.13.2 Mine Site AE

3.13.2.1 Local Physiography

3.13.2.2 Local Geologic Conditions

3.13.2.3 Local Construction Material Sources

3.13.3 Amakdedori Port AE

3.13.3.1 Local Physiography

3.13.3.2 Local Geologic Conditions

3.13.3.3 Local Construction Material Sources

3.13.4 Transportation Corridor AE

3.13.4.1 Local Physiography

3.13.4.2 Local Geologic Conditions

3.13.4.3 Local Construction Material Sources

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3.13.5 Natural Gas Pipeline Corridor AE

3.13.5.1 Local Physiography

3.13.5.2 Local Geologic Conditions

3.13.5.3 Local Construction Material Sources

3.14 SOILS EPA

3.14.1 Mine Site AE

3.14.1.1 Soil Types

3.14.1.2 Soil Chemistry

3.14.1.3 Erosion

3.14.2 Amakdedori Port AE

3.14.2.1 Soil Types

3.14.2.2 Erosion

3.14.3 Transportation Corridor AE

3.14.3.1 Soil Types

3.14.3.2 Erosion

3.14.4 Natural Gas Pipeline Corridor AE

3.14.4.1 Soil Types

3.14.4.2 Erosion

3.15 GEOHAZARDS STATE

3.15.1 Mine Site AE

3.15.1.1 Earthquakes

3.15.1.2 Slope Stability

3.15.1.3 Other Geohazards

3.15.2 Amakdedori Port AE

3.15.2.1 Earthquakes

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3.15.2.2 Slope Stability

3.15.2.3 Other Geohazards

3.15.3 Transportation Corridor AE

3.15.3.1 Earthquakes

3.15.3.2 Slope Stability

3.15.3.3 Other Geohazards

3.15.4 Natural Gas Pipeline Corridor AE

3.15.4.1 Earthquakes

3.15.4.2 Slope Stability

3.15.4.3 Other Geohazards

3.16 SURFACE WATER HYDROLOGY EPA, STATE

3.16.1 Flood Hazards

3.16.2 Floodplain Values

3.16.3 Shore Erosion and Accretion

3.16.4 Salinity Gradients, Water Circulation, Fluctuation, Suspended Particulate and Turbidity

3.16.5 Mine Site AE

3.16.5.1 Drainage Basins/Watersheds

3.16.5.2 Streamflow

3.16.5.3 Meteorological Inputs to Water Balance Modeling

3.16.5.4 Flood Magnitude and Frequency

3.16.5.5 Surface Water Use

3.16.6 Amakdedori Port AE

3.16.6.1 Drainage Basins/Watersheds

3.16.6.2 Streamflow

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3.16.6.3 Marine Water

3.16.6.4 Flood Magnitude and Frequency

3.16.6.5 Surface Water Use

3.16.7 Transportation Corridor AE

3.16.7.1 Drainage Basins/Watersheds

3.16.7.2 Streamflow

3.16.7.3 Surface Water Use

3.16.7.4 Surface Water Extraction Sites

3.16.7.5 Stream Crossing Bank Erosion/Scour)

3.16.8 Natural Gas Pipeline Corridor AE

3.16.8.1 Drainage Basins/Watersheds

3.16.8.2 Streamflow

3.16.8.3 Marine Water

3.16.8.4 Surface Water Use

3.16.8.5 Surface Water Extraction Sites

3.16.8.6 Stream Crossing Bank Erosion/Scour

3.17 GROUNDWATER HYDROLOGY EPA, STATE

3.17.1 Water Supply and Conservation (Municipal and Private)

3.17.2 Hydrogeological Setting and Data Sources

3.17.3 Mine Site AE

3.17.3.1 Groundwater Occurrence and Aquifer Characteristics

3.17.3.2 Groundwater Quality and Use

3.17.3.3 Hydrogeologic Units

3.17.3.4 Groundwater Flow Systems

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3.17.3.5 Aquifer Parameters: Hydraulic Conductivity and Specific Storage

3.17.3.6 Mine Site Groundwater Model

3.17.4 Amakdedori Port AE

3.17.4.1 Groundwater Occurrence and Aquifer Characteristics

3.17.4.2 Groundwater Quality and Use

3.17.5 Transportation Corridor AE

3.17.5.1 Groundwater Occurrence and Aquifer Characteristics

3.17.5.2 Groundwater Quality and Use

3.17.6 Natural Gas Pipeline Corridor AE

3.17.6.1 Groundwater Occurrence and Aquifer Characteristics

3.17.6.2 Groundwater Quality and Use

3.18 WATER AND SEDIMENT QUALITY EPA, STATE

3.18.1 Substrate

3.18.2 Mine Site AE

3.18.2.1 Surface Water Quality

3.18.2.2 Groundwater Quality

3.18.2.3 Sediment Quality

3.18.2.4 Geochemistry

3.18.3 Amakdedori Port AE

3.18.3.1 Surface Water Quality

3.18.3.2 Groundwater Quality

3.18.3.3 Sediment Quality

3.18.4 Transportation Corridor AE

3.18.4.1 Surface Water Quality

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3.18.4.2 Sediment Quality)

3.18.5 Natural Gas Pipeline Corridor AE

3.18.5.1 Surface Water Quality

3.18.5.2 Sediment Quality

3.19 NOISE

3.19.1 Applicable Noise Concepts (Terms, Sound Levels, Propagation, Health Effects)

3.19.2 Mine Site AE

3.19.3 Amakdedori Port AE

3.19.4 Transportation Corridor AE

3.19.5 Natural Gas Pipeline Corridor AE

3.20 AIR QUALITY STATE

3.20.1 Meteorology

3.20.2 Air Quality Attainment Status

3.20.3 Project Impacts on Climate Change (GHG Reporting)

3.21 SPILL RISK STATE

3.21.1 Spill Risk

3.21.2 Tailings Dam Failure Scenarios

3.22 WETLANDS/SPECIAL AQUATIC SITES EPA, STATE?, FWS

3.22.1 Substrate (Wetlands)

3.22.2 Wetlands/Special Aquatic Sites Analysis Methodology (Categories, Classes, Functions)

3.22.3 Mine Site AE

3.22.4 Amakdedori Port AE

3.22.5 Transportation Corridor AE

3.22.6 Natural Gas Pipeline Corridor AE

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3.23 WILDLIFE VALUES (NON-TES) FWS, STATE

3.23.1 Mine Site AE

3.23.1.1 Birds

3.23.1.2 Terrestrial Wildlife

3.23.2 Amakdedori Port AE

3.23.2.1 Birds

3.23.2.2 Terrestrial Wildlife

3.23.2.3 Marine Mammals

3.23.3 Transportation Corridor AE

3.23.3.1 Birds

3.23.3.2 Terrestrial Wildlife

3.23.3.3 Marine Mammals

3.23.4 Natural Gas Pipeline Corridor AE

3.23.4.1 Birds

3.23.4.2 Terrestrial Wildlife

3.23.4.3 Marine Mammals

3.24 FISH VALUES FWS, STATE

3.24.1 Mine Site Area AE

3.24.1.1 Aquatic Habitat

3.24.1.2 Resident and Anadromous Fish

3.24.1.3 Ecotoxicology Analysis

3.24.1.4 EFH

3.24.1.5 Aquatic Organisms Associated With the Food Web

3.24.2 Amakdedori Port AE

3.24.2.1 Aquatic Habitat

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3.24.2.2 Resident and Anadromous Fish

3.24.2.3 Marine Fish

3.24.2.4 EFH

3.24.2.5 Aquatic Organisms Associated With the Food Web

3.24.3 Transportation Corridor AE

3.24.3.1 Aquatic Habitat

3.24.3.2 Resident and Anadromous Fish

3.24.3.3 EFH

3.24.3.4 Aquatic Organisms Associated With the Food Web

3.24.4 Natural Gas Pipeline Corridor

3.24.4.1 Aquatic Habitat

3.24.4.2 Resident and Anadromous Fish

3.24.4.3 EFH

3.25 THREATENED AND ENDANGERED SPECIES (TES) FWS

3.25.1 Amakdedori Port AE

3.25.1.1 Cook Inlet Beluga Whale

3.25.1.2 Steller's Sea Lion

3.25.1.3 Northern Sea Otter

3.25.1.4 Fin Whale

3.25.1.5 Steller's Eider

3.25.1.6 Short Tailed Albatross

3.25.2 Transportation Corridor AE

3.25.2.1 Steller's Eider

3.25.3 Natural Gas Pipeline Corridor AE

3.25.3.1 Cook Inlet Beluga Whale

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3.25.3.2 Steller's Sea Lion

3.25.3.3 Northern Sea Otter

3.25.3.4 Fin Whale

3.25.3.5 Steller's Eider

3.25.3.6 Short Tailed Albatross

3.26 VEGETATION EPA, STATE

3.26.1 Mine Site AE

3.26.2 Amakdedori Port AE

3.26.3 Transportation Corridor AE

3.26.4 Natural Gas Pipeline Corridor AE

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4.0 ENVIRONMENTAL CONSEQUENCES OF ACTION

4.1 IMPACT ASSESSMENT FRAMEWORK

4.2 TO 4.26 (SECTIONS REPEAT CHAPTER 3 ORDER)

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5.0 LIST OF PREPARERS

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6.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT HAVE BEEN SENT

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7.0 REFERENCES

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8.0 APPENDICES

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EPA-0135-0005697

APPENDIX A – PUBLIC INVOLVEMENT

APPENDIX B – AGENCY COORDINATION

APPENDIX C – MAILING LIST

APPENDIX D – COMMENTS RECEIVED ON THE DEIS AND CORPS RESPONSES (FINAL)

APPENDIX E – PERMITS, APPROVALS, AND CONSULTATIONS REQUIRED

APPENDIX F – DRAFT CLEAN WATER ACTION 404(B)(1) ANALYSIS (IN DRAFT)

APPENDIX G – ESA BIOLOGICAL ASSESSMENT (FWS) (IN DRAFT)

APPENDIX H – ESA BIOLOGICAL ASSESSMENT (NMFS) (IN DRAFT)

APPENDIX I – EFH ASSESSMENT (IN DRAFT)

APPENDIX J – PJD

APPENDIX K – ETC., TECHNICAL APPENDICES

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 10/25/2018 2:32:02 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble review request
Attachments: Comments Section 4.1.docx

Here are my comments on Section 4.1.

I know that they don't want grammatical/typo comments but I can't help myself. I just have to say it must be so exciting working for CE!Q.

From: McGrath, Patricia
Sent: Thursday, October 18, 2018 4:59 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble review request

Hi Cindi and Mark-

We have another short turn around review on a draft section of the Pebble EIS.

Attached is draft Section 4.1, which is the introduction to the Environmental Consequences section. The Corps has requested comments by 10/31. This section identifies past, present, and reasonably foreseeable future actions that will be considered in the cumulative effects analysis in subsequent chapters. We especially appreciate your review of the actions identified and whether there are others that could be missing.

The Corps has requested comments by 10/31. In order to meet this deadline and have management review, if you have time to look at this section, then please send Molly and I comments by COB 10/24.

Let us know if you have questions.

Thanks - Patty

Patty McGrath | Mining Advisor
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AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 9/7/2018 11:45:03 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Draft Bristol Bay Check-in Cancellation and Update

Hi Erik – I thought you wanted updates by mid-day Monday? I had been working on this between meetings and other deadlines today – it has been a chaotic day… I would just leave it and not send another update to him – but so that you are aware… Have a good weekend.

Thanks, Eric! This sounds like a good approach to me. Can I add one bullet point that has not been on anyone's radar for a while but recently I've made good progress on and was going to discuss on Tuesday? David will be aware of the first and second sentences but not the rest.

Bristol Bay Litigation Hold

Attorney Client / Ex. 5

For Trustees – I would add that R10 has finished review of all emails.

Can I also adjust this bullet a bit:
PLP letter, memo to file

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Friday, September 07, 2018 12:28 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Draft Bristol Bay Check-in Cancellation and Update

Patty, Molly and Ashley,

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David Allnutt is working next week but traveling on September 11th. Because he will be traveling, I propose we cancel the 9/11 BB check-in. In place of the meeting, I suggest an update that we would send to the whole invite check-in invite list. Below is a draft update, please provide feedback – ideally no later than mid-day September 10th.

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Preliminary EIS review

- EPA has reviewed and commented on section 3 (affected environment). Currently working on section 4 (environmental consequences)

404(c) Team

FOIA

- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response

- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA

- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings

- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file

- An OGC clerk has completed a summary of court decisions on challenges to agencies withdrawing proposals.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

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Message

From: Bob Loeffler [bobl@jadenorth.com]
Sent: 9/10/2018 11:06:09 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Re: August 22 Cooperating Agency meeting notes and future agency meeting notes

Good work Patty,
- Bob

Bob Loeffler
bobl@jadenorth.com
907-250-4621

On Sep 10, 2018, at 2:46 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

Dear Shane –

We were surprised to see that notes from the August 22, 2018 Cooperating Agency Meeting on Alternatives Screening were posted to the Corps' Pebble EIS public website. It was our understanding that the Corps would not be making notes from Cooperating Agency meetings publicly available. This understanding came from the January 18, 2018 Cooperating Agency meeting, where Sheila Newman indicated that the Corps did not plan to record interagency conversations unless they are part of a specific decision-making meeting. We were not informed that the August 22nd meeting was a "decision-making meeting," and did not view it as such. Rather we saw it as our first opportunity to hear from the Corps and AECOM how they were specifically conducting alternatives screening and as a brainstorming and Q&A meeting to discuss the alternatives process and preliminary rationale for alternatives considered or dismissed.

In addition, we note that the Cooperating Agency Coordination Plan (6/1/18 version) states "*CAs are encouraged to engage in robust discussion and debate during CA meetings and topical discussions on affected resources. These meetings ensure that all cooperating voices are heard throughout the EIS process and that multiple views can be thoroughly discussed. The USACE will not use the exchange that occurs within these meetings as a substitute for agency position or comments*." By posting the meeting notes on the public website under the heading "Cooperating Agency Scoping Documents," the discussion from the meeting is being presented as agency comments. While the meeting discussion entailed questions and observations from us, it was not reflective of formal agency comments on alternatives. In fact, before submitting written comments, we specifically requested more details related to the rationale for how certain alternatives were developed (or not) and for some alternatives that were dismissed.

We are also concerned that the notes were finalized and made public without an opportunity for Cooperating Agencies to review a draft version of the notes. It is standard practice for NEPA Cooperating Agency meeting notes to be circulated in draft form to meeting participants, and for corrections to be made prior to finalization for the file. For example, we note several omissions from and edits to the meeting notes posted to the website, which we would have provided if given the chance to review. These include:

- A robust discussion from the early part of the meeting regarding how the Corps determined a threshold for economic practicability in the absence of an economic feasibility study, as well as how environmental impact trade-offs were considered, was not included in the notes.
- Regarding Mine Locations and Layout Options, we have the following edits:
    - LOC-001 through LOC-003: Patty McGrath suggested a figure to illustrate and additional discussion to explain why these options have been selected. Patty also asked why the alternatives considered do

AMERICAN OVERSIGHT

not include mining of Pebble East, the high-grade underground deposit. Bill noted that the analysis does not include a larger mine as an alternative, but does analyze it as a cumulative effect.
    - Patty also recommended a figure to illustrate the mine layout options and location options for waste and tailings storage (as was done for the access options) and additional discussion explaining why these particular locations and layouts were identified and dismissed.
    - Patty asked what happens with pyritic tails in the full build-out scenario. Bill noted that an RFAI is pending with Pebble on this question, and they are also looking at EPA's BBWA.
- Regarding Throughput Options, we have the following edits:
    - Patty suggested need for more information backing-up statements about financial return, including for example why 50,000 tpd does not provide "positive financial return".
- Regarding Concentrate Transport, we have the following addition:
    - There was also a request to look at the NPDES New Source Performance Standards no discharge of process waste water requirements and exemptions which would limit the ability to discharge filtered concentrate water.
- Regarding Tailings, we have the following edit:
    - Patty suggested reviewing the ongoing EIS process for the Resolution copper/molybdenum mine in Arizona regarding tailings management techniques and alternatives.

In the future, we respectfully request that the Corps:

1. inform Cooperating Agencies in advance when meetings are being regarded as "decision-making" and notes will be recorded and made publicly available on the project website; and,
2. provide the Cooperating Agencies with an opportunity to review and comment on a draft version of the notes, prior to finalization, any time "official" Cooperating Agency meeting notes are recorded for the file, regardless of whether or not they will be posted to the website.

We are committed to accomplishing a review of draft meeting notes quickly. We think that these steps will ensure a common understanding of meeting purposes and the most accurate representation of our statements in the meeting notes.

Please feel free to call if you wish to discuss.

Best regards-
Patty

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AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/11/2018 5:24:52 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Bristol Bay Check-in
Attachments: ATT20076

Patty,

Linda has requested a change for the July 31 check-in. I looked at your calendar and you are booked all day Mon-Wed. Is there a time(s) that work for you on that Tuesday or Wednesday?

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Anderson-Carnahan, Linda
Sent: Wednesday, July 11, 2018 10:15 AM
To: Peterson, Erik
Subject: Declined: Bristol Bay Check-in
When: Tuesday, July 31, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

I have a meeting with Lee Forsgren at this time; can we reschedule?

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Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/30/2018 7:49:39 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Bristol Bay Check-in Draft Agenda

Patty and Molly,

Draft agenda for check-in with Linda this Wednesday morning at 10 am PST. Suggestions?

- Site visit
- Review of preliminary EIS deliverables
- BB briefing for AOO Director
- BB briefing for Henry Darwin
- De fazio CMS
- FOIA

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Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/16/2018 9:33:38 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: BB presentation materials for AOO director
Attachments: Bristol Bay Spript - AOO Briefing_20180713 Erik.docx

Thank you Patty and Ashley.

My edits to the script, which are all copyediting type stuff (e.g., making the Q and A italics instead of highlighted grey, consistent spacing)

Ppt looks good and I agree with Ashley's suggestions for added names for the 404(c) Team.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Palomaki, Ashley
Sent: Monday, July 16, 2018 11:29 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: BB presentation materials for AOO director

Hi Patty –

Thanks! My edits to the script are attached.

Edits to ppt are all minor suggestions and are below (all up to your discretion):

Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

In general, I would check the spelling of names.

Palmer isn't going to attend Nonresponsive Discussion of Personal Matters / Ex. 6, but asked for a copy of the ppt and script. Can one of you send it to him when it's done? (and put it on the G drive).

Ashley Palomaki
Assistant Regional Counsel
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1200 Sixth Avenue, Suite 155, ORC-113
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206-553-8582

From: McGrath, Patricia
Sent: Friday, July 13, 2018 12:06 PM
To: Peterson, Erik ; Palomaki, Ashley
Subject: BB presentation materials for AOO director

Hi Erik and Ashley –
Attached is the updated BB presentation and script for the briefing with Sue on July 23. I revised the script in track changes.
Please let me know if you have any comments by COB Monday july 16 so that I can revise and finalize on Tuesday. I will be out of the office next Wednesday through Friday.

Also, Erik can you try to find a Seattle conference room for the briefing? Sue will be here in person.

Thanks - Patty

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AMERICAN OVERSIGHT

Message

From: Eckley, Chris [Eckley.Chris@epa.gov]
Sent: 6/15/2018 5:25:52 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Re: pebble site visit

Sunday travel is fine with me for 7/30...but less than ideal for 8/20 Nonresponsive Discussion of Personal Matters / Ex. 6

Nonresponsive Discussion of Personal Matters / Ex. 6

--Chris

Chris S. Eckley, Ph.D.
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eckley.chris@epa.gov

From: McGrath, Patricia
Sent: Wednesday, June 13, 2018 12:32 PM
To: Vaughan, Molly; Eckley, Chris; Maley, Timothy
Cc: Nogi, Jill
Subject: pebble site visit

Hi All-
Thanks for your quick responses related to the request for available dates for a site visit.
Based on the responses, it looks like the only dates that work are:
7/30 (this would mean Sunday travel to Anchorage for Seattle folks)
7/31
8/20 (this would entail Sunday travel to Anchorage for Seattle folks)
8/21

Chris, Tim and Jill - Please confirm that Sunday afternoon/evening travel is acceptable to you in case the 7/30 and 8/20 dates, otherwise I will just forward the two Tuesday dates (7/31 and 8/21) as options.

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 6/12/2018 4:06:00 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Re: Bristol Bay Check-in

Joining you in about 3 mins

Sent from my iPhone

On Jun 5, 2018, at 3:40 PM, Allnutt, David <Allnutt.David@epa.gov> wrote:

> Tami – hopefully you can make the rescheduled time next week. Going forward, we should decide whether you, Sue, or both should be included in this and whether to change the recurring date/time as a result.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Fordham, Tami
Sent: Tuesday, June 05, 2018 12:25 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject: RE: Bristol Bay Check-in

I always have a conflict with this meeting because of the standing associate meeting.

From: Allnutt, David
Sent: Tuesday, June 05, 2018 10:59 AM
To: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

Team – are we holding our regular check-in tomorrow? Personal Matters / Ex. 6
a Personal Matters / Ex. 6 here are a couple of topics that I'd like to update the group on if possible.

AMERICAN OVERSIGHT

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn; Douglas, Mark
Subject: Bristol Bay Check-in
When: Wednesday, June 06, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/21/2018 3:57:26 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi Patty – I appreciate being kept informed, but I have not been assigned this project in our unit, and to my knowledge am not on the "team". I do not have time to join the team unless some other portion of my current workload is removed…which has not happened nor has been discussed with me to date. Just wanted to make sure I'm not being sucked toward some Pebble work vortex that I am not able to fulfill… JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: McGrath, Patricia
Sent: Friday, May 18, 2018 12:29 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. **Deliberative Process / Ex. 5** **Deliberative Process / Ex. 5**
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 8/6/2018 9:44:09 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: OERA Manager's Meeting
Attachments: OERA All Staff Agenda, 2018.docx

During the UMs mtg this morning (I'm acting), they discussed the presentations slated for the All Staff at MEL in Aug 16th.
They have a slot for Pebble (see attached draft), but you won't be there. They looked at me to possible summarize the recent Site visit/tour, and maybe put a representative picture or two of Site from visit, but also alluded that I may be the only one who could talk more? Were you going to provide a canned presentation suitable for this meeting?

Please advise.

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Wroble, Julie
Sent: Thursday, August 2, 2018 8:32 AM
To: Allen, Elizabeth <allen.elizabeth@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Subject: FW: OERA Manager's Meeting

FYI – one of you will be acting when this happens.

From: Pepich, Barry
Sent: Wednesday, August 1, 2018 5:15 PM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Bachman, Brenda <bachman.brenda@epa.gov>; Dodo, Gerald <Dodo.Gerald@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Brown, DonaldM <Brown.DonaldM@epa.gov>; Islam, Mahbubul <Islam.Mahbubul@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Matheny, Don <Matheny.Don@epa.gov>
Cc: Storm, Linda <Storm.Linda@epa.gov>; Wroble, Julie <Wroble.Julie@epa.gov>
Subject: RE: OERA Manager's Meeting

HI All,

Here's the draft agenda for the All Staff at MEL. I'll need folks to firm up the presentation titles and authors.

Thanks,
Barry

Barry V. Pepich, Ph.D.
Director, EPA Region 10 Laboratory
360-871-8701 (desk)

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:37 AM

AMERICAN OVERSIGHT

To: R10-OERA Calendar; Conference Line/Code / David; Anderson-Carnahan, Linda; Bachman, Brenda; Pepich, Barry; Dodo, Gerald; Nogi, Jill; Mendelman, Krista; Brown, DonaldM; Islam, Mahbubul; Szerlog, Michael; Matheny, Don
Cc: Storm, Linda; Wroble, Julie
Subject: OERA Manager's Meeting
When: Wednesday, August 1, 2018 2:00 PM-3:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/24/2018 3:26:44 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Hi Patty,
I am available on the 22nd (still holding that whole day per his earlier calendar invite), but am not available on the 24th.
I will send the Section 3.16 and 3.26 comments over.
Thanks,
Molly

From: McGrath, Patricia
Sent: Tuesday, July 24, 2018 7:08 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Hi Molly-
I am still getting caught up and did not send these over to the Corps. Why don't you go ahead and do that today? Also, per last message from Shane, the extended CA meeting will be rescheduled to September. Since the August meeting will be short, I am not planning to travel up there. He did ask if we are available for the shorter meeting on either Aug 22 or 24 – do these days work for you?
Patty

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Monday, July 23, 2018 8:51 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Good morning, Patty **Nonresponsive Discussion of Personal Matters / Ex. 6** The linked version to the Pre-Draft Chapter 3 comments incorporates your edits and now also includes a few comments on 3.26 Vegetation for your review **Nonresponsive Discussion of Personal Matters / Ex. 6** **Nonresponsive Discussion of Personal Matters / Ex. 6** Feel free to send this to Shane today if you don't have any major edits, otherwise I will plan to send tomorrow.
Thanks,
Molly

Open Pre Draft 3.16 comments draft 071818.docx

See more related to Vaughan, Molly in Delve.

Get the SharePoint mobile app!

AMERICAN OVERSIGHT

Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 5/18/2018 10:06:51 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: ARU Staff Transition

Patty,

Thanks so much for this. I do not believe that it was David's intent to have Heather and myself on the sidelines on this, and I was concerned when we were both left out of the loop. In any case, Mark will need help, and I am the only one who can give it to him.

Nonresponsive Discussion of Personal Matters / Ex. 6

Have a great weekend.

Mary Anne

From: McGrath, Patricia
Sent: Friday, May 18, 2018 3:03 PM
To: Thiesing, Mary <Thiesing.Mary@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: ARU Staff Transition

Hi Mary Anne-
I just sent you the invite.
Originally the meeting invite included just the leads for each program/resource and I left it to the leads to invite folks designated as support, depending on the agenda topic and their comfort.
I am glad that you will be assisting Mark. I'll also forward an email that I sent to the team earlier today.
Patty

From: Thiesing, Mary
Sent: Friday, May 18, 2018 2:46 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: ARU Staff Transition

Patty,

I am on the team that David designated for the review of the EIS for Pebble. I would appreciate receiving invitations to the meetings. Mark is not going to be able to go from 0-60 in a week, and I have responsibilities here that I need to meet.

Mary Anne

From: LaCroix, Matthew
Sent: Friday, May 18, 2018 12:36 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: ARU Staff Transition

All,

AMERICAN OVERSIGHT

Good morning/afternoon. You are all aware that I transitioned into Gayle Martin's oil and gas-focused position on April 1. I will not have the capacity to continue as the CWA 404 lead for project review of the Pebble project. Mark Douglas has agreed to take on the 404 lead role.

The Region's NEPA scoping letter on the project will be going out shortly, and the timing is right for me to pass the baton to Mark. I have sent him the meeting invitations, and Patti has included him on the group emails. Once he has access to the project website and our internal SharePoint site, he will be good to go. I plan to participate in next week's meetings, but do not anticipate participating in future meetings unless there is some specific need.

Mary Anne will continue in her existing role, working with Mark to track the project review, and coordinating with the 404(c) team.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 3:46 PM
To: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: Pebble transition

Hi Mark and Matt,
Would you mind coming up with a very short description of how you might transition the Pebble work from Matt to Mark and send it out to the appropriate folks working on Pebble? Please include a statement about Mary Anne's continued involvement as well. …Just so folks hear it from you both directly.

Thank you,
Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/28/2018 11:49:31 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble Draft Ch3 comments

Hi Patty – I've reached my maximum capacity for the day and am turning off my computer. I have completed compiling all of the comments on the preliminary Ch3 sections, and a first cut at editing for organization, consistency, clarity and tone. I think another read-through is definitely needed, but that will have to wait until next week. I will dive back into this Monday, but if you have time Friday and want to begin reviewing, any edits you provide will be much appreciated. I will send you a link to my OneDrive so we are working off the same version. (I cannot manage to make Outlook attach the document as a link this time… it is very frustrating that sometime it attaches one way and sometimes another, and just when I think I have it figured out, it throws me for another loop! Argh. Anyway look for another email coming with the link).
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/11/2018 10:38:35 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: BB check in agenda items

I don't have anything additional and am traveling this week for work so won't be able to join.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Monday, June 11, 2018 11:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB check in agenda items

Patty,

I suggest the following for the agenda. I also suggest they come after yours.

- QFR
- PLP response
- Forsgren and Hladick meeting
- Western Caucus response

Ashley may have more based on last week's work. I propose that you can go ahead and we'll add Ashley's suggestion later if she has one.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: McGrath, Patricia
Sent: Monday, June 11, 2018 9:17 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: BB check in agenda items

Hi All-

AMERICAN OVERSIGHT

Please let me know if you have agenda items in addition to those below for the BB check in meeting that was rescheduled for tomorrow.

- FOIA
- Status of scoping letter
- Cooperating agency meeting
- Site travel

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/24/2018 3:06:30 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Hi Patty,
I am back at work, at least for the morning Personal Matters / Ex. 6 Personal I am checking in to see if you have had a chance to review the Vegetation comments, or would still like a chance, before we send this to the Corps? Our 30-day deadline is 7/27, but I figured we should send as soon as we are able.
Thanks,
Molly

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Monday, July 23, 2018 7:51 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Good morning, Patty. Personal Matters / Ex. 6 The linked version to the Pre-Draft Chapter 3 comments incorporates your edits and now also includes a few comments on 3.26 Vegetation for your review. Personal Matters / Ex. 6 Personal Matters / Ex. 6 Feel free to send this to Shane today if you don't have any major edits, otherwise I will plan to send tomorrow.
Thanks,
Molly

Open Pre Draft 3.16 comments draft 071818.docx

See more related to Vaughan, Molly in Delve.


Get the SharePoint mobile app!

AMERICAN OVERSIGHT

Appointment

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 8/3/2018 6:00:34 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Declined: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Busy

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/23/2018 3:52:01 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Declined: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

Good morning,

Personal Matters / Ex. 6

Thanks,
Molly

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 5/10/2018 3:49:57 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble EIS tribal cooperating agencies

Thank you, Patty.

Neverley
(907) 271-3206

From: McGrath, Patricia
Sent: Wednesday, May 09, 2018 4:11 PM
To: Fordham, Tami <Fordham.Tami@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>
Subject: Fwd: Pebble EIS tribal cooperating agencies

Hi Tami and Neverley
I should have cced you on the message below.
Patty

Sent from my iPhone

Begin forwarded message:

> **From:** "McGrath, Patricia" <mcgrath.patricia@epa.gov>
> **Date:** May 9, 2018 at 4:02:00 PM PDT
> **To:** "Molly Vaughan (Vaughan.Molly@epa.gov)" <Vaughan.Molly@epa.gov>, "David Allnutt (Allnutt.David@epa.gov)" <Allnutt.David@epa.gov>, "Jill Nogi (nogi.jill@epa.gov)" <nogi.jill@epa.gov>
> **Cc:** "Ashley Palomaki (Palomaki.Ashley@epa.gov)" <Palomaki.Ashley@epa.gov>
> **Subject: Pebble EIS tribal cooperating agencies**
>
> Molly, Jill, and David –
>
> I heard from Shane McCoy this afternoon that the Corps has included two tribal governments as cooperating agencies – Nondalton and Curyung.
> Also, for Molly's benefit, the next cooperating agency meeting will likely be June 6 or 7 and will be an all-day meeting. I am going to travel to Anchorage for this meeting, given the topics that will be under discussion.
>
> Patty
>
> **Patty McGrath | Mining Advisor**
> U.S. Environmental Protection Agency, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> M/S: RAD-202
> Office: (206) 553-6113
> Cell: (206) 743-7068
> mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/10/2018 12:04:04 AM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Proposal to cancel 7/18/18 Bristol Bay Check-in

Thank you Linda.

I will wait until July 16 or 17 to actually send out the meeting cancellation in case something hot does come up.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Anderson-Carnahan, Linda
Sent: Monday, July 09, 2018 3:12 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Proposal to cancel 7/18/18 Bristol Bay Check-in

Yes as long as there is nothing hot pending.

Linda Anderson-Carnahan
Associate Director
Office of Environmental Review and Assessment
US EPA Region 10
Suite 155
1200 Sixth Ave
Seattle Wa, 98101
Office: (206) 553-2601
Cell: (206) 291-6879

From: Peterson, Erik
Sent: Monday, July 9, 2018 12:48 PM
To: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Proposal to cancel 7/18/18 Bristol Bay Check-in

Linda,

Patty and I will not be in the office for the next scheduled bi-weekly Bristol Bay check-in on July 18th and are proposing that we cancel.

If we cancel the 18th, our next BB check-in with you would be July 31st at 9:00 am.

Are you ok with canceling the 18th?

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10

AMERICAN OVERSIGHT

1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, June 25, 2018 1:03 PM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Marcia Combes (Combes.Marcia@epa.gov); Mendelman, Krista; Stern, Allyn
Cc: Douglas, Mark; Detwiler, Susan K.
Subject: FW: Bristol Bay Check-in
When: Wednesday, July 18, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

-----Original Appointment-----
From: Kelly, Christine M **On Behalf Of** R10-OERA Calendar
Sent: Wednesday, May 16, 2018 10:11 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Szerlog, Michael; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Marcia Combes (Combes.Marcia@epa.gov); Mendelman, Krista; Stern, Allyn
Cc: Douglas, Mark; Detwiler, Susan K.
Subject: Bristol Bay Check-in
When: Wednesday, July 18, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 8/1/2018 10:21:15 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has shared 'Comment spreadsheet 4.16'

Hi Patty - as we discussed, here is Ch 4.16 for you to begin review. Mark Douglas may have additional comments next week. Thanks, Molly

Open Comment spreadsheet 4.16.docx

See more related to Vaughan, Molly in Delve.

 Get the SharePoint mobile app!

  

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 8/1/2018 10:17:01 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Revised comment date for Chapter 3 and 4 sections to 31 August 2018

Hi Tim and Chris,
I hope your travels back to Seattle today went smoothly.

Deliberative Process / Ex. 5

If you are interested in perusing any of the RFIs for background information, here is the link in case you didn't have it:
https://www.pebbleprojecteis.com/
Go to Documents > Project Library

Thank you,
Molly

-----Original Message-----
From: Vaughan, Molly
Sent: Thursday, July 26, 2018 2:36 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Revised comment date for Chapter 3 and 4 sections to 31 August 2018

Hi Pebble Review Team,
As I explained during today's team meeting, we received word this morning from the Corps (below) that the deadline for comments on the documents we have received for review has been extended to August 31. A huge thank you to all of you for your quick reviews to meet the original very tight turnaround time. As was discussed at the meeting, our plan is to proceed with finalizing our review and sending our comments to the Corps in a reasonably expedient time frame, since much of the effort has already been completed. That said, if there were portions of the document you wanted to take another look at given the extra time, the opportunity is available. I have placed all of the compiled comments received to date on the SharePoint file here:

Internal Website / Ex. 6

If you have additional comments to add, please let me know. I would request those comments by August 7.
Thank you,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 26, 2018 8:45 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Hobbie, David S CIV USARMY CEPOA (US) <David.S.Hobbie@usace.army.mil>; Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>
Subject: Revised comment date for Chapter 3 and 4 sections to 31 August 2018

Cooperating Agencies,

Last week it came to my attention that I inadvertently omitted to distribute some sections of draft Chapters 3 and 4 to some cooperators. I had originally asked that cooperators submit comments on these draft chapters by 31 July for Chapter 4 and July 5 for comments for Chapter 3.

Given my oversight, I am now asking that the review for both Chapters 3 and 4 sections be submitted by August 31, 2018. This will also mean that the robust technical discussions will occur in October.

AMERICAN OVERSIGHT

I would like to remind everyone, that at this stage of the development of the analysis, I am asking that your review be at a high level; meaning that we are asking your teams to identify gaps (did we miss something?). The team developing the sections will review the comments and may be reaching out to you for clarity. A more in detail review will be expected in October when the team has incorporated additional information based on your input and data gathered by the teams.

As we are all aware, there are many moving parts to any EIS and it is difficult to keep all things on track. I would greatly appreciate any issues being brought directly to my attention as soon as you identify them. Please email me or call me directly if you have concerns or questions about the flow of information so we can collaboratively ensure that errors are caught and corrected as soon as possible.

VR

Shane McCoy
Program Manager
907-753-2715

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/7/2018 8:13:43 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Pebble technical team assignments

Hi Patty,
As discussed yesterday, here are initial assignments for the Pebble technical teams. We can update the wetlands ones if needed following our discussion on Tuesday, before sending to the Corps. Also please edit if I mixed up any of the POCs for the teams, or missed someone somewhere.

- 3.1 Intro – Molly Vaughan
- 3.5 Recreation – Mark Douglas (POC), Palmer Hough
- 3.11 Aesthetics – Mark Douglas (POC), Palmer Hough
- 3.14 Soils – Mark Douglas (POC), Palmer Hough
- 3.16 Surface Water Hydrology – Tim Maley (POC), Mark Douglas, Palmer Hough, Muluken Muche
- 3.17 Groundwater Hydrology – Tim Maley (POC), Mark Douglas, Palmer Hough, Muluken Muche
- 3.18 Water and Sediment Quality – Cindi Godsey (POC), Tim Maley, Chris Eckley
- 3.22 Wetlands/ Special Aquatic Sites – Mark Douglas (POC), Palmer Hough
- 3.26 Vegetation – Mark Douglas (POC), Palmer Hough

Contact Information for technical team members:
Mark Douglas, Douglas.mark@epa.gov, 907-271-1217
Chris Eckley, Eckley.chris@epa.gov, 206-553-0510
Cindi Godsey, Godsey.cindi@epa.gov, 206-553-1676
Palmer Hough, Hough.palmer@epa.gov, 202-566-1374
Tim Maley, Maley.timothy@epa.gov, 206-553-1210
Muluken Muche, Muche.muluken@epa.gov, 706-355-8321
Molly Vaughan, Vaughan.molly@epa.gov, 907-271-1215

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/3/2018 9:31:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: BB Funds - $80,410

Hmm. I thought it was open when I proposed it. Darf.

Yes, if you and Patty get together and add info. to the draft memo that is great and all we need. You could update the memo with what you all think is appropriate and just let me know. Good enough. I'll keep the meeting because it gives a chance to meet with David Allnutt prior to submitting something to Michael Szerlog. It is more of a deadline than a need to all discuss. I would like to send the memo to Michael by the end of the day on the 5th.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-6382

From: Vaughan, Molly
Sent: Tuesday, April 03, 2018 2:26 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: BB Funds - $80,410

Hi Erik – It appears that the meeting time Patty set to discuss this with ORD (1-2 pm Pacific on Thursday) conflicts with our rescheduled R10 meeting. Sorry that this meeting has been such a pain to schedule. Is a full-group meeting necessary at this point, or could just Patty and I get back to you after we talk to ORD? I hate to make you reschedule the whole thing again!
--Molly

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, March 27, 2018 10:54 AM
To: Peterson, Erik; McGrath, Patricia; Vaughan, Molly; Conference Line/Code / Ex.
Cc: Allnutt, David; Hough, Palmer; Palomaki, Ashley; Bennett, Brittany
Subject: BB Funds - $80,410
When: Thursday, April 05, 2018 1:00 PM-1:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-20Cedar/R10-Rooms-Service-Center

Peterson, Erik has shared a OneDrive for Business file with you. To view it, click the link below.

Bristol Bay - 2018 Funding Needs(1).docx

Conference Line/Code / Ex. 6

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Agenda

Discuss draft plan for Szerlog's BB funds

Next steps – final general plan to Szerlog by April 6th.

Notes from 11/26 BB funds meeting and from 11/27 Peterson and Szerlog meeting

Deliberative Process / Ex. 5

- Michael would like a final memo with basic recommendations on how the region will use the funds by **COB April 6th**

AMERICAN OVERSIGHT

Message

From: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Sent: 6/13/2018 3:28:31 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Field Logistics

Hi Patty,

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, June 13, 2018 7:25 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Reif, Kathy B. <reif.kathy@epa.gov>
Subject: RE: Field Logistics

Thanks Ashley and Garth for your quick response.
Patty

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, June 13, 2018 7:41 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Reif, Kathy B. <reif.kathy@epa.gov>
Subject: RE: Field Logistics

Hi Patty -

Attorney Client / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, June 13, 2018 7:11 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Reif, Kathy B. <reif.kathy@epa.gov>
Subject: RE: Field Logistics

Hi Patty -

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----

AMERICAN OVERSIGHT

From: McGrath, Patricia
Sent: Tuesday, June 12, 2018 1:28 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: FW: Field Logistics
Importance: High

Hi Ashley and Garth -

I traded voice messages with Ashley about this issue, but realized that I neglected to forward you this email string.
We are planning two trips to the Pebble project site this summer.
The first is a wetlands delineation field verification trip with the Corps on July 9 - 11. Mark Douglas would participate in that trip.
The second, yet to be scheduled, is a project overview site visit (1 day on-site) attend by four EPA folks from our NEPA team. Both of these visits will involve helicopter time from Iliamna to and around the Pebble site. Mark's visit will involve overnights in Iliamna.

Attorney Client / Ex. 5

Please let me know as soon as possible if you have any concerns or would like to discuss.

Thanks -
Patty

-----Original Message-----
From: Smith, Marla J.
Sent: Thursday, June 7, 2018 1:18 PM
To: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: Field Logistics
Importance: High

Hi Mark,

Attorney Client / Ex. 5

Thanks,
Marla

-----Original Message-----
From: Douglas, Mark
Sent: Thursday, June 07, 2018 12:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: FW: Field Logistics

The form Pebble wants me to sign and get back.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

-----Original Message-----
From: Tim Havey [mailto:timhavey@pebblepartnership.com]
Sent: Thursday, June 07, 2018 12:06 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Field Logistics

AMERICAN OVERSIGHT

Mark:

Please review the attached and send back to me. Basically I need your cell phone number and for you to add any food or dietary requirements. Below is the email I sent to Estrella yesterday with some additional info. Call if you have any questions.

Regards,

Tim Havey
Director-Environment and Permitting

3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 C: 907.230.5056

-----Original Message-----
From: Tim Havey
Sent: Wednesday, June 6, 2018 10:20 AM
To: 'Campellone, Estrella F CIV USARMY CEPOA (US)' <Estrella.F.Campellone@usace.army.mil>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: RE: Field Logistics

Estrella:

I have attached the site services request form that our operations staff need to finalize your arrangements. I went ahead and filled out most. Please review and add your phone number (cell phone preferably) and whether anyone has any food allergies or special needs. You can send the completed form back to me and I will submit it to site. I have requested individual rooms for each of you.

Meals are cafeteria style. For your arrival day, it will be easiest if you can bring your lunch with you. For the remaining days you will make a bag lunch at breakfast to bring with you to the field.

We will provide in-town transportation to/from the airport each day in one of our vehicles. Work days are 12 hours, with 10 in the field and one hour on either end for muster, briefings, etc. Crews normally do not return to base during the work day unless weather limits flight operations. Low clouds and/or high winds are typically the only conditions that will restrict helicopter travel.

No firearms are permitted at any Pebble facility or in helicopters. Trained bear guards will be provided with each crew. Guards are in constant radio contact with site operations. Alcohol is prohibited at any Pebble facility.

Safety training and site orientation will take place as soon as you arrive. That should take about an hour, followed by a 20-minute helicopter safety briefing. We provide basic PPE (safety goggles, high visibility vest, hearing protection). You are welcome to bring your own as long as the operations manager approves. Field gear requirements are what you would normally bring.

Accommodations are 150/person/day. We will invoice you after your trip. Our site staff does not have the ability to accept payments. Helicopter time will likewise be invoiced to you based on the per seat cost and number of flight hours logged. Cost may vary depending on which helicopter is available.

Please let me know if you have any other questions.

Thanks,
Tim

-----Original Message-----
From: Campellone, Estrella F CIV USARMY CEPOA (US) [mailto:Estrella.F.Campellone@usace.army.mil]
Sent: Wednesday, June 6, 2018 7:31 AM
To: Tim Havey <timhavey@pebblepartnership.com>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: Field Logistics

Hi Tim,

I think I left a voice mail and I am wondering if you received it.

In any case, please let me review with you our itinerary:
Arrival time @ Iliamna: July 9 (Monday) at 0900.
Departure time: July 11 @ 4:30 p.m.

Corps will disburse your company directly for hotel/helicopter costs.
Hotel:
Check in July 9th
Check out July 11th

AMERICAN OVERSIGHT

Meals:
July 9th (lunch brown bag - Diner)
July 10th (all meals)
July11th (breakfast & lunch).

Helicopter: as per time-usage logs (coordination field work with HDR at this point).

Truck Rental: We will take your offer of picking us up at the airport on Monday July 9th.

You mentioned we will have safety training upon arrival on July 9th before heading to the field. Please let us know if there is anything else we need to be aware of.

Thank you very much for your help,

Estrella
-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US)
Sent: Monday, June 4, 2018 10:51 AM
To: Campellone, Estrella F CIV USARMY CEPOA (US) <Estrella.F.Campellone@usace.army.mil>
Cc: Tim Havey <timhavey@pebblepartnership.com>
Subject: contact info

Estrella,
Here is Tim's email.

Shane

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/13/2018 3:28:15 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble site visit

The week of Aug 20th works well. Week of July 30th would also work if the site visit is Monday or Tuesday, **Personal Matters**

Personal Matters / Ex. 6

From: McGrath, Patricia
Sent: Wednesday, June 13, 2018 7:24 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Pebble site visit

Do either of these weeks work for you?

From: Eckley, Chris
Sent: Wednesday, June 13, 2018 8:17 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Re: Pebble site visit

July 30th is my first choice....Aug 20th is my second choice.

Thanks,

Chris

Chris S. Eckley, Ph.D.
Environmental Scientist; Mining Geochemist
U.S. EPA—Region 10; Office of Environmental Assessment
1200 6th Ave., Suite 900, OEA-095, Seattle, WA 98101
Office: 206-553-0510; Fax: (206) 553-0119
eckley.chris@epa.gov

From: McGrath, Patricia
Sent: Tuesday, June 12, 2018 5:03 PM
To: Eckley, Chris; Maley, Timothy; Vaughan, Molly; Nogi, Jill
Subject: Pebble site visit

Hi all-

AMERICAN OVERSIGHT

The purpose of this email is to begin planning our overview visit to the Pebble project site to support our NEPA review.
The visit will entail flying from Anchorage to Ilimana and then taking a helicopter flight from Iliamna to the Pebble site. From the Pebble site we would travel by helicopter to view locations of various mine site facilities. We would return to Illiamna and Anchorage on the same day. Travelers from Seattle should plan on arriving in Anchorage the day before the site visit and leaving Anchorage either on the red eye or, better, the day after the site visit - so, this would entail three travel days.

We will attempt to coordinate with other agencies, but depends on the timing.

Please let me know if you have conflicts during the following dates. Since this trip will take 3-days (except for Molly), please provide me with 3-day choices. Please give me as many options as possible to work from since there will be exploration work at the site and we will need to work with PLP's schedule.

July 24 – 27
July 30 – Aug 3
Aug 13 – 18
Aug 20 – 24

Please send me your responses ASAP and let me know if you have questions.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Bennett, Brittany [bennett.brittany@epa.gov]
Sent: 6/6/2018 8:12:56 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Tribes training on NEPA and mining

Thank you!

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

From: McGrath, Patricia
Sent: Wednesday, June 06, 2018 4:10 PM
To: Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Tribes training on NEPA and mining

Hi Brittany-
Here is the link to the three parts of the NEPA & mining 101 webinar that I mentioned. Folks can view the archived presentations.

https://clu-in.org/conf/tio/NEPAandMining101-1_051216/

https://clu-in.org/conf/tio/NEPAandMining101-2_052416/

https://clu-in.org/conf/tio/NEPAandMining101-3_060816/

From: Bennett, Brittany
Sent: Wednesday, June 6, 2018 11:30 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Tribes training on NEPA and mining

Sounds good.

Brittany K. Bennett
Ecologist
U.S. EPA, Office of Water
ph: 202.564.1896
Bennett.Brittany@epa.gov

From: McGrath, Patricia
Sent: Wednesday, June 06, 2018 3:27 PM
To: Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Re: Tribes training on NEPA and mining

AMERICAN OVERSIGHT

Hi Brittany
I will give you a call about this.
Patty

Sent from my iPhone

On Jun 6, 2018, at 8:37 AM, Bennett, Brittany <bennett.brittany@epa.gov> wrote:

> Hey Patty (Molly cc'd),
>
> I presented a few talking points on the Pebble Project to the National Tribal Water Council earlier today. I received two questions that I was unable to answer:
>
> 1. Were the tribes invited to be cooperating agencies? If so, did any of them accept?
> 2. Will there be training made available to tribes in Bristol Bay (or Alaska generally) on NEPA and mining, either by Corps or EPA? This was requested by multiple people at the meeting re: Pebble. Apparently R5 does this sort of training when big projects pop up to help potentially affected tribes understand the process and potential impacts better. They have upcoming meetings (annual tribal forum and Statewide environmental forum) where this training could be provided, but also would accept a webinar if it is impossible to schedule an in-person training.
>
> Thanks!
>
> B
>
> **Brittany K. Bennett**
> Ecologist
> U.S. EPA, Office of Water
> ph: 202.564.1896
> Bennett.Brittany@epa.gov

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 6/22/2018 7:45:27 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
Subject: RE: Pebble site visit

Christine Kelly

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: McGrath, Patricia
Sent: Friday, June 22, 2018 12:42 PM
To: Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Subject: FW: Pebble site visit

Hi Tim and Chris-
Who is your analyst that processes TAs for you? I want to make sure that we are coordinated so that we stay in the same hotel in Anchorage.
Thanks - Patty

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 12:54 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Timothy Maley (maley.timothy@epa.gov) <maley.timothy@epa.gov>; Chris Eckley (Eckley.Chris@epa.gov) <Eckley.Chris@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Tami Fordham (Fordham.Tami@epa.gov) <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Molly, Tim, and Chris –

Our Pebble site visit is confirmed for July 31. Please submit your TAs ASAP. ARE funding is available for this trip but needs to be obligated.

Following is information for the TAs.

Seattle travelers –
7/30 – fly to Anchorage and stay overnight

All travelers –
7/31:
8 am flight from Anchorage to Iliamna via Illiamna Air Taxi (arrive Iliamna at 9 am)
9:00 – 3:30 – Pebble site visit (mine site, road, ports) - this will entail helicopter time. The cost estimate for the helicopter portion is $1200 per person (note PLP will invoice us for the exact amount)
4:30 – flight from Iliamna back to Anchorage (should arrive in Anchorage at 5:30)

Seattle travelers - you can return to Seattle on 7/31 as there are late flights leaving Anchorage – or overnight and leave Anchorage on 8/1. I will likely leave the morning of 8/1.

Please let Molly and I know if you have questions.

AMERICAN OVERSIGHT

I am also ccing Marla who has been helpful with previous travel to Pebble.

Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
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AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 6/13/2018 2:44:56 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble site visit

Any of those dates works for me, except if considering the Aug 20-24 slot, **Personal Email / Ex. 6**
Personal Matters / Ex. 6

tm

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: McGrath, Patricia
Sent: Tuesday, June 12, 2018 5:03 PM
To: Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble site visit

Hi all-

The purpose of this email is to begin planning our overview visit to the Pebble project site to support our NEPA review. The visit will entail flying from Anchorage to Ilimana and then taking a helicopter flight from Iliamna to the Pebble site. From the Pebble site we would travel by helicopter to view locations of various mine site facilities. We would return to Illiamna and Anchorage on the same day. Travelers from Seattle should plan on arriving in Anchorage the day before the site visit and leaving Anchorage either on the red eye or, better, the day after the site visit - so, this would entail three travel days.

We will attempt to coordinate with other agencies, but depends on the timing.

Please let me know if you have conflicts during the following dates. Since this trip will take 3-days (except for Molly), please provide me with 3-day choices. Please give me as many options as possible to work from since there will be exploration work at the site and we will need to work with PLP's schedule.

July 24 – 27
July 30 – Aug 3
Aug 13 – 18
Aug 20 – 24

Please send me your responses ASAP and let me know if you have questions.

Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
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Cell: (206) 743-7068

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Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/26/2018 7:57:27 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Review of Pebble 4.1, 4.5, 4.11

Hi Patty,
I have reviewed Sections 4.1 Intro, 4.5 Recreation, and 4.11 Aesthetics – I was the only reviewer assigned to those sections. I do not have any comments to provide to the Corps at this preliminary stage in document development. If you also decide to take a look at those sections and have any comments, please let me know.

Summary status of other sections: you should have received a link to my OneDrive to begin your review of Section 4.22 Wetlands. I will send you 4.14 Soils, 4.16 Surface Water, 4.17 Hydrogeology, 4.18 Water Quality, and 4.26 Vegetation once Mark is able to complete his review (likely either 8/1 **Personal Matters / Ex. 6**

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

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Message

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: 6/6/2018 12:45:07 AM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: resume
Attachments: J Ebersole DM Vita.docx

Here you go, attached. A little out of date but just a few recent papers missing.

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Tuesday, June 05, 2018 5:14 PM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: resume

Hi Joe-
I am participating in an agency meeting tomorrow for Pebble and will be discussing our technical leads with other agencies. Could you please send me a copy of your resume if it is easy to do?
If not, no worries.
Thanks -Patty

Patty McGrath |Mining Advisor
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Joseph L. Ebersole

US Environmental Protection Agency
Western Ecology Division
(541) 754-4775
Email: Ebersole.joe@epa.gov

Education

PhD, Oregon State University, 2002.
Major: Fisheries Science
Dissertation Title: Heterogeneous Thermal Habitat for Northeast Oregon Stream Fishes

MS, Oregon State University, 1994.
Major: Fisheries Science
Thesis Title: Classification and Restoration of Stream Habitats in the Blue Mountains, Northeast Oregon

BS, Oregon State University, 1990.
Major: Fisheries Science

History of Professional Experience

Research Fisheries Biologist
U.S. Environmental Protection Agency Western Ecology Division, Corvallis, OR
June 2005 - present

Post-Doctoral Fishery Biologist
U.S. Environmental Protection Agency Western Ecology Division, Corvallis, OR November 2001 – June 2005

Graduate Research Assistant
Oregon State University, Dept. of Fisheries and Wildlife
Sept. 1996 – Nov. 2001

Visiting Investigator
Flathead Lake Biological Station, University of Montana, Polson, MT
July-Sept 1996:

Professional Memberships

American Fisheries Society (1989-present)

American Geophysical Union (2015-present)

Awards and Honors

EPA Gold Medal for Exceptional Service 2015 – EPA's highest honor, awarded *In recognition of the Bristol Bay Assessment Team for its extraordinary efforts to conduct and complete the agency's Bristol Bay Assessment*

EPA Bronze Medal Award 2010 - *For establishing how the configuration of stream habitats in stream networks including intermittent streams impact the productivity and survivability of coho salmon in coastal watersheds*

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EPA STAA Award 2010 Honorable Mention - *Innovative Research Quantifying the Effects of Multi-Level Factors on Fish Populations Across Entire Watersheds*

EPA STAA Level II Award 2010 - *Developing a Novel Procedure for Stable Isotope Analysis for Rapid Determination of Diet Switching of Fish*

EPA STAA Level III Award 2008 – *Innovative research on the value of seasonal habitats and intermittent streams to coho salmon populations*

EPA STAA Level II Award 2007 – *Outstanding research quantifying the influence of intermittent streams on the biological integrity of navigable waters*

NHEERL Community Service Award 2007 - *In recognition of extraordinary commitment to educate public school and university students in the area of aquatic ecology of streams and rivers.*

Environmental Protection Agency Science Forum Poster Award 2004– 3rd Prize

Environmental Protection Agency "S" (Special Accomplishment Recognition) Award 2003

Oregon Chapter American Fisheries Society Graduate Scholarship Award 2001

Oregon State University Graduate Student Association Presentation Award 2000

Pennsylvania Scholars in Education Award 1985

Izaak Walton League Certificate of Merit 1985

Lewis and Clark Club Award 1985

Bausch and Lomb Science Medal 1985

International Science Fair Finalist 1985

TEACHING

Teaching Experience

Oregon State University

FW 488/489 Problem Solving in Fisheries and Wildlife, 2 courses
FW 441, Introduction to Group Problem Solving, 4 courses
FW 442, Problem Definition and Analysis, 4 courses
FW 443, Problem Analysis and Resolution; 4 courses
FW 323, Management Principles of Salmon in the Northwest, 2 courses
FW 454/554, Fishery Biology, 1 course
FW 255, Wildlife Techniques, 1 course
FW 321, Fisheries and Wildlife Resource Ecology, 1 course
ENSC 399, Special Topic – Finding Your Place in the Watershed, 1 course

Directed Student Learning (current)

Advisor. (January 2016 - Present).
Advised: Sabrina Pearson

Co-Advisor. (June 20, 2016)
Advised: Dalton Hance

Co-Advisor. (September 23, 2010)
Advised: Rebecca R. Miller

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RESEARCH

Published Intellectual Contributions

Book Chapters

Frissell, C.A., W.J. Liss, R.E. Greswell, R.K. Nawa and J.L. Ebersole. 1997. Resource in crisis: New measures for salmon management. In D.J. Stouder, P.A. Bisson, and R.J. Naiman (eds.) Pacific salmon and their ecosystems: status and future options. Chapman and Hall, New York.

Burnett, K. M., C. E. Torgersen, E. A. Steel, D. P. Larsen, J. L. Ebersole, R. E. Gresswell, P. W. Lawson, D. J. Miller, J. D. Rodgers, and D. L. Stevens. 2009. Data and modeling tools for assessing landscape-level influences on salmonid populations: examples from western Oregon. Pages 873–900 In: Pacific Salmon: Ecology and Management of Western Alaska's Populations. American Fisheries Society, Bethesda, MD.

Torgersen, C. E., C. V. Baxter, J. L. Ebersole, and R. E. Gresswell. 2012. Incorporating Spatial Context into the Analysis of Salmonid–Habitat Relations. Pages 216-224 in P. B. M. Church, and A. Roy, editor. Gravel-Bed Rivers. John Wiley & Sons, Ltd.

Refereed Journal Articles

Ebersole, J.L., W.J. Liss, and C.A. Frissell. 1997. Restoration of stream habitats in the western United States: Restoration as re-expression of habitat capacity. Environmental Management 21:1-14.

Ebersole, J.L., W.J. Liss, and C.A. Frissell. 2001. Relationship between stream temperature, thermal refugia, and rainbow trout (Oncorhynchus mykiss) abundance in arid-land streams, northwestern United States. Ecology of Freshwater Fish 10(1):1-11.

Ebersole, J. L. and E. K. Ryce, 2001. Becoming an effective fisheries teaching assistant. Fisheries 26: 38-39.

Ebersole, J.L., W.J. Liss, and C.A. Frissell, 2003. Coldwater patches in warms streams: physiochemical characteristics and the influence of shading. Journal of the American Water Resources Association 39(2):355-368.

Ebersole, J.L., W.J. Liss, and C.A. Frissell. 2003. Thermal heterogeneity, stream channel morphology and salmonid abundance in northeast Oregon streams. Canadian Journal of Fisheries and Aquatic Sciences 60:1266-1280.

Watanabe, M., Richard M. Adams, JunJie Wu, John P. Bolte, Matt M. Cox, Sherri L. Johnson, William J. Liss, William G. Boggess, and J. L. Ebersole. 2005. Toward Efficient Riparian Restoration: Integration Economic, Physical, and Biological Models. Journal of Environmental Management 75(2):93-104.

Cairns, M.A., J.L. Ebersole, J.P. Baker, H.R. Lavigne, S.M. Davis, and P.J. Wigington. 2005. Influence of summer stream temperatures on black spot infestation of juvenile coho salmon in the Oregon coast range. Transactions of the American Fisheries Society 134:1471–1479.

Ebersole, J.L., P.J. Wigington , J.P. Baker, M.A. Cairns, M.R. Church, .E. Compton, S.G. Leibowitz, B. Miller, and B. Hansen. 2006. Juvenile coho salmon growth and survival across stream

AMERICAN OVERSIGHT

network seasonal habitats. Transactions of the American Fisheries Society 135:1681–1697.

Wigington, P. J., Jr., J.L. Ebersole, M.E. Colvin, B. Miller, B. Hansen, H. Lavigne, D. White, J.P. Baker, M.R. Church, S.G. Leibowitz, J.R. Brooks, M.A. Cairns, and J.E. Compton. 2006. Coho salmon dependence on intermittent streams. Frontiers in Ecology and the Environment 4(10):514-519.

Roni, P., D. Van Slyke, B. A. Miller, J. L. Ebersole, and G. R. Pess. 2008. Adult coho salmon and steelhead use of boulder weirs in Southwest Oregon streams. North American Journal of Fisheries Management 28:970-978.

Rodnick, K. J., S. St-Hilaire, P. K. Battiprolu, S. M. Seiler, M. L. Kent, M. S. Powell, and J. L. Ebersole. 2008. Evidence for sex and or habitat differences in swimming performance, parasite infestation, tissue biochemistry, and morphology of juvenile coho salmon in Oregon's West Fork Smith River. Transactions of the American Fisheries Society 137(6):1571-1590.

McCullough, D. A., J. M. Bartholow, H. I. Jager, R. L. Beschta, E. F. Cheslak, M. L. Deas, J. L. Ebersole, J. S. Foott, S. L. Johnson, K. R. Marine, M. G. Mesa, J. H. Petersen, Y. Souchon, K. F. Tiffan, and W. A. Wurtsbaugh. 2009. Research in Thermal Biology: Burning Questions for Coldwater Stream Fishes. Reviews in Fisheries Science 17(1):90 - 115.

Church, M. R., J. L. Ebersole, K. M. Rensmeyer, R. B. Couture, F. T. Barrows, and D. L. G. Noakes. 2009. Mucus: a new tissue fraction for rapid determination of fish diet switching using stable isotope analysis. Can. J. Fish. Aquat. Sci 66:1-5.

Ebersole, J. L., M. E. Colvin, P. J. Wigington, S. G. Leibowitz, J. P. Baker, M. R. Church, J. E. Compton, B. A. Miller, M. A. Cairns, B. P. Hansen, and H. R. LaVigne. 2009. Modeling stream network-scale variation in coho salmon overwinter survival and smolt size. Transactions of the American Fisheries Society 138:564-580.

Ebersole, J. L., and coauthors. 2009. Hierarchical modeling of late-summer weight and summer abundance of juvenile coho salmon across a stream network. Transactions of the American Fisheries Society 138:1138-1156.

Leibowitz, S. G., P. J. Wigington Jr, R. L. Comeleo, and J. L. Ebersole. 2011. A temperature-precipitation-based model of thirty-year mean snowpack accumulation and melt in Oregon, USA. Hydrological Processes 26:741-759.

Rashleigh, B., C. Barber, J. L. Ebersole, G. Boxall, D. White, and A. Brookes. 2012. Forecasting fish communities in river networks. Korean Journal of Limnology 45(2):150-157.

Wigington, P. J., S. G. Leibowitz, R. L. Comeleo, and J. L. Ebersole. 2013. Oregon hydrologic landscapes: a classification framework. Journal of the American Water Resources Association 49(1):163-182.

Fritz, Ken M., Elisabeth Hagenbuch, Ellen D'Amico, Molly Reif, Parker J. Wigington, Jr., Scott G. Leibowitz, Randy L. Comeleo, Joseph L. Ebersole, and Tracie-Lynn Nadeau, 2013. Comparing the Extent and Permanence of Headwater Streams from Two Field Surveys to Values from Hydrographic Databases and Maps. Journal of the American Water Resources Association (JAWRA) 49(4): 867-882. DOI: 10.1111/jawr.12040

Leibowitz, S.G., R. L. Comeleo, P. J. Wigington, Jr., C. P. Weaver, P. E. Morefield, E. A. Sproles, and J. L. Ebersole. 2014. Hydrologic landscape classification assesses streamflow

AMERICAN OVERSIGHT

vulnerability to climate change in Oregon, USA. Hydrology and Earth Systems Science 18:1-26.

Ebersole, J.L., P.J. Wigington, Jr., S. G. Leibowitz, R. Comeleo, and J. V. Sickle. 2015. Predicting the Occurrence of Cold Water Patches at Intermittent and Ephemeral Tributary Confluences of Warm Rivers. Journal of Freshwater Science 34:111-124.

Fullerton, A. H., C. E. Torgersen, J. J. Lawler, R. N. Faux, E. A. Steel, T. J. Beechie, J. L. Ebersole, and S. G. Leibowitz. 2015. Rethinking the longitudinal stream temperature paradigm: region-wide comparison of thermal infrared imagery reveals unexpected complexity of river temperatures. Hydrological Processes. DOI: 10.1002/hyp.10506

Nadeau, Tracie-Lynn, Scott G. Leibowitz, Parker J. Wigington, Jr., Joseph L. Ebersole, Ken M. Fritz, Robert A. Coulombe, Randy L. Comeleo, and Karen A. Blocksom. 2015. Validation of Rapid Assessment Methods to Determine Streamflow Duration Classes in the Pacific Northwest. Environmental Management.

Hance, D. J., L. M. Ganio, K. M. Burnett, and J. L. Ebersole. 2016. Basin-scale variation in the spatial pattern of fall movement of juvenile coho salmon in the West Fork Smith River, Oregon. Transactions of the American Fisheries Society. 145:1018-1034.

Morelli, T.L., C.I. Millar, S. Maher, K. Nydick, C. Daly, S. Dobrowski, D. Dulen, J. Ebersole, S. Jackson, J. Lundquist, W. Monahan, K. Redmond, S. Sawyer, S. Stock, and S. Beissinger. 2016. Managing Climate Change Refugia for Climate Adaptation. PLOS ONE.

Other

Frissell, C.A., J. L. Ebersole, W.J. Liss, B.J. Cavallo, G.C. Poole and J. A. Stanford. 1996. Potential effects of climate change on thermal complexity and biotic integrity of streams: seasonal intrusion of non-native fishes. Environmental Protection Agency Final Report CR-822019-01-0. Duluth, Minnesota.

Ebersole, J. L. and W. J. Liss, 2001. Thermal Refugia and Salmonid Life Histories in the Grande Ronde Basin of Northeast Oregon. Oregon Department of Fish and Wildlife Project Completion Report. La Grande, OR. 201 pp.

Wigington, P.J., Jr., J. L. Ebersole, J. P. Baker, M. R. Church, J. E. Compton, S. G. Leibowitz, D. White and M. A. Cairns, 2002. Landscape and Watershed Influences on Wild Salmon and Fish Assemblages in Oregon Coastal Streams. EPA NHEERL Western Ecology Division, Research Plan EPA/600/R-03/081, Corvallis, OR.

Dunne, T., G. Ruggerone, D. Goodman, K. Rose, W. Kimmerer, J. Ebersole. 2011. Scientific Assessment of Two Dam Removal Alternatives on Coho Salmon and Steelhead. Expert

AMERICAN OVERSIGHT

Panel Report to the U.S. Secretary of the Interior. January 8, 2011. Available at: http://www.pbsj.com/KlamathRiver/Pages/default.aspx

Torgersen, C. E., J. L. Ebersole, and D. M. Keenan. 2012. Primer for identifying cold-water refuges to protect and restore thermal diversity in riverine landscapes. Environmental Protection Agency EPA 910-C-12-001, Seattle, WA.

USEPA. 2014. An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska. Region 10, Seattle, WA. EPA 910-R-14-001.

Ebersole, J.L. 2004. Love in the margin: finding refuge in the Blue Mountains. *In* The Back Road to Crazy: Stories from the Field. *Edited by* J. Bove. University of Utah Press, Logan, UT. pp. 97-103.

Presentations Given (Invited only)

Ebersole, J.L., P.J. Wigington , J.P. Baker, M.A. Cairns, M.R. Church, J.E. Compton, S.G. Leibowitz, D. White, H.A. LaVigne, B. Miller, and B. Hansen. 2003. A Spatially Integrated Watershed Approach Linking Salmonid Productivity to Freshwater Habitats. Presented at the Small Stream PIT Tag Symposium, Annual Meeting of the American Fisheries Society, Quebec City, Canada. August 10-14, 2003.

Ebersole, J.L., B. McComb, J.P. Baker, D. White, and S. Duncan. 2004. Research Needs for Effective Watershed Planning. Presented to the Watershed Planning Symposium, Annual Meeting of the North Pacific International Chapter of the American Fisheries Society. Stevenson, WA. November, 2004.

Ebersole, J.L., S.G. Leibowitz, D. White. 2005. Utility of Habitat Modeling for Pacific Salmon Conservation. Presented to the Symposium on Habitat Modeling: State of the Salmon – 2005. Anchorage, AK. April, 2005.

Ebersole, J. L., M. E. Colvin, P. J. Wigington, S. G. Leibowitz, J. P. Baker, M. R. Church, J. E. Compton, B. A. Miller, M. A. Cairns, B. P. Hansen, and H. R. LaVigne. 2006. Growth, Survival and Movement of Juvenile Salmonids as Indicators of Habitat Quality. Oral presentation to the International Symposium on the Ecology of Stream Fish – State of the Art and Future Prospects II. Leon, Spain June 11-16, 2006.

Ebersole, J.L, M.E. Colvin, P.J. Wigington Jr., S.G. Leibowitz, K. Burnett, and B. Hansen. 2008. Application of restoration scenarios to basin-scale demographics of coho salmon inferred from PIT-tags. Invited oral presentation to the International Symposium on Advances in Fish Tagging and Marking Technology. Auckland, New Zealand. February 2008.

Ebersole, J.L., M.E. Colvin, P.J. Wigington Jr., S.G. Leibowitz, K.M. Burnett, and J.C. Firman. 2009. Modeling patterns of coho salmon size and survival within a stream network. Invited oral presentation to the International Environmetrics Society, June 15, 2009, Corvallis, OR.

Ebersole, J.L. and W.J. Liss. 1994. A Context for Restoration. Conservation of Pacific Salmon: Issues and Questions for the Future. Oregon State University, April 27-28, 1994.

Ebersole, J.L. 1999. Thermal Diversity of the Upper Grande Ronde River: Implications for Salmonid Life History Diversity. Presented at Wallow Whitman National Forest Headquaters, La Grande, OR, September 14, 1999.

Ebersole, J.L. 2001. On Being a Salmon Biologist in the 21st Century. Pacific University, Forest Grove, OR, May 2001.

AMERICAN OVERSIGHT

Ebersole, J.L. 2002. Effectiveness of Thermal Refugia for Stream Salmonids. Presented to regional administrator and staff of National Marine Fisheries Service (NOAA Fisheries), Portland, OR, September 2002.

Wigington, P.J. Jr., Ebersole, J.L., J.P. Baker, M.A. Cairns, H. A. Lavigne, J.E. Compton, R.M. Church, D. White, S.G. Leibowitz, B. Miller, B. Hansen. 2003. Influence of Stream Network-Scale Habitat of a Coastal Oregon Watershed on Coho Salmon and Other Native Fish. 2003 Headwater Stream Ecology Research Forum, Oregon State University, Corvallis, OR. January 16, 2003.

Ebersole, J.L. 2003. Restoration of Stream Habitats in Eastern Oregon: Ecological Considerations. Presented to Governor's Independent Multidisciplinary Science Team, Corvallis, OR. May 13, 2003.

Ebersole, J.L. 2003. Restoration Research in the West Fork Smith River Watershed, Coastal Oregon. Presented to Southwest Province Advisory Committee, Reedsport, OR. November 18, 2003.

Ebersole, J.L. 2004. Putting Science Into Action: Fish-Habitat Relationships in Pacific Northwest Streams. Presented to the Oregon State University Dept. of Fisheries and Wildlife Seminar Series, Corvallis, OR. January 27, 2004.

Ebersole, J.L., W.J. Liss, and C.A. Frissell. 2004. Factors Influencing Thermal Refuge Use by Redband Trout and Other Native Fishes. Presented to the Inland Native Trout Symposium, Western Division American Fisheries Society, Salt Lake City, UT. March 2, 2004.

Ebersole, J.L. 2004. Landscape to Local Effects on Ecology of Oregon Stream Fishes. Presented to the Oregon State University Applied Fish Ecology Class FW 445/545. October 25, 2004.

Ebersole, J.L. 2005. Implications of Climate Change for Streamflows and Anadromous Fish in the Columbia Basin. Respondent in dialogue hosted by Columbia Basin Water Transactions Program, Portland OR. January 28, 2005.

Ebersole, J.L., S.G. Leibowitz, P.J. Wigington, J.P. Baker, M.A. Cairns, M.R. Church, J. Compton, B. Hansen, B. Miller. 2005. Implications of Fish Movement and Seasonal Habitat Dynamics to Restoration Planning and Prioritization. Presented to the Symposium on Stream and Watershed Restoration: Planning, Prioritizing, and Monitoring, Annual Meeting of the American Fisheries Society. Anchorage, AK. September, 2005.

Ebersole, J.L., H. LaVigne, B. Miller , P.J. Wigington, Jr., M.R. Church, J.P. Baker, M.A. Cairns, S. Leibowitz, J.E. Compton and D.White. 2006. Winchester Creek Intensive Watershed Studies. Presentation to South Slough Estuarine Research Reserve Board of Commissioners. Charleston, OR. February 16, 2006.

Ebersole, J.L., M.E. Colvin, P.J. Wigington Jr., S.G. Leibowitz, and K. Burnett. 2008. Assessing patterns of fish demographics and habitat in stream networks. Invited oral presentation to the Symposium on Advances in Modeling Populations and Habitat, Western Division American Fisheries Society Annual Meeting, Portland, OR, May 4-9, 2008.

Torgersen, C. E., Ebersole, J. L., Keenan, D. M. 2008. Coldwater fishes and thermal refuges in hot water: Synthesis and future directions. Oral presentation. Symposium: Identifying protecting and restoring thermal refuges for coldwater fishes, Annual Meeting of the Western Division American Fisheries Society, May 6, 2008, Portland, OR.

Ebersole, J.L. 2009. Assessing sensitivity of fish populations to climate change. Invited presentation to the Oregon Climate Change Research Institute, Corvallis, OR. June 24-25, 2009.

AMERICAN OVERSIGHT

Ebersole, J.L. 2009. Intensively monitored watersheds for coho salmon recovery. Invited presentation to the Oregon Coast Coho Salmon Recovery Team, Corvallis, OR. September 19, 2009.

Ebersole, J.L. 2009. Appropriate scales for watershed evaluation and restoration? Invited presentation to EPA Office of Research and Development Watershed Management Working Group, Raleigh-Durham, NC. November 17, 2009.

Leibowitz, S.G, P. J. Wigington, Jr., Randy Comeleo and Joseph L. Ebersole. 2010. Headwater effects on downstream waters: legal perspectives, science needs, and assessment approaches. Invited keynote presentation to Special Session on Stream Network Connections, Joint Annual Meeting of the North American Benthological Society and the American Society for Limnology and Oceanography, Santa Fe, NM. June 7, 2010

Ebersole, J.L. 2010. Modeling the ecological significance of seasonal movement of stream fishes. Invited presentation to the Oregon Coastal Coho Salmon Modeling Workshop, Corvallis, OR. April 27, 2010.

Ebersole, J.L. 2010. Invited presentation to Special Session on Stream Network Connections, Joint Annual Meeting of the North American Benthological Society and the American Society for Limnology and Oceanography, Santa Fe, NM. June 7, 2010

Ebersole, J.L., G. Boxall, B. Rashleigh, D. White, A. Brookes, and J. Bolte. 2011. Mapping the unknown: modeling future scenarios of riverine fish communities. Invited Oral Presentation to the Symposium on Riverscape Ecology: Theory and Application for Understanding and Conserving Lotic Fishes. American Fisheries Society Annual Meeting, Seattle, WA. Sept. 4-8 2011.

Ebersole, J.L., C.E. Torgersen, D.M. Keenan, A. Fullerton, and R. Labiosa. 2014. Identifying, protecting, and restoring (?) fine-scale thermal heterogeneity in streams. Invited Oral Presentation to the Joint Aquatic Sciences Meeting, Portland, OR. May 18-23, 2014.

Morelli, T.L., S.R. Beissinger, S. Maher, C.I. Millar, C. Daly, S. Dobrowski, D. Dulen, J. Ebersole, S. Jackson, J. Lundquist, W. Monahan, K. Nydick, K. Redmond, S. Sawyer, and S. Stock. 2015. Climate Change Refugia as a Tool for Climate Adaptation. Oral Presentation to Science for Parks, Parks for Science Conference. Berkeley, CA. March 25-27, 2015.

Ebersole, J.L. 2015. Climate Refugia for Salmon in a Changing World. Invited Oral Presentation to the Session "Climate Refugia in a Changing World: Climatic and Hydrologic Processes Informing Ecological Responses". American Geophysical Union Annual Meeting, December 14-18, 2015. San Francisco, CA.

SERVICE

University Service

Committee Member, Graduate Scholarship, Fisheries and Wildlife. (20 - 2015).

Committee Member, Communication and Outreach, Fisheries and Wildlife. (2016).

Professional Service

East-side Watershed Restoration Review Team, Pacific Rivers CouncilOne of 5 invited scientists to participate in review of status of the science regarding restoration of critical habitats for native fish in interior Columbia River watersheds. (1999-2000)

AMERICAN OVERSIGHT

Technical Peer Review Committee for Water Temperature Standard Development, Environmental Protection Agency Region 10. One of 15 invited scientists to participate in scientific review of documents and draft criteria during re-evaluation of stream temperature criteria in EPA Region 10. (2001-2004).

Technical Advisory Committee for Oregon Department of Environmental Quality Water Temperature Standard Development. One of 11 invited scientists to participate in review of Oregon proposed temperature standards to protect and sustain healthy populations of native salmon. (2001- 2004).

Salmon-Safe Peer Review Committee. Participated in review of Salmon-Safe guidelines for sustainable development and management of urban parks and natural areas in Portland Metro and Puget Sound regions. (2002-present).

Klamath River Dam Removal and Restoration Technical Review Team. One of six invited scientists to participate in USGS peer review of Klamath River dam-restoration and salmon recovery science. 2010-2011.

EPA Bristol Bay Assessment Technical Team. Fisheries Team Leader. Participant in joint EPA Office of Water, Region 10, and Office of Research and Development assessment team. 2011-2014.

Technical Team for EPA Proposed Determination of the US EPA Region 10 Pursuant to Section 404(c) to the Clean Water Act, Pebble Deposit Area, Southwest Alaska. 2014.

Technical Team, Cold Water Refugia Sufficiency Work Group, EPA Region 10. Assisting with 3-year effort to guide EPA, NOAA, state and tribal water temperature guidelines. Providing technical expertise and chapter lead for defining refuge “sufficiency”. 2015-present.

Climate Refugia Research Coalition. Invited member of National Landscape Conservation Cooperative (NLCC) supported and Northwest Climate Science Center sponsored interagency workgroup to define and operationalize climate refugia for ecosystems and species in the Pacific Northwest and as a model for other regions. 2016-present.

IUCN Climate Refugia Forum Workgroup. (2016).

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 6/22/2018 6:52:25 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint
Attachments: pre-draft 3-18.docx

Molly,

Attached are my comments on Section 3.18 with a single comment on the intro in 3.1. Take them or leave them.

Deliberative Process / Ex. 5

If you have questions, I should be around.

From: Vaughan, Molly
Sent: Thursday, June 07, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website/ Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website/ Ex. 6

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

AMERICAN OVERSIGHT

The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

Internal Website/ Ex. 6

If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

Please identify the sub-section and page number for each of your comments.

Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>;

AMERICAN OVERSIGHT

Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website/ Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Some of these changes could impact parts of our scoping letter (**Deliberative Process / Ex. 5**
2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068

AMERICAN OVERSIGHT

mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 7/26/2018 6:11:18 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble permit oversight/NEPA team

Good morning, ladies.

Personal Matters / Ex. 6 will join as soon as I can. Molly, if you're available, I'll get with you after lunch to catch up on what I missed.

Neverley
(907) 271-3206

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Godsey, Cindi; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Wake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris
Cc: Douglas, Mark; Schofield, Kate; Thiesing, Mary
Subject: Pebble permit oversight/NEPA team
When: Thursday, July 26, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda below, please feel free to suggest additional agenda topics

Agenda:
- Review of preliminary EIS sections – Molly
- Field verification site visit – Mark
- Upcoming agency meetings – Patty
- Schedule - Patty

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 8/23/2018 2:52:30 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble permit oversight/NEPA team

Personal Matters / Ex. 6

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

-----Original Appointment-----
From: McGrath, Patricia
Sent: Wednesday, August 22, 2018 4:31 PM
To: Maley, Timothy; Wake, Neverley; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Godsey, Cindi; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Hough, Palmer; Eckley, Chris
Cc: Douglas, Mark; Schofield, Kate; Thiesing, Mary
Subject: Pebble permit oversight/NEPA team
When: Thursday, August 23, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:17:18 PM
To: Kelly, Christine M [kelly.christinem@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Bristol Bay Check-in

Christine,

Please make July 18th the last OERA Calendar occurrence of the Bristol Bay Check-in. In other words, cancel the OERA Calendar Bristol Bay Check-in starting August 1st.

I have sent new calendar invites for this recurring meeting starting July 31st.

Thank you!

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/12/2018 7:26:15 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble technical team assignments

Hi Patty – Based on our conversation just now, here is an edited version of the subject matter teams and points of

Deliberative Process / Ex. 5

Please let me know if there is anything else I can do to assist with this task.
Thanks,
Molly

- 3.1 Intro – Molly Vaughan
- 3.5 Recreation – Molly Vaughan
- 3.11 Aesthetics – Molly Vaughan
- 3.14 Soils – Mark Douglas (POC), Palmer Hough, Maryanne Thiesing
- 3.16 Surface Water Hydrology – Tim Maley (POC), Mark Douglas, Palmer Hough, Maryanne Thiesing, Muluken Muche
- 3.17 Groundwater Hydrology – Tim Maley (POC), Mark Douglas, Palmer Hough, Maryanne Thiesing, Muluken Muche
- 3.18 Water and Sediment Quality – Cindi Godsey (POC), Tim Maley, Chris Eckley
- 3.22 Wetlands/ Special Aquatic Sites – Mark Douglas (POC), Palmer Hough, Maryanne Thiesing
- 3.26 Vegetation – Mark Douglas (POC), Palmer Hough, Maryanne Thiesing

Contact Information for technical team members:
Mark Douglas, Douglas.mark@epa.gov, 907-271-1217
Chris Eckley, Eckley.chris@epa.gov, 206-553-0510
Cindi Godsey, Godsey.cindi@epa.gov, 206-553-1676
Palmer Hough, Hough.palmer@epa.gov, 202-566-1374
Tim Maley, Maley.timothy@epa.gov, 206-553-1210
Muluken Muche, Muche.muluken@epa.gov, 706-355-8321
MaryAnne Thiesing, Thiesing.mary@epa.gov, 206-553-6114
Molly Vaughan, Vaughan.molly@epa.gov, 907-271-1215

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
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AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/6/2018 5:13:20 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: BB funds
Attachments: Bristol Bay - 2018 Funding Needs(1).docx

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/16/2018 8:19:13 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Feedback Request - Draft Bristol Bay Check-in 7/18 Cancellation Message

That's fine with me. I don't have any updates that you aren't aware of.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Monday, July 16, 2018 12:50 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Feedback Request - Draft Bristol Bay Check-in 7/18 Cancellation Message

Patty, Molly and Ashley,

Linda, Patty and I have discussed the possibility of canceling this Wednesday's, 7/18, Bristol Bay Check-in. We are planning to keep the 7/31 Bristol Bay Check-in with Linda A-C.

I'm writing to confirm with you all that it would be ok to cancel this week's Bristol Bay Check-in with Linda and also to get your feedback on a draft cancellation message. The cancellation message serves as a kind of update in place of a meeting. Please send or edit any updates you would like me to send in the cancellation message by COB today if possible.

Hello,

I'm writing to cancel the 7/18 Bristol Bay Check-in on behalf of the EPA Bristol Bay 404(c) Team and Permit Oversight/NEPA Review Team. See the updates below for awareness of our ongoing Bristol Bay related activities.

Updates

Linda Anderson-Carnahan is acting while David Allnutt is out until September 10th. We will continue Bristol Bay Check-ins with Linda during this time period. Our next scheduled check-in with Linda is for 30 minutes starting at 10 am PST on August 1st.

The 404(c) team is managing equity reviews and preparing non-equities documents for release for the Trustees for Alaska FOIA.

The Permit Oversight/NEPA Review team is reviewing preliminary EIS documents.

An EPA staff visit to the Pebble mine site is planned for 7/30 and 7/31.

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A Pebble overview briefing for the new Alaska Operations Office Director is scheduled for July 23rd in Seattle.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 7/16/2018 7:56:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Prepare for Pebble AOO Briefing
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/17/2018 8:00:00 PM
End: 7/17/2018 8:45:00 PM
Show Time As: Tentative

Proposing this meeting as an opportunity to talk through the presentation prior to the AOO Director Briefing. It would be useful for us to talk about how long we plan to take overall on the presentation and to discuss some of the transitions.

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/29/2018 7:45:26 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Attachments: Project Forecast Report 25 May 2018_pm_ACP.docx

That worked! Here you go.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, May 29, 2018 12:27 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Try this one.

From: Palomaki, Ashley
Sent: Tuesday, May 29, 2018 12:25 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Patty – this link doesn't seem to be working for me.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, May 29, 2018 9:40 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Ashley –
Do you have time today to check my revisions to this project forecast report from OFA?
Please add your edits and I will forward on to Jill (and cc you).
Thanks –
Patty

AMERICAN OVERSIGHT

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 6:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at
206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project. **Non-Responsive:**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report? **Non-Responsive: Unrelated to Bristol Bay/Pebble**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I hope this helps!

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>

AMERICAN OVERSIGHT

Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

All –

AMERICAN OVERSIGHT

We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and Non-Responsive: but please feel free to edit this information.

- **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
  - **Background:**
  - **EPA Involvement:**
  - **Status:**

The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.

We really appreciate your assistance on this and apologize for the quick turnaround.

If you have any questions, please let me know.

Many, many thanks again for your help and I hope you have a wonderful weekend!

Candi Schaedle
NEPA Compliance Division
202-564-6121

<Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Message

From: Duncan, Bruce [Duncan.Bruce@epa.gov]
Sent: 6/4/2018 9:45:43 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: ORD support for Pebble EIS

Thanks!!!

From: McGrath, Patricia
Sent: Monday, June 04, 2018 1:05 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-

Deliberative Process / Ex. 5

Patty

From: Duncan, Bruce
Sent: Thursday, May 31, 2018 6:57 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Patty – another hydro possibility if you are interested – see below.

Bruce

From: Burden, Susan
Sent: Thursday, May 31, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Blank, Valerie <Blank.Valerie@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

Do you know whether Patty has met with Muluken Muche yet? We have identified another hydrologist that may be available to support R10. Do you know whether they would like to explore that options as well?

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Thursday, May 17, 2018 3:22 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Susan!

From: Burden, Susan
Sent: Thursday, May 17, 2018 12:21 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Riddick, Lee <Riddick.Lee@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

We've identified a federal post doc that has the expertise and availability to support R10 as a hydrologist. His name is Muluken Muche, and he is a post doc in NERL with two years left on his term. Attached is his resume. I recommend that Patty McGrath reach out to Muluken and arrange a phone call to assess whether his expertise and time constraints will fit within their needs. If R10 decides that Muluken is not the right fit, we can explore other options. Please let me know how it goes.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Wednesday, May 09, 2018 6:03 PM
To: Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you!!!

From: Blank, Valerie
Sent: Wednesday, May 09, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Bruce,

We are reaching out across ORD through an additional level to look into this question and will get back to you soon.

AMERICAN OVERSIGHT

Thanks, Valerie

Valerie Blank
Regional Science Program Coordinator
Office of Science Policy
EPA Office of Research and Development
202-564-1720

From: McGrath, Patricia
Sent: Friday, May 04, 2018 12:42 PM
To: Burden, Susan <Burden.Susan@epa.gov>; Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-

Given Susan's message below, will ORD be able to supply a hydrologist with modeling expertise as requested?

Thanks –
Patty

From: Burden, Susan
Sent: Friday, May 4, 2018 9:38 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

You're very welcome. Just to let you know, ORD did look into whether Steve Kraemer was available for this effort. Unfortunately, he is not available at this time.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Friday, May 04, 2018 11:55 AM
To: Burden, Susan <Burden.Susan@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you Susan;

We very much appreciate your timely response and inreach within ORD on our high priority regional request. I have copied Patty McGrath (Lead), David Allnutt (Office Director) and Jill Nogi (Unit Manager) in our Office of Environmental Review and Assessment.

Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

- Although no hydrologist has been identified, Steve Kraemer (NERL) has been suggested as a possible option.

- Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in areas not mentioned in the original request that might come up in the future, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>

AMERICAN OVERSIGHT

Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>;

AMERICAN OVERSIGHT

McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

AMERICAN OVERSIGHT

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low	

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

AMERICAN OVERSIGHT

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10

AMERICAN OVERSIGHT

1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Kelly, Christine M [kelly.christinem@epa.gov]
Sent: 7/2/2018 7:47:48 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble site visit

Deliberative Process / Ex. 5

Christine Kelly
EPA- Region 10
206-553-2770

From: McGrath, Patricia
Sent: Monday, July 02, 2018 11:27 AM
To: Kelly, Christine M <kelly.christinem@epa.gov>
Subject: RE: Pebble site visit

Deliberative Process / Ex. 5

From: Kelly, Christine M
Sent: Monday, July 2, 2018 10:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: Pebble site visit
Importance: High

Hi Patty,

Deliberative Process / Ex. 5

Christine Kelly
EPA- Region 10
206-553-2770

From: Eckley, Chris
Sent: Monday, July 02, 2018 7:09 AM
To: Kelly, Christine M <kelly.christinem@epa.gov>
Subject: FW: Pebble site visit
Importance: High

Hi Christine,
I'm not sure if you need the information below or not, but just forwarding in case its relevant.
Thanks,
Chris

From: Smith, Marla J.
Sent: Monday, June 25, 2018 10:55 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>

AMERICAN OVERSIGHT

Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>
Subject: RE: Pebble site visit
Importance: High

Good Morning,

Please submit your travel requests as soon as possible.

Your travel preparer will need to change the organization to EPAR10AOO and select the 18 Crossfunding ARE label. If they have any questions please have them call me.

Since you will be traveling on a Pebble arranged helicopter flight you will be invoiced by Pebble and will need to pay them Please check to see if they accept the government travel card as payment. If not, you will need to write them a personal check for the cost. If you have to pay by personal check you will also need to submit a "direct bill/reimbursement" memo along with your voucher. If you need this memo, let me know and I can assist you with the wording.

If you have any questions/concerns, please let me know.

Thank you,
Marla Smith
Management Analyst
EPA/Region 10
Alaska Operations Office
(907) 271-1272

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 11:54 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Molly, Tim, and Chris –

Our Pebble site visit is confirmed for July 31. Please submit your TAs ASAP. ARE funding is available for this trip but needs to be obligated.

Following is information for the TAs.

Seattle travelers –
7/30 – fly to Anchorage and stay overnight

All travelers –
7/31:
8 am flight from Anchorage to Iliamna via Illiamna Air Taxi (arrive Iliamna at 9 am)
9:00 – 3:30 – Pebble site visit (mine site, road, ports) - this will entail helicopter time. The cost estimate for the helicopter portion is $1200 per person (note PLP will invoice us for the exact amount)
4:30 – flight from Iliamna back to Anchorage (should arrive in Anchorage at 5:30)

AMERICAN OVERSIGHT

Seattle travelers - you can return to Seattle on 7/31 as there are late flights leaving Anchorage – or overnight and leave Anchorage on 8/1. I will likely leave the morning of 8/1.

Please let Molly and I know if you have questions.

I am also ccing Marla who has been helpful with previous travel to Pebble.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Duncan, Bruce [Duncan.Bruce@epa.gov]
Sent: 5/9/2018 1:56:36 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: ORD support for Pebble EIS

Got your vm and this came in today.

Bruce

From: Blank, Valerie
Sent: Wednesday, May 09, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS

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Valerie Blank
Regional Science Program Coordinator
Office of Science Policy
EPA Office of Research and Development
202-564-1720

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Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
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AMERICAN OVERSIGHT

Hi Bruce,

You're very welcome. Just to let you know, ORD did look into whether Steve Kraemer was available for this effort. Unfortunately, he is not available at this time.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Friday, May 04, 2018 11:55 AM
To: Burden, Susan <Burden.Susan@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you Susan;

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Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

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AMERICAN OVERSIGHT

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff

AMERICAN OVERSIGHT

Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	

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Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No
If yes, please list the names of the scientists.
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.

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Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/16/2018 6:29:19 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: BB presentation materials for AOO director
Attachments: Bristol Bay Script - AOO briefing_20180713_ACP.docx

Hi Patty –

Thanks! My edits to the script are attached.

Edits to ppt are all minor suggestions and are below (all up to your discretion):

Deliberative Process / Ex. 5

Palmer isn't going to attend **Personal Matters / Ex. 6**, but asked for a copy of the ppt and script. Can one of you send it to him when it's done? (and put it on the G drive).

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: McGrath, Patricia
Sent: Friday, July 13, 2018 12:06 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB presentation materials for AOO director

Hi Erik and Ashley –
Attached is the updated BB presentation and script for the briefing with Sue on July 23. I revised the script in track changes.
Please let me know if you have any comments by COB Monday july 16 so that I can revise and finalize on Tuesday. I will be out of the office next Wednesday through Friday.

Also, Erik can you try to find a Seattle conference room for the briefing? Sue will be here in person.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/26/2018 8:05:10 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: pebble team call

We are starting.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Thursday, April 26, 2018 12:55 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: pebble team call

I am not sure if Molly got this

From: McGrath, Patricia
Sent: Thursday, April 26, 2018 12:52 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>
Subject: pebble team call

Molly-
Can you start the Pebble team call today?
Conference Line/Code / Ex. 6
I am on a call with the Department of State that is going long. I will join when I can

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/26/2018 8:02:38 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: pebble team call

Yes, just started it.

From: McGrath, Patricia
Sent: Thursday, April 26, 2018 11:52 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: pebble team call

Molly-
Can you start the Pebble team call today?
Conference Line/Code
I am on a call with the Department of State that is going long. I will join when I can

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/8/2018 8:05:50 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: BB check in agenda items

I think that Eric added FOIA and PLP Letters. I think that Eric may not be able to join the meeting so I think I'm covering both.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, May 08, 2018 9:01 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: BB check in agenda items

Hi Ashley –
I meant to send this to you as well.
Patty

From: McGrath, Patricia
Sent: Tuesday, May 8, 2018 8:44 AM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Erik Peterson (Peterson.Erik@epa.gov) <Peterson.Erik@epa.gov>
Subject: BB check in agenda items

Hi Molly and Erik –
Please let me know if you have any agenda items for the BB check-in, in addition to those below.

Scoping letter
ORD EIS support team assignments
DNR announcement regarding Bristol Bay Advisory Group

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 5/8/2018 4:20:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: BB check in agenda items

I would add the following.

FOIA
PLP letter to the Administrator

Whatever overall order you think is fine by me. And, I likely won't be able to call in so I will ask that someone from the 404(c) team to cover. Likely Ashley and/or Palmer.

Also, my sense is that those are our 404(c) items. We are meeting today at 12:30 and if something else comes up I'll let you know. If you want to send the agenda out sooner though I understand. Unlikely that we would have several major things.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: McGrath, Patricia
Sent: Tuesday, May 08, 2018 8:44 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: BB check in agenda items

Hi Molly and Erik –
Please let me know if you have any agenda items for the BB check-in, in addition to those below.

Scoping letter
ORD EIS support team assignments
DNR announcement regarding Bristol Bay Advisory Group

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/8/2018 4:15:53 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: BB check in agenda items

Hi Patty,
I don't have any additional items to add, and unfortunately will not be able to attend the meeting tomorrow. I will be on

Personal Matters / Ex. 6

I am still waiting on comments from one associate reviewer, but will definitely have the revised letter to you for review by the end of today. Your allotted time for review in the schedule is through the end of this week (or sometime Monday morning would be okay for me to stay on schedule). Does this timing still work for you?

Thanks,
Molly

From: McGrath, Patricia
Sent: Tuesday, May 08, 2018 7:44 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: BB check in agenda items

Hi Molly and Erik –
Please let me know if you have any agenda items for the BB check-in, in addition to those below.

Scoping letter
ORD EIS support team assignments
DNR announcement regarding Bristol Bay Advisory Group

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 8/8/2018 8:08:35 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]
Subject: Re: OERA pebble presentation

From the conversation on Monday, Tim offered to talk about some of his pictures from the site visit. Linda knew of briefing materials that you had, Patty, so if Tim can pull some big picture/schedule type slides for covering a few things that could be helpful for some background/context. It's not that much time so thinking about some highlights without a lot of details...

Linda thought Erik could share a few updates from his team as well and I let he Personal Matters / Ex. 6 Personal Matters / Ex. 6 Barry's asked for all materials in advance to share with the whole office With the lit hold, everyone would have to save everything they receive so let's keep thinking about the materials.

Molly I've heard that you can hear the speakers from the lab, but it won't be set up easily for you to share anything from AK. If there's points you think we could share with the office we should work that in to what Tim and/or Erik could be sharing in the 15 minutes.

Thanks,
Jill

Sent from my iPhone

On Aug 8, 2018, at 12:19 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:

> Hi Patty – I will not be at the picnic, but can provide information on the status of the NEPA review if needed.
>
> **From:** McGrath, Patricia
> **Sent:** Wednesday, August 08, 2018 11:00 AM
> **To:** Peterson, Erik <Peterson.Erik@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
> **Subject:** OERA pebble presentation
>
> Linda has asked for a short (15 min) update on Pebble for the OERA picnic next week (8/17).
> It is not clear to me who would be presenting the information. Personal Matters / Ex. 6
> Do we know who is going to this and could do a presentation?
> I can help prepare something if needed, but I have very limited time.
> Patty
>
> **Patty McGrath | Mining Advisor**
> U.S. Environmental Protection Agency, Region 10
> 1200 Sixth Avenue, Seattle, WA 98101
> M/S: RAD-202
> Office: (206) 553-6113
> Cell: (206) 743-7068
> mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: 5/23/2018 11:45:10 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: ORD support for Pebble EIS

Hi Patty,
Tomorrow is a meeting-dense day, but I've got a window between 9 and 10, then again after 3.

Deliberative Process / Ex. 5

Happy to chat more on phone tomorrow if you're available. I'm also available Friday morning until 11:30.
Thanks,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Wednesday, May 23, 2018 9:09 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: RE: ORD support for Pebble EIS

2 pm would work great
thanks

From: Ebersole, Joe
Sent: Wednesday, May 23, 2018 9:00 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Patty,
Would sometime this afternoon after 2pm work? If so, I can call you shortly after 2, (or anytime up to 5pm)
Talk soon,
Joe

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: McGrath, Patricia
Sent: Wednesday, May 23, 2018 8:45 AM
To: Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Joe-

Deliberative Process / Ex. 5

Please feel free to give me a call when you have a minute.
Thanks-
Patty

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Thursday, May 17, 2018 12:23 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Patty, for your consideration.

Bruce

From: Burden, Susan
Sent: Thursday, May 17, 2018 12:21 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Riddick, Lee <Riddick.Lee@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

We've identified a federal post doc that has the expertise and availability to support R10 as a hydrologist. His name is Muluken Muche, and he is a post doc in NERL with two years left on his term. Attached is his resume. I recommend that Patty McGrath reach out to Muluken and arrange a phone call to assess whether his expertise and time constraints will fit within their needs. If R10 decides that Muluken is not the right fit, we can explore other options. Please let me know how it goes.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Wednesday, May 09, 2018 6:03 PM
To: Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you!!!

From: Blank, Valerie
Sent: Wednesday, May 09, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Bruce,

AMERICAN OVERSIGHT

We are reaching out across ORD through an additional level to look into this question and will get back to you soon.

Thanks, Valerie

Valerie Blank
Regional Science Program Coordinator
Office of Science Policy
EPA Office of Research and Development
202-564-1720

From: McGrath, Patricia
Sent: Friday, May 04, 2018 12:42 PM
To: Burden, Susan <Burden.Susan@epa.gov>; Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-

Given Susan's message below, will ORD be able to supply a hydrologist with modeling expertise as requested?

Thanks –
Patty

From: Burden, Susan
Sent: Friday, May 4, 2018 9:38 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

You're very welcome. Just to let you know, ORD did look into whether Steve Kraemer was available for this effort. Unfortunately, he is not available at this time.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

AMERICAN OVERSIGHT

From: Duncan, Bruce
Sent: Friday, May 04, 2018 11:55 AM
To: Burden, Susan <Burden.Susan@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you Susan;

We very much appreciate your timely response and inreach within ORD on our high priority regional request. I have copied Patty McGrath (Lead), David Allnutt (Office Director) and Jill Nogi (Unit Manager) in our Office of Environmental Review and Assessment.

Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

- Although no hydrologist has been identified, Steve Kraemer (NERL) has been suggested as a possible option.

- Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in areas not mentioned in the original request that might come up in the future, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>

AMERICAN OVERSIGHT

Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>;

AMERICAN OVERSIGHT

McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

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The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low	

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

AMERICAN OVERSIGHT

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10

AMERICAN OVERSIGHT

1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Herbst, John [herbst.john@epa.gov]
Sent: 5/23/2018 9:56:31 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: RTOC Standing Issues Table - EPA Updates by 6/1

Great! Thanks for these updates!

JR

From: McGrath, Patricia
Sent: Wednesday, May 23, 2018 2:45 PM
To: Herbst, John <herbst.john@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Shaw, Hanh <Shaw.Hanh@epa.gov>; Szelag, Matthew <Szelag.Matthew@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bottcher, Helen <Bottcher.Helen@epa.gov>; Zhen, Davis <Zhen.Davis@epa.gov>
Cc: Murphy, Stacy <Murphy.Stacy@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>
Subject: RE: RTOC Standing Issues Table - EPA Updates by 6/1

Hi JR-
I made revisions to the standing issues table for Pebble (NEPA aspects). **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**
Please let me know if you have questions.
Patty

From: Herbst, John
Sent: Tuesday, May 22, 2018 12:03 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Shaw, Hanh <Shaw.Hanh@epa.gov>; Szelag, Matthew <Szelag.Matthew@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bottcher, Helen <Bottcher.Helen@epa.gov>; Zhen, Davis <Zhen.Davis@epa.gov>
Cc: Murphy, Stacy <Murphy.Stacy@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>
Subject: RTOC Standing Issues Table - EPA Updates by 6/1

Hello,

The next EPA Region 10 Tribal Operations Committee (RTOC) quarterly meeting will be held on June 5th- 7th in Juneau, AK. Please provide any updates that you may have to the RTOC Standing Issues **by Friday, June 1st.** These updates will be shared with the RTOC electronically prior to their meeting.

The RTOC Standing Issues is available on OneDrive located at:

Internal Website/ Ex. 6

Let me know if you have any questions or need any additional information about this quarterly RTOC request.

Thanks for your time!

JR

AMERICAN OVERSIGHT

John (JR) Herbst | Tribal Consultation Specialist
U.S. Environmental Protection Agency | Region 10
1200 6th Avenue | Seattle, WA 98101
P: (206) 553.2116 | Herbst.John@epa.gov
F: (206) 553.1775 | Region 10 Tribal Programs

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/22/2018 7:19:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: BB check in

Hi Patty,
The only other agenda item I can think of is a welcome to Mark Douglas – I assume he will be attending these calls now as Matt was before?

Regarding the scoping letter status, Jill and I have worked out a revised schedule per David's request to try to finish before the last minute. The plan is for ORC to complete review by COB today and Jill by COB Thursday. This would then bump the director (David and Tami) review to 5/25-6/1 and HQ review to 6/4-6/12. I have already let Megan Barnhart (at OFA) and Palmer know about the planned HQ review time, so they can be ready.

I have not yet had a chance to read the new documents Shane distributed and determine if any changes are needed in the scoping letter, but that is on my to-do list for this week.

Thanks,
Molly

From: McGrath, Patricia
Sent: Tuesday, May 22, 2018 7:32 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check in

Hi Molly, Erik, and Ashley –

Please let me know if you have agenda items for the check-in meeting tomorrow, in addition to those below:

- Scoping letter status
- PLP project description updates
- June 6 cooperating agency meeting

Thanks –
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 5/22/2018 5:05:23 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: BB check in

Thank you Patty, here are our items as of now. There is some chance that we may have another one, or that one of these won't need to happen – my suggestion would be that we can play that by ear if it happens and you can send these out whenever you want. I would also suggest that the EIS/permitting items come first.

- FOIA
- PLP response
- Congressional Western Caucus response
- HAC QFR response
- FYI correspondence

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: McGrath, Patricia
Sent: Tuesday, May 22, 2018 8:32 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check in

Hi Molly, Erik, and Ashley –

Please let me know if you have agenda items for the check-in meeting tomorrow, in addition to those below:

- Scoping letter status
- PLP project description updates
- June 6 cooperating agency meeting

Thanks –
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/5/2018 6:38:56 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: BB funds - Hydrologic Support
Location: Conference line enclosed

Start: 4/6/2018 5:00:00 PM
End: 4/6/2018 5:30:00 PM
Show Time As: Tentative

<!--[if lte mso 15 || CheckWebRef]-->

Peterson, Erik has shared a OneDrive for Business file with you. To view it, click the link below.

Bristol Bay - 2018 Funding Needs(1).docx

<!--[endif]-->

Finalize the memo to Szerlog.

→ Join by Phone

Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

→ Join Skype Meeting

Trouble Joining? Try Skype Web App

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Appointment

From: Lavoie, Emma [Lavoie.Emma@epa.gov]
Sent: 4/3/2018 9:49:46 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Tentative: FW: ORD support for Pebble EIS
Location: Conference Line/Code / Ex. 6

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 4/3/2018 9:02:33 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Meeting Forward Notification: ORD support for Pebble EIS
Location: **Conference Line/Code / Ex. 6**

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM

Recurrence: (none)

Your meeting was forwarded

Schofield, Kate has forwarded your meeting request to additional recipients.

Meeting

ORD support for Pebble EIS

Meeting Time

Thursday, April 5, 2018 1:00 PM-2:00 PM.

Recipients

Lavoie, Emma

Bierwagen, Britta

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 5/18/2018 7:28:56 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Meeting Forward Notification: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/22/2018 8:00:00 PM
End: 7/22/2018 9:00:00 PM

Recurrence: (none)

Your meeting was forwarded

LaCroix, Matthew has forwarded your meeting request to additional recipients.

Meeting

Pebble permit oversight/NEPA team

Meeting Time

Sunday, July 22, 2018 1:00 PM-2:00 PM.

Recipients

Douglas, Mark

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 5/18/2018 7:28:55 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Meeting Forward Notification: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/22/2018 8:00:00 PM
End: 9/22/2018 9:00:00 PM

Recurrence: (none)

Your meeting was forwarded

LaCroix, Matthew has forwarded your meeting request to additional recipients.

Meeting

Pebble permit oversight/NEPA team

Meeting Time

Saturday, September 22, 2018 1:00 PM-2:00 PM.

Recipients

Douglas, Mark

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 5/18/2018 7:28:54 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Meeting Forward Notification: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM

Recurrence: (none)

Your meeting was forwarded

LaCroix, Matthew has forwarded your meeting request to additional recipients.

Meeting

Pebble permit oversight/NEPA team

Meeting Time

Thursday, November 22, 2018 1:00 PM-2:00 PM.

Recipients

Douglas, Mark

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 4/5/2018 8:03:15 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Meeting Forward Notification: ORD support for Pebble EIS
Location: **Conference Line/Code / Ex. 6**
Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM

Recurrence: (none)

Your meeting was forwarded

Bierwagen, Britta has forwarded your meeting request to additional recipients.

Meeting

ORD support for Pebble EIS

Meeting Time

Thursday, April 5, 2018 1:00 PM-2:00 PM.

Recipients

Hagerthey, Scot

All times listed are in the following time zone: (UTC-08:00) Pacific Time (US & Canada)

Sent by Microsoft Exchange Server

AMERICAN OVERSIGHT

Message

From: Bujak, Charissa [bujak.charissa@epa.gov]
Sent: 4/12/2018 4:52:44 PM
To: Stoddard, Jamey [Stoddard.Jamey@epa.gov]; Young, Margo [Young.Margo@epa.gov]; Mahmud, Shahid [Mahmud.Shahid@epa.gov]; Congdon, Julie [Congdon.Julie@epa.gov]; Davis, Michelle V. [Davis.MichelleV@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Hood, Lynne [Hood.Lynne@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Martich, Tara [Martich.Tara@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; McKenna, Elizabeth [Mckenna.Elizabeth@epa.gov]; Moreen, Ed [Moreen.Ed@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Tomten, Dave [Tomten.Dave@epa.gov]; Vanderboom, Eric [Vanderboom.Eric@epa.gov]; Wilkening, Matt [Wilkening.Matt@epa.gov]; Zokan, James [Zokan.Jim@epa.gov]; Werntz, James [Werntz.James@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: 5.16.2018 Mining Team Retreat: updated location
Attachments: WRC Campus.docx; SPD Drawings.docx; 2018 draft Mine Team Retreat (003).docx

Good morning Mining Team,

We are continuing to plan location logistics for the Mine Team Retreat to occur on **Wednesday, May 16.** A DRAFT agenda is attached but please keep in mind this agenda is changing as we continuing to finalize the details.

There has been a location change and the new location of the meeting is detailed below:

NOAA Western Regional Site
7600 Sand Point Way NE,
Seattle, WA 98115

- Conference room located at **Building # 2** (see map) on the lower level of the building with reserved parking only
- Recommended to park in the parking lot in **Building #1**

Food: There is a cafeteria on campus, if you plan on utilizing the campus cafeteria we are requested to do so after 12:30pm PST.

Most folks travelling will be staying downtown. Please record how you will get to the facility at the below link:

Internal Website / Ex. 6

Thanks!

Charissa Bujak
Biologist
U.S. Environmental Protection Agency
Region 10, Boise ID Ops Office
950 W. Bannock St.
Boise, ID 83702
Phone: (208) 378-5754
Email: bujak.charissa@epa.gov

AMERICAN OVERSIGHT

DRAFT AGENDA
Mine Team "Sector" Retreat 2018
Wednesday, May 16th

Goal: *To connect as a team, share program updates, and develop a Regional Mine Sector Workplan.*

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Location:
NOAA Western Regional Center at Magnuson Park,7600 Sand Point Way, Seattle WA. Building #2 Conference Room
Travel Logistics*: Arrive at 9:00. Carpools TBD*

Agenda

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- Pebble update, Patty (if time permits)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/10/2018 6:10:20 PM
To: Bartus, Dave [Bartus.Dave@epa.gov]; Bujak, Charissa [bujak.charissa@epa.gov]; Congdon, Julie [Congdon.Julie@epa.gov]; Cora, Christopher [Cora.Christopher@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Davis, Michelle V. [Davis.MichelleV@epa.gov]; DeMaria, Eva [DeMaria.Eva@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Goulet, Joe [Goulet.Joe@epa.gov]; Grandinetti, Cami [Grandinetti.Cami@epa.gov]; Hale, Elly [Hale.Elly@epa.gov]; Hood, Lynne [Hood.Lynne@epa.gov]; Jen, Mark [Jen.Mark@epa.gov]; MacDonald, Jennifer [Macdonald.Jennifer@epa.gov]; MacIntyre, Mark [Macintyre.Mark@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Martich, Tara [Martich.Tara@epa.gov]; Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; McKenna, Elizabeth [Mckenna.Elizabeth@epa.gov]; Moreen, Ed [Moreen.Ed@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Olson, Lisa [Olson.Lisa@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Prestbo, Kim [Prestbo.Kim@epa.gov]; Sheldrake, Beth [sheldrake.beth@epa.gov]; Sibley, Michael [Sibley.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stoddard, Jamey [Stoddard.Jamey@epa.gov]; Storm, Linda [Storm.Linda@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Tomten, Dave [Tomten.Dave@epa.gov]; Vakoc, Misha [Vakoc.Misha@epa.gov]; Vanderboom, Eric [Vanderboom.Eric@epa.gov]; Villa, Catherine [Villa.Catherine@epa.gov]; Wallace, Joe [Wallace.Joe@epa.gov]; Wilkening, Matt [Wilkening.Matt@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]
Subject: ET Mining Subgroup summary - August 2018
Attachments: ET_miningsubgroup_summary_201808.docx; ETMiningSubgroupCharter_150314.pdf

Dear Mining Team-

Attached is the R10 mining sector summary that was shared with the ET Mining Subgroup during a meeting earlier this week.
As mentioned at the last mining team meeting, I meet with the ET Mining Subgroup quarterly and prepare quarterly updates in advance (and email updates more frequently as needed). The highlighted text in the summary are the issues that were discussed during the meeting – in addition to others that the ET brought up.

Also, a couple of you have asked to see the ET Mining Subgroup Charter, which is attached.

Please let me know if you have questions.

Best regards
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

ET Mining Subgroup – Mining Sector Update
August 7, 2018

Non-responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble (AK)	NEPA (CA) 404 NPDES (o/s) Air (o/s)	- Proposal to withdraw 404(c) determinations was suspended - EPA submitted scoping comments to the Corps on 6/29/2018 - We are reviewing early versions of select sections of the draft EIS - Draft EIS scheduled for January 2019 - Summer field visits

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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- The critical minerals list was published in February 2018 and includes several minerals that could be mined in the Region.
- A federal agency task force has been developed to provide input to into Critical Minerals permitting and environmental review streamlining recommendations. DOI-BLM is the task force lead. I am participating on the work group developed by OP/OFA to provide EPA feedback to BLM.
- Final critical minerals task force recommendations will be noticed in September 2018.

Travel/Logistics

- September 25 – 27 – planned AOO meetings and NEPA UM and AOO Director site visit to Pebble
- October 29 & 30, 2018 – invited by R8 and BC MOE to participate in Elk Valley/Koocanusa/ Kootenai annual meeting in Cranbrook BC
- December 2018 – invited to participate on panel with other Federal agencies at American Exploration and Mining Association conference in Spokane

Recusals

- Donlin
- Palmer Project (Constantine)

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 3/31/2018 4:47:26 PM
To: Herbst, John [herbst.john@epa.gov]
CC: Ortiz, Michael [Ortiz.Michael@epa.gov]; Michelle V. Davis (Davis.MichelleV@epa.gov) [Davis.MichelleV@epa.gov]
Subject: RTOC updates - mining

Hi JR-

I provided updates to the Standing Issues table (Pebble) Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Herbst, John
Sent: Tuesday, March 13, 2018 5:08 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Shaw, Hanh <Shaw.Hanh@epa.gov>; Szelag, Matthew <Szelag.Matthew@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bottcher, Helen <Bottcher.Helen@epa.gov>; Zhen, Davis <Zhen.Davis@epa.gov>
Cc: Murphy, Stacy <Murphy.Stacy@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>
Subject: RTOC Standing Issues Table - EPA Updates by 3/30

Good Afternoon,

The next EPA Region 10 Tribal Operations Committee (RTOC) quarterly meeting will be held on April 9th- 10th in Worley, ID. Please provide any updates to the RTOC Standing Issues Table for Tribes **by Friday, March 30th.**

The updated Table will be shared with the RTOC during their meeting, and is available on OneDrive located at:

Internal Website / Ex. 6

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Let me know if you have any questions or need any additional information about this quarterly RTOC request.

Thanks!

JR

John (JR) Herbst | Tribal Consultation Specialist
U.S. Environmental Protection Agency | Region 10
1200 6th Avenue | Seattle, WA 98101
P: (206) 553.2116 | Herbst.John@epa.gov
F: (206) 553.1775 | Region 10 Tribal Programs

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/4/2018 6:36:32 PM
To: Werntz, James [Werntz.James@epa.gov]
Subject: RE: TAs for September travel

Hi Jim-

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Patty

-----Original Message-----
From: Werntz, James
Sent: Thursday, August 30, 2018 10:20 AM
To: Bailey, Tina L. <bailey.tina@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Townsend, Tom <Townsend.Tom@epa.gov>
Subject: RE: TAs for September travel

Non-Responive: Unrelated to Bristol Bay/Pebble Mine

Thank you. Jim

James H. Werntz, Director
US EPA - Idaho Operations
950 W. Bannock St., Suite 900
Boise, Idaho 83702

208-378-5743

-----Original Message-----
From: Bailey, Tina L.
Sent: Wednesday, August 29, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Werntz, James <Werntz.James@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Townsend, Tom <Townsend.Tom@epa.gov>
Subject: RE: TAs for September travel

Thank you for letting me know I will make sure they get cancelled.

Thank You

Tina Bailey
Administrative Specialist
Region 10 - Idaho Operations Office
950 W. Bannock Street, Suite 900
Boise, Idaho 83702
208-378-5746
Fax: 208-378-5744

-----Original Message-----
From: McGrath, Patricia
Sent: Wednesday, August 29, 2018 11:40 AM
To: Bailey, Tina L. <bailey.tina@epa.gov>
Cc: Werntz, James <Werntz.James@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Townsend, Tom <Townsend.Tom@epa.gov>
Subject: TAs for September travel

Hi Tina
I want to let you know that my two trips to Alaska in September are cancelled.
The trip for September 18 was for an all day agency meeting associated with the Pebble EIS. The Corps of Engineers cancelled that meeting and is replacing that meeting with a series of 2 hour conference calls.
The trip for the following week was to accompany our NEPA unit manager and new AOO director on a site visit to Pebble.

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I appreciate all the work you put into these TAs and wanted to let you know ASAP that these are cancelled. Hopefully the ARE funds can be used for others to travel.

Please let me know if you have questions.

Patty

Sent from my iPhone

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/12/2018 3:58:05 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: BB check in agenda items

Thanks Eric. I am calling in from home and don't have the leader pin with me. Can you initiate the call?

From: Peterson, Erik
Sent: Monday, June 11, 2018 11:07 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB check in agenda items

Patty,

I suggest the following for the agenda. I also suggest they come after yours.

- QFR
- PLP response
- Forsgren and Hladick meeting
- Western Caucus response

Ashley may have more based on last week's work. I propose that you can go ahead and we'll add Ashley's suggestion later if she has one.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: McGrath, Patricia
Sent: Monday, June 11, 2018 9:17 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: BB check in agenda items

Hi All-
Please let me know if you have agenda items in addition to those below for the BB check in meeting that was rescheduled for tomorrow.

- FOIA
- Status of scoping letter
- Cooperating agency meeting
- Site travel

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Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
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Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/26/2018 3:10:29 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]
Subject: FW: EPA Tour
Attachments: ATT00001.txt

Hi Marla-
See info below from Tim Havey with Pebble. The helicopter company will take credit cards, but add on a 3% fee.
Patty

From: Tim Havey [mailto:timhavey@pebblepartnership.com]
Sent: Monday, June 25, 2018 5:50 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: EPA Tour

Patty:

Flight details for the July trip below. I also checked with our helicopter vendor (Soloy). They do accept credit cards, but since they take so few they add on the 3% fee to your total cost. Happy to do it either way.

Thanks,
Tim

From: Chasity Anelon
Sent: Thursday, June 21, 2018 3:13 PM
To: Tim Havey <timhavey@pebblepartnership.com>; Site Travel <sitetravel@pebblepartnership.com>
Subject: RE: EPA Tour

HI Tim

7.31.18 ANC to KOK Iliamna Air Departing @ 8:00AM Checking in @ 7:00AM
7.31.18 ILI to ANC Iliamna Air Departing @ 4:30PM Checking in @ 4:00PM

Thank you let me know if you have any questions.

Chas

From: Tim Havey
Sent: Thursday, June 21, 2018 10:25 AM
To: Site Travel <sitetravel@pebblepartnership.com>
Subject: EPA Tour

Chas:

Can you reserve 5 seats on July 31 for a tour with EPA? Will need to be on the earliest flight out and latest one returning. Also, can you check on the possibility of flying in to Kokhanok in the morning instead of Iliamna? We may try to start the tour there. Will also need an AStar for the full day. Will get you the SSRF shortly.

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Thanks,

Tim Havey
Director—Environment and Permitting



3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 **C:** 907.230.5056

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/29/2018 8:42:06 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Attachments: Project Forecast Report 25 May 2018_pm_ACP.docx; Project Forecast Report 25 May 2018_pm_ACP_clean.docx

Hi Jill-
Here is an updated/revised Pebble report from Ashley and I, both clean and track changes versions.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please let me know if you have questions.

Patty

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 6:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at 206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report? **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

I hope this helps!

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

AMERICAN OVERSIGHT

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

> All –
>
> We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and **Non-Responsive:**, but please feel free to edit this information.
>
> - **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
>   - **Background:**
>   - **EPA Involvement:**
>   - **Status:**
>
> The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.
>
> We really appreciate your assistance on this and apologize for the quick turnaround.
>
> If you have any questions, please let me know.
>
> Many, many thanks again for your help and I hope you have a wonderful weekend!
>
> Candi Schaedle
> NEPA Compliance Division
> 202-564-6121
>
> <Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/17/2018 3:05:08 PM
To: Hagerthey, Scot [Hagerthey.Scot@epa.gov]
Subject: RE: bristol bay follow up

Hi Scot
Please call 206 553-6113

Thanks-Patty

From: Hagerthey, Scot
Sent: Tuesday, April 17, 2018 5:12 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: bristol bay follow up

Hi Patty,

I set up a time for us to talk tomorrow (Wed). Could you send me the phone number you would like me to call?

Cheers,

Scot

From: McGrath, Patricia
Sent: Monday, April 16, 2018 8:04 PM
To: Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: bristol bay follow up

Hi Scot-
I am open on Tuesday before 10 am (pacific time) and have more open times the rest of the week.
Look forward to talking to you about this.
Thanks-
Patty

From: Hagerthey, Scot
Sent: Friday, April 13, 2018 1:19 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: bristol bay follow up

Hi Patty,

Personal Matters / Ex. 6 Following up on the call we had on the 5th. I reached out to folks here about ORD's help on the Pebble EIS. It's doable. Can we have a quick chat when you are back in the office?

Cheers,

Scot

AMERICAN OVERSIGHT

Scot Hagerthey, Ph.D.
Deputy Director, Washington Division
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue (8623R), NW, Washington, DC 20460
Office (202) 564-5553 - Cell (571) 302-6703

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/6/2018 7:27:25 PM
To: Werntz, James [Werntz.James@epa.gov]; Susan K. Detwiler (detwiler.susan@epa.gov) [detwiler.susan@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Bilbrey, Sheryl [bilbrey.sheryl@epa.gov]; Opalski, Dan [Opalski.Dan@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]
BCC: Conference Line/Code / Ex. 6 /IOO-Meet-Me-Ln/R10-IOO-Eqpt [R10IOO- Conference Line/Code / Ex. 6 R10Sea-Room-11Camas-ORC-VTC/R10-Rooms-Restricted [R10Sea-Room-11Camas-ORC@epa.gov]

Subject: ET Mining Subgroup meeting
Attachments: ET_miningsubgroup_summary_201808.docx
Location: R1 Conference Line/Code / Ex. 6 OO-Meet-Me-Ln/R10-IOO-Eqpt; R10Sea-Room-11Camas-ORC-VTC/R10-Rooms-Restricted

Start: 8/7/2018 4:00:00 PM
End: 8/7/2018 5:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Meeting of ET Mining Subgroup
Agenda to be sent out before the meeting

Dear ET Mining Subgroup-
Attached is the mining update for August. Areas highlighted in the update are those that I propose discussing during our meeting tomorrow, which include:

Non-Responsive:

- Project-specific updates – Pebble, S
- Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
- Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Patty

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/27/2018 11:42:00 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Muluken Muche (muche.muluken@epa.gov) [muche.muluken@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble EIS water management plans and modeling

As discussed during our meeting this morning, below is a link to the Pebble Project EIS website where you will find the water management plans and modeling reports. Most of this will be found in responses to RFI 19 (including 19a, 19b, 19c, and 19d) and also RFI 21. You can filter the list of documents by searching on "19" or you can look through the entire list of information requests. The reference documents are available on the website as well.

https://pebbleprojecteis.com/documents/library

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/28/2018 5:10:46 PM
To: Susan K. Detwiler (detwiler.susan@epa.gov) [detwiler.susan@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]

Subject: Canceled: quick chat regarding pebble site visit
Location: meet in Jills office and will call Sue

Start: 8/28/2018 7:00:00 PM
End: 8/28/2018 7:15:00 PM
Show Time As: Free

Importance: High

Cancelling since we already discussed

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/17/2018 12:59:31 AM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]
Subject: US Army Corps Pebble EIS website

All-

Just FYI that the Corps continues to add documents to the Pebble EIS website.
For example, public scoping comments are being loaded (so far there are 487 comments).

https://pebbleprojecteis.com/publiccomments/list

The Project Library section includes the Pebble EBD, preliminary JD, the BB Assessment and other information.

https://pebbleprojecteis.com/documents/library

Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/11/2018 5:46:45 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay Check-in

Hi Eric-
I am at Pebble site on Tuesday of that week.
I could do a meeting on Wednesday morning (aug 1) from the Anchorage office – open from 9 – 11 Pacific time on that day.
Patty

From: Peterson, Erik
Sent: Wednesday, July 11, 2018 10:25 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: Bristol Bay Check-in

Patty,

Linda has requested a change for the July 31 check-in. I looked at your calendar and you are booked all day Mon-Wed. Is there a time(s) that work for you on that Tuesday or Wednesday?

<< OLE Object: Picture (Device Independent Bitmap) >>

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Anderson-Carnahan, Linda
Sent: Wednesday, July 11, 2018 10:15 AM
To: Peterson, Erik
Subject: Declined: Bristol Bay Check-in
When: Tuesday, July 31, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

I have a meeting with Lee Forsgren at this time; can we reschedule?

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 10:04:59 PM
To: Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
Subject: FW: Pebble NEPA/permitting team - documents for awareness review
Attachments: 03_20_2018_Pebble_Technical_Note_on_Project_Options_Screening_Criteria.pdf; 05_11_2018_Pebble_Project_Updates_to_Proposed_Project.pdf

From: McGrath, Patricia
Sent: Friday, May 18, 2018 12:28 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Matthew LaCroix (LaCroix.Matthew@epa.gov) <LaCroix.Matthew@epa.gov>; Christopher Meade (Meade.Chris@epa.gov) <Meade.Chris@epa.gov>; Cindi Godsey (Godsey.Cindi@epa.gov) <Godsey.Cindi@epa.gov>; Karl Pepple (Pepple.Karl@epa.gov) <Pepple.Karl@epa.gov>; Jay McAlpine (McAlpine.Jay@epa.gov) <McAlpine.Jay@epa.gov>; Ashley Palomaki (Palomaki.Ashley@epa.gov) <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Palmer Hough (Hough.Palmer@epa.gov) <Hough.Palmer@epa.gov>; Kate Schofield (Schofield.Kate@epa.gov) <Schofield.Kate@epa.gov>; Timothy Maley (maley.timothy@epa.gov) <maley.timothy@epa.gov>; Chris Eckley (Eckley.Chris@epa.gov) <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Mark Douglas (douglas.mark@epa.gov) <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202

AMERICAN OVERSIGHT

Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/2/2018 4:18:58 PM
To: Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Susan K. Detwiler (detwiler.susan@epa.gov) [detwiler.susan@epa.gov]
Subject: FW: Field Logistics

Hi Jennifer and Sue -

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

I will give you both a call back to see if you need more information.
Patty

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, June 13, 2018 6:41 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Reif, Kathy B. <reif.kathy@epa.gov>
Subject: RE: Field Logistics

Hi Patty -

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Palomaki, Ashley
Sent: Wednesday, June 13, 2018 7:11 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Reif, Kathy B. <reif.kathy@epa.gov>
Subject: RE: Field Logistics

Hi Patty -

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: McGrath, Patricia
Sent: Tuesday, June 12, 2018 1:28 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wright, Garth <wright.garth@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: FW: Field Logistics
Importance: High

AMERICAN OVERSIGHT

Hi Ashley and Garth -

I traded voice messages with Ashley about this issue, but realized that I neglected to forward you this email string.
We are planning two trips to the Pebble project site this summer.
The first is a wetlands delineation field verification trip with the Corps on July 9 - 11. Mark Douglas would participate in that trip.
The second, yet to be scheduled, is a project overview site visit (1 day on-site) attend by four EPA folks from our NEPA team. Both of these visits will involve helicopter time from Iliamna to and around the Pebble site. Mark's visit will involve overnights in Iliamna.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Please let me know as soon as possible if you have any concerns or would like to discuss.

Thanks -
Patty

-----Original Message-----
From: Smith, Marla J.
Sent: Thursday, June 7, 2018 1:18 PM
To: Douglas, Mark <douglas.mark@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: Field Logistics
Importance: High

Hi Mark,

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Thanks,
Marla

-----Original Message-----
From: Douglas, Mark
Sent: Thursday, June 07, 2018 12:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: FW: Field Logistics

The form Pebble wants me to sign and get back.

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

-----Original Message-----
From: Tim Havey [mailto:timhavey@pebblepartnership.com]
Sent: Thursday, June 07, 2018 12:06 PM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Field Logistics

Mark:

Please review the attached and send back to me. Basically I need your cell phone number and for you to add any food or dietary requirements. Below is the email I sent to Estrella yesterday with some additional info. Call if you have any questions.

AMERICAN OVERSIGHT

Regards,

Tim Havey
Director-Environment and Permitting

3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 C: 907.230.5056

-----Original Message-----
From: Tim Havey
Sent: Wednesday, June 6, 2018 10:20 AM
To: 'Campellone, Estrella F CIV USARMY CEPOA (US)' <Estrella.F.Campellone@usace.army.mil>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: RE: Field Logistics

Estrella:

I have attached the site services request form that our operations staff need to finalize your arrangements. I went ahead and filled out most. Please review and add your phone number (cell phone preferably) and whether anyone has any food allergies or special needs. You can send the completed form back to me and I will submit it to site. I have requested individual rooms for each of you.

Meals are cafeteria style. For your arrival day, it will be easiest if you can bring your lunch with you. For the remaining days you will make a bag lunch at breakfast to bring with you to the field.

We will provide in-town transportation to/from the airport each day in one of our vehicles. Work days are 12 hours, with 10 in the field and one hour on either end for muster, briefings, etc. Crews normally do not return to base during the work day unless weather limits flight operations. Low clouds and/or high winds are typically the only conditions that will restrict helicopter travel.

No firearms are permitted at any Pebble facility or in helicopters. Trained bear guards will be provided with each crew. Guards are in constant radio contact with site operations. Alcohol is prohibited at any Pebble facility.

Safety training and site orientation will take place as soon as you arrive. That should take about an hour, followed by a 20-minute helicopter safety briefing. We provide basic PPE (safety goggles, high visibility vest, hearing protection). You are welcome to bring your own as long as the operations manager approves. Field gear requirements are what you would normally bring.

Accommodations are 150/person/day. We will invoice you after your trip. Our site staff does not have the ability to accept payments. Helicopter time will likewise be invoiced to you based on the per seat cost and number of flight hours logged. Cost may vary depending on which helicopter is available.

Please let me know if you have any other questions.

Thanks,
Tim

-----Original Message-----
From: Campellone, Estrella F CIV USARMY CEPOA (US) [mailto:Estrella.F.Campellone@usace.army.mil]
Sent: Wednesday, June 6, 2018 7:31 AM
To: Tim Havey <timhavey@pebblepartnership.com>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: Field Logistics

Hi Tim,

I think I left a voice mail and I am wondering if you received it.

In any case, please let me review with you our itinerary:
Arrival time @ Iliamna: July 9 (Monday) at 0900.
Departure time: July 11 @ 4:30 p.m.

Corps will disburse your company directly for hotel/helicopter costs.
Hotel:
Check in July 9th
Check out July 11th

Meals:
July 9th (lunch brown bag - Diner)
July 10th (all meals)
July11th (breakfast & lunch).

Helicopter: as per time-usage logs (coordination field work with HDR at this point).

AMERICAN OVERSIGHT

Truck Rental: We will take your offer of picking us up at the airport on Monday July 9th.

You mentioned we will have safety training upon arrival on July 9th before heading to the field. Please let us know if there is anything else we need to be aware of.

Thank you very much for your help,

Estrella
-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US)
Sent: Monday, June 4, 2018 10:51 AM
To: Campellone, Estrella F CIV USARMY CEPOA (US) <Estrella.F.Campellone@usace.army.mil>
Cc: Tim Havey <timhavey@pebblepartnership.com>
Subject: contact info

Estrella,
Here is Tim's email.

Shane

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/13/2018 7:37:12 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]
CC: Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]
Subject: RE: pebble site visit

And please hold these dates on your calendar until the actual date is confirmed.
Thanks-Patty

From: McGrath, Patricia
Sent: Wednesday, June 13, 2018 12:33 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Chris Eckley (Eckley.Chris@epa.gov) <Eckley.Chris@epa.gov>; Timothy Maley (maley.timothy@epa.gov) <maley.timothy@epa.gov>
Cc: Jill Nogi (nogi.jill@epa.gov) <nogi.jill@epa.gov>
Subject: pebble site visit

Hi All-
Thanks for your quick responses related to the request for available dates for a site visit.
Based on the responses, it looks like the only dates that work are:
7/30 (this would mean Sunday travel to Anchorage for Seattle folks)
7/31
8/20 (this would entail Sunday travel to Anchorage for Seattle folks)
8/21

Chris, Tim and Jill - Please confirm that Sunday afternoon/evening travel is acceptable to you in case the 7/30 and 8/20 dates, otherwise I will just forward the two Tuesday dates (7/31 and 8/21) as options.

Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/25/2018 8:51:57 PM
To: Kelly, Christine M [kelly.christinem@epa.gov]; Smith, Marla J. [Smith.MarlaJ@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble site visit

Yes. The $500 includes both legs. The helicopter time is estimated at $1200 although the exact amount cannot be determined until the day of since it is dependent upon actual time in flight and standby.
Iliamna Air Taxi will accept $500 on gov credit card. Regarding the helicopter, we will be involved by Pebble and will pay them back via check.
Patty

From: Kelly, Christine M
Sent: Monday, June 25, 2018 1:48 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Smith, Marla J. <Smith.MarlaJ@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble site visit

Thanks Patty,
So, the Iliamna airfare is 500 for both the leg from Anchorage to Kokhanok, and from Iliamna to Anchorage. Do we know how much the helicopter ride is,- or is that included in the $500.? Also, - Do they accept gov. credit cards that the travelers can pay with that day?

Christine Kelly
EPA- Region 10
206-553-2770

From: McGrath, Patricia
Sent: Monday, June 25, 2018 1:14 PM
To: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Kelly, Christine M <kelly.christinem@epa.gov>
Subject: RE: Pebble site visit

All-
I talked to Pebble. As is being done for Mark Douglas' trip, Pebble has reserved the flights out of Anchorage and has provided our names to Ilimana Air taxi.
Therefore, our seats are already reserved. We will pay Illiamna Air taxi on the day of the flight.

For the site visit we will fly from Anchorage to Kokhanok and board the helicopter there. From Kokhanok we will travel by helicopter over the ports and road route to the mine site and tour the mine site. At the end of the tour we will depart from Iliamna back to Anchorage.

The flight costs for Anchorage-Kokhanok and Iliamna-Anchorage is $500.

Your TAs should note that the 7/31 flights are already reserved and will be paid for on day of flight (airplane) or via invoice afterwards based on exact flight time (helicopter)

AMERICAN OVERSIGHT

Patty

From: Smith, Marla J.
Sent: Monday, June 25, 2018 12:30 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Kelly, Christine M <kelly.christinem@epa.gov>
Subject: RE: Pebble site visit
Importance: High

Hi All,

Before you make your travel arrangements, Patty McGrath is going to check with Pebble on the Illiamna Air piece to see if they have already held seats for you.
Patty will let you know asap.

Thanks,
Marla

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 11:54 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Molly, Tim, and Chris –

Our Pebble site visit is confirmed for July 31. Please submit your TAs ASAP. ARE funding is available for this trip but needs to be obligated.

Following is information for the TAs.

Seattle travelers –
7/30 – fly to Anchorage and stay overnight

All travelers –
7/31:
8 am flight from Anchorage to Iliamna via Illiamna Air Taxi (arrive Iliamna at 9 am)
9:00 – 3:30 – Pebble site visit (mine site, road, ports) - this will entail helicopter time. The cost estimate for the helicopter portion is $1200 per person (note PLP will invoice us for the exact amount)
4:30 – flight from Iliamna back to Anchorage (should arrive in Anchorage at 5:30)

Seattle travelers - you can return to Seattle on 7/31 as there are late flights leaving Anchorage – or overnight and leave Anchorage on 8/1. I will likely leave the morning of 8/1.

Please let Molly and I know if you have questions.

I am also ccing Marla who has been helpful with previous travel to Pebble.

Thanks - Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 9:56:34 PM
To: Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Kate Schofield (Schofield.Kate@epa.gov); Mary Thiesing (Thiesing.Mary@epa.gov)
Cc: Douglas, Mark; Kate Schofield (Schofield.Kate@epa.gov)
Subject: Pebble permit oversight/NEPA team
When: Thursday, November 22, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 9:56:32 PM
To: Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Kate Schofield (Schofield.Kate@epa.gov)
Cc: Douglas, Mark; Kate Schofield (Schofield.Kate@epa.gov)
Subject: Pebble permit oversight/NEPA team
When: Occurs the fourth Thursday of every 1 month(s) effective 2/22/2018 until 11/22/2018 from 1:00 PM to 2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/23/2018 10:52:14 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]
Subject: FW: no response requested
Attachments: 60-Day Pebble Priority Schedule 8.6.2018.xlsx

Pebble EIS reviewers-
As discussed during today's team meeting, attached is a 60-day schedule that shows upcoming EIS development activities and areas where cooperating agencies (CAs) will be involved.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Wednesday, August 8, 2018 4:40 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: no response requested

All,

Attached is a 60-day priority schedule highlighting major milestones. There is a column for "who's involved" and more detail on when activities take place or are due.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/10/2018 3:44:24 PM
To: Lynne Hood (Hood.Lynne@epa.gov) [Hood.Lynne@epa.gov]; Erik Peterson (Peterson.Erik@epa.gov) [Peterson.Erik@epa.gov]
Subject: ET mining subgroup updates

Hi Lynne and Erik –
I am preparing my regular update for the mining ET subgroup. Could you please revise the entries in the table below for **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine** If so, please add to the table.
Please send me updates by noon tomorrow.
Call if you have questions.
Thanks - Patty

Mine Project	Programs	Update
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		
Pebble (AK)	NEPA (CA) 404 NPDES (o/s) Air (o/s)	- Proposal to withdraw 404(c) determinations was suspended in February 2018 - EIS scoping period ends June 29; scoping letter under development
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		

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Mine Project	Programs	Update
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 8:34:52 PM
To: Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]
Subject: FW: ORD support for Pebble EIS
Attachments: Muluken Muche__Resume.docx

Per my voice mail message

From: Duncan, Bruce
Sent: Thursday, May 17, 2018 12:23 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Patty, for your consideration.

Bruce

From: Burden, Susan
Sent: Thursday, May 17, 2018 12:21 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Riddick, Lee <Riddick.Lee@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

We've identified a federal post doc that has the expertise and availability to support R10 as a hydrologist. His name is Muluken Muche, and he is a post doc in NERL with two years left on his term. Attached is his resume. I recommend that Patty McGrath reach out to Muluken and arrange a phone call to assess whether his expertise and time constraints will fit within their needs. If R10 decides that Muluken is not the right fit, we can explore other options. Please let me know how it goes.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Wednesday, May 09, 2018 6:03 PM
To: Blank, Valerie <Blank.Valerie@epa.gov>

AMERICAN OVERSIGHT

Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you!!!

From: Blank, Valerie
Sent: Wednesday, May 09, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Bruce,

We are reaching out across ORD through an additional level to look into this question and will get back to you soon.

Thanks, Valerie

Valerie Blank
Regional Science Program Coordinator
Office of Science Policy
EPA Office of Research and Development
202-564-1720

From: McGrath, Patricia
Sent: Friday, May 04, 2018 12:42 PM
To: Burden, Susan <Burden.Susan@epa.gov>; Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-

Given Susan's message below, will ORD be able to supply a hydrologist with modeling expertise as requested?

Thanks –
Patty

From: Burden, Susan
Sent: Friday, May 4, 2018 9:38 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

You're very welcome. Just to let you know, ORD did look into whether Steve Kraemer was available for this effort. Unfortunately, he is not available at this time.

AMERICAN OVERSIGHT

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Friday, May 04, 2018 11:55 AM
To: Burden, Susan <Burden.Susan@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you Susan;

We very much appreciate your timely response and inreach within ORD on our high priority regional request. I have copied Patty McGrath (Lead), David Allnutt (Office Director) and Jill Nogi (Unit Manager) in our Office of Environmental Review and Assessment.

Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

- Although no hydrologist has been identified, Steve Kraemer (NERL) has been suggested as a possible option.

- Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in areas not mentioned in the original request that might come up in the future, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

AMERICAN OVERSIGHT

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0216 | **duncan.bruce@epa.gov**

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

AMERICAN OVERSIGHT

From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>;

AMERICAN OVERSIGHT

Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	

AMERICAN OVERSIGHT

Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan)
☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz

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Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/23/2018 10:38:46 PM
To: Susan K. Detwiler (detwiler.susan@epa.gov) [detwiler.susan@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]

Subject: quick chat regarding pebble site visit
Location: meet in Jills office and will call Sue

Start: 8/28/2018 7:00:00 PM
End: 8/28/2018 7:15:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/28/2018 7:54:09 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 6/28/2018 8:00:00 PM
End: 6/28/2018 9:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Hi All.
Cancelling the meeting today so that we can focus on getting the scoping letter completed.

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/10/2018 3:20:30 PM
To: Werntz, James [Werntz.James@epa.gov]
Subject: telework

Hi Jim –
I am hoping to telework from home tomorrow with focus on reviewing the Pebble scoping letter.
Should I schedule a time for us to talk in advance of the retreat and ET subgroup meeting?
Patty

Patty McGrath |**Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 8:21:31 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]

Subject: Pebble check-in
Location: AOO

Start: 6/5/2018 10:00:00 PM
End: 6/6/2018
Show Time As: Tentative

Molly and Mark –
Reserving this time to talk before the Pebble cooperating agency meeting on 6/6. I should be in the AOO office.

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/23/2018 7:41:59 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center [R10Sea-Room-14WallaWalla@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Updated meeting room location – 14 Walla Walla

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/13/2018 6:26:09 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: RE: Can we talk when you are back in?

Hi Mary Anne-
I am actually back today so we can talk sooner if more convenient for you.
Patty

From: Thiesing, Mary
Sent: Friday, April 13, 2018 10:26 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: Can we talk when you are back in?

ATTORNEY-CLIENT PRIVILEGE
PRE-DECISIONAL AND DELIBERATIVE

Patty,

It looks like you are out of the office right now; I am hoping to speak to you ASAP about an idea that I had, which I have discussed with Molly and Linda Anderson-Carnahan. Linda was going to discuss it with David and told me to go ahead with it if I didn't hear back from her.

Deliberative Process / Ex. 5

I'd like to talk if we can—I will be reachable Monday and Tuesday of next week, and I will be back in Seattle Thursday, Friday, and Monday of the following week. If you feel that this is a useful idea, would you be willing to speak to ORD about it, since I understand that you are their contact for this project?

Let me know. I will look forward to seeing you.

Mary Anne Thiesing
Regional Wetland Ecologist
(206) 553-6114
(206) 375-4772 (cell)
thiesing.mary@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/5/2018 10:13:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Pre Draft Ch3 Comments EPA 070518'

Hi Molly-
You're welcome. Can you please cc me when you send to Shane?
Thanks-
Patty

From: Vaughan, Molly
Sent: Thursday, July 5, 2018 11:15 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Vaughan, Molly has shared 'Pre Draft Ch3 Comments EPA 070518'

Thanks so much, Patty! I took a look and all of your explanations/edits made sense to me. I will follow up with Jill, and we will give you a call if she wants to discuss to better understand any of these.
Thanks,
Molly

From: McGrath, Patricia
Sent: Thursday, July 05, 2018 10:10 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Vaughan, Molly has shared 'Pre Draft Ch3 Comments EPA 070518'

Hi Molly-
I just finished reviewing and added some explanation and edits. I am happy to talk to Jill with you to explain the

Deliberative Process / Ex. 5

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Thursday, July 5, 2018 10:30 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Pre Draft Ch3 Comments EPA 070518'

Hi Patty - I've addressed the majority of Jill's edits on the Preliminary Ch3 sections, but there are a few where I would appreciate your input. Please take a look at the current version, linked here. I am available all day if you would like to call to discuss once you have had a chance to review.
Thanks,
Molly

Open Pre Draft Ch3 Comments EPA 070518.docx

See more related to Vaughan, Molly in Delve.

AMERICAN OVERSIGHT

Get the SharePoint mobile app!

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 3/30/2018 8:11:05 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: FW: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)
Attachments: document_gw_05.pdf

Jill and David-

The Corps today issued its NOI to prepare an EIS and its scoping schedule. See links below.
The scoping period runs from April 1 to 30.

Deliberative Process / Ex. 5

Thanks - Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, March 30, 2018 11:22 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: March 30, 2018

IDENTIFICATION NUMBER: POA-2017-271

APPLICANT: Pebble Limited Partnership

LOCATION: The project would be located in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit.

CONTACT:
For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

_____
**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

AMERICAN OVERSIGHT

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/5/2018 8:14:22 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: briefings for sue

Hi Tami-

Personal Matters / Ex. 6

Patty

From: Fordham, Tami
Sent: Thursday, July 5, 2018 1:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: briefings for sue

Thanks Patty, Those days don't look good for the other folks on the list. So, as long as you will be around that day let's go for it (July 19th). We will be in Seattle July 23-26, but those days are looking quite busy. Let me know if you see any more challenges with the schedule I have proposed, its flexible – just want to get these on the calendar.

:) Thanks! Tami

From: McGrath, Patricia
Sent: Thursday, July 05, 2018 12:01 PM
To: Fordham, Tami <Fordham.Tami@epa.gov>
Subject: briefings for sue

Hi Tami-
Just so you know, I will be in Anchorage Office on July 30 (afternoon) and August 1 (most of the day) and could do the Pebble or AK mining briefings for Sue in person then if the week of July 23 does not work.
Alternately I am around much of the week of July 23 in Seattle office – not sure what days you two will be there.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/5/2018 7:51:19 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Declined: Pebble Overview for AOO Director
Location: R10AOO-Room-Large-30-VTC/R10-Rooms-AOO; R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/19/2018 8:30:00 PM
End: 7/19/2018 9:30:00 PM
Show Time As: Busy

Hi Tami-

Personal Matters / Ex. 6

Could we move this to the following week or alternate date?
Thanks - Patty

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/7/2018 6:46:57 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Pebble EIS

From: Muche, Muluken
Sent: Monday, June 4, 2018 12:05 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Maley, Timothy <maley.timothy@epa.gov>
Subject: RE: Pebble EIS

Thank you!

Muluken

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: McGrath, Patricia
Sent: Monday, June 04, 2018 4:03 PM
To: Muche, Muluken <Muche.Muluken@epa.gov>
Cc: Maley, Timothy <maley.timothy@epa.gov>
Subject: Pebble EIS

Hi Muluken –
Per our conversation, below are links to information that will assist with your understanding of the proposed Pebble project and some past work done by EPA.

Link to the US Army Corps of Engineers Pebble EIS website. The website describes EIS process. The Department of Army Permit Application, Attachment D, contains the current Project Description.
https://pebbleprojecteis.com/documents/background

Link to EPA's Bristol Bay website. See "Bristol Bay Assessment – Final Report (2014)" for information on some work that EPA did in evaluating potential mining impacts
https://www.epa.gov/bristolbay

Also, below is the contact information for Tim Maley (also cced). Tim will be contacting you further about the project and our needs.

Tim Maley (206) 553-1210
Maley.timothy@epa.gov

Thanks –

AMERICAN OVERSIGHT

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/3/2018 8:58:24 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]; Suter, Glenn [suter.glenn@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: ORD support for Pebble EIS
Location: Conference Line/Code / Ex. 6

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/3/2018 7:31:24 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]; Suter, Glenn [suter.glenn@epa.gov]
CC: Lavoie, Emma [Lavoie.Emma@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble EIS

That time works for me.
I will send a meeting invite later. Have to run to another meeting now.
Patty

From: Schofield, Kate
Sent: Tuesday, April 3, 2018 12:11 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Suter, Glenn <suter.glenn@epa.gov>
Cc: Lavoie, Emma <Lavoie.Emma@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble EIS

Hi Patty,

Yes, sorry about not responding earlier - **Personal Matters / Ex. 6**
Person My schedule is fairly open on Thursday and Friday this week. Would 4:00 EDT on Thursday work for you?

Looking forward to chatting with you,
Kate

Kate Schofield, Ph.D. | Ecologist | schofield.kate@epa.gov | 202.564.2640
National Center for Environmental Assessment | US Environmental Protection Agency
Postal address: USEPA | 1200 Pennsylvania Ave, NW (8623R) | Washington DC 20460

From: McGrath, Patricia
Sent: Tuesday, April 3, 2018 3:04 PM
To: Schofield, Kate <Schofield.Kate@epa.gov>; Suter, Glenn <suter.glenn@epa.gov>
Cc: Lavoie, Emma <Lavoie.Emma@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble EIS

Hello Kate-
I left a message with you several weeks ago regarding the Pebble EIS, requesting ORD's support.
The US Army Corps of Engineers is the lead agency in developing the EIS. EPA is a cooperating agency and will be assisting the Corps in developing portions of the document and we will also be reviewing the EIS per our CAA 309 authorities.
While the Region has put together a multi-disciplinary team, including folks from OW, there are a few areas where we would like additional support. These include fisheries and hydrologic review and modeling.
I understand that you and others that work for ORD provided assistance in these areas during development of the Bristol Bay watershed assessment.

Region 10 is requesting assistance in these areas to support our EIS cooperating agency and review role.

Can we set up a time this week to discuss?

I am the lead for the Region 10 Pebble NEPA/permitting team. Molly Vaughan is our lead NEPA reviewer.

AMERICAN OVERSIGHT

Thanks –
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/18/2018 11:58:34 PM
To: Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble review request
Attachments: Sec4.1_IntroEC_reviewdraft_2018.10.16.docx

Hi Cindi and Mark-

We have another short turn around review on a draft section of the Pebble EIS.

Attached is draft Section 4.1, which is the introduction to the Environmental Consequences section. The Corps has requested comments by 10/31. This section identifies past, present, and reasonably foreseeable future actions that will be considered in the cumulative effects analysis in subsequent chapters. We especially appreciate your review of the actions identified and whether there are others that could be missing.

The Corps has requested comments by 10/31. In order to meet this deadline and have management review, if you have time to look at this section, then please send Molly and I comments by COB 10/24.

Let us know if you have questions.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/16/2018 10:03:48 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Muluken Muche (muche.muluken@epa.gov) [muche.muluken@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]; R Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

Subject: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10Sea- Conference Line/Code / Ex. 6

Start: 11/27/2018 5:00:00 PM
End: 11/27/2018 6:00:00 PM
Show Time As: Tentative

Call in: 206-553-7076
Code: 123456#

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/25/2018 7:32:26 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: Pebble site visit & Corps/AECOM meeting logistics

Hi Tim, Chris, and Molly –

This email provides logistics for our site visit to Pebble and meeting with the Corps/AECOM next week.

July 30 - Chris, Tim, and I are flying to Anchorage in the morning. The Sheraton does not have an airport shuttle, so I recommend taking a cab to the hotel following arrival. We can check in or drop bags off at the hotel, have a quick lunch, and then head to the AECOM office.
(currently I arrive on a later flight – at 12:53 pm. If I can't change to the earlier flight then go ahead without me and I will meet you at AECOM)

AECOM office address: 700 5th (walking distance from hotel)
Meeting time is 2 -4 (I forwarded the invite). Purpose is to meet and greet their geochem and hydo SMEs and they will provide us an update on the status of the impact assessment for these resources.

After the meeting I will be checking out the AOO jeep for use on the 31st.

July 31 –
6:45 am - Tim, Chris, and Patty to meet in the hotel lobby; Drive AOO jeep to Iliamna Air Taxi (6231 S Airpark Place) for arrival by 7. Molly will meet us there.
7:00 am – Check in for flight to Kokhanok – be prepared to pay for the charter with your gov credit card
8:00 am – Depart for Kokhanok
9:00 am – Arrive Kokhanok
9 – 4 - Safety briefing, helicopter tour of mine site and parts of the access road and Illiamna Lake terminal locations, time will be spent in the helicopter and also on the ground (will be invoiced later for helicopter time)
4:00 pm – Arrive in Iliamna from tour and check in for Iliamna Air Taxi flight back to Anchorage
4:30 pm – flight leaves Iliamna for Anchorage
5:30 pm – Arrive in Anchorage; Patty, Tim, Chris drive jeep back to the hotel

August 1
My flight leaves at 2 pm. I may be able to take Tim and Chris to airport, except I have a 7 am conference call

---

Please check the weather and dress accordingly.
We will need to bring lunches, snacks, water with us on the 31st. We can purchase in Anchorage on Monday.
Also you might want to bring site maps from the project description for reference.

Let me know if you have questions.
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101

AMERICAN OVERSIGHT

M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/21/2018 9:09:45 PM
To: Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Wetlands Methodology and Schedule Memo
Attachments: Pebble_Project_Wetlands_Methodology_Memo_FINALV2.pdf

Hi Mark-

Sheila had asked AECOM to share this memo with us in advance of receipt of the PDEIS wetlands sections and a meeting next week (again, assuming next week works for you and others).

Patty

From: Bella, Elizabeth <elizabeth.bella@aecom.com>
Sent: Wednesday, November 21, 2018 1:06 PM
To: Sheila Newman (Sheila.M.Newman@usace.army.mil) <Sheila.M.Newman@usace.army.mil>; USACE Pebble Project EIS (poaspecialprojects@usace.army.mil) <poaspecialprojects@usace.army.mil>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: ARPebbleEIS <ARPebbleEIS@aecom.com>
Subject: Wetlands Methodology and Schedule Memo

Please see attached memo on wetlands section methodology and schedule. I will send a calendar invite for a meeting on Thursday 11/29 shortly.

Thank you,

Elizabeth

Elizabeth Bella, PhD
Planning Group Leader
office (907) 261-9737 cell (907) 330-4494
elizabeth.bella@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, AK 99501
office (907) 562-3366 fax (907) 562-1297
www.aecom.com

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/25/2018 6:56:54 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]

Subject: FW: Meeting before EPA Pebble site visit
Location: CR.ANC-700.5th-Large-Conference-Room

Start: 7/30/2018 10:00:00 PM
End: 7/31/2018
Show Time As: Tentative

-----Original Appointment-----
From: Wright, Cara [mailto:cara.wright@aecom.com]
Sent: Tuesday, July 17, 2018 1:11 PM
To: Wright, Cara; Craig, Bill; Darigo, Nancy; Bella, Elizabeth; Mills, Ryan (Burnaby); Henry, Richard; POA Special Projects; McGrath, Patricia; Vaughan, Molly
Subject: Meeting before EPA Pebble site visit
When: Monday, July 30, 2018 2:00 PM-4:00 PM (UTC-09:00) Alaska.
Where: CR.ANC-700.5th-Large-Conference-Room

-- Do not delete or change any of the following text. --

Join Webex meeting

Conference Line/Code / Ex. 6

Join from a video system or application

Conference Line/Code / Ex. 6

Join by phone

Conference Line/Code / Ex. 6

Global call-in numbers | Toll-free calling restrictions

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IMPORTANT NOTICE: Please note that this WebEx service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/25/2018 6:55:33 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/26/2018 8:00:00 PM
End: 7/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda below, please feel free to suggest additional agenda topics

Agenda:

- Review of preliminary EIS sections – Molly
- Field verification site visit – Mark
- Upcoming agency meetings – Patty
- Schedule - Patty

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/2/2018 8:41:09 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]

Subject: discuss Pebble EIS outline
Location: AOO call Patty

Start: 4/4/2018 9:30:00 PM
End: 4/4/2018 10:00:00 PM
Show Time As: Tentative

Hi Molly and Matt –
I need to reschedule this since I have a briefing with the RA that got changed to this afternoon.
Patty

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/22/2018 11:30:43 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Agenda:

- 7/31 project site visit
- Status of review of EIS sections
- Summary of 8/22 cooperating agency meeting (alternatives discussion)
- Next steps and schedule

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/12/2018 7:56:48 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay - Allnutt Check-in meetings

Hi Erik-
Yes. That would be great if you could facilitate the change and the meetings themselves.
Though I am moving to the 14th floor later this week!
thanks
Patty

From: Peterson, Erik
Sent: Tuesday, June 12, 2018 12:29 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Bristol Bay - Allnutt Check-in meetings

Patty,

David indicated a preference and a kind of expectation that the bi-weekly Bristol Bay check-ins would move from Wednesdays to Tuesdays. Tuesdays are apparently better for Tami Fordham and also for Linda A-C.

Would you like me to facilitate this change? I'm offering to take over setting up the Bristol Bay check-ins because I have capacity to manage the meeting invites, gather agenda items, share the agenda prior to the meeting, and facilitate, and, because my being on the 14th floor means that it is easier for me to initiate the call. I offer to take over now also because switching days makes for a natural transition, and also the 404(c) work is less than the NEPA/404 work. Trying to be helpful kind of thing.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/21/2018 4:11:40 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: My suggestions on Pre Draft Ch 2
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 111918draft+JN_pm.docx

Hi Molly –
I have a few comments on Jills edits. **Deliberative Process / Ex. 5**
Deliberative Process / Ex. 5
Please feel free to call if you have questions.
Patty

From: Nogi, Jill
Sent: Tuesday, November 20, 2018 6:13 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: My suggestions on Pre Draft Ch 2

Internal - Deliberative

Hi team –
Thank you for your review of preliminary draft chapter 2 and for developing our comments. This looks very thorough. You did a nice job preparing our comments. I appreciate the opportunity to review and provide suggestions for consideration. I **Deliberative Process / Ex. 5**
Deliberative Process / Ex. 5
any questions about my suggestions, you can try to reach me on my work cell while we're in the car tomorrow. I'd be happy to discuss.

Thanks again,
Jill

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/20/2018 11:21:26 PM
To: Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]
CC: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Feedback post Patty's VM
Attachments: Comment spreadsheet_Chapter 4_BAB.docx; Comment spreadsheet_Chapter 5_BAB.docx

Hi Cindi-
As discussed, here are Barb's comments.
Patty

From: Butler, Barbara
Sent: Tuesday, November 20, 2018 1:00 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Feedback post Patty's VM

Hi Molly and Patty,

Deliberative Process / Ex. 5

Please let me know if you have any questions, or if there is anything that you would like me to look at with a different focus.

Have a Happy and Safe Thanksgiving break!
Barb

From: Butler, Barbara
Sent: Thursday, November 15, 2018 9:01 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Feedback post Patty's VM

Hi Molly and Patty,

I'll volunteer to be one of the reviewers for Chapter 5 for parts not covering recommendations for compensatory mitigation, if that's captured at this stage (that's outside my area of experience).

Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Cheers,
Barb

Barbara A. Butler, Ph.D.
Research Environmental Engineer

USEPA ORD-NRMRL-LMMD-RTEB
26 W. Martin Luther King Dr, MS-483
Cincinnati, OH 45268
Phone: 513-569-7468
Office Location: AWBERC 493B

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/20/2018 7:19:05 PM
To: Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]

Subject: FW: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10Sea-Conf Conference Line/Code / Ex. 6

Start: 11/27/2018 5:00:00 PM
End: 11/27/2018 6:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: McGrath, Patricia
Sent: Friday, November 16, 2018 2:04 PM
To: McGrath, Patricia; Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Muluken Muche (muche.muluken@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Molly Vaughan (Vaughan.Molly@epa.gov)
Subject: Pebble EIS hydro & water discussion
When: Tuesday, November 27, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10Sea- Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/17/2018 6:32:11 PM
To: Erik Peterson (Peterson.Erik@epa.gov) [Peterson.Erik@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/2/2018 8:03:24 PM
To: David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Tami Fordham (Fordham.Tami@epa.gov) [Fordham.Tami@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: BB website - EIS info
Attachments: Pebble EIS Newsletter No. 1.pdf

Hi Molly, Jill, Tami, and David-

Suzanne and I talked briefly about adding a few sentences to EPA's Bristol Bay website about our role in the EIS process and a link to the Corps EIS website.

I think that will help direct folks that are used to looking to EPA for information to the Corps website, particularly now that scoping has begun.

Following is some suggested language. Please let me know if you agree that we should include this on our website and if you have any recommended edits to the language. I have also attached the Corps' Newsletter #1 that was recently posted, FYI.

Environmental Impact Statement Process

The U.S. Army Corps of Engineers received a Department of Army permit application and project description from the Pebble Limited Partnership on December 22, 2017 and has determined that an EIS under the National Environmental Policy Act is needed before it makes a decision on the permit application. The Corps is the lead agency in managing the EIS process and developing the EIS. EPA is a cooperating agency in the EIS process, at the invitation of the Corps. The EIS is to evaluate potential impacts of the project on the physical, biological, and social environment.
The Corps initiated public scoping of the EIS on April 1, 2018. Below is link to the Corps EIS website for more information and documents pertaining to the Department of Army permit application and EIS process.
https://www.pebbleprojecteis.com/#/

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/2/2018 7:20:20 PM
To: Mark Jen (Jen.Mark@epa.gov) [Jen.Mark@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Subject: FW: Mining Team Retreat Deliberative Process / Ex. 5
Attachments: 2018 draft Mine Team Retreat 3_26_18.docx

Importance: High

Hi Mark and Jennifer-
As regular participants in the mining team, wanted to make sure that you are aware of this as well.
Patty

From: Stoddard, Jamey
Sent: Tuesday, March 27, 2018 12:12 PM
To: Young, Margo <Young.Margo@epa.gov>; Mahmud, Shahid <Mahmud.Shahid@epa.gov>; Bujak, Charissa <bujak.charissa@epa.gov>; Congdon, Julie <Congdon.Julie@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Hood, Lynne <Hood.Lynne@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Martich, Tara <Martich.Tara@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; McKenna, Elizabeth <Mckenna.Elizabeth@epa.gov>; Moreen, Ed <Moreen.Ed@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; Stoddard, Jamey <Stoddard.Jamey@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Tomten, Dave <Tomten.Dave@epa.gov>; Vanderboom, Eric <Vanderboom.Eric@epa.gov>; Wilkening, Matt <Wilkening.Matt@epa.gov>; Zokan, James <Zokan.Jim@epa.gov>; Werntz, James <Werntz.James@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Mining Team Retreat: Deliberative Process / Ex. 5
Importance: High

Mining Team-

We are beginning to plan transportation logistics for the Mine Team Retreat (May 18) and need some input from everyone attending. Please follow the link below to access a spreadsheet you will need to fill out re: your transportation needs to/from Vashon.

Some background as you consider your transportation needs. Draft agenda is also attached.

Deliberative Process / Ex. 5

Please reply ASAP. Thanks in advance.

AMERICAN OVERSIGHT

Jamey L. Stoddard
NEPA Compliance Coordinator
Office of Water and Watersheds
USEPA Region X
1200 6th Ave, Suite 900, OWW-191
Seattle, WA 98101
t. 206.553.6110

AMERICAN OVERSIGHT

DRAFT AGENDA
Mine Team "Sector" Retreat 2018
Wednesday, May 16th

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- Pebble update-Patty (if time permits)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/15/2018 8:45:53 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: Pebble hand off

From: Allnutt, David
Sent: Tuesday, May 15, 2018 1:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: Pebble hand off

FYI --

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 12:05 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: Pebble hand off

HI David and Linda,

Mark Douglas has bravely stepped forward to be the lead on Pebble taking over for Matt. There will obviously be a transition between Matt and Mark with Mary Anne supporting Mark through a team approach. This is something that Michael S and I have discussed and Michael is supportive.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/15/2018 6:44:52 PM
To: Hood, Lynne [Hood.Lynne@epa.gov]; Young, Margo [Young.Margo@epa.gov]; Mahmud, Shahid [Mahmud.Shahid@epa.gov]; Bujak, Charissa [bujak.charissa@epa.gov]; Congdon, Julie [Congdon.Julie@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Martich, Tara [Martich.Tara@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; McKenna, Elizabeth [Mckenna.Elizabeth@epa.gov]; Moreen, Ed [Moreen.Ed@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; Stoddard, Jamey [Stoddard.Jamey@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Tomten, Dave [Tomten.Dave@epa.gov]; Wilkening, Matt [Wilkening.Matt@epa.gov]; Zokan, James [Zokan.Jim@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]
CC: Werntz, James [Werntz.James@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Sachs, Robert [Sachs.Robert@epa.gov]
Subject: RE: Mine Team Retreat- Updated location
Attachments: R10 Mine Team -2018 Retreat Agenda.docx

Attached is the agenda. No changes, except to update the meeting room location.
Patty

-----Original Appointment-----
From: Hood, Lynne
Sent: Monday, May 14, 2018 7:41 AM
To: Young, Margo; Mahmud, Shahid; Bujak, Charissa; Congdon, Julie; Eckley, Chris; Godsey, Cindi; Maley, Timothy; Martich, Tara; McAlpine, Jerrold; McGrath, Patricia; McKenna, Elizabeth; Moreen, Ed; Palomaki, Ashley; Pepple, Karl; Stoddard, Jamey; Thiesing, Mary; Tomten, Dave; Wilkening, Matt; Zokan, James; Nogi, Jill; Allnutt, David
Cc: Werntz, James; Steiner-Riley, Cara; Sachs, Robert
Subject: Mine Team Retreat- Updated location
When: Wednesday, May 16, 2018 9:30 AM-7:30 PM (UTC-07:00) Mountain Time (US & Canada).
Where: NOAA facility Building #9

NOAA Western Regional Site
7600 Sand Point Way NE,
Seattle, WA 98115

- Conference room located at Building # 9 (see map)
- Recommended to park in the parking lot in Building #1

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Food/Drink:
- *Small Morning Coffee/Snacks and Afternoon Snacks Provided by Planning Team (BYOC)*
- *Lunch available for purchase in the NOAA cafeteria or bring your own bagged lunch*

AGENDA
Mine Team "Sector" Retreat 2018
Wednesday, May 16th
9am – 4pm
NOAA Western Regional Center at Magnuson Park
7600 Sand Point Way, Seattle WA Building #9 Conference Room

Logistics:
- ***Bring your EPA badge!*** *You will not be let into building without it*
- *Planning Team: Patty McGrath, 3-6113; Jamey Stoddard, 3-6110; Lynne Hood, 8-5757; Charissa Bujak, 8-5754*

Goal: *To connect as a team, share program updates, and develop a Regional Mine Sector Work Plan.*

Desired Outcomes:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

TIME	WHAT	WHO
	Non-Responsive: Unrelated to Bristol Bay/Pebble Mine	
3:15pm-4:00pm	Highlights	**Non-Responsive:** Pebble update, Patty

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/29/2018 7:26:48 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Attachments: Project Forecast Report 25 May 2018_pm.docx

Try this one.

From: Palomaki, Ashley
Sent: Tuesday, May 29, 2018 12:25 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Patty – this link doesn't seem to be working for me.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, May 29, 2018 9:40 AM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Ashley –
Do you have time today to check my revisions to this project forecast report from OFA?
Please add your edits and I will forward on to Jill (and cc you).
Thanks –
Patty

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 6:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at
206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

AMERICAN OVERSIGHT

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project. **Non-Responsive: Unrelated to**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report? **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill

AMERICAN OVERSIGHT

<nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3

AMERICAN OVERSIGHT

Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

> All –
>
> We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.
>
> - **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
>   - **Background:**
>   - **EPA Involvement:**
>   - **Status:**
>
> The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.

AMERICAN OVERSIGHT

We really appreciate your assistance on this and apologize for the quick turnaround.

If you have any questions, please let me know.

Many, many thanks again for your help and I hope you have a wonderful weekend!

Candi Schaedle
NEPA Compliance Division
202-564-6121

<Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 7:39:21 PM
To: Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Kate Schofield (Schofield.Kate@epa.gov)
Cc: Douglas, Mark
Subject: Pebble permit oversight/NEPA team
When: Thursday, November 22, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/16/2018 8:07:40 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/18/2018 7:39:20 PM
To: Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov)
Cc: Douglas, Mark
Subject: Pebble permit oversight/NEPA team
When: Occurs the fourth Thursday of every 1 month(s) effective 2/22/2018 until 11/22/2018 from 1:00 PM to 2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/24/2018 9:49:46 PM
To: Susan K. Detwiler (detwiler.susan@epa.gov) [detwiler.susan@epa.gov]; Tami Fordham (Fordham.Tami@epa.gov) [Fordham.Tami@epa.gov]
CC: Erik Peterson (Peterson.Erik@epa.gov) [Peterson.Erik@epa.gov]
Subject: Bristol Bay/Pebble presentation
Attachments: BB Presentation_AOO_20180723.pptx

Hi Tami and Sue –
Attached is the presentation that Erik and I used yesterday for the Bristol Bay/Pebble briefing.
Please let us know if there are follow-up questions.
Best-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/29/2018 4:39:51 PM
To: Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

<!--[if lte mso 15 || CheckWebRef]-->

McGrath, Patricia has shared a OneDrive for Business file with you. To view it, click the link below.

Project Forecast Report 25 May 2018_pm.docx

<!--[endif]-->

Hi Ashley –
Do you have time today to check my revisions to this project forecast report from OFA?
Please add your edits and I will forward on to Jill (and cc you).
Thanks –
Patty

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 6:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at
206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project. **Non-Responsive: Unrelated to**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

involve high-level HQ political coordination or review than those should probably be on the list. If it is too speculative to know right now, than I would leave them off. We can always update this list at a later time.

Right now, I can't state how often this document will need to be updated. But my guess is that it will be monthly to bi-monthly at most. We should know more after we get feedback from the AA – Rob is meeting with her at the end of next week.

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report? A Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I hope this helps!

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>

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Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

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Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

> All –
>
> We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.
>
> - **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
>   - **Background:**
>   - **EPA Involvement:**
>   - **Status:**
>
> The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.
>
> We really appreciate your assistance on this and apologize for the quick turnaround.
>
> If you have any questions, please let me know.
>
> Many, many thanks again for your help and I hope you have a wonderful weekend!
>
> Candi Schaedle
> NEPA Compliance Division
> 202-564-6121
>
> <Project Forecast Report 25 May 2018.docx>

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Unextractable file placeholder

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/6/2018 10:30:45 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Re: RFFA comment

Ok. Thanks

Sent from my iPhone

On Nov 6, 2018, at 1:21 PM, Vaughan, Molly <Vaughan.Molly@epa.gov> wrote:

Thanks Patty!

Deliberative Process / Ex. 5

--Molly

From: McGrath, Patricia
Sent: Tuesday, November 06, 2018 1:12 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RFFA comment

Hi Molly

Here is a comment per our discussion. Feel free to make edits.

Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/27/2018 4:29:20 PM
To: Geselbracht, Jeanne [Geselbracht.Jeanne@epa.gov]
Subject: ray

Hi Jeanne-

Deliberative Process / Ex. 5

I am happy to help.
Thanks- Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/25/2018 6:13:12 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jill-
I can review and provide any revisions to the Pebble info on Tuesday.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Patty

From: Nogi, Jill
Sent: Friday, May 25, 2018 10:59 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Importance: High

Patty/Jennifer –
This draft project forecasting report was shared this morning with NEPA regional managers. We've been asking questions to get more clarification from Candi on what goes on here, how often it's going to be updated, and other criteria. I'll forward you the list of questions to her next so you can see the conversation. I will forward any other answers I receive in case they are helpful.

I am sharing this with you both because if Pebble is staying on this report, the deadline to get back to Candi is 9am Wednesday am. I looked at what was provided and thought we may want to make additions/changes to what's here. I don't know if there's time to get a lot of people involved, so I'm coming to you as Sector leads. I am also thinking that

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for taking a look and providing me with any revisions/additions etc. All 10 Regions were asked to add info, so I expect that Candi will be compiling what she receives. I am teleworking on Tuesday and back in the office at 7am on Wednesday, so I can share what we have with Candi by 9am as requested.
Talk with you soon!
Jill

Work cell (if you need me Tuesday) is 206-316-0219

From: Schaedle, Candi
Sent: Friday, May 25, 2018 7:12 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick,

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Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Knight, Kelly <knight.kelly@epa.gov>
Subject: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Importance: High

All –

We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.

- **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
  - **Background:**
  - **EPA Involvement:**
  - **Status:**

The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.

We really appreciate your assistance on this and apologize for the quick turnaround.

If you have any questions, please let me know.

Many, many thanks again for your help and I hope you have a wonderful weekend!

Candi Schaedle
NEPA Compliance Division
202-564-6121

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/26/2018 6:36:28 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: section 4.1 comments
Attachments: Comments Section 4.1_PM and CG.docx

Hi Molly-
Please use this version of my comments on Section 4.1. I revised one of the comments.
Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/4/2018 7:51:46 PM
To: Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]
Subject: FW: ORD support for Pebble EIS
Attachments: Muluken Muche__Resume.docx

From: Duncan, Bruce
Sent: Thursday, May 17, 2018 12:23 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Patty, for your consideration.

Bruce

From: Burden, Susan
Sent: Thursday, May 17, 2018 12:21 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Riddick, Lee <Riddick.Lee@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

We've identified a federal post doc that has the expertise and availability to support R10 as a hydrologist. His name is Muluken Muche, and he is a post doc in NERL with two years left on his term. Attached is his resume. I recommend that Patty McGrath reach out to Muluken and arrange a phone call to assess whether his expertise and time constraints will fit within their needs. If R10 decides that Muluken is not the right fit, we can explore other options. Please let me know how it goes.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Wednesday, May 09, 2018 6:03 PM
To: Blank, Valerie <Blank.Valerie@epa.gov>

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Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you!!!

From: Blank, Valerie
Sent: Wednesday, May 09, 2018 5:45 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Burden, Susan <Burden.Susan@epa.gov>; LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS

Hi Bruce,

We are reaching out across ORD through an additional level to look into this question and will get back to you soon.

Thanks, Valerie

Valerie Blank
Regional Science Program Coordinator
Office of Science Policy
EPA Office of Research and Development
202-564-1720

From: McGrath, Patricia
Sent: Friday, May 04, 2018 12:42 PM
To: Burden, Susan <Burden.Susan@epa.gov>; Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-

Given Susan's message below, will ORD be able to supply a hydrologist with modeling expertise as requested?

Thanks –
Patty

From: Burden, Susan
Sent: Friday, May 4, 2018 9:38 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce,

You're very welcome. Just to let you know, ORD did look into whether Steve Kraemer was available for this effort. Unfortunately, he is not available at this time.

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Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Duncan, Bruce
Sent: Friday, May 04, 2018 11:55 AM
To: Burden, Susan <Burden.Susan@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thank you Susan;

We very much appreciate your timely response and inreach within ORD on our high priority regional request. I have copied Patty McGrath (Lead), David Allnutt (Office Director) and Jill Nogi (Unit Manager) in our Office of Environmental Review and Assessment.

Patty, Jill, and David;

- Paul Ringold would like to (see attachment):
  Develop fairly formal quarterly progress meetings or discussions to make sure that the work requested and performed is on track and continues to function within the boundaries of our original agreements.

  Discuss the possibility of regional funding to assist ORD technical experts in keeping engaged with the EIS process. This may be particularly important as the experts will be spending only a small fraction of their time on this effort. Having someone to stay engaged with the EIS and with the science requirements and issues involved on their behalf could facilitate the efficient and effective use of their time and effort.

- Although no hydrologist has been identified, Steve Kraemer (NERL) has been suggested as a possible option.

- Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in areas not mentioned in the original request that might come up in the future, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

- ORD indicated they do not have travel funds for their staff for this effort.

Let me know if I can be of further help.

Bruce

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Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0216 | **duncan.bruce@epa.gov**

From: Burden, Susan
Sent: Friday, May 04, 2018 4:26 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Walton, Barb <Walton.Barb@epa.gov>; Hartzell, Evelyn <hartzell.evelyn@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Hi Bruce,

Valerie shared this request with me last week, and I've worked with ORD's Program Support Coordinators to identify ORD staff available to work with R10 on the Pebble Mine EIS. As you know, R10 requested specific people and expertise for the project. I'm happy to report that Joe Ebersole, Michael Kravitz, and Kate Schofield are all available for this effort. Unfortunately, we were not able to identify anyone with the requested hydrology expertise. The hydrologists who worked on the Bristol Bay assessment are no longer with ORD (Jim Wiggington retired and Jason Todd is now with OCSPP).

Additionally, Barb Butler, an author of the Bristol Bay assessment, is willing to assist in other areas (aka, areas not mentioned in the original request) that might come up in the future with respect to this mine site, including reviews of water quality data (groundwater or surface water), mining materials testing data (e.g., kinetic and static leaching tests), sampling/analysis design, and mitigation/treatment options for control of water quality (e.g., management of wastes to minimize leaching/seepage issues, fate and transport of constituents in water if mine drainage is formed, and treatment of drainage).

Finally, Paul Ringold, Joe Ebersole's branch chief, has asked for a follow up conversation with Patty McGrath (or R10's lead on the Pebble Mine EIS, if it is not Patty) to discuss Joe's participation. Paul's specific requests are in the attached email. Also, please note that the attached email chain indicates that Joe is available for up to 10% of his time for two years.

I'm assuming that you'll pass this information onto Patty. Please let me know if you need anything else from me.

Thanks,

Susan

Susan Burden, Ph.D.
Acting Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

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From: Blank, Valerie
Sent: Thursday, April 26, 2018 12:12 PM
To: Burden, Susan <Burden.Susan@epa.gov>
Cc: LaVay, Maggie <LaVay.Maggie@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

fyi

From: Duncan, Bruce
Sent: Tuesday, April 24, 2018 2:41 PM
To: LaVay, Maggie <LaVay.Maggie@epa.gov>; Blank, Valerie <Blank.Valerie@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>; Ebersole, Joe <Ebersole.Joe@epa.gov>
Subject: FW: ORD support for Pebble EIS
Importance: High

Dear Maggie and Val,

Please find attached the Region 10 technical support request form for assistance. This is a high priority for R10 and we look forward to support starting as soon as possible. Our Regional Mining Advisor has been discussing the specifics with ORD Scientists already so this will not come as a surprise. Let me know of any next steps and how I can assist with the support request.

Bruce

Bruce Duncan
Regional Science Liaison to Office of Research & Development

U.S. Environmental Protection Agency | Region 10
1200-6th Ave, Suite #155, Mail Stop OERA-140; Seattle, WA 98101-3140
206.553.0218 | **duncan.bruce@epa.gov**

From: McGrath, Patricia
Sent: Tuesday, April 24, 2018 8:33 AM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: ORD support for Pebble EIS

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>;

AMERICAN OVERSIGHT

Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation ☐ Document review Other (please specify)	
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps	
Project Milestones and Due Date	
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed	
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)	
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No	
If yes, please list the names of the scientists.	

AMERICAN OVERSIGHT

Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan)
☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz

AMERICAN OVERSIGHT

Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/26/2018 5:50:40 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Review of Pebble section 3.1
Attachments: Comments Section 4.1_PM and CG.docx

Hi Molly-

This email provides you with some updates and comments.

Deliberative Process / Ex. 5

Pebble permit team meeting - we had a good team meeting yesterday though not everyone was able to attend. I did commit to us sending to the team: (1) the PP presentation from the CA meeting that lists the alternatives; and (2) draft Chapters 1 and 2 that Shane sent out this week – for context, but not comment. I sent #1 out yesterday. Can you send out Ch 1 and 2 to the team next week?

Deliberative Process / Ex. 5

I will be out next week, but will be able to check emails and return calls sporadically. So feel free to reach out if you want to talk.

Thanks -
Patty

From: Vaughan, Molly
Sent: Thursday, October 25, 2018 12:05 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Review of Pebble section 3.1

Hi Patty –
As you are working through your own review of the draft sections due next week, I wanted to share my comments so far as well. I have reviewed Sections 3.5, 4.5, and 3.1 so far, and will get to 4.1 on Monday.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/26/2018 6:52:26 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/27/2018 8:00:00 PM
End: 9/27/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Hi all- Here is the agenda for our meeting tomorrow. Feel free to suggest additional topics

AGENDA

- Litigation hold
- NEPA documents under review
    - Alternatives
- Schedule for upcoming document reviews
- Additional topics

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/13/2018 3:04:58 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: Bristol Bay Check-in 8/14 Draft Agenda

Looks good to me.

From: Peterson, Erik
Sent: Friday, August 10, 2018 1:54 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Bristol Bay Check-in 8/14 Draft Agenda

Patty,

What do you think of the following draft agenda for the check-in with Linda on 8/14?

- Preliminary EIS document review
- FOIA
- De Fazio response
- OGC clerk legal memo

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/26/2018 6:52:24 PM
To: Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/27/2018 8:00:00 PM
End: 9/27/2018 9:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Hi all- Here is the agenda for our meeting tomorrow. Feel free to suggest additional topics

AGENDA

- Litigation hold
- NEPA documents under review
    - Alternatives
- Schedule for upcoming document reviews
- Additional topics

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/26/2018 5:38:18 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: pebble team meeting

Hi Molly –
I am thinking of an agenda for the team meeting tomorrow.
Please let me know if you have anything to add to the topics below. Also, please give me a quick call if you have time today or tomorrow morning regarding the alternatives review.

- Litigation hold
- NEPA documents
    - Alternatives
- Schedule for upcoming document reviews

Thanks-Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/26/2018 3:47:59 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 4/26/2018 8:00:00 PM
End: 4/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Here is agenda for our team meeting today. Please let me know if you have additional items:

Status of scoping letter – Molly
Scoping meetings – Molly, Neverley, Patty
ORD support – Patty
Next steps

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/24/2018 3:37:35 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]
Subject: RE: Pebble Concentrate Pipeline

Ok.

From: Godsey, Cindi
Sent: Monday, September 24, 2018 8:35 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Pebble Concentrate Pipeline

Apparently my meeting update didn't go through. I will call you at 10 because I am working at home today so no need to use the conference room.

-----Original Appointment-----
From: McGrath, Patricia
Sent: Monday, September 24, 2018 8:07 AM
To: Godsey, Cindi
Subject: Accepted: Pebble Concentrate Pipeline
When: Monday, September 24, 2018 10:00 AM-10:30 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-19C-OWW/R10-Rooms-Restricted

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/13/2018 7:25:11 PM
To: Mark Douglas (douglas.mark@epa.gov) [douglas.mark@epa.gov]
Subject: FW: Pebble EIS: Cooperating Agency Timelines

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 12, 2018 3:16 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Subject: FW: Pebble EIS: Cooperating Agency Timelines

All,
Here is a quick look at the anticipated dates for CA engagements/deliverables/meetings. I will be sending draft CH 4 in a few minutes

Shane

Scoping Report

Distributed July 25, 2018

List of Potential Alternatives

Distributed August 14 (may be sooner, but plan on short turn)

Meeting with CAs on Alternatives

August 22

Pre-Draft Chapter 4

Distributed July 12

CAs assist with Chapter 4 Impact Analysis

October 1 to 30

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/25/2018 3:51:40 PM
To: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Subject: RE: Bristol Bay Check-in

Hi Suzanne-
You can do either. I forwarded to you the invite for the meeting tomorrow in case that works for your schedule.
Patty

From: Skadowski, Suzanne
Sent: Wednesday, April 25, 2018 8:34 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Bristol Bay Check-in

Hi Patty,

I'd like an overall update on the NEPA/permitting from your perspective, would it be easiest to sit in on your meeting tomorrow or just catch up at our next update to David?
No biggie, thanks.

Suzanne Skadowski
Public Affairs | Media Relations Specialist
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Twitter: @EPAnorthwest
Facebook: @eparegion10

From: McGrath, Patricia
Sent: Wednesday, April 25, 2018 8:32 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: RE: Bristol Bay Check-in

Hi David-
Since the primary purpose of this meeting is to update you, I recommend canceling the meeting. The 404 team meet yesterday and our NEPA/permitting team is meeting tomorrow. Jill is informed on the status of the scoping letter.
I am planning to send a cancellation for this meeting only, unless I hear otherwise.
Patty

AMERICAN OVERSIGHT

From: Allnutt, David
Sent: Tuesday, April 24, 2018 6:46 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: Re: Bristol Bay Check-in

Patty - I've had a couple things come up and will not be able to attend this tomorrow. Please proceed without me. Will try to catch up on these topics with folks individually as needed.

Sent from my iPhone

On Apr 24, 2018, at 3:48 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

> All –
> Here is a proposed agenda for the 4/25 BB check-in call
>
> - FOIA – Ashley
> - Docket – Ashley
> - Summary of Lee Forsgren Meeting – Palmer
> - Scoping meetings – Molly and Patty
> - Status of scoping letter – Molly and Patty
> - Status of ORD support – Patty
>
> And, FYI, ADNR recently (4/19) issued the Miscellaneous Land Use Permit for PLP's care/maintenance, reclamation, and ongoing exploration/data collection activities for 2018.
>
> http://dnr.alaska.gov/mlw/mining/largemine/pebble/pdf/A20186118_FINAL_PACKAGE.pdf
>
> -----Original Appointment-----
> **From:** R10-OERA Calendar
> **Sent:** Monday, February 5, 2018 10:13 AM
> **To:** R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Szerlog, Michael; Mendelman, Krista
> **Subject:** Bristol Bay Check-in
> **When:** Wednesday, April 25, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
> **Where:** R10Sea-Room-14Elwha/R10-Rooms-Service-Center Conference Line/Code / Ex. 6
>
> Conference Line/Code / Ex. 6
>
> **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/26/2018 9:45:49 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Hi Molly-

Deliberative Process / Ex. 5

Please let me know if you have questions.
Patty

From: Vaughan, Molly
Sent: Thursday, June 7, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website/ Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

AMERICAN OVERSIGHT

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

  Internal Website/ Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-

AMERICAN OVERSIGHT

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/10/2018 5:32:24 PM
To: Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]
Subject: FW: McGrath, Patricia has shared 'oera'

From: McGrath, Patricia [mailto:no-reply@sharepointonline.com]
Sent: Friday, August 10, 2018 10:14 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: McGrath, Patricia has shared 'oera'

Hi Jill and Tim. This folder contains some of the slides from the most recent pebble briefing (last month). Focus is on the current project description and nepa status. Also folder has a few people pictures from the site visit. I have many other pictures but am hoping that Tims pictures are better (he had the better camera and helicopter seat). Patty

Go to oera


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Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/25/2018 3:49:23 PM
To: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]

Subject: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 4/26/2018 8:00:00 PM
End: 4/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 10:54 AM
To: McGrath, Patricia; Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov)
Subject: Pebble permit oversight/NEPA team
When: Thursday, April 26, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/25/2018 3:48:00 PM
To: Marshall, Vanessa [marshall.vanessa@epa.gov]
Subject: FW: Bristol Bay Check-in

Hi Vanessa –
Can you send out a cancellation notice for the Bristol Bay check-in meeting scheduled for 9 am today?
Please cancel this meeting only, not the entire series.
David cannot make the meeting and I have heard from others that there is not a need to meet.
Please let me know if you have questions.
Thanks - Patty

From: Allnutt, David
Sent: Tuesday, April 24, 2018 6:46 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>
Subject: Re: Bristol Bay Check-in

Patty - I've had a couple things come up and will not be able to attend this tomorrow. Please proceed without me. Will try to catch up on these topics with folks individually as needed.

Sent from my iPhone

On Apr 24, 2018, at 3:48 PM, McGrath, Patricia <mcgrath.patricia@epa.gov> wrote:

> All –
> Here is a proposed agenda for the 4/25 BB check-in call
>
> - FOIA – Ashley
> - Docket – Ashley
> - Summary of Lee Forsgren Meeting – Palmer
> - Scoping meetings – Molly and Patty
> - Status of scoping letter – Molly and Patty
> - Status of ORD support – Patty
>
> And, FYI, ADNR recently (4/19) issued the Miscellaneous Land Use Permit for PLP's care/maintenance, reclamation, and ongoing exploration/data collection activities for 2018.
>
> http://dnr.alaska.gov/mlw/mining/largemine/pebble/pdf/A20186118_FINAL_PACKAGE.pdf
>
> -----Original Appointment-----
> **From:** R10-OERA Calendar

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Sent: Monday, February 5, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Szerlog, Michael; Mendelman, Krista
Subject: Bristol Bay Check-in
When: Wednesday, April 25, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: 206-800-4483, Code: 1465518

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/15/2018 12:15:39 AM
To: Hood, Lynne [Hood.Lynne@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: ET mining subgroup updates

Thanks!

From: Hood, Lynne
Sent: Thursday, May 10, 2018 12:22 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: ET mining subgroup updates

Hi Patty, **Non-Responsive: Unrelated to Bristol Bay/Pebble**

Thanks!

Lynne Ann Hood
Environmental Scientist, NEPA Review
EPA R10- Idaho Operations Office
950 W Bannock Street, Suite 900
Boise, Idaho 83702

Phone: 208-378-5757

From: Peterson, Erik
Sent: Thursday, May 10, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Hood, Lynne <Hood.Lynne@epa.gov>
Subject: RE: ET mining subgroup updates

Patty,

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140

AMERICAN OVERSIGHT

(206) 553-6382

From: McGrath, Patricia
Sent: Thursday, May 10, 2018 8:44 AM
To: Hood, Lynne <Hood.Lynne@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: ET mining subgroup updates

Hi Lynne and Erik –
I am preparing my regular update for the mining ET subgroup. Could you please revise the entries in the table below for **Non-Responsive: Unrelated to Bristol Bay/Pebble Mine** If so, please add to the

Please send me updates by noon tomorrow.
Call if you have questions.
Thanks - Patty

Mine Project	Programs	Update
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		
Pebble (AK)	NEPA (CA) 404 NPDES (o/s) Air (o/s)	- Proposal to withdraw 404(c) determinations was suspended in February 2018 - EIS scoping period ends June 29; scoping letter under development
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		

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Mine Project	Programs	Update
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine		
CA – EPA is a cooperating agency in EIS development o/s - oversight		

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
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Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/5/2018 8:30:28 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Re: Bristol Bay Allnutt Check in - 11/6/18 Draft Agenda

Hi Erik
Molly and I are at the AMA conference tomorrow. However I can still call in and will plan to do so. Agenda looks fine.
Patty

Sent from my iPhone

On Nov 4, 2018, at 8:13 PM, Palomaki, Ashley <Palomaki.Ashley@epa.gov> wrote:

> I don't have any additional agenda items.
>
> **Ashley Palomaki**
> Assistant Regional Counsel
> U.S. EPA Region 10 Office of Regional Counsel
> 1200 Sixth Avenue, Suite 155, ORC-113
> Seattle, WA 98101
> 206-553-8582
>
> ---
>
> **From:** Peterson, Erik
> **Sent:** Friday, November 02, 2018 4:31 PM
> **To:** Palomaki, Ashley <Palomaki.Ashley@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
> **Subject:** Bristol Bay Allnutt Check in - 11/6/18 Draft Agenda
>
> Patty, Ashley, and Molly,
>
> I propose we keep the Allnutt check-in for 11/6 at 9 am. Please send your feedback/suggestions on this draft agenda by mid-day 11/5. Thank you!
>
> **Agenda**
>
> **404(c)**
>
> FOIA – HQ role in FOIA responsibilities
>
> **Permit Oversight/ NEPA Review Team**
>
> NEPA Review
>
> ---
>
> <image001.jpg>
>
> **Erik Peterson**, NEPA Reviewer
> U.S. EPA, Region 10
> 1200 Sixth Avenue
> Mail Code: OERA-140
> Seattle, Washington 98101
> (206) 553-6382

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/24/2018 3:32:47 PM
To: Duncan, Bruce [Duncan.Bruce@epa.gov]
CC: David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]; Jill Nogi (nogi.jill@epa.gov) [nogi.jill@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: RE: ORD support for Pebble EIS
Attachments: ORD Regional Decision Support Request_PebbleEIS_April2018.docx

Hi Bruce-
Attached is the completed form. Please let me know if you need more information.
We would like some immediate assistance from Joe Ebersole to help us with scoping comments (due before the end of June) if that can be arranged.
Thanks-
Patty

From: Duncan, Bruce
Sent: Monday, April 23, 2018 4:21 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: RE: ORD support for Pebble EIS

Thanks Patti,

Here is a link to the form that OSP uses (from the R10 Science Steering Council SharePoint)

SUBMIT A TECHNICAL SUPPORT REQUEST:

Request Form - this form (Click HERE) is submitted to OSP who will help find the ORD support if available.

The form is pretty simple – if you need help I can arrange the information you provided into the desired format:

ORD Regional Decision Support Request	
Initiating Region and Division Region 10	**Date**
Contact Information Name: Phone Number: Email:	
Project Title	
Type of Scientific Support Requested ☐ Consultative advice ☐ Workgroup/seminar/committee participation	

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☐ Document review Other (please specify)
Description of Science Need – One-time request Background & Problem. Assistance Needed/Research Steps
Project Milestones and Due Date
Estimated number of hours required to complete request ☐ 1 – 4 hours ☐ 8 – 16 hours ☐ 4 – 8 hours ☐ >16 hours If >16, please provide an estimate of the hours needed
Type of expertise needed (e.g., human health risk assessment, aquatic toxicology)
Have you worked with ORD scientists on this project previously? ☐ Yes ☐ No
If yes, please list the names of the scientists.
Regional Priority (To be completed by Regional Science Liaison – Bruce Duncan) ☐ High ☐ Medium ☐ Low

From: McGrath, Patricia
Sent: Monday, April 23, 2018 1:46 PM
To: Duncan, Bruce <Duncan.Bruce@epa.gov>
Cc: Allnutt, David <Allnutt.David@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Hagerthey, Scot <Hagerthey.Scot@epa.gov>
Subject: ORD support for Pebble EIS

Hello Bruce-

Last week I spoke with Scot Hagerthey regarding ORD support for our cooperating agency participation in the Pebble EIS. He acknowledged that ORD folks are interested and available and requested that I send the request for ORD support through you. Can you let me know how you like to see these requests. Is an email from me sufficient? Following is the support that is needed.

Request for ORD Support for Pebble Environmental Impact Statement

The US Army Corps of Engineers is the lead agency in developing an EIS for the Pebble Mine Project in Alaska. The Corps invited EPA to be a cooperating agency to assist the Corps in developing sections of the EIS. In addition, EPA is responsible for reviewing the Draft EIS and the public notice for the CWA 404 permit application. EPA Region 10 has put together a team to accomplish these responsibilities. There are several areas where EPA is requesting support from ORD to bolster EPA's review team and also benefit from ORD's past work in the Bristol Bay watershed where the mine project is located. From 2011 to 2014, EPA Region 10 and EPA's Office of Water worked with ORD in developing the Bristol Bay Watershed Assessment. ORD's experience and understanding of the watershed and potential impacts that could occur during mining will provide needed support to EPA Region 10's NEPA/permit review team in several key areas.

The key areas where we are requesting support are identified below.

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Specialty	Summary of Assistance Requested	ORD staff requested
Fisheries	Provide advice to EPA's team on fisheries issues Provide input into EIS scoping letter Review baseline data Recommend aquatic resources impact assessment methodologies Participate in fisheries technical working group Review and provide comments on fisheries sections of the EIS	Joe Ebersole
Hydrology	Provide advice to EPA's team on hydrology issues Review groundwater and surface water hydrology baseline data Recommend impact assessment methodologies and modelling approaches and review results Participate in hydrology technical working group Review and provide comments on hydrology sections of the EIS	The ORD hydrologist that assisted with the Bristol Bay watershed assessment has retired. We do need support in this area and request that ORD identify individuals that can assist.
Transportation	Provide advice to EPA's team on transportation issues Review and provide comments on transportation sections of the EIS	Michael Kravitz
Coordination	Participate in monthly Pebble NEPA/permit team to assist with coordinating ORD support Potentially review sections of the EIS	Kate Schofield

In terms of timing, we are requesting ORDs immediate assistance to help with baseline data review and development of EPA's EIS scoping letter. We expect that assistance will be needed throughout the EIS process, with times of intense activity when documents are being reviewed and times with very little activity. The EIS process will take at least two years. There may be additional areas where we need support as the EIS process moves forward.

Please let me know if you need additional information.
Thanks-

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/30/2018 3:04:10 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Pre Draft Ch3 comments draft 062818'

Hi Molly-
Today was a busy day for me.
I got through section 3.17 of the comment compilation. I will finish on Monday morning. I made my edits in track changes and will be happy to discus with you if you have questions.
Patty

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Thursday, June 28, 2018 4:51 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Pre Draft Ch3 comments draft 062818'

Here's the document that Vaughan, Molly shared with you.

Open Pre Draft Ch3 comments draft 062818.docx

See more related to Vaughan, Molly in Delve.


Get the SharePoint mobile app!





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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/13/2018 7:06:25 PM
To: Erik Peterson (Peterson.Erik@epa.gov) [Peterson.Erik@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]
Subject: BB presentation materials for AOO director
Attachments: BB Presentation_AOO_20180713.pptx; Bristol Bay Script - AOO briefing_20180713.docx

Hi Erik and Ashley –
Attached is the updated BB presentation and script for the briefing with Sue on July 23. I revised the script in track changes.
Please let me know if you have any comments by COB Monday july 16 so that I can revise and finalize on Tuesday. I will be out of the office next Wednesday through Friday.

Also, Erik can you try to find a Seattle conference room for the briefing? Sue will be here in person.

Thanks - Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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DRAFT

EPA's Work in the Bristol Bay Watershed

Presentation for Alaska Operations Office Director

July 23, 2018

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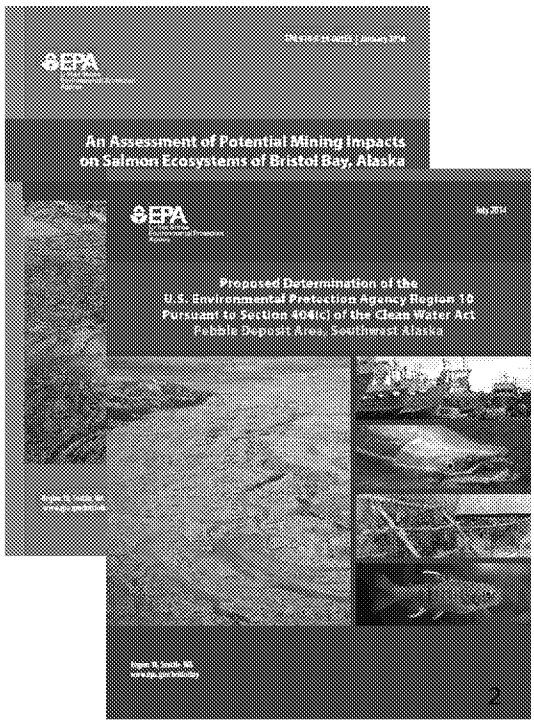
Overview

DRAFT

- EPA's Involvement History
- Science
- Section 404(c) Regulatory Response
- Section 404 Permitting and NEPA



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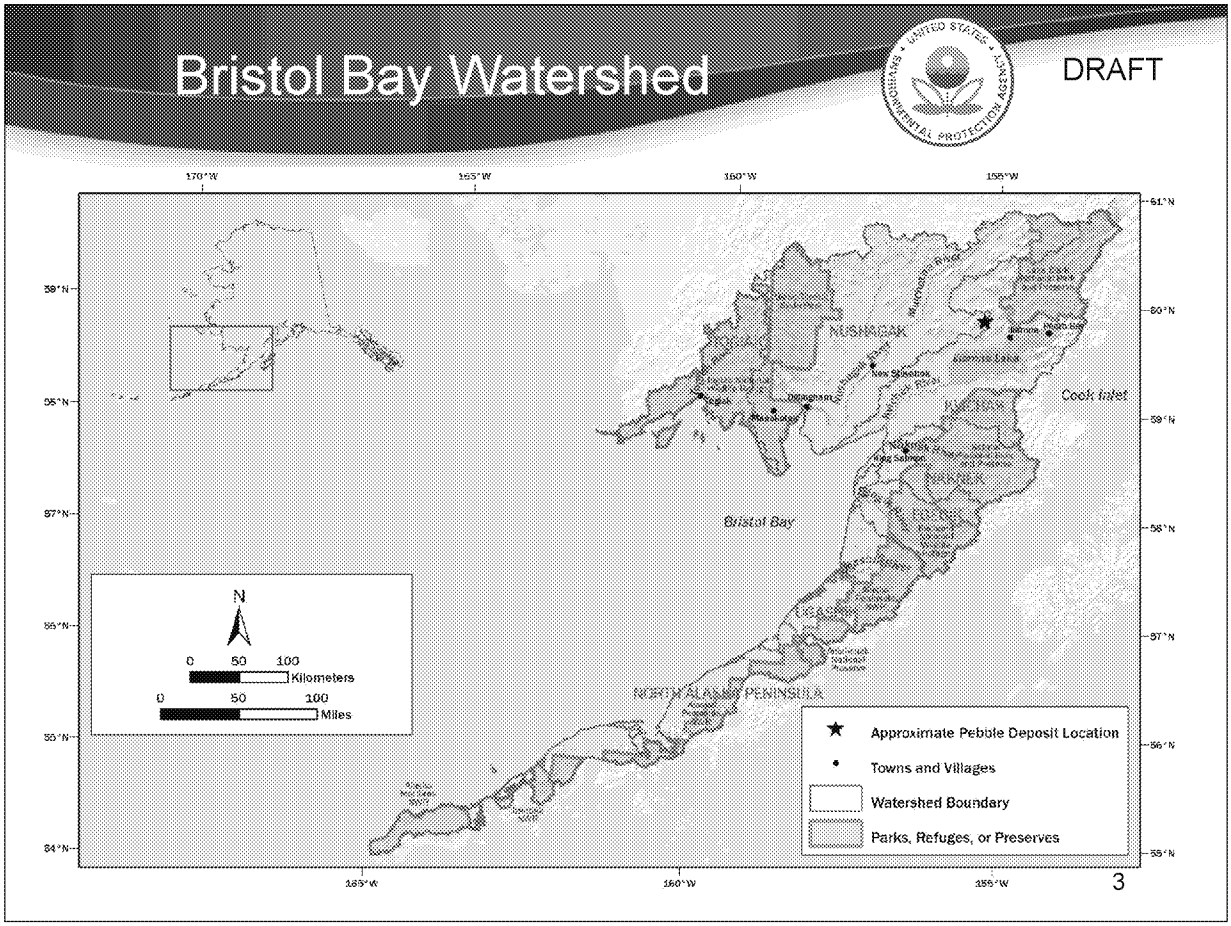

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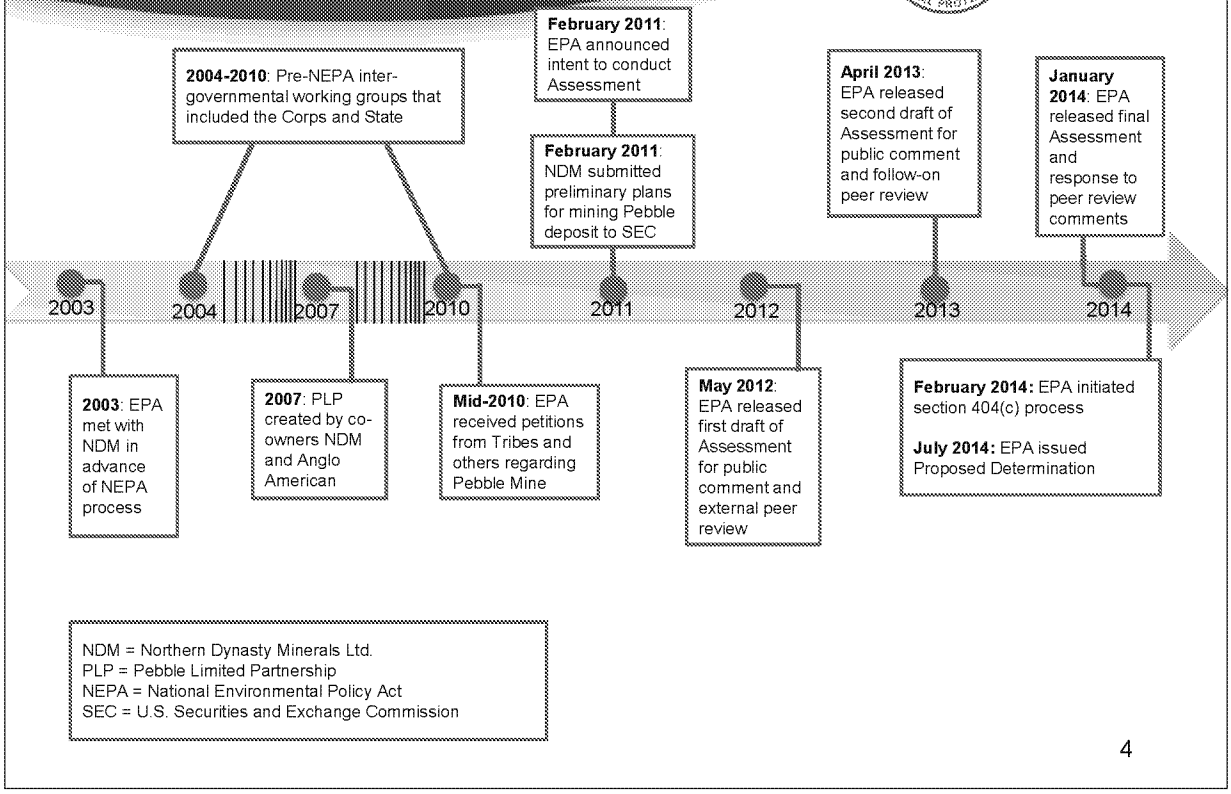
Timeline 2003 - 2014

DRAFT



NDM = Northern Dynasty Minerals Ltd.
PLP = Pebble Limited Partnership
NEPA = National Environmental Policy Act
SEC = U.S. Securities and Exchange Commission

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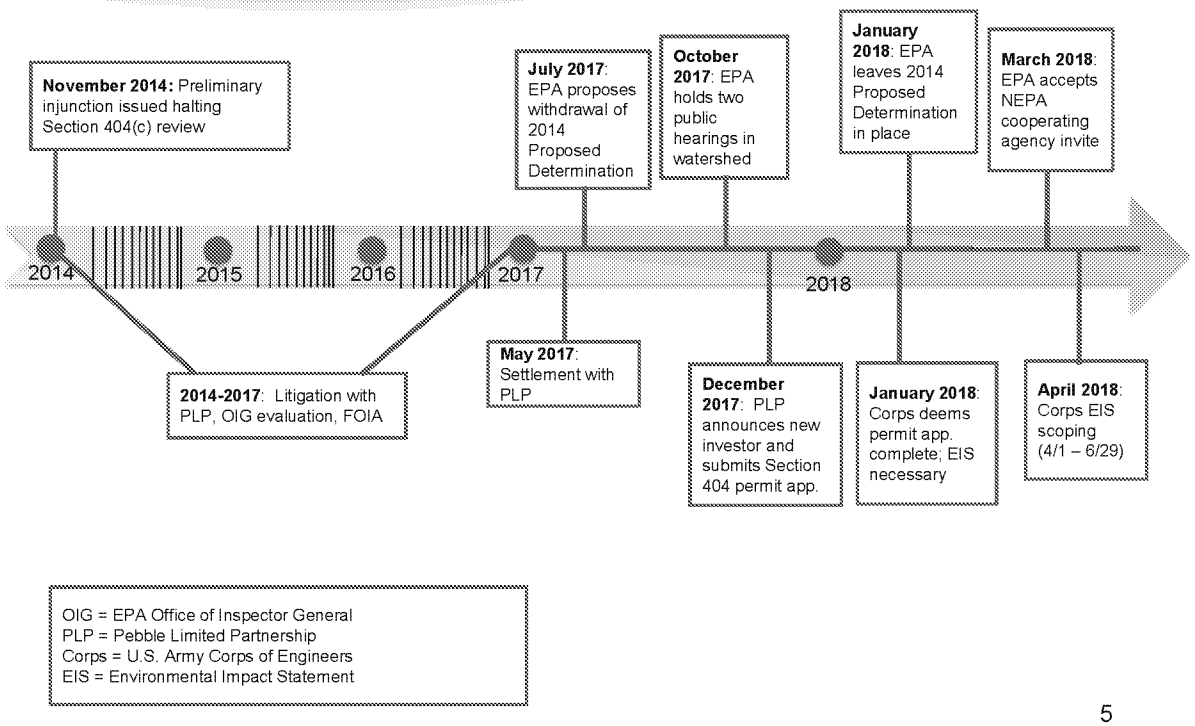
Timeline 2014 - Present

DRAFT



OIG = EPA Office of Inspector General
PLP = Pebble Limited Partnership
Corps = U.S. Army Corps of Engineers
EIS = Environmental Impact Statement

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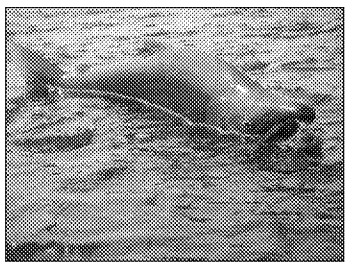
Bristol Bay Watershed Assessment

DRAFT

- Purpose:
  - Characterize the biological and mineral resources of the Bristol Bay watershed
  - Increase understanding of the potential impacts of large-scale mining on the region's fish resources
  - Inform future decision-making
- Scientific Ecological Risk Assessment evaluating potential impacts associated with:
  - Large-scale mine construction and operation
  - Accidents and failures



- Three-year scientific assessment effort
  - Independent external peer review
  - Stakeholder and public engagement
    - 8 public meetings
    - 2 rounds of public comment – over 1.1 million comments
  - Tribal consultations

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Bristol Bay Watershed Resources

DRAFT

Biological Resources:

- Bristol Bay produces almost half of world's sockeye salmon
- Kvichak watershed world's largest producer of sockeye salmon
- Nushagak watershed frequently at or near world's largest producer of Chinook salmon

Biological Resources Support:

- 14,000 jobs, generates $480 million annually in direct economic expenditures and sales
  - Salmon fishery valued at $1.5 billion annually
- 4,000-year-old subsistence fishery for Alaska Natives

Geological Resources:

- At least 10 claims with more than minimal exploration, including Pebble.
- Pebble deposit: low-grade, with copper, gold, and molybdenum
- According to NDM, Pebble could:
  - Be largest mine of its type in North America
  - Produce 3,000 jobs in AK
  - Contribute $2.7 billion to US GDP annually
- Economics of mining the Pebble deposit are speculative
- Since 2001, four major mining companies have walked away from Pebble project

AMERICAN OVERSIGHT

Bristol Bay Watershed Assessment

- Mining scenarios informed by NDM plans submitted to U.S. Securities and Exchange Commission (SEC) in 2011
- Uses 3 potential stages of mine development at Pebble deposit
  - 0.25-billion-ton mine (worldwide median size porphyry copper deposit)
  - 2.0-billion-ton mine (smallest mine size proposed by NDM to SEC)
  - 6.5-billion-ton mine (largest mine size proposed by NDM to SEC)
- NDM says deposit is nearly 12 billion tons

AMERICAN OVERSIGHT

Bristol Bay Watershed Assessment

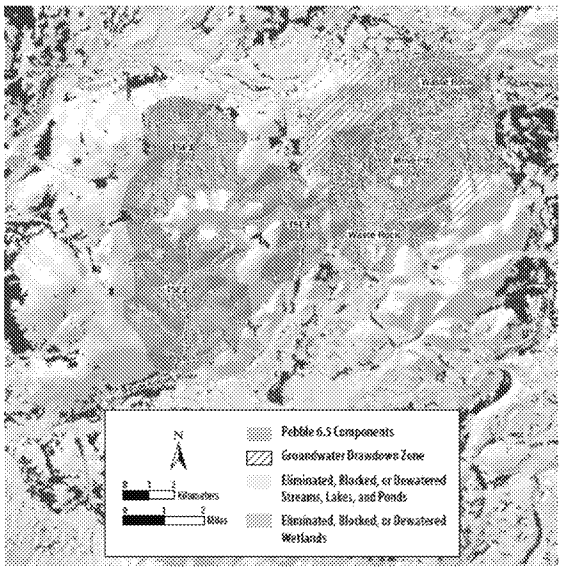
DRAFT

Mine Footprint Impacts:

- 24-94 miles of salmon-supporting streams destroyed
- 1,300-5,350 acres of wetlands, ponds, lakes destroyed
- 9-33 miles of salmon-supporting streams with altered streamflow likely to affect ecosystem structure and function

Other Impacts:

- Tailings dams need maintenance in perpetuity
- Routine operations and accidents would increase impacts on salmon habitat quality, both at the mining site and along the 86-mile transportation corridor.



AMERICAN OVERSIGHT

Clean Water Act Section 404

DRAFT

- § 404(a) authorizes the Secretary of the Army to issue **permits**
  - For the discharge of dredged or fill material into waters of the U.S. at specified disposal sites
- § 404(b) directs the Secretary of the Army to apply **environmental criteria** developed by EPA when specifying disposal sites
  - § 404(b)(1) Guidelines [40 CFR Part 230]
- § 404(c) authorizes EPA to prohibit, deny or restrict (withdraw) the placement of dredged or fill material at defined sites in waters of the U.S.

AMERICAN OVERSIGHT

Limits of Section 404(c)

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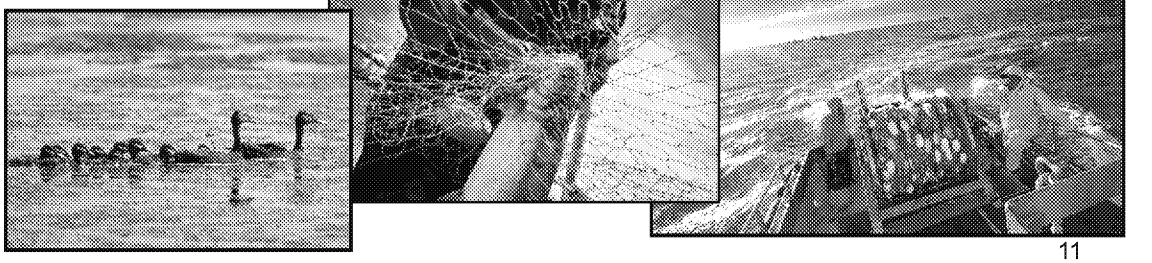
- **Whenever** it determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an **unacceptable adverse effect(s)** on:
  - Municipal water supplies; or
  - Shellfish beds and **fishery areas**; or
  - Wildlife; or
  - Recreation areas.



AMERICAN OVERSIGHT

Pebble Deposit 404(c) Process

DRAFT

Step 1

- 2/28/14: **Initiation by EPA Region 10 – "15-day letter"**
- Consulted with Corps, NDM/PLP, and State

Step 2

- 7/18/14: **Proposed Determination** released (PD) by EPA Region 10
- 8/12-15/14: 7 public hearings in Alaska
- > 670,000 written comments; > 99% (86% unique) supported Proposed Determination

Step 3

- EPA Region 10 will review the public comments
- EPA Region 10 will withdraw PD *or* prepare **Recommended Determination** (RD)

Step 4

- **Final Determination (FD) by EPA Assistant Administrator for Water**
- Consult again with Corps, NDM/PLP, and State
- Within 60 days of receipt of RD, issue FD affirming, modifying, or rescinding RD

AMERICAN OVERSIGHT

What Are the Proposed Restrictions?

DRAFT

Restrict the discharge of dredged or fill material related to mining the Pebble deposit into waters of the U.S. that would, individually or collectively, result in the following:

1. **Loss of Streams.**
   a. The loss of 5 or more linear miles of streams with documented anadromous fish occurrence; **or**
   b. The loss of 19 or more linear miles of streams where anadromous fish are not currently documented, but that are tributaries of streams with documented anadromous fish occurrence; **or**

2. **Loss of Wetlands, Lakes, and Ponds.** The loss of 1,100 or more acres of wetlands, lakes, and ponds contiguous with either streams with documented anadromous fish occurrence or tributaries of those streams; **or**

3. **Streamflow Alterations.** Streamflow alterations greater than 20% of daily flow in 9 or more linear miles of streams with documented anadromous fish occurrence

AMERICAN OVERSIGHT

Response to Section 404(c) Proceeding

DRAFT

- Office of Inspector General (OIG) Review
  - 17-month in-depth evaluation found no evidence of bias or a pre-determined outcome
  - Possible misuse of position for retired Region 10 employee noted
- PLP broad Freedom of Information Act (FOIA) requests
  - Approximately 18,000 documents produced
- PLP filed three lawsuits in 2014
  - Administrative Procedure Act (APA) challenge to initiation of 404(c) process
  - FOIA litigation
  - Federal Advisory Committee Act (FACA) litigation
- May 2017 settlement agreement
  - Resolved FOIA and FACA litigation and PLP's outstanding FOIA requests

AMERICAN OVERSIGHT

Settlement Agreement

DRAFT

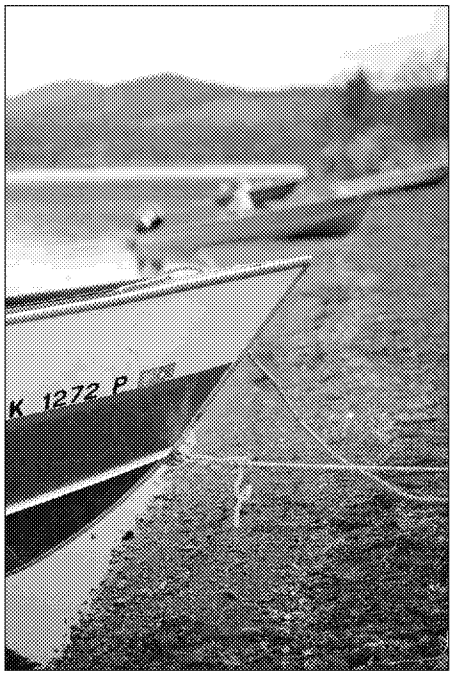
- Key terms of the May 11, 2017 settlement agreement between PLP and EPA:
  - EPA may use its Bristol Bay Watershed Assessment without limitation
  - EPA agrees to initiate a process to propose to withdraw its 2014 Proposed Determination by July 11, 2017
  - EPA agrees not to forward a Recommended Determination (the next step in the 404(c) review process) to EPA HQ until a Final EIS is noticed for the project or May 11, 2021, whichever is earlier
  - PLP drops remaining lawsuits and fee requests against EPA and agrees to file no new FOIA requests during the 2.5- to 4-year hiatus period

AMERICAN OVERSIGHT

Proposal to Withdraw 2014 Proposed Determination

DRAFT

- July 2017: Withdrawal proposed based on policy rationale
  - EPA did not solicit comment on the proposed restrictions or on science or technical information underlying the Proposed Determination
- Outreach and Consultation
  - Proposal generated >1 million comments (~99% opposed)
  - 2 public hearings in watershed
  - Tribal and ANCSA Consultation
    - 16 tribal governments and 1 ANCSA Regional Corp. opposed
    - 1 tribal government and 2 ANCSA Village Corps. supported



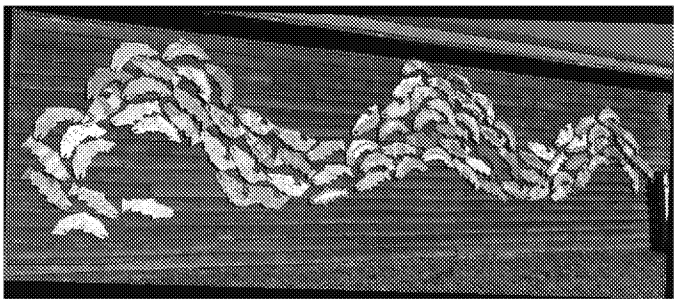
AMERICAN OVERSIGHT

Section 404(c) Next Steps

DRAFT

- In January 2018 EPA decided not to withdraw and suspended Section 404(c) process pending further review

- Settlement agreement obligations
  - EPA can issue a new/modified Proposed Determination at any time
  - EPA Region 10 cannot forward a Recommended Determination to EPA HQ until May of 2021 or until a final EIS is noticed, whichever comes first



AMERICAN OVERSIGHT

2017 Permit Application

DRAFT

- PLP filed Department of Army (DA) permit application to the Corps in December 2017
  - Includes CWA 404 and RHA Section 10
  - Includes Project Description: mine, power supply, transportation
- Corps deemed application sufficient to begin NEPA



Pebble deposit area

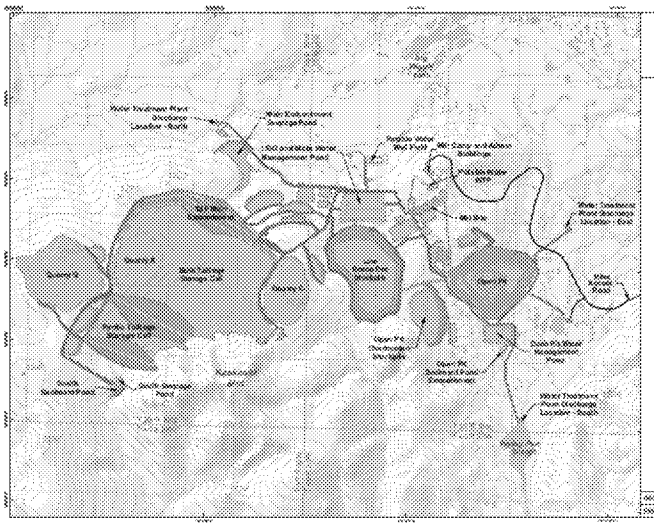
AMERICAN OVERSIGHT

Project Description

DRAFT

Mine Site

- 1.1 billion tons of ore mined over 20 years
- 160,000 tons/day of ore processed to produce:
  - Copper concentrate
  - Molybdenum concentrate
  - Gold via gravity separation
- Open pit mine, ore storage pile, 2 tailings impoundments
- 2 water treatment plants and 3 discharge outfalls
- Closure
  - PAG waste rock backfilled into open pit
  - Dry closure of tailings
  - Long-term water treatment



AMERICAN OVERSIGHT

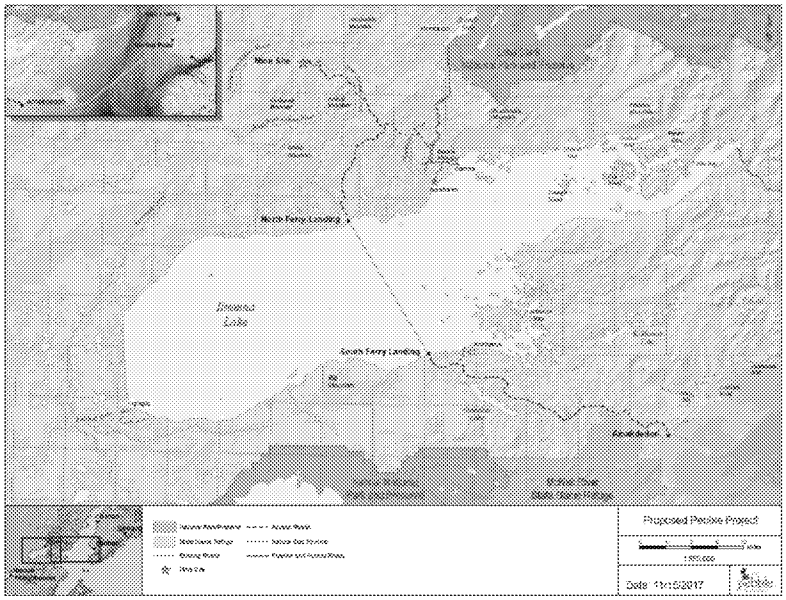
Project Description

Power

- 230 MW power plant at mine site
- 188 mile natural gas pipeline

Transportation

- 65 miles of roads
- Ferry across Lake Illiamna
- Cook Inlet port site



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Project Description

DRAFT

- Proposed mine is:
  - Smaller than 2011 Preliminary Assessment to SEC
  - Larger than the EPA Assessment's 0.25 billion ton mine scenario, which is the basis for the 2014 Proposed Determination

2014 Proposed Determinations
Loss of 5 or more miles of streams with anadromous fish; or
Loss of 19 or more miles of streams that are tributaries of anadromous fish streams; or
Loss of 1100 or more acres of wetlands, lakes and ponds contiguous with streams or tributaries to streams that have anadromous fish; or
Stream flow alteration > 20% of daily flow in 9 or more miles of streams with anadromous fish

2017 DA Application	
component	**wetlands filled**
Mine site	3190
Transportation (roads, ferry terminals, port)	480
Pipeline	408
TOTAL	4078

- Differences from 2011 Preliminary Assessment and EPA's Assessment:
  - Less waste rock mined
  - No cyanide leaching
  - Liners (pyritic tailings)
  - Advanced water treatment and "Physical Habitat Simulation System" to mitigate dewatering
  - Compensatory mitigation - TBD
- Project description could evolve during EIS and 404 review

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Initial Corps NEPA & 404 Process

DRAFT

- Corps issued informational Public Notice of application (January 5, 2018)
  - Did not request public comment at this time
- Corps Cooperating Agency Plan specifies agency involvement.
  - EPA's cooperating agency involvement is limited to Section 404(b)(1) issues
- EIS scoping occurred April 1 through June 29
  - EPA submitted scoping letter
- Corps is developing preliminary EIS sections
  - EPA reviewing and providing comments where requested

AMERICAN OVERSIGHT

Corps NEPA Schedule

DRAFT

- Corps EIS schedule:
  - Draft EIS – January 2019
  - Final EIS – late 2019
  - Record of Decision – early 2020
- PLP has requested inclusion of the project in FAST 41 infrastructure & critical minerals streamlining

Corps' Pebble website
https://pebbleprojecteis.com/

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NEPA Cooperating Agencies

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- Federal
  - DOT Pipeline and Hazardous Materials Safety Administration
  - US Coast Guard
  - DOI Bureau of Safety and Environmental Enforcement
  - US Fish and Wildlife Service
  - National Park Service
  - Advisory Council on Historic Preservation
  - EPA
- State
  - Alaska Department of Natural Resources Office of Project Management and Permitting coordinates state agencies (ADNR, ADEC, ADFG, SHPO)
- Local Governments
  - Lake & Peninsula Borough & Kenai Peninsula Borough
- Tribes
  - Curyung Tribal Council
  - Nondalton Tribal Council

AMERICAN OVERSIGHT

EPA Response to Permit Application

DRAFT

- EPA Role
  - NEPA
    - Cooperating agency
    - CAA 309 review of the Draft EIS
  - Clean Water Act
    - CWA 404 permit application & 404(b)(1) review
    - Oversight of State CWA 402 Alaska Pollutant Discharge Elimination System Permit
  - Clean Air Act
    - Oversight of State Air Quality Permit
- EPA has developed a cross-programmatic, multi-disciplinary team

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EPA Pebble Teams

DRAFT

R10 Management Team
- David Allnutt, OERA Director
- Krista Mendleman, Acting ARU Manager
- Jill Nogi, NEPA Unit Manager
- Sue Detwiler, AOO Director

CWA 404(c) Team
- Erik Peterson, Team lead
- Palmer Hough, OW
- Mark Douglas, ARU
- Ashley Palomaki, ORC
- Neverley Wake, Tribal
- Suzanne Skadowski, Press

Permit Oversight/NEPA Team
- Patty McGrath, Team lead
- Molly Vaughn, NEPA review
- Mark Douglas, ARU
- Palmer Hough, OW
- Justine Barton, ARU
- Mary Anne Theising, ARU
- Cindi Godsey, NPDES
- Jay McAlpine, Air
- Karl Pepple, Air
- Chis Eckley (geochemist), OERA
- Tim Maley (hydrogeologist), OERA
- Kate Schofeld, ORD
- Joe Ebersole (fisheries), ORD
- Muluken Muche (hydrological modelling), ORD
- Neverley Wake, Tribal
- Ashley Palomaki, ORC
- Suzanne Skadowski, Press

AMERICAN OVERSIGHT

Questions

DRAFT



Upper Talarik Creek, one of three streams flowing from the Pebble deposit site

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/10/2018 10:14:33 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: ch 2
Attachments: Comment spreadsheet_PDEIS_ch2_pm.docx

Hi Molly-
Attached are my comments on Ch 2.
I see that Cindi, Barb, and Kate also sent comments. Let me know if you have questions while combining comments.

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 11/10/2018 4:44:10 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Ch. 7 and 8

Hi Molly-
I did not have any comments on these sections.
Patty

-----Original Message-----
From: Vaughan, Molly
Sent: Friday, November 9, 2018 9:48 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Ch. 7 and 8

Hi Patty - did you have any comments on Chapter 7 or 8? I believe comments are now due 11/16 based on 28 days from distribution. Ch. 7 is the list of preparers, including cooperating agency representatives. Ch. 8 is the list of organizations that copies of the EIS will be sent to.
The way in which Cooperating Agencies provided their contact information for preparers is all over the board, but ours is more or less consistent with the majority.
--Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Saturday, October 20, 2018 11:57 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: please review and provide comment by 11/2/2018 (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached are two Word files, the review drafts of Chapter 7 and Chapter 8. There are no CAs listed as reviewers. There are no figures associated with these chapters. Please review and provide comments by 11/2/2018. Thanks.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/18/2018 4:39:09 PM
To: Wake, Neverley [wake.neverley@epa.gov]
Subject: RE: EPA's Pebble tribal coordinator

You are welcome. There was good connection to the Nondalton meeting on Monday so I was able to listen in. Hopefully will have the same for the scoping meeting later this afternoon.
Patty

From: Wake, Neverley
Sent: Wednesday, April 18, 2018 8:53 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: EPA's Pebble tribal coordinator

Thanks for initiating the outreach on the connection, Patty.

Neverley
(907) 271-3206

From: McGrath, Patricia
Sent: Tuesday, April 17, 2018 8:11 AM
To: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>
Cc: Wake, Neverley <wake.neverley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: EPA's Pebble tribal coordinator

Hi Shane-

As you know EPA has put together a team of folks to accomplish our cooperating agency and permit review and oversight responsibilities. Neverley Wake is the EPA tribal coordinator assigned to our Pebble team. We think it would be beneficial for Neverley to meet with the Corps' tribal coordinator/advisor. I am assuming that is Amanda. The purpose would be to meet & greet so that Amanda knows she can chat with Neverley as needed or if questions come up related to tribal issues. Are you okay with Neverley reaching out to Amanda or vice versa? I believe that Neverley will be attending at least part of the Anchorage scoping meeting.

Below is Neverley' s contact information and she is cced on this email.
Wake.neverley@epa.gov
(907) 271-3206

Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/9/2018 10:19:12 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Comment spreadsheet_4.18'

Hi Molly-
I just completed my review of 4.18 and included some additional comments. I think that I am all caught up now – at least with Pebble documents!
Patty

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Wednesday, August 1, 2018 3:23 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Comment spreadsheet_4.18'

And here is 4.18.

Open Comment spreadsheet_4.18.docx

See more related to Vaughan, Molly in Delve.


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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/24/2018 2:58:10 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble permit oversight/NEPA team

Hi Molly-
You can schedule an alternate time if you can find one that works better for you. I don't need to participate so long as you lead the meeting.
Patty

-----Original Appointment-----
From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 10:29 AM
To: McGrath, Patricia
Subject: Tentative: Pebble permit oversight/NEPA team
When: Thursday, October 25, 2018 1:00 PM-2:00 PM (UTC-09:00) Alaska.
Where: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Hi Patty – I am putting this as tentative to keep it on my calendar, **Personal Matters / Ex. 6**

Personal Matters /

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/24/2018 12:18:44 AM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: dry stack comments
Attachments: Comments on Dry Stack memo_BAB&PM.docx

Hi Molly-
Attached are combined comments from Barb and I. I talked to Barb about these earlier and she was fine with editing and combining.
Can you look at this quickly and send to the Corps and AECOM (Bill Craig)?
Thanks-
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/8/2018 11:13:17 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Wetlands 4.22 Comment spreadsheet'

Hi Molly-
I completed my review of the section 4.22 comments. Had a few edits and an additional comment.
Patty

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Thursday, July 26, 2018 12:35 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Wetlands 4.22 Comment spreadsheet'

Hi Patty,
The Pebble Section 4.22 Wetlands comments are completed if you would like to begin your review. I will send the additional sections once they are ready -- likely mid-next week or early the following week.
Thanks,
Molly

Open Wetlands 4.22 Comment spreadsheet.docx

See more related to Vaughan, Molly in Delve.

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Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/8/2018 10:38:20 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has shared 'Comment Spreadsheet Section 4.14 and 4.26'

Hi Molly –
I made some edits to the comments, primarily for consistency. I also added a few comments on section 4.1 and 4.5 to this table.
I hope to finish reviewing most of the other sections today.
Patty

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Wednesday, August 8, 2018 1:09 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has shared 'Comment Spreadsheet Section 4.14 and 4.26'

Hi Patty - here are the draft comments on the last two sections from Mark, for your review. Jill would also like to review the Ch 4 comments before we send them, and is available to review later this week or next, whenever you are finished.
Thanks,
Molly

Open Comment Spreadsheet Section 4.14 and 4.26.docx

See more related to Vaughan, Molly in Delve.


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AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/24/2018 4:34:56 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 5/24/2018 8:00:00 PM
End: 5/24/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Agenda:

Welcome Mark Douglas to the team
Status of scoping letter
Possible changes to project description
Next steps

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/23/2018 12:20:59 AM
To: Neverley Shoemake (shoemake.neverley@epa.gov) [shoemake.neverley@epa.gov]; Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]; Matthew LaCroix (LaCroix.Matthew@epa.gov) [LaCroix.Matthew@epa.gov]; Christopher Meade (Meade.Chris@epa.gov) [Meade.Chris@epa.gov]; Cindi Godsey (Godsey.Cindi@epa.gov) [Godsey.Cindi@epa.gov]; Karl Pepple (Pepple.Karl@epa.gov) [Pepple.Karl@epa.gov]; Jay McAlpine (McAlpine.Jay@epa.gov) [McAlpine.Jay@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Palmer Hough (Hough.Palmer@epa.gov) [Hough.Palmer@epa.gov]; Timothy Maley (maley.timothy@epa.gov) [maley.timothy@epa.gov]; Chris Eckley (Eckley.Chris@epa.gov) [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gc Conference Line/Code / Ex. 6
Conference Line/Code / Ex. 6
CC: Douglas, Mark [douglas.mark@epa.gov]; Kate Schofield (Schofield.Kate@epa.gov) [Schofield.Kate@epa.gov]; Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
BCC: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center [R10Sea-Room-14WallaWalla@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/25/2018 9:00:00 PM
End: 10/25/2018 10:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Pebble permit team meeting

Hi all, I moved this meeting out by an hour due to a conflict that Molly and I have with another meeting.
Also, note the change in meeting location (14- Walla Walla)

Conference Line/Code / Ex. 6

Agenda

- Updated project description available
- EIS section reviews
  - Current – dry stack, intro to sections 3 and 4
  - Upcoming – revised sections of chapters 3 and 4
- Report on 10/24 cooperating agency meeting

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/23/2018 12:20:58 AM
BCC: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/25/2018 9:00:00 PM
End: 10/25/2018 10:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

Pebble permit team meeting

Hi all, I moved this meeting out by an hour due to a conflict that Molly and I have with another meeting. Also, note the change in meeting location (14- Walla Walla)

Conference Line/Code / Ex. 6

Agenda

- Updated project description available
- EIS section reviews
    - Current – dry stack, intro to sections 3 and 4
    - Upcoming – revised sections of chapters 3 and 4
- Report on 10/24 cooperating agency meeting

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/10/2018 4:30:48 PM
To: Ortiz, Michael [Ortiz.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]
CC: Murphy, Stacy [Murphy.Stacy@epa.gov]; Herbst, John [herbst.john@epa.gov]
Subject: RE: RTOC Standing Issues Table - EPA Updates by 9/12

Hi Michael –
I just wanted to let you know that I completed my updates on Pebble (NEPA) **Non-Responsive: Unrelated to Bristol Bay/Pebble** RTOC issues table per the link below.
Please let me know if you have questions.
Patty

From: Ortiz, Michael
Sent: Tuesday, September 4, 2018 2:22 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Shaw, Hanh <Shaw.Hanh@epa.gov>; Szelag, Matthew <Szelag.Matthew@epa.gov>; Davis, Michelle V. <Davis.MichelleV@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Bottcher, Helen <Bottcher.Helen@epa.gov>; Zhen, Davis <Zhen.Davis@epa.gov>
Cc: Murphy, Stacy <Murphy.Stacy@epa.gov>; Ortiz, Michael <Ortiz.Michael@epa.gov>; Herbst, John <herbst.john@epa.gov>
Subject: RTOC Standing Issues Table - EPA Updates by 9/12

Hello,

The next EPA Region 10 Tribal Operations Committee (RTOC) quarterly meeting will be held on September 18th- 20th here in the EPA Seattle Offices. Please provide any updates that you may have to the RTOC Standing Issues **by Friday, September 12st.** These updates will be shared with the RTOC electronically prior to their meeting.

The RTOC Standing Issues is available on OneDrive located at:

Internal Website/ Ex. 6

Let me know if you have any questions or need any additional information about this quarterly RTOC request.

Also, I want to take a moment to inform you that I will be officially taking over RTOC Coordinator duties for JR on October 1st. I want to announce this as you will be seeing emails from me associated with this work in the future.

Thanks for your time!

Michael Ortiz
Tribal Trust and Assistance Unit
U.S. Environmental Protection Agency, Region 10
1200 6th Ave Seattle, WA 98101
(206)553-6234

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/7/2018 9:55:26 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Draft Bristol Bay Check-in Cancellation and Update

Hi Erik-
I added some info to the Permit/NEPA bullet. Molly and Ashley, feel free to add any additional edits.
Patty

From: Peterson, Erik
Sent: Friday, September 7, 2018 12:28 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Draft Bristol Bay Check-in Cancellation and Update

Patty, Molly and Ashley,

David Allnutt is working next week but traveling on September 11th. Because he will be traveling, I propose we cancel the 9/11 BB check-in. In place of the meeting, I suggest an update that we would send to the whole invite check-in invite list. Below is a draft update, please provide feedback – ideally no later than mid-day September 10th.

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation
- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- It is not clear whether we will be provided with another opportunity to review these chapters before the draft EIS. The Corps has indicated that there will be technical meetings in October/November to discuss comments and the impact assessment.

Alternatives

AMERICAN OVERSIGHT

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule

- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

404(c) Team

FOIA

- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response

- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA

- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings

- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file

- An OGC clerk has completed a summary of court decisions on challenges to agencies withdrawing proposals.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/23/2018 7:46:43 PM
To: Davis, Michelle V. [Davis.MichelleV@epa.gov]
Subject: RE: Talking points for michelle Pirzadeh for June RTOC meeting

Hi Michelle-

Non-Responsive: Unrelated to Bristol Bay/Pebble

From: Davis, Michelle V.
Sent: Friday, May 18, 2018 9:45 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Talking points for michelle Pirzadeh for June RTOC meeting

Good morning Patty;

I'm helping to pull together the talking points for the June RTOC meeting. Below are bullets you provided last time, would you like to update them? My goal is to send them out for review late next week. Michelle has asked us to format them as bullet points, so you will see they changed slightly.

Non-Responsive: Unrelated to Bristol Bay/Pebble

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble

Also, on the last call, Billy Maines, Curyung Tribal Council, asked if there were any Pebble updates, and specifically asked how is it going coordinating with the Corp. Michelle said that the timelines are challenging but we are making it work. He said that Curyung is requesting cooperating agency status, and will also continue to work with them. If there is anything you'd like to share re: Pebble, that would be appreciated.

If it works for you, I have also sent a link to update via OneDrive.

Thanks Patty.

Michelle V. Davis
US EPA Tribal Coordinator
(907) 271-3434
https://www.epa.gov/tribal/region-10-tribal-programs

Weave for me a garment of brightness, that I may walk at peace among the birds.
Weave for me a garment of brightness, that I may walk at peace among the grass.
M. Scott Momaday

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/23/2018 5:45:21 PM
To: Mary Thiesing (Thiesing.Mary@epa.gov) [Thiesing.Mary@epa.gov]
Subject: mine tailings comment

Hi Mary Anne –

I just wanted you to be aware that I added the following draft 404 related language to the Pebble draft scoping

Deliberative Process / Ex. 5

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/23/2018 3:59:15 PM
To: Davis, Michelle V. [Davis.MichelleV@epa.gov]
Subject: RE: Talking points for michelle Pirzadeh for June RTOC meeting - Reminder

Hi Michelle –
Following are updated talking points related to Pebble:

Bristol Bay Pebble: Michelle Pirzadeh (Revised and optional) Drafted for April meeting.

- On February 28, 2018, EPA suspended its process to withdraw proposed restrictions on the discharge of dredged or fill material related to mining the Pebble deposit.
- The proposed determinations are in place while EPA receives more information on the potential impacts.
- Eric Peterson is EPA's team lead for this process with Palmer Hough from EPA's Office of Water in DC.

- Pebble Limited Partnership submitted a Clean Water Act 404 permit application to the U.S. Army Corps of Engineers on December 22, 2017, which was accepted.
- The Corps started the NEPA process and will be the lead agency in developing the EIS.
- EPA is a cooperating agency in the EIS process and also has a role in reviewing the CWA 404 application and the State of Alaska's wastewater discharge and air permits.

- Tribes will have an opportunity to provide input into the EIS process during consultation meetings with the Corps and during public comment periods.
- In addition, we understand that the Corps has included two tribal governments as cooperating agencies.
- In April the Corps initiated the EIS scoping public comment period, which ends on June 29. The purpose of the scoping period is for the public to submit comments on the scope of the EIS
- (**Patty McGrath is R10's point of contact related to NEPA and permitting oversight**).

From: Davis, Michelle V.
Sent: Tuesday, May 22, 2018 9:24 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: Talking points for michelle Pirzadeh for June RTOC meeting - Reminder

Good morning Patty;

I'm in the final steps of drafting talking points. The RTOC team, JR, Michael and me are busy with preparations for the June RTOC meeting. As you know, transboundary mining is one of the tribes main concerns in SE. The RTOC Chair, Billy Maines also asked for a Pebble update. Here's what I have from an earlier meeting. Note, the DRA has asked us for a bulleted format, so this may look a little different than you submitted. Please call with questions or concerns. I would like to send the draft points forward for review by tomorrow morning. Best, Michelle

Bristol Bay Pebble: Michelle Pirzadeh (Revised and optional) Drafted for April meeting.

- On February 28, 2018, EPA suspended its process to withdraw proposed restrictions on the discharge of dredged or fill material related to mining the Pebble deposit.

AMERICAN OVERSIGHT

- The proposed determinations are in place while EPA receives more information on the potential impacts.
- Eric Peterson is EPA's team lead for this process with Palmer Hough from EPA's Office of Water in DC.

- Pebble Limited Partnership submitted a Clean Water Act 404 permit application to the U.S. Army Corps of Engineers on December 22, 2017, which was accepted.
- The Corps will begin the NEPA process and development of an Environmental Impact Statement (EIS).
- The Corp is lead agency in developing the EIS and EPA will be a cooperating agency.
- EPA will review the CWA 404 application and the State of Alaska's wastewater discharge and air permits.

- Tribes will have an opportunity to provide input into the EIS process during consultation meetings with the Corps and during public comment periods.
- The first public comment period will be the EIS scoping period which is anticipated to start within the next few months. (**Patty McGrath is R10's point of contact**).

Here's a link to OneDrive.

Internal Website / Ex. 6

Michelle V. Davis
US EPA Tribal Coordinator
(907) 271-3434
https://www.epa.gov/tribal/region-10-tribal-programs

Weave for me a garment of brightness, that I may walk at peace among the birds. Weave for me a garment of brightness, that I may walk at peace among the grass.
M. Scott Momaday

From: Davis, Michelle V.
Sent: Friday, May 18, 2018 8:45 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Talking points for michelle Pirzadeh for June RTOC meeting

Good morning Patty;

I'm helping to pull together the talking points for the June RTOC meeting. Below are bullets you provided last time, would you like to update them? My goal is to send them out for review late next week. Michelle has asked us to format them as bullet points, so you will see they changed slightly.

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

Also, on the last call, Billy Maines, Curyung Tribal Council, asked if there were any Pebble updates, and specifically asked how is it going coordinating with the Corp. Michelle said that the timelines are challenging but we are making it work. He said that Curyung is requesting cooperating agency status, and will also continue to work with them. If there is anything you'd like to share re: Pebble, that would be appreciated.

If it works for you, I have also sent a link to update via OneDrive.

Thanks Patty.

Michelle V. Davis
US EPA Tribal Coordinator
(907) 271-3434
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M. Scott Momaday

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/22/2018 5:08:31 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) [Vaughan.Molly@epa.gov]
Subject: FW: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)
Attachments: 10_10_2018_Project_description_Update.pdf

Molly-
Were you able to open this document?
I could not get it to open.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, October 19, 2018 3:08 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the updated Project Description produced by the applicant associated with the May 11, 2018 Memo.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

Sent: 6/25/2018 8:08:24 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]
Subject: RE: Pebble site visit

All-
I talked to Pebble. As is being done for Mark Douglas' trip, Pebble has resrverd the flights out of Anchoarge and has provided our names to Ilimana Air taxi.
Therefore, our seats are already reserved. We will pay Illiamna Air taxi on the day of the flight.

For the site visit we will fly from Anchroage to Kokhanok and board the helicopters there. From Kokhanok we will travel by helicopter over the road route to the mine site and toru the mine site. At the end of the tour we will depart from Iliamna back to Anahcorage.

The flight costs for Anchorage-Kokhanok and Iliamna-Acnhorage is $500.

Helicopter costs per below.

Patty

From: Smith, Marla J.
Sent: Monday, June 25, 2018 12:30 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Kelly, Christine M <kelly.christinem@epa.gov>
Subject: RE: Pebble site visit
Importance: High

Hi All,

Before you make your travel arrangements, Patty McGrath is going to check with Pebble on the Illiamna Air piece to see if they have already held seats for you.
Patty will let you know asap.

Thanks,
Marla

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 11:54 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Molly, Tim, and Chris –

Our Pebble site visit is confirmed for July 31. Please submit your TAs ASAP. ARE funding is available for this trip but needs to be obligated.

AMERICAN OVERSIGHT

Following is information for the TAs.

Seattle travelers –
7/30 – fly to Anchorage and stay overnight

All travelers –
7/31:
8 am flight from Anchorage to Iliamna via Illiamna Air Taxi (arrive Iliamna at 9 am)
9:00 – 3:30 – Pebble site visit (mine site, road, ports) - this will entail helicopter time. The cost estimate for the helicopter portion is $1200 per person (note PLP will invoice us for the exact amount)
4:30 – flight from Iliamna back to Anchorage (should arrive in Anchorage at 5:30)

Seattle travelers - you can return to Seattle on 7/31 as there are late flights leaving Anchorage – or overnight and leave Anchorage on 8/1. I will likely leave the morning of 8/1.

Please let Molly and I know if you have questions.

I am also ccing Marla who has been helpful with previous travel to Pebble.

Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

Sent: 6/25/2018 8:13:47 PM
To: Smith, Marla J. [Smith.MarlaJ@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]
Subject: RE: Pebble site visit

All-
I talked to Pebble. As is being done for Mark Douglas' trip, Pebble has reserved the flights out of Anchorage and has provided our names to Ilimana Air taxi.
Therefore, our seats are already reserved. We will pay Illiamna Air taxi on the day of the flight.

For the site visit we will fly from Anchorage to Kokhanok and board the helicopter there. From Kokhanok we will travel by helicopter over the ports and road route to the mine site and tour the mine site. At the end of the tour we will depart from Iliamna back to Anchorage.

The flight costs for Anchorage-Kokhanok and Iliamna-Anchorage is $500.

Helicopter costs per below.

Patty

From: Smith, Marla J.
Sent: Monday, June 25, 2018 12:30 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>; Kelly, Christine M <kelly.christinem@epa.gov>
Subject: RE: Pebble site visit
Importance: High

Hi All,

Before you make your travel arrangements, Patty McGrath is going to check with Pebble on the Illiamna Air piece to see if they have already held seats for you.
Patty will let you know asap.

Thanks,
Marla

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 11:54 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Smith, Marla J. <Smith.MarlaJ@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Molly, Tim, and Chris –

Our Pebble site visit is confirmed for July 31. Please submit your TAs ASAP. ARE funding is available for this trip but needs to be obligated.

AMERICAN OVERSIGHT

Following is information for the TAs.

Seattle travelers –
7/30 – fly to Anchorage and stay overnight

All travelers –
7/31:
8 am flight from Anchorage to Iliamna via Illiamna Air Taxi (arrive Iliamna at 9 am)
9:00 – 3:30 – Pebble site visit (mine site, road, ports) - this will entail helicopter time. The cost estimate for the helicopter portion is $1200 per person (note PLP will invoice us for the exact amount)
4:30 – flight from Iliamna back to Anchorage (should arrive in Anchorage at 5:30)

Seattle travelers - you can return to Seattle on 7/31 as there are late flights leaving Anchorage – or overnight and leave Anchorage on 8/1. I will likely leave the morning of 8/1.

Please let Molly and I know if you have questions.

I am also ccing Marla who has been helpful with previous travel to Pebble.

Thanks - Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

Sent: 7/26/2018 8:51:49 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]
CC: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Ashley Palomaki (Palomaki.Ashley@epa.gov) [Palomaki.Ashley@epa.gov]; Erik Peterson (Peterson.Erik@epa.gov) [Peterson.Erik@epa.gov]
Subject: FW: AOO director briefing materials
Attachments: BB Presentation_AOO_20180723.pptx; Bristol Bay Spript - AOO Briefing_20180723.docx

Hi Chris and Michelle-
Palmer informed us of a briefing tomorrow related to Pebble. The briefing materials are those used to brief Sue Detwiler on Monday.
It looks like Chris has been invited. Please let me know if you need any support or have questions.
Patty

From: Hough, Palmer
Sent: Thursday, July 26, 2018 1:26 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: AOO director briefing materials

Folks:

I just wanted to give you a heads-up that the materials that you used to brief the new AOO will be used tomorrow to brief Henry Darwin, EPA's chief of operations.

It is my understanding that Lee Forsgren will be leading the briefing and John Goodin and Brian Frazer from OWOW will be present as well. Brian indicated that Chris Hladick has also been invited but it is not clear that he has accepted this invite.

That is basically all I know about this briefing.

-Palmer

From: Palomaki, Ashley
Sent: Monday, July 23, 2018 2:22 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: FW: AOO director briefing materials

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Tuesday, July 17, 2018 11:32 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: AOO director briefing materials

AMERICAN OVERSIGHT

Hi Erik and Ashley-
Attached is the PP and script, with edits accepted, for the briefing with Sue next Monday.
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/7/2018 11:59:30 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: Please Review - current draft of Pebble Letter

Importance: High

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

 Pebble Project Scoping 050818 draft.docx

<!--[endif]-->

Hi Chris,
I have to leave for the day and didn't see any edits from you yet on the Sharepoint site version. So, so make things go more quickly, here is the current version of the document on my OneDrive. I need to send this to Patty ASAP when I come in tomorrow. Please make any edits directly in this document using track changes. As a reminder, the specific section for your review is titled "Marine Environment". It begins in the middle of Page 13 of this version, and ends top of page 15. In particular, please add the appropriate text we've discussed in place of the italicized text on page 14.

If you've already begun edits on another version, no need to switch gears now, just send those to me and I will consolidate in the morning.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [nogi.jill@epa.gov]
Sent: 5/8/2018 4:28:53 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Please Review - current draft of Pebble Letter

Importance: High

<!--[if lte mso 15 || CheckWebRef]-->

Nogi, Jill has shared a OneDrive for Business file with you. To view it, click the link below.


Pebble Project Scoping 050818 draft.docx

<!--[endif]-->
Chris,
I hope that you are doing well. Molly called this morning with her concern that she needs to keep the scoping letter moving through the internal review process as it needs to go to Patty McGrath today. As per her message below, she needs you to review the section related to dredged material management (pages 13-15) and provide any necessary edits, as well as adding a few sentences to the letter regarding upland disposal. The review schedule is tight and I anticipate that you only need to take about 30 minutes today to assist Molly with this. I know that you have been great about sharing your concerns with the team over the phone, so it should be a pretty easy task for you to complete your contributions to the scoping letter today. If Molly hasn't heard from you by 2pm today, I will need to reach out to Justine to see if she can make the time to provide input related to dredged material management. Justine doesn't have the background with this project however – so she would need to hear from you all about your involvement to date – which could take more time than having you edit it and send it back to Molly.

Please make responding to Molly your first priority when you get in to the office today, and take care of this as soon as you are able.
Thank you!
Jill

From: Vaughan, Molly
Sent: Monday, May 07, 2018 5:00 PM
To: Meade, Christopher <Meade.Chris@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Please Review - current draft of Pebble Letter
Importance: High

Hi Chris,
I have to leave for the day and didn't see any edits from you yet on the Sharepoint site version. So, so make things go more quickly, here is the current version of the document on my OneDrive. I need to send this to Patty ASAP when I come in tomorrow. Please make any edits directly in this document using track changes. As a reminder, the specific section for your review is titled "Marine Environment". It begins in the middle of Page 13 of this version, and ends top of page 15. In particular, please add the appropriate text we've discussed in place of the italicized text on page 14.

If you've already begun edits on another version, no need to switch gears now, just send those to me and I will consolidate in the morning.

Thank you,
Molly

AMERICAN OVERSIGHT

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/9/2018 9:44:13 PM
To: Meade, Christopher [Meade.Chris@epa.gov]
Subject: Here are my comments on the dredging section...please take a look and use what you like...call if we need to discuss!
Attachments: Pebble Project Scoping 050818 draft w JB.docx

I just had a few comments…hopefully you can put them directly in the version you are working on. Don't forget the

Deliberative Process / Ex. 5

JB ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/26/2018 3:47:59 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 4/26/2018 8:00:00 PM
End: 4/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/24/2018 4:34:56 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 5/24/2018 8:00:00 PM
End: 5/24/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/28/2018 7:54:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 6/28/2018 8:00:00 PM
End: 6/28/2018 9:00:00 PM
Show Time As: Free

Importance: High

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/25/2018 6:55:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/26/2018 8:00:00 PM
End: 7/26/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/22/2018 11:30:43 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Meade, Christopher [Meade.Chris@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM

AMERICAN OVERSIGHT

Message

From: Meade, Christopher [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C70E5264633A4B6C81DF859F211876D3-MEADE, CHRIS]
Sent: 5/29/2018 6:31:36 PM
To: Lohrman, Bridgette [lohrman.bridgette@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]; Hoffman, Erika [Hoffman.Erika@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Team call today (5/29)
Attachments: 052918 Chris Meade Workload Transition Table.docx

See draft table attached.

From: Lohrman, Bridgette
Sent: Tuesday, May 29, 2018 10:25 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Hoffman, Erika <Hoffman.Erika@epa.gov>; Lohrman, Bridgette <lohrman.bridgette@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Team call today (5/29)

Hello –

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Conference Line/Code / Ex. 6

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Oregon Operations Office | 805 SW Broadway, Suite 500 | Portland, OR 97205 | 503.326.4006 | lohrman.bridgette@epa.gov

AMERICAN OVERSIGHT

Transition Plan for Chris Meade's Workload – as of 5.31.18

Project/Workgroup/Activity	Contact(s) (EPA & External)	Current Status/Description	Upcoming Milestone(s)/Next Steps	Transition Status: Recommended need for Immediate Re-assignment? Y/N	% FTE/How Much Time it Might Take to Complete
Non-Responsive: Unrelated to Bristol Bay/Pebble Mine					

AMERICAN OVERSIGHT

Pebble Project	Patty McGrath, EPA Shane McCoy, ACE	Applicant recently dropped dredging in favor of lightering.	Scoping comments sooner, alternative development later. **Deliberative Process / Ex. 5**	Yes.	< 0.1 FTE

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/21/2018 11:04:32 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]

Subject: Check-in
Location: Jill's Office

Start: 12/14/2018 6:30:00 PM
End: 12/14/2018 7:00:00 PM
Show Time As: Busy

Aiming to ensure there is a time for us to check-in before the break.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Bristol Bay

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/13/2018 10:45:27 PM

Subject: Pebble

Start: 11/20/2018 2:00:00 PM
End: 11/20/2018 2:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 10/30/2018 6:12:35 PM
To: Nogi, Jill [nogi.jill@epa.gov]

Subject: **Non-Res** pebble comments

Start: 11/20/2018 2:30:00 PM
End: 11/20/2018 3:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 10/23/2018 8:18:23 PM

Subject: pebble letter

Start: 10/30/2018 3:00:00 PM
End: 10/30/2018 4:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:14:41 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Bristol Bay Check-in; Bristol Bay Check-in; Untitled Attachment; Untitled Attachment; Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Busy

Recurrence: (none)

Suggesting change to this meeting given scheduling constraints.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

Agenda

NEPA preliminary EIS comments

Briefing

FOIA

Information Quality Act Request for Correction or Withdrawal

404c rulemaking

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0ecba75a9f9448d3980a693951129e64-Peterson, Erik]
Sent: 10/9/2018 3:48:24 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

AMERICAN OVERSIGHT

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

AMERICAN OVERSIGHT

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Thiesing, Mary [Thiesing.Mary@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 1/1/2019 5:00:00 PM
End: 1/1/2019 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Fordham, Tami [Fordham.Tami@epa.gov]
Sent: 7/5/2018 8:27:31 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; R10AOO-ConfLnO365-Restricted-2051053 [R10AOO-ConfLnO365-Restricted-2051053@epa.gov]
CC: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: FW: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Fordham, Tami
Sent: Thursday, July 5, 2018 12:29 PM
To: Fordham, Tami; McGrath, Patricia; Palomaki, Ashley; Douglas, Mark; Detwiler, Susan K.; R10AOO-ConfLnO365-Restricted-2051053
Cc: Vaughan, Molly; Anderson-Carnahan, Linda; Peterson, Erik; Steiner-Riley, Cara
Subject: Pebble Overview for AOO Director
When: Monday, July 23, 2018 10:00 AM-11:00 AM (UTC-09:00) Alaska.
Where: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Sue and I will be in Seattle, looking forward to seeing most of you in person. Thanks! Tami

→ Join Skype Meeting

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

Join by Phone

Conference Line/Code / Ex. 6

Help

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/25/2018 2:46:11 AM

Subject: send PLP letter to DA and TF, through onedrive

Start: 5/25/2018 1:00:00 PM
End: 5/25/2018 1:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/16/2018 5:11:28 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Bristol Bay Check-in; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
Occurs on Wednesday every other week from 9:00 AM to 10:00 AM effective 6/20/2018 until 7/18/2018.

AMERICAN OVERSIGHT

Appointment

From: Kelly, Christine M [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6b60de9f09f749b6a5ccd7f30fe4a26e-Kelly, Chri]
Sent: 6/25/2018 8:03:39 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Sent: 4/24/2018 9:43:51 PM
To: Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]

Subject: Monthly Alaska Projects Update Conference Line/Code / Ex. 6
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 5/24/2018 5:30:00 PM
End: 5/24/2018 6:30:00 PM
Show Time As: Busy

Recurrence: Monthly
the fourth Thursday of every 1 month(s) from 9:30 AM to 10:30 AM

This is the monthly meeting for ERSMU, ARU, AOO, R10 Mining Sector and Alaska O&G Sector to provide updates on Alaska projects and issues.

AMERICAN OVERSIGHT

Appointment

Start: 5/24/2018 5:30:00 PM
End: 5/24/2018 6:30:00 PM
Show Time As: Busy

Recurrence: (none)

This is the monthly meeting for ERSMU, ARU, AOO, R10 Mining Sector and Alaska O&G Sector to provide updates on Alaska projects and issues. W

Non-Responsive:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Went around and shared information - trip on NS
Donlin, Pebble, CA invitations,

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble

. Mark Douglas joining the team for
Matt – swapping AK LNG with Pebble -

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Nonresponsive Unrelated to Pebble/ Ex. 6

Pebble timing with Lee's trip

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsiv - pebble folks see memo

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

To: Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]

CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; R10AOO-ConfLnMM-907-271-2895/AOO-Meet-Me-Ln/R10-AOO-Eqpt

Location: R10AOO-Room-Large-30-VTC/R10-Rooms-A[Conference Line/Code / Ex. 6]Me-Ln/R10-AOO-Eqpt

Start: 6/28/2018 5:30:00 PM
End: 6/28/2018 6:30:00 PM

Recurrence: (none)

I added the AOO Large Conference Room since there are now four of us in AOO.

For folks in calling in, [Conference Line/Code / Ex. 6] *Thanks!*

This is the monthly meeting for ERSMU, ARU, AOO, R10 Mining Sector and Alaska O&G Sector to provide updates on Alaska projects and issues.

AMERICAN OVERSIGHT

Appointment

To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Somers, Elaine [somers.elaine@epa.gov]

Start: 8/23/2018 5:30:00 PM
End: 8/23/2018 6:30:00 PM
Show Time As: Busy

Recurrence: (none)

This is the monthly meeting for ERSMU, ARU, AOO, R10 Mining Sector and Alaska O&G Sector to provide updates on Alaska projects and issues.

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]

Start: 9/27/2018 5:30:00 PM
End: 9/27/2018 6:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Start: 11/22/2018 6:30:00 PM
End: 11/22/2018 7:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]

Start: 10/25/2018 5:30:00 PM
End: 10/25/2018 6:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]

Start: 12/27/2018 6:30:00 PM
End: 12/27/2018 7:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 8/7/2018 9:00:11 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Conversation with Anderson-Carnahan, Linda

Anderson-Carnahan, Linda 9:44 AM:
Is Theo involved in Pebble??

Nogi, Jill 9:44 AM:
no.

Anderson-Carnahan, Linda 9:46 AM:
Barry put him on the agenda for the all-staff to talk about Pebble.

Nogi, Jill 9:49 AM:
I talked with Barry on Friday and he was taking it off the agenda all together. Patty isn't in town and others that went on the site visit are also away. Patty said that they wouldn't have time to pull things together right now with everything else going on, so I think he's got a revised agenda to share that doesn't have AK on it at all...

Anderson-Carnahan, Linda 9:51 AM:
Getting a little late to be changing the agenda and we had asked people to be here for the all-staff. What is going in place instead? I may talk to Patty.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 8/6/2018 6:33:04 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Conversation with Anderson-Carnahan, Linda

Anderson-Carnahan, Linda 9:44 AM:
Is Theo involved in Pebble??

Nogi, Jill 9:44 AM:
no.

Anderson-Carnahan, Linda 9:46 AM:
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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 8/6/2018 4:59:36 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Conversation with Anderson-Carnahan, Linda

Anderson-Carnahan, Linda 9:44 AM:
Is Theo involved in Pebble??

Nogi, Jill 9:44 AM:
no.

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Anderson-Carnahan, Linda 9:51 AM:
Getting a little late to be changing the agenda and we had asked people to be here for the all-staff. What is going in place instead? I may talk to Patty.

AMERICAN OVERSIGHT

Message

From: Anderson-Carnahan, Linda [anderson-carnahan.linda@epa.gov]
Sent: 8/6/2018 4:48:08 PM
To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Conversation with Anderson-Carnahan, Linda

Anderson-Carnahan, Linda 9:44 AM:
Is Theo involved in Pebble??

Nogi, Jill 9:44 AM:
no.

Anderson-Carnahan, Linda 9:46 AM:
Barry put him on the agenda for the all-staff to talk about Pebble.

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/24/2018 9:47:13 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Hot Topics from ERSMU today

Just finished the meeting and am writing some notes up for you now. I asked Linda (no David present) whether Snake and Pebble had been put in Hot Topics and she told me to check myself on the Info Page…so will do that now. JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Nogi, Jill
Sent: Wednesday, October 24, 2018 2:27 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Barton, Justine <Barton.Justine@epa.gov>
Subject: Hot Topics from ERSMU today

Double checking with you while I'm thinking of it. We have the Pebble Hot Topic in the Weekly, **Non-Responsive**

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks! Jill

AMERICAN OVERSIGHT

Message

Sent: 11/2/2018 8:04:10 PM
To: Chu, Rebecca [Chu.Rebecca@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Curtis, Jennifer [Curtis.Jennifer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: PLEASE UPDATE THIS BRIEFING DOC!!! Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

And to add to this, hopefully it's helpful to everyone --

From: Chu, Rebecca
Sent: Friday, November 02, 2018 12:19 PM
To: Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: PLEASE UPDATE THIS BRIEFING DOC!!! Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.
Importance: High

Hi All

Now that we are coordinating on TWO briefing docs for the RA- reminder that the One Drive doc below needs to be updated with the NEPA info by COB today. Please let me know if you don't have access to this doc. As a reminder- these talking points are being drafted for the RA for:

11-16-18 Meeting of Chris H, RA and Col. Borders, DE, Alaska District, Corps of Engineers

Purpose of the meeting: it's a meet-and-greet between the two senior leaders. Topics to cover: EPA and the Army MOA for Alaska District & Large NEPA Projects (ID'd in Jill's email below- Nanushuk, Pebble, Ambler, Willow and Coastal Plain)

Talking Point Need:
AK MOU Talking Points: The current draft talking points came from a discussion with David Allnutt. *Mark, Matt and Mary Anne:* please review and edit for accuracy. *Jennifer/Molly/Erik*- we also identified specific ongoing project where we'd like more coordination with the Corps on to support our "one federal decision" and aggressive timelines. Feel free to review those and edit for NEPA accuracy!
Large NEPA Projects Talking Points: NEPA team- we need your help in getting these sorted out. An idea- maybe you can use our last "MOU Talking Point" of wanting more coordination to support our "one federal decision" as a way to describe the specific large projects so it ties together?

Process and Timeline to Complete the Talking Points:
We need to have the talking points to the RA's office by 11-13. To meet this timeline:

- ***Staff input on draft talking points- pretty much need this by COB today or 11/5 AM at the latest***
- HQ Coordination on programmatic level (for 404 program, Mary Anne lead; for NEPA, ???)- 11/5ish
- Jill/Rebecca Review- 11/5-11/6
- David and Linda review & edit - 11/7-11/9
- David/Linda submit to RA's office by 11/13

Please let me know if I have missed any steps in the review process.

Thanks!!

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Rebecca Chu | Acting Unit Manager
Aquatic Resources Unit
United States Environmental Protection Agency
Region 10
1200 Sixth Ave Suite 900
MS-140
Seattle, WA 98101
(206) 553-1774
Chu.Rebecca@epa.gov

From: Nogi, Jill
Sent: Sunday, October 28, 2018 3:43 PM
To: Chu, Rebecca <Chu.Rebecca@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

Hi Becky,
David and I talked on Friday about having bullet points ready for Chris to bring up with the Colonel regarding our efforts/thinking on Nanushuk, Pebble, Ambler, Willow and Coastal Plain – a number of the big NEPA projects in AK. The Corps is the lead on Pebble and Nanushuk and will be coordinating/collaborating with us regarding our 404/aquatic resource related comments on the BLM-led projects on the list. Jennifer Curtis is the lead point of contact for NEPA for Nanushuk and Molly Vaughan is the lead point of contact on the other projects. David had mentioned that he wanted to talk with Chris about everything we pull together prior to the 16th. If we've set 11/6 as the deadline to get it to David and Linda, I would ask that the NEPA leads please have bullet points/talking points ready for me to take a look by Friday 11/2 – and I can help add points to this as well, if needed, by the 6th.

Please also share your one drive link with Molly and Jennifer – Erik is working on the 404(c) team effort but isn't working on the NEPA EIS review, which would be separate talking points for Chris, if we wanted to bring up both. Thanks everyone – we'll be in good shape getting everything together in plenty of time! Your help in developing this is much appreciated. I'm still home sick – so won't be in on Monday but can catch up with folks (hopefully) Tuesday or later.

Jill

From: Chu, Rebecca
Sent: Friday, October 26, 2018 2:53 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

All

The RA is meeting with the new District Engineer at the Alaska District on 11-16. David has asked us to put together some talking points for the RA, and we're going to get these to David and Linda by 11-6. I understand that David spoke with Jill re: talking points specific to Bristol Bay. So including Jill

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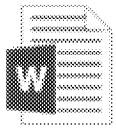
and Eric if they'd like to join ARU in what we're putting together for Linda/David and the RA.

Matt & Mary Anne- my notes are from our discussions. Feel free to reframe and clean up.

This link only works for the direct recipients of this message.



R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders

Open

Microsoft OneDrive

Microsoft respects your privacy. To learn more, please read our Privacy Statement.
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

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Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 10/30/2018 6:24:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Conversation with Vaughan, Molly

Vaughan, Molly 11:21 AM:
Hi Jill - sorry I missed your call, and now I believe you are in a meeting. I will plan to call at noon your time, or feel free to call me if you are available before that.

Vaughan, Molly 11:21 AM:
Regarding Pebble, I apologize that I am still working on the comments, but will send them to you shortly.

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Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/26/2018 11:11:50 PM

Subject: PLP

Start: 12/14/2018 9:00:00 PM
End: 12/14/2018 10:00:00 PM
Show Time As: Busy

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Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/26/2018 11:11:43 PM

Subject: PLP

Start: 12/14/2018 4:30:00 PM
End: 12/14/2018 5:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/26/2018 11:10:14 PM

Subject: PLP

Start: 12/13/2018 10:00:00 PM
End: 12/13/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/26/2018 11:10:07 PM

Subject: PLP

Start: 12/13/2018 9:00:00 PM
End: 12/13/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/26/2018 11:10:01 PM

Subject: HOLD PLP

Start: 12/13/2018 7:00:00 PM
End: 12/13/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 10/30/2018 6:12:14 PM
Subject: Non-Respons Pebble comments

Start: 11/19/2018 2:30:00 PM
End: 11/19/2018 3:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]
Sent: 5/7/2018 8:26:00 PM
To: Hood, Lynne [Hood.Lynne@epa.gov]; Jen, Mark [Jen.Mark@epa.gov]; Kubo, Teresa [Kubo.Teresa@epa.gov]; Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Somers, Elaine [somers.elaine@epa.gov]; Wright, Wendy [Wright.Wendy@epa.gov]
Subject: FW: Workload for today
Attachments: NEPA Workload Report-May7(corrected).pdf

Corrected workload sheet for today.

From: Mbabaliye, Theogene
Sent: Monday, May 7, 2018 10:10 AM
To: Hood, Lynne <Hood.Lynne@epa.gov>; Jen, Mark <Jen.Mark@epa.gov>; Kubo, Teresa <Kubo.Teresa@epa.gov>; Mbabaliye, Theogene <Mbabaliye.Theogene@epa.gov>; Molly Vaughan <vaughan.molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Somers, Elaine <somers.elaine@epa.gov>; Wendy Wright (Wright.Wendy@epa.gov) <Wright.Wendy@epa.gov>
Subject: Workload for today

Hello and Happy Monday!
Attached please find our NEPA workload for today. If any more projects come in before 1:30pm, I'll update the sheet with the same.

Theo

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NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE
Not Assigned							
							Scoping
							Scoping
							Scoping
							Draft Sup
							Draft
							Final
							Final
							Final
							Draft Sup
							Draft
							Final
							Draft
							Draft
Pebble Project, Cooperating Agency, Pebble Mine, AK		18-0002-COE	4/30/2018	6/29/2018		vaughan	Scoping

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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EPA-0135-0006093

NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE

The Following Are Late

CETA Ongoing

AMERICAN OVERSIGHT

Message

From: Duncan, Bruce [Duncan.Bruce@epa.gov]
Sent: 9/10/2018 11:00:55 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Islam, Mahbubul [Islam.Mahbubul@epa.gov]; Kubo, Teresa [Kubo.Teresa@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Bachman, Brenda [bachman.brenda@epa.gov]; Brown, DonaldM [Brown.DonaldM@epa.gov]; Dodo, Gerald [Dodo.Gerald@epa.gov]; Matheny, Don [Matheny.Don@epa.gov]; Pepich, Barry [Pepich.Barry@epa.gov]
Subject: FW: !REMINDER! We need your Hot Topics for RTOC- extended deadline is COB TOMORROW, TUESDAY 9/11!
Attachments: R10 Tribal Hot Topics for RTOC Fall 2017.pdf; R10 Tribal Hot Topics for RTOC Winter 2018.pdf; R10 Tribal Hot Topics for RTOC Spring 2018.pdf; R10 Tribal Hot Topics for RTOC Summer 2018.pdf

Sorry this snuck by me last week, I'll check my tickler set up. The current ORD Strategic Research Action Plan review has been described in the last two newsletters.

I plan to submit:

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

From: Brown, Katherine
Sent: Monday, September 10, 2018 11:18 AM
To: R10-Tribal Specialists Team <R10Tribal_Specialists_Team@epa.gov>
Cc: Murphy, Stacy <Murphy.Stacy@epa.gov>; Wilson, Wenona <Wilson.Wenona@epa.gov>
Subject: !REMINDER! We need your Hot Topics for RTOC- extended deadline is COB TOMORROW, TUESDAY 9/11!

Hello.

It's Hot Topics time again! Last Friday's deadline was extended to tomorrow, Tuesday 9/11, so please get them in.

What? 2-3 Hot Topics for RTOC from each office. **1-2 sentences long**. Request them from management or staff. Find them on the internet. Or make them up. Ask yourself, **what's happening related to programs in my office that R10 tribes might benefit from hearing about**? Track it down and write it up. Edit it to 2 sentences. See examples attached.

Thank you for all you do!

Katherine

x7263

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National News

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

Bristol Bay Determination
EPA is proposing to withdraw its 2014 Clean Water Act Proposed Determination that would have imposed restrictions on the discharge of dredged or fill material associated with the potential Pebble Mine Project. Consultation and coordination with tribes and ANCSA Village and Regional Corporations in the Bristol Bay watershed continues. The public comment period ends October 17. epa.gov/bristolbay

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Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

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National News

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

R10 Office of Environmental Review and Assessment

Bruce Duncan: duncan.bruce@epa.gov, (206) 553-0218

Pebble Project Scoping
The Pebble Partnership submitted a CWA §404 permit application in December. ACOE is the lead agency responsible for analyzing the potential impacts of the project and developing the Environmental Impact Statement. Scoping meetings will be held in several locations in April.

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

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National News

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Reponsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 11/27/2018 12:12:36 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble Mine - Justine Barton Comments
Attachments: Comment_spreadsheet_J_Barton_11-26-18.docx

Hi Molly –

Deliberative Process / Ex. 5

Deliberative Could you take a look and see if these are helpful? Please let me know what else I might include that would be of assistance to you in the topic areas I mentioned above. JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Vaughan, Molly
Sent: Wednesday, November 21, 2018 12:34 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hello All,
We just received word from the Corps that they are extending the deadline for cooperating agency comments on these sections. For all of the sections below, I would now appreciate if you can complete your review and send me any comments you have by COB Monday Dec. 10.
Thank you and Happy Thanksgiving!
--Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

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We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Jennings, Marie [Jennings.Marie@epa.gov]
Sent: 6/19/2018 10:48:49 PM
To: R10-OWW Mail Group [R10OWW_Mail_Group@epa.gov]
CC: Edmondson, Lucy [Edmondson.Lucy@epa.gov]; Grafe, Cyndi [Grafe.Cyndi@epa.gov]; Kenknight, Jeff [Kenknight.Jeff@epa.gov]; MacIntyre, Mark [Macintyre.Mark@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peak, Nicholas [Peak.Nicholas@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wilcox, Michelle [wilcox.michelle@epa.gov]
Subject: OWW Management Meeting Highlights 6/14/18 and 6/18/18

OWW Thursday Management Meeting June 14, 2018

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

-- OERA - David Allnutt mentioned the Alaska trip and the Pebble mine scoping letter. He also mentioned the National Scientific Integrity opportunity

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

OWW Monday Morning Management Meeting June 18, 2018

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Marie J.

AMERICAN OVERSIGHT

Message

From: Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]
Sent: 5/7/2018 5:09:47 PM
To: Hood, Lynne [Hood.Lynne@epa.gov]; Jen, Mark [Jen.Mark@epa.gov]; Kubo, Teresa [Kubo.Teresa@epa.gov]; Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Somers, Elaine [somers.elaine@epa.gov]; Wright, Wendy [Wright.Wendy@epa.gov]
Subject: Workload for today
Attachments: NEPA Workload Report-May7.pdf

Hello and Happy Monday!
Attached please find our NEPA workload for today. If any more projects come in before 1:30pm, I'll update the sheet with the same.

Theo

AMERICAN OVERSIGHT

NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble Project, Cooperating Agency, Pebble Mine, AK	18-0002-COE	4/30/2018	6/29/2018	vaughan		Scoping

AMERICAN OVERSIGHT

NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE

The Following Are Late

CETA Ongoing

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/24/2018 11:41:34 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Acting Report from Monday and Wednesday this week...

You bet!

Non-Resp

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Wednesday, October 24, 2018 4:26 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Acting Report from Monday and Wednesday this week...

Thank you so much Justine! Your notes are very helpful, I appreciate your taking all of this down. I haven't heard

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Have a great afternoon – hopefully it went ok for you today as Acting UM on a Wednesday. Thanks again for all of your help in keeping things moving. You've done a great job.
Jill

From: Barton, Justine
Sent: Wednesday, October 24, 2018 4:13 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: Acting Report from Monday and Wednesday this week...

Hi Jill – Here are things I think will be of interest to you, I've highlighted ones I think are most timely for the week:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

There were a few other things, but frankly with all the acronyms I couldn't get them down, and they didn't sound to me like they would affect ERSMU. That's it from me! ☺

JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 3:29 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thank you! Jill

From: Barton, Justine
Sent: Tuesday, October 23, 2018 2:58 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Jill – Just now off the DMMP monitoring/bioaccum call. Looks like we're set for the Hot Topics for tomorrow…so my plan is just to attend the manager's meeting from 2-3:30 pm tomorrow in your stead. Anything else I should do? JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 11:33 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Thanks to all of your for your help with developing this paragraph. I have submitted it to David/Linda for final review and approval before it goes out through the Weekly tomorrow.

Personal Matters / Ex. 6

From: McGrath, Patricia
Sent: Tuesday, October 23, 2018 10:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Please consider the recommended edits.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 10:37 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Justine and Jill,
Here is my write-up:

Deliberative Process / Ex. 5

Thanks,
Molly

From: Barton, Justine
Sent: Monday, October 22, 2018 11:15 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Hot Topics for ERSMU this week

Hi Molly – I'm acting for Jill today & Wednesday. At today's Hot Topics meeting, Dave asked for a brief paragraph for the Weekly re. #4 below (Pebble Prelim DEIS). Could you get me some sentences before noon on Wednesday that I can forward on to Dave and Linda? Thanks Molly! ☺ JB p.s. FYI -- #1 and #4 are the only ones he asked for… JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.

AMERICAN OVERSIGHT

Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Deliberative Process / Ex. 5

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/24/2018 11:13:20 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Acting Report from Monday and Wednesday this week...

Hi Jill – Here are things I think will be of interest to you, I've highlighted ones I think are most timely for the week:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

There were a few other things, but frankly with all the acronyms I couldn't get them down, and they didn't sound to me like they would affect ERSMU. That's it from me! ☺

JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 3:29 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thank you! Jill

From: Barton, Justine
Sent: Tuesday, October 23, 2018 2:58 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Jill – Just now off the DMMP monitoring/bioaccum call. Looks like we're set for the Hot Topics for tomorrow…so my plan is just to attend the manager's meeting from 2-3:30 pm tomorrow in your stead. Anything else I should do? JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 11:33 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Thanks to all of your for your help with developing this paragraph. I have submitted it to David/Linda for final review and approval before it goes out through the Weekly tomorrow.

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Jill

From: McGrath, Patricia
Sent: Tuesday, October 23, 2018 10:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Please consider the recommended edits.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 10:37 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Justine and Jill,
Here is my write-up:

Deliberative Process / Ex. 5

Thanks,
Molly

From: Barton, Justine
Sent: Monday, October 22, 2018 11:15 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Hot Topics for ERSMU this week

Hi Molly – I'm acting for Jill today & Wednesday. At today's Hot Topics meeting, Dave asked for a brief paragraph for the Weekly re. #4 below (Pebble Prelim DEIS). Could you get me some sentences before noon on Wednesday that I can forward on to Dave and Linda? Thanks Molly! ☺ JB p.s. FYI -- #1 and #4 are the only ones he asked for… JB

AMERICAN OVERSIGHT

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.
Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

AMERICAN OVERSIGHT

Message

From: Somers, Elaine [somers.elaine@epa.gov]
Sent: 8/24/2018 2:20:39 AM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Alaska Projects call notes

Jill,
Here are the notes:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Mining:
Pebble is moving along
Corps is trying to issue DEIS in Feb, 2019.

Deliberative Process / Ex. 5

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Pebble visit travel – we're using charters.

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Message

From: Jennings, Marie [Jennings.Marie@epa.gov]
Sent: 11/1/2018 11:08:23 PM
To: R10-OWW Mail Group [R10OWW_Mail_Group@epa.gov]
CC: Edmondson, Lucy [Edmondson.Lucy@epa.gov]; Grafe, Cyndi [Grafe.Cyndi@epa.gov]; Kenknight, Jeff [Kenknight.Jeff@epa.gov]; MacIntyre, Mark [Macintyre.Mark@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peak, Nicholas [Peak.Nicholas@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wilcox, Michelle [wilcox.michelle@epa.gov]
Subject: RE: OWW Meeting Highlights 10/25/18 and 10/29/18-- Correction

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks Lucy for update.

From: Jennings, Marie
Sent: Thursday, November 01, 2018 9:08 AM
To: R10-OWW Mail Group <R10OWW_Mail_Group@epa.gov>
Cc: Edmondson, Lucy <Edmondson.Lucy@epa.gov>; Grafe, Cyndi <Grafe.Cyndi@epa.gov>; Kenknight, Jeff <Kenknight.Jeff@epa.gov>; MacIntyre, Mark <Macintyre.Mark@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peak, Nicholas <Peak.Nicholas@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Wilcox, Michelle <wilcox.michelle@epa.gov>
Subject: OWW Meeting Highlights 10/25/18 and 10/29/18

OWW Thursday Management Meeting - October 25, 2018

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

legislature. David mentioned that they have 7 days to review the Bristol Bay EIS.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Marie J

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/22/2018 7:08:01 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Hot Topics for ERSMU this week

Hi Jill – I've highlighted the topics Dave wants to carry forward for Wednesday. Lynne and I will handle Snake, and I'll let Molly know re. Pebble Prelim DEIS. Dave will forward #6 to RA on his own. JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.
Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Deliberative Process / Ex. 5

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

AMERICAN OVERSIGHT

Message

From: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Sent: 10/29/2018 6:13:52 PM
To: Chu, Rebecca [Chu.Rebecca@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

Flag: Follow up

Please feel free to edit the Nanushuk information I added this morning as you see fit. It does not exactly fit the section it is in, but there doesn't appear to be another location for it.

From: Chu, Rebecca
Sent: Monday, October 29, 2018 9:55 AM
To: Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

I have shared the link with Jennifer & Molly (Erik already has access).

On the 404 side: the meeting between the RA and the DE is part of our ongoing effort to implement the MOA signed between the Administrator and the Corps specific to Alaska. It's something that we identified as next steps with HQ, who is tracking this closely. I put together some draft talking points that David, Matt, Linda & I discussed in our meeting. The guidance we received was to keep the talking points concise. For what it's worth.

Personal Matters / Ex. 6 hank you Mary Anne and Matt for helping to clean these up for 404.

Rebecca Chu | Acting Unit Manager
Aquatic Resources Unit
United States Environmental Protection Agency
Region 10
1200 Sixth Ave Suite 900
MS-140
Seattle, WA 98101
(206) 553-1774
Chu.Rebecca@epa.gov

From: Nogi, Jill
Sent: Sunday, October 28, 2018 3:43 PM
To: Chu, Rebecca <Chu.Rebecca@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

Hi Becky,
David and I talked on Friday about having bullet points ready for Chris to bring up with the Colonel regarding our efforts/thinking on Nanushuk, Pebble, Ambler, Willow and Coastal Plain – a number of the big NEPA projects in AK. The Corps is the lead on Pebble and Nanushuk and will be coordinating/collaborating with us regarding our 404/aquatic resource related comments on the BLM-led projects on the list. Jennifer Curtis is the lead point of contact for NEPA for

AMERICAN OVERSIGHT

Nanushuk and Molly Vaughan is the lead point of contact on the other projects. David had mentioned that he wanted to talk with Chris about everything we pull together prior to the 16th. If we've set 11/6 as the deadline to get it to David and Linda, I would ask that the NEPA leads please have bullet points/talking points ready for me to take a look by Friday 11/2 – and I can help add points to this as well, if needed, by the 6th.

Please also share your one drive link with Molly and Jennifer – Erik is working on the 404(c) team effort but isn't working on the NEPA EIS review, which would be separate talking points for Chris, if we wanted to bring up both. Thanks everyone – we'll be in good shape getting everything together in plenty of time! Your help in developing this is much appreciated. **Personal Matters / Ex. 6**

Jill

From: Chu, Rebecca
Sent: Friday, October 26, 2018 2:53 PM
To: LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Subject: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

All

The RA is meeting with the new District Engineer at the Alaska District on 11-16. David has asked us to put together some talking points for the RA, and we're going to get these to David and Linda by 11-6. I understand that David spoke with Jill re: talking points specific to Bristol Bay. So including Jill and Eric if they'd like to join ARU in what we're putting together for Linda/David and the RA.

Matt & Mary Anne- my notes are from our discussions. Feel free to reframe and clean up.

This link only works for the direct recipients of this message.

R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Chu, Rebecca [Chu.Rebecca@epa.gov]
Sent: 10/26/2018 9:53:04 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
Subject: Chu, Rebecca shared "R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders" with you.

All

The RA is meeting with the new District Engineer at the Alaska District on 11-16. David has asked us to put together some talking points for the RA, and we're going to get these to David and Linda by 11-6. I understand that David spoke with Jill re: talking points specific to Bristol Bay. So including Jill and Eric if they'd like to join ARU in what we're putting together for Linda/David and the RA.

Matt & Mary Anne- my notes are from our discussions. Feel free to reframe and clean up.

This link only works for the direct recipients of this message.

R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders

Open

Microsoft OneDrive

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/22/2018 3:00:27 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Hot Topics for ERSMU this week

Got it! Take care! JB ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.
Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Deliberative Process / Ex. 5

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

AMERICAN OVERSIGHT

Message

From: Chu, Rebecca [Chu.Rebecca@epa.gov]
Sent: 11/6/2018 5:43:39 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: briefing paper

Jill

I cleaned up the 404 side and a quick summary of projects for the purposes of "talking points" (not tons of details there).

The "talking points" on Pebble need some editing. I am deferring to you on that. Placeholders for those areas that are NEPA specific.

Let me know when you have had a chance to edit, and I'll pass on to Linda and David once you are done.

Rebecca Chu | Acting Unit Manager
Aquatic Resources Unit
United States Environmental Protection Agency
Region 10
1200 Sixth Ave Suite 900
MS-140
Seattle, WA 98101
(206) 553-1774
Chu.Rebecca@epa.gov

From: Nogi, Jill
Sent: Tuesday, November 06, 2018 9:02 AM
To: Chu, Rebecca <Chu.Rebecca@epa.gov>
Subject: briefing paper

Hi Becky – I have windows of time to work on it between 10-11 or 12-1 today. I'm booked solid the rest of the day … so if at all possible, let me know if it will work for you if I take a shot at it during those windows. I'd like to have it ready by the end of the day today if possible – then we can give David some time to do what he wants to do with it before Friday. Thanks! Jill

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 7/18/2018 6:56:03 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has shared 'Pre Draft 3.16 comments draft 071818'

Flag: Follow up

Hi Jill - as we discussed, here are the draft comments on Pebble Preliminary Draft Sections 3.16 and 3.26, for your review if you have time. I plan to finalize these with Patty on Monday when she returns, and transmit to the Corps.
Thank you,
Molly

Open Pre Draft 3.16 comments draft 071818.docx

See more related to Vaughan, Molly in Delve.

 Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/1/2018 6:29:41 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Bi-Weekly Check in with Molly

Yes, I will look for another time. I have two updates I was going to bring up:

1) I expect to send you the draft comments on the Pebble Preliminary Alternatives this afternoon, for your review if interested. They are due to the Corps Wednesday 10/3

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks,
Molly

-----Original Appointment-----
From: Nogi, Jill
Sent: Monday, October 01, 2018 10:25 AM
To: Vaughan, Molly
Subject: Declined: Bi-Weekly Check in with Molly
When: Monday, October 01, 2018 3:00 PM-3:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Molly will call Jill at 3-1841

Molly – can we look to reschedule our call and catch up again some other time soon? I'm working through a FOIA deadline and need to be done today or tomorrow… Sorry about this – I think we're in a good place for now and let's catch up again about FY19 maybe next week, before you come to Seattle…

Thank you!
Jill

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 7/2/2018 11:04:11 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Please Review - Pebble Prelim Ch 3. Comments
Attachments: Pre Draft Ch3 comments draft 070218.docx

Flag: Follow up

Hi Jill – Here are the draft comments on the preliminary Ch3 sections that were shared with EPA for review. These were developed by the review team technical experts, compiled and edited by me, and reviewed by Patty. Please let me know if you have any additional edits, by no later than Thursday morning. Comments are due to the Corps Thursday 7/5.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]
Sent: 6/20/2018 5:20:54 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]
Subject: Pebble EIS letter?

Flag: Follow up

Hi Folks,

Just checking in on the Pebble EIS comments letter….

Timing to send to Corps?

Please remember that before we send the letter, we need to talk through the salient points and our potential messages for any press inquiries.

Thanks!

Suzanne

Suzanne Skadowski
Public Affairs Specialist | Media Relations
U.S. Environmental Protection Agency
Region 10 Pacific Northwest - Seattle
O: 206-553-2160 C: 206-900-3309
Follow us on Twitter! @EPAnorthwest
Like us on Facebook! @eparegion10

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/21/2018 10:02:06 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Pebble

Hi Jill – Just heard from Chris that Pebble has dropped the dredging part of their project (wow!)…so looks like for now

Deliberative Process / Ex. 5 JB ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

AMERICAN OVERSIGHT

Message

From: Meade, Christopher [no-reply@sharepointonline.com]
Sent: 6/1/2018 9:34:02 AM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Meade, Christopher [Meade.Chris@epa.gov]
Subject: Meade, Christopher has shared 'Pebble Mine'

Here's the folder that Meade, Christopher shared with you.

Go to Pebble Mine



Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/30/2018 2:09:46 PM
To: Schaedle, Candi [Schaedle.Candi@epa.gov]
Subject: Region 10 Project Forecast Report -May 30
Attachments: OFA_OP Project Forecast Report 25 May 2018_Region 10.docx

Candi-
Thanks for sharing the template and for answering questions. Region 10 has edited what was shared earlier and added a few projects of potential interest to be included in the report. Please feel free to call me if you need any additional information.
Jill

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/29/2018 11:13:39 PM
To: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Thank you, Jennifer! I appreciate your help with this. I'll send back to Candi tomorrow morning. Take care and talk with you soon.
Jill

From: Curtis, Jennifer
Sent: Tuesday, May 29, 2018 3:33 PM
To: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jill,

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine Please feel free to edit as you see fit.

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 5:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at 206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Rob did mention that he wanted Pebble listed since the AA is aware of this project.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report?

Non-Responsive: Unrelated to Bristol

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I hope this helps!

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>

AMERICAN OVERSIGHT

Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

AMERICAN OVERSIGHT

Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

> All –
>
> We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.
>
> - **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
>   - **Background:**
>   - **EPA Involvement:**
>   - **Status:**
>
> The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.
>
> We really appreciate your assistance on this and apologize for the quick turnaround.
>
> If you have any questions, please let me know.
>
> Many, many thanks again for your help and I hope you have a wonderful weekend!
>
> Candi Schaedle
> NEPA Compliance Division
> 202-564-6121
>
> <Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/29/2018 8:42:06 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)
Attachments: Project Forecast Report 25 May 2018_pm_ACP.docx; Project Forecast Report 25 May 2018_pm_ACP_clean.docx

Hi Jill-
Here is an updated/revised Pebble report from Ashley and I, both clean and track changes versions.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please let me know if you have questions.

Patty

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 6:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at 206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

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To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Right now, I can't state how often this document will need to be updated. But my guess is that it will be monthly to bi-monthly at most. We should know more after we get feedback from the AA – Rob is meeting with her at the end of next week.

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report?

Non-Responsive: Unrelated to Bristol

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for working with us on this! By the way, a lot of people aren't in today, so there's really only the one day next Tuesday to work on this and get it back to you. I think it will be super helpful to understand what makes the cut for being reported on this forecast report, and how often you will be asking the Regions to update it. Is it once a month, bi-monthly, more often – so that if we know things are happening later in the summer in some cases, would you want those reported now as well?

Jill

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Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

I hope this helps!

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Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
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Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

AMERICAN OVERSIGHT

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Sincerely,
Barbara

From: Schaedle, Candi
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Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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-Kathy

Sent from my iPhone

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> We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.
>
> - **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
>   - **Background:**
>   - **EPA Involvement:**
>   - **Status:**
>
> The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.
>
> We really appreciate your assistance on this and apologize for the quick turnaround.
>
> If you have any questions, please let me know.
>
> Many, many thanks again for your help and I hope you have a wonderful weekend!
>
> Candi Schaedle
> NEPA Compliance Division
> 202-564-6121
>
> <Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Message

From: Curtis, Jennifer [Curtis.Jennifer@epa.gov]
Sent: 5/29/2018 3:32:13 PM
To: Nogi, Jill [nogi.jill@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Will do.

From: Nogi, Jill
Sent: Tuesday, May 29, 2018 5:37 AM
To: Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Jennifer and Patty –
More information related to HQ quick turnaround request for you. I wanted to have Candi clarify what needs to be on the report by 9am Pacific/8am AK time tomorrow to meet the deadline. I'm teleworking today so if you want to talk through the request this morning, please feel free to call my work cell at 206-316-0219. We will want to run the Pebble update through Ashley today too. Thanks so much for your help with this! If you are both able to send your edits/additional information to me before you leave the office today, I'll compile and send out to Candi tomorrow morning.

Hope you had a great weekend! Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:15 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Rob did mention that he wanted Pebble listed since the AA is aware of this project.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Right now, I can't state how often this document will need to be updated. But my guess is that it will be monthly to bi-monthly at most. We should know more after we get feedback from the AA – Rob is meeting with her at the end of next week.

From: Nogi, Jill
Sent: Friday, May 25, 2018 1:40 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

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Candi, a few more questions for you. Thank you! I want to make sure whether OFA/OP is mostly interested in the projects for which we anticipate the DEIS to be released (and is that in the next 2 weeks as stated at the top of the report?). The DEIS for Pebble is anticipated this fall on the report that you shared, so not in the next 2 weeks – should it be on here or on a later report?

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Jill

From: Schaedle, Candi
Sent: Friday, May 25, 2018 10:32 AM
To: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I hope this helps!

From: Timmermann, Timothy
Sent: Friday, May 25, 2018 12:58 PM
To: Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux,

AMERICAN OVERSIGHT

Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks for fielding all the questions.

tt

Timothy L. Timmermann, Associate Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
Mail Code OEP 06-3
Boston, MA 02109-3912

Email: timmermann.timothy@epa.gov
Telephone: 617-918-1025
E-Fax: 617-918-0025

From: Rudnick, Barbara
Sent: Friday, May 25, 2018 12:39 PM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Goforth, Kathleen <Goforth.Kathleen@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>; Lapp, Jeffrey <lapp.jeffrey@epa.gov>
Subject: FW: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Hi Candi,

Thanks for the clarification on the request. As with R9's request for extra folks to be included, R3 would appreciate if Jeff Lapp and I were on the contact list.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Sincerely,
Barbara

From: Schaedle, Candi
Sent: Friday, May 25, 2018 11:38 AM
To: Goforth, Kathleen <Goforth.Kathleen@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: RE: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Great questions – I've provided responses that I hope help and provide clarity.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

I will include Connell and Nicole on future emails – thanks for forward the email to them!

From: Goforth, Kathleen
Sent: Friday, May 25, 2018 10:46 AM
To: Schaedle, Candi <Schaedle.Candi@epa.gov>
Cc: Timmermann, Timothy <Timmermann.Timothy@epa.gov>; Musumeci, Grace <Musumeci.Grace@epa.gov>; Rudnick, Barbara <Rudnick.Barbara@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>; Westlake, Kenneth <westlake.kenneth@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Tapp, Joshua <Tapp.Joshua@epa.gov>; Strobel, Philip <Strobel.Philip@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>; Dunning, Connell <Dunning.Connell@epa.gov>; Moutoux, Nicole <Moutoux.Nicole@epa.gov>
Subject: Re: QUICK TURNAROUND: Reporting of Regional projects that are/will be receiving HQ visibility (due no later than 5/30)

Candi -
Thanks for the template. I have a few questions:

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Please include Connell Dunning and Nicole Moutoux on any messages requesting Regional action, especially when fast turnaround is required. That will help us ensure that nothing falls through the cracks if I am out of the office. I've cc'd them on this message.

Thanks -
-Kathy

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Sent from my iPhone

On May 25, 2018, at 7:12 AM, Schaedle, Candi <Schaedle.Candi@epa.gov> wrote:

All –

We have been tasked to identify projects in the Regions that currently are or potentially will be receiving high-level political HQ review, visibility, and/or coordination. We've provided a template that you can use to report any projects – see below and the draft Project Forecast Report that is attached to this email. In the attachment, some projects have been filled in (R10/USACE/Pebble Mine/DEIS and R5/USACE/Seven Hills Mine/DEIS), but please feel free to edit this information.

- **Region/Lead Agency/Project Name/EIS type (Draft, Final, Supplement)/Anticipated (insert date)**
  - **Background:**
  - **EPA Involvement:**
  - **Status:**

The sooner that you can provide us this information, the better. The latest that we can receive this info is by **NOON on Wednesday, May 30th (eastern time)**. If you have nothing to report, please let us know so that we can track this.

We really appreciate your assistance on this and apologize for the quick turnaround.

If you have any questions, please let me know.

Many, many thanks again for your help and I hope you have a wonderful weekend!

Candi Schaedle
NEPA Compliance Division
202-564-6121

<Project Forecast Report 25 May 2018.docx>

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/13/2018 7:37:12 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]
CC: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: pebble site visit

And please hold these dates on your calendar until the actual date is confirmed.
Thanks-Patty

From: McGrath, Patricia
Sent: Wednesday, June 13, 2018 12:33 PM
To: Molly Vaughan (Vaughan.Molly@epa.gov) <Vaughan.Molly@epa.gov>; Chris Eckley (Eckley.Chris@epa.gov) <Eckley.Chris@epa.gov>; Timothy Maley (maley.timothy@epa.gov) <maley.timothy@epa.gov>
Cc: Jill Nogi (nogi.jill@epa.gov) <nogi.jill@epa.gov>
Subject: pebble site visit

Hi All-
Thanks for your quick responses related to the request for available dates for a site visit.
Based on the responses, it looks like the only dates that work are:
7/30 (this would mean Sunday travel to Anchorage for Seattle folks)
7/31
8/20 (this would entail Sunday travel to Anchorage for Seattle folks)
8/21

Chris, Tim and Jill - Please confirm that Sunday afternoon/evening travel is acceptable to you in case the 7/30 and 8/20 dates, otherwise I will just forward the two Tuesday dates (7/31 and 8/21) as options.

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/24/2018 11:44:12 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Pebble NEPA/permitting team - documents for awareness review

And so it goes…. JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 3:48 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website/ Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

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For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 5/24/2018 11:43:39 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: FW: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Deliberative Process / Ex. 5

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Thursday, May 24, 2018 3:43 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hi Justine. Thank you for agreeing to help on the Pebble Project in Chris's absence. Here is the link to the SharePoint site. --Molly

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.


Get the SharePoint mobile app!





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Message

From: Niemiec, Maria J. [niemiec.maria@epa.gov]
Sent: 6/25/2018 5:56:40 PM
To: Detwiler, Susan K. [detwiler.susan@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
CC: Fordham, Tami [Fordham.Tami@epa.gov]
Subject: RE: Pebble site visit

Ms. Sue and Ms. Patty –

Deliberative Process / Ex. 5

Thank you so much.

v/r

Mia Niemiec
Administrative Specialist
EPA/Region 10
Alaska Operations Office
(907) 271-5083

From: Detwiler, Susan K.
Sent: Monday, June 25, 2018 8:44 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Niemiec, Maria J. <niemiec.maria@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>
Subject: RE: Pebble site visit

Deliberative Process / Ex. 5

Sue

From: McGrath, Patricia
Sent: Thursday, June 21, 2018 11:01 AM
To: Detwiler, Susan K. <detwiler.susan@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Pebble site visit

Hi Sue-

A portion of EPA's technical team will be visiting the Pebble project site on July 31.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

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Deliberative Process / Ex. 5

Thanks and welcome to EPA!

Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 10/30/2018 7:57:58 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Draft comments on Pebble Sections - due 10/31
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 103018.docx

Hi Jill,
I apologize for the delay in sending these draft comments to you for review. As we discussed earlier, this is the first "installment" of the preliminary draft EIS sections. Comments are requested by Wednesday 10/31. However, the Corps informed Cooperating Agencies that it would be acceptable to request a few additional days for review of specific documents, where needed, so please let me know if you would like me to request an extension (to Friday?) for these comments.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 11/6/2018 11:23:28 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: Please Review - Pebble Comments Ch3/Ch4 sections due 11/13
Attachments: Comments Sections 3.1_3.5_4.1_4.5 Draft 110618.docx

Flag: Follow up

Hi Jill,
The attached version contains edits made in response to Ashley's review comments. The edits were discussed by Ashley, Patty and myself and address the comments in the comment bubbles. I left in the comments and track changes so you could see what changed and why since the previous version you reviewed. Once I receive and address any additional edits from you, I assume the next step is transmitting these comments to the Corps, but please tell me if there is anyone else you want me to run these by before sending them.
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/8/2018 10:54:49 PM
To: Nogi, Jill [nogi.jill@epa.gov]
Subject: RE: Please Review - current draft of Pebble Letter

Flag: Follow up

Hi Jill,

Personal Matters / Ex. 6 My plan at this point is to send the letter to Patty for her review in its current form. I Personal Matters / Ex. 6 , but will incorporate any comments from Chris (or Justine) Monday morning It will be very problematic to add the comments in any later than that.
Thank you for your help.
--Molly

From: Nogi, Jill
Sent: Tuesday, May 08, 2018 8:29 AM
To: Meade, Christopher <Meade.Chris@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: Please Review - current draft of Pebble Letter
Importance: High

Chris,
I hope that you are doing well. Molly called this morning with her concern that she needs to keep the scoping letter moving through the internal review process as it needs to go to Patty McGrath today. As per her message below, she needs you to review the section related to dredged material management (pages 13-15) and provide any necessary edits, as well as adding a few sentences to the letter regarding upland disposal. The review schedule is tight and I anticipate that you only need to take about 30 minutes today to assist Molly with this. I know that you have been great about sharing your concerns with the team over the phone, so it should be a pretty easy task for you to complete your contributions to the scoping letter today. If Molly hasn't heard from you by 2pm today, I will need to reach out to Justine to see if she can make the time to provide input related to dredged material management. Justine doesn't have the background with this project however – so she would need to hear from you all about your involvement to date – which could take more time than having you edit it and send it back to Molly.

Please make responding to Molly your first priority when you get in to the office today, and take care of this as soon as you are able.
Thank you!
Jill

From: Vaughan, Molly
Sent: Monday, May 07, 2018 5:00 PM
To: Meade, Christopher <Meade.Chris@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Please Review - current draft of Pebble Letter
Importance: High

Hi Chris,
I have to leave for the day and didn't see any edits from you yet on the Sharepoint site version. So, so make things go more quickly, here is the current version of the document on my OneDrive. I need to send this to Patty ASAP when I come in tomorrow. Please make any edits directly in this document using track changes. As a reminder, the specific

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section for your review is titled “Marine Environment”. It begins in the middle of Page 13 of this version, and ends top of page 15. In particular, please add the appropriate text we’ve discussed in place of the italicized text on page 14.

If you’ve already begun edits on another version, no need to switch gears now, just send those to me and I will consolidate in the morning.

Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 7/5/2018 6:17:22 PM
To: Nogi, Jill [nogi.jill@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has shared 'Pre Draft Ch3 Comments draft 070518'

Flag: Follow up

Hi Jill,
I've reviewed your comments and revised accordingly. A few of the comments I was unsure of, so reached out to Patty for her technical expertise. The linked version contains explanations/edits to address some of your questions. Patty and I are both available to discuss if that would be helpful.
Thanks,
Molly

Open Pre Draft Ch3 Comments draft 070518.docx

See more related to Vaughan, Molly in Delve.


Get the SharePoint mobile app!





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Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 7/5/2018 4:14:20 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pre Draft Ch3 comments draft 070218_JN.docx
Attachments: Pre Draft Ch3 comments draft 070218_JN.docx

Thank you for your work on this Molly! It looks good – I have some wording suggestions to share for your consideration. I would be happy to talk through this today if you have time.
Thanks,
Jill

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 4/10/2018 3:32:13 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: BB check-in

Sure Molly, that's fine – I will plan to be there from the beginning, in case NEPA comes up before you are able to call in.
Jill

From: Vaughan, Molly
Sent: Tuesday, April 10, 2018 8:18 AM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: BB check-in

Good morning, Jill. Patty has asked me to cover the NEPA portion of the BB Check-in with David tomorrow since she is out, but I will not be able to call in until approximately halfway through the meeting **Personal Matters / Ex. 6** week. I suspect it will not be a long meeting, and may be over by then. Do you plan to attend? My only NEPA update was going to be sharing the revised internal review schedule for the scoping letter with David. If you will be there, would you be able to cover that piece if I don't call in in time?
Thank you,
Molly

From: McGrath, Patricia
Sent: Friday, April 06, 2018 2:17 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check-in

Hi David-
Personal Matters / Ex. 6 Molly will be providing NEPA/permitting input into the check-in call on Wednesday.

Highlights for this week include:

- Corps extended scoping period to now end on June 29
- Suzanne posted a blurb on our BB site about the EIS and link to Corps' Pebble website. I informed the Corps of this.
- Additional scoping meeting added in New Stuyahok.
- Most cooperating agencies are not participating in the scoping meetings. Exception is the State who will be at the meetings next week. BSEE is attending the Homer and Anchorage meeting. The Corps is providing a conference line. Molly, Neverly, or myself will be calling into the scoping meetings to listen in (except for Homer, Anchorage, and Dillingham). Molly will attend the Anchorage meeting.
- Molly and I had a call with ORD this week. I expect we will get assistance from ORD on fisheries, transportation, and hydrology (though need to verify with hydrologists)
- Molly is off to a good start on our scoping letter
- Based on a call with the Corps today, we will be setting up a 404 strategy meeting between EPA and Corps in May. I will work on that (attendees, agenda, timing, internal strategy) when I return.

Have a good week.
Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 11/21/2018 2:12:38 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: My suggestions on Pre Draft Ch 2
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 111918draft+JN.docx

Internal - Deliberative

Hi team –
Thank you for your review of preliminary draft chapter 2 and for developing our comments. This looks very thorough. You did a nice job preparing our comments. I appreciate the opportunity to review and provide suggestions for consideration. I

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

any questions about my suggestions, you can try to reach me on my work cell while we're in the car tomorrow. I'd be happy to discuss.

Thanks again,
Jill

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 9/21/2018 7:40:16 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-12Maple/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 11/19/2018 9:10:09 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Meeting with Col Brooks FW: Quick Question

Molly,
FYI – I want to share with you, when we can find a few minutes to talk about this, what I heard on Friday. The potential

Deliberative Process / Ex. 5

From: Detwiler, Susan K.
Sent: Monday, November 19, 2018 12:55 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; McCracken, Betsy W. <mccracken.betsy@epa.gov>
Cc: Fordham, Tami <Fordham.Tami@epa.gov>
Subject: Meeting with Col Brooks FW: Quick Question

fyi

From: Detwiler, Susan K.
Sent: Monday, November 19, 2018 10:22 AM
To: Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>
Subject: RE: Quick Question

Meeting was "meet and greet", David Hobbie did most of talking during meeting, Col was in listening

Deliberative Process / Ex. 5

From: Pirzadeh, Michelle
Sent: Monday, November 19, 2018 10:01 AM
To: Detwiler, Susan K. <detwiler.susan@epa.gov>
Subject: Quick Question

Hi Sue,

Just checking to see if there is anything to report about Chris and your meeting with AK Dist Col on Friday.

Thanks,

Michelle

Michelle L. Pirzadeh
Deputy Regional Administrator

AMERICAN OVERSIGHT

U.S. Environmental Protection Agency, Region 10
Office: (206) 553-1234
Cell: (206) 499-1927
Fax: (206) 553-1809

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 10/23/2018 10:43:50 PM
To: Barton, Justine [Barton.Justine@epa.gov]
Subject: RE: Hot Topics for ERSMU this week

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

From: Barton, Justine
Sent: Tuesday, October 23, 2018 3:36 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 3:29 PM
To: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thank you! Jill

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From: Barton, Justine
Sent: Tuesday, October 23, 2018 2:58 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Jill – Just now off the DMMP monitoring/bioaccum call. Looks like we're set for the Hot Topics for tomorrow…so my plan is just to attend the manager's meeting from 2-3:30 pm tomorrow in your stead. Anything else I should do? JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Tuesday, October 23, 2018 11:33 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Thanks to all of your for your help with developing this paragraph. I have submitted it to David/Linda for final review and approval before it goes out through the Weekly tomorrow.
I appreciate Justine's coordination and communication on our unit's Hot Topics while I was out sick yesterday!
Jill

From: McGrath, Patricia
Sent: Tuesday, October 23, 2018 10:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Please consider the recommended edits.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 10:37 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Justine and Jill,

AMERICAN OVERSIGHT

Here is my write-up:

Deliberative Process / Ex. 5

Thanks,
Molly

From: Barton, Justine
Sent: Monday, October 22, 2018 11:15 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Hot Topics for ERSMU this week

Hi Molly – I'm acting for Jill today & Wednesday. At today's Hot Topics meeting, Dave asked for a brief paragraph for the Weekly re. #4 below (Pebble Prelim DEIS). Could you get me some sentences before noon on Wednesday that I can forward on to Dave and Linda? Thanks Molly! ☺ JB p.s. FYI -- #1 and #4 are the only ones he asked for… JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.
Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Deliberative Process / Ex. 5

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

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Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 11/4/2018 10:35:07 PM
To: Kubo, Teresa [Kubo.Teresa@epa.gov]
Subject: RE: Draft agenda/action items

Thank you so much for developing the draft agenda, Teresa. It looks really good – I will also think about some potential options/adjustments -- the One Note or CDX demo are both good possibilities if we want/need to swap some topics.

Thanks, too for the action item table – it's going to be so helpful to have it and be able to update over time. I heard the team wanting to keep a standing check in regarding this follow up, will you share it with the team via OneDrive when you have a chance?

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Non-Responsive: Unrelated For your information, some big things going on in November are the preliminary review of Pebble chapters and possible briefings,

Non-Responsive: Unrelated to

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks again! Take care too – hope it's been a good weekend,
Jill

From: Kubo, Teresa
Sent: Saturday, November 03, 2018 3:11 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Subject: Draft agenda/action items

Hi Jill,

I am attaching my first crack at a draft agenda for the 6th. There are a couple of agenda items that may or may not be timely. If they won't be ready for discussion, another option might be to have Lynne do a OneNote demo for the group. We could also try to set up a demo of the HQ workload tracking system.

I am also attaching a table that outlines action items and leads that were identified during the October retreat.

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Take care,

Teresa

Teresa Kubo
Environmental Review and Sediment Management
US EPA Oregon Operations
805 SW Broadway, Ste 500
Portland, Oregon 97205
Tel. 503-326-2859

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 11/6/2018 8:38:23 PM
To: Chu, Rebecca [Chu.Rebecca@epa.gov]
Subject: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx
Attachments: R10 ORA Briefing Paper and Talking Points Chris Meet and Greet with Col Borders.docx

Hi Becky,
Thanks for your work on this and for coordinating everyone. I tried saving my recommended language back to your OneDrive site and was told it was locked for editing by another user. So, I don't know if I was successful in saving it to your OneDrive site or not! I am attaching here for your use …. I got it down to 3 pages after accepting all the changes. See what you think and let me know if you want me to work on it any more… I'm on a call from 1-2 and then Personal Matters / Ex. 6 Be back in the office in Seattle tomorrow, so if we hear that David/Linda recommend additional adjustments, I can help you pick it up again on Wednesday (then I'm out Th-Fri this week).

Thanks again,
Jill

AMERICAN OVERSIGHT

Message

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/8/2018 8:48:14 PM
To: Allnutt, David [Allnutt.David@epa.gov]
Subject: TCTO and other updates

Personal Matters / Ex. 6

Out.

If Chris really doesn't get comments to Molly today on Pebble, I think we have to move forward with what we have and keep to the schedule. **Personal Matters / Ex. 6** and the letter is supposed to be with Patty. Molly mentioned that she's coming to Seattle next week (for Tribal I guess?) and is giving Ashley a few days to review before it comes to me around the end of next week.

Talk with you tomorrow – feel free to let me know if there's anything you would do differently related to these couple of updates. Thanks! Jill

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Message

From: Schwab, Justin [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EED0F609C0944CC2BBDB05DF3A10AADB-SCHWAB, JUS]
Sent: 6/13/2018 9:48:16 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]
Subject: Re: Alaska docs from reg review

Thank you. Do you have any sense of how quickly these will be moving forward?

Sent from my iPhone

On Jun 13, 2018, at 4:28 PM, Hoppe, Allison <hoppe.allison@epa.gov> wrote:

> Justin,
>
> These are the two Alaska documents we discussed at the end of reg review today. No action is required on your part on these at this time, just sharing for awareness.
>
> Thanks,
>
> Allison Hoppe
> Attorney Advisor
> American Indian & Alaska Native Special Emphasis Program Manager
> Cross-Cutting Issues Law Office
> Office of General Counsel
> U.S. Environmental Protection Agency
> (202) 564-1912
>
> I am an EPA LGBTQ+ Ally. Learn more and take the pledge here.
> Pronouns: She/Her/Hers
>
> <DF edits to Pebble Project Scoping 060518 draft.docx>
> <NorthSlopeOptions_6-8-18 (002).docx>

AMERICAN OVERSIGHT

Appointment

From: Schwab, Justin [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EED0F609C0944CC2BBDB05DF3A10AADB-SCHWAB, JUS]
Sent: 6/5/2018 4:51:06 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Declined: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Schwab, Justin [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EED0F609C0944CC2BBDB05DF3A10AADB-SCHWAB, JUS]
Sent: 6/27/2018 6:34:38 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]
Subject: Fwd: Most recent letter with HQ comments
Attachments: Pebble Project Scoping 060518 draft HQ Review.docx; ATT00001.htm

Sent from my iPhone

Begin forwarded message:

> **From:** "Feeley, Drew (Robert)" <Feeley.Drew@epa.gov>
> **Date:** June 27, 2018 at 2:14:55 PM EDT
> **To:** "Schwab, Justin" <Schwab.Justin@epa.gov>
> **Subject: Fwd: Most recent letter with HQ comments**
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Knight, Kelly" <knight.kelly@epa.gov>
> > **Date:** June 27, 2018 at 11:14:29 AM EDT
> > **To:** "Tomiak, Robert" <tomiak.robert@epa.gov>, "Feeley, Drew (Robert)" <Feeley.Drew@epa.gov>
> > **Subject: FW: Most recent letter with HQ comments**
> >
> > This is the most recent version with HQ comments.
> >
> > ---
> >
> > **From:** Barnhart, Megan
> > **Sent:** Wednesday, June 27, 2018 10:46 AM
> > **To:** Knight, Kelly <knight.kelly@epa.gov>
> > **Subject:** Most recent letter with HQ comments
> >
> > .....
> > Megan Barnhart
> > U.S. Environmental Protection Agency
> > Office of Federal Activities, NEPA Compliance Division
> > William Jefferson Clinton Building
> > 1200 Pennsylvania Avenue, N.W.
> > Washington, DC 20460
> > Phone: 202-564-5936

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/26/2018 8:44:57 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]

Subject: FW: Bristol Bay - High Level Briefing Preparation
Location: David's Office and on the phone

Start: 11/28/2018 7:15:00 PM
End: 11/28/2018 8:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Peterson, Erik
Sent: Wednesday, November 21, 2018 3:27 PM
To: Peterson, Erik; Allnutt, David; Hough, Palmer; Palomaki, Ashley; McGrath, Patricia
Subject: Bristol Bay - High Level Briefing Preparation
When: Wednesday, November 28, 2018 11:15 AM-12:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: David's Office and on the phone

Agenda

- Reason for briefing
- For whom
- Main topics
- Timing
- Next steps

I've created a folder to compile relevant information. If you have useful documents (like briefing papers), scripts or previous presentations etc., then I suggest adding them to the briefings folder at the link below. Ok for it to be too many or imperfect for now, goal is to get relevant source material in one place. We'll organize it better as we go along.

Bristol Bay - Briefings Folder

→ Join by Phone

Conference Line/Code / Ex. 6

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/13/2018 8:30:00 PM
End: 11/13/2018 9:30:00 PM
Show Time As: Busy

Recurrence: (none)

Agenda

FOIA

NEPA Coordination

Congressional Correspondence

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/20/2018 8:30:00 PM
End: 11/20/2018 9:30:00 PM

Recurrence: (none)

BB 404c Team,

I propose we meet on 11/20. See agenda below. Happy to hear feedback on the agenda.

Also, I'd like to discontinue sending the emails with the agenda. I was doing that primarily because of the litigation hold and would prefer to add the agenda to the calendar invite. I will however try not to change it too many times, and I will either add an agenda to the calendar invite or send an update/cancel proposal at least the day before our team meeting. In other words, if this calendar event has not been canceled and has an agenda then we are planning on having the call. As we have been doing, review the agenda to determine relevance for you and your level of interest.

A huge ongoing thank you for your engagement on this important project.

Agenda

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA
- E&E News (011614)
- McKeaver FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence
- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

AMERICAN OVERSIGHT

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/27/2018 8:30:00 PM
End: 11/27/2018 9:30:00 PM

Recurrence: (none)

We have enough going on where having the call will be helpful. Thank you for making the call if you can.

Agenda

NEPA preliminary EIS comments

FOIA

Information Quality Act Request for Correction or Withdrawal

June 2018 memo on 404c

DeFazio and Carper response

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Wake, Neverley [wake.neverley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]

Start: 12/11/2018 8:30:00 PM
End: 12/11/2018 9:30:00 PM

Recurrence: (none)

Hello Bristol Bay 404c Team,

I'd like to meet on 12/11.

Proposed Agenda

NEPA Preliminary EIS Comments

Plan for Hladick and Forsgren Briefing – 12/12

FOIA

Request for Correction or Withdrawal

CMS: BBNC, Thomas Allen, PLP

External Meeting

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/28/2018 4:00:00 PM
End: 8/28/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/11/2018 4:00:00 PM
End: 9/11/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

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Conference Line/Code / Ex. 6

→ Meeting Organizer

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AMERICAN OVERSIGHT

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CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: (none)

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0ecba75a9f9448d3980a693951129e64-Peterson, Erik]
Sent: 10/9/2018 2:47:57 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/9/2018 4:00:00 PM
End: 10/9/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

404(c) Team

Congressional responses (Palmer)

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

FOIA (Ashley)

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up (Erik)

External Correspondence (Erik)

- Recent activity and approach

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

AMERICAN OVERSIGHT

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)
    - The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

Erik and Patty will be calling in to this meeting.

Agenda

Permit Oversight/ NEPA Review Team

NEPA Review

404(c)

FOIA – HQ role in FOIA responsibilities

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

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CC: Thiesing, Mary [Thiesing.Mary@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 1/1/2019 5:00:00 PM
End: 1/1/2019 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

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Subject: Canceled: Bristol Bay Check-in

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

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To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 8/1/2018 4:00:00 PM
End: 8/1/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

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Subject: Canceled: Bristol Bay Check-in

Start: 8/15/2018 4:00:00 PM
End: 8/15/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

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Subject: Canceled: Bristol Bay Check-in

Start: 8/29/2018 4:00:00 PM
End: 8/29/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/12/2018 4:00:00 PM
End: 9/12/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 9/26/2018 4:00:00 PM
End: 9/26/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/10/2018 4:00:00 PM
End: 10/10/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 10/24/2018 4:00:00 PM
End: 10/24/2018 5:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Start: 11/7/2018 5:00:00 PM
End: 11/7/2018 6:00:00 PM
Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Kelly, Christine M [kelly.christinem@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Canceled: Bristol Bay Check-in

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM

End: 7/18/2018 5:00:00 PM

Show Time As: Free

Importance: High

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/26/2018 8:44:55 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]

Subject: FW: Bristol Bay - High Level Briefing Preparation
Location: David's Office and on the phone

Start: 11/28/2018 7:15:00 PM
End: 11/28/2018 8:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Peterson, Erik
Sent: Wednesday, November 21, 2018 3:27 PM
To: Peterson, Erik; Allnutt, David; Hough, Palmer; Palomaki, Ashley; McGrath, Patricia
Subject: Bristol Bay - High Level Briefing Preparation
When: Wednesday, November 28, 2018 11:15 AM-12:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: David's Office and on the phone

Agenda

- Reason for briefing
- For whom
- Main topics
- Timing
- Next steps

I've created a folder to compile relevant information. If you have useful documents (like briefing papers), scripts or previous presentations etc., then I suggest adding them to the briefings folder at the link below. Ok for it to be too many or imperfect for now, goal is to get relevant source material in one place. We'll organize it better as we go along.

Bristol Bay - Briefings Folder

→ Join by Phone

Conference Line/Code / Ex. 6

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Green, Noelle [Green.Noelle@epa.gov]
Sent: 11/26/2018 4:41:17 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: Re: Pebble NEPA status and question

Attorney Client / Ex. 5

Thanks,

Noelle Green
Attorney-Advisor
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460
(202) 564-1236
green.noelle@epa.gov

On Nov 26, 2018, at 9:28 AM, Hoppe, Allison <hoppe.allison@epa.gov> wrote:

> Ashley's summary generally aligns with my understanding of how this works in the NEPA context, but I would defer to Noelle and Carrie on specifics.
>
> Allison Hoppe
> Attorney Advisor
> American Indian & Alaska Native Special Emphasis Program Manager
> Cross-Cutting Issues Law Office
> Office of General Counsel
> U.S. Environmental Protection Agency
> (202) 564-1912

Personal Matters / Ex. 6

From: Wehling, Carrie
Sent: Monday, November 26, 2018 9:06 AM

AMERICAN OVERSIGHT

To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Marshall, Tom <marshall.tom@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Green, Noelle <Green.Noelle@epa.gov>
Subject: RE: Pebble NEPA status and question

I am copying Noelle for her input on the record issue, but I think Ashley's summary is generally correct (I

Attorney Client / Ex. 5

Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Monday, November 26, 2018 7:57 AM
To: Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Marshall, Tom <marshall.tom@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble NEPA status and question

Hi Allison,

We wanted to give you a heads up that the Corps has been sending Region 10 preliminary drafts of the DEIS chapters for informal review and comment. The Region is providing comments back at the staff level. The comments will not go back on formal letter head. Given this, OFA is not reviewing. OW is doing a limited review. Ashley is the main legal reviewer for ORC. I am only planning to review any issues raised by Ashley or OW (and not do a review myself).

Attorney Client / Ex. 5

Thanks,
Heidi

++++

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 11/26/2018 1:00:06 PM
To: Hoppe, Allison [hoppe.allison@epa.gov]
CC: Marshall, Tom [marshall.tom@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Pebble NEPA status and question

I should probably add for context that folks decided on this process because the Corps' turn-around is pretty fast (a few weeks) and is largely happening during the holidays. I also understand that this is typical of reviews of preliminary draft EISs.

From: Nalven, Heidi
Sent: Monday, November 26, 2018 7:57 AM
To: Hoppe, Allison <hoppe.allison@epa.gov>
Cc: Marshall, Tom <marshall.tom@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble NEPA status and question

Hi Allison,

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Attorney Client / Ex. 5

Thanks,
Heidi

++++

Attorney Client / Ex. 5

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/14/2018 6:05:47 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: Pebble meeting

Hi Cara – I'm on the phone with Carrie, Heidi, and Erik. Are you joining? I'm in your office.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 10/24/2018 9:30:29 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: Pebble EIS Updates

Hi Molly –

Are you expecting attorney review of any of the comments? I haven't reviewed any of the chapters so far but want to understand expectations so that I can plan my schedule.

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 11:04 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Subject: Pebble EIS Updates

Hello All,
I have a few updates to share regarding the Pebble EIS.

First, the Corps plans to distribute preliminary drafts of the DEIS chapters for review in November. We expect to receive all chapters by 11/9/18, although sections may be received in advance on a rolling basis. Comments on all sections will be due 11/21/18. This will be a very tight timeframe for review, as management review of our comments will be required, so please plan to review within a few days of receipt – I will provide a specific due date once sections have been received. The Corps has said they will share all sections of the document for context, although our comments are still only requested on those specific sections we have been assigned in the Cooperating Agency Workplan (the same ones we have seen early drafts of so far).

Second, the Corps has distributed a revised project description developed by Pebble. My understanding is that this revised project description aligns with the updates to the project that we learned about earlier this year (e.g., use of lightering at Amakdedori Port), but I have not had time to read it in detail myself. I recommend reading when you have time, as it will help us prepare for review of the draft chapters in November.

Please let me know if you have any questions.
Thank you,

AMERICAN OVERSIGHT

Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/21/2018 2:53:03 AM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: ARU Staff Transition

FYI –

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: LaCroix, Matthew
Sent: Friday, May 18, 2018 12:36 PM
To: Mendelman, Krista <Mendelman.Krista@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: ARU Staff Transition

All,

Good morning/afternoon. You are all aware that I transitioned into Gayle Martin's oil and gas-focused position on April 1. I will not have the capacity to continue as the CWA 404 lead for project review of the Pebble project. Mark Douglas has agreed to take on the 404 lead role.

The Region's NEPA scoping letter on the project will be going out shortly, and the timing is right for me to pass the baton to Mark. I have sent him the meeting invitations, and Patti has included him on the group emails. Once he has access to the project website and our internal SharePoint site, he will be good to go. I plan to participate in next week's meetings, but do not anticipate participating in future meetings unless there is some specific need.

Mary Anne will continue in her existing role, working with Mark to track the project review, and coordinating with the 404(c) team.

Thanks,

Matthew LaCroix, Biologist
Aquatic Resources Unit
Office of Environmental Review and Assessment
Alaska Operations Office
222 W. 7th Ave. #19
Anchorage, AK 99513
(907) 271-1480

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 3:46 PM
To: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>
Subject: Pebble transition

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Hi Mark and Matt,
Would you mind coming up with a very short description of how you might transition the Pebble work from Matt to Mark and send it out to the appropriate folks working on Pebble? Please include a statement about Mary Anne's continued involvement as well. …Just so folks hear it from you both directly.

Thank you,
Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

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Message

From: Wright, Wendy [Wright.Wendy@epa.gov]
Sent: 4/30/2018 8:20:37 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Hood, Lynne [Hood.Lynne@epa.gov]; Kubo, Teresa [Kubo.Teresa@epa.gov]; Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Somers, Elaine [somers.elaine@epa.gov]; Jen, Mark [Jen.Mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]
Subject: REVISED NEPA Workload Report April 30, 2018
Attachments: rptNEPAWorkload.txt

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Wendy Wright
SEE Administrative Assistant
206.533.6232
1200 Sixth Avenue – 14th Floor
Seattle, WA 98101

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Non-Responsive- Unrelated to Bristol Bay/Pebble Mine

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Non-Responsive - Unrelated to Bristol Bay/Pebble Mine

Pebble Project, Cooperating Agency, Pebble Mine, AK
18-0002- 4/30/2018 6/29/2018 vaughan
Scoping
COE

The Following Are Late

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Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 7/27/2018 11:44:27 PM
To: Owens, Kim [Owens.Kim@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: RE: ASAP FSEIS signed comment letter
Attachments: Pebble.062918.Scoping Letter FINAL.pdf

Attorney Client / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Owens, Kim
Sent: Wednesday, July 18, 2018 1:51 PM
To: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: ASAP FSEIS signed comment letter

Attorney Client / Ex. 5

AMERICAN OVERSIGHT

Attorney Client / Ex. 5

From: Vaughan, Molly
Sent: Wednesday, July 18, 2018 11:46 AM
To: Douglas, Mark <douglas.mark@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Owens, Kim <Owens.Kim@epa.gov>; Hoffman, Erika <Hoffman.Erika@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; Detwiler, Susan K. <detwiler.susan@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Curtis, Jennifer <Curtis.Jennifer@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: ASAP FSEIS signed comment letter

Hello ASAP Team,
Our comment letter for the ASAP Final SEIS has been finalized, and a pdf of the signed letter is attached for your files. This final version of the letter reflects the edits received from EPA headquarters, per direction from senior management in OFA and OW. Thank you again for all of your assistance in the review of this FSEIS, and throughout the lengthy history of our cooperating agency involvement on this project. If you have any questions regarding the final comments, please feel free to give me a call.
Thank you,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 29, 2018

Mr. Shane McCoy, Project Manager
U.S. Army Corps of Engineers
Regulatory Division
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Mr. McCoy:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' March 29, 2018, Notice of Intent initiating the scoping process for the proposed Pebble Project Environmental Impact Statement development (EPA Region 10 Project Number 18-0002-COE). We have also reviewed the additional project information available on the Corps website. The EPA is providing comments for your consideration pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500-1508) and Section 309 of the Clean Air Act. The EPA is also supporting the Corps in EIS development as a cooperating agency, due to our special expertise. We appreciate the opportunity to provide early input in the analysis of the Pebble Project.

The Pebble Limited Partnership (PLP) is proposing to develop the Pebble deposit in southwest Alaska, containing copper, gold, and molybdenum. The proposed project includes an open-pit mine, tailings storage facility, a low-grade ore stockpile, an overburden stockpile, a mill facility, a natural gas-fired power plant, and other mine site facilities. The anticipated throughput at the mill facility is 160,000 tons of ore per day, and the proposed mine operating life is 20 years. The proposed project also includes development of a 188-mile natural gas pipeline across Cook Inlet and Lake Iliamna and two compressor stations used to transport natural gas from the Kenai Peninsula to the mine site. The proposed transportation network includes 65 miles of roads, ferry terminals on the north and south shores of Lake Iliamna for use by an ice-breaking ferry, and the Amakdedori Port on Cook Inlet (including dredging and disposal of up to 20 million cubic yards of dredged material).

The scoping comments that follow are provided to inform the Corps of issues the EPA believes are significant and warrant explicit treatment in the EIS, based on current information. Overall, the EPA encourages the development of an EIS that evaluates and compares a full range of reasonable alternatives and comprehensively discusses the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action.

The EPA has significant concerns regarding the potential impacts of mining activities near the world-class fisheries of the Bristol Bay Watershed.[1] Many of these concerns have been previously documented in the EPA's 2014 Bristol Bay Watershed Assessment, which evaluated the potential impacts of large-scale mining on the region's fish resources, and in the Agency's 2014 Proposed Determination under

[1] See https://www.epa.gov/bristolbay for more information.

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Section 404 of the Clean Water Act. This Proposed Determination proposed restrictions on the discharge of dredged or fill material to waters of the U.S. to protect waters that support fishery areas in and near the Pebble deposit area. Because the Watershed Assessment and the Proposed Determination were completed before PLP submitted its permit application to the Corps, these assessments did not consider and were not based on the specific parameters of PLP's pending proposal. The EIS should thoroughly analyze the potential impacts of PLP's proposal to aquatic and other resources, including the anticipated direct impacts of the proposed action, and the reasonably foreseeable indirect and cumulative impacts. We note that the geographic extent of the proposed project infrastructure is not limited to the Bristol Bay watershed, and we recommend that the EIS analyze all areas of impact from the project, including Cook Inlet.

We appreciate the information provided in the Corps' scoping package, including the list of resources to be analyzed in the EIS, and we agree that the suite of issues presented are appropriate to analyze in detail in the EIS. Our enclosed scoping comments provide our recommendations for analysis of key areas that will be the focus of our review of the project, including natural resource impacts, as well as human health and impacts to communities and federally recognized tribes. Our scoping comments also include recommendations related to: risk analysis and hazardous materials management, including geotechnical stability; analytical tools and methodologies, including predictive modeling of impacts to water, air, fish, and other aquatic resources; mitigation and monitoring; and financial assurance. Identification of these key issues and recommendations is based on the EPA's knowledge of the proposed project as well as our experience with mining projects in Alaska and other Region 10 states.

We appreciate the opportunity to participate early in the planning process for this project and are looking forward to working with you as you develop the EIS. Should you have any questions regarding our comments, please contact Patty McGrath, EPA Region 10 Mining Advisor at (206) 553-6113 or mcgrath.patricia@epa.gov.

Sincerely,

R. David Allnutt
Director

Enclosure:

1. U.S. Environmental Protection Agency Detailed Scoping Comments for the Pebble Project EIS

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EPA Region 10 Detailed Scoping Comments for the
Pebble Project Environmental Impact Statement

General Components of NEPA Analysis

Purpose and Need

We recommend that the EIS include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with the implementing regulations for NEPA[2] and the Clean Water Act Section 404(b)(1) Guidelines (Guidelines).[3] In presenting the purpose and need, the EIS should reflect not only the Corps' purpose in responding to the permit application, but also the broader public interest and need for this project. An appropriately defined purpose and need statement is of critical importance to setting up the analysis of a range of reasonable and practicable alternatives in the EIS that will meet the requirements of both NEPA and the Guidelines.

Range of Alternatives

We recommend that the EIS include a range of reasonable alternatives that meet the stated purpose and need for the project, are responsive to the issues identified during the scoping process and through tribal consultation, and include options for avoiding significant environmental impacts. This will ensure that the NEPA analysis provides agency decision makers and the public with information that defines the issues and identifies a clear basis for the choices made among the range of alternatives, as required by NEPA. The EIS should clearly outline the physical design of current and proposed facilities and alternatives (including ore storage sites, waste rock disposal areas, tailings areas, water storage and conveyance facilities, and supporting infrastructure including the transportation corridor, port site, and pipeline).

The EIS should "rigorously explore and objectively evaluate all reasonable alternatives"[4] even if some of them are outside the capability or the jurisdiction of the agency preparing the EIS for the proposed action.[5] This includes identifying the specific criteria that were used to (1) develop the range of reasonable alternatives, (2) eliminate certain alternatives, and (3) identify the agency preferred alternative, as appropriate. In addition, we recommend the EIS provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail.

While NEPA requires the evaluation of *reasonable* alternatives to the proposed action, the Guidelines require the analysis of *practicable*[6] alternatives in order to identify the least environmentally damaging

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[2] 40 C.F.R. § 1502.13.
[3] Within the context of the Guidelines, practicable alternatives to the proposed discharge of fill or dredged material are identified "in light of overall project purposes," which is also termed "the basic purpose of the proposed activity." 40 C.F.R. § 230.10(a)(2).
[4] 40 C.F.R. § 1502.14(a).
[5] 40 C.F.R. § 1502.14(c).
[6] An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2).

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practicable alternative (LEDPA), which is the only alternative that can be permitted.[7] The analysis of alternatives for NEPA can provide the information for evaluation of alternatives under the Guidelines.[8] We recommend that the EIS range of alternatives include the practicable alternatives developed for the Guidelines analysis.

In evaluating the proposed project and alternatives, the analysis should include an evaluation of performance and effectiveness, as well as the planned monitoring to ensure efficacy of proposed design features, environmental protection measures, and mitigation.[9]

Regarding mitigation for purposes of NEPA, we recommend that the alternatives analysis include appropriate mitigation measures not already included in the proposed action or alternatives.[10] The EIS should evaluate reasonable alternatives, including mitigation measures, to reduce or minimize adverse impacts to environmental resources. We recommend that, in conducting such an evaluation, the Corps consider:

- The disturbance footprint;
- Habitat value, cultural significance, and risks in siting project components for the proposed mine site components, as well as the port site, transportation corridor, and pipeline components;
- Source control measures (effective management of waste rock and tailings to prevent acid generation and metal leaching) and containment (liners and covers);
- Measures to reduce contact between mine waste materials and surface water and groundwater (such as surface water diversions and liners and covers as recommended above);
- Impacts of pit dewatering on groundwater and stream flows;
- Treatment to promote compliance with water quality standards;
- The physical stability of structures (e.g., pit walls, ore storage and waste rock facilities, tailings facility) during operations and closure, such as considering dry stack tailings;
- Impacts along the pipeline route and transportation corridor, including to Lake Iliamna;
- Impacts from dredged material disposal;
- Impacts to the marine environment at the Amakdedori Port site;
- Air pollutant emissions; and
- Impacts to traditional and cultural uses and resources, including key subsistence species and sites.

Indirect Impacts

We recommend that the EIS include consideration of all reasonably foreseeable indirect effects caused by the action but that may occur later in time or farther removed in distance.[11] The indirect effects analysis "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural

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[7] 40 C.F.R. § 230.10(a)
[8] 40 C.F.R. § 230.10(a)(4).
[9] The term mitigation included in this "Range of Alternatives" section is referring to the general term as it applies to NEPA. Compensatory mitigation for purposes under CWA section 404 cannot be used to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 40 C.F.R. § 230.10(a). *See* 1990 Memorandum of Agreement between Army and EPA concerning the determination of mitigation under CWA section 404(b)(1) Guidelines.
[10] 40 C.F.R. § 1502.14(f).
[11] 40 C.F.R. § 1508.8(b).

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systems, including ecosystems."[12] While NEPA does not require agencies to engage in speculation, "[t]he EIS must identify all of the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are reasonably foreseeable."[13]

We therefore recommend that the EIS evaluate the expansion and continued operation of the currently proposed project to the extent that the Corps considers it to be a reasonably foreseeable indirect effect of the proposed action. The current proposed Pebble Project description includes mining of approximately 1.1 billion tons of mineralized material, while the 2011 Preliminary Assessment Technical Report[14] estimated that the total Pebble mineral resource may be 11.9 billion tons. It may be reasonable to predict that a mine at the Pebble deposit will eventually operate for longer than 20 years and recover and process additional ore based on the size of the deposit, the significant infrastructure that will be developed under the current project description, and statements made by the Pebble Limited Partnership regarding the potential to examine expanding the mine once initial production has begun on the current proposal.[15] Accordingly, we recommend that the EIS consider the potential impacts associated with reasonably foreseeable mine expansion scenarios, including up to 11.9 billion tons.

In addition, we recommend that the EIS consider the extent to which it is reasonably foreseeable that the proposed transportation corridor and natural gas pipeline may be made accessible to the public and may stimulate additional reasonably foreseeable mining projects in the area, and potential environmental effects associated with that induced mining. Although PLP's current proposal only includes private access to the infrastructure components, public access may be granted in the future. This potential may be different for the different infrastructure elements. For example, if the pipeline is regulated as a common carrier, then public access could be allowed if capacity permits. We recommend that the EIS discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.

Construction and operation of the project would result in increased vessel traffic in Cook Inlet and on Lake Iliamna because vessels will bring supplies to the site and transport products off-site. In addition to evaluating the direct effects of the increased transportation, we recommend that, if it is reasonably foreseeable that the ports and ferry landings will become available for public use, then any reasonably foreseeable future use of these components should be assessed in the EIS as indirect or cumulative effects. Should the port and ferry terminals remain open following mining, this infrastructure may result in increased use and vessel traffic beyond what PLP is currently proposing.

Indirect project impacts under NEPA can include secondary effects, which are defined by the Guidelines as "effects on the aquatic ecosystem that are associated with the discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[16] The consideration of secondary effects is necessary for the Guidelines analysis, and examples of potential secondary effects are discussed in the section on aquatic resources below.

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[12] *Id.*

[13] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 18 (CEQ, 1981).

[14] Preliminary Assessment of the Pebble Project, Southwest Alaska, February 2011. Developed by Wardrop, A Tetra Tech Company, for Northern Dynasty Minerals, Ltd.

[15] e.g., see http://www.alaskajournal.com/2018-01-10/permit-application-reveals-size-scaled-down-pebble-project. "Collier has acknowledged the company might look to expand after initial production commences but contends growing the project would require additional rounds of environmental reviews and permitting that would be independent from any approvals Pebble already had."

[16] 40 C.F.R. § 230.11(h).

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Cumulative Impacts

In accordance with NEPA, the cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be affected by, past, present, or reasonably foreseeable future activities in the project area, "regardless of what agency (federal or non-federal) or person undertakes such other actions."[17]

The Guidelines also fundamentally require consideration of reasonably foreseeable cumulative effects in determining whether a project complies with the significant degradation prohibition and to ensure that discharges will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.[18] Cumulative effects are "the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material," which individually may be minor, but cumulatively may result in a "major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems."[19]

For the cumulative impacts assessment, we recommend that the EIS delineate appropriate geographic boundaries, including natural ecological boundaries whenever possible, as well as consider an appropriate time period for the project's effects. We recommend that resources be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of any historical degradation (e.g., due to exploration activities), and to predict the environmental effects of the project components.

Past, present, and reasonably foreseeable future activities that should be considered in the cumulative impact assessment will vary across the geographic scope of the various mine-site and infrastructure components. Please refer to CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act"[20] and the EPA's "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[21] for assistance with identifying appropriate boundaries and identifying appropriate past, present, and reasonably foreseeable future projects to include in the analysis.

In particular, we recommend that the cumulative effects analysis consider, but not be limited to, the following activities:

- Past and current exploration activities conducted by PLP and others at the Pebble site;
- Current exploration activities occurring in the Bristol Bay watershed region;
- Reasonably foreseeable expansion and continued operation of the currently proposed project (while this is an indirect effect under NEPA, as discussed above, it is a cumulative effect under the Guidelines);
- Reasonably foreseeable future use of project infrastructure (road, port, pipeline); and,
- Reasonably foreseeable development of additional mining projects as a result of increased exploration activity in the region. Even if those activities are not determined to be indirect effects of the proposed action (as discussed above), they are still reasonably foreseeable.

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[17] 40 C.F.R. § 1508.7.
[18] 40 C.F.R. § 230.10(c).
[19] 40 C.F.R. § 230.11(g).
[20] http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm.
[21] http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf.

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ENVIRONMENTAL RESOURCE IMPACTS

Aquatic Resources, Including Wetlands, Streams, and Fish

Evaluating Compliance with the Clean Water Act Section 404(b)(1) Guidelines

The Corps' potential CWA Section 404 permitting action is triggering preparation of the EIS. We recommend that the Corps' permitting regulations and the Guidelines therefore provide the context for identifying relevant issues and evaluating alternatives in the EIS.

The Guidelines are the substantive environmental criteria for the evaluation of proposed discharges of dredged or fill material, and applicants must demonstrate compliance with the Guidelines.[22] The EIS is a significant component of the administrative record for the District's permit decision, which can and should provide sufficient information to address compliance with the Guidelines and the Corps' public interest review.[23] Although it is not mandatory, we support the Corps' decision to include of the public interest review factors into the list of issues to be considered in the EIS. This will enable the expected benefits to be balanced against reasonably foreseeable detriments, and all relevant public interest factors to be weighed.

We recommend that the organization of the EIS facilitate the evaluation of the proposed project's compliance with the Guidelines. Issues relevant to compliance with the Guidelines should be addressed explicitly in the EIS where possible. Alternatively, a stand-alone Section 404(b)(1) analysis could be included as its own section of, or appendix to, the EIS. As mentioned above, we recommend that the range of alternatives evaluated in the EIS be sufficient to identify the LEDPA. In addition, we recommend that the final EIS identify which alternative is the LEDPA.

The Guidelines prohibit, for example, the authorization of a proposed discharge that would cause or contribute to the violation of an applicable water quality or toxic effluent standard, jeopardize a listed threatened or endangered species, or impact a marine sanctuary.[24] We recommend that these criteria be used to evaluate and compare alternatives.

The Guidelines also prohibit the authorization of a proposed discharge which will cause or contribute to significant degradation of the aquatic ecosystem.[25] Findings of significant degradation must be based upon specific factual determinations, evaluations, and tests identified in the Guidelines. These include the evaluation of the direct, secondary, and cumulative effects of the proposed discharge and alternatives on specific resources including fish, wildlife, and special aquatic sites. The significant degradation findings must also evaluate the effects to resource characteristics including aquatic ecosystem diversity, productivity, and stability. Evaluating the potential for significant degradation also requires the consideration of effects to human uses or values, including recreational, aesthetic, and economic values. With regard to fisheries, the Guidelines require, for example, an evaluation of effects to all forms and life stages of aquatic organisms in the food web, including fish and the plants and animals on which they feed and depend upon for their needs.[26] The Guidelines also require an evaluation of effects to

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[22] 40 C.F.R. § 230.12(a)(3)(iv).
[23] See 33 C.F.R. § 320.4.
[24] 40 C.F.R. § 230.10(b).
[25] 40 C.F.R. § 230.10(c).
[26] 40 C.F.R. § 230.31.

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recreational and commercial fisheries, which includes harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man.[27] The Corps has proposed including a number of these evaluations in the EIS. We recommend that as many of the specific factual determinations, evaluations, and tests required by the Guidelines as possible be included in the EIS, and be used to evaluate and compare alternatives.

The Guidelines also prohibit any proposed discharge that does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem.[28] Subpart H of the Guidelines identifies numerous possible steps to minimize impacts, including reducing the footprint of the project, using co-location of facilities whenever possible, implementation of best management practices to reduce environmental impacts, configuring the project footprint to reduce or eliminate impacts to higher functioning aquatic resources and other appropriate and practicable measures. Also, as previously discussed, we recommend that the EIS include appropriate minimization measures both as part of the action alternatives and relative to the affected environment. The discussion of minimization measures should include assessment of their likely effectiveness.

Compensatory Mitigation

For unavoidable impacts to wetlands, streams, and other aquatic resources, the Guidelines require appropriate and practicable compensatory mitigation to offset unavoidable environmental impacts associated with discharges permitted under CWA Section 404. We recommend that the EIS consider potential mechanisms to offset likely unavoidable aquatic resource impacts. We also recommend that the EIS include the applicant's proposed compensatory mitigation plan. Compensatory mitigation requirements, including the components of a compensatory mitigation plan, are described in Subpart J of the Guidelines. Pursuant to the Guidelines, the level of detail in the compensatory mitigation plan should be commensurate with the scale and scope of the impacts.

Compensatory mitigation may be provided through purchase of credits from an approved mitigation bank, purchase of credits from an approved in-lieu fee mitigation program, and/or completion of a permittee-responsible compensatory mitigation project(s). Final compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Section 404 permit.[29] Compensatory mitigation required by the Guidelines is separate from, and may be in addition to, proposed project impact mitigation under NEPA.

Characterizing the Affected Environment

We recommend that the EIS describe aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. For example, if wetlands are mapped using a Cowardin classification, that mapping should be to the smallest identifiable map unit. Likewise, streams should be classified and mapped accordingly. The baseline information for aquatic resources should include their functional condition and integrity. We also recommend that the EIS evaluate the characteristics of the potentially affected aquatic resources, how those characteristics provide fish habitat, and how such habitat could be adversely impacted by the proposed project. Wetlands and streams perform different functions at different rates, and capturing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions (exploration and mining) on these resources.

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[27] 40 C.F.R. § 230.51.
[28] 40 C.F.R. § 230.10(d).
[29] 40 C.F.R. § 230.93(a)(1).

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Characterizing the distribution of resident and anadromous fish in potentially affected streams and other aquatic resources is also important, and we recommend the use of data sources such as the Anadromous Waters Catalog[30] and the Alaska Freshwater Fish Inventory[31] to help with this characterization.

Aquatic Resource Impacts Analysis

We recommend that the areal extent (i.e., acreage) of impacts to aquatic resources be quantified in the EIS for both direct and secondary effects. The acreage values for the direct and secondary impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, mudflats, and other waters. In other words, reported acreage losses should represent the total loss of jurisdictional waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles. Channel length values are a more intuitive metric for some, and facilitate different types of analyses than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.

Direct effects are impacts on aquatic resources within the footprint of the discharge of dredged or fill material. Direct effects at the mine site would include stream and other aquatic resource losses within the footprints of the tailings storage facility, the ore and overburden storage sites, the mine pit, and other mine site facilities described in the permit application. Construction of the transportation and pipeline corridors and port facility will likely involve such discharges as well.

Secondary effects, as defined by the Guidelines, are associated with the discharge of dredged or fill material, but do not result from actual placement of this material. These effects are also considered indirect impacts under NEPA. Examples of secondary effects that should be evaluated in the EIS include the following:

- Elimination of streams and wetlands due to drowning by the tailings impoundment and other mine components;
- Dewatering of streams and other aquatic resources due to pumping of groundwater during open pit mining and filling during closure;
- Fragmentation of aquatic resources due to the placement of the mine pit, ore storage sites, tailings storage facility, and other mine components;
- Degradation of downstream fish habitat due to streamflow alterations resulting from water capture, withdrawal, storage, treatment, or release at the mine site;
- Degradation of downstream fish habitat due to water quality impacts associated with mine construction and operation;
- Degradation of downstream fish habitat due to the loss of important inputs such as nutrients and groundwater from upstream sources;
- Degradation of aquatic resources due to dust deposition from mining and transportation activities.

The evaluation of the proposed project's impacts and alternatives should fully consider the physical, chemical, and biological effects of each of the direct and secondary effects, and should consider incremental changes from these impacts along each stream segment downstream of the impact site.

[30] See https://www.adfg.alaska.gov/sf/SARR/AWC/.
[31] See http://www.adfg.alaska.gov/index.cfm?adfg=ffinventory.main.

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Considering the value of the region's commercial, subsistence, and recreational fishery resources, we recommend that the EIS focus on quantifying direct, indirect, and cumulative impacts on resident and anadromous fish and their habitat resulting from losses of streams with documented fish occurrences; losses of headwater source areas of these streams; losses of wetlands, lakes, and ponds; and streamflow alterations. We appreciate that the Corps has made the EPA's 2014 Bristol Bay Watershed Assessment available on the Pebble Project website, and we also recommend that this document be referenced in preparing the EIS.[32]

The losses of stream reaches and adjacent wetlands from dewatering, as well as changes to downstream reaches and adjacent wetlands, may result in physical, chemical, and biological changes which would impact fishery habitat and habitat support. We recommend that the EIS model and consider these impacts compared to baseline conditions, including but not limited to:

- Evaluate changes in water volume in the stream areas of impact, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. We recommend that the analysis address seasonal changes to the different stream segment hydrographs, including changes to seasonal temperatures, dissolved oxygen levels, sediment transport capabilities, and any associated changes to sediment grain sizes in the different stream segments;
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points, to assess any potential changes to stream profile, form, and pattern, and to identify any areas of accretion and/or scouring which may reasonably be anticipated. We also recommend that areas of stream incision as a result of flow changes be identified, as well as losses of connectivity to floodplains and riparian wetlands currently connected to the downstream reaches;
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches. We further recommend that both the direct losses of both autochthonous and allochthonous inputs from upstream reaches lost and/or disconnected from wetland and other riparian habitats, as well as the incremental reductions in those inputs in downstream segments throughout the stream reaches and their effects on system-wide primary, secondary, and tertiary production, be evaluated. These analyses should consider the direct changes to downstream habitats as well as changes to fisheries support in the different stream reaches;
- Evaluate decreases in anticipated invertebrate transport and production in downstream segments and those effects on fish production; and
- Evaluate the effects of disconnecting any off-channel habitat both near the areas of direct impact and throughout the downstream reaches, both for losses of allochthonous inputs and also for potential losses of nursery habitat.

We recommend that the direct, indirect, and cumulative impacts of any of these potential physical, chemical, and biological alterations be examined for how they may result in the loss and/or degradation of fish habitat, including alterations with respect to spawning, overwintering, nursery, and migration. Habitat losses that may result from freeze-through or seasonal warming of fish production areas should also be evaluated.

[32] See https://www.epa.gov/bristolbay/bristol-bay-assessment-final-report-2014.

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Water Quality and Quantity

Evaluating Impacts to Surface Water and Groundwater Quality and Quantity

Water quality is one of the EPA's principal concerns at mine facilities due to the potential for acid-generating and metal-leaching waste materials (ore, waste rock, tailings, pit walls) that are exposed to the environment and require management over long periods of time. In addition, road construction and operation have the potential to contribute a significant quantity of sediment to streams. We recommend that the EIS characterize baseline surface water and groundwater quality, quantity, and interactions, and evaluate the impacts of all aspects of the proposed operations and alternatives (including pit dewatering and backfilling, tailings management and disposal, water management, and port-site and transportation aspects) on these hydrologic components and describe mitigation for adverse impacts.

Given the potential impacts of the proposed Pebble Project, the EPA recommends that the Corps specifically include in the water resources analysis for the EIS (see also our recommendations for Analysis Tools and Methodologies):

- Characterization of existing groundwater, surface water, springs, and wetland resources within the area of both the project and all potential alternatives, including groundwater levels, flow direction and gradients, and chemistry;
- Development of a hydrogeologic conceptual site model, including:
    - Maps of groundwater, surface water, springs, and wetland resources in the area to be developed or affected;
    - Baseline data on the extent and quality of groundwater, surface water, springs and wetlands;
    - Information on the quantity and location of all aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
    - Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters;
    - Identification and description of all wetlands and surface waters that could be affected by the project and alternatives; where applicable, acreages, channel lengths, habitat types, values and functions of these waters should be identified;
    - Identification and description of hydrologic pathways (e.g., the connectivity of springs or groundwater to surface waters; the connectivity of all streams to each other and to wetlands); and
    - A detailed water balance for the proposed action and each alternative.
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), specific pollutants likely to impact those waters and a comparison to applicable environmental standards (e.g., surface water and drinking water quality standards);
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability (in particular, the impacts of copper, which can have adverse effects on salmon at very low concentrations);
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes; and
- Consideration of effects of seasonality on water quantity and quality impact assessment, including predictions for all phases of the project (construction, operations, and closure).

Anti-degradation

The anti-degradation provisions of the CWA apply to those waterbodies where water quality standards are currently being met. In certain high-quality waters, the anti-degradation provisions prohibit

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degrading water quality unless it is determined that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.[33] We recommend that the EIS discuss whether and how the CWA anti-degradation requirements could be met.

Water Management and Treatment

We recommend that the EIS describe the plans for water management, treatment, and discharge during all phases of the project (construction, operations, and closure), including plans for long-term water treatment. The EIS should evaluate and disclose the adequacy, reliability, effectiveness, and operational uncertainty associated with proposed operation and closure (long-term) water management and treatment techniques, taking into account seasonality and potential changes associated with future climate scenarios. We also recommend that the analysis characterize chemical compositions and quantities of process waters, mine drainage, storm water, and treated and untreated effluent. This information should be supported by the results of treatability testing. Assumptions used in the analysis should be disclosed and be reasonably conservative. If long-term water treatment is needed, we recommend that the EIS include modeling of predicted stream concentrations of contaminants of concern, both with and without treatment, to evaluate the potential impacts to water quality if the treatment system is not working properly.

The EIS should also identify the Alaska Pollutant Discharge Elimination System (APDES) discharge locations, identify applicable water quality standards, and analyze the likelihood and ability of all discharges to meet applicable standards and the direct, indirect, and cumulative impacts of such discharges to the receiving waters. We recommend that any applicable water quality variance requests, site-specific criteria proposals, and/or any other planned or potential requests for water quality standard revisions also be disclosed in the EIS.

Sediment Management and Stormwater Runoff

Since the project has the potential to cause or contribute to erosion of soils and subsequent sediment loading to nearby surface waters, we recommend that the EIS evaluate construction design and operation practices that will be used to minimize erosion and control stormwater runoff from the mine site, port sites, transportation corridor, and pipeline route. We recommend that the EIS discuss specific mitigation measures that may be necessary or beneficial in preventing and minimizing adverse impacts to water quality and disclose the effectiveness of such measures. We suggest that the Corps consider the Best Management Practices identified by the EPA for mining facilities[34] and specify those that would be suitable and likely implemented at the Pebble Project. We also recommend that the EIS document the project's consistency with applicable APDES stormwater permitting requirements.

Hydrostatic Test Water

Hydrostatic testing will likely be utilized to verify pipeline integrity. We recommend that the EIS identify and describe the location of the water sources required for hydrostatic testing, in terms of surface area, depth, volume, withdrawal rate, and project requirements. For each water source, we recommend that the EIS discuss the presence of any anadromous and/or resident fish species, including discussion of any direct and cumulative impacts to fisheries resources. In addition, we recommend that locations and methods of discharges to land and/or surface waters be specified in the EIS. Emphasis should be placed on minimizing inter-basin transfers of water to the maximum extent practicable, to

[33] 40 C.F.R. § 131.12.

[34] https://www3.epa.gov/npdes/pubs/sector_g_metalmining.pdf.

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minimize the risk of mobilizing invasive species. We recommend that the EIS describe the mitigation measures and control devices that would be implemented to minimize environmental impacts.

Marine Environment and Freshwater Lakes

Port Construction and Dredging Impacts

According to the Permit Application Appendix D – Project Description, the Amakdedori Port will require dredging of a channel and turning basin for shipping access to berths. According to the application, annual maintenance dredging will be necessary throughout the life of the port facility. Dredging activities potentially affect habitats and key ecological functions that support recruitment and sustainability of estuarine and marine organisms. We recommend that the EIS:

- Characterize the marine benthic environment and organisms, sediment composition and grain size, etc.;
- Identify any biologically important areas, such as migratory routes, benthic communities, and subsistence areas;
- Evaluate marine dredging, dewatering, transloading (from water to land), placement methods and options (summer and winter), and disposal sites (offshore, nearshore, upland, and open-water), as well as beneficial uses of the dredged material;
- Include and evaluate a sampling and analysis plan, as well as a marine dredging and disposal plan;
- Evaluate the following potential impacts of dredging activities on species and their habitats:
  - Substrate removal and any resulting habitat and species removal (entrainment);
  - Potential changes to estuarine bathymetry, fluvial and tidal energy, and substrate roughness, and any attendant impacts to salinity structure and estuarine circulation;
  - Potential changes to sediment transport processes, including effects on adjacent shorelines;
  - Alteration of sediment composition in and around the dredging site (including changes to the nature and diversity of benthic communities);
  - Local resuspension of sediments and any turbidity increases;
  - Spread of sediments (and any associated contaminants) into the area surrounding the dredging site;
  - Release of sediment-associated nutrients, potential increases in eutrophication and resulting decreases in dissolved oxygen concentrations;
  - Decreased primary production due to reduced transparency of the water column and/or smothering, particularly at in-water disposal sites; and
  - Enhanced bioavailability and ecotoxicological risk of background contaminants and/or chemical or biochemical changes of contaminants;
- Consider implementation of effective mitigation measures to ensure that marine resources and habitats are adequately protected; and
- Incorporate a monitoring plan for marine protected resources and associated habitats to ensure effectiveness of mitigation measures.

Because of the magnitude of the proposal, dredging and disposal operations will need to be carefully planned and scheduled to avoid and minimize impacts to sensitive marine mammals, fish, shellfish, and their habitat at critical spawning and migration periods.

Dredged Material Disposal

According to the Permit Application Appendix D, dredged material will be used to construct the jetty, causeway, and/or the main terminal patio area, if suitable. Excess dredged material will be stockpiled in

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an upland location adjacent to the port facilities. The EPA recommends an on-the-ground wetland delineation at the proposed dredged material disposal site to verify whether there are any jurisdictional waters of the United States at this location.

The proposed discharge of dredged material effluent from the confined disposal facility into Kamishak Bay is subject to regulation under Section 404 of the CWA. Thus, the EIS should include sufficient information to support making the required determinations and findings under the Guidelines. For example, Subpart G of the Guidelines includes general evaluation procedures and specific testing procedures to reach the determinations required by 40 C.F.R. § 230.11. The Inland Testing Manual[35] also provides detailed technical guidance on how to evaluate and test dredged material consistent with the Guidelines. In particular, the EPA recommends using the ITM Appendix B, "Guidance for Evaluation of Effluent Discharges from Confined Disposal Facilities."

To support disposal decisions, we recommend that the EIS provide an inventory of the physical and chemical characteristics of the dredged material and an assessment of disposal alternatives. We recommend that the range of dredged material management alternatives include: no action; the proposed action; beneficial uses such as beach nourishment or construction material; a disposal site in internal waters, landward of the Kamishak Bay closing line (regulated under the CWA); and an ocean disposal site seaward of the Kamishak Bay closing line (regulated under the Marine Protection, Research and Sanctuaries Act).

Potential for Ocean Disposal of Dredged Material

Under Section 102 of the MPRSA, the EPA is responsible for designating and managing ocean dumping sites for all materials, including dredged material. The EPA designates ocean disposal sites through rulemaking and sites are published at 40 C.F.R. § 228.15. The EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas similar to the site in physical, chemical, and biological characteristics. All studies for the evaluation and potential selection of dredged material disposal sites should be conducted in accordance with the criteria for the selection of disposal sites for ocean dumping published in 40 C.F.R. §§ 228.5 and 228.6. The minimum requirements for baseline assessment surveys are found in 40 C.F.R. § 228.13.

The evaluation process includes conducting oceanographic studies to establish the environmental conditions at all alternative locations being considered as potential sites, as well as the area or region encompassing the alternative sites. Results from oceanographic studies and other sources are used to model likely dispersion and deposition of material disposed at the alternative sites and evaluate potential impacts. If there are no practicable alternatives to ocean dumping that will have a less adverse impact on the environment, this information is used to select the best ocean site proposed for designation.

If ocean disposal is to be considered as an alternative, we encourage the Corps to engage early and actively with the EPA to ensure that site selection activities are consistent with the MPRSA and the ocean disposal criteria. The EIS must be adequate for the EPA to ensure that use of the site selected for designation will not likely cause unreasonable degradation to the surrounding marine environment. In addition, only dredged material that is authorized for disposal under the MPRSA and 40 C.F.R. Part 227 may be disposed in an EPA-designated ocean dredged material disposal site.

[35] See https://www.epa.gov/cwa-404/inland-testing-manual.

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Impacts of Vessel Traffic

Marine traffic, including barges and other vessels associated with construction and operation of the proposed project, may also result in impacts to the marine environment. For example, vessel traffic may result in potential impacts to marine mammals, including threatened and/or endangered species, and their migration patterns and routes; subsistence, commercial, and recreational fisheries; and other vessel use. We recommend the EIS describe the vessel traffic schedule in Cook Inlet; patterns and marine transportation routes; subsistence, commercial, and recreational fishery resources; and the migration period, patterns, and routes of potentially affected marine mammals, including Cook Inlet Belugas. The direct, indirect and cumulative impacts from vessel traffic on marine mammals, threatened and endangered species, critical habitats, and fishery resources should be analyzed in the EIS, and the EIS should discuss the mitigation measures that would be implemented to minimize such impacts.

Use of the proposed ice-breaking ferry on Lake Iliamna may result in similar impacts to the freshwater lake environment, including the potential for wake impacts to the shoreline. We recommend the EIS analyze the direct, indirect, and cumulative impacts of the year-round use of the lake proposed by the applicant on threatened and/or endangered species, fishery resources, and other lake user groups, and discuss mitigation measures to minimize impacts.

Air Quality

The EPA recommends that the EIS evaluate how the construction and operation of the proposed project and alternatives could affect air quality and what measures may be needed to mitigate potentially significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. To address potential air quality impacts, the EIS should consider whether the direct, indirect, or cumulative impacts of project-related air emissions would result in any adverse impact on air quality or air quality-related values.

Potential air pollutant concerns for the proposed project include:

- Operation of heavy machinery and equipment, including marine vessels, during construction and operations that result in the emission of fossil fuel combustion exhausts. Such exhausts will include oxides of nitrogen, oxides of sulfur, carbon monoxide, and particulates. The significance of the contribution of project emissions to the formation of secondary particulate matter ($PM_{2.5}$) and ozone should also be evaluated;
- Fugitive dust emissions may be generated from construction and operation of the mine, ancillary facilities, and supporting infrastructure. In addition to human health effects, dust blown from the roadway can settle onto wetlands, vegetation, or waterbodies, impairing their health as well; and
- Hazardous air pollutants may result from fuel combustion and ore processing. The *National Air Toxics Assessment* asserts that numerous human epidemiology studies show increased lung cancer rates associated with diesel exhaust and significant potential for non-cancer health effects (see http://www.epa.gov/ttn/atw/nata). Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule (66 Fed. Reg. 17,230, March 29, 2001) lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. The EPA recommends the EIS disclose whether hazardous air pollutant emissions would result from project construction and operations, discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations and individuals likely to be exposed to these emissions.

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We recommend the following steps for the EIS air quality analysis:

- Characterize the existing conditions to set the context for evaluating project impacts, including:
  - Regional climate and meteorology,
  - Air quality and air quality related values (e.g., visibility),
  - Identification of sensitive receptors in the vicinity;
- Review air quality regulations and any air permitting requirements that apply to the air pollutant sources associated with the project;
- Provide a comprehensive emissions inventory of criteria pollutants (in tons per year), greenhouse gas emissions (in metric tons CO_2 equivalents per year), and significant HAP emissions for all project components (mine site, transportation corridor, port, and pipeline) and project phases; and
- If projected emissions are significant, conduct near-field and far-field air quality modeling to assess project-related air quality and visibility impacts. Also, see our recommendations related to Predictive Modeling, later in this document.

We recommend that the Corps evaluate and incorporate best management practices and mitigation measures into the EIS to reduce emissions of criteria pollutants and HAPs, which also have co-benefits of reducing GHGs. We recommend that the EIS include a comprehensive fugitive dust control plan as well as a construction air pollutant emissions control plan to address reduction of engine emissions.

These recommendations are separate and distinct from, and are not intended as a substitute for compliance with, any additional obligations of the Corps and the project proponent to comply with the federal Clean Air Act and any applicable state or tribal air pollution laws, which may require, among other things, obtaining pre-construction permits and operating permits, compliance with new source performance standards and/or national emission standards for hazardous air pollutants, as well as any applicable state implementation plan (SIP) requirements, including, as applicable to the Corps, the requirements under Section 176 of the Clean Air Act regarding conformity of federal activities to implementation plans approved or promulgated under section 110 of the Clean Air Act.

Climate Adaptation

The EPA recommends that the EIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure. This could help inform the development of measures to improve the resilience of the proposed project. If projected changes could notably exacerbate the environmental impacts of the project, the EPA recommends these impacts also be considered as part of the NEPA analysis.

Fish and Wildlife, including Endangered Species and Essential Fish Habitat

The EPA recommends that the EIS evaluate impacts to fish and wildlife from the proposed project and alternatives. The aquatic resources section above also provides recommendations related to fisheries.

Special consideration should be given to listed and proposed species under the Endangered Species Act and Essential Fish Habitat under the Magnuson Stevens Fishery Conservation and Management Act. NEPA regulations require that, to the fullest extent possible, the EIS be prepared concurrently with

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environmental analyses required by the ESA and other environmental laws.[36] Magnuson Stevens Act and ESA implementing regulations also encourage coordination with other environmental reviews.[37, 38]

We recommend that the EIS discuss the species listed and proposed as threatened or endangered under the ESA and the essential fish habitat within the project area (including the pipeline, roads, and port site) and the potentially impacted area surrounding the project. The EIS should describe impacts to ESA species and EFH and discuss the activities proposed to avoid, minimize, mitigate, and monitor listed and proposed species and EFH. We understand that the Corps will develop a biological assessment to evaluate impacts to listed and proposed endangered species and EFH, and recommend that it be included with the draft EIS. We also recommend that the federal action agencies work together to ensure that a single biological assessment is developed that meets all agencies' needs.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties, including those of traditional religious and cultural importance, following regulations in 36 C.F.R. Part 800. The NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, to consult with the appropriate State Historic Preservation Officer /Tribal Historic Preservation Officer. We support the Corps' early engagement with the Advisory Council on Historic Preservation, and we recommend that the EIS discuss any potential impacts to historic properties, including any tribal, cultural, or other treaty resources that are historic properties or traditional cultural properties. In addition, the EIS should identify alternatives and mitigation to avoid significant impacts. Recommendations related to traditional uses and resources that are not historic properties are discussed further below.

Invasive Species

We know that ballast water from barges or vessels can be a major source of non-native species into marine ecosystems. Non-native species can adversely impact the economy and the environment and cause harm to human health. Impacts may include reduction of biodiversity of species inhabiting coastal waters due to competition between non-native and native species for food and resources. We recommend that the EIS discuss potential impacts from non-native invasive species associated with ballast water in vessels that will be utilizing the Amakdedori Port associated with this project and identify mitigation measures to minimize adverse impacts to the marine environment and human health.

SAFETY, RISK ANALYSIS, AND HAZARDOUS MATERIALS MANAGEMENT

Accidents and Failures

An array of spills, accidents, and failures can occur at mining sites. We recommend that the EIS describe the control measures that will be in place to prevent these events from occurring during construction, operations, and closure. To identify these events, we recommend that the Corps evaluate the proposed design and management of the tailings facility, dams, and other structures and evaluate PLP's waste and water management and reclamation plans to determine the project-specific likelihood of different types of accidents and failures. Designs and management plans for the pipeline and transportation components

[36] 40 C.F.R. § 1502.25.
[37] 50 C.F.R. § 600.92 (c), (f).
[38] 50 C.F.R. § 402.06.

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(road, ports, shipping) should also be evaluated to determine the probability of accidents and failures. We recommend that the results of these evaluations be documented in the EIS. For those events that are determined to be of low probability but high consequence, we recommend that the EIS evaluate the potential effects of such events on aquatic ecosystems, particularly fishery resources, and other resources. The EIS should also discuss mitigation measures that could minimize the risk or damages of such events.

Physical Stability of Structures

The EIS should assess the likelihood of earthquakes in the region and describe the geotechnical stability of the tailings and waste storage facilities and open pit walls during operations and closure. We recommend including a description of how these facilities are designed and how they would be operated, closed, and monitored to ensure stability. In addition, we recommend that a risk assessment, such as a Failure Modes Effects Analysis, (FMEA) be conducted on each of the tailings dams with the results summarized in the EIS. An FMEA considers potential failure modes and identifies the relative likelihood and consequences of the failure modes, which are key considerations for impact assessment. We recommend that the EIS incorporate mitigation or alternatives to improve stability should the FMEA identify failure modes that are anything other than a tolerable risk.

For the tailings impoundment in particular, we recommend that the Corps require a demonstration that the structure complies with state dam safety criteria and has been designed by qualified persons. In addition, we recommend that the Corps require that the dam be independently reviewed (and modified if indicated by the review)[39]. Given the proposed size of the dams associated with the Pebble project and value of the downstream resources, we believe that an independent review of the dam structure is appropriate. We recommend that the results of the independent review be documented in the EIS in order to support the assessment of geotechnical stability.

As mentioned above in the Range of Alternatives section, we recommend that the Corps consider alternatives to improve physical stability of the tailings, including consideration of filtered tailings (dry stack). We note that consideration of a filtered tailings alternative and assessment of safety and stability via a FMEA and independent review panel are consistent with recommendations of *The Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach* (January 30, 2015). In addition to investigating the cause of the Mount Polley tailings storage facility failure, the Review Panel made recommendations on actions that could be taken to ensure that similar failure does not occur at other mines. We recommend that the Corps consider the Review Panel Report and, in particular, the recommendations related to best available technology for new impoundments, design commitments to support permit applications, and actions to validate the safety of tailings storage facilities.

Hazardous Materials

We recommend that the EIS address the potential direct, indirect, and cumulative impacts of hazardous materials/wastes management and storage from the construction and operation of the proposed project and alternatives. Mining activities may involve the transport of hazardous materials, and we recommend that the EIS disclose the types and amounts of materials that will be used at each step of mining operations. In addition, we recommend that the EIS describe measures that will be taken to minimize the

[39] 33 C.F.R. § 325.1.

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chances of an accidental release, emergency measures that will be implemented should such an event occur, and how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations.

We also recommend that potential health impacts to local communities or other project area users be identified, as well as any strategies employed to communicate risks or actual emergencies. As part of this analysis, we recommend that the EIS use scientific and traditional ecological knowledge to describe potential health effects from exposure to hazardous materials and the effects on the palatability of eating potentially contaminated foods.

HUMAN HEALTH AND IMPACTS TO COMMUNITIES

Sociocultural Impacts

It is anticipated that the proposed project will result in employment opportunities for Alaska Native residents, as well as generate local and corporate revenues in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts may affect a community's ability to access traditional and accustomed subsistence use areas. We recommend that the EIS identify the specific communities, federally recognized tribes, and corporations that could be impacted, both positively and negatively, which will help agency decision makers and the public understand the scope of the potential sociocultural impacts.

We recommend that the sociocultural impacts associated with this project and alternatives be fully evaluated and disclosed in the EIS and include, but not be limited to, the following:

- Socioeconomic Impacts
  - Evaluate potential changes to the region's economy as a result of the mine construction and operation (e.g., changes to commercial fishery, recreational fishery, and tourism sectors).
  - Evaluate impacts associated with economic changes to families, communities, and cultures, including potential changes to those aspects of the area's economy that are currently subsistence-based;
  - Evaluate the potential decline in the region's economy following mine closure; and
  - Evaluate replacement costs of traditional foods if access or availability are impacted by the proposed project.
- Accessibility of Traditional Use Areas
  - Identify community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, camping, berry picking, and other uses;
  - Describe the potential access limitations to these traditional use areas and their impacts to local communities; and
  - Coordinate with the tribes and communities on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.
- Compatibility of Traditional Use Areas
  - Identify project activities that may conflict with traditional and accustomed uses; and

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- Coordinate with the affected tribes and communities to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses and the construction and operation of this project.

Environmental Justice and Impacted Communities

In compliance with NEPA and Executive Order 12898 on Environmental Justice, actions should be taken to conduct adequate public outreach and participation that ensures that the public and Native American tribes understand possible impacts to their communities and trust resources.

Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.[40] The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be uniquely vulnerable populations that may be impacted.

The CEQ has developed guidance concerning how to address Environmental Justice in the environmental review process.[41] In accordance with this guidance, the EPA recommends that the EIS address the following points:

- Identify low income, minority, and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts;
- Disclose the results of meaningful involvement efforts, such as community identified impacts;
- Evaluate identified project impacts for their potential to disproportionately impact low income, minority, or Alaska Native communities, relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the Corps' decision making process;
- Propose mitigation for unavoidable impacts that will or are likely to occur; and
- Include a summary conclusion, sometimes referred to as an "environmental justice determination" that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on the EPA's website at: https://www.epa.gov/environmentaljustice.

Health Risk or Impact Analysis

The EPA recommends that the Corps undertake a screening process to determine which aspects of health (including but not limited to public, environmental, mental, social, and cultural) could be impacted by the proposed project. Depending on the screening results, an analysis of health effects, such

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[40] EO 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-income Populations. February 11, 1994.

[41] http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf.

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as a health risk assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health. This analysis may need as much time to complete as the Draft EIS, therefore we recommend that early screening is essential to ensuring a timely analysis. We further recommend that the Corps partner directly with local, state, tribal, and federal health officials to determine the type of analysis needed to assess health impacts and conduct the analysis, and to determine appropriate and effective mitigation of potential health impacts.

Scope of Health Assessment in EIS

In terms of the scope of the health assessment, we recommend that the potential for contaminant exposure and resulting risks be evaluated. In addition, we recommend that the EIS consider how income from new jobs can result in positive or negative health impacts, for example by increasing socioeconomic status or by generating rapid social and community change. We also recommend considering the health impacts of potential changes to traditional way of life from the project, including reduced reliance on a traditional diet due to lack of access and corresponding increased reliance on substitutes.

Data Collection

To appropriately evaluate health impacts, we recommend that specific health data that may not be routinely collected as part of the scoping process may be required. To ensure that the necessary data are available for this evaluation, the Corps may want to involve public health professionals early in the NEPA process. Public health data and expertise for prospective health impact analysis, or for providing input on health issues, may be available from local health departments, tribal health agencies, the Alaska Department of Health and Social Services, or federal public health agencies such as the U.S. Centers for Substances and Disease Registry, or the Indian Health Service.

Methods and Tools

The Health Impact Assessment methodology is a common tool that can be used to assess potential health impacts. HIA is a combination of procedures, methods, and tools that enables systematic analysis of potential positive or negative effects of a policy, plan, program, or project on the health of a population, as well as the distribution of those effects within the population.[42] Depending on available data and potential effects, there are different levels of HIA analysis, and we recommend that the Corps' involve public health professionals in determining the appropriate level of analysis. In addition to evaluating impacts, we recommend that the HIA identify the appropriate actions to manage or mitigate health effects from the proposed project.

Guidelines for conducting an HIA are available from various sources.[43] The World Health Organization has links to many guides.[44] The International Finance Corporation has also developed detailed guidelines for conducting an HIA.[45] In addition, the State of Alaska has developed *Technical Guidance for Health Impact Assessment*, also known as the "Alaska HIA Toolkit".[46]

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[42] This definition is from the International Association for Impact Assessment (IAIA), which is modified from the World Health Organization's Gothenberg consensus statement (1999).

[43] The EPA does not endorse or recommend use of any single or particular guidance on HIA. These references are provided as general information and to assist permitting agencies with identifying additional resources on HIA.

[44] See http://www.who.int/hia/about/guides/en/.

[45] See http://www.ifc.org/wps/wcm/connect/a0f1120048855a5a85dcd76a6515bb18/HealthImpact.pdf?MOD=AJPERES.

[46] See http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf.

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CONSULTATION AND COORDINATION WITH TRIBAL GOVERNMENTS

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States' government-to-government relationships with Indian tribes. In addition, pursuant to Public Law 108-119, 118 Stat. 452, as amended by Public Law 108-4217, 188 Stat. 3267, federal agencies are required to consult with Alaska Native Claims Settlement Act corporations on the same basis as Indian tribes under Executive Order 13175. We recommend that the EIS describe the process and outcome of any government-to-government and/or government-to-corporation consultations regarding the Pebble Project, issues that were raised during the tribal consultations and how those issues were addressed.

Cooperating agency involvement establishes a mechanism for addressing intergovernmental issues throughout the EIS development process, and we support the Corps' inclusion of two tribal governments as cooperating agencies. We recommend that the Corps remain open to including other potentially affected tribal governments that have the resources and interest in serving as cooperating agencies for EIS development, consistent with the July 28, 1999, memorandum from CEQ to the heads of federal agencies.

ANALYSIS TOOLS AND METHODOLOGIES

Baseline Data Adequacy

We suggest categorizing and synthesizing existing data to ensure pertinent information is available for review and use in the EIS analysis. We understand that the Corps intends to establish focused workgroups during development of the EIS. We support this approach and recommend that the workgroups include cooperating agency subject matter experts for key areas (air, water, wetlands, fisheries, etc.) to review baseline data for completeness, identify data gaps, and recommend approaches toward resolving those gaps in a timely manner. For example, additional analysis or collection of additional data may be required to characterize the accuracy of best available baseline estimates of resources such as fish populations, groundwater elevations, or wetland extents. Such information will be critical for designing and developing a robust monitoring framework and for assessing impacts during and after project development and comparing those to the baseline.

Geochemistry/Characterization of Ore, Waste Rock, and Tailings

To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste management, we recommend that the physical and chemical characteristics of the ore, pit walls, waste rock, and tailings should be determined and disclosed in the EIS. Environmental samples used to support projections should represent a range of conditions that currently occur and that could occur in the future as a result of the project, including under potentially altered future climate conditions. Waste materials (ore, waste rock, tailings) used for environmental projections should be representative of the material to be mined and related to the mine plan and proposed processing methods. Physical and chemical characterization should be conducted in a manner that provides environmentally conservative estimates of impacts.

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It may be helpful to consider EPA Region 10's Sourcebook for Hardrock Mining for recommendations related to the NEPA analyses of mining projects.[47] We recommend that the following information be utilized to characterize geologic and mineralogy setting/aqueous geochemistry in the baseline environment and impact prediction sections of the EIS:

- Whole rock analysis;
- Mineralogy;
- Drill core descriptions;
- Block model or similar model (a computerized estimate of the quantity and characteristics of ore and waste);
- Available literature on the ore deposit;
- Mineral occurrences (e.g., on fracture surfaces, in groundmass, using hand specimens and thin section) with an emphasis on sulfides and carbonates;
- Acid-base accounting;
- Long-term kinetic testing (including possible startup of test pads if sufficient material and access to site are available);
- Baseline surface and ground water quality and flows (including springs);
- Potentiometric surface for groundwater;
- Hydraulic properties (e.g., hydraulic conductivity, porosity, permeability) of soil, vadose zone, and groundwater aquifers, especially under proposed locations of mine facilities; and
- Hydrogeochemical models for prediction of water quality.

Predictive Modeling

We recommend that predictive modeling be based on a site-specific conceptual model that describes the system boundaries, spatial and temporal scales, hydraulic (for water modeling) and chemical characteristics, sources of data and data gaps, and the mathematical relationships used to describe processes. We also recommend that our suggestions be applied to any environmental and predictive modeling used for assessing impacts in the EIS. The water quality model, in particular, should be capable of predicting both whole water and dissolved fractions of metals/metalloids and should provide temporal predictions that are consistent with the time-steps in applicable water quality criteria.

Any modeling documentation should include:

- Tables of parameter values used in the model;
- Tables and graphs of results;
- Uncertainty and sensitivity analyses;
- Errors associated with both measured and assumed data; and
- Recommendations for further analysis, if applicable.

We recommend that discussions on modeling include a clear statement of the management objectives intended to be achieved by the modeling, the level of analysis required to meet the objectives, and uncertainties associated with modeled outcomes. For your reference, please refer to EPA's guidance that provides recommendations for the effective development, evaluation, and use of models in

[47]U.S. EPA Region 10. 2003. EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska January 2003.

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environmental decision making.[48]

We recommend that the EIS use caution in describing absolute outcomes based on modeling. Mathematical modeling used for describing the physical and chemical characteristics of the project site and potential impacts includes a level of uncertainty; understanding these uncertainties and associated risks is necessary for informed decision making. We recommend that the study plan for modeling analysis clearly state the purpose, questions of concern, method, data, and limitations of the model to generate valuable interpretations. We also strongly recommend an appropriately conservative approach be taken with modeling and a range of predictive outcomes be discussed (e.g., most likely case, reasonable worst-case, and reasonable best-case scenarios) that reflect a range of climatic settings and critical input values. Inclusion of a reasonable range of outcomes allows the agencies to make better informed plans for mitigation, adaptive management, and contingencies to respond to reasonably foreseeable adverse impacts.

Traditional Ecological Knowledge

Due to the location of the proposed project and traditional uses of the area, we recommend the identification, inclusion, and integration of traditional ecological knowledge into the EIS analysis, as appropriate. Such anthropological work can include the collection of local and traditional knowledge concerning the affected environment, anticipated impacts from the project, and traditional hunting and land use patterns in the area. We recommend that, in addition to reviewing any pertinent traditional ecological knowledge currently available, additional studies be conducted as necessary to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed project and project alternatives. This information should be reviewed and included in the EIS to the extent possible and utilized in the analysis of potential impacts.

MITIGATION, MONITORING, AND ADAPTIVE MANAGEMENT

Mitigation

CEQ regulations at 40 C.F.R. § 1508.20 define mitigation to include five categories of actions to address impacts. Briefly stated, these are: avoiding, minimizing, rectifying, reducing, and compensating. The regulations at 40 C.F.R. § 1502.14(f), 1502.16(h), and 1508.25 indicate that appropriate mitigation measures should be addressed in an EIS both as part of the analysis of alternatives and in discussions of environmental consequences.

Mitigation is also relevant to evaluating compliance with the Guidelines, which prohibit discharges of dredged or fill material that will cause or contribute to significant degradation of the waters of the United States, and prohibit all discharges *"unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."*[49] The Guidelines identify numerous types of actions to mitigate potential adverse impacts, which include

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[48] Guidance Document on the Development, Evaluation and Application of Environmental Models (PDF). EPA/100/K-09/003. March 2009. http://www.epa.gov/crem/cremlib.html.

[49] 40 C.F.R. § 230.10(d).

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measures to avoid, minimize, and compensate for impacts. Avoidance, minimization, and compensation form a "mitigation sequence" that must be followed in order to comply with the Guidelines' requirement that all appropriate and practicable steps be taken to mitigate impacts to aquatic resources.[50] Compensatory mitigation considerations under the Guidelines are discussed further in the section on aquatic resources above.

The EPA recommends that the EIS identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this project. In addition, we recommend identifying whether implementation of each measure is required by the Corps or any other governmental entity and which entity will be responsible for implementing the measure. To the extent possible, mitigation goals and measurable performance standards should be identified in the EIS to reduce impacts to a particular level or adopted to achieve an environmentally preferable outcome. CEQ guidance on the Appropriate Use of Mitigation and Monitoring seeks to enable agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs.[51]

Monitoring

Environmental monitoring programs should be designed to assess both impacts from the project and whether implemented mitigation measures are effective. We recommend that the monitoring programs:

- Define the monitoring goals and objectives;
- Provide details to demonstrate that goals and objectives will be achieved such as the parameters to be monitored, monitoring locations and frequency, data analysis, and reporting;
- Discuss actions (contingencies, triggers, adaptive management, corrective actions, etc.) that will be taken based on monitoring results;
- Identify and incorporate controls and pre-project data with quantified bias and precision to enable detection of impacts, success of BMPs, and ability to distinguish these from natural variation; and
- Require regular analysis and reporting of data to oversight agencies, including submittal of a sampling and quality assurance plan for agency approval.

We recommend that the monitoring programs be described in the EIS and that the EIS also discuss public participation, and how the public can get information on mitigation effectiveness and monitoring results.

Adaptive Management Planning

We recommend that the EIS utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy should include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set follow-up actions into motion. This strategy or plan should be described so that reviewers may comment on its adequacy. This type of plan, when coupled with the monitoring program, is necessary to mitigate for uncertainties and risks associated with predictions of

[50] 40 C.F.R. § 230.10(a), (d); *See* Memorandum of Agreement between U.S. Department of Army and the Environmental Protection Agency on the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.
[51] https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

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environmental outcomes, and will provide an early warning system of unexpected outcomes.

FINANCIAL ASSURANCE

NEPA provides for the disclosure of all information concerning the environmental consequences of a proposed action to agency decision makers and the public before decisions are made and actions are taken. A key component in determining the environmental impacts of a mining project is the effectiveness of the closure and reclamation activities, including long-term water management. In turn, whether any closure and reclamation activities that may be necessary will be adequately funded is key to determining whether those activities will be effective. We therefore recommend that the project's ability to self-fund, and/or any third-party financial assurance mechanisms, be disclosed. Disclosure of the financial assurance amount and mechanism is particularly important for this project given that PLP's proposal includes long term water management and treatment.

We recommend that the draft EIS disclose the estimated costs to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives. The EPA recommends that the final EIS identify proposed financial assurance mechanisms and demonstrate that these mechanisms would ensure that necessary reclamation work is completed.

The EPA is available for further conversations about the level of detail to include in the document. Below are the main elements that we believe should be disclosed in the EIS:

1. Site Reclamation (facility closure, earth moving/stabilization, revegetation, etc.):

- Phases of reclamation;
- Estimated cost (+/- percent) to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives;
- Criteria for determining success of reclamation activities for financial assurance release; and
- Costs associated with implementing contingency measures to address reasonably foreseeable but not specifically predicted outcomes.

2. Long-Term Site Management (post-closure water treatment, mitigation of impacts to aquatic resources, site maintenance, and monitoring):

- Itemized cost estimate (including reasonable contingencies) and appropriate economic variables to calculate the net present value of future expenses; and
- If a trust fund is utilized, address the "mechanics" of the fund, including:
    - Trust fund mechanism (e.g., current value trust, net present value trust, etc.);
    - Requirements for timing of payments into the trust fund;
    - How the Corps would ensure that the trust fund or other financial assurance could not be claimed by a creditor in the case of bankruptcy;
    - Acceptable financial instruments;
    - How trust management fees and taxes will be paid;
    - Identity of the trust fund beneficiaries; and
    - Identity of the operator with responsibility/liability for financial assurance.

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Message

From: Wright, Wendy [Wright.Wendy@epa.gov]
Sent: 4/30/2018 3:58:52 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Hood, Lynne [Hood.Lynne@epa.gov]; Kubo, Teresa [Kubo.Teresa@epa.gov]; Mbabaliye, Theogene [Mbabaliye.Theogene@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Somers, Elaine [somers.elaine@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Jen, Mark [Jen.Mark@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Owens, Kim [Owens.Kim@epa.gov]
Subject: NEPA Workload Report - April 30, 2018
Attachments: NEPA Workload Report April 30, 2018.pdf

Theo told me he could not open this week's Workload Report. I am re-sending it via email. If you receive it twice, I apologize. Let me know if you can't open this attachment.

Wendy Wright
SEE Administrative Assistant
206.533.6232
1200 Sixth Avenue – 14th Floor
Seattle, WA 98101

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NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Pebble Project, Cooperating Agency, Pebble Mine, AK	18-0002-COE	4/30/2018	6/29/2018	vaughan		Scoping

The Following Are Late

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NEPA Workload

TITLE	ERP	CEQ	REGION 10	DUE DATE	EXTENSION	REVIEWER	TYPE

CETA Ongoing

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/4/2018 1:41:41 AM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 900, ORC-113
Seattle, WA 98101
206-553-8582

-----Original Message-----
From: Allnutt, David
Sent: Tuesday, April 03, 2018 6:38 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Deliberative Process / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Message-----
From: McGrath, Patricia
Sent: Friday, March 30, 2018 1:11 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: FW: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Jill and David-

The Corps today issued its NOI to prepare an EIS and its scoping schedule. See links below.
The scoping period runs from April 1 to 30.

Deliberative Process / Ex. 5

Thanks - Patty

-----Original Message-----
From: Worby-Miller, Angela N CIV USARMY CEPOA (US) [mailto:Angela.N.Worby-Miller@usace.army.mil]
Sent: Friday, March 30, 2018 11:22 AM
To: Pagemaster, Reg POA <regpagemaster@usace.army.mil>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: Notice of Intent to Prepare an Environmental Impact Statement (Pebble Limited Partnership)

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States.

SPECIAL PUBLIC NOTICE DATE: March 30, 2018

IDENTIFICATION NUMBER: POA-2017-271

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APPLICANT: Pebble Limited Partnership

LOCATION: The project would be located in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit.

CONTACT:
For information regarding the proposed project plans and construction, please contact the applicant at:
Pebble Limited Partnership
3201 C Street, Suite 505
Anchorage, Alaska 99503.

For additional information regarding the EIS process (including scoping) please contact:
Mr. Shane McCoy
Program Manager, Regulatory Division
US Army Corps of Engineers, Alaska District CEPOA-RD Post Office Box 6898 JBER, Alaska 99506-0898

Also, please visit our project website at www.PebbleProjectEIS.com.

The full text of this public notice, as well as associated maps and drawings, are available on our website at:
http://www.poa.usace.army.mil/Missions/Regulatory/Special-Public-Notices/
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

_____
**NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District
Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
http://www.poa.usace.army.mil/Missions/Regulatory/RegulatoryContacts.aspx

Customer Survey:
http://per2.nwp.usace.army.mil/survey.html

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/22/2018 3:04:30 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Bristol Bay - Administrator Meeting with House Western Caucus

Sorry! Was going to cc you.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Tuesday, May 22, 2018 8:04 AM
To: Stern, Allyn <Stern.Allyn@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: FW: Bristol Bay - Administrator Meeting with House Western Caucus

FYI –

Also – Carrie said the following this morning:

Deliberative Process / Ex. 5

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 7:37 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: FW: Bristol Bay

FYI.

From: Fotouhi, David
Sent: Tuesday, May 22, 2018 10:28 AM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Very helpful; thank you!

AMERICAN OVERSIGHT

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 10:04 AM
To: Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Hi David – Below is a status update of PLP's permit application. I have attached the FR notice I quoted from just in case you wanted to see it. Carrie mentioned that the Congressional Western Caucus is coming in for a meeting. I wanted to make sure you were of the attached letter from some Caucus members. OW is currently preparing a draft response. Also, as you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

Heidi

++++++++++

- Pebble's permit application is currently in the NEPA scoping phase.
- Substance: The Corps' public notice announcing its intent to issue the EIS explained that "[s]coping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS."
    - The Corps' public notice indicated that the draft EIS will identify a range of alternatives and evaluate reasonable and practicable alternatives, including "the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action."
    - The notice identified significant issues that will be analyzed in the draft EIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation and closure. These significant issues include "wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental concerns, historic properties, navigation, and safety."
- Process: The Corps' public scoping period ends on June 29, 2018.
    - Region 10 is preparing a draft scoping letter.
    - The draft letter will come to headquarters (OW, OFA and OGC) for review June 4th-June 12th.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

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Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/15/2018 6:40:24 PM
To: Marshall, Tom [marshall.tom@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]
CC: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: Here's the version we are talking from
Attachments: EDIT DF edits to Pebble Project Scoping 060518 draft_noon.docx

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Steiner-Riley, Cara [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0BEF7D04F2E64E4B8B90235A30CC7109-STEINER-RILEY, CARA]
Sent: 5/3/2018 8:00:45 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]

Subject: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Cente Conference Line/Code / Ex. 6

Start: 2/14/2018 5:00:00 PM
End: 2/14/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 2/14/2018 until 6/8/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 6/12/2018 11:14:40 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Free

Recurrence: Weekly
Occurs on Tuesday every other week from 9:00 AM to 10:00 AM effective 7/31/2018 until 1/30/2019.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM
Show Time As: Busy

Recurrence: (none)

Erik Peterson will email the agenda prior to the meeting.

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: (none)
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0ecba75a9f9448d3980a693951129e64-Peterson, Erik]
Sent: 11/16/2018 8:06:38 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Fordham, Tami; Stern, Allyn
CC: Detwiler, Susan K.; Chu, Rebecca

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Tuesday from 9:00 AM to 10:00 AM

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

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Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA
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June 2018 memo on 404c regulation revisions

External meeting
- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Conference Line/Code / Ex. 6

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 6/25/2018 8:03:09 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Marcia Combes (Combes.Marcia@epa.gov) [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]

CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Tentative

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/3/2018 8:00:47 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Subject: FW: Bristol Bay Check-in
Attachments: Untitled Attachment; Untitled Attachment; Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 2/14/2018 5:00:00 PM
End: 2/14/2018 6:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Subject: Bristol Bay Check-in
When: Occurs every 2 week(s) on Wednesday effective 2/14/2018 until 6/8/2018 from 9:00 AM to 10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]

Start: 5/9/2018 4:00:00 PM
End: 5/9/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Start: 5/23/2018 4:00:00 PM
End: 5/23/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

Subject: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Start: 6/12/2018 4:00:00 PM
End: 6/12/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/27/2018 9:34:14 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]
CC: Koslow, Karin [Koslow.Karin@epa.gov]
Subject: your voicemail on pebble nepa letter

Allyn - It has been with david and Justin. I've been pinging David on a regular basis and he's just swamped. Why don't you send Justin and david a note and copy me and Karin, mark it urgent and see if you can get a response.

Steve Neugeboren
Associate General Counsel for Water
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
202 (564-5488)

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 8/13/2018 8:31:16 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]
Subject: FW: Bristol Bay Check-in Agenda for 8/14/18

Hi Allyn – Sorry – I didn't realize you were on this email as well. Below is my current status (Kent and I have a one-hour pre-mediation conference call with Magistrate Judge You tomorrow at 9am so I will not be at this checkin).

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Palomaki, Ashley
Sent: Monday, August 13, 2018 1:27 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: RE: Bristol Bay Check-in Agenda for 8/14/18

Hi Erik –

I have a conference call with a federal judge tomorrow morning at 9am so I will not be able to participate in this meeting. **Personal Matters / Ex. 6**

I think you have current status of FOIA.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Monday, August 13, 2018 12:33 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne

AMERICAN OVERSIGHT

<Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Detwiler, Susan K. <detwiler.susan@epa.gov>
Subject: Bristol Bay Check-in Agenda for 8/14/18

Hello,

Tomorrow at 9 am PST, 8/1/18, we will have a Bristol Bay check-in with Linda Anderson-Carnahan. Linda is acting for David Allnutt while he is out.

The purpose of these bi-weekly meetings is for the two Bristol Bay Teams - the Permit Oversight/NEPA Review Team and the 404(c) Team – to check-in with each other and with regional management.

Agenda

Preliminary EIS document review

FOIA

De Fazio response

OGC clerk legal memo

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 8/6/2018 7:27:25 PM
To: Werntz, James [Werntz.James@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Bilbrey, Sheryl [Bilbrey.Sheryl@epa.gov]; Opalski, Dan [Opalski.Dan@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]

Subject: ET Mining Subgroup meeting
Attachments: ET_miningsubgroup_summary_201808.docx
Location: R10IO Conference Line/Code / Ex. 6 IOO-Meet-Me-Ln/R10-IOO-Eqpt; R10Sea-Room-11Camas-ORC-VTC/R10-Rooms-Restricted

Start: 8/7/2018 4:00:00 PM
End: 8/7/2018 5:00:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

Meeting of ET Mining Subgroup
Agenda to be sent out before the meeting

Dear ET Mining Subgroup-
Attached is the mining update for August. Areas highlighted in the update are those that I propose discussing during our meeting tomorrow, which include:

- Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
- Project-specific updates – Pebble;
- Non-Responsive: Unrelated to Bristol Bay/Pebble Mine
-
-

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Patty

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 11/6/2018 6:26:25 AM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/6/2018 5:00:00 PM
End: 11/6/2018 6:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/26/2018 5:37:33 AM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM
End: 7/18/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 11/19/2018 11:36:30 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/13/2018 1:55:52 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Tentative: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 5/17/2018 7:29:07 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Declined: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 4/3/2018 8:58:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Suter, Glenn [suter.glenn@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: Lavoie, Emma [Lavoie.Emma@epa.gov]; Bierwagen, Britta [Bierwagen.Britta@epa.gov]; Hagerthey, Scot [Hagerthey.Scot@epa.gov]

Subject: ORD support for Pebble EIS
Location: Conference Line/Code / Ex. 6

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 8/14/2018 6:14:27 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: R10AOO-ConfLnMM-907-271-2895/AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO- Conference Line/Code / Ex. 6 Conference Line/Code / Ex. 6

Subject: Pebble Ch. 4
Location: R10AOO- Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 8/14/2018 7:30:00 PM
End: 8/14/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/16/2018 8:38:26 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Pebble Meeting

Start: 7/30/2018 9:45:00 PM
End: 7/31/2018 12:15:00 AM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/13/2018 7:44:18 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Pebble Site Visit

Start: 7/31/2018 8:00:00 AM
End: 8/1/2018 8:00:00 AM
Show Time As: Out of Office

AMERICAN OVERSIGHT

Appointment

To: Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

Agenda

NEPA preliminary EIS comments

Briefing

FOIA

Information Quality Act Request for Correction or Withdrawal

404c rulemaking

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Subject: Canceled: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/25/2018 4:00:00 PM
End: 9/25/2018 5:00:00 PM
Show Time As: Free

Recurrence: (none)

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Fordham, Tami [Fordham.Tami@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]
CC: Detwiler, Susan K. [detwiler.susan@epa.gov]; Chu, Rebecca [Chu.Rebecca@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/20/2018 5:00:00 PM
End: 11/20/2018 6:00:00 PM

Recurrence: (none)

Agenda

Permit Oversight/ NEPA Review Team

Preliminary EIS review

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeever FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

→ **Meeting Organizer**

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]

CC: Chu, Rebecca [Chu.Rebecca@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 12/18/2018 5:00:00 PM
End: 12/18/2018 6:00:00 PM

Recurrence: (none)

Proposed Agenda – let Erik know if you have suggestions

Permit Oversight/ NEPA Review Team

NEPA Preliminary EIS Comments

Public Notice

PLP's draft Compensatory Mitigation Plan

404(c) Team

Hladick and Forsgren 12/12 Briefing

Bristol Bay NEPA and 404 Leadership Update for January 2019

CMS Pebble Limited Partnership

FOIA

Request for Correction or Withdrawal

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/6/2018 11:53:17 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
BCC: R10AOO-ConfLnMM-907-271-2895/AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO-ConfLineMM-907-271-2895@epa.gov]

Subject: Pebble wetlands coordination conversation
Location: Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Busy

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]
Sent: 5/16/2018 5:11:26 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]

Subject: Bristol Bay Check-in
Attachments: Untitled Attachment; Untitled Attachment
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every 2 week(s) on Wednesday from 9:00 AM to 10:00 AM

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]

CC: Douglas, Mark [douglas.mark@epa.gov]; Detwiler, Susan K. [detwiler.susan@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

To: Mendelman, Krista [Mendelman.Krista@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]
CC: Douglas, Mark [douglas.mark@epa.gov]

Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Douglas, Mark [douglas.mark@epa.gov]
Sent: 8/13/2018 11:27:33 PM
To: Douglas, Mark [douglas.mark@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Conversation with Douglas, Mark

Douglas, Mark 3:22 PM:
any news from Pebble re the alternatives info for next week's meeting?

Vaughan, Molly 3:25 PM:
No new news. If I am correctly understanding the last schedule provided by Shane (which I may not be), we will be receiving it tomorrow.

Douglas, Mark 3:26 PM:
ah, ok

Douglas, Mark 3:26 PM:
thanks

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [vaughan.molly@epa.gov]
Sent: 10/30/2018 6:21:51 PM
To: Nogi, Jill [nogi.jill@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Conversation with Nogi, Jill

Vaughan, Molly 10:20 AM:
Hi Jill - sorry I missed your call, and now I believe you are in a meeting. I will plan to call at noon your time, or feel free to call me if you are available before that.

Vaughan, Molly 10:21 AM:
Regarding Pebble, I apologize that I am still working on the comments, but will send them to you shortly.

AMERICAN OVERSIGHT

Message

Sent: 11/27/2018 6:31:45 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
Subject: internal review schedule for Pebble comments

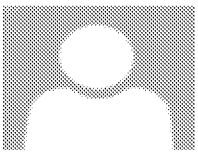
Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [no-reply@sharepointonline.com]
Sent: 11/20/2018 8:24:02 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Hough, Palmer wants to share 'Pebble Project Permitting Oversight and NEPA Review Team' with Ebersole, Joe



I want to share Pebble Project Permitting Oversight and NEPA Review Team with Ebersole, Joe

Accept or Decline this request

Requested resource: https://usepa.sharepoint.com/sites/R10_Work/pebble_project_po_nr_team

AMERICAN OVERSIGHT

Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 10/1/2018 8:18:39 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Bristol Bay Check-in - Propose moving to every other Wednesday at 9:30 am

Ok, thank you all for responding, I really appreciate it. Based on a key conflict, I am going to propose now that we keep it at 9 am on Tuesdays.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Palomaki, Ashley
Sent: Monday, October 01, 2018 12:53 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Bristol Bay Check-in - Propose moving to every other Wednesday at 9:30 am

That's fine with me. Thanks, Erik.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Monday, October 01, 2018 12:49 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Bristol Bay Check-in - Propose moving to every other Wednesday at 9:30 am

Patty,

Thank you. There would be conflicts with the second Wednesday starting on February 13th. So, I'll keep it to 9 am to avoid that problem.

Otherwise sounds like Wednesdays are ok for you.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

From: McGrath, Patricia
Sent: Monday, October 01, 2018 12:36 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Bristol Bay Check-in - Propose moving to every other Wednesday at 9:30 am

I have a National Mine Team call that starts at 10 on the second Wednesday of every month. I would rather not conflict with that call, but if there are conflicts, I could find someone to sub for me on the call every now and then.

From: Peterson, Erik
Sent: Monday, October 1, 2018 12:28 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Bristol Bay Check-in - Propose moving to every other Wednesday at 9:30 am

Patty, Molly and Ashley,

I would like to move the BB check-in with David Allnutt from every other Tuesday at 9:00 am to every other Wednesday at 9:30 am starting November 7th.

Would this be ok with you all?

Wednesday mornings seem better to me because both the teams can have Monday and Tuesdays to figure out what is most important for David, and it will be recent and relevant for that week. 9:30 am is better for me also.

The 404(c) team meets on Tuesdays. In general, we have been meeting once a month given our relatively lower current workload.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 11/20/2018 8:29:56 PM
To: Ebersole, Joe [Ebersole.Joe@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly is inviting you to collaborate on Pebble Project Permitting Oversight and NEPA Review Team

Hi Joe - per Palmer's email, you should now have access to our SharePoint site. Please let me know if you have any trouble locating documents you need on the site.
--Molly

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.

 Get the SharePoint mobile app!

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 10/24/2018 6:21:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Hot Topics for ERSMU this week

Thanks very much for your work on this Molly and Patty…much appreciated! Yesterday Jill said that she has submitted -- I will confirm that at the manager's meeting this afternoon. Have a good day! JB ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 11:19 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Thank you, Patty.
Justine, please use this edited version:

Deliberative Process / Ex. 5

From: McGrath, Patricia
Sent: Tuesday, October 23, 2018 9:47 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Please consider the recommended edits. **Deliberative Process / Ex. 5**

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 10:37 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Hot Topics for ERSMU this week

Hi Justine and Jill,
Here is my write-up:

Deliberative Process / Ex. 5

Thanks,
Molly

From: Barton, Justine
Sent: Monday, October 22, 2018 11:15 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: FW: Hot Topics for ERSMU this week

Hi Molly – I'm acting for Jill today & Wednesday. At today's Hot Topics meeting, Dave asked for a brief paragraph for the Weekly re. #4 below (Pebble Prelim DEIS). Could you get me some sentences before noon on Wednesday that I can forward on to Dave and Linda? Thanks Molly! ☺ JB p.s. FYI -- #1 and #4 are the only ones he asked for… JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 |
barton.justine@epa.gov

From: Nogi, Jill
Sent: Monday, October 22, 2018 7:55 AM
To: Barton, Justine <Barton.Justine@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Cc: Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Subject: Hot Topics for ERSMU this week

Justine – If you can attend the Hot Topics meeting at 11:30 today in the Elwha Room for ERSMU, that would be very helpful. If not, please help me find someone who could attend.
Topics to mention for David to determine what to share with the ET later today (and if David asks for write up in the Weekly, please ask staff for a paragraph that you can review/email to David and Linda on Wednesday before noon. David and Linda make any final edits before they can upload the information to the R10 Weekly Sharepoint Site):

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Deliberative Process / Ex. 5

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

Thanks
Jill

AMERICAN OVERSIGHT

Message

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: 11/20/2018 10:19:55 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Sharing request for 'Pebble Project Permitting Oversight and NEPA Review Team' sent to owner

Got it! Thank you Molly

Joseph L. Ebersole, PhD | 1.541.754.4775 | ebersole.joe@epa.gov | EPA staff profile
US Environmental Protection Agency | 200 SW 35th St, Corvallis, OR 97333

From: Vaughan, Molly
Sent: Tuesday, November 20, 2018 12:32 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: RE: Sharing request for 'Pebble Project Permitting Oversight and NEPA Review Team' sent to owner

Okay, Joe should have just received a SharePoint message giving him access!
--Molly

From: Hough, Palmer
Sent: Tuesday, November 20, 2018 11:26 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Ebersole, Joe <Ebersole.Joe@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>
Subject: FW: Sharing request for 'Pebble Project Permitting Oversight and NEPA Review Team' sent to owner

Molly/Patty

If you have not already, can you give Joe Ebersole access to the Pebble EIS sharepoint site?

Thanks, palmer

From: no-reply@sharepointonline.com <no-reply@sharepointonline.com>
Sent: Tuesday, November 20, 2018 3:24 PM
To: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Sharing request for 'Pebble Project Permitting Oversight and NEPA Review Team' sent to owner

We've asked the owner to share Pebble Project Permitting Oversight and NEPA Review Team with:

Ebersole, Joe

After the owner approves the request, recipients will receive a confirmation email.

AMERICAN OVERSIGHT

Message

Sent: 11/19/2018 8:44:29 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: Pebble Draft Ch 2 comments for review

Hi Patty – here is Mark's response. If you would like to see any additional changes to this comment, please let me know.

From: Douglas, Mark
Sent: Monday, November 19, 2018 11:13 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Molly,

Deliberative Process / Ex. 5

Thanks as always,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

From: Vaughan, Molly
Sent: Monday, November 19, 2018 10:35 AM
To: Douglas, Mark <douglas.mark@epa.gov>
Subject: FW: Pebble Draft Ch 2 comments for review

Hi Mark – please take a look at Ashley's edits to the first comment in the table, also described in her email below, and let me know how you would like to finalize the comment.
Thanks,
Molly

From: Palomaki, Ashley
Sent: Monday, November 19, 2018 8:01 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly –

Thanks for the opportunity to review. My comments are attached. I have a problem in that I always fix nits if I see them ☺ but you should take it or leave it. I also flagged a couple places for you where you should edit the sentence b/c it isn't clear.

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Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Friday, November 16, 2018 9:25 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly and Ashely –

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

From: Vaughan, Molly
Sent: Thursday, November 15, 2018 3:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Draft Ch 2 comments for review

Hi Ashley,
I am so sorry for the delay in getting these comments to you for review. If you will no longer be able to complete your review Friday, please let me know. I also apologize that some of the comments (particularly the last couple pages) are still a bit rough. So, please don't feel that you have to edit grammar, punctuation, etc., as I will do another read-through for that before sending this to Jill.

Patty – I've copied you here as well, so you can decide if you would prefer to do your final review of the compiled comments now, or at the same time as Jill's review.

Thank you very much in advance for your review!
--Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 10/4/2018 10:25:02 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Draft 10/9/18 Bristol Bay Check-in Agenda

Hi Erik – I don't have anything to add re FOIA. Thanks.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Thursday, October 04, 2018 2:26 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Draft 10/9/18 Bristol Bay Check-in Agenda

Patty, Ashley and Molly,

Please give feedback on the following draft agenda by 1pm 10/5/18. Thank you!

Patty and Molly, the text below (except the Bolen briefing question) is from the 9/7 update we provided David in-lieu of meeting with him on 9/11.

Draft Agenda

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation
- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- It is not clear whether we will be provided with another opportunity to review these chapters before the draft EIS. The Corps has indicated that there will be technical meetings in October/November to discuss comments and the impact assessment.

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Alternatives

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule

- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

<u>404(c) Team</u>

FOIA

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up?

Congressional responses

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

External Correspondence

- Recent activity and approach

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 9/26/2018 7:26:12 PM

Subject: Hold for Pebble Alts meeting

Start: 10/24/2018 5:00:00 PM
End: 10/24/2018 8:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 11/2/2018 11:28:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: FYI - Pebble Needs and Welfare of the People and Socioeconomics Sections

Thanks, Molly.

Have a great weekend,
Neverley
(907) 271-3206

-----Original Message-----
From: Vaughan, Molly
Sent: Friday, November 02, 2018 1:21 PM
To: Wake, Neverley <wake.neverley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: FYI - Pebble Needs and Welfare of the People and Socioeconomics Sections

Hi Neverley,
The Corps has distributed the preliminary draft affected environment and environmental consequences sections for "Needs and Welfare of the People-Socioeconomics." As you can see from the email below, this has not been assigned to EPA for review. However, if you are interested in taking a look, I have put it on the Sharepoint Site.
Regards,
Molly

-----Original Message-----
From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, November 02, 2018 9:17 AM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: please provide comments by 11/30 from the requested CAs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Attached are 4 Word files and 3 PDF files, the review drafts and associated figures of:

Sec3.3/4.3-Needs and Welfare of the People-Socioeconomics (CAs listed as Curyung Tribal Council, Lake and Peninsula Borough, Nondalton Tribal Council, State of Alaska) .There are no figures associated with these two sections.

Sec3.12/4.12-Transportation and Navigation (CAs listed as USACE, USCG, State of Alaska). Section 3.12 has three figures, attached as PDFs.

A four-week review period for CAs gives a return date to AECOM of 11/30/2018.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Butler, Barbara [no-reply@sharepointonline.com]
Sent: 11/2/2018 7:26:44 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Butler, Barbara wants to access 'Pebble Project Permitting Oversight and NEPA Review Team'

I'd like access, please.

Accept or Decline this request

Internal Website/ Ex. 6

AMERICAN OVERSIGHT

Message

From: Barton, Justine [Barton.Justine@epa.gov]
Sent: 11/27/2018 10:40:13 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble Mine - Justine Barton Comments

OK, sounds good Molly. If, while you are compiling things, you have any need to discuss my comments, please give me a call. Good luck with all your upcoming work on this. You are doing a great job…much appreciated!!! JB ☺

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Vaughan, Molly
Sent: Tuesday, November 27, 2018 10:26 AM
To: Barton, Justine <Barton.Justine@epa.gov>
Subject: RE: Pebble Mine - Justine Barton Comments

Hi Justine,
Thank you so much for reviewing and for these comments. I was specifically hoping you would focus on impacts at the potential port sites, so that is perfect (and I apologize for not reaching out at the beginning of the review period with more specific direction, everything has just been so rushed on this review!). Your comments seem very appropriate and helpful. I have not had time to read the sections myself to see if I have any additional questions for you, but will follow up with you if I do.
Thank you,
Molly

From: Barton, Justine
Sent: Monday, November 26, 2018 3:13 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: Nogi, Jill <nogi.jill@epa.gov>
Subject: Pebble Mine - Justine Barton Comments

Hi Molly – My expertise is in the Port facility and dredging and dredged material disposal realm, so my comments are skewed toward those sections of the chapters provided. Since my review area is pretty narrow, I have just a few comments at this point. Could you take a look and see if these are helpful? Please let me know what else I might include that would be of assistance to you in the topic areas I mentioned above. JB

Justine Barton | Ecologist | U.S. Environmental Protection Agency
Sediment Management Unit | 1200 6th Avenue, Suite 155 | Seattle, WA 98101 | 206.553.6051 | barton.justine@epa.gov

From: Vaughan, Molly
Sent: Wednesday, November 21, 2018 12:34 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas,

AMERICAN OVERSIGHT

Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: RE: Please Review - Pebble Pre-DEIS Sections

Hello All,
We just received word from the Corps that they are extending the deadline for cooperating agency comments on these sections. For all of the sections below, I would now appreciate if you can complete your review and send me any comments you have by COB Monday Dec. 10.
Thank you and Happy Thanksgiving!
--Molly

From: Vaughan, Molly
Sent: Tuesday, November 13, 2018 10:56 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Butler, Barbara <Butler.Barbara@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>
Cc: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: Please Review - Pebble Pre-DEIS Sections
Importance: High

Hello Pebble NEPA Team,

We have received several additional sections of the preliminary Draft EIS for review. We have also received many sections as an FYI for which our review is not requested. I have loaded everything I've received to date into the Sharepoint Folder: Preliminary Draft EIS Sections Oct-Nov 2018.

As a reminder, our input at this stage is only requested on the specific sections we were assigned to in the Cooperating Agency plan. Therefore, if your name doesn't appear below with a specific assignment, no review is necessary at this time. However, feel free to take a look at the sections pertaining to your subject matter on the Sharepoint Site if you wish.

Here are the assignments for specific sections where I would appreciate your review. Note that each subject area includes a section for Chapter 3 (affected environment), Chapter 4 (environmental consequences), as well as one or two supporting technical appendices. Please use the attached comment spreadsheet to assemble your comments, and please send them to me by the date noted for each section below.

- 3.11/4.11/K4.11 Aesthetics – Molly
- 3.14/4.14/K3.14 Soils – Mark/Palmer – due COB 11/27
- 3.16/4.16/K3.16 Surface Water Hydrology – Tim/Mark/Palmer/Muluken/Justine – due COB 11/27
- 3.26/4.26/K3.26 Vegetation – Mark/Palmer – due COB 11/27
- 3.17/4.17/K3.17 Hydrogeology – Tim/Mark/Palmer/Muluken – due COB 11/29
- 3.18/4.18/K3.18/K4.18 Water and Sediment Quality – Cindi/Tim/Chris – due COB 11/29
- (note, we have not yet received the Wetlands sections, which are anticipated to arrive approximately 11/21)

I apologize for the short time available for review, especially given the Thanksgiving holiday in the middle. If this schedule will be impossible for you, please let me know as soon as possible. Also, if you have any questions about the sections you are reviewing or where to focus your review, please don't hesitate to call.

Thank you,
Molly

AMERICAN OVERSIGHT

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 9/26/2018 5:38:18 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: pebble team meeting

Hi Molly –
I am thinking of an agenda for the team meeting tomorrow.
Please let me know if you have anything to add to the topics below. Also, please give me a quick call if you have time today or tomorrow morning regarding the alternatives review.

- Litigation hold
- NEPA documents
    - Alternatives
- Schedule for upcoming document reviews

Thanks-Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/20/2018 11:21:26 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Feedback post Patty's VM
Attachments: Comment spreadsheet_Chapter 4_BAB.docx; Comment spreadsheet_Chapter 5_BAB.docx

Hi Cindi-
As discussed, here are Barb's comments.
Patty

From: Butler, Barbara
Sent: Tuesday, November 20, 2018 1:00 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: RE: Feedback post Patty's VM

Hi Molly and Patty,

Deliberative Process / Ex. 5

Please let me know if you have any questions, or if there is anything that you would like me to look at with a different focus.

Have a Happy and Safe Thanksgiving break!
Barb

From: Butler, Barbara
Sent: Thursday, November 15, 2018 9:01 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Feedback post Patty's VM

Hi Molly and Patty,

I'll volunteer to be one of the reviewers for Chapter 5 for parts not covering recommendations for compensatory mitigation, if that's captured at this stage (that's outside my area of experience).

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

Cheers,
Barb

Barbara A. Butler, Ph.D.
Research Environmental Engineer

USEPA ORD-NRMRL-LMMD-RTEB
26 W. Martin Luther King Dr, MS-483
Cincinnati, OH 45268
Phone: 513-569-7468
Office Location: AWBERC 493B

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/22/2018 5:08:31 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)
Attachments: 10_10_2018_Project_description_Update.pdf

Molly-
Were you able to open this document?
I could not get it to open.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, October 19, 2018 3:08 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the updated Project Description produced by the applicant associated with the May 11, 2018 Memo.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 6/28/2018 7:54:21 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: CANCELLED: Pebble permit oversight/NEPA team

ok

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Thursday, June 28, 2018 12:53 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: CANCELLED: Pebble permit oversight/NEPA team

Hi Team – Sorry for the short notice, but we are cancelling today's team meeting. We are in the midst of scrambling to finish the scoping letter, due tomorrow, and Patty and I are not available. We will meet next month as scheduled.

Regarding the Chapter 3 Sections – Thank you very much to everyone who provided comments so far. I am working on compiling them, and we will send to the Corps next week. If you are on the reviewer list for the delayed Sections 3.16 and 3.26 that we finally received, please send your comments to me no later than July 20, but sooner would be much appreciated.

Thank you,
Molly

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Godsey, Cindi; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Wake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris
Cc: Douglas, Mark; Schofield, Kate; Thiesing, Mary
Subject: Pebble permit oversight/NEPA team
When: Thursday, June 28, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Conference Line/Code / Ex. 6

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

AMERICAN OVERSIGHT

Message

From: Muche, Muluken [Muche.Muluken@epa.gov]
Sent: 6/22/2018 7:04:37 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Molly,

I have read the Groundwater Hydrology section (3.17) and the following is my overall review.

Deliberative Process / Ex. 5

Please let me know if you have any question.

Thanks and have a great weekend!

Muluken

PS: I will review the Surface Water Hydrology section whenever it is available.

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: Vaughan, Molly
Sent: Thursday, June 07, 2018 3:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate

AMERICAN OVERSIGHT

<Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report
2) **Internal Website / Ex. 6**

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
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  Internal Website / Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

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  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
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- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

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Internal Website / Ex. 6

Regards,
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To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
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Pebble NEPA/permitting team –

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Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

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We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/24/2018 12:18:44 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: dry stack comments
Attachments: Comments on Dry Stack memo_BAB&PM.docx

Hi Molly-
Attached are combined comments from Barb and I. I talked to Barb about these earlier and she was fine with editing and combining.
Can you look at this quickly and send to the Corps and AECOM (Bill Craig)?
Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Wake, Neverley [wake.neverley@epa.gov]
Sent: 10/23/2018 10:36:44 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble - draft section on TEK for review

Thanks, Molly.

I'll take a look, and ask for Tami's input as well.

Neverley
(907) 271-3206

-----Original Message-----
From: Vaughan, Molly
Sent: Tuesday, October 23, 2018 2:35 PM
To: Wake, Neverley <wake.neverley@epa.gov>
Subject: Pebble - draft section on TEK for review

Hi Neverley,
We have received a few additional draft sections of the Pebble EIS for review. One of these is a description of the Corps approach to TEK in the EIS. I have not had a chance to review, but didn't want to delay any longer in sending this to you. I am not sure if there is anything in here we would want to comment on, but at a minimum I thought you might want to see if for informational purposes. Please review if you have time, and let me know if you have any comments. Due to the short timeframe provided for review, I would need your comments, if you have any, by COB this Friday (the 26th).
If you have any questions on how this document fits in with the overall EIS, or anything else, please let me know.
Thanks,
Molly

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Message

From: Barnhart, Megan [barnhart.megan@epa.gov]
Sent: 6/27/2018 3:31:23 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble letter
Attachments: EDIT DF edits to Pebble Project Scoping 060518 draft_pm.docx

From: Knight, Kelly
Sent: Wednesday, June 27, 2018 11:18 AM
To: Barnhart, Megan <barnhart.megan@epa.gov>
Subject: FW: Pebble letter

From: Nalven, Heidi
Sent: Wednesday, June 27, 2018 10:08 AM
To: Marshall, Tom <marshall.tom@epa.gov>; Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble letter

Attached is a version with edits from OGC political management and with responses from attorneys from CCILO and WLO. We are still waiting for feedback on the responses and final OGC political management edits.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Marshall, Tom
Sent: Wednesday, June 27, 2018 9:03 AM
To: Knight, Kelly <knight.kelly@epa.gov>
Cc: Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Pebble letter

Great. Thx.

Sent from my iPhone

On Jun 27, 2018, at 9:02 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> 11:00?
>
> **From:** Marshall, Tom
> **Sent:** Wednesday, June 27, 2018 8:55 AM
> **To:** Knight, Kelly <knight.kelly@epa.gov>
> **Cc:** Hoppe, Allison <hoppe.allison@epa.gov>; Tomiak, Robert <tomiak.robert@epa.gov>; Nalven, Heidi

AMERICAN OVERSIGHT

<Nalven.Heidi@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Pebble letter

Any flexibility on the timing here, so we can coordinate internally? Thanks.

Sent from my iPhone

On Jun 27, 2018, at 7:09 AM, Knight, Kelly <knight.kelly@epa.gov> wrote:

> Good Morning –
>
> Rob needs OGC's comments to share with Drew by 9am. Is that possible?
>
> Thanks
>
> Kelly Knight
> Director, NEPA Compliance Division
> Environmental Protection Agency
> 202-564-2141 (office)
> 202-594-6391 (cell)

AMERICAN OVERSIGHT

Message

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 6/12/2018 7:49:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Molly, thanks for this. Much appreciated.

From: Vaughan, Molly
Sent: Tuesday, June 12, 2018 12:28 PM
To: Thiesing, Mary <Thiesing.Mary@epa.gov>
Subject: FW: REVIEW REQUEST and additional documents loaded to Sharepoint

Hi Maryanne,
Here is the email from last week distributing the materials for review. I will make sure you have access to the Sharepoint site as well (I can't remember if you do).
Thanks,
Molly

From: Vaughan, Molly
Sent: Thursday, June 07, 2018 11:13 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <muche.muluken@epa.gov>
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1) the Preliminary Scoping Report
2 **Internal Website / Ex. 6**

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

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AMERICAN OVERSIGHT

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Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
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To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>;

AMERICAN OVERSIGHT

Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

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Internal Website / Ex. 6

Regards,
Molly

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Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

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We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068

AMERICAN OVERSIGHT

mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 6/12/2018 7:29:41 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Here's the site that Vaughan, Molly shared with you.

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.

Get the SharePoint mobile app!

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Message

From: Pepple, Karl [Pepple.Karl@epa.gov]
Sent: 6/11/2018 5:45:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McAlpine, Jerrold [McAlpine.Jay@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Molly,

The links work today, even using Microsoft IE. I must have just timed it perfectly on previous attempts to coincide with outages.

Thank you!

KP

From: Vaughan, Molly
Sent: Monday, June 11, 2018 9:58 AM
To: Pepple, Karl <Pepple.Karl@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Hi Karl,
Thanks for checking in. Yes, there is no air quality material for review, and, unless something changes, I don't expect there to be until the DEIS is published. The Corps has been very specific in assigning cooperating agency "special expertise" roles, and ours for this project is limited to the 404(b)(1) guidelines. Which means they do not plan to share any preliminary draft materials with us for any sections of the document not directly tied to wetlands permitting.

But, that is very strange that you weren't able to follow the links. I just checked and they did work for me. I also verified that both of you are members on the Sharepoint site. I have noticed there have been a lot of outages and issues with Sharepoint lately, so maybe it was just down when you were trying? If you specifically want to see any of the documents and are still unable to access Sharepoint, let me know and I'll email it to you.
Thanks,
Molly

From: Pepple, Karl
Sent: Friday, June 08, 2018 9:12 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Cc: McAlpine, Jerrold <McAlpine.Jay@epa.gov>
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Good morning Molly,

I noticed that JD and I were not mentioned in your email. I tried going in to both of the links to verify that there was no air quality material to review, but I cannot access either document (in MS Explorer or using Chrome). Please let me know if I am missing something!

Thank you

KP

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Internal Website / Ex. 6

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

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AMERICAN OVERSIGHT

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Message

From: Muche, Muluken [Muche.Muluken@epa.gov]
Sent: 6/7/2018 7:30:52 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hello Molly,

Thank you! I will update myself about the project and review the parts too.

Muluken

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: Vaughan, Molly [mailto:no-reply@sharepointonline.com]
Sent: Thursday, June 07, 2018 3:16 PM
To: Muche, Muluken <Muche.Muluken@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hello Muluken. Welcome to the Pebble Project Permitting Oversight and NEPA Review Team. Here is a link to the project sharepoint site, where we house background documents and documents received for review.
Thank you for your assistance with this project.
--Molly

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.


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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 6/7/2018 6:46:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble EIS

From: Muche, Muluken
Sent: Monday, June 4, 2018 12:05 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Cc: Maley, Timothy <maley.timothy@epa.gov>
Subject: RE: Pebble EIS

Thank you!

Muluken

Muluken Muche | Research Hydrologist, Post-Doc
USEPA/ORD-NERL-CED-Watershed Exposure Branch
960 College Station Road, Athens, GA-30605
Phone: 706-355-8321

From: McGrath, Patricia
Sent: Monday, June 04, 2018 4:03 PM
To: Muche, Muluken <Muche.Muluken@epa.gov>
Cc: Maley, Timothy <maley.timothy@epa.gov>
Subject: Pebble EIS

Hi Muluken –
Per our conversation, below are links to information that will assist with your understanding of the proposed Pebble project and some past work done by EPA.

Link to the US Army Corps of Engineers Pebble EIS website. The website describes EIS process. The Department of Army Permit Application, Attachment D, contains the current Project Description.
https://pebbleprojecteis.com/documents/background

Link to EPA's Bristol Bay website. See "Bristol Bay Assessment – Final Report (2014)" for information on some work that EPA did in evaluating potential mining impacts
https://www.epa.gov/bristolbay

Also, below is the contact information for Tim Maley (also cced). Tim will be contacting you further about the project and our needs.

Tim Maley (206) 553-1210
Maley.timothy@epa.gov

Thanks –
Patty

AMERICAN OVERSIGHT

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 5/15/2018 8:45:53 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Pebble hand off

From: Allnutt, David
Sent: Tuesday, May 15, 2018 1:12 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: Pebble hand off

FYI --

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Mendelman, Krista
Sent: Tuesday, May 15, 2018 12:05 PM
To: Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>
Cc: Douglas, Mark <douglas.mark@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Thiesing, Mary <Thiesing.Mary@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Subject: Pebble hand off

HI David and Linda,

Mark Douglas has bravely stepped forward to be the lead on Pebble taking over for Matt. There will obviously be a transition between Matt and Mark with Mary Anne supporting Mark through a team approach. This is something that Michael S and I have discussed and Michael is supportive.

Krista

_____

Krista Mendelman
US EPA Region 10 MS:OWW-193
1200 6th Ave. Suite 900
Seattle WA 98101
206-553-1571

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 7/25/2018 7:32:26 PM
To: Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble site visit & Corps/AECOM meeting logistics

Hi Tim, Chris, and Molly –

This email provides logistics for our site visit to Pebble and meeting with the Corps/AECOM next week.

July 30 - Chris, Tim, and I are flying to Anchorage in the morning. The Sheraton does not have an airport shuttle, so I recommend taking a cab to the hotel following arrival. We can check in or drop bags off at the hotel, have a quick lunch, and then head to the AECOM office.
(currently I arrive on a later flight – at 12:53 pm. If I can't change to the earlier flight then go ahead without me and I will meet you at AECOM)

AECOM office address: 700 5th (walking distance from hotel)
Meeting time is 2 -4 (I forwarded the invite). Purpose is to meet and greet their geochem and hydo SMEs and they will provide us an update on the status of the impact assessment for these resources.

After the meeting I will be checking out the AOO jeep for use on the 31st.

July 31 –
6:45 am - Tim, Chris, and Patty to meet in the hotel lobby; Drive AOO jeep to Iliamna Air Taxi (6231 S Airpark Place) for arrival by 7. Molly will meet us there.
7:00 am – Check in for flight to Kokhanok – be prepared to pay for the charter with your gov credit card
8:00 am – Depart for Kokhanok
9:00 am – Arrive Kokhanok
9 – 4 - Safety briefing, helicopter tour of mine site and parts of the access road and Illiamna Lake terminal locations, time will be spent in the helicopter and also on the ground (will be invoiced later for helicopter time)
4:00 pm – Arrive in Iliamna from tour and check in for Iliamna Air Taxi flight back to Anchorage
4:30 pm – flight leaves Iliamna for Anchorage
5:30 pm – Arrive in Anchorage; Patty, Tim, Chris drive jeep back to the hotel

August 1
My flight leaves at 2 pm. I may be able to take Tim and Chris to airport, except I have a 7 am conference call

---

Please check the weather and dress accordingly.
We will need to bring lunches, snacks, water with us on the 31st. We can purchase in Anchorage on Monday.
Also you might want to bring site maps from the project description for reference.

Let me know if you have questions.
Patty

Patty McGrath | Mining Advisor
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1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202

AMERICAN OVERSIGHT

Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 4/16/2018 4:43:22 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hi Ashley - I have elevated your permissions to "owner" so you should now be able to do anything needed to create/modify folders for FOIA work.

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.

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Message

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 4/9/2018 11:30:13 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: BB check-in

I can lead the call on Wednesday and thank you for the agenda items. I'll send the agenda out tomorrow afternoon.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Vaughan, Molly
Sent: Monday, April 09, 2018 3:29 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: BB check-in

Hi Erik **Personal Matters / Ex. 6** s wondering if you are available to lead the BB check-in call Wednesday? I may have to call in while in-transit to the office, so not an ideal day for me to lead. Here are the NEPA Team agenda items:

- Scoping
  - Extension of scoping comment deadline to June 29
  - Update on public scoping meetings.
- 404 strategy meeting between EPA and Corps in May

Thanks,
Molly

From: McGrath, Patricia
Sent: Friday, April 06, 2018 2:17 PM
To: Allnutt, David <Allnutt.David@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check-in

Hi David-
Personal Matters / Ex. 6 Molly will be providing NEPA/permitting input into the check-in call on Wednesday.

Highlights for this week include:
- Corps extended scoping period to now end on June 29
- Suzanne posted a blurb on our BB site about the EIS and link to Corps' Pebble website. I informed the Corps of this.
- Additional scoping meeting added in New Stuyahok.

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- Most cooperating agencies are not participating in the scoping meetings. Exception is the State who will be at the meetings next week. BSEE is attending the Homer and Anchorage meeting. The Corps is providing a conference line. Molly, Neverly, or myself will be calling into the scoping meetings to listen in (except for Homer, Anchorage, and Dillingham). Molly will attend the Anchorage meeting.
- Molly and I had a call with ORD this week. I expect we will get assistance from ORD on fisheries, transportation, and hydrology (though need to verify with hydrologists)
- Molly is off to a good start on our scoping letter
- Based on a call with the Corps today, we will be setting up a 404 strategy meeting between EPA and Corps in May. I will work on that (attendees, agenda, timing, internal strategy) when I return.

Have a good week.
Patty

Patty McGrath |Mining Advisor
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Cell: (206) 743-7068
mcgrath.patricia@epa.gov

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Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 10/26/2018 6:36:28 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: section 4.1 comments
Attachments: Comments Section 4.1_PM and CG.docx

Flag: Follow up

Hi Molly-
Please use this version of my comments on Section 4.1. I revised one of the comments.
Thanks - Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Godsey, Cindi [Godsey.Cindi@epa.gov]
Sent: 11/8/2018 10:29:05 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: Pebble

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Thursday, November 08, 2018 2:17 PM
To: Godsey, Cindi <Godsey.Cindi@epa.gov>
Subject: RE: Pebble

Hi Cindi – We haven't received Appendix N. The Corps did share a table of deliverables the contractor is working on so we would know what to expect when. For Appendix N it has listed that it is just the Project Description, and will not be further shared with Cooperators for comment. Patty did send the revised Project Description to the team a week or two ago, and I also put it on Sharepoint. Hopefully that will answer whatever questions you may have.
Thanks,
Molly

From: Godsey, Cindi
Sent: Wednesday, November 07, 2018 8:04 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble

Is Appendix N available yet? If not, do we know when it will be?

Cindi



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Delivery Report

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 6/5/2018 7:29:42 PM
To: Combes, Marcia [Combes.Marcia@epa.gov]
Subject: Undeliverable: RE: Bristol Bay Check-in
Attachments: RE: Bristol Bay Check-in

Your message
To: Steiner-Riley, Cara; Allnutt, David; R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; LaCroix, Matthew; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
CC: Stern, Allyn; Douglas, Mark
Subject: RE: Bristol Bay Check-in
Sent: 6/5/2018 7:29:41 PM

Office 365

Your message to Combes.Marcia@epa.gov couldn't be delivered.

Combes.Marcia wasn't found at epa.gov.

Vaughan.Molly	Office 365	Combes.Marcia
Action Required		Recipient

Unknown To address

How to Fix It

The address may be misspelled or may not exist. Try one or more of the following:

- Send the message again following these steps: In Outlook, open this non-delivery report (NDR) and choose **Send Again** from the Report ribbon. In Outlook on the web, select this NDR, then select the link "**To send this message again, click here.**" Then delete and retype the entire recipient address. If prompted with an Auto-Complete List suggestion don't select it. After typing the complete address, click **Send**.
- Contact the recipient (by phone, for example) to check that the address exists and is correct.
- The recipient may have set up email forwarding to an incorrect address. Ask them to check that any forwarding they've set up is working correctly.
- Clear the recipient Auto-Complete List in Outlook or Outlook on the web by following the steps in this article: Fix email delivery issues for error code 5.1.10 in Office 365, and then send the message again. Retype the entire recipient address before selecting **Send**.

If the problem continues, forward this message to your email admin. If you're an email admin, refer to the **More Info for Email Admins** section below.

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Was this helpful? Send feedback to Microsoft.

More Info for Email Admins

Status code: 550 5.1.10

This error occurs because the sender sent a message to an email address hosted by Office 365 but the address is incorrect or doesn't exist at the destination domain. The error is reported by the recipient domain's email server, but most often it must be fixed by the person who sent the message. If the steps in the **How to Fix It** section above don't fix the problem, and you're the email admin for the recipient, try one or more of the following:

The email address exists and is correct - Confirm that the recipient address exists, is correct, and is accepting messages.

Synchronize your directories - If you have a hybrid environment and are using directory synchronization make sure the recipient's email address is synced correctly in both Office 365 and in your on-premises directory.

Errant forwarding rule - Check for forwarding rules that aren't behaving as expected. Forwarding can be set up by an admin via mail flow rules or mailbox forwarding address settings, or by the recipient via the Inbox Rules feature.

Recipient has a valid license - Make sure the recipient has an Office 365 license assigned to them. The recipient's email admin can use the Office 365 admin center to assign a license (Users > Active Users > select the recipient > Assigned License > Edit).

Mail flow settings and MX records are not correct - Misconfigured mail flow or MX record settings can cause this error. Check your Office 365 mail flow settings to make sure your domain and any mail flow connectors are set up correctly. Also, work with your domain registrar to make sure the MX records for your domain are configured correctly.

For more information and additional tips to fix this issue, see Fix email delivery issues for error code 5.1.10 in Office 365.

Original Message Details

Created Date:	6/5/2018 7:29:41 PM
Sender Address:	Vaughan.Molly@epa.gov
Recipient Address:	Combes.Marcia@epa.gov
Subject:	RE: Bristol Bay Check-in

Error Details

Reported error:	*550 5.1.10 RESOLVER.ADR.RecipientNotFound; Recipient Combes.Marcia@epa.gov not found by SMTP address lookup*
DSN generated by:	DM6PR09MB2618.namprd09.prod.outlook.com

Message Hops

HOP	TIME (UTC)	FROM	TO	WITH

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1	6/5/2018 7:29:41 PM	DM6PR09MB2794.namprd09.prod.outlook.com	DM6PR09MB2794.namprd09.prod.outlook.com	mapi
2	6/5/2018 7:29:41 PM	DM6PR09MB2794.namprd09.prod.outlook.com	DM6PR09MB2618.namprd09.prod.outlook.com	Microsoft SMTP Serve cipher=TLS_ECDHE_R

Original Message Headers

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From: "Vaughan, Molly" <Vaughan.Molly@epa.gov>
To: "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>, "Allnutt, David"
        <Allnutt.David@epa.gov>, R10-OERA Calendar <R10-OERA_Calendar@epa.gov>,
        "Lindsay, Andrea" <Lindsay.Andrea@epa.gov>, "Skadowski, Suzanne"
        <Skadowski.Suzanne@epa.gov>, "Nogi, Jill" <nogi.jill@epa.gov>, "Peterson,
 Erik" <Peterson.Erik@epa.gov>, "Nalven, Heidi" <Nalven.Heidi@epa.gov>,
        "Fordham, Tami" <Fordham.Tami@epa.gov>, "Anderson-Carnahan, Linda"
        <Anderson-Carnahan.Linda@epa.gov>, "McGrath, Patricia"
        <mcgrath.patricia@epa.gov>, "Palomaki, Ashley" <Palomaki.Ashley@epa.gov>,
        "LaCroix, Matthew" <LaCroix.Matthew@epa.gov>, "Hough, Palmer"
        <Hough.Palmer@epa.gov>, "Combes, Marcia" <Combes.Marcia@epa.gov>, "Mendelman,
 Krista" <Mendelman.Krista@epa.gov>, "Szerlog, Michael"
        <Szerlog.Michael@epa.gov>
CC: "Stern, Allyn" <Stern.Allyn@epa.gov>, "Douglas, Mark"
        <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in
Thread-Topic: Bristol Bay Check-in
Thread-Index: AdOerMNSyg6D+MKyTyqlv+38s/yhWgAAD7BQFSR+ERAAAFpd0AAAtlDw
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Message-ID:
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In-Reply-To:
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Accept-Language: en-US
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MIME-Version: 1.0

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Return-Path: Vaughan.Molly@epa.gov

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	BCL:0;PCL:0;RULEID:(102415395)(9101524173)(2401047)(8121501046)(823300264)(8233101 15)(10201501046)(93006095)(93001095)(3002001)(3231254)(944501410)(52105095)(2017080717420 11)(7699016);SRVR:DM6PR09MB2618;BCL:0;PCL:0;RULEID:;SRVR:DM6PR09MB2618;

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AMERICAN OVERSIGHT

X-Forefront-Antispam-Report:

SFV:SKI;SFS:;DIR:INB;SFP:;SCL:-1;SRVR:DM6PR09MB2618;H:DM6PR09MB2794.namprd09.prod.outlook.com;FPR:;SPF:None;LANG:en;

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X-MS-Office365-Filtering-Correlation-Id: 740c44f7-134d-47e4-0684-08d5cb1aaf77

X-MS-Exchange-CrossTenant-OriginalArrivalTime: 05 Jun 2018 19:29:41.4733 (UTC)

X-MS-Exchange-CrossTenant-FromEntityHeader: Hosted

X-MS-Exchange-CrossTenant-Id: 88b378b3-6748-4867-acf9-76aacbeca6a7

X-MS-Exchange-CrossTenant-Network-Message-Id: 740c44f7-134d-47e4-0684-08d5cb1aaf77

X-MS-Exchange-Transport-CrossTenantHeadersStamped: DM6PR09MB2618

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 6/5/2018 7:29:41 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; R10-OERA Calendar [R10-OERA_Calendar@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fordham, Tami [Fordham.Tami@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; LaCroix, Matthew [LaCroix.Matthew@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Combes, Marcia [Combes.Marcia@epa.gov]; Mendelman, Krista [Mendelman.Krista@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Bristol Bay Check-in

I will also miss tomorrow's check-in due to the conflict with the Cooperating Agency meeting here in Anchorage.
--Molly

From: Steiner-Riley, Cara
Sent: Tuesday, June 05, 2018 11:08 AM
To: Allnutt, David <Allnutt.David@epa.gov>; R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

I am not available tomorrow. Sorry.

From: Allnutt, David
Sent: Tuesday, June 05, 2018 11:59 AM
To: R10-OERA Calendar <R10-OERA_Calendar@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Fordham, Tami <Fordham.Tami@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>
Cc: Stern, Allyn <Stern.Allyn@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Bristol Bay Check-in

Team – are we holding our regular check-in tomorrow? **Personal Matters / Ex. 6**
Personal Matters / Ex. 6 There are a couple of topics that I'd like to update the group on if possible.

AMERICAN OVERSIGHT

Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 05, 2018 10:13 AM
To: R10-OERA Calendar; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Szerlog, Michael
Cc: Stern, Allyn; Douglas, Mark
Subject: Bristol Bay Check-in
When: Wednesday, June 06, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [no-reply@sharepointonline.com]
Sent: 5/24/2018 10:45:52 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]
CC: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Vaughan, Molly has invited you to 'Pebble Project Permitting Oversight and NEPA Review Team'

Hello Kate - welcome to the Pebble NEPA Team. Here is a link to the team's SharePoint site.
Thanks,
Molly

Go to Pebble Project Permitting Oversight and NEPA Review Team

Follow this site to get updates in your newsfeed.

 Get the SharePoint mobile app!

  

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [mcgrath.patricia@epa.gov]
Sent: 11/10/2018 10:14:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: ch 2
Attachments: Comment spreadsheet_PDEIS_ch2_pm.docx

Hi Molly-
Attached are my comments on Ch 2.
I see that Cindi, Barb, and Kate also sent comments. Let me know if you have questions while combining comments.

Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/22/2018 6:32:17 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

Hi Patty - No, I could not open this either. I did notice that a Revised Project Description dated 10/4 has been loaded in the Project Library on the website (under Data Reviewed for the Draft EIS, here: https://u8280144.ct.sendgrid.net/wf/click?upn=3ZS1U8pRPduUmTL1tY4oI-2BD0ECgIrX590o8ZR8FxvvNnzgR4A-2FUgOknyA4wJK-2BUMpeLFgvIQivvz1jxdLZzzKnIVFib7tTJGPh9TDR3JOLk-3D_Jo98HnSke35zX6hnX9-2BRVbnZvz2YETXrDsfWfFqXeTXyA-2BFQ4Ho0u45R4z6wKfavU2JX3jzwx909zy-2B4or1oG8RuBzNQfnnGAUVcuYeSWb9ApwPUZm5cnrifFUALyB69fUuCNQZ7quMIgM8jq-2F1K6xYi-2FDEWYcUp6-2FrslPl6nSQ2QF1udTNHzeHPN-2FLjK-2FrU3R5IwfbkYBHHGbiUxxpmrq9BYokBjCo-2FTmUT3XMezPO-3D
But, since the dates don't exactly match, I'm not 100% sure it is the same thing?
--Molly

-----Original Message-----
From: McGrath, Patricia
Sent: Monday, October 22, 2018 9:09 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: FW: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

Molly-
Were you able to open this document?
I could not get it to open.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Friday, October 19, 2018 3:08 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; J. Loichinger <jloichinger@achp.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: POA Special Projects <poaspecialprojects@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>
Subject: 10_10_2018_PLP_Revised_Project_Description (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

All,
Attached is the updated Project Description produced by the applicant associated with the May 11, 2018 Memo.

VR

Shane McCoy
Program Manager
(907) 753-2715

CLASSIFICATION: UNCLASSIFIED

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/3/2018 9:43:36 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: pebble alts

Thanks Patty – I just finished a final read-through and caught a few more typos. I'll send to Shane now.

From: McGrath, Patricia
Sent: Wednesday, October 03, 2018 1:05 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: pebble alts

Hi Molly –
I made a couple minor edits to our comments on TSF-04.
Also the header will need to be revised to take out the word Draft.
Thanks –
Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/19/2018 11:42:16 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Please Review - Pebble Draft Ch 2 Comments
Attachments: EPA Comments Pebble Pre-DEIS Ch 2 111918draft.docx

Oops, forgot to cc you, but here's the current draft.

From: Vaughan, Molly
Sent: Monday, November 19, 2018 1:32 PM
To: Nogi, Jill <nogi.jill@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Please Review - Pebble Draft Ch 2 Comments

Hi Jill,
Here are the draft comments on Chapter 2 for your review. As we've discussed, the comments are due Friday the 23rd, but I plan to send them to the Corps on Wednesday, after I address any comments/edits you may have.
Thanks,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/19/2018 9:41:52 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Pebble Draft Ch 2 comments for review

Thanks so much Ashley! I've accepted your edits and will copy you when I send the revised version to Jill for final review.
--Molly

From: Palomaki, Ashley
Sent: Monday, November 19, 2018 8:01 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly –

Thanks for the opportunity to review. My comments are attached. I have a problem in that I always fix nits if I see them ☺ but you should take it or leave it. I also flagged a couple places for you where you should edit the sentence b/c it isn't clear.

Attorney Client Privilege/Deliberative Process Privilege / Ex. 5

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: McGrath, Patricia
Sent: Friday, November 16, 2018 9:25 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: RE: Pebble Draft Ch 2 comments for review

Hi Molly and Ashely –

Deliberative Process / Ex. 5

AMERICAN OVERSIGHT

Deliberative Process / Ex. 5

From: Vaughan, Molly
Sent: Thursday, November 15, 2018 3:52 PM
To: Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Cc: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Pebble Draft Ch 2 comments for review

Hi Ashley,
I am so sorry for the delay in getting these comments to you for review. If you will no longer be able to complete your review Friday, please let me know. I also apologize that some of the comments (particularly the last couple pages) are still a bit rough. So, please don't feel that you have to edit grammar, punctuation, etc., as I will do another read-through for that before sending this to Jill.

Patty – I've copied you here as well, so you can decide if you would prefer to do your final review of the compiled comments now, or at the same time as Jill's review.

Thank you very much in advance for your review!
--Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 8/14/2018 6:14:32 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Nogi, Jill [nogi.jill@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble Ch. 4
Location: Conference Line/Code / Ex. 6

Start: 8/14/2018 7:30:00 PM
End: 8/14/2018 8:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/26/2018 3:43:23 PM
To: Maley, Timothy [maley.timothy@epa.gov]
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Good morning, Tim. Thank you for reviewing. We never received the missing chapters from the Corps. I'm not sure what the status is, but hopefully we will get a chance to review at a later date.
Thanks,
Molly

From: Maley, Timothy
Sent: Monday, June 25, 2018 7:08 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: REVIEW REQUEST and additional documents loaded to Sharepoint

Good morning –

I'm completing my review and will get you a response hopefully later today in accordance with your schedule. I see Chris send you comments regarding his review of 3.18. I'll at least work off of his to avoid replication.
Also I'm reviewing 3.16 and 3.17.

Has the text for 3.16 been released?

- Tim

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: Vaughan, Molly
Sent: Thursday, June 7, 2018 12:13 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Muche, Muluken <Muche.Muluken@epa.gov>
Subject: REVIEW REQUEST and additional documents loaded to Sharepoint

Hello Team,
The Corps distributed some additional information to cooperating agencies related to yesterday's Cooperating Agency meeting here in Anchorage, and I have added these materials to the Sharepoint site, in the "Materials for 6-6-18 Cooperating Agency Meeting" folder. Most of the information is for awareness only, but our review has been requested on two items:

1) the Preliminary Scoping Report

Internal Website / Ex. 6

AMERICAN OVERSIGHT

2) selected sections of Pre-Draft Chapter 3

Internal Website / Ex. 6

Your review is being requested on specific materials (listed below), but feel free to also review the remainder of the materials if you wish.

- Preliminary Scoping Report: **Molly/Patty** – comments due to Molly **June 20**
  This document addresses scoping comments received to date, but will be updated following the close of the public scoping period.

- Pre-Draft Chapter 3 Sections – comments due to Molly **June 25** (specific section assignments below)
  These documents are first drafts of each resource section Affected Environment, and will also be updated following the close of public scoping and based on cooperating agency input. It is not clear whether cooperators will have an opportunity to review a second iteration prior to publication of the Draft EIS, so a thorough review at this stage is critical.

  The Corps has requested that our review focus on what is missing or any inaccuracies (don't worry about formatting, grammar, etc.). Where we identify something missing/innacurate, we are asked to be very specific in our recommendation. If you identify missing information in your review, first check the RFIs and Responses to Date

Internal Website / Ex. 6

  If there is a RFI/response that addresses your concern, then please note that in your comment. If not, then please include in your comment: (1) the information gap, (2) a reference where additional information can be found, and (3) what from that reference should be added, with as much specificity as possible – suggested text would be helpful.

  Please identify the sub-section and page number for each of your comments.

  Here are specific assignments for the review request. Most sections include a word document as well as some associated figures in pdf form.

- 3.1 Intro – **Molly**
- 3.5 Recreation – **Mark/Palmer/Molly**
- 3.11 Aesthetics – **Mark/Palmer/Molly**
- 3.14 Soils – **Mark/Palmer**
- 3.16 Surface Water Hydrology (note, we received figures but not text, and are following up) – **Tim/Mark/Palmer/Muluken**
- 3.17 Groundwater Hydrology – **Tim/Mark/Palmer/Muluken**
- 3.18 Water and Sediment Quality – **Cindi/Tim/Chris**
- 3.22 Wetlands/ Special Aquatic Sites – **Mark/Palmer**
- 3.26 Vegetation (note, we received figures but not text, and are following up) – **Mark/Palmer**

Please let me know if you have any questions. Thank you for your assistance with this review.
Regards,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19

AMERICAN OVERSIGHT

Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

From: Vaughan, Molly
Sent: Thursday, May 24, 2018 2:47 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: RE: Pebble NEPA/permitting team - documents for awareness review

Hi All,
All of the materials received from the Corps to date are now on the Sharepoint site, in a folder labeled "Materials for 6-6-18 Cooperating Agency Meeting," for your perusal if interested.

Internal Website / Ex. 6

Regards,
Molly

From: McGrath, Patricia
Sent: Friday, May 18, 2018 11:29 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>; LaCroix, Matthew <LaCroix.Matthew@epa.gov>; Meade, Christopher <Meade.Chris@epa.gov>; Godsey, Cindi <Godsey.Cindi@epa.gov>; Pepple, Karl <Pepple.Karl@epa.gov>; McAlpine, Jerrold <McAlpine.Jay@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Wake, Neverley <wake.neverley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Schofield, Kate <Schofield.Kate@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Barton, Justine <Barton.Justine@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Pebble NEPA/permitting team - documents for awareness review

Pebble NEPA/permitting team –

The Corps has started sending us, and other cooperating agencies, information generated by PLP and the third-party EIS contractor (AECOM). This information includes AECOM's requests (to PLP) for additional information (RFAIs) and PLP's responses. The Corps has begun adding theses RFAIs to the public EIS website. Molly and I will add this information to our SharePoint site as well.
The Corps has submitted this information to us and requested an awareness review, but is not requesting written comments.

For now, I want to bring your attention to two documents, attached:
1 – PLP Updates to the Proposed Project - PLP has made some updates to the project description. Please review this document so that you are aware of the changes.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

2 – PLP Technical Note on Project Options and Screening Criteria – This document summarizes screening criteria and options used by PLP to develop its current project description. I expect the Corps will consider this information during alternatives development. Please review this document for awareness.

AMERICAN OVERSIGHT

We will discuss these documents during our next team meeting on May 24, and I can provide more context. In the meantime, please let me know if you have questions.

Thanks-
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/23/2018 10:35:01 PM
To: Wake, Neverley [wake.neverley@epa.gov]
Subject: Pebble - draft section on TEK for review
Attachments: AppK3.1_TEK_reviewdraft_2018.10.16.docx

Hi Neverley,
We have received a few additional draft sections of the Pebble EIS for review. One of these is a description of the Corps approach to TEK in the EIS. I have not had a chance to review, but didn't want to delay any longer in sending this to you. I am not sure if there is anything in here we would want to comment on, but at a minimum I thought you might want to see if for informational purposes. Please review if you have time, and let me know if you have any comments. Due to the short timeframe provided for review, I would need your comments, if you have any, by COB this Friday (the 26th).
If you have any questions on how this document fits in with the overall EIS, or anything else, please let me know.
Thanks,
Molly

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/26/2018 7:58:44 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Pebble check-in
Location: Molly will call Patty

Start: 6/27/2018 9:00:00 PM
End: 6/27/2018 9:30:00 PM
Show Time As: Tentative

Discuss agenda for PO/NEPA team meeting and status of comments on preliminary documents.

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 11/16/2018 8:01:47 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Bristol Bay - Draft Agenda - 11/29 Allnutt Check-in

Hi Erik – Patty and I do not have anything else to add either.
Thanks!
--Molly

From: Palomaki, Ashley
Sent: Friday, November 16, 2018 10:36 AM
To: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Bristol Bay - Draft Agenda - 11/29 Allnutt Check-in

Hi Erik –

I do not have anything to add. McKeever is spelled with two Es – just FYI.

Also - I have a status call with a federal judge for one of my enforcement cases at 9am on Tuesday. I'm not expecting it to take an hour so will probably just be late (probably by a half hour) but wanted to let you know.

Thanks,

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Friday, November 16, 2018 10:59 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: Bristol Bay - Draft Agenda - 11/29 Allnutt Check-in

Patty, Molly, and Ashley,

Draft agenda for 11/20 Allnutt check-in below. Please send feedback by 4pm today if possible. I'll add this to the calendar invite about then. If you have feedback later, we can update the calendar invite too.

Permit Oversight/ NEPA Review Team

Preliminary EIS review

AMERICAN OVERSIGHT

404(c) Team

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA

- E&E News (011614)
- McKeaver FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence

- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 9/10/2018 7:59:17 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: notes from 8/22 CA meeting

Hi Patty – here is a draft email to Shane (and recommend cc-ing other CAs) on this

Deliberative Process / Ex. 5

From: McGrath, Patricia
Sent: Friday, September 07, 2018 2:04 PM

AMERICAN OVERSIGHT

To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: notes from 8/22 CA meeting

Molly-
I noticed that the Corps posted meeting notes from the 8/22 cooperating agency meeting on the Pebble EIS website. I am not aware that we were offered an opportunity to review these notes.
Can you review the notes and let me know if you have any comments or additions? I plan to review them on Monday and would like to send Shane any clarifications by mid-next week.
The notes are found from the link below under "Cooperating Agency Scoping Documents".

https://pebbleprojecteis.com/documents/scoping

thanks-
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/7/2018 12:02:18 AM
To: Hough, Palmer [Hough.Palmer@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
BCC: Conference Line/Code / Ex. 6

Subject: Pebble wetlands coordination conversation
Location: Conference Line/Code / Ex. 6

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Tentative

Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 10/23/2018 5:29:13 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Tentative: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 10/25/2018 9:00:00 PM
End: 10/25/2018 10:00:00 PM
Show Time As: Busy

Hi Patty – I am putting this as tentative to keep it on my calendar, Personal Matters / Ex. 6

Personal Matters / Ex. 6

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/10/2018 3:10:23 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
Subject: RE: BB check-in

Thanks Erik – It now appears I will not be able to make the meeting tomorrow. I will check with Jill if she can cover the NEPA scoping piece. The other agenda items can wait until next time, so please modify the NEPA portion of the agenda to just the following item:

- Extension of scoping comment deadline to June 29 and revised internal review schedule.

Thanks,
Molly

From: Peterson, Erik
Sent: Monday, April 09, 2018 3:30 PM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: BB check-in

I can lead the call on Wednesday and thank you for the agenda items. I'll send the agenda out tomorrow afternoon.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Vaughan, Molly
Sent: Monday, April 09, 2018 3:29 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>
Subject: FW: BB check-in

Hi Erik – **Personal Matters / Ex. 6** so I was wondering if you are available to lead the BB check-in call Wednesday? I may have to call in while in-transit to the office, so not an ideal day for me to lead. Here are the NEPA Team agenda items:

- Scoping
  - Extension of scoping comment deadline to June 29
  - Update on public scoping meetings.
- 404 strategy meeting between EPA and Corps in May

Thanks,
Molly

From: McGrath, Patricia
Sent: Friday, April 06, 2018 2:17 PM
To: Allnutt, David <Allnutt.David@epa.gov>

AMERICAN OVERSIGHT

Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>; Combes, Marcia <Combes.Marcia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>
Subject: BB check-in

Hi David-

Personal Matters / Ex. 6 Molly will be providing NEPA/permitting input into the check-in call on Wednesday.

Highlights for this week include:

- Corps extended scoping period to now end on June 29
- Suzanne posted a blurb on our BB site about the EIS and link to Corps' Pebble website. I informed the Corps of this.
- Additional scoping meeting added in New Stuyahok.
- Most cooperating agencies are not participating in the scoping meetings. Exception is the State who will be at the meetings next week. BSEE is attending the Homer and Anchorage meeting. The Corps is providing a conference line. Molly, Neverly, or myself will be calling into the scoping meetings to listen in (except for Homer, Anchorage, and Dillingham). Molly will attend the Anchorage meeting.
- Molly and I had a call with ORD this week. I expect we will get assistance from ORD on fisheries, transportation, and hydrology (though need to verify with hydrologists)
- Molly is off to a good start on our scoping letter
- Based on a call with the Corps today, we will be setting up a 404 strategy meeting between EPA and Corps in May. I will work on that (attendees, agenda, timing, internal strategy) when I return.

Have a good week.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 4/9/2018 8:50:07 PM
To: Wright, Wendy [Wright.Wendy@epa.gov]
Subject: RE: Wright, Wendy has shared 'NEPA Workload Report April 9, 2018'

Hi Wendy – the scoping period has been extended for the Pebble Project – it is now June 29. Can you update this in the workload?
Thanks,
Molly

From: Wright, Wendy [mailto:no-reply@sharepointonline.com]
Sent: Monday, April 09, 2018 11:07 AM
To: Nogi, Jill <nogi.jill@epa.gov>; Hood, Lynne <Hood.Lynne@epa.gov>; Kubo, Teresa <Kubo.Teresa@epa.gov>; Mbabaliye, Theogene <Mbabaliye.Theogene@epa.gov>; Peterson, Erik <Peterson.Erik@epa.gov>; Somers, Elaine <somers.elaine@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Jen, Mark <Jen.Mark@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Owens, Kim <Owens.Kim@epa.gov>
Cc: Wright, Wendy <Wright.Wendy@epa.gov>
Subject: Wright, Wendy has shared 'NEPA Workload Report April 9, 2018'

NEPA Workload Report April 9, 2018

Open NEPA Workload Report April 9, 2018.pdf

See more related to Wright, Wendy in Delve.


Get the SharePoint mobile app!





AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/22/2018 6:49:34 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Pebble permit oversight/NEPA team

Hi Patty – Should we reschedule this week's Pebble Team meeting, since it conflicts with the bilateral meeting that we are both attending?

-----Original Appointment-----
From: McGrath, Patricia
Sent: Thursday, February 15, 2018 9:55 AM
To: McGrath, Patricia; Vaughan, Molly; LaCroix, Matthew; Meade, Christopher; Godsey, Cindi; Pepple, Karl; McAlpine, Jerrold; Palomaki, Ashley; Wake, Neverley; Hough, Palmer; Maley, Timothy; Eckley, Chris; Timothy Maley (maley.timothy@epa.gov)
Cc: Schofield, Kate; Thiesing, Mary; Douglas, Mark
Subject: Pebble permit oversight/NEPA team
When: Thursday, October 25, 2018 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/29/2018 6:06:20 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]
Subject: FW: request for review of Draft EIS Sections, SUSPENSE 31 OCT 2018, (UNCLASSIFIED)
Attachments: Sec3.1_IntroAE_reviewdraft_2018.10.16.docx

Hi Tami and Neverley. Here is the intro to Chapter 3, as we discussed. Hopefully it will help provide some more context for the TEK appendix. Sorry again for not sending this one earlier.
--Molly

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/5/2018 4:17:30 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Draft 10/9/18 Bristol Bay Check-in Agenda

Thank you Erik and Patty – I don't have any further edits

From: McGrath, Patricia
Sent: Thursday, October 04, 2018 3:08 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: RE: Draft 10/9/18 Bristol Bay Check-in Agenda

Hi Eric-
I made some edits directly to the text below.
Patty

From: Peterson, Erik
Sent: Thursday, October 4, 2018 2:26 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Draft 10/9/18 Bristol Bay Check-in Agenda

Patty, Ashley and Molly,

Please give feedback on the following draft agenda by 1pm 10/5/18. Thank you!

Patty and Molly, the text below (except the Bolen briefing question) is from the 9/7 update we provided David in-lieu of meeting with him on 9/11.

Draft Agenda

Permit Oversight/ NEPA Review Team

Timing a Brittany Bolen briefing?

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads

NEPA/EIS document reviews - completed

- Scoping Document: In August we submitted comments on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.
- Preliminary EIS Sections: In July and August, we reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation)

AMERICAN OVERSIGHT

- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be finalized, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.

- Alternatives: On October 3, we submitted comments on draft Appendix B (Alternatives Development Process). Previously we participated in a cooperating agency meeting and provided verbal input on the alternatives development process and some of the potential alternatives.

NEPA/EIS document reviews – upcoming

- The Corps has indicated that they will be sending us draft DEIS sections on 11/9 with comments due by 11/21. We have requested more time for review (30 days review period).

Schedule

- The Corps Pebble EIS website identifies estimated dates for a draft EIS in January 2019 and a final EIS in late 2019.

<u>404(c) Team</u>

FOIA

- E&E News – new request for unredacted copies
- McKeever FOIA Lawsuit – next steps
- NRDC and CNN – working with the AOs office
- Trustees for Alaska – options for Justin Schwab review
- Trustees for Alaska 2 – new FOIA
- Back-up?

Congressional responses

- Western Caucus (Gosar et al) – newly OW-approved, not issued
- DeFazio and Carper – just revised, based on newly OW-approved, not issued Western Caucus response
- Lamar Smith – just drafted, based on newly OW-approved, not issued Western Caucus response

External Correspondence

- Recent activity and approach

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 9/19/2018 5:09:53 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Bristol Bay Check-in 9/25/18 - Draft Agenda

Hi Erik – thanks for your voicemail clarifying the status of the agenda, that is what I was calling about. Sorry I was out of the office all day in training yesterday. We don't have anything new to share on several of the topics listed in the draft agenda beyond what was in the email update earlier this month. However, I think keeping them on the agenda as placeholders is fine in case David has any questions.
Thanks,
Molly

From: Peterson, Erik
Sent: Tuesday, September 18, 2018 10:24 AM
To: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Bristol Bay Check-in 9/25/18 - Draft Agenda

Molly,

Patty and Ashley are out this week and so I'm hoping you can help me finalize this BB agenda. Here is a first draft. Would be great to hear back by mid-day 9/19 if possible. Thank you!

Draft Agenda

Permit Oversight/ NEPA Review Team

Scoping Document

Preliminary EIS review

Alternatives

Site Visits

Schedule

404(c) Team

FOIA

Litigation hold

Representative DeFazio and Senator Carper letter response

Interest group letter to EPA

External Meetings

AMERICAN OVERSIGHT

External Correspondence

PLP letter, memo to file

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

From: Peterson, Erik
Sent: Friday, September 07, 2018 3:17 PM
To: Fordham, Tami <Fordham.Tami@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Anderson-Carnahan, Linda <Anderson-Carnahan.Linda@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Lindsay, Andrea <Lindsay.Andrea@epa.gov>; Skadowski, Suzanne <Skadowski.Suzanne@epa.gov>; Nogi, Jill <nogi.jill@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>
Cc: Detwiler, Susan K. <detwiler.susan@epa.gov>; Chu, Rebecca <Chu.Rebecca@epa.gov>
Subject: Bristol Bay Check-in 9/11/18 - Cancellation and Update

Hello,

Welcome back David! Given that you are out on September 11, we are canceling the check-in and the Bristol Bay Teams have the following update for you. We plan on having the Bristol Bay Check-in on September 25th at 9:00 am PST.

Updates

Permit Oversight/ NEPA Review Team

Scoping Document

- EPA reviewed and commented on the draft scoping document that describes the significant issues raised in scoping. The final scoping document is available on the Corp's Pebble EIS website.

Preliminary EIS review

- EPA reviewed and commented on specific portions of chapter 3 (affected environment) and chapter 4 (environmental consequences) that pertain to our areas of special expertise as identified by the Corps which includes: aesthetics, surface water hydrology, groundwater hydrology, water and sediment quality, wetlands, vegetation
- The documents have many placeholders since there have been changes to the proposed action, alternatives have yet to be developed, and there are numerous substantial requests for additional information where the Corps is awaiting response from PLP.
- It is not clear whether we will be provided with another opportunity to review these chapters before the draft EIS. The Corps has indicated that there will be technical meetings in October/November to discuss comments and the impact assessment.

Alternatives

AMERICAN OVERSIGHT

- The Corps is developing the range of alternatives to be analyzed in the EIS. We participated in a cooperating agency meeting and provided input. During the week of Sept 10, the Corps is to submit a detailed discussion of the alternatives selected for EIS review and rationale for those dismissed.

Site Visits

- July 9 – 11: CWA 404 field verification was completed by Mark Douglas
- July 31: Site visit with some of our NEPA team (Patty, Molly, Tim, Chris) to view the mine site, proposed Lake Iliamna port sites, and portions of the proposed roads.

Schedule

- The Corps Pebble EIS website identifies a draft EIS in January 2019 and a final EIS in late 2019.

404(c) Team

FOIA

- NRDC and CNN FOIA: extended until end 9/28/18 as we work on ex-Administrator's office employee non-email electronic records. Making progress.
- Trustees for Alaska FOIA: interim release of Corps equities documents on 8/31 and deadline extended until 10/31/18 to facilitate coordination between R10 and HQ on the remaining documents.

Representative DeFazio and Senator Carper letter response

- This July 2018 letter asks for Wheeler to revoke the June 2018 memo issued by Pruitt, describe his view of proper use of 404(c) and the Mingo Logan case, and, describe current and planned EPA actions regarding Pebble.
- EPA's response was uploaded to CMS for Lee F's signature on 8/27

Interest group letter to EPA

- This 9/6/18 letter to EPA from 15 interest groups (including, for example, the Competitive Enterprise Institute) urges Wheeler to rescind the proposed determination and applauds the June 2018 memo issued by Pruitt.
- If this letter is controlled for a response, HQ will share a draft with R10.

External Meetings

- Henry Darwin met with Pebble representatives the week of 8/2/18. The 404(c) Team uploaded a note of this meeting to our external meetings folder on share point.
- We want to emphasize our interest for external meetings at all levels to be recorded with: topic, date, attendees, agenda and notes.

PLP letter, memo to file

- An OGC clerk has completed a summary of court decisions on challenges to agencies withdrawing proposals.

Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-6382

-----Original Appointment-----
From: Peterson, Erik
Sent: Tuesday, June 12, 2018 4:15 PM

AMERICAN OVERSIGHT

To: Fordham, Tami; Peterson, Erik; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Douglas, Mark; Vaughan, Molly; Hough, Palmer; Nalven, Heidi; Mendelman, Krista; Stern, Allyn
Cc: Detwiler, Susan K.; Chu, Rebecca
Subject: Bristol Bay Check-in
When: Tuesday, September 11, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Moving the bi-weekly Bristol Bay Check-in from Wednesdays to Tuesdays at 9:00 AM PST starting July 30th.

Erik Peterson will email the agenda prior to the meeting.

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 5/7/2018 11:38:32 PM
To: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Subject: current draft of pebble letter

<!--[if lte mso 15 || CheckWebRef]-->

Vaughan, Molly has shared a OneDrive for Business file with you. To view it, click the link below.

 Pebble Project Scoping 050818 draft.docx

<!--[endif]-->

Hi Matt – as requested

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Unextractable file placeholder

AMERICAN OVERSIGHT

Message

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 10/23/2018 6:03:37 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: Pebble EIS Updates
Attachments: 10_10_2018_Updated_ProjectDescription.pdf

Hello All,
I have a few updates to share regarding the Pebble EIS.

First, the Corps plans to distribute preliminary drafts of the DEIS chapters for review in November. We expect to receive all chapters by 11/9/18, although sections may be received in advance on a rolling basis. Comments on all sections will be due 11/21/18. This will be a very tight timeframe for review, as management review of our comments will be required, so please plan to review within a few days of receipt – I will provide a specific due date once sections have been received. The Corps has said they will share all sections of the document for context, although our comments are still only requested on those specific sections we have been assigned in the Cooperating Agency Workplan (the same ones we have seen early drafts of so far).

Second, the Corps has distributed a revised project description developed by Pebble. My understanding is that this revised project description aligns with the updates to the project that we learned about earlier this year (e.g., use of lightering at Amakdedori Port), but I have not had time to read it in detail myself. I recommend reading when you have time, as it will help us prepare for review of the draft chapters in November.

Please let me know if you have any questions.
Thank you,
Molly

Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

Sent: 10/23/2018 5:47:53 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: Pebble EIS Updates
Attachments: 10_10_2018_Updated_ProjectDescription.pdf

Hello All,
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AMERICAN OVERSIGHT

Message

Sent: 10/23/2018 6:00:01 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
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AMERICAN OVERSIGHT

Message

Sent: 10/23/2018 5:51:03 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
Subject: Pebble EIS Updates
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AMERICAN OVERSIGHT

Message

Sent: 10/23/2018 6:06:25 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
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Please let me know if you have any questions.
Thank you,
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Molly Vaughan
U.S. Environmental Protection Agency Region 10
Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov

AMERICAN OVERSIGHT

Message

Sent: 10/23/2018 6:04:01 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Godsey, Cindi [Godsey.Cindi@epa.gov]; Pepple, Karl [Pepple.Karl@epa.gov]; McAlpine, Jerrold [McAlpine.Jay@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Maley, Timothy [maley.timothy@epa.gov]; Eckley, Chris [Eckley.Chris@epa.gov]; Barbara Butler (Butler.Barbara@epa.gov) [Butler.Barbara@epa.gov]; Douglas, Mark [douglas.mark@epa.gov]; Schofield, Kate [Schofield.Kate@epa.gov]; Thiesing, Mary [Thiesing.Mary@epa.gov]; Muche, Muluken [muche.muluken@epa.gov]; Barton, Justine [Barton.Justine@epa.gov]
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AMERICAN OVERSIGHT

Appointment

To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/13/2018 8:30:00 PM
End: 11/13/2018 9:30:00 PM
Show Time As: Tentative

Recurrence: (none)
every Tuesday from 12:30 PM to 1:30 PM

Agenda

FOIA

NEPA Coordination

Congressional Correspondence

→ Join by Phone

Conference Line/Code / Ex.

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/20/2018 8:30:00 PM
End: 11/20/2018 9:30:00 PM
Show Time As: Tentative

Recurrence: (none)
every Tuesday from 12:30 PM to 1:30 PM

BB 404c Team,

I propose we meet on 11/20. See agenda below. Happy to hear feedback on the agenda.

Deliberative Process / Ex. 5

A huge ongoing thank you for your engagement on this important project.

Agenda

NEPA/404c coordination

Competitive Enterprise Institute Information Quality Act Request for Correction or Withdrawal Regarding Bristol Bay Watershed Assessment

FOIA
- E&E News (011614)
- McKeaver FOIA Lawsuit
- Trustees for Alaska 2 (0135)
- HQ FOIA Role

Congressional correspondence
- Western Caucus (Gosar et al) – Forsgren signed final sent 9/16/18
- Lamar Smith – nearly identical Forsgren signed final sent 10/18/18
- DeFazio and Carper – in process

June 2018 memo on 404c regulation revisions

AMERICAN OVERSIGHT

External meeting

- 11/14/18 Forsgren, PLP and other BB stakeholders

→ Join by Phone

Conference Line/Code / Ex. 6

→ Meeting Organizer

Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Bennett, Brittany [bennett.brittany@epa.gov]; Ortiz, Michael [Ortiz.Michael@epa.gov]; Skadowski, Suzanne [Skadowski.Suzanne@epa.gov]; Lindsay, Andrea [Lindsay.Andrea@epa.gov]; Whitley, Annie [Whitley.Annie@epa.gov]; Wake, Neverley [wake.neverley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Herbst, John [herbst.john@epa.gov]

Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 11/27/2018 8:30:00 PM
End: 11/27/2018 9:30:00 PM
Show Time As: Tentative

Recurrence: (none)
every Tuesday from 12:30 PM to 1:30 PM

We have enough going on where having the call will be helpful. Thank you for making the call if you can.

Agenda

NEPA preliminary EIS comments

FOIA

Information Quality Act Request for Correction or Withdrawal

June 2018 memo on 404c

DeFazio and Carper response

→ **Join by Phone**

Conference Line/Code / Ex. 6

→ **Meeting Organizer**
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 6/15/2018 4:55:49 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]

Subject: pre-meet re Pebble letter
Location: Steve's office

Start: 6/15/2018 6:00:00 PM
End: 6/15/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 5/22/2018 3:20:51 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: RE: Bristol Bay

Thank you!!

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Nalven, Heidi
Sent: Tuesday, May 22, 2018 10:04 AM
To: Fotouhi, David <Fotouhi.David@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Bristol Bay

Hi David – Below is a status update of PLP's permit application. I have attached the FR notice I quoted from just in case you wanted to see it. Carrie mentioned that the Congressional Western Caucus is coming in for a meeting. I wanted to make sure you were of the attached letter from some Caucus members. OW is currently preparing a draft response. Also, as you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

Heidi

++++++++++

- Pebble's permit application is currently in the NEPA scoping phase.
- Substance: The Corps' public notice announcing its intent to issue the EIS explained that "[s]coping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS."
    - The Corps' public notice indicated that the draft EIS will identify a range of alternatives and evaluate reasonable and practicable alternatives, including "the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action."
    - The notice identified significant issues that will be analyzed in the draft EIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation and closure. These significant issues include "wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental concerns, historic properties, navigation, and safety."
- Process: The Corps' public scoping period ends on June 29, 2018.
    - Region 10 is preparing a draft scoping letter.
    - The draft letter will come to headquarters (OW, OFA and OGC) for review June 4th-June 12th.

AMERICAN OVERSIGHT

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 4/9/2018 2:03:41 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Subject: can't print so here's my weekly
Attachments: Events for this week.docx

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

AMERICAN OVERSIGHT

Events for this week

Carrie's PG

Apr 9-13

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- Bristol Bay – **Deliberative Process / Ex. 5** ; scoping extended to end of June

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
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Location: Steve's office

Start: 6/15/2018 6:00:00 PM
End: 6/15/2018 6:30:00 PM
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AMERICAN OVERSIGHT

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Sent: 6/5/2018 2:00:03 AM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
Subject: Pebble meeting

Steve and I discussed and talked to David and are comfortable with you and David going, and not Steve or me. Will be anxious to hear how it goes. Thanks.

Sent from my iPhone

AMERICAN OVERSIGHT

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 4/30/2018 3:55:41 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Schroer, Lee [schroer.lee@epa.gov]; Levine, MaryEllen [levine.maryellen@epa.gov]
Subject: my events for this week -- for PGL
Attachments: Events for this week.docx

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

AMERICAN OVERSIGHT

Events for this week

Carrie's PG

Apr 30-May 4

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- David F matters
  - Bristol Bay letters

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

- Bristol Bay – **Deliberative Process / Ex. 5** scoping extended to end of June; followup on letters with David

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Non-Responsive: Unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 1/4/2018 10:18:35 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 2/5/2018 5:58:18 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 1/19/2018 8:13:48 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: FW: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 1/4/2018 10:25:28 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: HOLD: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 1/4/2018 10:18:35 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

- Attendees on behalf of Pebble Limited Partnership: John Shively, Peter Robertson, James Fueg, and John Iani.
- Attendees on behalf of EPA: Chris Hladick, David Allnutt, Allyn Stern, Ashley Palomaki, Patty McGrath

POC: John Iani, Perkins Coie LLP; cell 206-412-5531; Jiani@perkinscoie.com

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Sent: 1/8/2018 10:59:30 PM
To: jiani@perkinscoie.com; Tyson, Linda [Tyson.Linda@epa.gov]
CC: Allnutt, David [Allnutt.David@epa.gov]; Tyler, Kendra [Tyler.Kendra@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]
Subject: RE: Pebble Limited Partnership meeting request

Hi John—
Just wanted to give you Ashley Palomaki's 's contact information. Ashley is ORC's lead attorney on Pebble. Her phone number is 206-553-8582. She will be at the meeting as well and you will be able to meet her then. Thanks! Cara

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Monday, January 08, 2018 9:14 AM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

Good Morning Linda,

That time and date will work fine. Thank you for making it available. I will send the final list of attendees later.

John

L. John Iani | **Perkins Coie LLP**
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6589
F. +1.206.359.7689
E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Thursday, January 04, 2018 2:18 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

We can make 9:00-10:00am on the 8th work – please confirm if this is good and I'll send out a calendar invite.

LT

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Thursday, January 4, 2018 1:15 PM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

Hi Linda,

AMERICAN OVERSIGHT

Can we try to set the meeting for February 8? (Feb 7 will also work, but the 8th is much better). We don't have our "team" fully identified yet but wanted to get the date set.

Thank you,

John

L. John Iani | Perkins Coie LLP
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6069
F. +1.206.359.7869
E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Wednesday, January 03, 2018 4:09 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

My apologies for the delay in getting back to you. We'd like to move forward with your meeting request.
Chris has some limited availability next week: 1/10 at 11am or 4pm; or we can look at scheduling for the first full week in February.

Please let us know what works for your schedule and I can send an outlook invite.

Thanks,

LT

Linda Tyson, Executive Assistant
Office of the Regional Administrator
U.S. EPA, Region 10
1200 Sixth Avenue, Mail Stop RA-210
Seattle, Washington 98101-3140
(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM
To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

John – good talking with you earlier today. I've figured out that RA's office does have a system in place for receiving external meeting requests; by cc'ing the R10-ORA mailbox with this message, I'm placing your request for PLP to meet with Chris into the queue. Linda Tyson will follow up with you on the timing and logistics for such a meeting. As you and I discussed, it seems unlikely that we could accommodate such a meeting before January. As we also discussed, we

AMERICAN OVERSIGHT

would expect that a few Regional program staff and attorneys would participate in PLP's meeting with Chris, and we may look for an opportunity to have a technical staff-level meeting before PLP meets with him.

I've let Cara know that we talked, and she's happy to speak with you further about this our any other matter on which you're currently representing PLP.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

John

L. John Iani | **Perkins Coie LLP**
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6689
F. +1.206.359.7689
E. JIani@perkinscoie.com

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AMERICAN OVERSIGHT

Message

From: Tyson, Linda [Tyson.Linda@epa.gov]
Sent: 1/4/2018 10:17:38 PM
To: jiani@perkinscoie.com
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Tyler, Kendra [Tyler.Kendra@epa.gov]
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

We can make 9:00-10:00am on the 8th work – please confirm if this is good and I'll send out a calendar invite.

LT

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Thursday, January 4, 2018 1:15 PM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

Hi Linda,

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Thank you,

John

L. John Iani | **Perkins Coie LLP**
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6689
F. +1.206.359.7689
E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Wednesday, January 03, 2018 4:09 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

My apologies for the delay in getting back to you. We'd like to move forward with your meeting request.
Chris has some limited availability next week: 1/10 at 11am or 4pm; or we can look at scheduling for the first full week in February.

Please let us know what works for your schedule and I can send an outlook invite.

Thanks,

AMERICAN OVERSIGHT

LT

Linda Tyson, Executive Assistant
Office of the Regional Administrator
U.S. EPA, Region 10
1200 Sixth Avenue, Mail Stop RA-210
Seattle, Washington 98101-3140
(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM
To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

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I've let Cara know that we talked, and she's happy to speak with you further about this our any other matter on which you're currently representing PLP.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

From: Iani, L. John (Perkins Coie) [mailto:Jlani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

AMERICAN OVERSIGHT

John

L. John Iani | Perkins Coie LLP
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AMERICAN OVERSIGHT

Message

From: Iani, L. John (Perkins Coie) [JIani@perkinscoie.com]
Sent: 1/4/2018 12:20:28 AM
To: Tyson, Linda [Tyson.Linda@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Tyler, Kendra [Tyler.Kendra@epa.gov]
Subject: RE: Pebble Limited Partnership meeting request

Thank you Linda. We will check schedules and get back to you shortly.

Happy New Year!

John

L. John Iani | Perkins Coie LLP
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6689
F. +1.206.359.7689
E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Wednesday, January 03, 2018 4:09 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

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1200 Sixth Avenue, Mail Stop RA-210
Seattle, Washington 98101-3140
(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM

AMERICAN OVERSIGHT

To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

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U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

From: Iani, L. John (Perkins Coie) [mailto:Jlani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

John

L. John Iani | **Perkins Coie LLP**
PARTNER
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
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E. Jlani@perkinscoie.com

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AMERICAN OVERSIGHT

Message

From: Tyson, Linda [Tyson.Linda@epa.gov]
Sent: 1/4/2018 12:09:19 AM
To: jiani@perkinscoie.com
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]; Tyler, Kendra [Tyler.Kendra@epa.gov]
Subject: RE: Pebble Limited Partnership meeting request

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Linda Tyson, Executive Assistant
Office of the Regional Administrator
U.S. EPA, Region 10
1200 Sixth Avenue, Mail Stop RA-210
Seattle, Washington 98101-3140
(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM
To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

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I've let Cara know that we talked, and she's happy to speak with you further about this our any other matter on which you're currently representing PLP.

R. David Allnutt, Director
Office of Environmental Review and Assessment

AMERICAN OVERSIGHT

U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140
(206) 553-2581

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

John

L. John Iani | **Perkins Coie LLP**
PARTNER
1201 Third Avenue Suite 4900
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E. JIani@perkinscoie.com

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AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 1/19/2018 8:13:48 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: FW: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Hladick, Christopher
Sent: Thursday, January 04, 2018 2:19 PM
To: Hladick, Christopher; Allnutt, David; Steiner-Riley, Cara; jiani@perkinscoie.com
Cc: Stern, Allyn; Palomaki, Ashley
Subject: EPA/Pebble Limited Partnership Meeting
When: Thursday, February 08, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: EPA Offices

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

POC: L. John Iani | Perkins Coie LLP
1201 Third Avenue Suite 4900
Seattle, WA 98101-3099
D. +1.206.359.6689
F. +1.206.359.7689
E. Jiani@perkinscoie.com

AMERICAN OVERSIGHT

Appointment

From: Microsoft Outlook [MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@usepa.onmicrosoft.com]
Sent: 1/22/2018 6:15:46 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Meeting Forward Notification: TO BE RESCHEDULED: Meeting with Pebble Partnership
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219B Please call 202-564-5700 for escort

Start: 1/23/2018 4:00:00 PM
End: 1/23/2018 4:45:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 2/6/2018 8:37:55 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; peterrobertson@pebblepartnership.com

Subject: Meeting with Peter Robertson
Location: 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219B Please call 202-564-5700 for escort

Start: 2/15/2018 7:00:00 PM
End: 2/15/2018 7:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 2/12/2018 2:51:28 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Meeting with Peter Robertson
Location: 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219B Please call 202-564-5700 for escort

Start: 2/15/2018 7:00:00 PM
End: 2/15/2018 7:45:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 1/11/2018 1:00:04 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Meeting with Pebble Partnership
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219B Please call 202-564-5700 for escort

Start: 1/23/2018 4:00:00 PM
End: 1/23/2018 4:45:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 2/6/2018 8:37:55 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; peterrobertson@pebblepartnership.com

Subject: Meeting with Peter Robertson
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219B Please call 202-564-5700 for escort

Start: 2/15/2018 7:00:00 PM
End: 2/15/2018 7:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 2/2/2018 8:19:12 PM
To: Penman, Crystal [Penman.Crystal@epa.gov]; Edwards, Crystal [Edwards.Crystal@epa.gov]
CC: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: meeting with Lee Forsgren

Dear Crystal,

The meeting for Tom Collier and me with Lee Forsgren, previously scheduled for January 23, had to be canceled because of scheduling difficulties.

If possible, I would like to come in to see Lee next week. If for any reason that is not possible, Mr. Collier will be here the entire week of the February 12, and I would like to bring him in to meet Lee during that week. He is available any day that week.

There is significant urgency to this issue, because EPA's recent decision has caused the price of our stock to drop some 50%. The survival of this company is genuinely at risk. We need to speak with Mr. Forsgren about this as soon as possible.

Thank you so much for considering my request.

Sincerely,

Peter Robertson



Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 2/26/2018 5:51:33 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: BBWA

Lee,

Thanks again for meeting with Tom Collier and me when Tom was here two weeks ago. We appreciated your making yourself available and your willingness to listen to our ongoing concerns.

As Tom and I have talked about our meetings in Washington, one of the issues that has come up is a continuing concern on our part about the Bristol Bay Watershed Assessment. You, and others with whom we have spoken in EPA and at other agencies, were not with the Agency when the BBWA was being drafted and completed. I suspect you have certainly not read the voluminous comments that we submitted, addressing concerns with both the substance of the Assessment and the process by which it was prepared. Those concerns are every bit as important today as they were when the BBWA came out, because the Agency is obviously still relying to a significant degree on the BBWA to make decisions regarding Pebble (as evidenced by the concerns about the risk of a mine as enunciated in the decision not to withdraw the Proposed Determination).

Tom would appreciate the opportunity to brief you, along with others in the Agency and perhaps representatives from other agencies involved in this process as well. He is out of the country now, but will be back in country and in Washington DC on Friday, March 9. He might also be in Washington during the following week.

If that timing doesn't work, we could almost certainly do this as a conference call (perhaps as a webinar with some slides as well). That may be the easiest way to do it and to involve people in other offices at EPA and in other agencies.

Please let me know if you have the time and inclination to hear our concerns. We believe that understanding them is crucial to making informed decisions. We appreciate your consideration of our request.

Best,

Peter



Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW

AMERICAN OVERSIGHT

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 12/4/2017 11:45:59 PM
To: Peter Robertson [peterrobertson@pebblepartnership.com]
CC: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: RE: status check

We'll call you at 4.

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Monday, December 4, 2017 6:44 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>
Cc: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: Re: status check

that works like a charm. thanks so much for getting back to me.

I'm happy to call you, or you can call me in my office (202-629-3392). Let me know your preferences.

Best,

Peter

From: Schwab, Justin <Schwab.Justin@epa.gov>
Sent: Monday, December 4, 2017 6:41:54 PM
To: Peter Robertson
Cc: Fotouhi, David
Subject: RE: status check

Peter,

Sorry we didn't connect today. David (cc'd here) and I could do 4 PM on Wednesday if that works for you.

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Monday, December 4, 2017 10:49 AM
To: Schwab, Justin <Schwab.Justin@epa.gov>
Subject: Re: status check

Justin,

Would still like to try to connect with you when you have a moment. I'm traveling today and tomorrow, but available by telephone nearly anytime today. Then back in the office on Wednesday.

Are you available for a quick chat?

Thanks.

AMERICAN OVERSIGHT

Peter

From: Peter Robertson
Sent: Tuesday, November 28, 2017 9:05:23 AM
To: Schwab, Justin
Subject: Re: status check

Hi Justin.

Just following up on this email from earlier in the month. Do you have time to talk today?

Hope all is well.

Peter

Peter D. Robertson
202-629-3392
Sent from my iPhone

From: Peter Robertson
Sent: Tuesday, November 14, 2017 12:43:39 PM
To: Schwab, Justin
Subject: status check

Justin,

I hope all is well with you. I'm pleased to see that EPA is getting a bigger component of political appointees in, finally.

I'm wondering whether you can shed any light on the likelihood that the Agency's work on withdrawing the proposed determination will be done before the end of the year. Would appreciate hearing your thoughts as to that. I know you have said before that the Administrator wants this done quickly, and we obviously appreciate that. I'm not looking for a specific date, but rather can you estimate that it will be done before the end of the year or is it more likely to be done in the first quarter of 2018?

I hope it goes without saying that I'm not looking for any information about how the decision will come out -- to withdraw or not -- only information on the timing.

Thanks for anything you can share.

Best,

Peter

AMERICAN OVERSIGHT

Appointment

From: Tyson, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D7AD12AF04F64468B18E3960F2A77781-TYSON, LIND]
Sent: 1/4/2018 10:18:30 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Tyson, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D7AD12AF04F64468B18E3960F2A77781-TYSON, LIND]
Sent: 1/4/2018 10:18:30 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; David Allnutt (Allnutt.David@epa.gov) [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Attachments: Pebble Partnership project overview.pdf
Location: EPA Offices

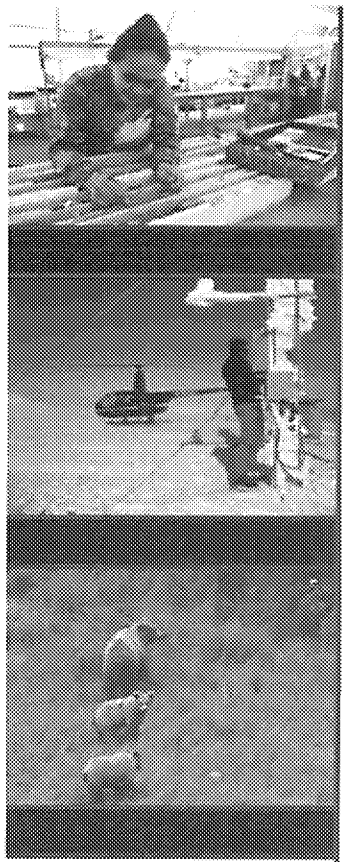
Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

- Attendees on behalf of Pebble Limited Partnership: John Shively, Peter Robertson, James Fueg, and John Iani.
- Attendees on behalf of EPA: Chris Hladick, David Allnutt, Allyn Stern, Ashley Palomaki, Patty McGrath

POC: John Iani, Perkins Coie LLP; cell 206-412-5531; Jiani@perkinscoie.com

AMERICAN OVERSIGHT





THE pebble PARTNERSHIP

EPA Region 10
Project Overview
February 8, 2018

John Shively – Chairman
James Fueg – Vice President, Permitting

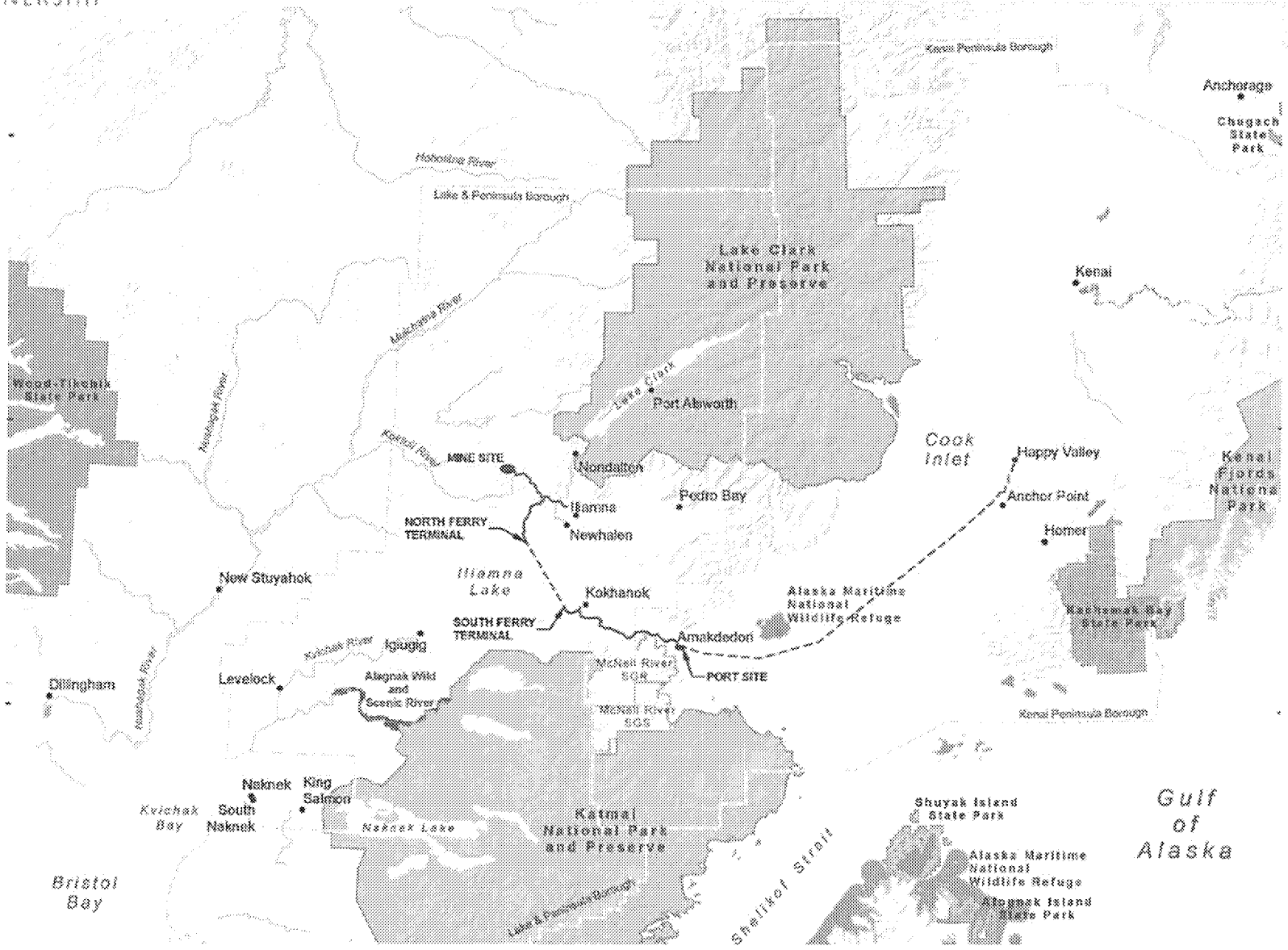
AMERICAN OVERSIGHT

EPA-0135-0006442

AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

Project Location



THE pebble PARTNERSHIP

Project Summary

- 20-year operating life
- 1.2 billion tons of material mined
- Annual processing rate of 58 million tons
- Annual Cu-Au concentrate 600 thousand tons
- Annual Mo concentrate 15 thousand tons
- No permanent waste rock storage facility
- Segregated storage of bulk and pyritic tailings
- 230 megawatt gas fired powerplant
- Gas pipeline from Anchor Point
- Road and lake ferry to Cook Inlet
- 850 jobs during operations

AMERICAN OVERSIGHT

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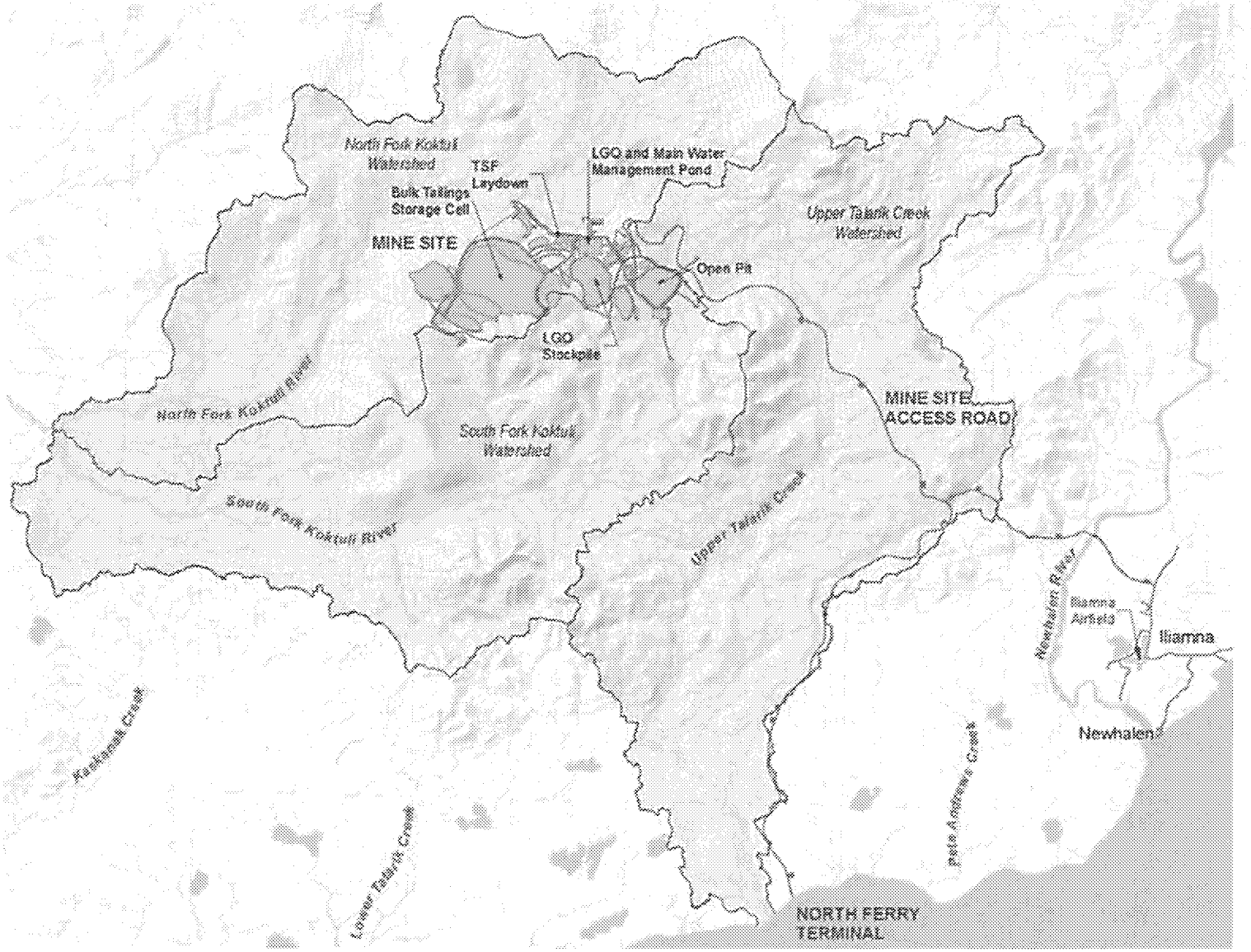
THE pebble PARTNERSHIP

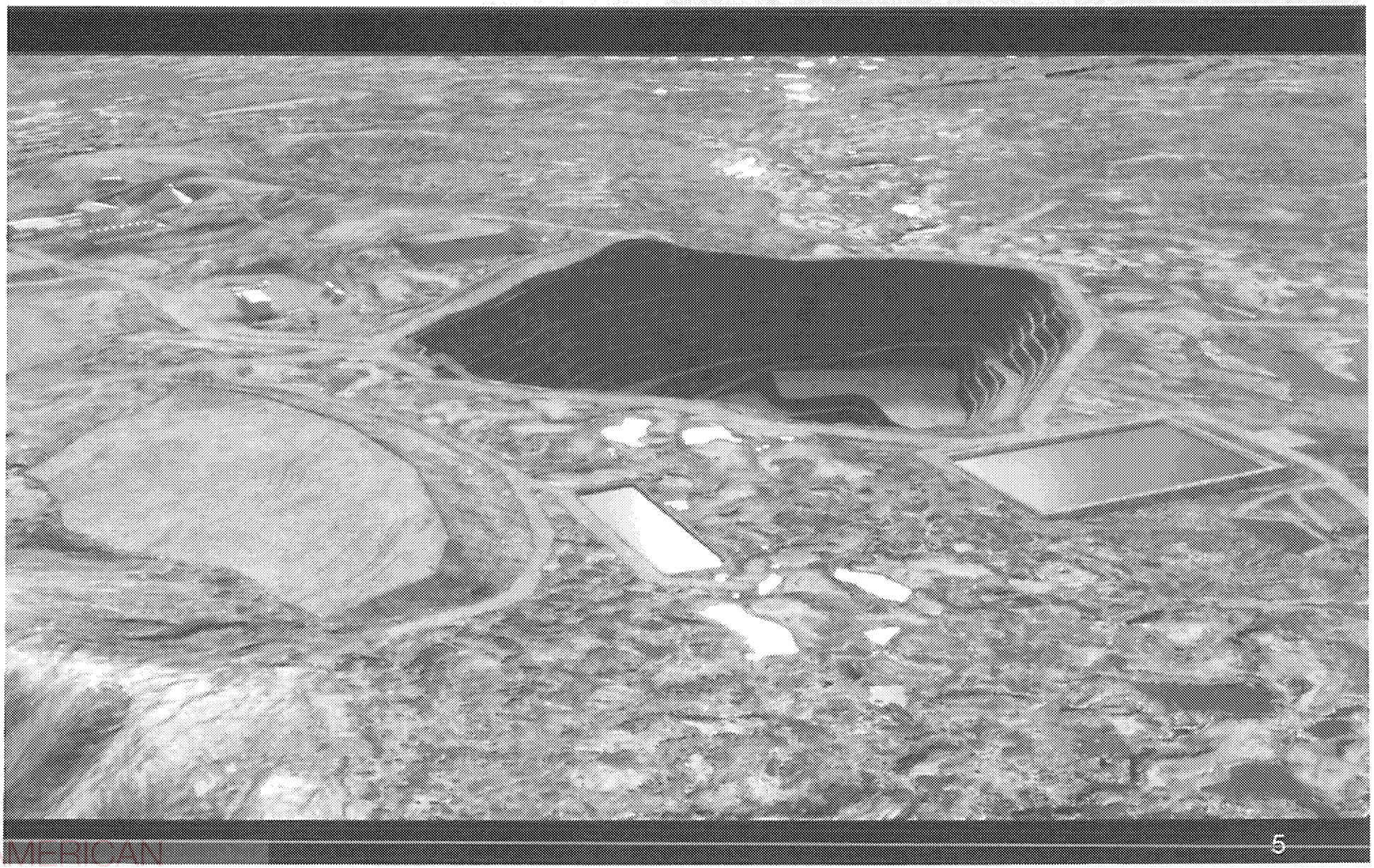
Layout and Major Drainages



EPA-0135-0006444

THE pebble PARTNERSHIP

Mining



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AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

Tailings Storage Facility

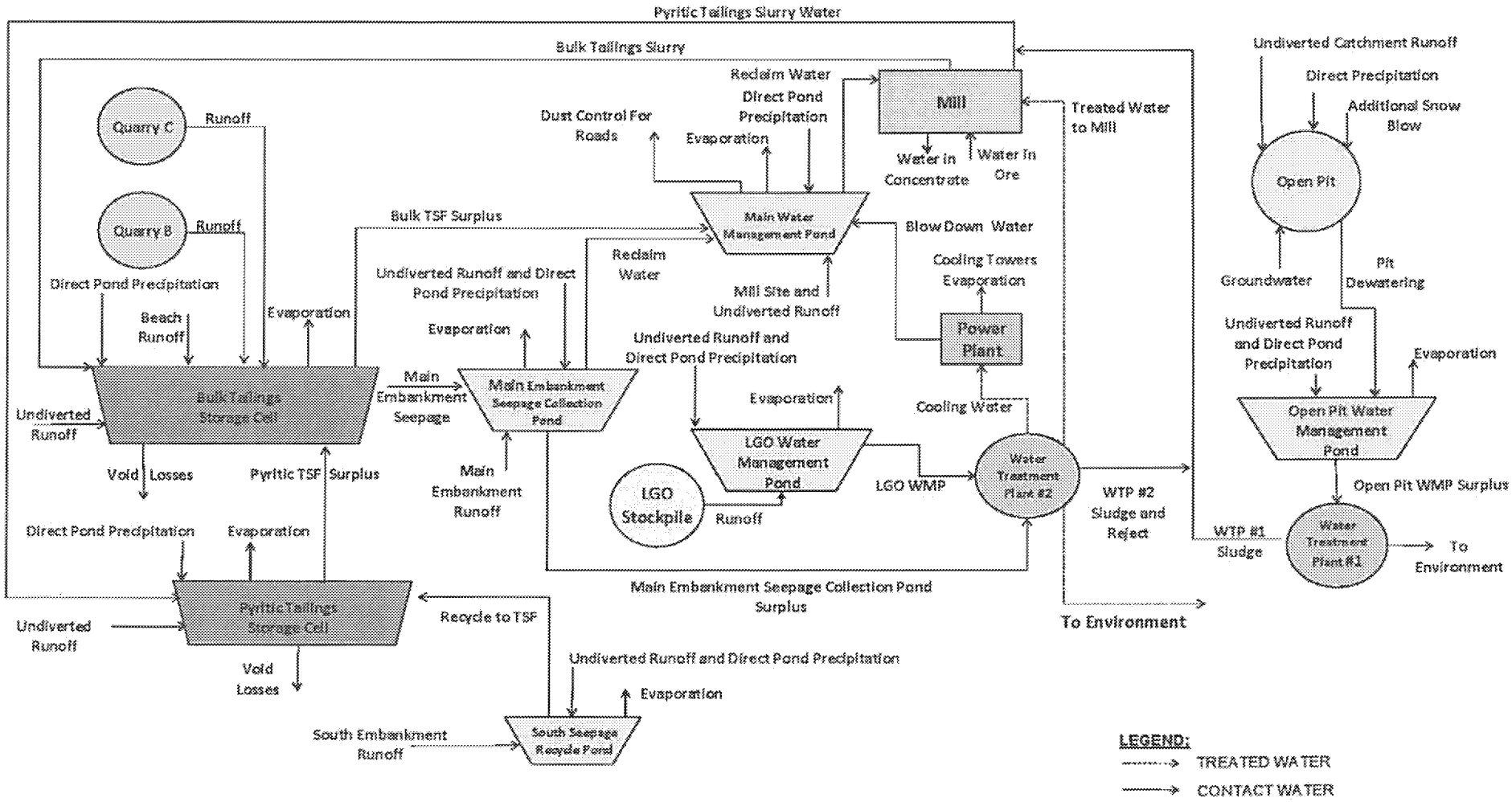


EPA-0135-0006446

AMERICAN OVERSIGHT

THE pebble PARTNERSHIP

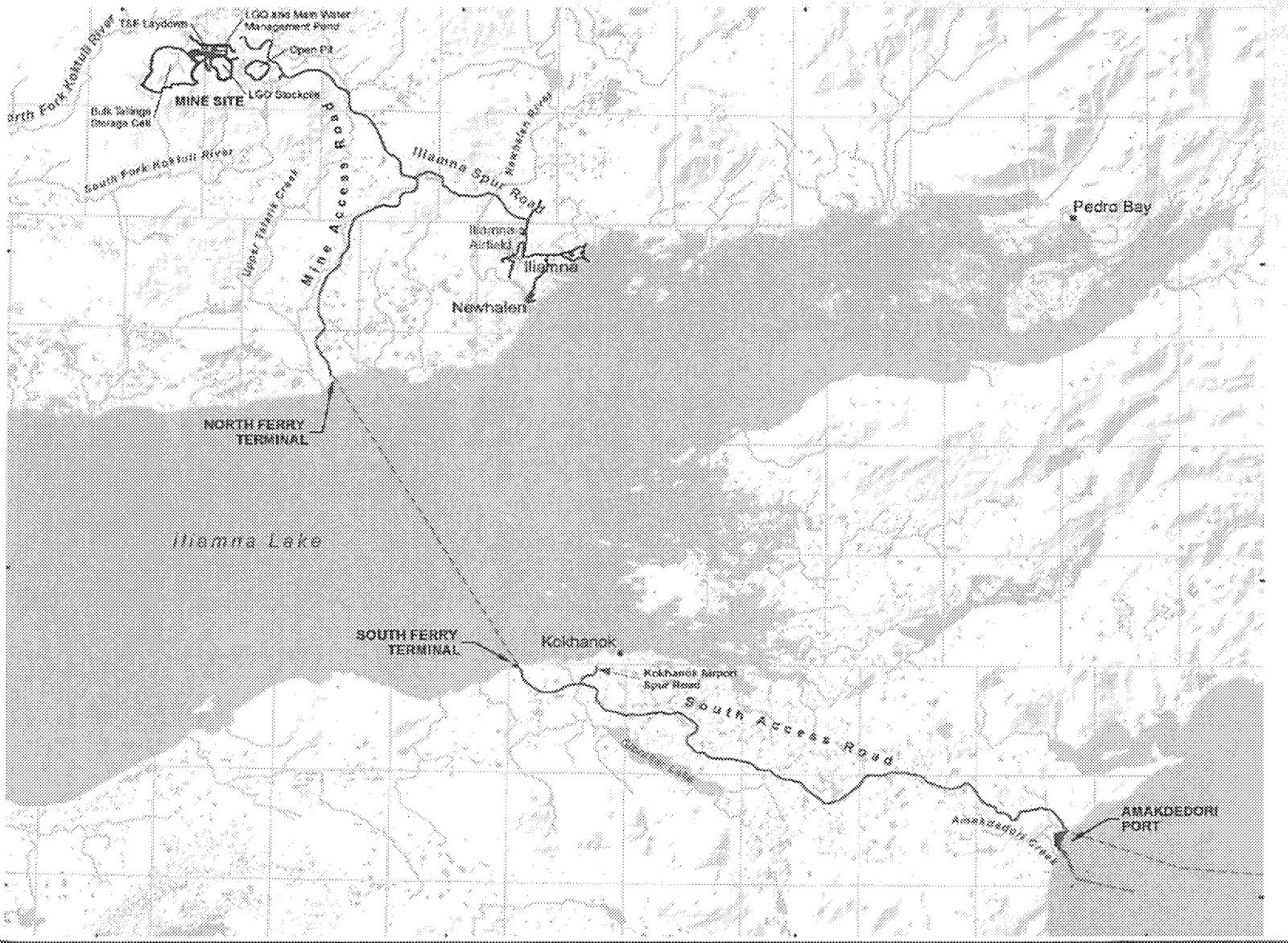
Water Balance



EPA-0135-0006447

THE pebble PARTNERSHIP

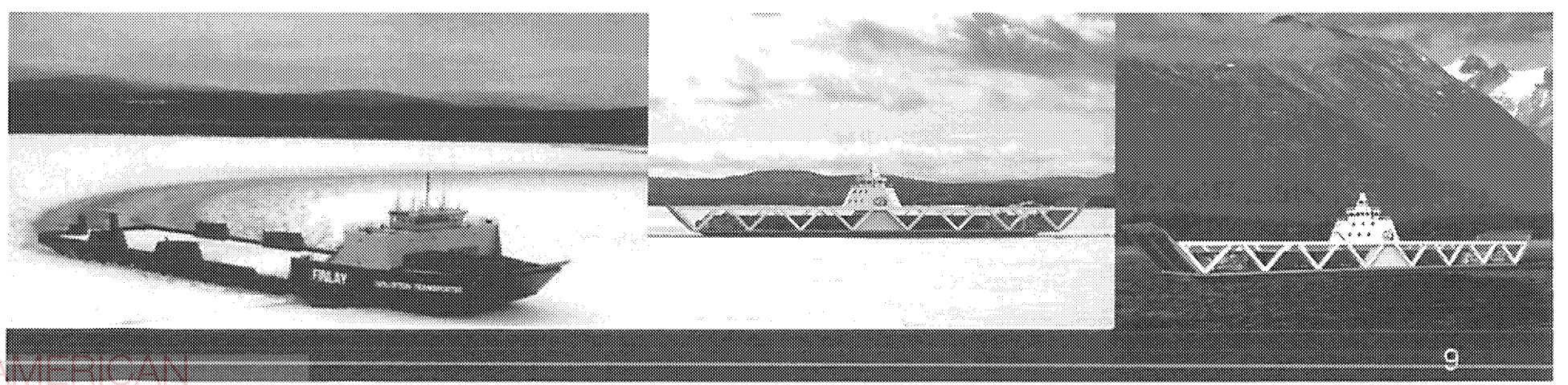
Access



AMERICAN OVERSIGHT

Iliamna Lake Ferry

- **Ice breaking ferry for year-round operation**
  - Design based on operating ferry on Williston Lake
- **Ferry will be constructed at the south ferry terminal location**
- **Average of one round trip per day**
  - 3 hours each way in ice
  - 1.5 hours each way in open water



AMERICAN OVERSIGHT

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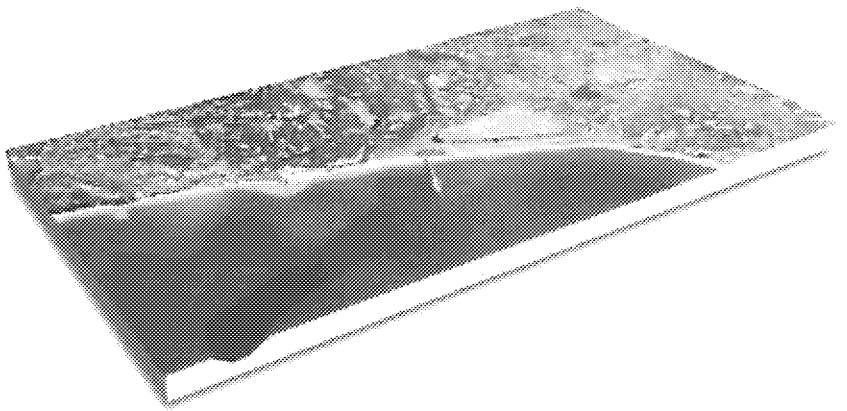
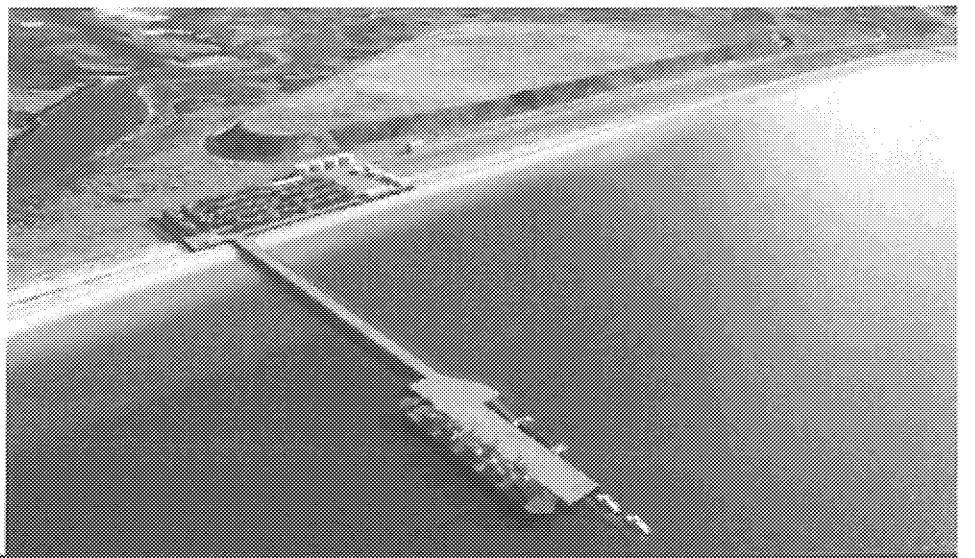
THE pebble PARTNERSHIP

Amakdedori Port Site

- Causeway and jetty
- 50-ft draft dredged channel
- North side of jetty for supply barge access
- Annual operations traffic
  - Up to 25 concentrate vessels
  - Up to 30 supply barges





EPA-0135-0006450

Appointment

From: Tyson, Linda [Tyson.Linda@epa.gov]
Sent: 2/5/2018 5:55:25 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 1/25/2018 8:17:47 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: FW: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 1/25/2018 8:17:47 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: FW: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: James Fueg [JamesFueg@pebblepartnership.com]
Sent: 1/30/2018 5:30:09 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: RE: Feb 8 meeting with EPA

Patty
Let me discuss this with our group and I will get back to you shortly.
Thanks,
James

James Fueg
Vice President - Permitting

THE pebble PARTNERSHIP

Main: (907) 339-2600
Direct: (907) 339-2612
3201 C Street, Suite 505
Anchorage, AK 99503

From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, January 30, 2018 7:21 AM
To: James Fueg <JamesFueg@pebblepartnership.com>
Subject: Feb 8 meeting with EPA

Hi James-

I was asked to reach out to Pebble to regarding the February 8 meeting with our Regional Administrator, Chris Hladick, to determine meeting attendance and an agenda.
Could you share with me your list of attendees and topics you would like to discuss?
Also, we should chat about whether you would like to have a separate meeting with our Pebble permit oversight/NEPA team.

Feel free to give me a call or to respond via email.

Thanks –
Patty

Patty McGrath |Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Message

From: James Fueg [jamesfueg@pebblepartnership.com]
Sent: 2/7/2018 6:05:02 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: Re: meeting tomorrow

Patty
Thanks for letting me know. I have a flight at noon to get back to Anchorage for a meeting with the Corps, so I don't anticipate it running long from our side.
See you tomorrow.
James

From: McGrath, Patricia <mcgrath.patricia@epa.gov>
Sent: Wednesday, February 7, 2018 9:59:09 AM
To: James Fueg
Subject: meeting tomorrow

Hi James-
I may need to leave the meeting with the RA tomorrow a bit early for a conference call (9:45-10:30).
I have set aside a room and time from 10:30 – 11:30 tomorrow if you and John would like to follow-up on anything.
Jill Nogi, EPA's NEPA manager is available from 10:30 – 11 and could join if needed.
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Tyson, Linda [Tyson.Linda@epa.gov]
Sent: 2/5/2018 5:55:25 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; jiani@perkinscoie.com
CC: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: EPA/Pebble Limited Partnership Meeting
Location: EPA Offices

Start: 2/8/2018 5:00:00 PM
End: 2/8/2018 6:00:00 PM
Show Time As: Tentative

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

- Attendees on behalf of Pebble Limited Partnership: John Shively, Peter Robertson, James Fueg, and John Iani.
- Attendees on behalf of EPA: Chris Hladick, David Allnutt, Allyn Stern, Ashley Palomaki, Patty McGrath

POC: John Iani, Perkins Coie LLP; cell 206-412-5531; Jiani@perkinscoie.com

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 2/6/2018 6:05:15 PM
To: James Fueg [jamesfueg@pebblepartnership.com]
Subject: RE: Feb 8 meeting with EPA

Ok James. Thanks for letting me know.
Patty

From: James Fueg [mailto:jamesfueg@pebblepartnership.com]
Sent: Monday, February 5, 2018 11:29 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Re: Feb 8 meeting with EPA

Patty
Thank you. I have also just found out that Peter Robinson won't be able to join us Thursday, so it will be John Shively, John Iani, and myself.
See you Thursday.
Regards
James

From: McGrath, Patricia <mcgrath.patricia@epa.gov>
Sent: Monday, February 5, 2018 11:25:28 AM
To: James Fueg
Subject: RE: Feb 8 meeting with EPA

Hi James-
Following are the EPA attendees.

Chris Hladick -Regional Administrator
David Allnutt – Director, Office of Environmental Review and Assessment
Allyn Stern- Regional Counsel, Office of Regional Counsel
Ashley Palomaki – Assistant Regional Counsel, Office of Regional Counsel
Patty McGrath – Mining Advisor

See you on Thursday.

Best,
Patty

From: James Fueg [mailto:jamesfueg@pebblepartnership.com]
Sent: Monday, February 5, 2018 9:50 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: Re: Feb 8 meeting with EPA

Patty
Is there any update on who from EPA will be participating in the meeting Thursday?

AMERICAN OVERSIGHT

Thanks,
James

From: James Fueg
Sent: Wednesday, January 31, 2018 2:14:14 PM
To: McGrath, Patricia
Subject: RE: Feb 8 meeting with EPA

Patty
Thanks for the email. Attending for PLP will be:
John Shively – PLP Chairman
Peter Robertson – PLP Senior VP Corporate Affairs
James Fueg – PLP VP Permitting
John Iani – Perkins Coie

The primary purpose of the meeting is to introduce ourselves to the new Regional Administrator, give him an overview of our proposed project, and address any questions he may have for us about the project and the process that is starting.

I would suggest an agenda as follows:

1. Introductions
2. Project Overview
3. Process Q&A

I would appreciate it if you could let us know who will attend from the EPA team.

Thanks,
James

James Fueg
Vice President - Permitting

THE pebble PARTNERSHIP

Main: (907) 339-2600
Direct: (907) 339-2612
3201 C Street, Suite 505
Anchorage, AK 99503

From: McGrath, Patricia [mailto:mcgrath.patricia@epa.gov]
Sent: Tuesday, January 30, 2018 7:21 AM
To: James Fueg <JamesFueg@pebblepartnership.com>
Subject: Feb 8 meeting with EPA

Hi James-

I was asked to reach out to Pebble to regarding the February 8 meeting with our Regional Administrator, Chris Hladick, to determine meeting attendance and an agenda.
Could you share with me your list of attendees and topics you would like to discuss?
Also, we should chat about whether you would like to have a separate meeting with our Pebble permit oversight/NEPA team.

AMERICAN OVERSIGHT

Feel free to give me a call or to respond via email.

Thanks –
Patty

Patty McGrath | Mining Advisor
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Hladick, Christopher [hladick.christopher@epa.gov]
Sent: 6/1/2018 6:45:19 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]; Allnutt, David [Allnutt.David@epa.gov]

Subject: Tom Collier, Pebble Partnership
Location: Chris's Office

Start: 6/7/2018 9:00:00 PM
End: 6/7/2018 9:30:00 PM
Show Time As: Busy

POC Shalon Personal Phone / Ex. 6

Topic: Pebble Mining

AMERICAN OVERSIGHT

Appointment

From: Gahner, Pamela [gahner.pamela@epa.gov]
Sent: 11/5/2018 5:29:46 PM
To: Allnutt, David [Allnutt.David@epa.gov]

Subject: Discussion USACE MOU / Pebble
Location: Chris' Office

Start: 11/9/2018 9:00:00 PM
End: 11/9/2018 9:45:00 PM
Show Time As: Tentative

AMERICAN OVERSIGHT

Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/8/2018 3:47:49 PM
To: Allnutt, David [Allnutt.David@epa.gov]; Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]
CC: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: RE: meeting with PLP

Thanks. I added them to the 404/NEPA Sharepoint site.

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Allnutt, David
Sent: Thursday, June 07, 2018 5:58 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Hough, Palmer <Hough.Palmer@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: meeting with PLP

Per previous emails and discussions on this topic, attached are my draft notes from this afternoon's meeting. I don't believe that EPA's PD or 404(c) action were mentioned during the meeting.

<< File: meeting notes - RA meeting with Collier.docx >>

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R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e28f5bf9cbf4b8b9eda7751c2f10750-Allnutt, David]
Sent: 11/5/2018 5:40:48 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: Discussion USACE MOU / Pebble
Location: Chris' Office

Start: 11/9/2018 9:00:00 PM
End: 11/9/2018 9:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e28f5bf9cbf4b8b9eda7751c2f10750-Allnutt, David]
Sent: 11/27/2018 7:47:53 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- **Conference Line/Code / Ex. 6**

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 11/14/2018 11:20:15 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]; Vaughan, Molly [Vaughan.Molly@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: RE: Bristol Bay - NEPA/404c Coordination Update

Erik – thanks for the update. Sounds like you all are on track.

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Peterson, Erik
Sent: Wednesday, November 14, 2018 11:32 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Bristol Bay - NEPA/404c Coordination Update

David,

Providing an update on follow-up from our 11/8/18 meeting about NEPA/404c coordination. Our goal was to check-in and work toward making sure that we are getting the right 404c related input to the NEPA team.

As a result of a few conversations and meetings the following has occurred.

- Palmer has confirmed that he is really likely one of the key people to provide technical 404c related input. And, that he doesn't really have a back-up. We talked about the fact that it is helpful that Mark Douglas, Kate Scoffield (sp?) and Barb Butler are providing input.
- Palmer highlighted his main areas of focus to Molly and has communicated his schedule constraints.
- As for OGC, Heidi and Palmer have agreed that Palmer will flag issues for Heidi.
- As for OGC NEPA (Alison), the plan is for Ashley to be the primary reviewer, talk to Kim Owens when needed, and raise issues to Alison at OGC as needed. OGC's NEPA lawyers should not necessarily be directly involved because OFA has decided they don't need to see these Preliminary DEIS comments.
- Carrie Wehling at OGC will communicate to senior leaders David and Justin that we do not currently see a need to OGC front office involvement on the regional preliminary DEIS comments.

Altogether, I think we have made progress on clarifying how to make sure 404c technical and legal input is provided to the NEPA team in an effective manner. Happy to have more direction or suggestions and at this point I propose we have 404c/NEPA coordination as an agenda topic at our next check-in with you.

Erik Peterson, NEPA Reviewer

AMERICAN OVERSIGHT

U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/5/2018 8:50:20 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/12/2018 4:00:00 PM
End: 6/12/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/16/2018 5:48:35 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/16/2018 5:47:29 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/4/2018 6:25:21 PM
To: Hladick, Christopher [hladick.christopher@epa.gov]

Subject: Accepted: Tom Collier, Pebble Partnership
Location: Chris's Office

Start: 6/7/2018 9:00:00 PM
End: 6/7/2018 9:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 5/1/2018 11:56:47 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]
Subject: FW: Letter to Administrator from Pebble re 404c
Attachments: 20180425125804.PDF

Cara – Attorney Client / Ex. 5

Attorney Client / Ex. 5

R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Wednesday, April 25, 2018 12:03 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Letter to Administrator from Pebble re 404c

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Wehling, Carrie
Sent: Wednesday, April 25, 2018 11:51 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Heads up re Letter to the Administrator

Heidi – looks like something for our weekly next week, if not sooner.
No specific to-do.
Thanks.
Carrie

AMERICAN OVERSIGHT

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM

AMERICAN OVERSIGHT

To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

AMERICAN OVERSIGHT

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6e28f5bf9cbf4b8b9eda7751c2f10750-Allnutt, David]
Sent: 11/21/2018 11:53:26 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay - High Level Briefing Preparation
Location: David's Office and on the phone

Start: 11/28/2018 7:15:00 PM
End: 11/28/2018 8:00:00 PM
Show Time As: Busy

I left an email on your keyboard and have copied the two docs cited therein into your Briefings Folder.

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 6/12/2018 11:34:26 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 7/3/2018 12:13:01 AM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line/Code / Ex. 6

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Allnutt, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6E28F5BF9CBF4B8B9EDA7751C2F10750-ALLNUTT, DAVID]
Sent: 4/23/2018 8:52:37 PM
To: Thiesing, Mary [Thiesing.Mary@epa.gov]

Subject: Accepted: Pebble Scoping Comments
Location: Phone- I wil call you

Start: 4/24/2018 4:30:00 PM
End: 4/24/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Anderson-Carnahan, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=C34CC9BE6AB74896B7EA15338CBE41EB-ANDERSON-CARNAHAN, LINDA]
Sent: 7/11/2018 5:59:04 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Tim Havey [timhavey@pebblepartnership.com]
Sent: 6/7/2018 8:06:24 PM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: FW: Field Logistics
Attachments: SSRF_EPA_2018_0709.pdf

Mark:

Please review the attached and send back to me. Basically I need your cell phone number and for you to add any food or dietary requirements. Below is the email I sent to Estrella yesterday with some additional info. Call if you have any questions.

Regards,

Tim Havey
Director-Environment and Permitting

3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 C: 907.230.5056

-----Original Message-----
From: Tim Havey
Sent: Wednesday, June 6, 2018 10:20 AM
To: 'Campellone, Estrella F CIV USARMY CEPOA (US)' <Estrella.F.Campellone@usace.army.mil>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: RE: Field Logistics

Estrella:

I have attached the site services request form that our operations staff need to finalize your arrangements. I went ahead and filled out most. Please review and add your phone number (cell phone preferably) and whether anyone has any food allergies or special needs. You can send the completed form back to me and I will submit it to site. I have requested individual rooms for each of you.

Meals are cafeteria style. For your arrival day, it will be easiest if you can bring your lunch with you. For the remaining days you will make a bag lunch at breakfast to bring with you to the field.

We will provide in-town transportation to/from the airport each day in one of our vehicles. Work days are 12 hours, with 10 in the field and one hour on either end for muster, briefings, etc. Crews normally do not return to base during the work day unless weather limits flight operations. Low clouds and/or high winds are typically the only conditions that will restrict helicopter travel.

No firearms are permitted at any Pebble facility or in helicopters. Trained bear guards will be provided with each crew. Guards are in constant radio contact with site operations. Alcohol is prohibited at any Pebble facility.

Safety training and site orientation will take place as soon as you arrive. That should take about an hour, followed by a 20-minute helicopter safety briefing. We provide basic PPE (safety goggles, high visibility vest, hearing protection). You are welcome to bring your own as long as the operations manager approves. Field gear requirements are what you would normally bring.

Accommodations are 150/person/day. We will invoice you after your trip. Our site staff does not have the ability to accept payments. Helicopter time will likewise be invoiced to you based on the per seat cost and number of flight hours logged. Cost may vary depending on which helicopter is available.

Please let me know if you have any other questions.

Thanks,
Tim

-----Original Message-----
From: Campellone, Estrella F CIV USARMY CEPOA (US) [mailto:Estrella.F.Campellone@usace.army.mil]
Sent: Wednesday, June 6, 2018 7:31 AM
To: Tim Havey <timhavey@pebblepartnership.com>
Cc: McCoy, Shane M CIV USARMY CEPOA (US) <Shane.M.Mccoy@usace.army.mil>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>
Subject: Field Logistics

AMERICAN OVERSIGHT

Hi Tim,

I think I left a voice mail and I am wondering if you received it.

In any case, please let me review with you our itinerary:
Arrival time @ Iliamna: July 9 (Monday) at 0900.
Departure time: July 11 @ 4:30 p.m.

Corps will disburse your company directly for hotel/helicopter costs.
Hotel:
Check in July 9th
Check out July 11th

Meals:
July 9th (lunch brown bag - Diner)
July 10th (all meals)
July11th (breakfast & lunch).

Helicopter: as per time-usage logs (coordination field work with HDR at this point).

Truck Rental: We will take your offer of picking us up at the airport on Monday July 9th.

You mentioned we will have safety training upon arrival on July 9th before heading to the field. Please let us know if there is anything else we need to be aware of.

Thank you very much for your help,

Estrella
-----Original Message-----
From: McCoy, Shane M CIV USARMY CEPOA (US)
Sent: Monday, June 4, 2018 10:51 AM
To: Campellone, Estrella F CIV USARMY CEPOA (US) <Estrella.F.Campellone@usace.army.mil>
Cc: Tim Havey <timhavey@pebblepartnership.com>
Subject: contact info

Estrella,
Here is Tim's email.

Shane

AMERICAN OVERSIGHT

Clear Form

2017 SITE SERVICES REQUEST FORM

Two weeks advance notice is required prior to all site visits

DATE OF REQUEST: 6/6/2018		***For PLP Use only*** Purchase Order #: ___10ANC09 ___20SIT09 ___30ENG09 ___40ENV09 ___50BD09 ___50PA09 ___50SR09 ___50WF09
PROJECT LEADER: Mark Douglas	**CATEGORY/TASK #** Wetlands	
COMPANY: US EPA		
CONTACT PHONE/EMAIL: Douglas.Mark@epa.gov		

FLIGHT DETAILS: ALL FLIGHTS TO SITE MUST BE BOOKED THROUGH sitetravel@pebblepartnership.com

From/To	Airline	Date	Flight	Time
ANC/ILI	IAT	07/09/18		AM
ILI/ANC	IAT	07/11/18		PM

However, if arrangements are in place please provide details below

Names of Individuals in Group:	Affiliation	M	F	Special Dietary Requests / Food Allergies
1. Mark Douglas	USACE	◉	○	
2.		◉	○	
3.		◉	○	
4.		○	○	
5.		○	○	
6.		○	○	
7.		○	○	
8.		○	○	
9.		○	○	
10.		○	○	

Purpose of Visit:

Wetlands field work

Scope of Work:

Field verification of mosaic wetlands with HDR wetlands crews.

Comments:

EPA staff will coordinate with USACE & HDR wetlands scientists to determine sites that will be visited and configuration of each field crew. All work will be conducted in the mine site/deposit area and will be based out of Iliamna.

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THE pebble PARTNERSHIP

ADDITIONAL REQUIREMENTS			
Private Land Access:		**# People:**	**Dates:**
☐	APC		
☐	CIRI		
☐	INL		
☐	PBC		
☐	KIJIK		
☐	Other (*describe):*		
Labor:		**# People:**	**Dates:**
☐	Bear Guard	1*	7/9-7/11
☐	Observer		
☐	Laborer		
☐	Local Knowledge Specialist		
☐	Other *(describe):*		
Helicopter:		**# People:**	**#Hours/Day:**
☐			
☐	ASTAR	1*	Full
☐	500		
☐	R44		
Other:		**Quantity:**	**Dates:**
☐	Boat *(describe):*		
☐	Backhoe		
☐	Vehicle		
☐	Bicycle		

Comments:

Please arrange for individual rooms for EPA staff.
*Helicopter and bear guard needs should be coordinated with USACE/HDR request for the same days.

TO BE COMPLETED BY THE REQUESTING TRAVELER
Date: Signature:

TO BE COMPLETED BY AUTHORIZING SUPERVISOR
Date: Signature:
Printed Name:

TO BE COMPLETED BY PERSON COMPLETING TRAVEL ARRANGEMENTS
Date Received: Date Completed:
Signature of person completing travel arrangements:
☐ Emailed to PLP Invoicing ☐ Emailed to traveler ☐ Faxed to traveler _____

PLEASE ATTACH MAPS AS THEY RELATE TO THE SCOPE OF WORK.

AMERICAN OVERSIGHT

Message

From: Tim Havey [timhavey@pebblepartnership.com]
Sent: 7/25/2018 12:53:27 AM
To: Douglas, Mark [douglas.mark@epa.gov]
Subject: RE: Site visit invoice
Attachments: EPA Invoice A-11 final.pdf

Mark:

Invoice attached. Please let me know if you have any questions.

Regards,
Tim

From: Douglas, Mark <douglas.mark@epa.gov>
Sent: Tuesday, July 24, 2018 3:35 PM
To: Tim Havey <timhavey@pebblepartnership.com>
Subject: Site visit invoice

Tim,

Out budget and travel folks are asking about the invoice for the site visit, have you had a chance to determine costs and is so can you send the invoice to me?

Thanks,

Mark Douglas
Aquatic Resources Unit
Office of Environmental Review & Assessment

U.S. Environmental Protection Agency
Alaska Operations Office
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588
Phone (907) 271-1217

AMERICAN OVERSIGHT

Pebble Limited Partnership
#505 – 3201 C Street
Anchorage, AK 99503
907-339-2600

INVOICE

Invoice Number: A-11

Invoice Date: July 20, 2018

Customer Information:

Billing Address:		**Shipping Address:**	
Company:		Company:	
Name:	US EPA-Alaska, Aquatic Resources Unit	Name:	
Address:	222 W 7th Avenue, Box 19	Address:	
City/State/Zip	Anchorage, AK 99513	City/State/Zip	

Shipping Method:

Order Information:

Qty	Product Description	USD Amount Each	USD Amount
2	Lodging in Iliamna July 9 and 10, 2018 (2 nights for Mark Douglas)	150.00	300.00
0.7	Helicopter hours (wet) for wetlands field work	1,620.00	1,134.00
	**Helicopter charge calculated on per-seat basis for wetland field work hours. Wetland hours (3.5 total) are indicated by "HDR" on attached daily flight reports. Hourly rate for helicopter N470BE (5 passenger) is 1,450/hour plus 170/hour for fuel. 3.5 hours / 5 seats = 0.7 hours per seat 1 EPA passenger x 0.7 hours = 0.7 hours total		
		Subtotal:	1,434.00
		Tax:	
		Shipping:	
		Grand Total:	1,434.00

Notes:
Due upon receipt

AMERICAN OVERSIGHT

SOLOY HELICOPTERS LLC

P.O. Box 872828 • Wasilla, Alaska 99687
Phone: (907) 376-1161 • Fax: (907) 376-5883
email: office@soloyhelicopters.com

DAILY FLIGHT REPORT

No.# 22455

CUSTOMER: Pebble

ADDRESS:

PO# ATTN: JOB NO.:

EMAIL:

PHONE:

DATE: 7-9-18

A/C REG. NO.: N470BE

A/C TYPE: A5350 BA

Sam C Malley
PILOT NAME (PRINTED)

PILOT SIGNATURE

AUTHORIZATION: Margie Olympic
PRINT NAME

Margie Olympic
SIGNATURE

FLIGHT OPERATIONS DETAIL

Pebble 2.7		
Paradox 0.5		
HDR 1.9		
	HOBBS: STOP:	3413.0
	HOBBS: START:	3407.9
	TOTAL HOURS:	5.1
FUEL: ☐B ☑NB Camp 95		
☐B ☑NB C½ 99.6		
☐B ☐NB		
SOLOY FUEL:		
EXPENSES:		
PER DIEM:		
	INVOICE TOTAL	

TERMS: Net Due & Payable Upon Receipt. Interest 1½% per month *(18% per annuim)* may be charged on accounts after 30 days overdue. By the chartering of the noted services or the signing of this flight report, the Charterer / Customer acknowledges that all conditions associated with this charter shall be as set out in the Soloy Helicopters LLC. tariff.

White • Original Canary • Customer Pink • Pilot

AMERICAN OVERSIGHT

SOLOY HELICOPTERS
P.O. Box 872828 • Wasilla, Alaska 99687
Phone: (907) 376-1161 • Fax: (907) 376-5883
email: office@soloyhelicopters.com

DAILY FLIGHT REPORT

No.# 22456

CUSTOMER: Pebble

ADDRESS:

PO# ATTN: JOB NO.:

EMAIL:

PHONE:

DATE: 7-10-18

A/C REG. NO.: N470BE

A/C TYPE: AS350BA

Sam O'Malley
PILOT NAME (PRINTED)

PILOT SIGNATURE

AUTHORIZATION:
Margie Olympic — Margie Olympic
PRINT NAME SIGNATURE

FLIGHT OPERATIONS DETAIL

Pebble 1.2
HDR 0.8
Recon 2.0

HOBBS:		
	STOP:	3417.0
	START:	3413.0
	TOTAL HOURS:	4.0

FUEL: ☐B ☑NB kickback cargo 75Gal	
☐B ☑NB CV2 575Gal	
☐B ☐NB	
SOLOY FUEL:	
EXPENSES:	
PER DIEM:	
INVOICE TOTAL	

TERMS: Net Due & Payable Upon Receipt. Interest 1½% per month *(18% per annum)* may be charged on accounts after 30 days overdue. By the chartering of the noted services or the signing of this flight report, the Charterer / Customer acknowledges that all conditions associated with this charter shall be as set out in the Soloy Helicopters LLC. tariff.

White • Original Canary • Customer Pink • Pilot

AMERICAN OVERSIGHT

SOLOY HELICOPTERS LLC

P.O. Box 872828 • Wasilla, Alaska 99687
Phone: (907) 376-1161 • Fax: (907) 376-5883
email: office@soloyhelicopters.com

DAILY FLIGHT REPORT

No.# 22457

CUSTOMER: Pebble

ADDRESS:

PO# ATTN: JOB NO.:

EMAIL:

PHONE:

DATE: 7-11-18

A/C REG. NO.: N470BL

A/C TYPE: AS350BA

Sam Connelley
PILOT NAME (PRINTED)

PILOT SIGNATURE

AUTHORIZATION:
Margie Olympic — Margie Olympic
PRINT NAME — SIGNATURE

FLIGHT OPERATIONS DETAIL

Pebble 1.5		
HDK 0.8		
Recon 0.9		
	HOBBS: STOP:	3420.2
	START:	3417.0
	TOTAL HOURS:	3.2
FUEL: ☐B ☑NB Camp 45 Gal		
☐B ☑NB CY2 112.2 Gal		
☐B ☐NB		
SOLOY FUEL: (157.2)		
EXPENSES:		
PER DIEM:		
	INVOICE TOTAL	

TERMS: Net Due & Payable Upon Receipt. Interest 1½% per month *(18% per annum)* may be charged on accounts after 30 days overdue. By the chartering of the noted services or the signing of this flight report, the Charterer / Customer acknowledges that all conditions associated with this charter shall be as set out in the Soloy Helicopters LLC. tariff.

White • Original Canary • Customer Pink • Pilot

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/26/2018 4:00:20 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 9/27/2018 8:00:00 PM
End: 9/27/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/26/2018 3:59:55 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/23/2018 8:00:00 PM
End: 8/23/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/26/2018 3:59:22 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/18/2018 4:00:00 PM
End: 7/18/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/26/2018 3:59:13 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/12/2018 11:31:04 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/24/2018 4:37:44 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 5/24/2018 8:00:00 PM
End: 5/24/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/7/2018 12:03:06 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble wetlands coordination conversation
Location: R10AOO-ConfLn Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 7/12/2018 4:16:13 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Accepted: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/18/2018 9:51:13 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/6/2018 4:00:00 PM
End: 6/6/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/18/2018 9:50:16 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: FW: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 5/23/2018 4:00:00 PM
End: 5/23/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 5/18/2018 8:32:35 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: Pebble check-in
Location: AOO

Start: 6/5/2018 10:00:00 PM
End: 6/6/2018
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 7/5/2018 8:12:37 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Accepted: Pebble Overview for AOO Director
Location: R10AOO-Room-Large-30-VTC/R10-Rooms-AOO; R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/19/2018 8:30:00 PM
End: 7/19/2018 9:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=23501ccdede34f148129c582fa1860b4-Mdougl02]
Sent: 8/20/2018 9:35:00 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Douglas, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=23501CCDEDE34F148129C582FA1860B4-MDOUGL02]
Sent: 6/26/2018 4:00:43 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 10/25/2018 8:00:00 PM
End: 10/25/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 10/19/2018 2:31:25 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; peterrobertson@pebblepartnership.com; Gude, Karen [Gude.Karen@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 3233 WJCE

Start: 11/14/2018 2:30:00 PM
End: 11/14/2018 3:15:00 PM
Show Time As: Busy

Recurrence: (none)

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 5/14/2018 4:49:56 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Peter D. Robertson [peterrobertson@pebblepartnership.com]; Fotouhi, David [fotouhi.david@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Campbell, Ann [Campbell.Ann@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Schwab, Justin [schwab.justin@epa.gov]

Subject: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/5/2018 6:10:53 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
Subject: RE: Bristol Bay

Good to hear; thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Forsgren, Lee
Sent: Tuesday, June 5, 2018 2:00 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Subject: RE: Bristol Bay

David,

Not a problem. It was a no runs, no hits, no errors meeting. Heidi did fine.

Lee

From: Fotouhi, David
Sent: Tuesday, June 5, 2018 12:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>
Subject: Bristol Bay

Lee: A meeting that I need to attend with Andrew W, Bill W, and Matt has been rescheduled for the same time as our meeting with the representatives from Pebble this afternoon. Heidi Nalven from OGC will be attending, and I would be glad to follow up with you afterward. Thanks.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Kaiser, Russell [Kaiser.Russell@epa.gov]
Sent: 6/5/2018 1:40:00 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: FW: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Frazer, Brian [Frazer.Brian@epa.gov]
Sent: 6/5/2018 1:27:10 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: FW: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 6/4/2018 6:14:17 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Re: Visit of Native Alaskans this week

You're terrific. Thanks, Lee.

Peter

From: Forsgren, Lee <Forsgren.Lee@epa.gov>
Sent: Monday, June 4, 2018 2:13 PM
To: Peter Robertson
Cc: Penman, Crystal; Campbell, Ann
Subject: Re: Visit of Native Alaskans this week

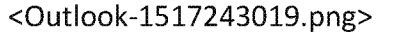
Happy to meet with them when they come in.

Sent from my iPhone

On Jun 4, 2018, at 2:12 PM, Peter Robertson <peterrobertson@pebblepartnership.com> wrote:

> Lee and Crystal,
>
> We have had a change to the group of Native Alaskans that are visiting this week. Abe Williams and Margie Olympic are no longer able to come. The group still includes:
>
> - Brad Angasan, President & CEO of Alaska Peninsula Corporation *(Represents Port Heiden, South Naknek, Ugashik, Kokhanok & Newhalen);*
> - Ventura Samaniego, President & CEP of Kijik Corporation *(Represents Lake Clark area & Six Mile Lake); and*
> - Henry Olympic, President of Newhalen Tribal Council *(Represents Newhalen).*
>
> They will be accompanied by me and by Shalon Harrington, Chief of Staff for the Pebble LImited Partnership.
>
> Please let me know if you have any questions. We look forward to seeing you.
>
> Sincerely,
>
> Peter

AMERICAN OVERSIGHT



Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 6/4/2018 6:12:01 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: Visit of Native Alaskans this week

Lee and Crystal,

We have had a change to the group of Native Alaskans that are visiting this week. Abe Williams and Margie Olympic are no longer able to come. The group still includes:

- Brad Angasan, President & CEO of Alaska Peninsula Corporation *(Represents Port Heiden, South Naknek, Ugashik, Kokhanok & Newhalen);*
- Ventura Samaniego, President & CEP of Kijik Corporation *(Represents Lake Clark area & Six Mile Lake); and*
- Henry Olympic, President of Newhalen Tribal Council *(Represents Newhalen).*

They will be accompanied by me and by Shalon Harrington, Chief of Staff for the Pebble LImited Partnership.

Please let me know if you have any questions. We look forward to seeing you.

Sincerely,

Peter



Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 5/29/2018 12:58:49 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 5/26/2018 1:14:15 AM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 5/24/2018 7:27:26 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: Re: meeting request

Lee and Crystal,

Circling back to see if we can get a time on the books for this meeting. Then, if you need to cancel, we would certainly understand.

Thanks.

Peter

Peter D. Robertson
202-629-3392
Sent from my iPhone

From: Peter Robertson
Sent: Friday, May 11, 2018 4:03:47 PM
To: Forsgren, Lee; Penman, Crystal
Subject: Re: meeting request

Thanks, Lee. I completely understand, better than most, how busy you guys are. I appreciate your willingness to try to make time. And you understand better than anyone how tough it is to get here from Alaska, so I really home they will get to speak with you.

But we will stand by to hear more. Thanks for considering the request.

PDR

From: Forsgren, Lee <Forsgren.Lee@epa.gov>
Sent: Friday, May 11, 2018 4:01:04 PM
To: Peter Robertson; Penman, Crystal
Subject: RE: meeting request

Peter,

We are very busy and I know that my schedule that week is crazy as we try to get the WOTUS rules to OMB. Will see what the art of the possible might be but I can't make any promises. Crystal will do her best to accommodate but it will be tough.

Thanks,
Lee

D. Lee Forsgren
Deputy Assistant Administrator
Office Of Water

AMERICAN OVERSIGHT

Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 3219 WJCE
Washington, DC 20460
Phone: 202-564-5700
Forsgren.Lee@epa.gov

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Friday, May 11, 2018 3:47 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Penman, Crystal <Penman.Crystal@epa.gov>
Subject: meeting request

Dear Lee and Crystal,

I hope all is well. I'm reaching out to you because a group of Alaskan natives is coming to Washington for meetings on June 5 and 6 regarding the Pebble mine. They are hopeful that Lee would have time to meet with them. At this point, their schedule is free on both days, except for 1:00 on the 6th, when they meet with Representative Young.

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Can you let me know if Lee has has time on either of those days?

Thanks.

Peter

THE pebble PARTNERSHIP

Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [Penman.Crystal@epa.gov]
Sent: 5/23/2018 6:33:43 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: Peter Robertson [peterrobertson@pebblepartnership.com]
Sent: 10/4/2018 2:57:20 PM
To: Penman, Crystal [Penman.Crystal@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: deantha@alaskaminers.org
Subject: Meeting with Deantha Crockett of the Alaska Miners Association

Lee and Crystal,

Deantha Crockett, head of the Alaska Miners Association is going to be in Washington DC the week of October 15. She would very much appreciate the opportunity to meet with Lee while she is there.

The Alaska Miners Association is the leading trade association for the mining industry in Alaska. Lee, you know better than most how important mining is to Alaska. The industry provides some 4,500 direct mining jobs: $700 million in direct and indirect payroll; some of the best-paying jobs in the state (nearly $109,000 estimated annual average wage, more than twice the state average for all sectors of the economy); $143 million in state and local government revenue; and some $250 million in payments to Alaska Native Corporations.

Deantha tells me that she has significant availability early in that week (the 15th, 16th and 17th), though she is booked up on Thursday and Friday (the 18th and 19th). I have copied her on this email so that you can communicate with her directly.

I very much hope you can meet with her, Lee, and appreciate your consideration of this request.

Best,

Peter Robertson

THE pebble PARTNERSHIP

Peter D. Robertson
The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 11/3/2018 12:15:59 AM
To: peterrobertson@pebblepartnership.com

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 2369B WJCE

Start: 11/14/2018 7:30:00 PM
End: 11/14/2018 8:30:00 PM
Show Time As: Tentative

Recurrence: (none)

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter



Peter D. Robertson

AMERICAN OVERSIGHT

The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 10/19/2018 2:38:01 PM
To: peterrobertson@pebblepartnership.com

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 2369B WJCE

Start: 11/14/2018 7:00:00 PM
End: 11/14/2018 8:00:00 PM
Show Time As: Tentative

Recurrence: (none)

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter



Peter D. Robertson

AMERICAN OVERSIGHT

The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 10/19/2018 2:34:50 PM
To: peterrobertson@pebblepartnership.com

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; WJCE 3233

Start: 11/14/2018 7:00:00 PM
End: 11/14/2018 8:00:00 PM
Show Time As: Tentative

Recurrence: (none)

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter



Peter D. Robertson

AMERICAN OVERSIGHT

The Pebble Partnership
1330 Connecticut Avenue, NW
Washington, DC 20036

AMERICAN OVERSIGHT

Message

From: Forsgren, Lee [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A055D7329D5B470FBAA9920CE1B68A7D-FORSGREN, D]
Sent: 6/4/2018 6:13:34 PM
To: Peter Robertson [peterrobertson@pebblepartnership.com]
CC: Penman, Crystal [Penman.Crystal@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]
Subject: Re: Visit of Native Alaskans this week

Happy to meet with them when they come in.

Sent from my iPhone

On Jun 4, 2018, at 2:12 PM, Peter Robertson <peterrobertson@pebblepartnership.com> wrote:

> Lee and Crystal,
>
> We have had a change to the group of Native Alaskans that are visiting this week. Abe Williams and Margie Olympic are no longer able to come. The group still includes:
>
> - Brad Angasan, President & CEO of Alaska Peninsula Corporation *(Represents Port Heiden, South Naknek, Ugashik, Kokhanok & Newhalen);*
> - Ventura Samaniego, President & CEP of Kijik Corporation *(Represents Lake Clark area & Six Mile Lake); and*
> - Henry Olympic, President of Newhalen Tribal Council *(Represents Newhalen).*
>
> They will be accompanied by me and by Shalon Harrington, Chief of Staff for the Pebble LImited Partnership.
>
> Please let me know if you have any questions. We look forward to seeing you.
>
> Sincerely,
>
> Peter
>
> <Outlook-1517243019.png>
>
> Peter D. Robertson
> The Pebble Partnership
> 1330 Connecticut Avenue, NW
> Washington, DC 20036
>
> 202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=93662678A6FD4D4695C3DF22CD95935A-PENMAN, CRYSTAL]
Sent: 5/25/2018 12:44:58 PM
To: Peter D. Robertson [peterrobertson@pebblepartnership.com]

Subject: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Eng, Connie [Eng.Connie@epa.gov]
Sent: 9/14/2018 12:20:30 PM
To: Leopold, Matt (OGC) [Leopold.Matt@epa.gov]; Fotouhi, David [Fotouhi.David@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Discussion: Pebble
Location: WJCn 3412

Start: 9/14/2018 1:30:00 PM
End: 9/14/2018 2:00:00 PM
Show Time As: Tentative

Sct: Connie Eng, 202 564 3279.

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Appointment

From: Shaffer, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=47CE854437AF49DAB8AB700A46837FD5-PSHAFFER]
Sent: 6/14/2018 7:56:04 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Fotouhi, David [fotouhi.david@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
BCC: DCRoomARN4045/DC-Ariel-Rios-OGC [DCROOMARN4045@epa.gov]

Subject: Pebble Scoping Letter - Dial-in #: **Conference Line/Code / Ex. 6**
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Busy

Dial-in #: **Conference Line/Code / Ex. 6**

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Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/8/2018 7:01:52 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: Pebble Project Scoping 060518 draft.docx

Flag: Follow up

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

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Message

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 6/20/2018 11:15:38 AM
To: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: Fwd: Pebble Scoping Letter - version with responses
Attachments: EDIT 06162018 EDIT DF edits to Pebble Project Scoping 060518 draft_pm.docx; ATT00001.htm

Flag: Follow up

Sent from my iPhone

Begin forwarded message:

> **From:** "Schwab, Justin" <Schwab.Justin@epa.gov>
> **Date:** June 16, 2018 at 1:46:12 PM EDT
> **To:** "Fotouhi, David" <fotouhi.david@epa.gov>
> **Subject: RE: Pebble Scoping Letter - version with responses**
>
> My new stuff (redlines, comment bubbles, or both) at:
>
> Pages 2, 4, 5, 7, 8, 10, 15, 16, 20, 25, 26-27
>
> There is other stuff that I haven't touched that you will want to look at, however.
>
> ---
>
> **From:** Nalven, Heidi
> **Sent:** Friday, June 15, 2018 4:56 PM
> **To:** Fotouhi, David <Fotouhi.David@epa.gov>; Schwab, Justin <Schwab.Justin@epa.gov>
> **Cc:** Stern, Allyn <Stern.Allyn@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
> **Subject:** Pebble Scoping Letter - version with responses
>
> Hi David and Justin – I have attached a version of the scoping letter that includes responses to your comments. Please let us know if you have any further questions.
>
> **Heidi Nalven**
> U.S. EPA Office of General Counsel
> 202-564-3189

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 5/22/2018 2:03:59 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Bristol Bay
Attachments: Western Caucus .pdf; Corps NOI to prepare an EIS.PDF

Hi David – Below is a status update of PLP's permit application. I have attached the FR notice I quoted from just in case you wanted to see it. Carrie mentioned that the Congressional Western Caucus is coming in for a meeting. I wanted to make sure you were of the attached letter from some Caucus members. OW is currently preparing a draft response. Also, as you may recall, staff worked on a paper responding to PLP's most recent letters. We wanted to see when might be a good time to send that paper to you.

Heidi

++++++++++

- Pebble's permit application is currently in the NEPA scoping phase.
- Substance: The Corps' public notice announcing its intent to issue the EIS explained that "[s]coping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS."
    - The Corps' public notice indicated that the draft EIS will identify a range of alternatives and evaluate reasonable and practicable alternatives, including "the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action."
    - The notice identified significant issues that will be analyzed in the draft EIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation and closure. These significant issues include "wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental concerns, historic properties, navigation, and safety."
- Process: The Corps' public scoping period ends on June 29, 2018.
    - Region 10 is preparing a draft scoping letter.
    - The draft letter will come to headquarters (OW, OFA and OGC) for review June 4th-June 12th.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Monday, May 21, 2018 7:29 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Bristol Bay

Could you provide me with any recent updates on Bristol Bay, including the status of Pebble's permit application with the Corps, by tomorrow at noon? Thank you.

David Fotouhi

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Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com.*

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. *Description of the Proposed Project.* Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

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Congress of the United States
House of Representatives
Washington, DC 20515-0301

May 3, 2018

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Ave., NW
Mail Code: 1101A
Washington, D.C. 20460

Dear Administrator Pruitt,

We write to express our concerns with regards to the EPA's decision not to scrap the Obama Administration's preemptive veto, also known as the Proposed Determination, for the prospective Pebble Limited Partnership mining project in Bristol Bay, Alaska. It is our view that the process has deviated into improper and irregular territory for having engaged in a repeated, economically damaging back-and-forth as to whether the EPA would exercise a preemptive veto of the project under Section 404(c) of the Clean Water Act. This has already set a harmful precedent which has the potential to undercut the standard National Environmental Policy Act (NEPA) review processes for years to come.

In a future administration, this dangerous precedent could be utilized as a tyrannical tool to restrict entire territories of the United States based on unilateral zoning edicts of the EPA on the basis of "unacceptable adverse" environmental effects – and decided under a paucity of evidence or before a project has even been proposed. It therefore poses a threat to the integrity of our entire project review system while casting the spectre of a double standard over this particular project.

We the undersigned understand and value the dual role EPA has to play in exercising its Congressionally-mandated task of ensuring environmental and ecological integrity right alongside its obligation to ensure strict due process in its regulatory actions. We would also not miss the chance to recognize that you, Administrator Pruitt, are a longtime friend of responsible economic and resource development. In this case, you have taken numerous steps to facilitate a holistic fact-finding process and right wrongs of the past administration which will allow Pebble ample opportunities to propose and defend a mining plan that is consistent with environmental protection of Bristol Bay. That is a world of improvement over the tenure of those who served at EPA prior to you.

It is because we recognize the above points that we raise the below concerns. The EPA's January 26, 2018 decision not to overturn what was widely considered a preemptive veto of the Pebble Limited Partnership mining project by the Obama Administration has sowed tumult for interested companies like Pebble and Northern Dynasty Minerals, for capital markets and for multiple mining stocks and indexes. Northern Dynasty Minerals' stock dropped more than 40% in the five trading days following EPA's announcement, and there is concern that the industry partnership comprising the potential project could fall apart due to this regulatory uncertainty, before a project proposal has even been fully analyzed.

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PRINTED ON RECYCLED PAPER

This is surely inconsistent with the intent of our project review processes enshrined in law, and the due process that is accorded to participants thereof. Our system is designed to facilitate the proposal of credible projects and sift the acceptable from the unacceptably adverse. What we have seen in this instance, however, is unpredictable regulatory action imperiling private entities and whole industries before a project has been sufficiently reviewed, a mere few weeks after an actual mine plan was finally allowed to be proposed.

If EPA's actions in this regard were necessary in order for it to execute its statutory mandate of environmental protection, then they would likely represent the proper steps having been taken. The public interest comes first as the mission of our federal agencies, and as Members of Congress we absolutely support that mission. However, it is well-known that the environmental protection of Bristol Bay is not dependent on the withdrawal of the Proposed Determination being suspended. Those conditions are independent of one another because the Pebble Limited Partnership mining project has yet to undergo the rigors of the Environmental Impact Statement (EIS) which requires the analysis of in-depth plans as well as intensive ecological, chemical and geological study.

As such, we respectfully question your premise when you stated during the announcement of the suspension, "Today's action allows EPA to get the information needed to determine what specific impacts the proposed mining project will have on those critical resources." Such an outcome is secured regardless of the suspension and as a consequence of the EIS, insofar as its scoping will encompass concerns surrounding the Bristol Bay Watershed. *That the necessary safeguards are already in place makes the damage that has been done to the interested parties all the more regrettable.*

The effect of suspending this withdrawal of the Proposed Determination is to retain an arbitrary and unnecessary "failsafe" against the Pebble Mine project. But if we believe our NEPA project review process is sufficiently fair and robust so as to constitute federal policy towards environmental review and mineral development, we should abstain from abruptly interjecting options which diverge from it in order to respond to a perceived threat. That law exists to analyze and deal with such a threat on its own, in a fair and comprehensive manner. In the case of its general failure as a protective statute, the proper remedy is legislative rather than agency action.

To our knowledge, there has been no such general failure of NEPA to establish scoping and criteria that ensures environmental integrity. As such, in taking this dramatic and rare step, the burden is on EPA to demonstrate that its mandate of environmental stewardship is substantially unlikely to be fulfilled following the completion of an EIS, such that queuing a disruptive preemptive veto at this stage is a compelling necessity for the public good. With a project only having just been proposed and not fully analyzed, this is simply not possible at this juncture under even the best scientific scrutiny.

The EPA's decision is also at odds with the Administration's stated policy on mineral development. Interior Secretary Ryan Zinke, in conjunction with the President, has made mineral development a top policy priority. In December 2017, the President signed an Executive Order promoting natural resource development to reduce foreign dependence on strategic minerals, including copper, by "increase[ing] in private-sector domestic exploration" and "streamlining leasing and permitting processes to expedite exploration, production, processing, reprocessing, recycling, and domestic refining of critical minerals." Overwhelmingly, the Administration's stance towards mining projects and minerals has been to treat them as issues of economic and national security, because they are.

As such, we have two requests. Firstly, we ask that the Proposed Determination be withdrawn, as was originally planned. Going forward with the withdrawal of the preemptive veto makes a return to the due process track and goes towards repairing the harm caused to interested parties by process uncertainty to date. It retains the protections of a full review process without setting forth a terrible precedent as well as further damaging entities and industry.

AMERICAN OVERSIGHT

Secondly, we ask that the EPA act in accordance with the outcomes of the normal NEPA process, which requires rigorous and scientific environmental review, before deciding whether or not to let the Pebble Limited Partnership mining project proceed.

We are honored to have the support of the following organizations and individuals that agree with our position and have endorsed this letter: American Exploration & Mining Association, National Mining Association, Women's Mining Coalition, Competitive Enterprise Institute, Americans for Limited Government, Arizona Mining Association, Alaska Miners Association, American Resources Policy Network, Arizona Pork Council, Arizona Rock Products Association, AZ BASS Nation, Bass Federation-AZ, Hibbing Area Chamber of Commerce, Hudbay Rosemont Copper Project, Idaho Mining Association, MiningMinnesota, New Mexico Cattle Growers' Association, New Mexico Wool Growers Inc., Southern Arizona Business Coalition, SRT Outdoors, Sulphur Springs Valley Electric Cooperative, Utah Mining Association, Yavapai Cattle Growers Association, Arizona District 6 Senator Sylvia Allen, Apache County Supervisor Doyel Shamley and Yavapai County Supervisors Thomas Thurman and Rowle Simmons.

Thank you for your thoughtful consideration of our comments. We look forward to your timely response.

Sincerely,

Paul A. Gosar, D.D.S.
Member of Congress

Doug Lamborn
Member of Congress

Andy Biggs
Member of Congress

Rob Bishop
Member of Congress

Lamar Smith
Member of Congress

Bob Gibbs
Member of Congress

Scott DesJarlais
Member of Congress

David B. McKinley, P.E.
Member of Congress

AMERICAN OVERSIGHT

Jeff Duncan
Member of Congress

John Duncan
Member of Congress

Randy Weber
Member of Congress

Alex Mooney
Member of Congress

Scott Perry
Member of Congress

Ted S. Yoho, D.V.M.
Member of Congress

Mark Amodei
Member of Congress

Doug LaMalfa
Member of Congress

AMERICAN OVERSIGHT

Brian Babin
Member of Congress

Roger Marshall M.D
Roger Marshall
Member of Congress

Cc: President of the United States Donald J. Trump

Secretary of the Department of the Interior Ryan Zinke

AMERICAN OVERSIGHT

Appointment

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 6/15/2018 5:13:09 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Tentative: Pebble Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/15/2018 5:01:12 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Scoping Letter - Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/14/2018 9:16:05 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Scoping Letter Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Koslow, Karin [Koslow.Karin@epa.gov]
Sent: 6/14/2018 9:10:51 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Scoping Letter - Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 6/14/2018 8:06:38 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Scoping Letter **Conference Line/Code / Ex. 6**
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: DCRoomARN4045/DC-Ariel-Rios-OGC [DCROOMARN4045@epa.gov]
Sent: 6/14/2018 7:56:10 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Scoping Letter - Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM

Recurrence: (none)

Your request was accepted.

Please contact Carla Veney, Monique Patrick, and Gail Jones to make reservation for this room.

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Message

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 6/14/2018 6:17:58 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]
Subject: FW: Alaska docs from reg review
Attachments: EDIT DF edits to Pebble Project Scoping 060518 draft.docx

From: Schwab, Justin
Sent: Thursday, June 14, 2018 2:18 PM
To: Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Alaska docs from reg review

I've done a redline/comments on the P.

From: Hoppe, Allison
Sent: Wednesday, June 13, 2018 4:28 PM
To: Schwab, Justin <Schwab.Justin@epa.gov>
Subject: Alaska docs from reg review

Justin,

These are the two Alaska documents we discussed at the end of reg review today. No action is required on your part on these at this time, just sharing for awareness.

Thanks,

Allison Hoppe
Attorney Advisor
American Indian & Alaska Native Special Emphasis Program Manager
Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
(202) 564-1912

I am an EPA LGBTQ+ Ally. Learn more and take the pledge here.
Pronouns: She/Her/Hers

AMERICAN OVERSIGHT

Appointment

From: Schwab, Justin [Schwab.Justin@epa.gov]
Sent: 6/14/2018 4:48:39 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Tentative: Pebble Mine Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: DCRoomARN4045/DC-Ariel-Rios-OGC [DCROOMARN4045@epa.gov]
Sent: 6/14/2018 1:56:28 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Mine Scoping Letter - Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM

Recurrence: (none)

Your request was accepted.

Please contact Carla Veney, Monique Patrick, and Gail Jones to make reservation for this room.

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [Stern.Allyn@epa.gov]
Sent: 6/13/2018 11:16:22 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Mine Scoping Letter
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/13/2018 4:07:42 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Mine Scoping Letter
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Marshall, Tom [marshall.tom@epa.gov]
Sent: 6/13/2018 3:49:50 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]

Subject: Accepted: Pebble Mine Scoping Letter
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 6/13/2018 12:48:13 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

We should include CCILO in this meeting today. copying Karin and Tom for starters

Steve Neugeboren
Associate General Counsel for Water
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
202 (564-5488)

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

My comments are tracked in the attached. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Please advise R10 that the draft should be raised to OW (Lee) and OA (Byron) if R10 has not already done so.

I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Pebble Scoping Letter for HQ Review by COB June 12th

AMERICAN OVERSIGHT

Hi David – Attached is Region 10's draft NEPA scoping letter. I think the key discussions appear on pages 3-10. We are still considering whether we will have any staff level edits/comments to suggest but we wanted to get this to you so you have an opportunity to review by the Tuesday COB deadline.

Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 5/31/2018 12:29:11 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Accepted: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 7/23/2018 6:40:03 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 3:30:00 PM
End: 7/27/2018 4:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/5/2018 5:45:51 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]

Subject: Declined: Pebble Mine Meeting
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/15/2018 5:09:51 PM
To: Schwab, Justin [Schwab.Justin@epa.gov]

Subject: Pebble Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Tentative

Dial-in #: Conference Line/Code / Ex. 6

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/5/2018 4:39:12 PM
To: Schwab, Justin [schwab.justin@epa.gov]

Subject: FW: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Forsgren, Lee
Sent: Thursday, May 31, 2018 8:19 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal; Frazer, Brian; Hough, Palmer; Kaiser, Russell
Subject: Pebble Mine Meeting
When: Tuesday, June 5, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/13/2018 1:12:01 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Yes, that's fine. Thank you.

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Wednesday, June 13, 2018 9:04 AM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Koslow, Karin <Koslow.Karin@epa.gov>; Marshall, Tom <marshall.tom@epa.gov>; Hoppe, Allison <hoppe.allison@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

Thanks David. We wanted to see if would be okay to meet tomorrow instead of today. A number of us (Carrie, Karin and I) are in Potomac yards today at the NCAC. I checked with the Region and pushing the meeting back one day would not impact their schedule. Also, Ashley Palomaki (lead ORC) is in town for the NCAC and could join us in person tomorrow as well if that would be okay with you.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

My comments are tracked in the attached. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

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I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

AMERICAN OVERSIGHT

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
Sent: Friday, June 8, 2018 3:02 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
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Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/13/2018 1:11:40 PM
To: Schwab, Justin [schwab.justin@epa.gov]
Subject: FW: Pebble Scoping Letter for HQ Review by COB June 12th
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Fotouhi, David
Sent: Tuesday, June 12, 2018 11:50 PM
To: Nalven, Heidi <Nalven.Heidi@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Pebble Scoping Letter for HQ Review by COB June 12th

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Deliberative Process / Ex. 5

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I'd like to meet tomorrow to discuss—please work with Pat to find a time.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Nalven, Heidi
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Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
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AMERICAN OVERSIGHT

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Thanks,
Heidi

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 6/13/2018 3:57:20 AM
To: Leopold, Matt (OGC) [Leopold.Matt@epa.gov]
Subject: Pebble Mine NEPA scoping document
Attachments: DF edits to Pebble Project Scoping 060518 draft.docx

Matt:

WLO shared with me a draft NEPA scoping letter to the Corps regarding the Pebble Mine permit application that Region 10 prepared. Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

I provided comments to staff this evening (tracked in the attached version) and plan to meet with WLO tomorrow to discuss further. Please let me know if you have similar concerns or other comments; I would be glad to provide more background tomorrow.

Best,

David

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 6/5/2018 12:40:02 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Peter D. Robertson [peterrobertson@pebblepartnership.com]; Fotouhi, David [Fotouhi.David@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Campbell, Ann [Campbell.Ann@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Schwab, Justin [schwab.justin@epa.gov]

Subject: FW: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Busy

-----Original Appointment-----
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To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal
Subject: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 11/8/2018 12:25:02 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; peterrobertson@pebblepartnership.com; Gude, Karen [Gude.Karen@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 3233 WJCE

Start: 11/14/2018 2:30:00 PM
End: 11/14/2018 3:15:00 PM
Show Time As: Busy

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

Brad Angasan Alaska Peninsula Corporation
Ventura Samaniego Kijik Corporation
Lisa Reimers Iliamna Development Corporation
Sue Anelon Iliamna Natives Limited
Chasity Anelon Pebble Employee/ Iliamna Resident
Rhiannon Nanalook Pebble Employee/ Iliamna Resident
Shannon Johnson South Central foundation Clinic & Lake and Peninsula School Board

This group will be meeting with the Alaska delegation, with other members and staff in Congress, and with representatives of the Administration (at EPA, Interior and elsewhere).

I'm hoping we can find some time for this group on one of those two days. Let me know if that might work, or if you need anything else from me.

Best wishes,

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [Penman.Crystal@epa.gov]
Sent: 11/13/2018 5:56:49 PM
To: peterrobertson@pebblepartnership.com; Gude, Karen [Gude.Karen@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 3233 WJCE

Start: 11/14/2018 2:30:00 PM
End: 11/14/2018 3:15:00 PM
Show Time As: Tentative

Lee and Crystal,

I hope all is well. I'm writing today to request a meeting with you, Lee, for a group of Alaskan Native leaders that will be in Washington on November 13 and 14 to discuss issues related to the Pebble Mine. The group will include:

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AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [Penman.Crystal@epa.gov]
Sent: 11/13/2018 2:57:28 PM
To: peterrobertson@pebblepartnership.com; Gude, Karen [Gude.Karen@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Goodin, John [Goodin.John@epa.gov]

Subject: Meeting with Alaskan Native Group
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004; Please call 202-564-5700 for escort; 3233 WJCE

Start: 11/14/2018 2:30:00 PM
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Best wishes,

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

AMERICAN OVERSIGHT

Appointment

From: Frazer, Brian [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=572986d047624669891da90708433da1-Brian Frazer]
Sent: 7/26/2018 5:52:52 PM
To: Darwin, Henry [darwin.henry@epa.gov]

Subject: Accepted: Pebble Mine
Location: WJCN 3412

Start: 7/27/2018 4:30:00 PM
End: 7/27/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 6/5/2018 12:43:07 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Peter D. Robertson [peterrobertson@pebblepartnership.com]; Fotouhi, David [Fotouhi.David@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Goodin, John [Goodin.John@epa.gov]
CC: Campbell, Ann [Campbell.Ann@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]; Frazer, Brian [Frazer.Brian@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Kaiser, Russell [Kaiser.Russell@epa.gov]; Schwab, Justin [schwab.justin@epa.gov]

Subject: FW: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Forsgren, Lee
Sent: Tuesday, June 05, 2018 8:40 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal; Frazer, Brian
Subject: FW: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

-----Original Appointment-----
From: Forsgren, Lee
Sent: Thursday, May 31, 2018 8:19 AM
To: Forsgren, Lee; Peter D. Robertson; Fotouhi, David; Nalven, Heidi; Goodin, John
Cc: Campbell, Ann; Penman, Crystal
Subject: Pebble Mine Meeting
When: Tuesday, June 05, 2018 1:00 PM-1:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

AMERICAN OVERSIGHT

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/13/2018 8:29:46 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Bristol Bay 404c and NEPA
Location: on the phone

Start: 11/14/2018 6:00:00 PM
End: 11/14/2018 6:30:00 PM
Show Time As: Tentative

Ashley, Heidi, Palmer, Cara and Carrie,

I'm suggesting this meeting as an opportunity for us to discuss how to effectively manage ORC, OGC and OW input on EPA's comments on preliminary Bristol Bay NEPA documents.

I think everyone has the same goal, to ensure that EPA's input on the NEPA process is in line with and helpful for any EPA actions related to Bristol Bay. I'm looking forward to a discussion on how to ensure we meet our shared goal in an effective and efficient as possible way.

→ Join by Phone

Conference Line/Code / Ex. 6

Local numbers: Seattle Conference Line/Code / Ex. 6 Anchorage Conference Line/Code / Ex. 6

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/13/2018 8:29:45 PM
To: Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Bristol Bay 404c and NEPA
Location: on the phone

Start: 11/14/2018 6:00:00 PM
End: 11/14/2018 6:30:00 PM
Show Time As: Tentative

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→ Join by Phone
Toll number: Conference Line/Code / Ex. 6
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→ Join Skype Meeting
Trouble Joining? Try Skype Web App
→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 5/16/2018 5:20:09 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/5/2018 10:25:59 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Accepted: FW: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 7/2/2018 1:29:56 PM
To: Schofield, Kate [Schofield.Kate@epa.gov]; Ebersole, Joe [Ebersole.Joe@epa.gov]
Subject: FW: FYI only - Gov. Walker urges Army Corps to suspend environmental review process for Pebble
Attachments: Pebble.062918..pdf

Kate/Joe

In case you did not see these, attached is EPA's final Pebble EIS scoping letter and an article about the State's comments to the Corps on the EIS process.

Have a great holiday.

-Palmer

https://www.adn.com/alaska-news/environment/2018/06/30/gov-walker-urges-army-corps-to-suspend-environmental-review-process-for-pebble/

Gov. Walker urges Army Corps to suspend environmental review process for Pebble

- Author: Annie Zak

Gov. Bill Walker and Lt. Gov. Byron Mallott on Friday asked the U.S. Army Corps of Engineers to suspend the environmental review process for the proposed Pebble mine project, citing the "unique" environment of the Bristol Bay region.

Pebble Limited Partnership has proposed the copper and gold prospect for a site that straddles the Bristol Bay salmon fishery headwaters.

Bristol Bay is the largest sockeye salmon fishery in the world. Without at least a preliminary economic assessment, Walker and Mallott said in the letter, the Army Corps would be "unable to take a hard look at all reasonable alternatives" in the draft environmental review.

"Given the unique characteristics of the region, the mine proposed by Pebble Limited Partnership (PLP) must be held to an extraordinarily high standard," the letter said.

There are "too many unanswered questions" for the review to advance further, a statement from the governor's office said Saturday afternoon.

[Following pressure from Murkowski and others, Pebble comment period extended]

The Army Corps had previously extended the comment period from 30 days to 90 days for the controversial project, after pressure from Sen. Lisa Murkowski and others. That extended the comment period to June 29.

But that extension wasn't enough to allay concerns, Walker and Mallott said in Friday's letter.

Pebble Limited Partnership "has yet to demonstrate to us or the Alaska public that they have proposed a feasible and realistic project," the letter said.

Groups opposed to the Pebble project have previously criticized what they said was a rushed environmental review by the federal government.

In a written statement on Saturday, Pebble CEO Tom Collier criticized the governor's request.

AMERICAN OVERSIGHT

"We expect this type of stall tactic from [environmental non-governmental organizations] opposed to any kind of development but not from the Governor of Alaska and especially when the project is on Alaska land," his statement said. "Frankly, the governor does not make a compelling case to suspend the NEPA process."

Collier also said Pebble believes it can responsibly operate the mine.

"The governor has said we have a high bar to demonstrate how we can mine and protect the salmon in the area around Pebble," his statement said. "It is this Corps Environmental Impact Statement process that will give Alaskans answers and assurance to this very issue."

Pebble is owned by Canadian company Northern Dynasty Minerals.

Palmer Hough, Environmental Scientist
office: 202.566.1374

Office of Wetlands, Oceans, and Watersheds
U.S. EPA Headquarters (MC 4504T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/wetlands

AMERICAN OVERSIGHT

Appointment

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 8/22/2018 5:16:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Hough, Palmer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51CD0B0D81AC416FA265944D6E6575CE-PHOUGH]
Sent: 4/3/2018 9:10:57 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Accepted: Pebble Scoping

Start: 4/11/2018 5:30:00 PM
End: 4/11/2018 6:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Tim Havey [timhavey@pebblepartnership.com]
Sent: 6/12/2018 11:30:20 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: PLP Site Tours
Attachments: ATT00001.txt

Patty:

Good to talk to you today. For planning purposes with Shane, please let me know the names of the people EPA would like to participate in a tour. Some prospective dates and a 'wish list' itinerary as soon as you have them will also help us identify what's possible for an out and back trip.

Thanks,

Tim Havey
Director—Environment and Permitting



3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 **C:** 907.230.5056

AMERICAN OVERSIGHT

Message

From: Maley, Timothy [maley.timothy@epa.gov]
Sent: 7/16/2018 5:00:45 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: FW: [SPAM-Sender] Re:FW: Pebble - meeting AECOM SMEs

Fyi (see Chris' response before heading deep in the woods).

I put in the request to bump up our departure time. Asked to get us your flight (10:10am), or there's one leaving a little earlier (9:29) which may be less $. I'll keep you posted.

tm

Tim Maley, PG
EPA-R10/OERA
O: 206-553-1210

From: chris.s.eckley **Personal Email / Ex. 6**
Sent: Monday, July 16, 2018 9:56 AM
To: Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Subject: [SPAM-Sender] Re:FW: Pebble - meeting AECOM SMEs

About to be out of cell coverage...early flight on monday good for me to meet geochem person...wednesday not as good..but can do if needed.

---- On Mon, 16 Jul 2018 07:42:15 -0700 Eckley.Chris@epa.gov wrote ----

From: Maley, Timothy
Sent: Monday, July 16, 2018 7:42:06 AM (UTC-08:00) Pacific Time (US & Canada)
To: McGrath, Patricia; Eckley, Chris
Cc: Vaughan, Molly
Subject: RE: Pebble - meeting AECOM SMEs

Good morning –

Chris is in vacation this week, but knowing our flight schedules are the same, it looks like the only availability would be Monday afternoon after we land (little after 3 pm). So I guess we'll be checked into the hotel by 4pm, and available to meet thereafter. We fly out weds morning at 8am.

tm

Tim Maley, PG

AMERICAN OVERSIGHT

EPA-R10/OERA

O: 206-553-1210

From: McGrath, Patricia
Sent: Monday, July 16, 2018 7:17 AM
To: Eckley, Chris <Eckley.Chris@epa.gov>; Maley, Timothy <maley.timothy@epa.gov>
Cc: Vaughan, Molly <Vaughan.Molly@epa.gov>
Subject: Pebble - meeting AECOM SMEs

Hi Chris and Tim –

AECOM's subject matter experts in geochem and hydro are interested in meeting you when we are in Anchorage for the Pebble site visit.

Will you have time to meet with them on either the afternoon of July 31 or the morning of Aug 2? I am available during both of these times and will accompany you. I believe the intent is to put a face to a name, but also they may have questions about our comments to-date and they may want to present info on the impact assessment. I will get more certainty/agenda before the meeting.

Please let me know if you will have time (e.g., 2 hours) on either of these dates and if you have a preference.

Thanks - Patty

Patty McGrath |Mining Advisor

U.S. Environmental Protection Agency, Region 10

1200 Sixth Avenue, Seattle, WA 98101

M/S: RAD-202

Office: (206) 553-6113

Cell: (206) 743-7068

mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/19/2018 10:34:50 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
CC: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: Pebble Scoping letter
Location: R10AOO-Personal Phone / Ex. 6/AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 10:00:00 PM
End: 6/26/2018 11:00:00 PM
Show Time As: Busy

Hi Molly –

I can skip either the 11-12 or 12:30-1:30 calls that I have next Tuesday if those time slots are more convenient Personal Matters / Ex. 6 I can call in during this time though, which is right between them.

Thanks!

Ashley

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 5/21/2018 4:53:22 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: Pebble check-in
Location: AOO

Start: 6/5/2018 10:00:00 PM
End: 6/6/2018
Show Time As: Busy

Hi Patty – thank you for setting aside time for us to talk. This is my telework day, so I may need to call in, but will try to make it to the office in person. --Molly

AMERICAN OVERSIGHT

Appointment

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 5/21/2018 1:43:52 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Schofield, Kate [Schofield.Kate@epa.gov]
Sent: 5/21/2018 1:43:47 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 11/22/2018 9:00:00 PM
End: 11/22/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 5/18/2018 10:24:13 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: FW: Pebble permit oversight/NEPA team
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 2/22/2018 9:00:00 PM
End: 2/22/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/3/2018 9:19:17 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: ORD support for Pebble EIS
Location: R10IOO Conference Line/Code / Ex. 6

Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Suter, Glenn [suter.glenn@epa.gov]
Sent: 4/3/2018 9:00:08 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: ORD support for Pebble EIS
Location: R10IOO; **Conference Line/Code / Ex. 6**
Start: 4/5/2018 8:00:00 PM
End: 4/5/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [Vaughan.Molly@epa.gov]
Sent: 4/2/2018 10:12:32 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: discuss Pebble EIS outline
Location: AOO call Patty

Start: 4/4/2018 9:30:00 PM
End: 4/4/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: LaCroix, Matthew [LaCroix.Matthew@epa.gov]
Sent: 4/2/2018 9:08:04 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: discuss Pebble EIS outline
Location: AOO call Patty

Start: 4/4/2018 9:30:00 PM
End: 4/4/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 4/24/2018 8:56:50 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: meeting room for Pebble scoping indirect/cumulative impacts call
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center [R10Sea-Room-14WallaWalla@epa.gov]
Sent: 4/24/2018 7:48:24 PM
To: McGrath, Patricia [mcgrath.patricia@epa.gov]

Subject: Accepted: meeting room for Pebble scoping indirect/cumulative impacts call
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM

Recurrence: (none)

Your request was accepted.

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Message

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/14/2018 3:00:12 PM
To: Tim Havey [timhavey@pebblepartnership.com]
CC: POA Special Projects [poaspecialprojects@usace.army.mil]
Subject: RE: PLP Site Tours

Hi Tim-

Following are the EPA folks that would participate in the site visit:

Molly Vaughn, NEPA review lead, Anchorage
Tim Maley, hydrogeologist, Seattle
Chris Eckley, geochemist, Seattle
Patty McGrath, Mining Advisor, Seattle
Jill Nogi, NEPA unit manager, Seattle – Jill's attendance is uncertain, but will be firmed up soon

Dates that work for us include (Seattle folks would fly to Anchorage the day before):
7/30
7/31
8/20
8/21
We prefer the 7/31 and 8/21 dates, but really could make any of the above dates work.

In terms of an itinerary, the first priority would be to view the proposed locations of the mine facilities and any alternative locations for the mine site facilities that are being considered. If possible we would like to see the proposed road route to the Lake and ferry landings on each side. Ideally we would like to see the road route from the south Lake terminal to the Port site, but I expect this may not be possible in a day.

I am ccing Shane on this email as I have mentioned this trip to him and would be happy to coordinate on dates with the Corps or other agencies.

Please let me know as soon as possible, what date works for this tour. Feel free to call if you have questions.

Thanks-

Patty

Patty McGrath | **Mining Advisor**
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Seattle, WA 98101
M/S: RAD-202
Office: (206) 553-6113
Cell: (206) 743-7068
mcgrath.patricia@epa.gov

AMERICAN OVERSIGHT

From: Tim Havey [mailto:timhavey@pebblepartnership.com]
Sent: Tuesday, June 12, 2018 4:30 PM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>
Subject: PLP Site Tours

Patty:

Good to talk to you today. For planning purposes with Shane, please let me know the names of the people EPA would like to participate in a tour. Some prospective dates and a 'wish list' itinerary as soon as you have them will also help us identify what's possible for an out and back trip.

Thanks,

Tim Havey
Director—Environment and Permitting



3201 C Street, Suite 505
Anchorage, AK 99515
D: 907.339.2626 **C:** 907.230.5056

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/14/2018 5:50:46 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping Letter
Location: Molly will call Patty

Start: 5/14/2018 7:30:00 PM
End: 5/14/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/16/2018 11:34:59 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble scoping - indirect/cumulative impacts
Location: R10AOO-Conference Line/Code / Ex. 6/AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/27/2018 8:31:24 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO-[redacted] **Conference Line/Code / Ex. 6**

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/16/2018 11:34:50 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping - Wetland comments strategy meeting
Location: R10AOO-{ **Conference Line/Code / Ex. 6** }; R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/1/2018 1:27:18 AM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 4/4/2018 9:14:17 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping letter check-in
Location: Molly will call Patty

Start: 4/4/2018 11:00:00 PM
End: 4/4/2018 11:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/5/2018 10:01:31 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Accepted: Prep for AOO Director Bristol Bay Overview
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/9/2018 6:00:00 PM
End: 7/9/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/17/2018 8:26:08 PM
To: Wright, Cara [cara.wright@aecom.com]

Subject: Accepted: Meeting before EPA Pebble site visit
Location: CR.ANC-700.5th-Large-Conference-Room

Start: 7/30/2018 10:00:00 PM
End: 7/31/2018
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/25/2018 8:15:18 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/5/2018 8:18:48 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Accepted: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/26/2018 4:07:50 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay - High Level Briefing Preparation
Location: David's Office and on the phone

Start: 11/28/2018 7:15:00 PM
End: 11/28/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/13/2018 5:10:13 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble scoping letter
Location: R10AOO-Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b5a069b6877f4eb985d83829c51ea4fa-McGrath, Pa]
Sent: 11/26/2018 4:07:23 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay - High Level Briefing Preparation #2
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 10:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/7/2018 12:08:26 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble wetlands coordination conversation
Location: R10AOO- Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/5/2018 10:25:57 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/12/2018 4:00:00 PM
End: 6/12/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 7/17/2018 4:43:18 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Prepare for Pebble AOO Briefing
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/17/2018 8:00:00 PM
End: 7/17/2018 8:45:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 10/31/2018 11:33:02 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/14/2018 6:18:44 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Ch. 4
Location: R10AOO-Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 8/14/2018 7:30:00 PM
End: 8/14/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/21/2018 5:14:48 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 8/20/2018 9:18:29 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Preliminary Alternatives
Location: Conference Call

Start: 8/22/2018 6:00:00 PM
End: 8/22/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/20/2018 7:31:47 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping letter round 2
Location: R10AOO-Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 9/24/2018 3:07:19 PM
To: Godsey, Cindi [Godsey.Cindi@epa.gov]

Subject: Accepted: Pebble Concentrate Pipeline
Location: R10Sea-Room-19C-OWW/R10-Rooms-Restricted

Start: 9/24/2018 5:00:00 PM
End: 9/24/2018 5:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/20/2018 2:35:50 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping letter
Location: R10AOO- Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 7:30:00 PM
End: 6/26/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 6/26/2018 8:30:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble check-in
Location: Molly will call Patty

Start: 6/27/2018 9:00:00 PM
End: 6/27/2018 9:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: McGrath, Patricia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B5A069B6877F4EB985D83829C51EA4FA-MCGRATH, PA]
Sent: 5/17/2018 9:54:58 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 6/19/2018 7:28:52 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping
Location: Call Molly at Personal Phone / Ex. 6

Start: 6/26/2018 11:00:00 PM
End: 6/26/2018 11:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 6/19/2018 7:28:43 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping letter
Location: R10AOO Conference Line/Code / Ex. 6 /AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/26/2018 10:00:00 PM
End: 6/26/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 6/19/2018 7:28:26 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping letter round 2
Location: R10AOO Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/27/2018 8:00:00 PM
End: 6/27/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 6/14/2018 1:37:07 AM
To: Allnutt, David [Allnutt.David@epa.gov]

Subject: Accepted: Pebble Scoping Prep
Location: Cara's

Start: 6/14/2018 4:00:00 PM
End: 6/14/2018 4:30:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 4/10/2018 8:27:18 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Scoping - Wetland comments strategy meeting
Location: R10AOO-Conference Line/Code / Ex. 6 R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-20Chinook/R10-Rooms-Service-Center

Start: 4/23/2018 7:00:00 PM
End: 4/23/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 4/10/2018 8:12:10 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble scoping - indirect/cumulative impacts
Location: R10AOO Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 4/24/2018 9:30:00 PM
End: 4/24/2018 10:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 11/27/2018 7:43:01 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- **Conference Line/Code / Ex. 6**

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 6/25/2018 9:34:34 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 10/31/2018 9:46:41 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 8/14/2018 6:15:56 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Ch. 4
Location: R10AOO-Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 8/14/2018 7:30:00 PM
End: 8/14/2018 8:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 5/16/2018 5:30:55 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/20/2018 4:00:00 PM
End: 6/20/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 7/31/2018 2:48:31 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8e6aa4ce4a754cd09f8490a81f581de9-Nogi, Jill]
Sent: 7/11/2018 6:29:08 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 8/1/2018 5:00:00 PM
End: 8/1/2018 5:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Nogi, Jill [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8E6AA4CE4A754CD09F8490A81F581DE9-NOGI, JILL]
Sent: 7/3/2018 3:35:38 AM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 7/3/2018 4:00:00 PM
End: 7/3/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/15/2018 5:09:53 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]

Subject: Pebble Scoping Letter - Dial-in #: **Conference Line/Code / Ex. 6**
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Tentative

Dial-in # **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/14/2018 4:48:10 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]

Subject: Pebble Mine Scoping Letter - Dial-in # Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Tentative

Dial-in #: **Conference Line/Code / Ex. 6**

Update includes dial-in number

AMERICAN OVERSIGHT

Appointment

From: Peterson, Erik [Peterson.Erik@epa.gov]
Sent: 11/13/2018 8:29:48 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Hough, Palmer [Hough.Palmer@epa.gov]

Subject: Bristol Bay 404c and NEPA
Location: on the phone

Start: 11/14/2018 6:00:00 PM
End: 11/14/2018 6:30:00 PM
Show Time As: Tentative

Ashley, Heidi, Palmer, Cara and Carrie,

I'm suggesting this meeting as an opportunity for us to discuss how to effectively manage ORC, OGC and OW input on EPA's comments on preliminary Bristol Bay NEPA documents.

I think everyone has the same goal, to ensure that EPA's input on the NEPA process is in line with and helpful for any EPA actions related to Bristol Bay. I'm looking forward to a discussion on how to ensure we meet our shared goal in an effective and efficient as possible way.

→ Join by Phone
Toll number: (
Conference ID

Conference Line/Code / Ex. 6

Local numbe

→ Join Skype Meeting
Trouble Joining? Try Skype Web App

→ Meeting Organizer
Erik Peterson, USEPA (206) 553-6382 office

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/14/2018 7:56:08 PM
To: Fotouhi, David [fotouhi.david@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]; Schwab, Justin [Schwab.Justin@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]

Subject: Pebble Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/15/2018 6:30:00 PM
End: 6/15/2018 7:30:00 PM
Show Time As: Busy

Dial-in #: **Conference Line/Code / Ex. 6**

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/13/2018 3:26:53 PM
To: Fotouhi, David [fotouhi.david@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]

Subject: Canceled: Pebble Mine Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Free

Dial-in #: Conference Line/Code / Ex. 6

Update includes dial-in number

AMERICAN OVERSIGHT

Appointment

From: Fotouhi, David [Fotouhi.David@epa.gov]
Sent: 6/14/2018 4:48:08 PM
To: Nalven, Heidi [Nalven.Heidi@epa.gov]; Steiner-Riley, Cara [Steiner-Riley.Cara@epa.gov]; Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Marshall, Tom [marshall.tom@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Koslow, Karin [Koslow.Karin@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hoppe, Allison [hoppe.allison@epa.gov]

Subject: Canceled: Pebble Mine Scoping Letter - Dial-in #: Conference Line/Code / Ex. 6
Location: DCRoomARN4045/DC-Ariel-Rios-OGC

Start: 6/14/2018 7:30:00 PM
End: 6/14/2018 8:30:00 PM
Show Time As: Free

Dial-in #: **Conference Line/Code / Ex. 6**

Update includes dial-in number

AMERICAN OVERSIGHT

Message

From: Steiner-Riley, Cara [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0BEF7D04F2E64E4B8B90235A30CC7109-STEINER-RILEY, CARA]
Sent: 5/2/2018 3:10:26 PM
To: Stern, Allyn [Stern.Allyn@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Fwd: Letter to Administrator from Pebble re 404c
Attachments: 20180425125804.PDF; ATT00001.htm

See David's request below. **Attorney Client / Ex. 5** Thanks.

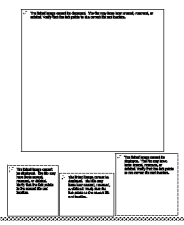
Sent from my iPhone

Begin forwarded message:

From: "Allnutt, David" <Allnutt.David@epa.gov>
To: "Steiner-Riley, Cara" <Steiner-Riley.Cara@epa.gov>
Subject: FW: Letter to Administrator from Pebble re 404c

Cara – **Attorney Client / Ex. 5**

Attorney Client / Ex. 5



R. David Allnutt, Director
Office of Environmental Review and Assessment
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140
(206) 553-2581

From: Palomaki, Ashley
Sent: Wednesday, April 25, 2018 12:03 PM
To: Peterson, Erik <Peterson.Erik@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Stern, Allyn <Stern.Allyn@epa.gov>; Mendelman, Krista <Mendelman.Krista@epa.gov>; Bennett, Brittany <bennett.brittany@epa.gov>
Cc: Hough, Palmer <Hough.Palmer@epa.gov>
Subject: Letter to Administrator from Pebble re 404c

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

AMERICAN OVERSIGHT

From: Wehling, Carrie
Sent: Wednesday, April 25, 2018 11:51 AM
To: Hough, Palmer <Hough.Palmer@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Nalven, Heidi <Nalven.Heidi@epa.gov>
Subject: Heads up re Letter to the Administrator

Heidi – looks like something for our weekly next week, if not sooner.
No specific to-do.
Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Fotouhi, David
Sent: Wednesday, April 25, 2018 2:00 PM
To: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Letter to the Administrator

Please see attached. I'd like to discuss sometime next week (or will let you know if we need to discuss sooner). Thanks!

David Fotouhi

Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Jackson, Ryan
Sent: Wednesday, April 25, 2018 1:55 PM
To: Forsgren, Lee <Forsgren.Lee@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: FW: Letter to the Administrator

From: Peter Robertson [mailto:peterrobertson@pebblepartnership.com]
Sent: Wednesday, April 25, 2018 1:34 PM
To: Jackson, Ryan <jackson.ryan@epa.gov>
Subject: Re: Letter to the Administrator

Ryan,

AMERICAN OVERSIGHT

Guess I should have actually attached the letter before I hit send.

Peter

From: Peter Robertson
Sent: Wednesday, April 25, 2018 1:31:27 PM
To: jackson.ryan@epa.gov
Subject: Letter to the Administrator

Ryan,

I'm attaching a letter to Administrator Pruitt to this email. I would appreciate it if you could bring this to his attention. He spoke a couple of weeks ago to a group of conservative organizations. During that meeting, he was asked about the Pebble preemptive veto. His answers were conveyed to us, and this letter reacts to some of the things he said.

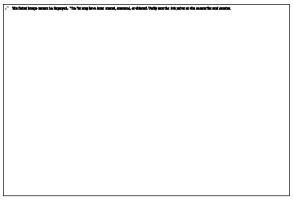
One of the things he said was that he was willing to hear new information about Pebble. This letter contains information which the Administrator clearly has not heard before. It also contains a request to meet with him so that we can discuss these matters in greater detail. Anything you can do to help facilitate such a meeting would, of course, be greatly appreciated.

Look forward to hearing from you.

Best,

Peter

AMERICAN OVERSIGHT



Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Steiner-Riley, Cara [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0BEF7D04F2E64E4B8B90235A30CC7109-STEINER-RILEY, CARA]
Sent: 4/30/2018 3:11:32 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Accepted: Pebble Scoping

Start: 5/2/2018 8:00:00 PM
End: 5/2/2018 9:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 10/1/2018 8:34:07 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 12/4/2018 5:00:00 PM
End: 12/4/2018 6:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 5/4/2018 6:52:55 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 2/14/2018 5:00:00 PM
End: 2/14/2018 6:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Appointment

From: Stern, Allyn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2E2D6F5DF08D4E9ABBFF2C0880407775-STERN, ALLYN]
Sent: 6/8/2018 3:32:21 PM
To: R10-OERA Calendar [R10-OERA_Calendar@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; **Conference Line/Code / Ex. 6**

Start: 6/12/2018 4:00:00 PM
End: 6/12/2018 5:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 11/12/2018 8:07:25 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Monday, November 05, 2018: 1 document(s) added or updated in Requests for Information
11/05/2018 RFI 94: Alternative Option to Develop Pebble East Using Underground Mining

Monday, November 05, 2018: 7 document(s) added or updated in Project Library
11/05/2018 Keys to Soil Taxonomy - Tenth Edition 2006
11/05/2018 Memo - Additional Data Collected after Supplement to Environmental Baseline Document, Pebble Project
11/05/2018 Memo - Initial Geochemical Testing of Quarry Rock, Pebble Project
11/05/2018 Memo - PFS Geotechnical Stability Assessment of the Pebble West Pit
11/05/2018 Memo - Updated Synthetic Temperature and Precipitation Series for Pebble 1
11/05/2018 Pebble Mines Corp. Toxicity Testing Program 2011 - Gold Plant Process Water and Non-Gold Plant Process Water
11/05/2018 Pebble Port Alternatives Baseline Studies 2017 Chemistry Data Report

Sunday, November 11, 2018: 27 document(s) added or updated in Requests for Information
11/11/2018 RFI 10a: Follow-up Questions on Tailings Characteristics
10/05/2018 RFI 19: Water Balance, Groundwater Model, and Streamflow Reduction
11/11/2018 RFI 19a: Follow-up Questions on RFI 019 - Water Management Plan
11/11/2018 RFI 19b: Follow-up on Streamflow Reductions at End of Mine Life Excluding Water Treatment Plant Discharges (RFI 019 Part 2 Response)
11/11/2018 RFI 19c: Follow-up Requests on RFI 019 - Groundwater Modeling Report
10/05/2018 RFI 21c: Follow-up Questions on Water Quality Predictions at Mine Site
11/11/2018 RFI 21d: Follow-up to 021 Water Quality-WTP processes and salt mass management
11/11/2018 RFI 32b: Follow-up request on 32a for GIS polygon data for Proposed Project layout and access route.
10/19/2018 RFI 34d: Visual Resources Clarification
10/19/2018 RFI 47: Mine-related changes in water temperatures in project area tributaries
11/11/2018 RFI 64a: Follow-up to RFI 064 response - Water Quality Criteria
11/11/2018 RFI 67: Biological Assessments and Essential Fish Habitat Assessment
09/07/2018 RFI 7: Air Quality Emission Inventories
11/11/2018 RFI 75a: Follow-up Questions on Downstream Dam for the Bulk TSF
11/11/2018 RFI 77: Water Withdrawals for Select Alternative Options
11/11/2018 RFI 80: North Access Natural Gas Pipeline Route
11/11/2018 RFI 81: Anchoring Plan for Lightering Locations
11/11/2018 RFI 82: Wetlands Temporary and Indirect Impacts
11/11/2018 RFI 85: 2018 Field Data/Biological Resources
11/11/2018 RFI 87: Surface water runoff and treated water management and outfalls: Ferry Terminals and Amakdedori Port

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11/11/2018 RFI 89: Supplement Wildlife Harvest and Subsistence Fishing Harvest Data
11/11/2018 RFI 8d: Follow-up to response to RFI 008b (Embankment Stability Analysis)
11/11/2018 RFI 8e: Embankment and Impoundment Summary Table
11/11/2018 RFI 8f: Follow-up to RFI 008f - Embankment and Impound Summary Table - Cross-Sections
11/11/2018 RFI 90: In Pit Crushing and Conveying
11/11/2018 RFI 97: Cultural and Subsistence Figures Request
11/11/2018 RFI 9a: Follow-up to RFI 009 Response: Dispersion and Deposition Modeling

Sunday, November 11, 2018: Project glossary updated

Sunday, November 11, 2018: 75 document(s) added or updated in Project Library
11/11/2018 2016 Lower Cook Inlet Area Finfish Management Report
11/11/2018 2016 Prince William Sound Area Finfish Management Report
11/11/2018 Acoustic Effects of Oil Production Activities on Bowhead and White Whales Visible During Spring Migration Near Pt. Barrow, Alaska -- 1991 and 1994 Phases
11/11/2018 ADEC Guidance on Developing Conceptual Site Models
11/11/2018 Advancing the match-mismatch framework for large berbivores in the Arctic: Evaluating the evidence for a trophic mismatch in caribou
11/11/2018 Aerial Survey Counts of Harbor Seals in Lake Iliamna, Alaska, 1984-2013
11/11/2018 AK: The Journey to Bristol Bay's fishing grounds
11/11/2018 Alaska - Yukon Waterfowl Breeding Population Survey May 15 to June 7, 2005
11/11/2018 Alaska Brown Bear Hunts - H&H Alaskan Outfitters
11/11/2018 Alaska Marine Mammal Stock Assessments, 2013
11/11/2018 Alaska Marine Mammal Stock Assessments, 2014
11/11/2018 Angry Eagle - Exploring Southwest Alaska
11/11/2018 Annual Management Report, Kuskokwim Area, 2016
11/11/2018 Assessment of impacts and potential mitigation for icebreaking vessels transiting pupping areas of an ice-breeding seal
11/11/2018 By road, lake and river: Boats make their way to Bristol Bay
11/11/2018 Climate Change in Nondalton, Alaska - Strategies for Community Health
11/11/2018 Construction Impacts on the Cook INlet Beluga Whale (Delphinapterus leucas) at the Port of Anchorage Marine Terminal Redevelopment Project
11/11/2018 Cook Inlet Area Commercial Salmon Fishing Regulations
11/11/2018 Cook Inlet Area Groundfish Management Report, 2012-2015
11/11/2018 Correspondence - RE: Pebble EIS: Other Mine Location Alternatives
11/11/2018 Development of an air bubble curtain to reduce underwater noise of percussive piling
11/11/2018 Distribution, abundance, migration, and breeding locations of marine birds, lower Cook Inlet, Alaska, 1976
11/11/2018 Division of Oil and Gas 2015 Annual Report
11/11/2018 Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions
11/11/2018 Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests
11/11/2018 Effects of pile-driving on harbour porpoises (Phocoena phocoena) at the first offshore wind farm in Germany
11/11/2018 Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas
11/11/2018 Estimating the zone of influence of industrial developments on wildlife: a migratory caribou Rangifer tarandus groenlandicus and diamond mine case study
11/11/2018 Federal Energy Regulatory Commission Guidance Manual for Environmental Report Preparation
11/11/2018 Federal Register - Conservation of Endangered Species and Other Fish or Wildlife
11/11/2018 Fisheries Figures, Boundaries, Regulatory Areas, EFH and Critical Habitat
11/11/2018 Freshwater Seals of Iliamna Lake: Recent Population Updates

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11/11/2018 Golden Eagles Status Fact Sheet
11/11/2018 Harbor Seal (Phoca vitulina) Tolerance to Vessels Under Different Levels of Boat Traffic
11/11/2018 Harbor Seal Investigations in Alaska Annual Report NOAA Grant NA87FX0300
11/11/2018 Harbor Seals in Iliamna Lake, Bristol Bay, Alaska - Final Aerial Census in 1991
11/11/2018 Horizontal Directional Drill Guidelines
11/11/2018 HRE: The Home Range Extension for ArcView and HRT: Home Range Tools for ArcGIS
11/11/2018 Impacts of Climate change on the seasonal distribution of migratory caribou
11/11/2018 Impacts of Human Developments and Land Use on Caribou: A Literature Review Volume II. Impacts of Oil and Gas Development on the Central Arctic Herd
11/11/2018 Integrating Local Traditional Knowledge and Subsistence Use Patterns with Aerial Surveys to Improve Scientific and Local Understanding of the Iliamna Lake Seals
11/11/2018 Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations
11/11/2018 Marine Mammal Protection Act. National Oceanic and Atmospheric Administration (National Marine Fisheries Service) and U.S. Fish & Wildlife Service
11/11/2018 Matanuska - Sustina Valley & West Cook Inlet King Salmon
11/11/2018 Memorandum of Agreement between The Department of the Army AND the Environmental Protection Agency Concerning Mitigation Sequence for Wetlands in Alaska Under Section 404 of the Clean Water Act
11/11/2018 Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations
11/11/2018 Migratory Bird Treaty
11/11/2018 Moose, Caribou, and Grizzly Bear Distribution in Relation to Road Traffic in Denali National Park, Alaska
11/11/2018 Nanutset ch'u Q'udi Gu Before Our Time and Now
11/11/2018 Natural Resources Revenue Data, Alaska - Land Ownership
11/11/2018 News Release - 2016 Kenai River King Salmon Sport Fishing and Upper Cook Inlet Commercial Fishing Outlook
11/11/2018 NOAA Designates Critical Habitat for Cook Inlet Beluga Whale
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2011
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2012
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2013
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2014
11/11/2018 Permitting Large Mine Projects in Alaska
11/11/2018 Protection of Bald and Golden Eagles
11/11/2018 Protection of Eagles; Definition of "Disturb"
11/11/2018 Re: Pebble EIS: Requesting information from Lake and Peninsula
11/11/2018 RE: RFI 19c Response
06/27/2018 Seabirds - North Pacific Seabird Colony Database
11/11/2018 Silver Bay Seafoods, LLC - Naknek Plant
11/11/2018 Southeast Regions School District - Our Communities
11/11/2018 Supplement to the Endangered Species Act - Section 7 Consultation Biological Opinion and Incidental Take Statement of October 2001
11/11/2018 Synthesis of Noise Effects on Wildlife Populations
11/11/2018 Temporal autocorrelation functions for movement rates from global positioning system radiotelemetry data
11/11/2018 The Great Whales: History and Status of Six Species Listed as Endangered Under the U.S. Endangered Species Act of 1973
11/11/2018 The Impact of Roads on the Demography of Grizzly Bears in Alberta

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11/11/2018 U.S. Fish and Wildlife Service Biological Assessment - Section 7
11/11/2018 Ungulate flight responses to human disturbance: A review and meta-analysis
11/11/2018 Upper Cook Inlet Commercial Fisheries Annual Management Report, 2016
11/11/2018 Upper Cook Inlet Commercial Fisheries Annual Management Report, 2017
11/11/2018 Wild Resource Harvests and Uses by Residents of Selected Communities of the Kenai Peninsula Borough
11/11/2018 Yukon River Salmon 2017 Season Summary and 2018 Season Outlook

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/27/2018 7:16:41 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO-Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: R10Sea-Room-14Elwha/R10-Rooms-Service-Center [R10Sea-Room-14Elwha@epa.gov]
Sent: 11/27/2018 7:15:33 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- Conference Line/Code / Ex. 6

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM

Recurrence: (none)

Your request was accepted.

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Appointment

From: R10AOO-ConfLnO365-Restricted-6642426 [R10AOO-ConfLnO365-Restricted-6642426@epa.gov]
Sent: 11/27/2018 7:15:31 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble - Briefing on Pre-DEIS comments
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10AOO- **Conference Line/Code / Ex. 6**

Start: 12/18/2018 10:00:00 PM
End: 12/18/2018 11:00:00 PM

Recurrence: (none)

Your request was accepted.

Sent by Microsoft Exchange Server 2016

AMERICAN OVERSIGHT

Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 10/31/2018 8:48:37 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM
Show Time As: Busy

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Appointment

From: R10AOO-ConfLnMM-907-271-6338/AOO-Meet-Me-Ln/R10-AOO-Eqpt [R10AOO-ConfLine Conference Line/Code / Ex. 6
Conference Line/Code / Ex. 6
Sent: 10/31/2018 8:47:51 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble Pre-DEIS RFFAs
Location: Conference Line/Code / Ex. 6

Start: 11/2/2018 8:00:00 PM
End: 11/2/2018 8:30:00 PM

Recurrence: (none)

Your request was accepted.

Sent by Microsoft Exchange Server 2016

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Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 9/29/2018 7:35:48 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Thursday, September 27, 2018: 14 document(s) added or updated in Project Library
09/27/2018 Designating the Cook Inlet, Alaska, Stock of Beluga Whale as Depleted under the Marine Mammal Protection Act (MMPA)
09/27/2018 Endangered and Threatened Species; Proposed Endangered Status for the Cook Inlet Beluga Whale
09/27/2018 Endangered and threatened Wildlife and Plants: Announcement of Initiation of a Status Review of the Cook Inlet Beluga Whale under the Endangered Species Act (ESA)
09/27/2018 Endangered and Threatened Wildlife; 90-Day Finding on a Petition to Delist the North Pacific Population of the Humpback Whale and Notice of Status Review
09/27/2018 Endangered and Threatened Wildlife; 90-Day Finding on a Petition to Identify the Central North Pacific Population of Humpback Whale as a Distinct Population Segment (DPS) and Delist the DPS Under the Endangered Species Act
09/27/2018 Federal Register - Endangered and Threatened Species; Identification of 14 Distinct Population Segments of the Humpback Whale (Megaptera novaeangliae) and Revision of Species-Wide Listing
06/27/2018 Map of Physiographic Divisions of Alaska
08/01/2018 Occurrence of Western Distinct Population Segment Steller Sea Lions East of 144 W. Longitude
09/27/2018 Range contraction in a beluga whale population
09/27/2018 Spatio-temporal Changes in Beluga Whale, Delphinapterus leucas, Distribution: Results from Aerial Surveys (1977-2014), Opportunistic Sightings (1975-2014), and Satellite Tagging (1999-2003) in Cook Inlet, Alaska
09/27/2018 Technical Memorandum: Pebble Project - Noise concepts and Methodology
09/27/2018 Technical Memorandum: Pebble Project - Preliminary Estimation of Seiche Oscillation, Iliamna Lake
09/27/2018 Technical Memorandum: Pebble Project - Review of Seismic Hazard Analysis
09/27/2018 Technical Memorandum: Pebble Project - Review of Tailings Thickening Experience in Cold Regions

Thursday, September 27, 2018: 7 document(s) added or updated in Requests for Information
09/27/2018 RFI 13: Iliamna Lake and Pipeline Landfall Hazards
09/27/2018 RFI 42: History of Exploration in Alaska
09/27/2018 Mine Site Safety Control Area
09/27/2018 RFI 59: Project Optimization Study Cited with Regard to Throughput in PLP Technical Note on Project Options and Screening Criteria
09/27/2018 RFI 63: Diamond Point Port Water Depth and Pipeline Alignment
09/27/2018 RFI 70: Cost Information for Alternatives Screening
09/27/2018 RFI 76: Dry Stack Bulk Tailings Information

Friday, September 28, 2018: 3 document(s) added or updated in Requests for Information
09/28/2018 RFI 34a: Visual Resource Data

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09/28/2018 RFI 34b: Visual Resource Data
09/28/2018 RFI 71: Mitigation for Analysis in EIS

Friday, September 28, 2018: 23 document(s) added or updated in Project Library
09/28/2018 18 AAC 75 Oil and Other Hazardous Substances Pollution Control
09/28/2018 Abundance and distribution of cetaceans in the Gulf of Alaska
09/28/2018 Acoustic Effects of Oil Production Activities on Bowhead and White Whales Visible During Spring Migration Near Pt. Barrow, Alaska -- 1990 Phase
09/28/2018 Assessing Climate Change Vulnerability of Breeding Birds in Arctic Alaska
09/28/2018 Climate change, global warming, and the PICES mandate - The need for improved monitoring
09/28/2018 Effects of Ocean Acidification on Pelagic Organisms and Ecosystems
09/28/2018 Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion for Lease Sale 244, Cook Inlet, Alaska 2017-2022
09/28/2018 Environmental Assessment - Reintroduction of Steller's Eiders to the Yukon-Kuskokwim Delta, Alaska
09/28/2018 Geochemical Source Terms for Water Treatment Planning Pebble Project - Operational Phase
09/28/2018 Human health Cumulative Baseline Data: Bristol Bay Drainages (2010-2018)
09/28/2018 Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities
09/28/2018 Interactions between climate change and contaminants
09/28/2018 Introduction to Visibility
09/28/2018 Listening for Large Whales in the Offshore Waters of Alaska
09/28/2018 Management Plan 2012-2017: Kachemak Bay
09/28/2018 Mediterranean fin whales at risk from fatal ship strikes
09/28/2018 Ocean acidification and its impact on ocean noise: Phenomenology and analysis
09/28/2018 Ocean acidification due to increasing atmospheric carbon dioxide
09/28/2018 Retail price of milk (fresh, whole, fortified) in the United States from 1995 to 2017 (in U.S. dollars per gallon)
09/28/2018 Seasonal variability and detection range modeling of baleen whale calls in the Gulf of Alaska, 1999-2002
09/28/2018 Socioeconomics- Bristol Bay Drainages Updated Detailed Cumulative Baseline Data (2000-2018)
09/28/2018 The Distribution and Migrations of Whales in the Northeastern part of the Pacific, Chukchi, and Bering Seas
09/28/2018 Vulnerability of a killer whale social network to disease outbreaks

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Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 10/20/2018 6:11:29 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Friday, October 19, 2018: 27 document(s) added or updated in Project Library
10/19/2018 ADFG: Welcome to the Community Subsistence Information System: CSIS
10/19/2018 Alaska Ecoregions: Tundra and Taiga
10/19/2018 Alaska Maritime National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review and Environmental Impact Statement
10/19/2018 Alaska's Mineral Industry 2016: Special Report 72
10/18/2018 Ambient Concentration Measured at Various Industrial Monitoring Sites
10/19/2018 Clean Air Status and Trends Network (CASTNET)
10/19/2018 Denali National Park Acoustic Monitoring Report - 2008
10/19/2018 Federal Land Manager Environmental Database
10/19/2018 Independent Technical Report for the Pyramid Copper - Molybdenum Project, Alaskan Peninsula, Alaska
10/19/2018 International Copper Study Group - Copper Market Forecast 2018/2019
06/27/2018 Katmai National Park and Preserve Aniakchak National Monument and Preserve Alagnak Wild River Long-Range Interpretive Plan
10/19/2018 Navigation Channel Feasibility Report and Environmental Assessment: Williamsport
10/19/2018 Northern Dynasty Announces National Economic Impact Study of Alaska's Pebble Project
10/19/2018 Pebble Base-Case Water Treatment Plant Engineering Revisions. Memorandum prepared for Pebble Limited Partnership.
06/13/2018 Pebble Project Environmental Baseline Data Report (2004-2008) - Chapter 25. Recreation
10/19/2018 Pebble Project - Site Visit Notes
10/19/2018 Pebble Project EIS - Off-Site Alternatives Review and Screening
06/27/2018 PLP EBD 2004-2012 Chapter 6. Geotechnical Studies, Seismicity, and Volcanism
10/19/2018 PLP Website
10/19/2018 Project Description Case Water Treatment Plant Data Update. Memorandum prepared for Pebble Limited Partnership.
10/19/2018 RE: Information for Response to Follow-Up Question to RFI 19a - Water Management Plan
10/19/2018 Re: RFI 19 Part 3: Groundwater Withdrawal Wells
10/19/2018 Technical Memorandum: Pebble Project - RFI 054 Technical Report Review
10/04/2018 The Pebble Project: Project Description - October 2018
10/19/2018 Visibility and Regional Haze
10/19/2018 Visitor Use in Katmai
10/19/2018 Visitor Use in Lake Clark

Friday, October 19, 2018: 15 document(s) added or updated in Requests for Information
10/19/2018 RFI 34b: Visual Resource Data
10/19/2018 RFI 34c: Viewshed for Alternatives
10/19/2018 RFI 34d: Visual Resources Clarification

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10/19/2018 RFI 47: Mine-related changes in water temperatures in project area tributaries
10/19/2018 RFI 48: Revised Habitat Time Series Analysis
10/19/2018 RFI 59a: Additional Throughput Option
10/18/2018 RFI 65: Summer Only Ferry Operations
10/18/2018 RFI 66: Concentrate Pipeline Concept Description
10/19/2018 RFI 83: GIS Data for Action Alternatives - Biological Resources
10/19/2018 RFI 84: Transportation Corridor Construction/Blasting
10/19/2018 RFI 86: Fish/Waterbody Crossings
10/19/2018 RFI 88: Traditional routes and trails
10/19/2018 RFI 91: Bulk TSF Cover Options
10/19/2018 RFI 92: Tailings Treatment Options
10/19/2018 RFI 93: Dimensions of proposed project and area of proposed impacts to Navigable WOUS

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Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 6/13/2018 5:10:57 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble scoping letter
Location: R10AOO Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/13/2018 6:30:00 PM
End: 6/13/2018 7:30:00 PM
Show Time As: Busy

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Appointment

From: Thiesing, Mary [Thiesing.Mary@epa.gov]
Sent: 6/11/2018 3:40:41 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: Pebble wetlands coordination conversation
Location: R10AOO-6 Conference Line/Code / Ex. 6 AOO-Meet-Me-Ln/R10-AOO-Eqpt

Start: 6/12/2018 7:00:00 PM
End: 6/12/2018 7:30:00 PM
Show Time As: Busy

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Message

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 11/14/2018 7:36:53 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: FW: Bristol Bay - NEPA/404c Coordination Update

Hi Molly –

I said I would follow-up with you today about Heidi's review. As indicated below, unless issues are flagged, Heidi will not be reviewing so there is no need to build her into the schedule. I have sent her my schedule so she's aware of review constraints if issues are flagged for her by either me or Palmer.

Let me know if you have any questions!

Ashley

Ashley Palomaki
Assistant Regional Counsel
U.S. EPA Region 10 Office of Regional Counsel
1200 Sixth Avenue, Suite 155, ORC-113
Seattle, WA 98101
206-553-8582

From: Peterson, Erik
Sent: Wednesday, November 14, 2018 11:32 AM
To: McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Palomaki, Ashley <Palomaki.Ashley@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>
Subject: Bristol Bay - NEPA/404c Coordination Update

David,

Providing an update on follow-up from our 11/8/18 meeting about NEPA/404c coordination. Our goal was to check-in and work toward making sure that we are getting the right 404c related input to the NEPA team.

As a result of a few conversations and meetings the following has occurred.

- Palmer has confirmed that he is really likely one of the key people to provide technical 404c related input. And, that he doesn't really have a back-up. We talked about the fact that it is helpful that Mark Douglas, Kate Scoffield (sp?) and Barb Butler are providing input.
- Palmer highlighted his main areas of focus to Molly and has communicated his schedule constraints.
- As for OGC, Heidi and Palmer have agreed that Palmer will flag issues for Heidi.
- As for OGC NEPA (Alison), the plan is for Ashley to be the primary reviewer, talk to Kim Owens when needed, and raise issues to Alison at OGC as needed. OGC's NEPA lawyers should not necessarily be directly involved because OFA has decided they don't need to see these Preliminary DEIS comments.
- Carrie Wehling at OGC will communicate to senior leaders David and Justin that we do not currently see a need to OGC front office involvement on the regional preliminary DEIS comments.

Altogether, I think we have made progress on clarifying how to make sure 404c technical and legal input is provided to the NEPA team in an effective manner. Happy to have more direction or suggestions and at this point I propose we have 404c/NEPA coordination as an agenda topic at our next check-in with you.

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Erik Peterson, NEPA Reviewer
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Code: OERA-140
Seattle, Washington 98101
(206) 553-6382

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Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 10/28/2018 4:38:04 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Monday, October 22, 2018: 1 document(s) added or updated in Media
10/22/2018 August Media Roundtable Transcript

Tuesday, October 23, 2018: 1 document(s) added or updated in Project Library
10/23/2018 The Pebble Project: Project Description - October 2018

Friday, October 26, 2018: 33 document(s) added or updated in Project Library
10/26/2018 Alagnak Wild River Visitor Use Project: Alagnak Wild River Resident User Study
10/26/2018 Alaska Peninsula Caribou Herds Increasing, Says Area Management Biologist
10/26/2018 BSSE Correspondence with James Fueg Apr 09 2018
10/26/2018 Caribou Annual Survey and Inventory - The Status of Alaska Caribou and Factors Influencing Their Populations in Region II
10/26/2018 Cook Inlet Customary and Traditional Subsistence Fisheries Assessment
10/26/2018 Description of the Ecoregions of the United States
10/26/2018 Dietary Intakes Vary with Age among Eskimo Adults of Northwest Alaska in the GOCADAN Study, 2000-2003
10/26/2018 Distribution and movements of fin whales in the North Pacific Ocean
10/26/2018 Draft Report Pebble Project Water Treatment - Benchmark Update
10/26/2018 FHWA Roadway Construction Noise Model User's Guide
10/26/2018 Guidelines for Community Noise
10/26/2018 Image Analysis Preliminary Summary Report - Pebble Project Area Iliamna Lake Ice Study
10/26/2018 Inventory of Montane-nesting Birds in Katmai and Lake Clark National Parks and Preserves Final Report
10/26/2018 Northern Alaska Peninsula Caribou Herd Update
10/26/2018 Pebble Project - Water Treatment Plant Prefeasibility Study Report - 42 foot Mill Option
10/26/2018 Pebble Project Groundwater Conditions at End of Mining and Post-Closure
10/26/2018 Pebble Project Hydrometeorology Report
10/26/2018 Pebble Project Port Site - Project Memo
10/26/2018 Pebble Project Subsistence Data Review
10/26/2018 Range Expansion of Moose in Arctic Alaska Linked to Warming and Increased Shrub Habitat
10/26/2018 Red Dog Mine Extension Aqqaluk Project Final Supplemental Environmental Impact Statement
10/26/2018 Refining Monitoring Protocols to Survey Brown Bear Populations in Katmai National Park and Preserve and Lake Clark National Park and Preserve
10/26/2018 RFI 019 Part 2 Estimated Mine-affected Streamflow Values (with and without treated water) at End of Mine
10/26/2018 RFI 019 Part 2 Estimated Mine-affected Streamflow Values (with and without treated water) at Post-Closure (Phase 4)
10/26/2018 RFI 019 Part 2: Streamflow Reductions at End of Mine Life Excluding Water Treatment Plant

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Discharges
10/26/2018 RFI 019 Part4: Influence of Geological Structures of Groundwater Flow Conditions
10/26/2018 RFI 019b Response (Follow-up to initial streamflow reduction report)
10/26/2018 Seasonality of Seabird Distribution in Lower Cook Inlet
10/26/2018 Traditional foods and physical activity patterns and associations with cultural factors in a diverse Alaska Native Population
10/26/2018 Transit Noise and Vibration Impact Assessment
10/26/2018 Trip Report: Aerial Survey of Lower Cook Inlet to Locate Molting Flocks of Steller's Eiders and Mergansers
10/26/2018 Understanding Variation in Partitioning Coefficient, Kd, Values
10/26/2018 White Paper on Water Treatment Process

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Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 10/6/2018 7:38:31 PM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Thursday, October 04, 2018: Detailed project description, updated in October 2018 available

Friday, October 05, 2018: 32 document(s) added or updated in Requests for Information
10/05/2018 RFI 19: Water Balance, Groundwater Model, and Streamflow Reduction
10/05/2018 RFI 19d: Pit Lake Rise
10/05/2018 RFI 21: Water Quality Predictions at Mine Site
10/05/2018 RFI 21a: Follow up Request on RFI 021 - Water Quality Predictions at Mine Site
10/05/2018 RFI 21b: Follow up Request on RFI 021 - Water Quality Modeling
10/05/2018 RFI 21c: Follow-up Questions on Water Quality Predictions at Mine Site
10/05/2018 RFI 23: Pit Wall Stability
10/05/2018 RFI 32a: Follow-up Questions on RFI 023 Pit Wall Stability
10/05/2018 RFI 27b: Additional Transportation Information
10/05/2018 RFI 28: TSF IDF and Freeboard
10/05/2018 RFI 28a: Follow-up Questions on RFI 028 - IDF, Freeboard, Precipitation Inputs, and Spillways
10/05/2018 RFI 28b: Follow-up Questions on RFI 028a - Climate Change Inputs to IDF/Freeboard
10/05/2018 RFI 34a: Visual Resource Data
10/05/2018 RFI 54: Dry Stack Tailings
10/05/2018 RFI 55: PAG-Pyritic Tailings Storage Facility, Construction and Closure
10/05/2018 RFI 55a: Follow-up to response to RFI 055 PAG/Pyritic TSF
10/05/2018 RFI 65: Summer Only Ferry Operations
10/05/2018 RFI 66: Concentrate Pipeline Concept Description
10/05/2018 RFI 68: Water and Sediment Quality Data Tales from EBD/SEBDs
10/05/2018 RFI 68a: Additional Water Quality Tables
10/05/2018 RFI 68b: Additional Water Quality Tables
10/05/2018 RFI 69: Tailings Disposal Options
10/05/2018 RFI 71a: Followup on RFI 071 Response - Mitigation for Analysis in the EIS
10/05/2018 RFI 72: Pile Supported Dock Concept Description
10/05/2018 RFI 73: No Action Alternative
10/05/2018 RFI 74: Ferry Terminal Site East of North Shore Site
10/05/2018 RFI 75: Downstream Dam for the Bulk TSF
10/05/2018 RFI 78: Kokhanok East Ferry Terminal Site
10/05/2018 RFI 79: North Shore East Ferry Terminal Site
10/05/2018 RFI 8a: Followup on Embankment Stability
10/05/2018 RFI 8b: Followup on 008/008a Embankment Stability Analyses
10/05/2018 RFI 8c: Followup on 008a - Seismic Analyses

Friday, October 05, 2018: 29 document(s) added or updated in Project Library
10/05/2018 2013 Peck Lecture - "Liquefaction Effects on Structures"

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10/05/2018 Acoustic Measurments in Cook Inlet, Alaska, During August 2001
10/05/2018 ADNR Early Entry Authorization (Diamond Point LLC)
10/05/2018 Biological Opinion and Conference Opinion for Oil and Gas Activities in the Beaufort and Chukchi Sea Planning Areas on...
10/05/2018 Bristol Bay Alaska: Natural Resources of the Aquatic and Terrestrial Ecosystems
10/05/2018 BSEE 2018 Correspondence to James Fueg
10/05/2018 Chapter 6 Seismic Design
10/05/2018 Climate Change Guidance
10/05/2018 Collisions Between Ships and Whales
10/05/2018 Comparison of Holocene Tsunami and Modern Storm-Overwash Deposits, Northern Bristol Bay, Southwestern Alaska
10/05/2018 Diamond Point LLC: What We Do
10/05/2018 Distribution, Abundance and Reaction to Aerial Surveys of Post-breeding King Eiders (Somateria spectabilis) in Western Greenland
10/05/2018 Final Report Seismic Survey Pebble Port Project Amakdedori Beach, Alaska
10/05/2018 Flood recedes from Williamsport-Pile Bay portage route
10/05/2018 Holocene Tephra and Tsunami Deposits Along Western Nushagak Bay, Southwestern Alaska
10/05/2018 Is there any liquefaction potential in the depth?
10/05/2018 Large Whale Ship Strike Database
10/05/2018 Mediterranean Fin Whale's (Balaenoptera Physalus) Response to Small Vessels and Biopsy Sampling Assessed Through Passive Tracking and Timing of Respiration
10/05/2018 Migration and Collision Avoidance of Eiders and Other Birds at Northstar Island, Alaska, 2001-2004: Final Report
10/05/2018 Pebble Project Environmental Baseline Document 2004 through 2008: Chapter 3. Geology and Mineralization
10/05/2018 Pebble Project: Pebble Mine Site - Closure Water Management Plan
10/05/2018 Re: RFI 008 Response - Embankment Static and Seismic Stability
08/01/2018 Research Article: Summary of Reported Whale-Vessel Collisions in Alaskan Waters
10/05/2018 Status Review of the Humpback Whale (Megaptera Novaeangliae) under the Endangered Species Act
10/05/2018 The Behaviour of Moulting King Eiders Somateria Spectabilis
10/05/2018 Tsunami generation by pyroclastic flow during the 3500-year B.P. caldera-forming eruption of Aniakchak Volcano, Alaska
10/05/2018 United States Coast Pilot 9 Alaska: Cape Spencer to Beufort Sea (36th Edition)
10/05/2018 Whale Reactions to Human Activities in Cape Cod Waters
10/05/2018 What is the Maximum Depth Liquefaction Can Occur?

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Appointment

From: Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Sent: 5/24/2018 12:10:07 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]

Subject: Accepted: pebble scoping
Location: Molly will call Ashley

Start: 5/24/2018 7:00:00 PM
End: 5/24/2018 7:30:00 PM
Show Time As: Busy

Of course! If it's helpful to add anyone else, we can do that, too.

AMERICAN OVERSIGHT

Message

From: noreply@pebbleprojecteis.com [noreply@pebbleprojecteis.com]
Sent: 11/12/2018 8:07:24 AM
To: Vaughan, Molly [Vaughan.Molly@epa.gov]
Subject: Pebble Project EIS Weekly Updates

Molly Vaughan,
You subscribed to weekly email notifications about the Pebble Project EIS and associated website content. Below is the list of the updates for the last week. For documents, the Upload Date reflects the date the file last changed, documents in the updated list with an older Upload Date reflect a change in the Title or Categorization.

Monday, November 05, 2018: 1 document(s) added or updated in Requests for Information
11/05/2018 RFI 94: Alternative Option to Develop Pebble East Using Underground Mining

Monday, November 05, 2018: 7 document(s) added or updated in Project Library
11/05/2018 Keys to Soil Taxonomy - Tenth Edition 2006
11/05/2018 Memo - Additional Data Collected after Supplement to Environmental Baseline Document, Pebble Project
11/05/2018 Memo - Initial Geochemical Testing of Quarry Rock, Pebble Project
11/05/2018 Memo - PFS Geotechnical Stability Assessment of the Pebble West Pit
11/05/2018 Memo - Updated Synthetic Temperature and Precipitation Series for Pebble 1
11/05/2018 Pebble Mines Corp. Toxicity Testing Program 2011 - Gold Plant Process Water and Non-Gold Plant Process Water
11/05/2018 Pebble Port Alternatives Baseline Studies 2017 Chemistry Data Report

Sunday, November 11, 2018: 27 document(s) added or updated in Requests for Information
11/11/2018 RFI 10a: Follow-up Questions on Tailings Characteristics
10/05/2018 RFI 19: Water Balance, Groundwater Model, and Streamflow Reduction
11/11/2018 RFI 19a: Follow-up Questions on RFI 019 - Water Management Plan
11/11/2018 RFI 19b: Follow-up on Streamflow Reductions at End of Mine Life Excluding Water Treatment Plant Discharges (RFI 019 Part 2 Response)
11/11/2018 RFI 19c: Follow-up Requests on RFI 019 - Groundwater Modeling Report
10/05/2018 RFI 21c: Follow-up Questions on Water Quality Predictions at Mine Site
11/11/2018 RFI 21d: Follow-up to 021 Water Quality-WTP processes and salt mass management
11/11/2018 RFI 32b: Follow-up request on 32a for GIS polygon data for Proposed Project layout and access route.
10/19/2018 RFI 34d: Visual Resources Clarification
10/19/2018 RFI 47: Mine-related changes in water temperatures in project area tributaries
11/11/2018 RFI 64a: Follow-up to RFI 064 response - Water Quality Criteria
11/11/2018 RFI 67: Biological Assessments and Essential Fish Habitat Assessment
09/07/2018 RFI 7: Air Quality Emission Inventories
11/11/2018 RFI 75a: Follow-up Questions on Downstream Dam for the Bulk TSF
11/11/2018 RFI 77: Water Withdrawals for Select Alternative Options
11/11/2018 RFI 80: North Access Natural Gas Pipeline Route
11/11/2018 RFI 81: Anchoring Plan for Lightering Locations
11/11/2018 RFI 82: Wetlands Temporary and Indirect Impacts
11/11/2018 RFI 85: 2018 Field Data/Biological Resources
11/11/2018 RFI 87: Surface water runoff and treated water management and outfalls: Ferry Terminals and Amakdedori Port

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11/11/2018 RFI 89: Supplement Wildlife Harvest and Subsistence Fishing Harvest Data
11/11/2018 RFI 8d: Follow-up to response to RFI 008b (Embankment Stability Analysis)
11/11/2018 RFI 8e: Embankment and Impoundment Summary Table
11/11/2018 RFI 8f: Follow-up to RFI 008f - Embankment and Impound Summary Table - Cross-Sections
11/11/2018 RFI 90: In Pit Crushing and Conveying
11/11/2018 RFI 97: Cultural and Subsistence Figures Request
11/11/2018 RFI 9a: Follow-up to RFI 009 Response: Dispersion and Deposition Modeling

Sunday, November 11, 2018: Project glossary updated

Sunday, November 11, 2018: 75 document(s) added or updated in Project Library
11/11/2018 2016 Lower Cook Inlet Area Finfish Management Report
11/11/2018 2016 Prince William Sound Area Finfish Management Report
11/11/2018 Acoustic Effects of Oil Production Activities on Bowhead and White Whales Visible During Spring Migration Near Pt. Barrow, Alaska -- 1991 and 1994 Phases
11/11/2018 ADEC Guidance on Developing Conceptual Site Models
11/11/2018 Advancing the match-mismatch framework for large berbivores in the Arctic: Evaluating the evidence for a trophic mismatch in caribou
11/11/2018 Aerial Survey Counts of Harbor Seals in Lake Iliamna, Alaska, 1984-2013
11/11/2018 AK: The Journey to Bristol Bay's fishing grounds
11/11/2018 Alaska - Yukon Waterfowl Breeding Population Survey May 15 to June 7, 2005
11/11/2018 Alaska Brown Bear Hunts - H&H Alaskan Outfitters
11/11/2018 Alaska Marine Mammal Stock Assessments, 2013
11/11/2018 Alaska Marine Mammal Stock Assessments, 2014
11/11/2018 Angry Eagle - Exploring Southwest Alaska
11/11/2018 Annual Management Report, Kuskokwim Area, 2016
11/11/2018 Assessment of impacts and potential mitigation for icebreaking vessels transiting pupping areas of an ice-breeding seal
11/11/2018 By road, lake and river: Boats make their way to Bristol Bay
11/11/2018 Climate Change in Nondalton, Alaska - Strategies for Community Health
11/11/2018 Construction Impacts on the Cook INlet Beluga Whale (Delphinapterus leucas) at the Port of Anchorage Marine Terminal Redevelopment Project
11/11/2018 Cook Inlet Area Commercial Salmon Fishing Regulations
11/11/2018 Cook Inlet Area Groundfish Management Report, 2012-2015
11/11/2018 Correspondence - RE: Pebble EIS: Other Mine Location Alternatives
11/11/2018 Development of an air bubble curtain to reduce underwater noise of percussive piling
11/11/2018 Distribution, abundance, migration, and breeding locations of marine birds, lower Cook Inlet, Alaska, 1976
11/11/2018 Division of Oil and Gas 2015 Annual Report
11/11/2018 Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions
11/11/2018 Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests
11/11/2018 Effects of pile-driving on harbour porpoises (Phocoena phocoena) at the first offshore wind farm in Germany
11/11/2018 Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas
11/11/2018 Estimating the zone of influence of industrial developments on wildlife: a migratory caribou Rangifer tarandus groenlandicus and diamond mine case study
11/11/2018 Federal Energy Regulatory Commission Guidance Manual for Environmental Report Preparation
11/11/2018 Federal Register - Conservation of Endangered Species and Other Fish or Wildlife
11/11/2018 Fisheries Figures, Boundaries, Regulatory Areas, EFH and Critical Habitat
11/11/2018 Freshwater Seals of Iliamna Lake: Recent Population Updates

AMERICAN OVERSIGHT

11/11/2018 Golden Eagles Status Fact Sheet
11/11/2018 Harbor Seal (Phoca vitulina) Tolerance to Vessels Under Different Levels of Boat Traffic
11/11/2018 Harbor Seal Investigations in Alaska Annual Report NOAA Grant NA87FX0300
11/11/2018 Harbor Seals in Iliamna Lake, Bristol Bay, Alaska - Final Aerial Census in 1991
11/11/2018 Horizontal Directional Drill Guidelines
11/11/2018 HRE: The Home Range Extension for ArcView and HRT: Home Range Tools for ArcGIS
11/11/2018 Impacts of Climate change on the seasonal distribution of migratory caribou
11/11/2018 Impacts of Human Developments and Land Use on Caribou: A Literature Review Volume II. Impacts of Oil and Gas Development on the Central Arctic Herd
11/11/2018 Integrating Local Traditional Knowledge and Subsistence Use Patterns with Aerial Surveys to Improve Scientific and Local Understanding of the Iliamna Lake Seals
11/11/2018 Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations
11/11/2018 Marine Mammal Protection Act. National Oceanic and Atmospheric Administration (National Marine Fisheries Service) and U.S. Fish & Wildlife Service
11/11/2018 Matanuska - Sustina Valley & West Cook Inlet King Salmon
11/11/2018 Memorandum of Agreement between The Department of the Army AND the Environmental Protection Agency Concerning Mitigation Sequence for Wetlands in Alaska Under Section 404 of the Clean Water Act
11/11/2018 Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations
11/11/2018 Migratory Bird Treaty
11/11/2018 Moose, Caribou, and Grizzly Bear Distribution in Relation to Road Traffic in Denali National Park, Alaska
11/11/2018 Nanutset ch'u Q'udi Gu Before Our Time and Now
11/11/2018 Natural Resources Revenue Data, Alaska - Land Ownership
11/11/2018 News Release - 2016 Kenai River King Salmon Sport Fishing and Upper Cook Inlet Commercial Fishing Outlook
11/11/2018 NOAA Designates Critical Habitat for Cook Inlet Beluga Whale
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2011
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2012
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2013
11/11/2018 Participation, Effort, and Harvest in the Sport Fish Business/Guide Licensing and Logbook Programs, 2014
11/11/2018 Permitting Large Mine Projects in Alaska
11/11/2018 Protection of Bald and Golden Eagles
11/11/2018 Protection of Eagles; Definition of "Disturb"
11/11/2018 Re: Pebble EIS: Requesting information from Lake and Peninsula
11/11/2018 RE: RFI 19c Response
06/27/2018 Seabirds - North Pacific Seabird Colony Database
11/11/2018 Silver Bay Seafoods, LLC - Naknek Plant
11/11/2018 Southeast Regions School District - Our Communities
11/11/2018 Supplement to the Endangered Species Act - Section 7 Consultation Biological Opinion and Incidental Take Statement of October 2001
11/11/2018 Synthesis of Noise Effects on Wildlife Populations
11/11/2018 Temporal autocorrelation functions for movement rates from global positioning system radiotelemetry data
11/11/2018 The Great Whales: History and Status of Six Species Listed as Endangered Under the U.S. Endangered Species Act of 1973
11/11/2018 The Impact of Roads on the Demography of Grizzly Bears in Alberta

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11/11/2018 U.S. Fish and Wildlife Service Biological Assessment - Section 7
11/11/2018 Ungulate flight responses to human disturbance: A review and meta-analysis
11/11/2018 Upper Cook Inlet Commercial Fisheries Annual Management Report, 2016
11/11/2018 Upper Cook Inlet Commercial Fisheries Annual Management Report, 2017
11/11/2018 Wild Resource Harvests and Uses by Residents of Selected Communities of the Kenai Peninsula Borough
11/11/2018 Yukon River Salmon 2017 Season Summary and 2018 Season Outlook

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/5/2018 11:09:02 PM
To: Fordham, Tami [Fordham.Tami@epa.gov]

Subject: Accepted: Pebble Overview for AOO Director
Location: R10AOO-Room-Raven-25-VTC/R10-Rooms-AOO; R10Sea-Room-14WallaWalla/R10-Rooms-Service-Center

Start: 7/23/2018 6:00:00 PM
End: 7/23/2018 7:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/5/2018 10:31:58 PM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Accepted: Prep for AOO Director Bristol Bay Overview
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/9/2018 6:00:00 PM
End: 7/9/2018 6:30:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=89EEE45FCEA246B78BBBB46014FE7B12-VAUGHAN, MOLLY]
Sent: 6/13/2018 3:28:38 PM
To: Peterson, Erik [Peterson.Erik@epa.gov]

Subject: Accepted: Bristol Bay Check-in
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center

Start: 7/31/2018 4:00:00 PM
End: 7/31/2018 5:00:00 PM
Show Time As: Busy

AMERICAN OVERSIGHT

Appointment

From: Vaughan, Molly [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=89eee45fcea246b78bbbb46014fe7b12-Vaughan, Molly]
Sent: 7/17/2018 8:17:43 PM
To: Wright, Cara [cara.wright@aecom.com]

Subject: Accepted: Meeting before EPA Pebble site visit
Location: CR.ANC-700.5th-Large-Conference-Room

Start: 7/30/2018 10:00:00 PM
End: 7/31/2018
Show Time As: Busy

AMERICAN OVERSIGHT

Message

From: Nalven, Heidi [Nalven.Heidi@epa.gov]
Sent: 5/31/2018 1:01:17 PM
To: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Palomaki, Ashley [Palomaki.Ashley@epa.gov]
Subject: FW: Pebble Mine Meeting
Attachments: Pebble Mine Meeting

Looks like PLP and others are coming in to talk to Lee.

Heidi Nalven
U.S. EPA Office of General Counsel
202-564-3189

AMERICAN OVERSIGHT

Appointment

From: Penman, Crystal [Penman.Crystal@epa.gov]
Sent: 5/31/2018 12:18:35 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]; Nalven, Heidi [Nalven.Heidi@epa.gov]; Goodin, John [Goodin.John@epa.gov]

Subject: Pebble Mine Meeting
Attachments: Real ID Information.pdf
Location: 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call 202-564-5700 for escort

Start: 6/5/2018 5:00:00 PM
End: 6/5/2018 5:45:00 PM
Show Time As: Tentative

The group includes:

Abe Williams – PLP Employee, Commerical Fisherman, BBNC Shareholder, Grew up in Bristol Bay
Brad Angasan – VP of Corporate Affairs for Alaska Peninsula Corporation
Ventura Samaniego – President & CEO of Kijik Corporation
Margie Olympic – PLP Site Staff & Newhalen Tribal Member
Henry Olympic – President of Newhalen of Tribal Council.

Peter D. Robertson

The Pebble Partnership

1330 Connecticut Avenue, NW

Washington, DC 20036

202-629-3392

AMERICAN OVERSIGHT

Appointment

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 4/25/2018 12:29:24 AM
To: Palomaki, Ashley [Palomaki.Ashley@epa.gov]

Subject: Accepted: Pebble Scoping

Start: 5/2/2018 8:00:00 PM
End: 5/2/2018 9:00:00 PM

Recurrence: (none)

AMERICAN OVERSIGHT

From: Tyson, Linda
Location: EPA Offices
Importance: Normal
Subject: HOLD: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

POC: L. John Iani | Perkins Coie LLP

1201 Third Avenue Suite 4900

Seattle, WA 98101-3099

D. +1.206.359.6689

F. +1.206.359.7689

E. JIani@perkinscoie.com

AMERICAN OVERSIGHT

From: Tyson, Linda
Location: EPA Offices
Importance: Normal
Subject: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

POC: L. John Iani | Perkins Coie LLP

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E. JIani@perkinscoie.com

AMERICAN OVERSIGHT

From: Hladick, Christopher
Location: EPA Offices
Importance: Normal
Subject: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

•□□□□□□□□ Attendees on behalf of Pebble Limited Partnership: John Shively, Peter Robertson, James Fueg, and John Iani.

•□□□□□□□□ Attendees on behalf of EPA: Chris Hladick, David Allnutt, Allyn Stern, Ashley Palomaki, Patty McGrath

POC: John Iani, Perkins Coie LLP; cell 206-412-5531; JIani@perkinscoie.com

AMERICAN OVERSIGHT

From: Tyson, Linda
Location: EPA Offices
Importance: Normal
Subject: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

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POC: John Iani, Perkins Coie LLP; cell 206-412-5531; JIani@perkinscoie.com

AMERICAN OVERSIGHT

To: jiani@perkinscoie.com[jiani@perkinscoie.com]
Cc: Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]
From: Tyson, Linda
Sent: Thur 1/4/2018 10:17:38 PM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Thur 1/4/2018 10:17:40 PM

Hi John,

We can make 9:00-10:00am on the 8th work – please confirm if this is good and I'll send out a calendar invite.

LT

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Thursday, January 4, 2018 1:15 PM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

Hi Linda,

Can we try to set the meeting for February 8? (Feb 7 will also work, but the 8th is much better). We don't have our "team" fully identified yet but wanted to get the date set.

Thank you,

John

AMERICAN OVERSIGHT

L. John Iani | **Perkins Coie LLP**

PARTNER

1201 Third Avenue Suite 4900

Seattle, WA 98101-3099

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F. +1.206.359.7689

E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Wednesday, January 03, 2018 4:09 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

My apologies for the delay in getting back to you. We'd like to move forward with your meeting request.

Chris has some limited availability next week: 1/10 at 11am or 4pm; or we can look at scheduling for the first full week in February.

Please let us know what works for your schedule and I can send an outlook invite.

Thanks,

LT

AMERICAN OVERSIGHT

Linda Tyson, Executive Assistant

Office of the Regional Administrator

U.S. EPA, Region 10

1200 Sixth Avenue, Mail Stop RA-210

Seattle, Washington 98101-3140

(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM
To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

John – good talking with you earlier today. I've figured out that RA's office does have a system in place for receiving external meeting requests; by cc'ing the R10-ORA mailbox with this message, I'm placing your request for PLP to meet with Chris into the queue. Linda Tyson will follow up with you on the timing and logistics for such a meeting. As you and I discussed, it seems unlikely that we could accommodate such a meeting before January. As we also discussed, we would expect that a few Regional program staff and attorneys would participate in PLP's meeting with Chris, and we may look for an opportunity to have a technical staff-level meeting before PLP meets with him.

I've let Cara know that we talked, and she's happy to speak with you further about this our any other matter on which you're currently representing PLP.

AMERICAN OVERSIGHT

R. David Allnutt, Director

Office of Environmental Review and Assessment

U.S. EPA, Region 10

1200 Sixth Avenue, Suite 900

Seattle, Washington 98101-3140

(206) 553-2581

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

John

AMERICAN OVERSIGHT

L. John Iani | **Perkins Coie LLP**

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To: Tyson, Linda[Tyson.Linda@epa.gov]
Cc: Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]
From: Iani, L. John (Perkins Coie)
Sent: Thur 1/4/2018 9:15:10 PM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Thur 1/4/2018 9:16:17 PM

Hi Linda,

Can we try to set the meeting for February 8? (Feb 7 will also work, but the 8th is much better). We don't have our "team" fully identified yet but wanted to get the date set.

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Cc: Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]
From: Iani, L. John (Perkins Coie)
Sent: Thur 1/4/2018 12:20:28 AM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Thur 1/4/2018 12:21:35 AM

Thank you Linda. We will check schedules and get back to you shortly.

Happy New Year!

John

L. John Iani | **Perkins Coie LLP**

PARTNER

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Cc: Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]
From: Tyson, Linda
Sent: Thur 1/4/2018 12:09:19 AM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Thur 1/4/2018 12:09:22 AM

Hi John,

My apologies for the delay in getting back to you. We'd like to move forward with your meeting request.

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U.S. EPA, Region 10

1200 Sixth Avenue, Suite 900

Seattle, Washington 98101-3140

(206) 553-2581

AMERICAN OVERSIGHT



From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Friday, December 08, 2017 9:06 AM
To: Allnutt, David <Allnutt.David@epa.gov>
Subject:

Morning Dave,

Can you please give me a call, today if possible, on my cell-.

Thanks,

John

L. John Iani | **Perkins Coie LLP**

PARTNER

1201 Third Avenue Suite 4900

Seattle, WA 98101-3099

D. +1.206.359.6689

F. +1.206.359.7689

E. JIani@perkinscoie.com

AMERICAN OVERSIGHT

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AMERICAN OVERSIGHT

To: jiani@perkinscoie.com[jiani@perkinscoie.com]; Tyson, Linda[Tyson.Linda@epa.gov]
Cc: Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]; Palomaki, Ashley[Palomaki.Ashley@epa.gov]; Stern, Allyn[Stern.Allyn@epa.gov]
From: Steiner-Riley, Cara
Sent: Mon 1/8/2018 10:59:30 PM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Mon 1/8/2018 10:59:32 PM

Hi John—

Just wanted to give you Ashley Palomaki's 's contact information. Ashley is ORC's lead attorney on Pebble. Her phone number is 206-553-8582. She will be at the meeting as well and you will be able to meet her then. Thanks! Cara

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Monday, January 08, 2018 9:14 AM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

Good Morning Linda,

That time and date will work fine. Thank you for making it available. I will send the final list of attendees later.

John

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PARTNER

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Seattle, WA 98101-3099

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F. +1.206.359.7689

AMERICAN OVERSIGHT

E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Thursday, January 04, 2018 2:18 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

We can make 9:00-10:00am on the 8th work – please confirm if this is good and I'll send out a calendar invite.

LT

From: Iani, L. John (Perkins Coie) [mailto:JIani@perkinscoie.com]
Sent: Thursday, January 4, 2018 1:15 PM
To: Tyson, Linda <Tyson.Linda@epa.gov>
Cc: Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>; Allnutt, David <Allnutt.David@epa.gov>; Tyler, Kendra <Tyler.Kendra@epa.gov>
Subject: RE: Pebble Limited Partnership meeting request

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Thank you,

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F. +1.206.359.7689

E. JIani@perkinscoie.com

From: Tyson, Linda [mailto:Tyson.Linda@epa.gov]
Sent: Wednesday, January 03, 2018 4:09 PM
To: Iani, L. John (SEA)
Cc: Steiner-Riley, Cara; Allnutt, David; Tyler, Kendra
Subject: RE: Pebble Limited Partnership meeting request

Hi John,

My apologies for the delay in getting back to you. We'd like to move forward with your meeting request.

Chris has some limited availability next week: 1/10 at 11am or 4pm; or we can look at scheduling for the first full week in February.

Please let us know what works for your schedule and I can send an outlook invite.

Thanks,

LT

AMERICAN OVERSIGHT

Linda Tyson, Executive Assistant

Office of the Regional Administrator

U.S. EPA, Region 10

1200 Sixth Avenue, Mail Stop RA-210

Seattle, Washington 98101-3140

(206) 553-1327

From: Allnutt, David
Sent: Friday, December 8, 2017 2:12 PM
To: jiani@perkinscoie.com
Cc: R10-ORA <R10-ORA@epa.gov>; Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>
Subject: Pebble Limited Partnership meeting request

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R. David Allnutt, Director

Office of Environmental Review and Assessment

U.S. EPA, Region 10

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Cc: Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]; Tyler, Kendra[Tyler.Kendra@epa.gov]
From: Iani, L. John (Perkins Coie)
Sent: Mon 1/8/2018 5:14:08 PM
Subject: RE: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Mon 1/8/2018 5:15:14 PM

Good Morning Linda,

That time and date will work fine. Thank you for making it available. I will send the final list of attendees later.

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Cc: R10-ORA[R10-ORA@epa.gov]; Steiner-Riley, Cara[Steiner-Riley.Cara@epa.gov]
From: Allnutt, David
Sent: Fri 12/8/2017 10:12:23 PM
Subject: Pebble Limited Partnership meeting request
MAIL_RECEIVED: Fri 12/8/2017 10:12:00 PM

John – good talking with you earlier today. I've figured out that RA's office does have a system in place for receiving external meeting requests; by cc'ing the R10-ORA mailbox with this message, I'm placing your request for PLP to meet with Chris into the queue. Linda Tyson will follow up with you on the timing and logistics for such a meeting. As you and I discussed, it seems unlikely that we could accommodate such a meeting before January. As we also discussed, we would expect that a few Regional program staff and attorneys would participate in PLP's meeting with Chris, and we may look for an opportunity to have a technical staff-level meeting before PLP meets with him.

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AMERICAN OVERSIGHT

From: Allnutt, David
Location: EPA Offices
Importance: Normal
Subject: Accepted: HOLD: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

AMERICAN OVERSIGHT

From: Allnutt, David
Location: EPA Offices
Importance: Normal
Subject: FW: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

-----Original Appointment-----
From: Hladick, Christopher
Sent: Thursday, January 04, 2018 2:19 PM
To: Hladick, Christopher; Allnutt, David; Steiner-Riley, Cara; jiani@perkinscoie.com
Cc: Stern, Allyn; Palomaki, Ashley
Subject: EPA/Pebble Limited Partnership Meeting
When: Thursday, February 08, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: EPA Offices

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

POC: L. John Iani | Perkins Coie LLP

1201 Third Avenue Suite 4900

Seattle, WA 98101-3099

D. +1.206.359.6689

F. +1.206.359.7689

E. JIani@perkinscoie.com

AMERICAN OVERSIGHT

From: Tyson, Linda
Location: EPA Offices
Importance: Normal
Subject: EPA/Pebble Limited Partnership Meeting
Categories: External Stakeholders
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

Location: EPA Offices, 1200 6th Avenue (Park Place Building at corner of 6th & University). Please check in at the security desk on the first floor. For questions/assistance, please contact us at 206-553-1234.

•□□□□□□□□ Attendees on behalf of Pebble Limited Partnership: John Shively, Peter Robertson, James Fueg, and John Iani.

•□□□□□□□□ Attendees on behalf of EPA: Chris Hladick, David Allnutt, Allyn Stern, Ashley Palomaki, Patty McGrath

POC: John Iani, Perkins Coie LLP; cell 206-412-5531; JIani@perkinscoie.com

AMERICAN OVERSIGHT

From: McGrath, Patricia
Location: EPA Offices
Importance: Normal
Subject: Accepted: FW: EPA/Pebble Limited Partnership Meeting
Start Date/Time: Thur 2/8/2018 5:00:00 PM
End Date/Time: Thur 2/8/2018 6:00:00 PM
Recurrence Pattern: None

AMERICAN OVERSIGHT

US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: January 5, 2018

REFERENCE NUMBER: POA-2017-271

WATERWAY: Multiple

An application has been received in this office from Pebble Limited Partnership (applicant) to discharge fill material into and perform work within waters of the United States. The project site is located in Southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough. The project consists of four primary project elements: a mine site, a port at Amakdedori, transportation corridor, and natural gas pipeline. The submitted application is available on the Corps website at www.poa.usace.army.mil/Missions/Regulatory/Permitting-Section-Homepage/Department of the Army Permit Application POA-2017-271 submitted by Pebble Limited Partnership.

The Corps has determined and notified the applicant that an environmental impact statement level of analysis will be required for the review of the Department of the Army Permit application. As such, the Corps will conduct public scoping after publishing a Notice of Intent to develop an EIS in the federal register. The Notice of Intent will include a list of public scoping locations. Times and dates for these locations will subsequently be advertised via Corps Public Notice and website as well as local media outlets.

Please contact Sheila Newman, Regulatory Division Program Manager at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at poaspecialprojects@usace.army.mil if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

AMERICAN OVERSIGHT

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
March 30, 2018
Release No. 18-006

Contact:
John Budnik, 907-753-2615
John.P.Budnik@usace.army.mil

Scoping for Department of the Army Permit Application 2017-271-Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District requests public input regarding the scope of the environmental impact statement level of analysis for Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership.

The Pebble Project has been in the public eye for many years and there have been multiple public input and comment opportunities from other agencies. This public body of information has helped to inform the Corps' preliminary scope for the environmental impact analysis.

The Corps is now asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures.

Since Jan.5, the permit application has been publically available on the Alaska District's website. On Jan.12, the application was mailed via CD to 35 federally recognized Alaska Native Tribes alongside invitations for government-to-government consultation throughout the entire evaluation process including the EIS. The Corps maintains the application as well as additional scoping information at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska, 99506-0898

Beginning April 1, scoping input can be entered directly into the project website at www.pebbeprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

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Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

Meeting locations and times are indicated below. A video explaining major project components will be available for viewing. The Corps will have representatives available to answer questions regarding the Department of the Army permit application review process. Individuals may come in at any time during open hours and to provide scoping input. A Yupik translator will be available at the meetings.

Naknek
Monday, April 9
Naknek School
3:30 PM – 7:30 PM

Kokhanok
Tuesday, April 10
Tribal Hall
3:30 PM – 7:30 PM

Homer
Wednesday, April 11
Homer High School,
5:00 PM – 9:00 PM

Newhalen
Thursday, April 12
Newhalen School
3:30 PM – 7:30 PM

New Stuyahok
Friday, April 13
Community Building
1:00 PM to 4:30 PM

Nondalton
Monday, April 16
Tribal Center
3:30 PM – 7:30 PM

Dillingham
Tuesday, April 17
Dillingham Middle School
5:00 PM – 9:00 PM

Igiugig
Wednesday, April 18
Community Building
3:30 PM – 7:30 PM

Anchorage
Thursday, April 19
Dena'ina Center
11:00 AM – 9:00 PM

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

# # #

AMERICAN OVERSIGHT

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
April 6, 2018
Release No. 18-007

Contact:
John Budnik, 907-753-2615
Public.affairs3@usace.army.mil

Corps extends public scoping period for Department of Army permit application 2017-271 Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District has allotted more time for the public scoping period for the environmental impact statement level of analysis for Department of Army permit application 2017-271 submitted by Pebble Limited Partnership.

An additional 60 days has been added to the original 30-day public scoping period that began on April 1. Therefore, interested parties that would like to provide scoping input have until June 29 to submit.

The Corps is asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures. The permit application is available on the project website at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

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Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
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# # #

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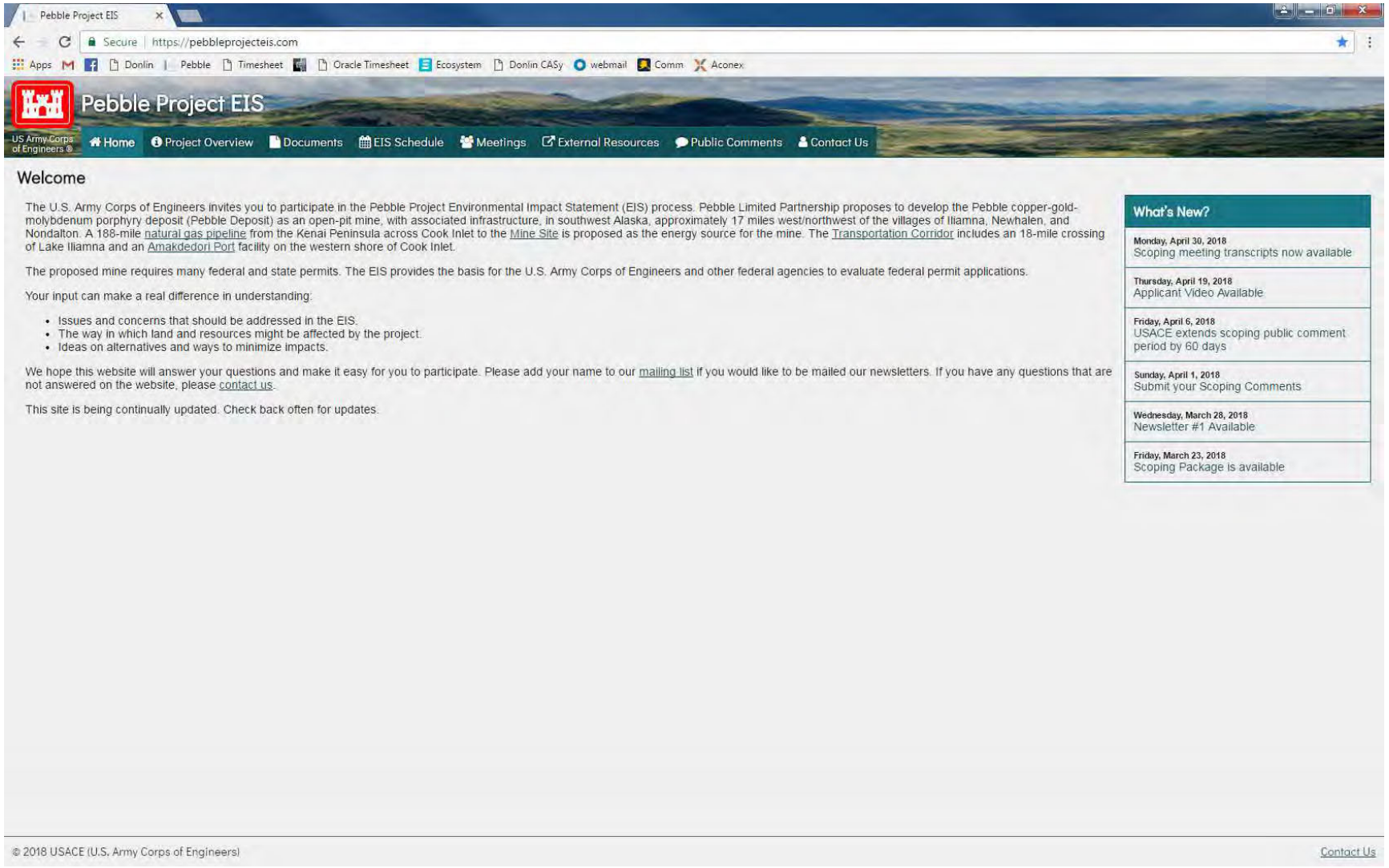

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Pebble Project EIS

Secure | https://pebbleprojecteis.com/overview/projectoverview

Apps | Donlin | Pebble | Timesheet | Oracle Timesheet | Ecosystem | Donlin CASy | webmail | Comm | Aconex

Pebble Project EIS

US Army Corps of Engineers

Project Overview

Pebble Limited Partnership (Applicant) has applied for permits to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure. The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. In addition to the Mine Site, the project would have three other major components: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline.

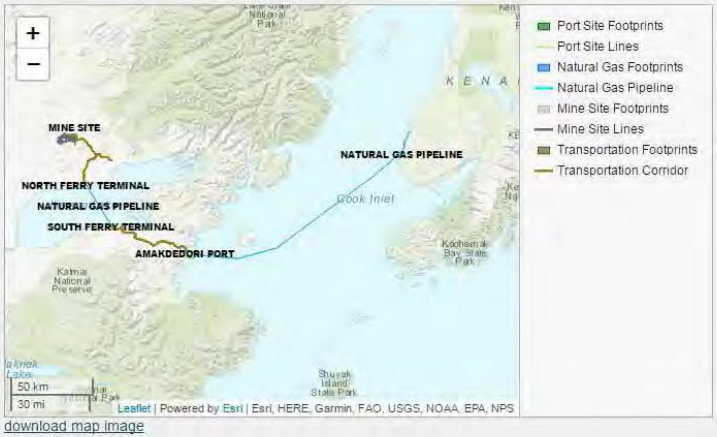
The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of the applicant and by a subsidiary of the applicant's parent company, Northern Dynasty. Neither the applicant nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Rights to develop on State of Alaska land may be acquired when necessary locations for mine development have been determined and permits awarded. The Transportation Corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act.

The proposed project would have a mine life of approximately 20 years. During that time, there would be:

- a total of 1.2 billion tons of material mined over the life of the project;
- mining rate up to 90 million tons per year;
- milling rate up to 58 million tons per year;
- annual copper-gold concentrate production of 600,000 tons; and
- annual molybdenum concentrate production of 15,000 tons.

The project would have an operating schedule of two 12-hour shifts per day for 365 days per year, and employ approximately 2,000 personnel for construction and 850 for operations.

A more detailed project description from the the applicant to the U.S. Army Corps of Engineers can be found here.



download map image

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Contact Us

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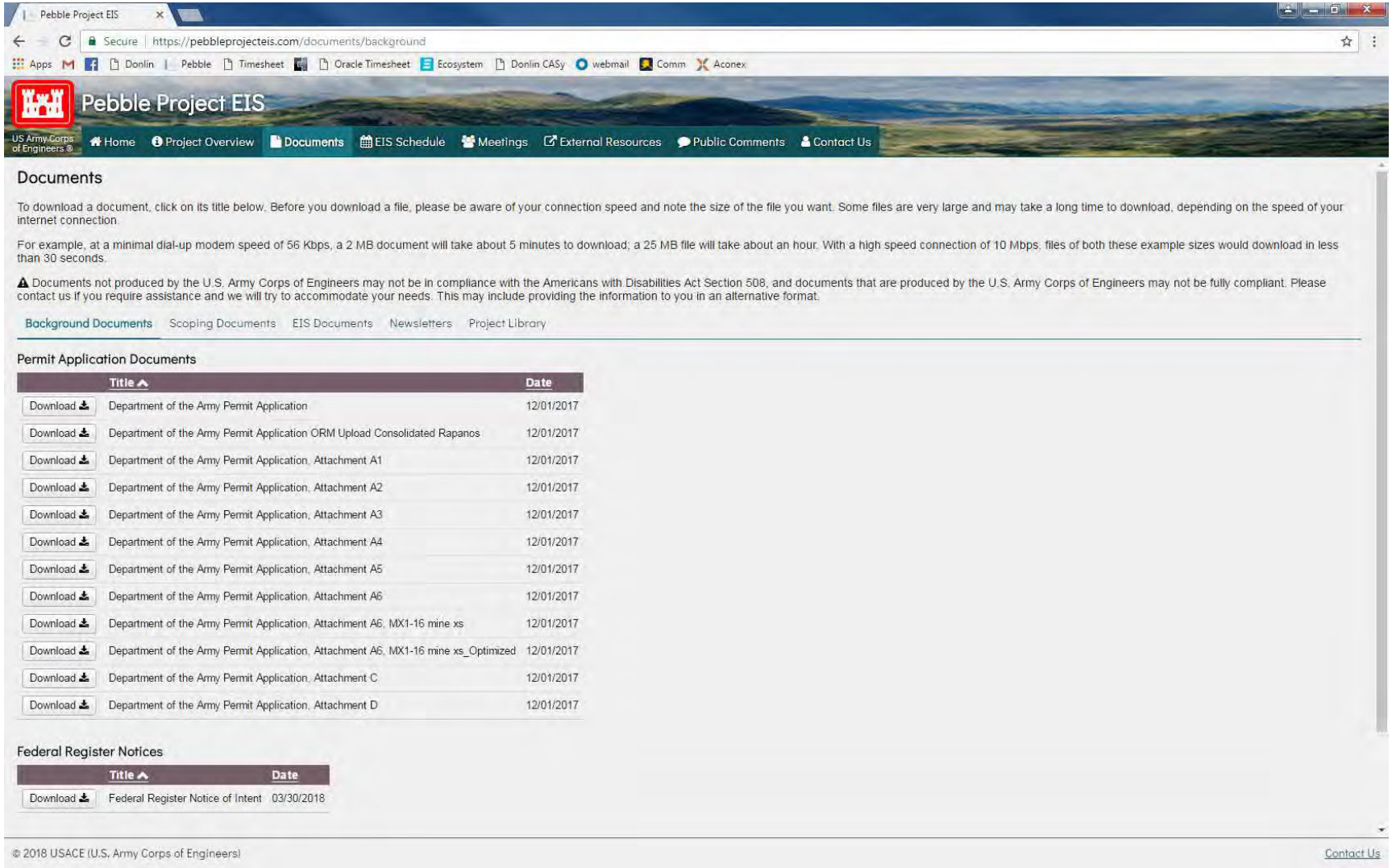

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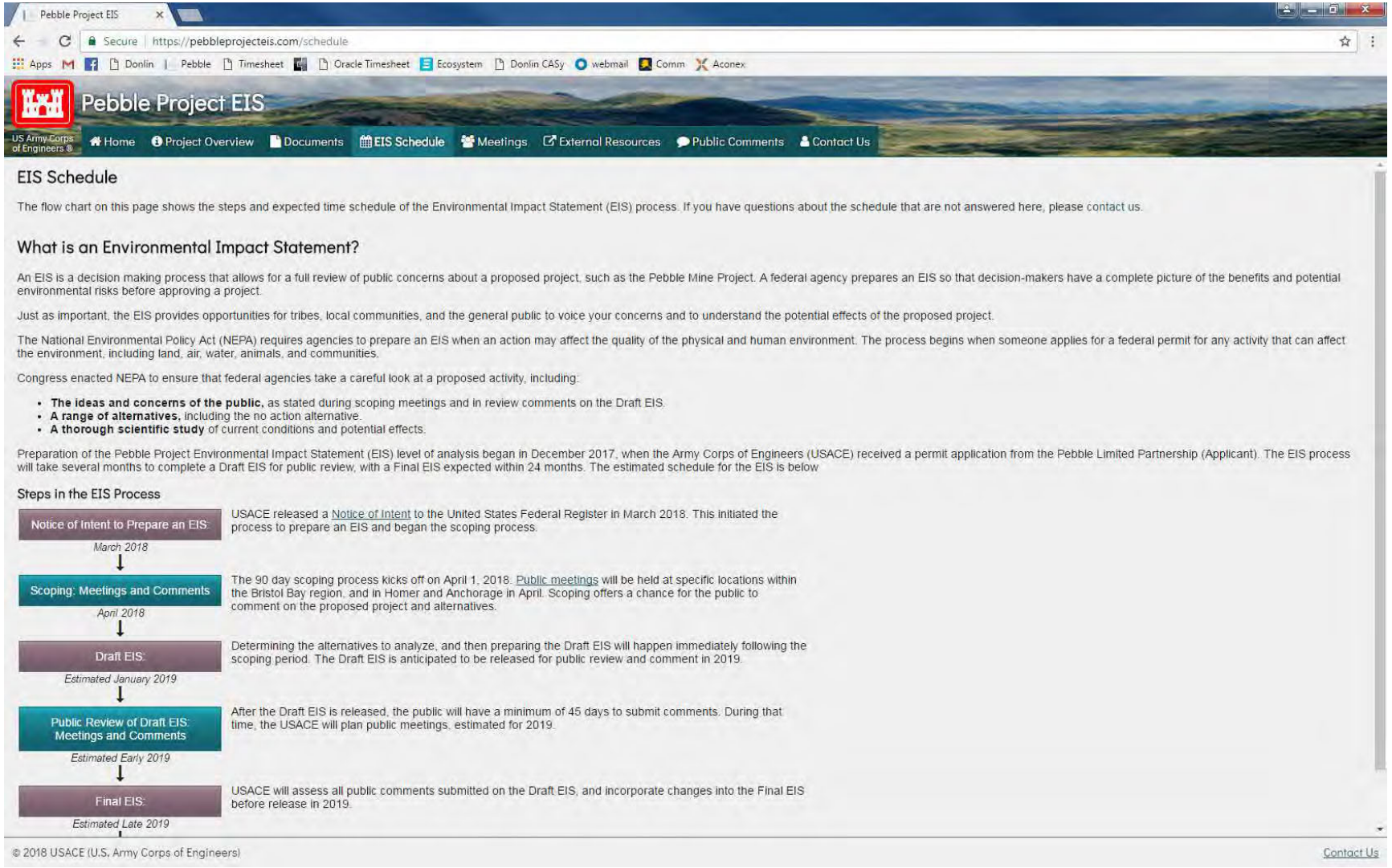

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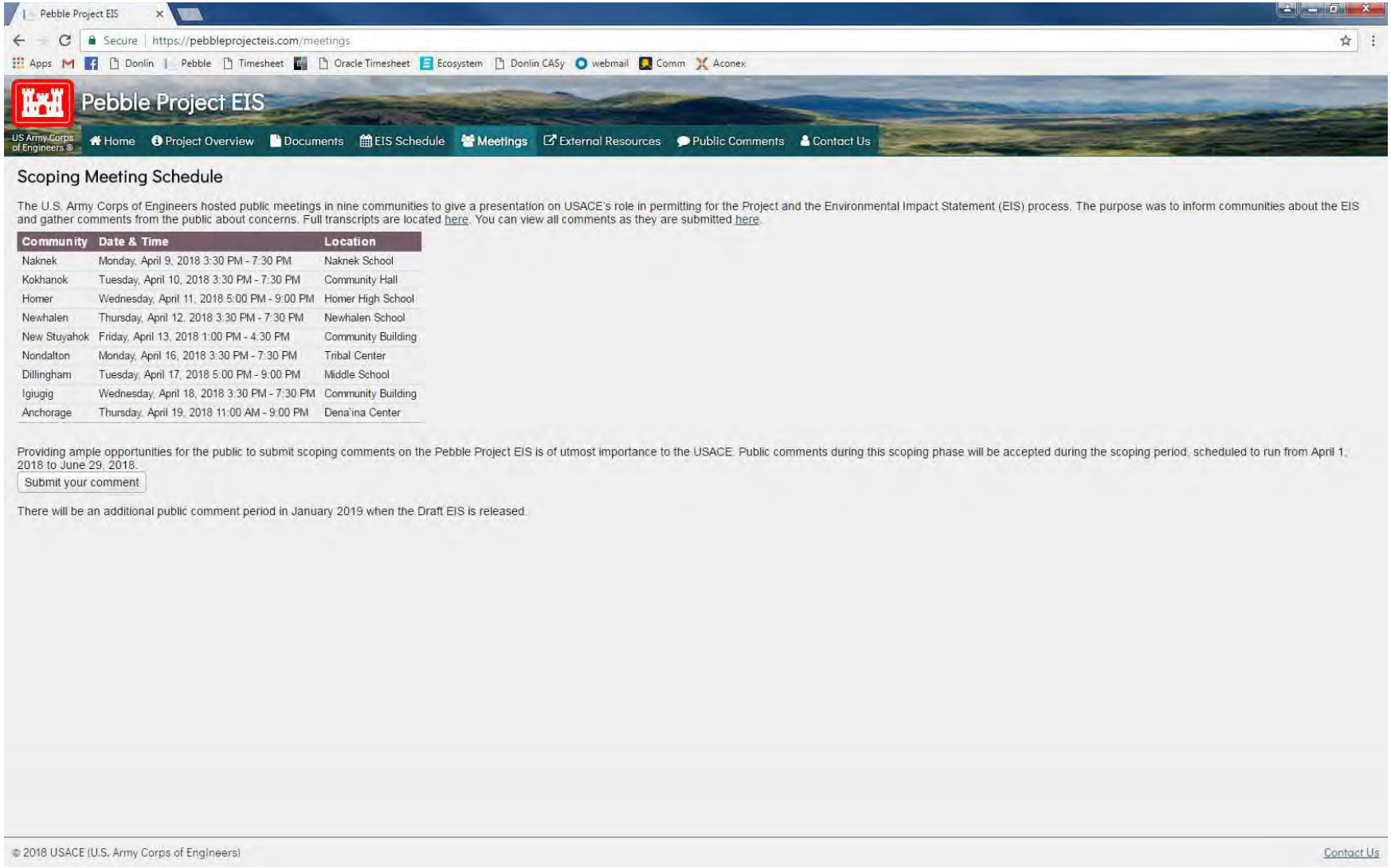

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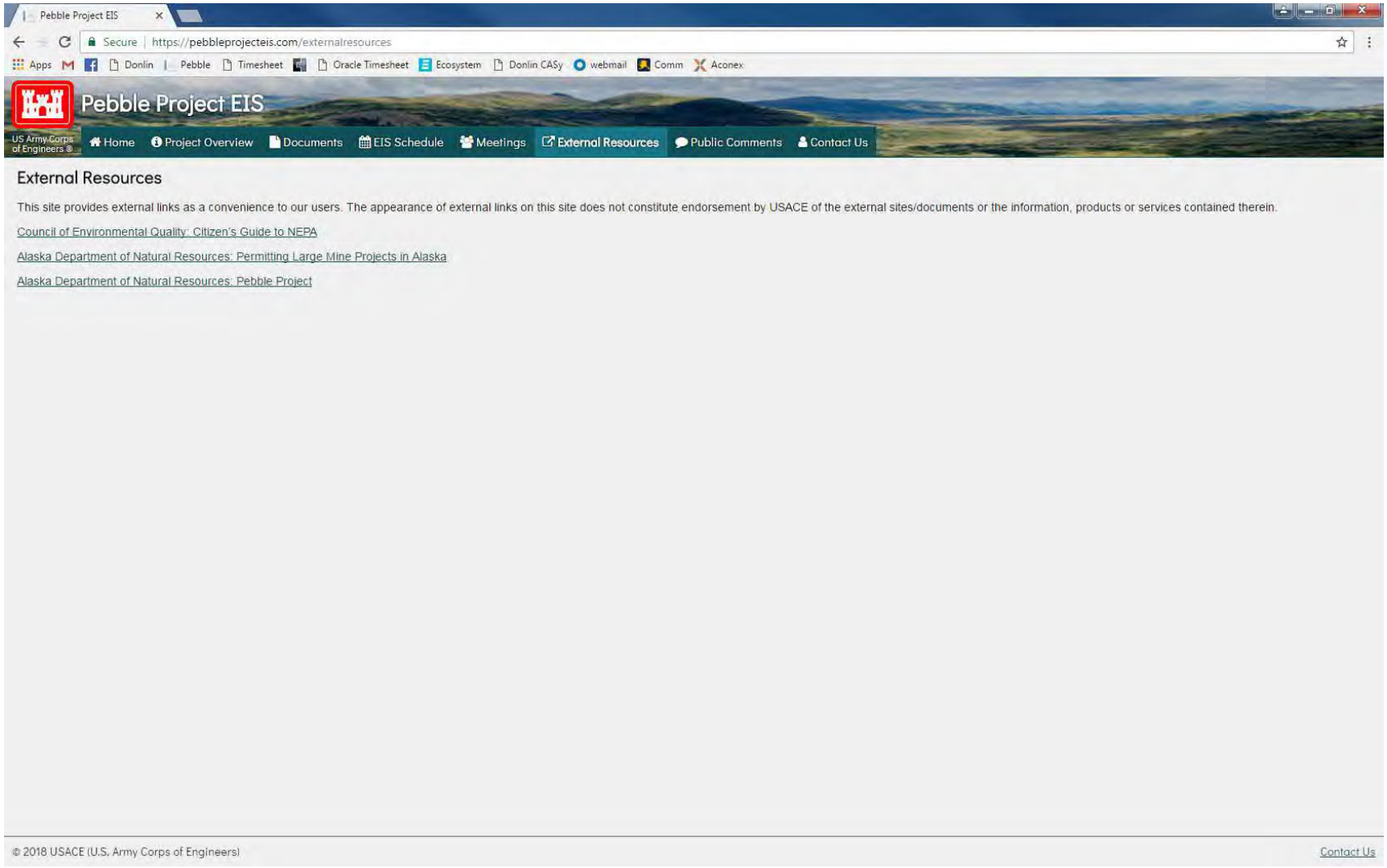

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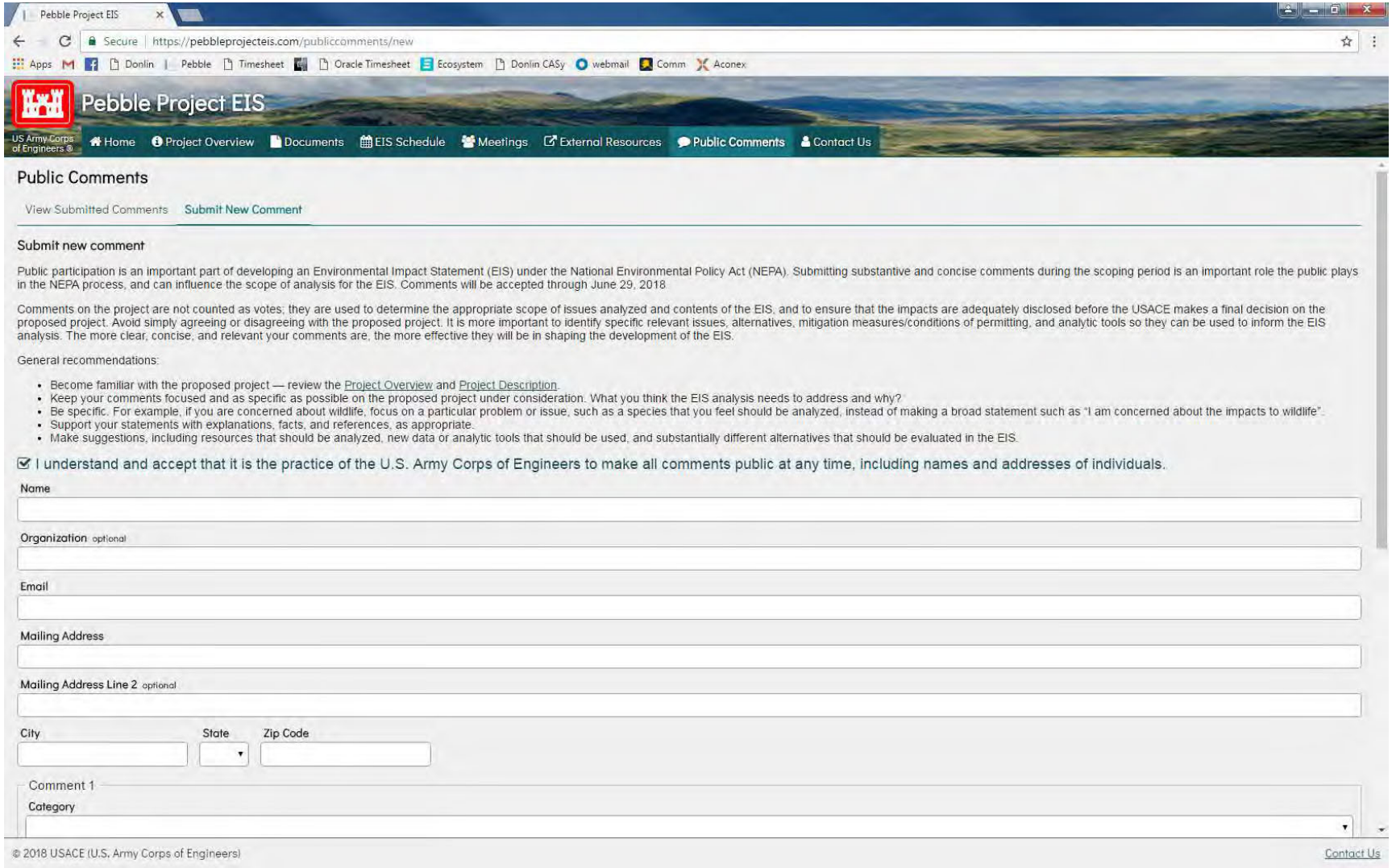

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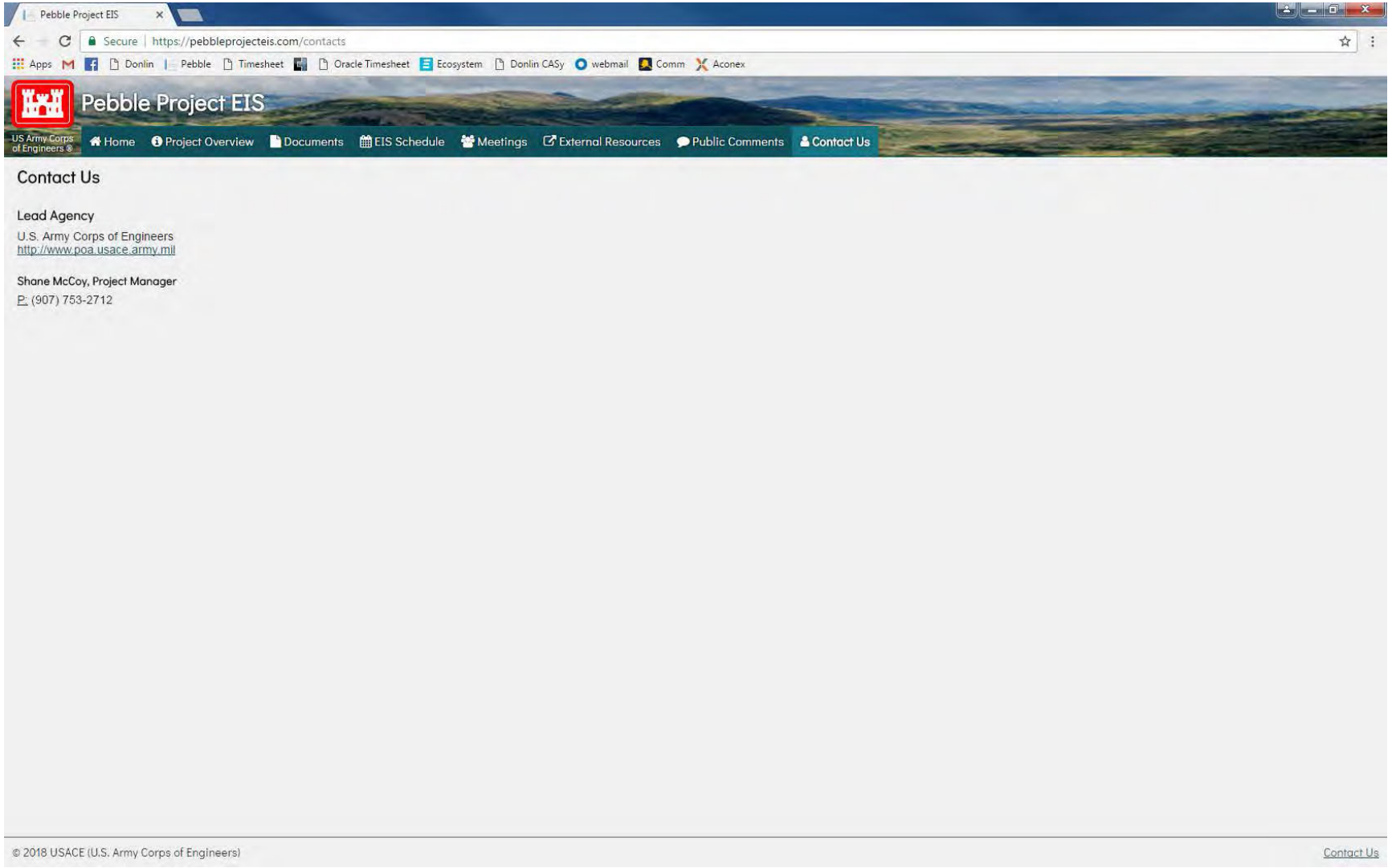

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DEPARTMENT OF THE ARMY PERMIT APPLICATION POA-2017-271, SCOPING PACKAGE

SCOPING PACKAGE CONTENTS

1. Public Scoping for the Pebble Project EIS
2. Pebble Limited Partnership (Applicant) Project Description
3. How Alternatives will be Developed
4. What Resources will be Analyzed in the EIS?
5. What is NEPA?
6. Roles and Responsibilities
7. EIS Schedule
8. EIS Outline
9. How to Comment
10. Pebble Project Comment Form
11. Frequently Asked Questions

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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action to express their views and concerns, and to offer suggestions on the scope of analysis. Public input may include ideas for alternatives to the proposed action that could have lesser environmental impacts.

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be avoided or lessened.

Public meetings will tentatively be held during the scoping period of April 1st to June 29th, 2018, in the following communities:

- Anchorage*
- Dillingham*
- Homer*
- Igiugig
- Kokhanok
- Naknek
- Newhalen
- New Stuyahok
- Nondalton

* To avoid long wait times, an open public testimony format will not be used.

Please check our website for the current meeting schedule.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to come to a scoping meeting and give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Scoping comments can be submitted through June 29, 2018.

*Comments received/postmarked after June 29 will be considered, but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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PEBBLE PROJECT DESCRIPTION

Pebble Limited Partnership (PLP), proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. The Pebble Deposit is located approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit, and Kokhanok, which is located 3 miles to the northeast of the proposed road from the port site to the south ferry terminal on Lake Iliamna (see Figure 1).

PEBBLE PROJECT COMPONENTS

The Pebble Project as proposed consists of four facility and operations components:

Mine Site and Associated Facilities (see Figure 2)

- **Open pit mine**, developed in stages, with each stage expanding the area and deepening the previous stage. Final dimensions of the open pit would be approximately 6,500 feet long and 5,500 feet wide, with depths between 1,330 and 1,750 feet.
- **Mine site mineral processing facilities** include a crushing plant, coarse ore stockpile, grinding plant, froth flotation circuits to produce concentrates, and concentrate filters to remove moisture before shipment.
- **Copper-gold concentrate** would be loaded into covered bulk shipping containers and transported by truck to the Amakdedori Port. **Molybdenum concentrate** would be bagged and containerized before shipping to Amakdedori Port.
- **Tailings Storage Facility** located within the North Fork Koktuli watershed:
  - 1.1 billion tons storage volume.
  - separate cells for bulk and pyritic (lined) tailings.
  - four embankments: main (600 feet high), south (350 feet high), and east (60 feet high) perimeter embankments and an internal embankment (420 feet high) separating the bulk and pyritic tailings cells.
- **Low Grade Ore Stockpile** up to 330 million tons of mineralized material, segregated by relative value, and PAG waste rock, placed on an engineered liner to control seepage losses through the stockpile.
- **Waste rock** – Non-potentially acid generating (NPAG) waste rock would be used to construct various mine site structures, including the TSF embankments and mine site roads. PAG waste rock would be stored within the LGO stockpile until mine closure, and then back-hauled into the open pit.
- **Overburden Stockpile** segregated to the southwest of the open pit, and surrounded by a berm of non-mineralized rock to contain the material and increase stability.
- **Water Supply, Management and Treatment** consists of five components**:**
  - potable water well field and treatment plant.
  - two water management ponds (open pit and LGO/main).
  - sediment ponds.
  - three seepage ponds (south, west, and main embankment).
  - two water treatment plant/three discharge locations (north, south and east).

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- **Personnel camps** include a main construction camp to accommodate 1,700 workers, later refurbished for 850 rooms for operations.
- **Power generation** capacity and distribution infrastructure: 230 megawatt delivery capacity fired by natural gas and a 69-kilovolt distribution system.

Amakdedori Port Site (See Figure 3)

- **Ore carrier vessels** up to 40,000 dead weight tons and 700 feet in length, up to **25 Handysize ships will be required annually** to transport concentrate.
- Up to **30 marine line-haul barge loads of supplies and consumables** will be required annually. **Two ice-breaking tug boats** will be used to support marine facility operations.
- **2000 foot earthen access causeway** extending out to a marine jetty located in 15 feet of natural water depth.
- **Access channel and turning basin,** dredged to 50 foot depth.
- **Shore-based facilities** to receive and store containers and fuel, two, 2-MW natural gas power generators with an emergency diesel generator, a natural gas compressor station, maintenance facilities, employee accommodations, and offices.
- **Fuel storage** consisting of four 1.25 million gallon tanks inside a lined and bermed area

Transportation Corridor (see Figure 3)

Road System Connecting Amakdedori Port to the Mine Site

- **Private, double-lane road extending 30 miles south from the Mine Site to North ferry terminal** on the north shore of Iliamna Lake.
- **Private, double-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port** on Cook Inlet.
- **Eight bridges**, six of which would be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There would be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River.
- Daily transportation of concentrate, fuel, reagents and consumables would require **up to 35 truck round trips per day for each leg of the road**, including three loads of fuel per day.
- **Village surface road connections** from the Transportation Corridor to Iliamna, Newhalen, and Kokhanok.

Ferry Service and Terminals on Lake Iliamna

- **18 mile ferry crossing of Lake Iliamna.**
- **All-season icebreaking ferry** with 12 crew members.
- **Inbound supplies from the Amakdedori Port to the Mine Site** and **outbound copper-gold and molybdenum concentrates, backhauled waste, and empty containers.**
- **Average of one round trip ferry per day.**
- **Two ferry terminals** with 40 foot rock/aggregate causeway, container handling and storage facilities, office and maintenance buildings, and local power supply.

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Natural Gas Pipeline System (see Figure 1)

- **188 mile 10-12 inch diameter natural gas pipeline**, buried 3 feet deep onshore, in five segments:
  - starts on the eastern shore of Cook Inlet at Happy Valley near Anchor Point along the Sterling Highway.
  - 94 mile subsea pipeline crosses Cook Inlet to the Amakdedori Port Site.
  - 35 mile buried pipeline adjacent to the road from port site to south ferry terminal.
  - 18 mile pipeline across Lake Iliamna.
  - 30 mile buried pipeline adjacent to the road from north ferry terminal to Mine Site.
- **Two gas fired compression stations**, one on the eastern end at Anchor Point, and one at the Amakdedori Port.
- **Buried fiber optic cable** adjacent to pipeline.

PROJECT CONSTRUCTION

- **The project would take approximately four years to construct,** on four main project components – Mine Site, Amakdedori Port, Transportation Corridor, and Pipeline.
- **Transportation infrastructure to access the site is the first step**, along with Pre-production Phase environmental protection systems and temporary facilities that support construction crews (camps at port site, mine site, ferry terminals).
- **Initial access to the mine site within one year,** followed by earthworks, plant facilities, tailings storage embankments, stockpile foundations/liners, and water treatment facilities.
- **Natural gas line installation** will occur during the second and third construction years.
- **Completion of Pre-production Open Pit, power plant and processing facilities** in year 4.
- **Construction employment** estimated at 2,000 workers.

PROJECT OPERATIONS

- **Project operating life of 20 years**, **three mining phases –** pre-production, production and stockpile reclaim.
- **Conventional open pit mine –** drill, blast, truck and shovel operation.
- **Blasting events –** once to twice a day.
- **Tailings Storage Facility water management –** Control, collection, and recovery of tailings water for recycling or treatment prior to discharge; seepage collection system below impoundment structures; freeboard to contain inflow design flood.
- **Total material mined –** 1.2 billion tons over the life of the project.
- **Mining rate** up to 90 million tons per year, **milling rate** up to 58 million tons per year.
- **Annual concentrate production –** 600,000 tons copper gold, 15,000 tons molybdenum.
- **Operations employment** estimated at 850 workers, two shifts per day, 365 days/year.

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PROJECT CLOSURE

- **Reclamation and closure jurisdiction** – Alaska Department of Natural Resources Division of Mining, Land, and Water, and Alaska Department of Environmental Conservation.
- **Design for Closure** – early consideration of requirements for Closure and post-Closure site management.
- **Segregation of the bulk and pyritic tailings storage cells** to facilitate Tailings Storage Facility closure.
- **Potentially Acid Generating waste rock** backhauled to mine pit for subaqueous storage.
- **Comprehensive water management plan** that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of flow changes on stream flow and fish habitat.
- **Removal of mill and other infrastructure** not required for closure and reclamation.
- **Reclamation of disturbed areas** through grading, use of top soil as need and revegetated.
- **Road system retained** as needed for post-Closure activities and monitoring.
- **Pit lake water quality will be monitored;** water will be treated and discharged before levels approach elevation where groundwater flows outward from the open pit.

For more details, see Attachment D Project Description, Department of Army Application for Permit (POA-2017-271) on www.PebbleProjectEIS.com.

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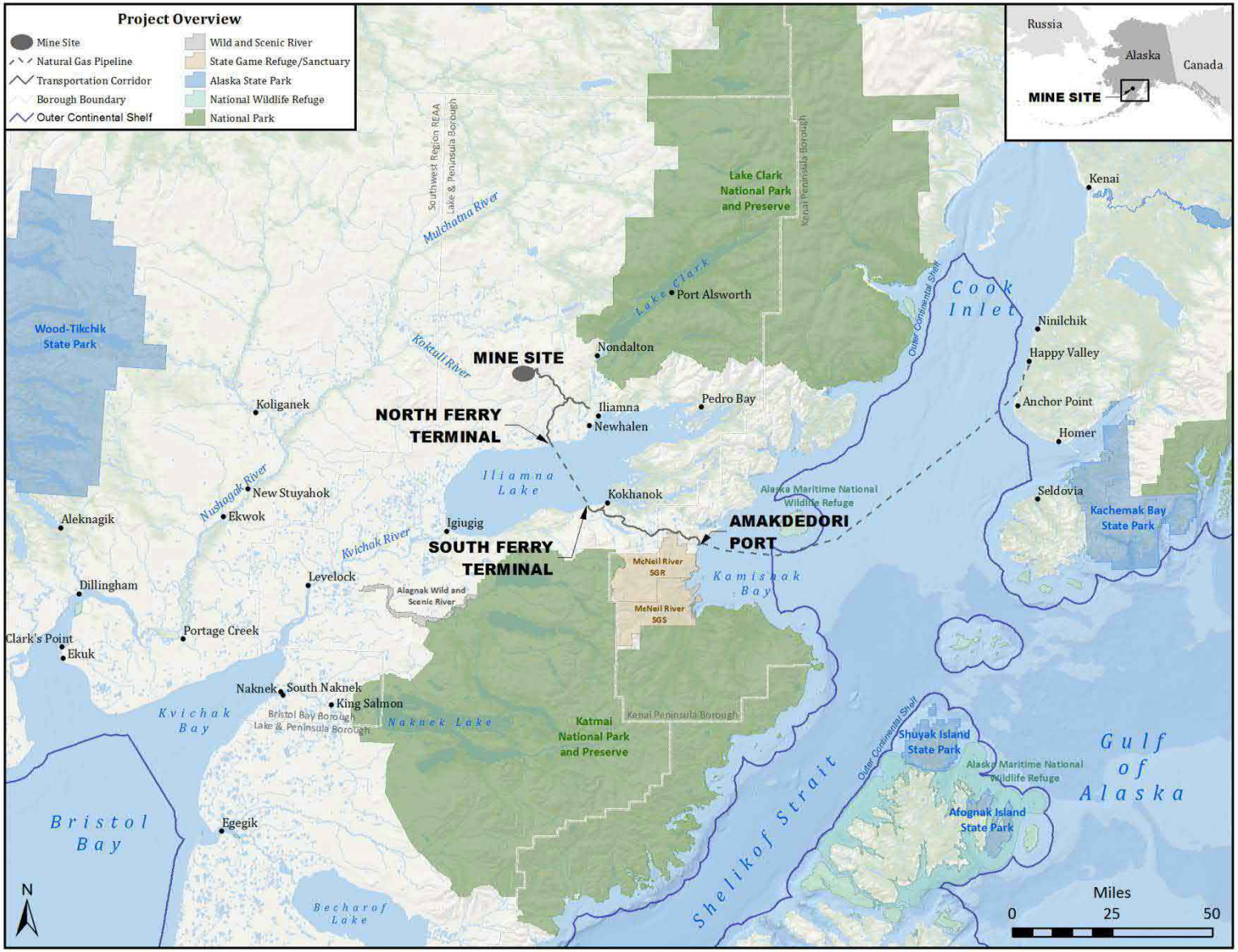

Figure 1. Project Overview

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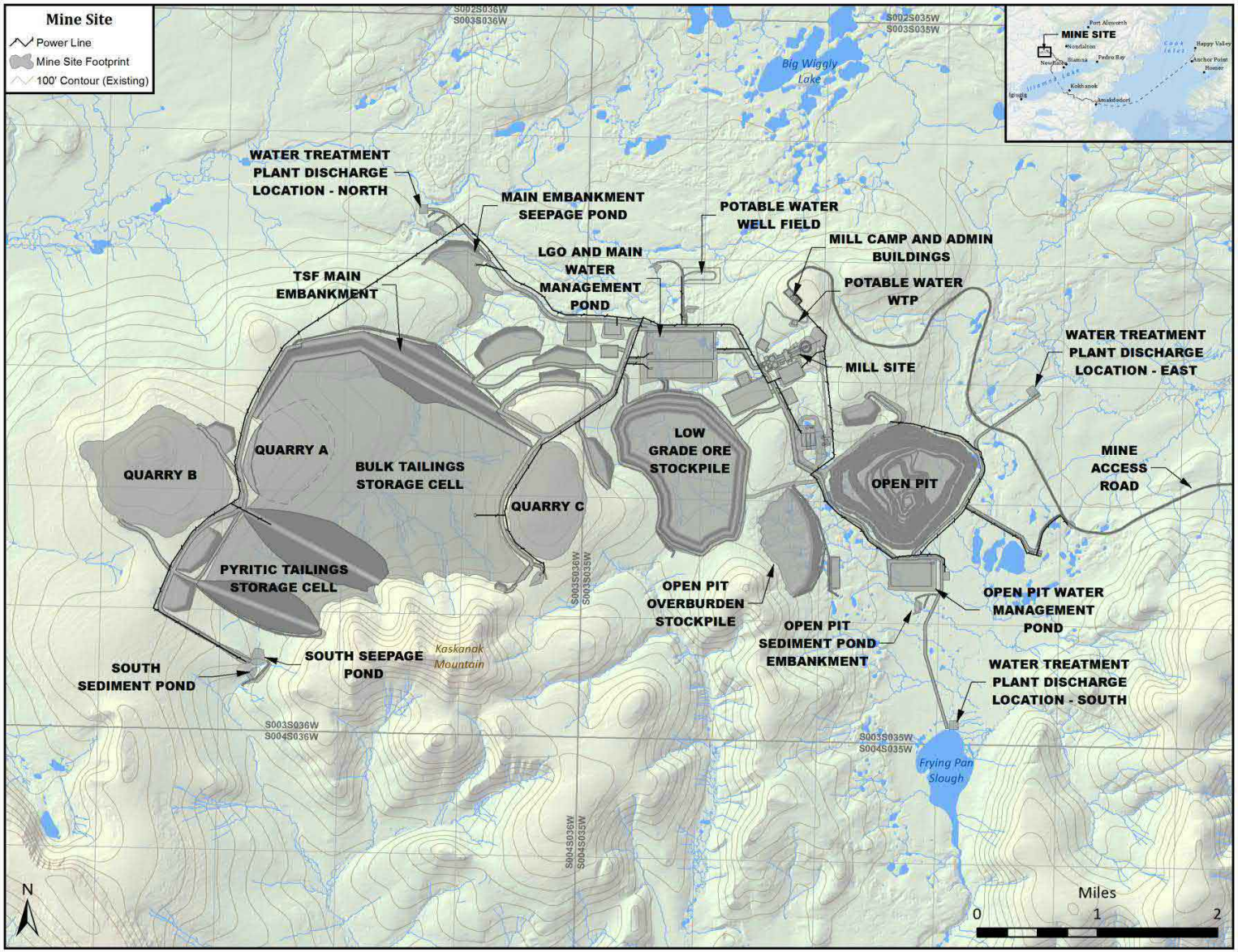

Figure 2. Mine Site and Associated Facilities

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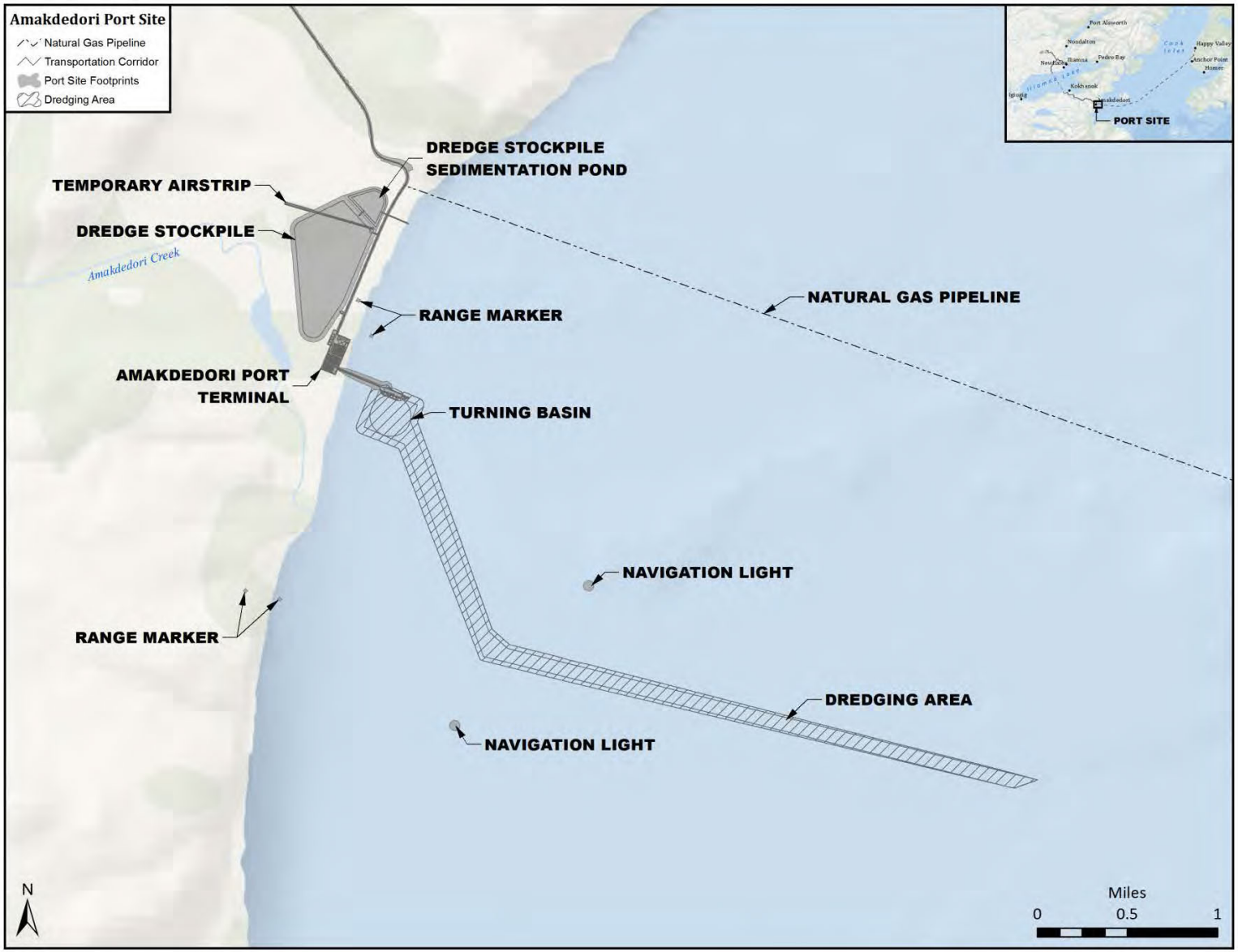

Figure 3. Amakdedori Port Site

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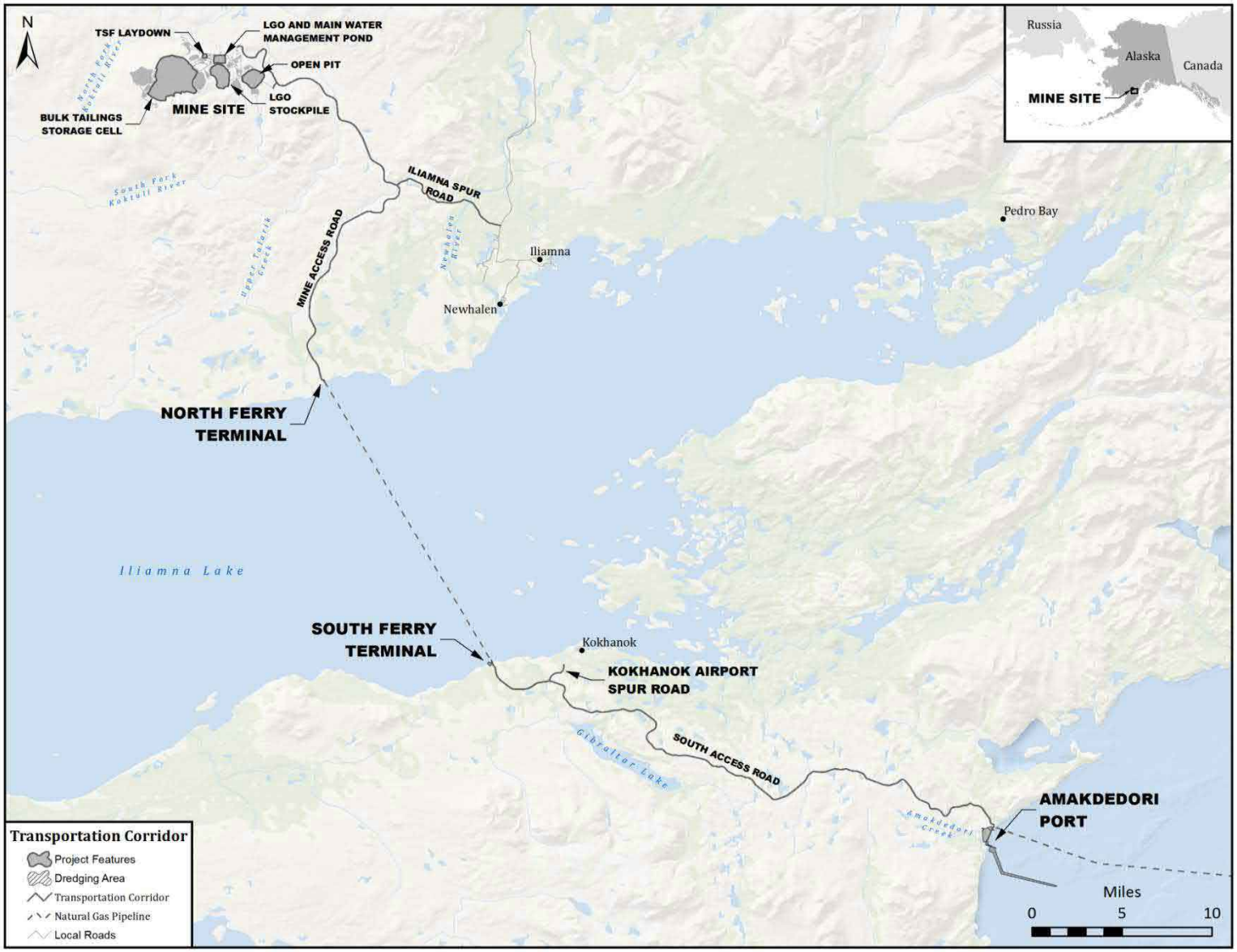

Figure 4. Transportation Corridor

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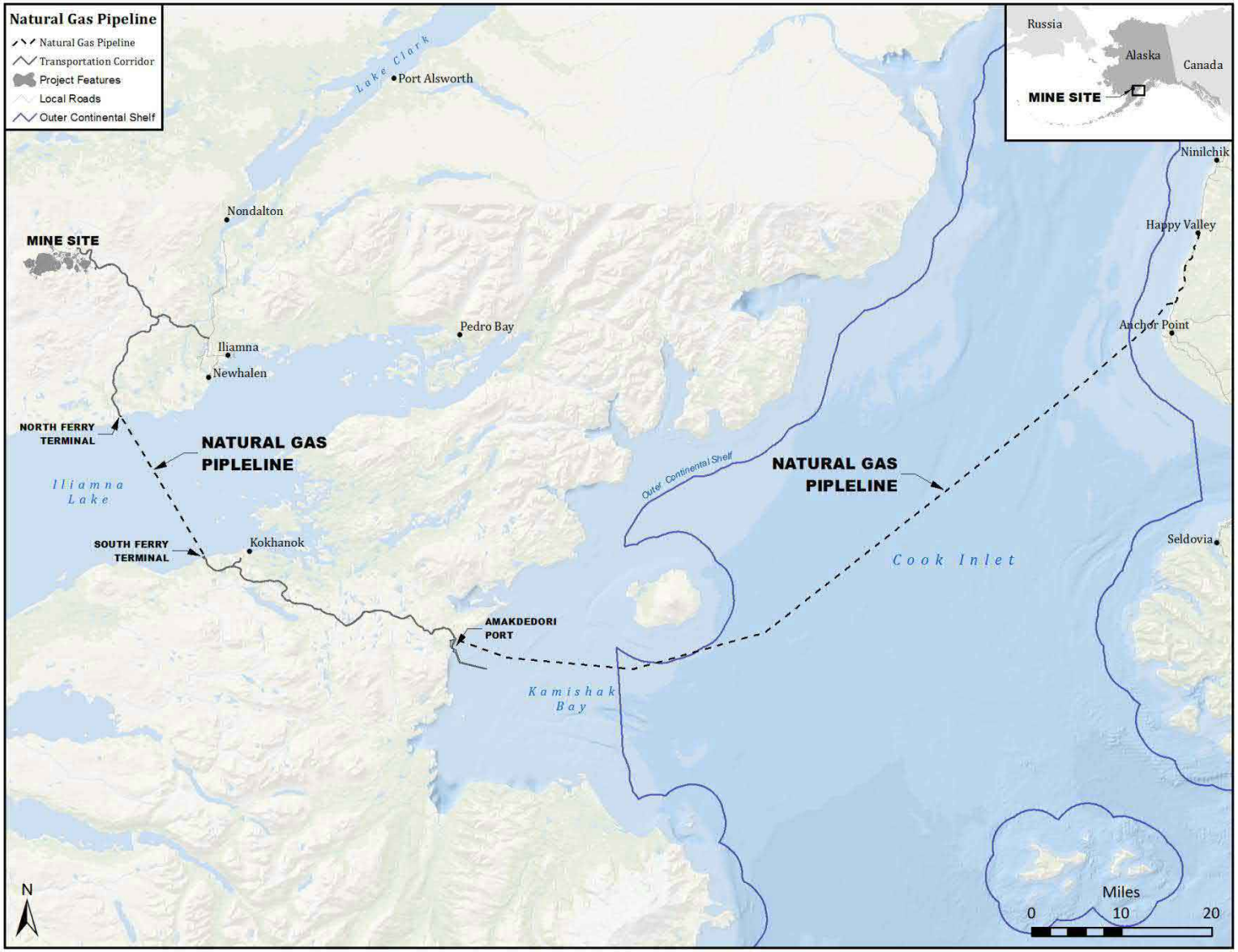

Figure 5. Natural Gas Pipeline

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How Alternatives will be Developed for the Pebble Project Environmental Impact Statement (EIS)

1. Identify need to which the United States Army Corps of Engineers (USACE) – Alaska District is responding and identify the overall project purpose. State the applicant's objectives for the project.
2. Compile a range of alternatives to be considered that meet the overall project purpose with consideration of the applicant's objectives. The alternatives compilation will include the no action alternative, any alternatives considered by the applicant, and alternatives suggested during the scoping process.
3. Determine whether identified alternatives are reasonable in accordance with the National Environmental Policy Act.
    a. Reasonable is based on the consideration of the overall project purpose including stated objectives as well as technology, economics, and common sense.
    b. Determine whether an alternative meets the overall project purpose inclusive of objectives.
        i. Alternatives that do not meet the overall project purpose will be eliminated at this stage.
        ii. Alternatives that meet the overall purpose will move forward.
    c. Alternatives that meet the overall project purpose will be reviewed to determine whether the alternative was available to the applicant during project planning (past 10 years).
        i. Alternatives identified as reasonable but were not available to the applicant will be removed at this time.
        ii. Alternatives that were available will move forward.
    d. Alternatives will be reviewed for technical feasibility (can these alternatives be accomplished using existing technology and equipment?).
        i. Alternatives determined to not be technically feasible will be removed at this stage.
        ii. Alternatives determined to be technically feasible will move forward.
    e. Alternatives will be reviewed for economic feasibility.
        i. Any alternative claimed to not be economically feasible by the applicant will require an economic analysis to support statement.
        ii. An alternative proven to not be economically feasible will be removed at this time.
        iii. Alternatives determined to be economically feasible will move forward.
    f. Alternatives will be reviewed using common sense.
        i. Alternatives that increase adverse environmental impacts will be removed at this time.
        ii. Alternatives will also be reviewed for logistical feasibility. Alternatives that are not logistically feasible will be removed at this time.

Identified REASONABLE ALTERNATIVES with significantly LESSER impacts will be evaluated in the EIS along with the NO ACTION alternative and the applicant's PROPOSED alternative.

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How Alternatives are Screened for Practicability

Due to the USACE specific authorities, alternatives must also be screened for practicability. The practicability determination is described below. Ultimately, the USACE must identify the **least environmentally damaging practicable alternative (LEDPA)** in the Record of Decision prior to making a decision under Section 404 of the Clean Water Act.

1. From the identified reasonable alternatives, further identify practicable alternatives in accordance with Clean Water Act Section 404(b)(1) of the Clean Water Act (the Guidelines). The Guidelines state practicable means the project is available and capable of being done after taking into consideration **cost**, **existing technology** and/or **logistics** in light of the overall project purpose including the applicant's objectives. Logistics and existing technology have at this point been screened in our determination of reasonable alternatives and are included below only for completeness and explanatory purposes. *An alternative needs to fail only one practicability factor to be determined not practicable*.
    a. Costs – Cost is analyzed in the context of the overall scope/cost of the project and whether it is unreasonably expensive. This determination is typically made in relation to comparable costs for similar actions in the region or analogous markets. Cost is to be based on an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost must be current with respect to the time of the alternatives analysis. Because one alternative costs more than another does not mean that the more expensive alternative is impracticable. It is important to note that in the context of this definition, cost does not include economics.
    b. Existing Technology – The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available.
    c. Logistics – The alternatives evaluated may incorporate an examination of various logistics associated with the project (e.g., placement of facilities within a specified distance to major thoroughfares, utilization of existing storage or staging areas, and/or safety concerns that cannot be overcome).
    d. Availability – The Guidelines state that if an alternative is otherwise practicable, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, the fact that an applicant does not own an alternative parcel, does not preclude that parcel from being considered as a practicable alternative. This factor is normally a consideration as a logistics and possibly cost limitation.
    e. Two tests are specified in the Guidelines for alternatives when the basic purpose of a project does not require siting within special aquatic sites such as wetlands. The basic purpose of this project is mining. The type of mining proposed (transitional metal-copper, gold, molybdenum) does not require siting within special aquatic sites. Therefore:
        i. It is presumed that alternatives that do not affect special aquatic sites such as wetlands are available

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ii. It is presumed that alternatives in sites that are not special aquatic sites will have a LESSER ADVERSE impact on the aquatic ecosystem

*Once an otherwise practicable alternative has been identified, the applicant (Pebble Limited Partnership) will be required to clearly demonstrate to the USACE that both of these presumptions have been rebutted or the alternative will be considered in the determination of the LEDPA***.**

**All practicable alternatives are also reasonable alternatives.

2. The final step in developing alternatives is to construct detailed descriptions for the reasonable alternatives that have been retained and carried forward for evaluation in the EIS.

How the Public Can Provide Useful Guidance on Alternatives that should be Considered in the EIS

The purpose of scoping is to determine the alternatives that should be considered in the analysis and determine the extent and nature of issues by which each alternative should be evaluated.

Scoping is an important opportunity for all citizens to provide specific suggestions for alternatives that should be considered in preparing the EIS, and issues that should be addressed in that process. The following guidelines may be useful in submitting comments during the scoping period (*examples shown in italics*):

1. Keep in mind the reasonable alternative screening criteria described above – any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (*mining methods, water treatment, tailings management*), the port site, the transportation corridor and modes (*rail*), and the natural gas pipeline.
3. You can suggest changes in location of project components (*road, port site, mine components*).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (*construction of a rail connection may eliminate truck traffic and reduce dust levels*).

The USACE will make the results of the scoping process publically available by publishing the Scoping Report on the project website (pebbleprojecteis.com) and will also communicate information for newsletters.

How Alternatives will be evaluated in this EIS

Once reasonable alternatives have been identified for evaluation as above, the USACE will evaluate each alternative in relation to the following:

- Conservation
- Economics
- Aesthetics

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- General environmental concerns
- Wetlands
- Historic properties (inclusive of sacred sites or areas of community and/or spiritual significance)
- Fish and wildlife values (inclusive of endangered species, marine mammals, fisheries and wildlife)
- Flood hazards
- Floodplain values
- Land use (inclusive of transportation corridors)
- Navigation
- Shore erosion and accretion
- Recreation
- Water supply and conservation
- Water quality
- Energy needs
- Safety
- Food and fiber production (this would include subsistence activities)
- Mineral needs
- Considerations of property ownership
- The needs and welfare of the people

In the EIS, we will develop a framework to analyze each of these issues with emphasis on issues that rise to the highest level of importance.

During scoping, we are also asking you to help us determine which of these factors are of highest concern to you, to provide information of specific concern regarding any factor listed, and to identify any other specific issues that are not listed. As with your comments related to alternatives, please be as specific as possible when identifying other issues or expanding on issues identified above. This will help us develop the analytical framework moving forward.

For alternatives identified as practicable, the USACE will ultimately make the following determinations:

1) Whether the alternative is the least environmentally damaging practicable alternative,

2) Whether the LEDPA will cause or contribute to the violation of applicable state or federal laws, such as water quality standards or the Endangered Species Act,

3) Whether the LEDPA will result in significant degradation of waters of the United States

4) Whether the LEDPA includes appropriate and practicable steps have been taken to minimize the adverse impacts of the project on wetlands and other waters.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component. *For example: pollutant discharge from a source could directly result in lowered water quality.*

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway. *For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.*

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. *For example: wetland fill from one project, combined with the wetland fill from a separate project.*

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What is NEPA?

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA's goal is to help the federal government make decisions with full understanding of the potential environmental consequences associated with federal projects or authorizations. A thorough understanding of consequences allows us to identify potential actions that can be taken to protect, restore, or enhance the environment.

As the USACE prepares to review the submitted permit application, it must conduct a detailed study of:

- how the project will be built,
- the consequences of the project (good or bad) on the environment and for communities,
- alternative ways to develop the project that still meet the project's purpose and needs while better protecting people and the environment, and
- measures that can be taken to avoid or lessen any harmful impacts of the project.

[redacted]

Before a decision is made and throughout its analysis, the federal government must ask citizens to voice concerns and suggest alternatives to ensure decisions on federal actions are well informed.

Steps in the EIS Process



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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of anlaysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. As lead agency, the USACE is responsible for identifying, inviting, and assigning roles to cooperating agencies including agencies that also have permitting decisions to make for the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisiplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide the interdisciplinary team that will develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, developing the Draft and Final EIS, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

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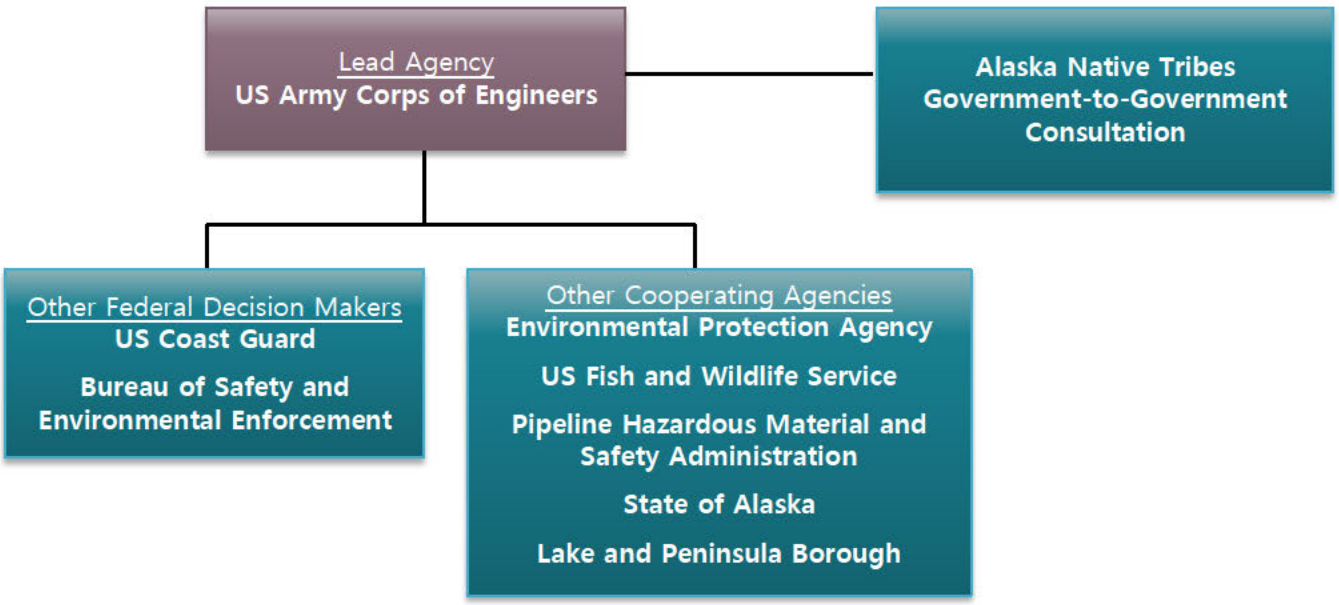
Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirity of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Lead and Cooperating Agencies



EIS Schedule

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began in December 2017, when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership (Applicant). The EIS process will take several months to complete a Draft EIS for public review, with a Final EIS expected within 24 months. The estimated schedule for the EIS is below.

Steps in the EIS Process

Notice of Intent to Prepare an EIS
March 2018

The USACE released a Notice of Intent to the United States Federal Register in March 2018. This initiated the process to prepare an EIS and began the scoping process.

Scoping: Meetings and Comments
April 2018

The 30 day scoping process kicks off on April 1, 2018. Public meetings will be held at specific locations within the Bristol Bay region, and in Homer and Anchorage in April. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Draft EIS
Estimated Jan. 2019

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period. The Draft EIS is anticipated to be released for public review and comment in 2019.

Public Review of Draft EIS: Meetings and Comments
Estimated early 2019

After the Draft EIS is released, the public will have a minimum of 45 days to submit comments. During that time, the USACE will plan public meetings, in the same locations that occurred during scoping, estimated for 2019.

Final EIS
Estimated late 2019

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release in 2019.

Record of Decision
Estimated early 2020

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application. This is estimated to be released in 2020.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. The EIS will be organized into chapters to address the specific requirements in the National Environmental Policy Act (NEPA). By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and providing comments.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consiquences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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How to Comment

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

[redacted]

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings. The website for the Pebble Project EIS is www.PebbleProjectEIS.com.
- **Learn about the steps in the NEPA process** and opportunities for submitting to the U.S. Army Corps of Engineers (USACE). Public comment periods are during scoping, and at the draft EIS.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through April 30.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed before the USACE makes a final decision on the permit application. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS. For a citizen's guide to NEPA, visit https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.

[redacted]

- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Support your statements** with explanations, facts, and references, as appropriate.
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29, 2018.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publically available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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From:

Please place first-class postage here.

Program Manager
US Army Corps of Engineers Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK 99506-0898

fold here



fold here

Frequently Asked Questions

What is the U.S. Army Corps of Engineers' relationship with the applicant?

The U.S. Army Corps of Engineers (USACE) has no relationship with the applicant and is neither for or against the project. The USACE has a responsibility to review the applicant's proposed project with the same objectivity as it would any permit application and make a permit decision under the USACE statutory authorities.

Is the Pebble Project already approved and going to be built?

No.

What is the USACE's role in reviewing this project?

The applicant has applied for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. It is the USACE's responsibility to evaluate their application and ultimately make permit decisions (approval or denial) under the USACE's Clean Water Act and Rivers and Harbors authorities.

Why is the USACE conducting an EIS for this project?

The National Environmental Policy Act (NEPA) mandates an EIS-level of analysis should be conducted for review of any potential federal authorizations that could "significantly affect the quality of the human environment." The USACE has reviewed the permit application and has determined that the proposed project could "significantly affect the quality of the human environment."

Are any other federal decisions required based on the applicant's submittal of the permit application?

Two additional federal agencies have federal decision making authority: the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement, and the U.S. Coast Guard.

Will the USACE seriously consider the No Action Alternative and what factors might lead to its selection?

The USACE cannot be pre-decisional, therefore, the process will be required to analyze and consider the No Action Alternative. In the context of USACE's evaluation, the No Action Alternative constitutes an action that would not include the discharge of fill material into waters of the United States.

What is the role of cooperating agencies that do not have federal decisions to make?

The role of cooperators invited due to specific expertise is to support the lead agency in developing the environmental analysis and providing technical assistance at the request of the lead agency.

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What is the role of federally recognized Alaska Native Tribes in the EIS process?

Thirty five federally recognized Alaska Native Tribes have been asked to consult directly with the USACE as lead agency throughout the entire decision making process to include the development of the environmental impact statement.

When and how will my comments be considered in preparing the EIS?

Public comments can be submitted at any time during the preparation of an EIS. Formal requests for comment occur during two important phases of an EIS:

- During the Scoping Period, the public is asked to comment on the issues and potential impacts that should be addressed in the EIS. The public is also asked to suggest alternatives to the proposed action that should be considered for evaluation in the EIS.
- Once the Draft EIS is released for public review and comment, the public is given the opportunity to submit comments in written form via the project website and orally at public meetings on the Draft EIS.
- All comments submitted will be put into the record, analyzed, and considered in determining the scope and potential impacts within the EIS and in making changes to the Draft EIS during the preparation of the Final EIS.
- The USACE is required to prepare responses to comments submitted on the Draft EIS; comments submitted and response will be included in the Final EIS.

Pebble Project EIS

NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.
2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.
3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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Program Manager
Regulatory Division
US Army Corps of Engineers
PO Box 6898
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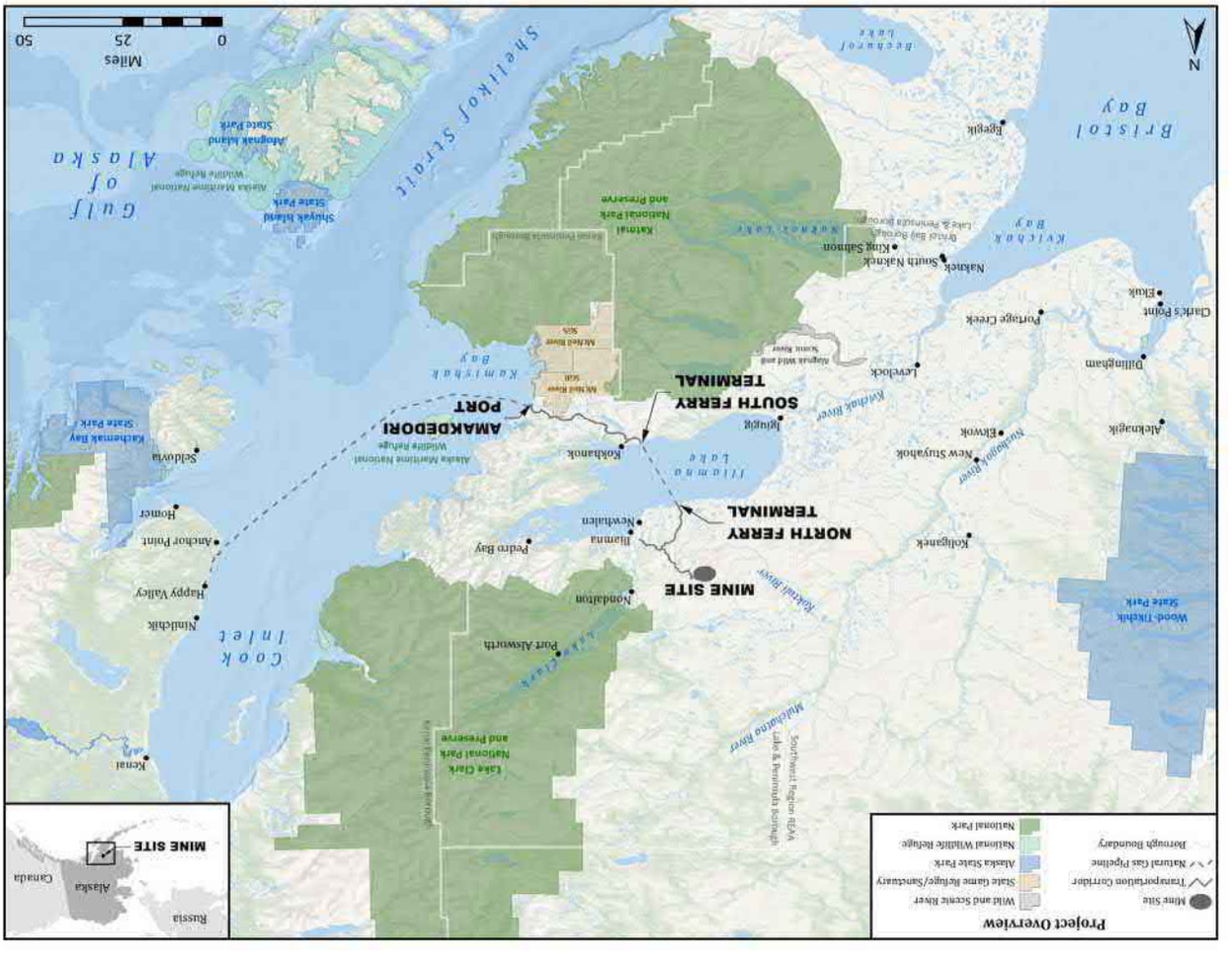

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 08, 2018, April 09, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed _____
Joleesa Stepetin

Subscribed and sworn to before me
this 9th day of April, 2018

_____
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS. Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Naknek	Mon. April 9, 2018	3:30 – 7:30 pm Naknek School
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Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
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700 G STREET STE 500
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		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
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April 15, 2018, April 16, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin
Joleesa Stepetin

Subscribed and sworn to before me
this 16th day of April, 2018

Britney Thompson
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

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Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

AFFP

Notice of Public Meetings

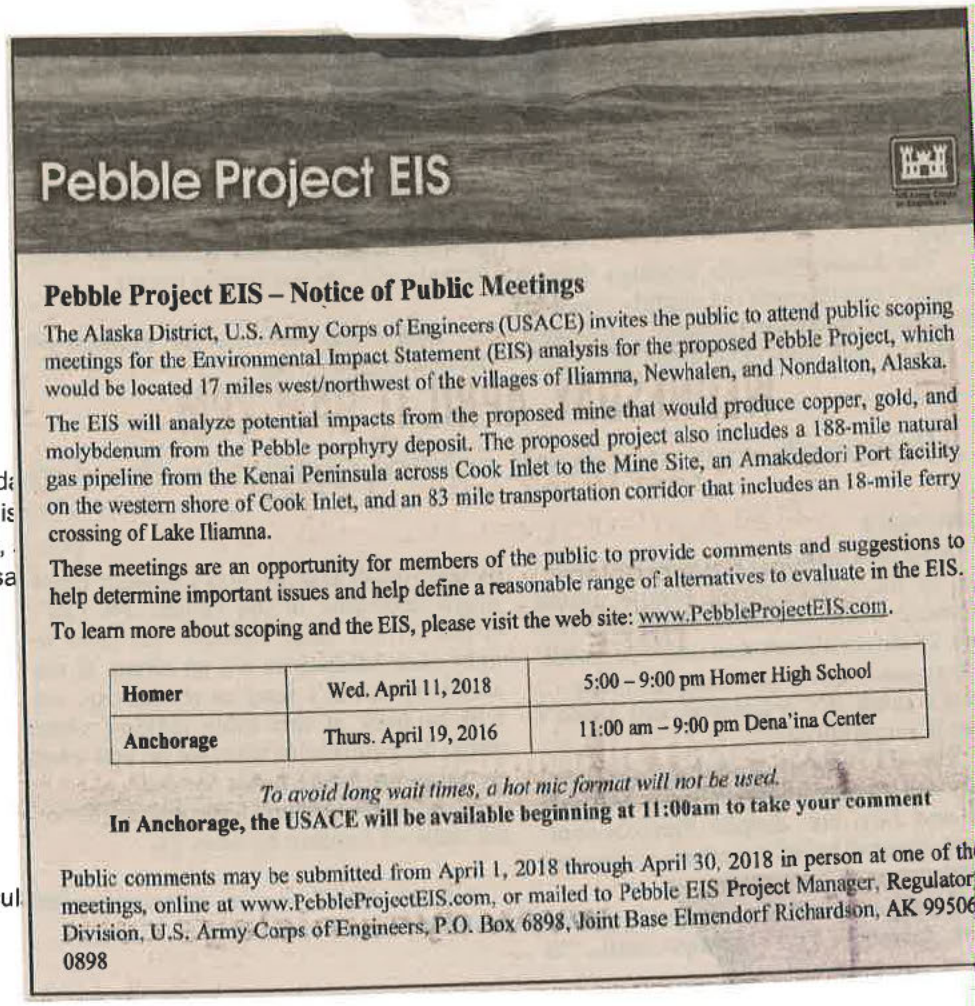
Affidavit of Publication

STATE OF ALASKA }
COUNTY OF KENAI } SS

Denise Reece, being duly sworn, says:

That she is Principal Clerk of the Homer News, a da
newspaper of general circulation, printed and publis
Homer, Kenai County, Alaska; that the publication,
of which is attached hereto, was published in the sa
newspaper on the following dates:

April 05, 2018, April 12, 2018



Pebble Project EIS

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To avoid long wait times, a hot mic format will not be used.

In Anchorage, the USACE will be available beginning at 11:00am to take your comment

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of th
meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulator
Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506
0898

That said newspaper was regularly issued and circul
on those dates.
SIGNED:

Denise Reece

Principal Clerk

Subscribed to and sworn to me this 12th day of April 2018.

Mary Von Beaudion, Notary Public, Kenai County, Alaska

My commission expires: August 29, 2020

MARY VON BEAUDION
Commission Expires
NOTARY
PUBLIC
AUGUST 29, 2020
STATE OF ALASKA

00001218 13002507

Jessica Evans
AECOM
700 G. Street, Suite 500
ANCHORAGE, AK 99501

AMERICAN OVERSIGHT

US Army Corps of Engineers

Invites You to Attend Public Scoping

for the

Pebble Project EIS

Naknek	Mon. April 9, 2018	3:30—7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30—7:30 pm Community Hall
Homer*	Wed. April 11, 2018	5:00—9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30—7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00—4:30 pm Community Building
Nondalton	Mon. April 16, 2018	3:30—7:30 pm Tribal Center
Dillingham*	Tue. April 17, 2018	5:00—9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30—7:30 pm Community Building
Anchorage*	Thurs. April 19, 2016	Comments accepted beginning 11:00 am—9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the Pebble Limited Partnership's proposed project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts, benefits, and alternatives from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Program Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898

Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1.	Maureen Knutsen	self/~~husband~~	(b) (6) [redacted]
2.	HENRY F. Fischer Jr	Self employed	
3.	William REGAN	RETIRED	
4.	Dorothy M Larson	BBNC	
5.	Marilyn A Hansen	housewife	
6.	Paul Hansen Sr	Subsistence/fisherman	
7.	~~Sharon~~ Thompson	resident	
8.	~~Abe~~ Williams	PLP/Self	
9.	Richard Russell	formerly ADF&G but now just for myself	
10.	Peter Andrew	BBNC	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11.	Henry		(b) (6) [redacted]
12.	Ted Shangin		
13.	Joe Chythlook	BBNC	
14.	Shirley	BBNC	
15.	Daniel J. O'Hara	Bristol Bay Bor.	
16.	Everett Thompson	Bristol Bay Fisherman Local	
17.	Dylan Mancuso	Bristol Bay Fisherman	
18.	Mellisa Mancuso	BB resident	
19.	Lindsay Layland	BB resident	
20.	Russell Phelps	BBNC	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. George Wilson Jr	BBFA/personal	(b) (6) [redacted]
22. Russell Nelson	BBNC	
23. John Christensen	Native Village of Port Heiden	
24. Jodie Hazenbag	Naknek	
25. Cody Lawson	Dillingham	
26. MegAnna Schlais	Naknek	
27. Pete Caruso	KS/NAKNEK	
28. CarolAnn Hester	Naknek Set Gillnet Fisher	
29. Beth Hill		
30. Anna Hoover	Egegik Drifter	

Peter Andrews

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Eddie Clark	Egegik Setnetter	(b) (6)
32.	Dale Peters	NO MINE! NO WAY!! NAKNEK SETNETTER LOCAL BUSINESS OWNER	
33.	Veronica Wood	Naknek Resident	
34.	Eseta Sherman	Small Business	
35.	Joshua Gumlickpak	Nushagak Drifter	
36.	Paul Hansen Jr	Fisherman Driftnet	
37.	Rose Chr Hansen	Naknek Resident	
38.	Annette CARUSO	Naknek resident	
39.	Josey Wood	Resident	
40.			

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. William Weatherby		(b) (6) (b) (6) [redacted]
42. Kate Conley	Lake & Peninsula Borough	
43. John Wise		
44. BECKY SAVO	resident BBB	
45.		
46.		
47.		
48.		
49.		
50.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Wesley Foster		(b) (6) [redacted]
52.		
53.		
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60.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61.		(b) (6) [redacted]
62.		
63.		
64.		
65.		
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68.		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify? Y

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Gerald Andrew		(b) (6) [redacted]
2. David McAlister		
3. Paul Chukwak	chukwak	
4. Joe Chythlook		
5. John Nelson Jr	self	
6. Sheila M. Hobson		
7. Jim Tilly	self	
8. Michelle Ravenmoon	Lake & Penn Borough Assembly	
9. Steve Nowaltok		
10. Joe Hyde		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Agnes Mike		(b) (6) [redacted]
12. Marlene Tilly		
13. Rickterff Marsha Rickterff		
14. Matt Matt Rickterff		
15. Kimberly Williams		
16. NATHAN HILL	LAKE + PENINSULA BOROUGH	
17. Trofim Wassillie		
18. Mariana Eknaty		
19. Diedre Hill	B.B.N.C. / land owner	
20. Mollie Gatzke		

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Viola Paul		(b) (6) (b) (6) [redacted]
22. Greg Andrew Jr.		
23. Sergie Chukwak	Levelockvillage	
24. Luke Zackar		
25. Gustie Tallekpalek	Levelock AK	
26. Gilbert Andrew	Kokhanok AK	
27. Laura Evan-Andrew	Kokhanok, AK	
28. Nicll Newyaka Jr.	Kokhanok AK	
29. Avery. Gill	KDLG	
30. Cynthia Olympic-Andrew	Kokhanok	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Alesia Newyak	Kokhanok	(b) (6)
32.	Mary Nelson	Kokhanok	
33.	Fran Andrew	Kokhanok	
34.	Jimmy Ekuty	Kokhanok	
35.	Natalia Wassillie	Kokhanok	
36.	Marisa Hobson	Kokhanok	
37.	Isaiah Mike	Kokhanok	
38.	Joseph Zackar	Kokhanok	
39.	John Chukwak	Levelock	
40.	Martha Kernak	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41.	Alice Cobb	Kokhanok	(b) (6)
42.	John F. Gust	Kokhanok	
43.	Gregory Wassillie	Kokhanok	
44.	Samuel Madrid	Kokhanok	
45.	Anni Hester (Hester)	Kokhanok	
46.	Joe A Paine	KOKHANOK	
47.	Alexander Tallekpalek		
48.	Joe Woods	Kokhanok	
49.	Raymond Apokedak	Levelock	
50.	Nicholas Chocknok	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Brittany Bush		(b) (6)
52. Evangaline Chemaic		
53. Sonia Delkittle		
54. ~~Megan Hoff~~		
55. Samara Chemaic	Kokhanok	
56. Helen Chemaic	Kokhanok	
57. Cara Pellegrino	Kokhanok	
58. Shelby Gallus	Kokhanok	
59. Jordan Putka	Kokhanok	
60. Charene Raehl	Kokhanok	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Test.ify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marlene Nielsen		(b) (6) [redacted]
62. Sharolyn Chocknok		
63. Jootsie Roehl	handed in	
64. Roy Andrew		
65. Kathy Wassillie		
66. Nancy Wassillie		
67. Jesse Davis		
68. Loney Moses		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. DAN BOONE	NONE	(b) (6) [redacted]
2. JACK POLSTER	"	
3. Eileen Sheridan	Cook Inlet Keepers	
4. GARY Sheridan	"	
5. Wilma Williams	me	
6. Royce Page	NONE	
7. JACK ALLARDICE	NONE	
8. JOHN WHITTIER	NONE	
9. Amanda Kelly	none	
10. Janet Fink	none	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Sera Baxter		(b) (6) [redacted]
12. John Allardice		
13. MICHELLE MICHAUD		
14. Chris Perry		
15. Mimi Martin		
16. BRYAN ZAK		
17. SHIRLEY EVANS		
18. Georgeanna Heaverley		
19. Shlomo Gherman		
20. [illegible]		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Benn Levine	none	(b) (6) [redacted]
22. Lindsay Layland	N/A	
23. Emilie Springer	UAF	
24. Martha Crow	fisherwoman	
25. Charles Cramp Jr	farmer-none	
26. Barbara Reilly		
27. Larry Shone	None	
28. Milli Lundgren	Fisherman	
29. Mike Lundgren	Fisherman	
30. Clyde Bogan	Interested Alaskan to save our fishery	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. JEFF MIDDLETON		(b) (6) [redacted]
32. Dennis Andrews		
33. Shelley Gill	Eye of the Whale.org	
34. Michael Yourkowski		
35. Dave Lewis	Salmon Lover	
36. George Matz		
37. John McHall	BSEE	
38. MATT HAKALA		
39. Loretta Brown	Salmon State	
40. Jessie Nelson	Cook Inlet Aquaculture Lower Inlet Setter	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Beaver Nelson	Cook Inlet seiner	(b) (6)
42. Brad Cameron	Sportsfisherman	
43. Janette Latimer	Nurse	
44. Lisa Krebs	Bristol Bay Fisherman	
45. Ricky Carroll	Tender owner in B. B.	
46. George Smallwood	Keeper	
47. Marika Carey		
48. Shirk Carey		
49. Kyle Schneider	Sportfisherman/Educator	
50. Donna Adarhold	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Charlie Franz		(b) (6) [redacted]
52. Claire Neaton	comfish	
53. Jim PLYMIRE	BEAR COVE FISHERIES LLC	
54. Jinky Handy		
55. Malcolm Milne	North Pacific Fisheries Assoc.	
56. Revelle Russell	North Pac Fisheries Assoc UCIDA	
57. Jennifer Hakala	NPFA	
58. GARY AULT		
59. Andrew Snegirev		
60. Jaime Gable		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Jon James Sharp	human	(b) (6) [redacted]
62. Chessie Sharp		
63. Laura McIntoe		
64. MARK MASSIGI		
65. Reba Temple	fisherman	
66. RON KEFFER	CAN	
67. Carolyn Maclow	teacher/salmon advoca	
68. STEVE BAIRD		
69. Jane Miles		
70. Catie Bursch	Fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Wendy Wayne		(b) (6) [redacted]
72. Lolita Brache		
73. Tess Dally		
74. Charles Lindsay	VCIDA	
75. Renie Cannava		
76. Peter Cannava		
77. Joey Kraszeski		
78. Solstice Kraszeski		
79. LOGAN SANDER		
80. Barb Buzzelli Aust		

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. PAT & Lyle Bellamy		(b) (6) [redacted]
82. Cheryl Rykaczewski	MARICULTURE OYSTER FARMER – ASSN.	
83. McKIBBEN JOCKINSKY	HOMER NEWS/ PEBBLE LITTER	
84. Sharon Brooks	resident	
85. Laura Luttrell		
86. ROB LUND	RESIDENT	
87. Karen Murdock	resident	
88. Thomas McDonough	resident	
89. Wesley & Sharon Henny	resident	
90. LuAnne M. Nelson	resident	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. Brandon Hill	Cook Inletkeeper	(b) (6) [redacted]
92. Tim Scheffel DO	Private-Healthcare	
93. Stu Schmutzler	private	
94. Amanda Campbell		
95. Sean Campbell		
96. Kathryn Carsson	private	
97. Mako Haggerty	self	
98. Amy Christiansen	self	
99. Shevawn Miller	self	
100. Amy Woodruff	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. BRENDA DOLMA	Alaskan (self)	(b) (6)
102. DREW SMITH	ALASKAN	
103. Erin Knudtson	"	
104. Patricia Cue	Conservat Kachemak Bay Society	
105. DINA SHERMAN	ALASKAN	
106. Tim Steinberg	Alaskan	
107. Laurie Daniel	Alaskan	
108. Katie Dawson	Alaskan	
109. Tammy Carmack	Alaskan / touris	
110. David Schauble	Alaskan	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Philip Brudie	local fisherman	(b) (6) [redacted]
112. Joe Svymbersky	Local fisherman	
113. Diane Szymbersky	business owner	
114. Roberta Highlands	Kachemak Bay Conservation Society	
115. Ernest Sweja	Local	
116. Bill Wiehe	Local	
117. Leon Smith		
118. Trisha J. Davis	Superfund Site Survivor	
119. Mark Munro	Fisherman Bear View Air Taxi	
120. Matthew Martushev	Commercial fisherman	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. NATALIA MCCANN		(b) (6) [redacted]
122. John Mink		
123. SARAH ROBERTSON	HOMER BIRTH & WELLNE	
124. GLENN CALDWELL		
125. Jeff Dean		
126. Skywalker Payne		
127. Daniel Layland	COOK INLET RESIDENT 35yr Bristol Bay Sumer	
128. DAVE BACHRACH		
129. Doug Reid		
130. Deborah Smith	Cook Inlet Keeper Supporter	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Lynn Temple		(b) (6) [redacted]
132. MARY FRISCHE		
133. KARA CLEMENS		
134. AndreaVanDinther	Bear Guide	
135. Sofia Lobay		
136. Isabella Lobay		
137. Hudson Lobay		
138. Joe Lobay		
139. Jeanne Parker	teacher	
140. Russell Miller		

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. ALISON OTTARA		(b) (6) [redacted]
142. Miranda Weiss	Citizen voter mother	
143. GREGORY FRIES	VOTER/CITIZEN	
144. Morgan Edminster	Fisherman/voter/citizen	
145. EDWIN O. KILCHER	COMMERCIAL BARGE & BUSINESS	
146. Charlotte Adamson	Farmer	
147. Francie Roberts	Citizen	
148. LACEY VELSKO	COMMERCIAL FISH	
149. Penelope Haas	ADF&G/Commercial Fishing	
150. Todd Gustafson		

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Mark Schollenberger		(b) (6) [redacted]
152. RICHARD HARNESS	SEASIDE ADVENTURE	
153. TORREY SHORT	Wildland Firefighter	
154. ELAINE BURGESS		
155. Dorla Harness	citizen	
156. Cynthia Morelli	fish eater	
157. Lynn Takeoka Spence		
158. CHERYL BAECHLER	HOMER citizen Landowner	
159. Tim Whip		
160. JACK CUSHING	HOMER CITIZEN	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Susan Cushing	Homer Resident	(b) (6) [redacted]
162. [illegible]	Homer Resident	
163. Shannon McBride-Morin	Kachemak Bay Wilderness Lodge. Homer	
164. Lars	Homer Resident	
165. Ben	Homer Resident	
166. Maggie Goedeke	Homer Resident	
167. Robert Johnson	Alaska resident, fisheries biologist, tribal employee	
168. Monica Zappa	Ninilchik, AK setnet	
169. Peter Andrew	BBNC	
170. Rika Mouw	resident	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. JENIFER DICKSON	HOMER	(b) (6) [redacted]
172. Sherri Burt	Seldovia	
173. PEGGY PAVER	HOMER	
174. Aaron Ford	Homer	
175. Nicole Arevalo	myself	
176. JUDY GONSALVES	BRISTOL BAY FISHERMA HOMER RESIDENT	
177. Charlie Christoffersen	Kenai	
178. Zenovia Prokopiof-Tallekpalek	Levelock	
179. Jordan Jackinsky		
180. Brad Thornburgh	Homer	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181. Betty Siegel	–	(b) (6) [redacted]
182. Daniel Del Missier		
183. Stephanie Zuniga	—	
184. Wes Schacht	Homeroid	
185. Jodi Andrews		
186. Christine Kulcheski		
187. Mikee Flora	Bristol Bay Fisherman	
188. Taylor Andrade	Homer Resident employed in Tourism.	
189. Kyla Dammann		
190. Anne Wieland	—	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191.	BOB MOORE	AK RESIDENT 48 yrs.	(b) (6) [redacted]
192.	Mercedes Becker	Ak resident 21 yrs	
193.	Karen Northrop	AK resident 21+yrs	
194.	Ruby Haigh	AK resident 66yr	
195.	Carrie Oats	Ak resident 19yrs.	
196.	Cal Loomer	AK Resident	
197.	PETE BECK	AK RESIDENT	
198.	TRISH BOYER	AK RESIDENT	
199.	Michael Mosley	Ak Resident	
200.	TIM OSMAR	Ak Resident	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201. Beverly Cronen		(b) (6) [redacted]
202. Louis Dupree		
203. Amanda Miotke		
204. Diedre Hill	B.B.N.C.	
205. Karen Schmidt		
206. Kim M'Nett	Kachemak Bay Conservation Society	
207. NANCY HILLSTRAND	PIONEER ALASKAN FISHERIES	
208. Jeffrey Lee		
209. Joey Allred		
210. Karianna Derr	Homer	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211. Timothy Gervais	fisherman	(b) (6)
212. Ruby		
213. Margaret		
214. Meghan		
215. Eileen Mullen	fisherwoman	
216. Martin Renner		
217. Sue Mauger		
218. WAYNE ADERHOLT	—	
219. Anders Gustafson	Bristol Bay Heritage Land Tru Homer Retired Guid	
220. Leah Evans	Homer	

AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
221. Mary Edminster	Homer	(b) (6)
222. Scott Bartlett	Homer	
223. Aimee Sulczynski		
224.		
225.		
226.		
227.		
228.		
229.		
230.		

AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
231.		(b) (6) [redacted]
232.		
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
241.		(b) (6) [redacted]
242.		
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Raymond Wassille		(b) (6) [redacted]	
2. Tasha Hobson	Student		
3. Wyatt Wassilie			
4. Lem Batchelder		(b) (6) [redacted]	
5. Greg Anelon	self		
6. Myrtle Anelon	INL		
7. Ethel Adcox			
8. James R Lamontsa			
9. Verna Kolyaha	Pedro Bay		
10. Wade	Student		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Benfoss	Pedro Bay	(b) (6) [redacted] (b) (6) [redacted]	[redacted]
12. Avery Lill	KDLG		
13. Keith Jensen	Pedro Bay		
14. Kara Jensen	Pedro Bay Tribe		
15. Wynn Knighton	Pedro Bay		
16. Molly Dischner	UTBB		
17. Ira W. Nickoli Ira Nickoli	none		
18. Terry Wassillie	Newhalen Tribal Council		
19. Samantha Herrick	Pedro Bay		
20. Mike Clark	Iliamna		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Larry J. Hill	—	—	[redacted]
22. RANDY ALVAREZ			
23. Heather Mase	—		
24. Manuel Anelon			
25. Kim Williams			
26. Chas Anelon			
27. Alex Wassilie			
28. Lisa Reimers			
29. [illegible]			
30. Lorene Anelon			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Nathan Kilbride	—	(b) (6) [redacted] (b) (6) [redacted]	[redacted]
32. Maxine Wassillie			
33. Lydia Olympic	—		
34. Joe Chythlook	BBNC		
35. Russell Nelson	Resident of BB		
36. Norman Van Vactor	Bristol Bay Economist		
37. Margie Olympic	Newhalen		
38. Agnes Ryshansky	Newhalen		
39. Chip Embretson	Iliamna		
40. Harvey Anderson	Iliamna Natives		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Bill Cornell		(b) (6)	
42. Joanne Wassillie			
43. Annie Wassillie			
44. Cathleen Gust			
45. Sheena Ishnook			
46. Sarah Armstrong			
47. Tim Andrew!			
48.			
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

Father Alexie YES ✓

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. John Hanson Sr.	NSTC	(b) (6) [redacted]	(b) (6) [redacted]
2. (Wally) Wassilie Gust Sr	New Stuyahok Traditional Council		
3. Blunka Stephan Blunka			
4. Randal A Hastings	community member		
5. Wonhola Adrian Wonhola	community member		
6. Timothy Wonhola	" "		
7. Mike Oyaluk	" "		
8. John Hanson Jr	" "		
9. Kim Williams			
10. Tatianna Oyaluk			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Gustie Kusma		(b) (6)	
12. Moxie Andrew Jr.			
13. Mathona Gust			
14. MaryAnn Gust			
15. Evan Kusma Sr.			
16. DENNAS Andrew			
17. Bobby Larson			
18. Thomas Tilden			
19. Tatianna Gumlickpuk			
20. Charlie & Gumlickpuk			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Myrtice Evan	Nunamta Aulukestai	(b) (6) [redacted]	
22. Joe Chythlook	BBNC		
23. Gusty S Blunka Sr			
24. Wass Neketa Sr.			
25. Mary Workola			
26. Andrew Wyason			
27. Peter Christopher Sr.	Stuyahok Ltd.		
28. Lucas Barr	pupil		
29. Marie Paul	BBNC		
30. Alannah Hurley	UTBB		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	~~Are you planning to comment?~~
31. Lindsay Layland	NTBB	(b) (6) [redacted]	[redacted]
32. Frances A. Nelson	New Koliganek Village Council		
33. Jenn McBrown Jen tell	New Koliganek Villiage council		
34. Mary Ann Wassilie	New Stuyahok		
35. Michael Gust			
36. Matrona Andrew			
37. Irene Wonhola			
38. Natalia Christopher	New Stuyahok		
39. Natalia Osyaluk	New Stuyahok		
40. Glen Olympic			

Glen Olympic

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Pebble Project Environmental Impact Statement

US Army Corps of Engineers

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Natalia Wassilieff		(b) (6) [redacted]	
42. Blunka Wassilieff Sr			
43. Bjorn Olson	~~BBWFBB~~		
44. Wassilie Andrews			
45. Harvey Demantle			
46. SERGIE IVALUK			
47. Annie Chunak			
48. Ivan Blunka			
49. Thomas Woodman			
50. L. Alexie Askoak			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Nina P. Gust		(b) (6) [redacted]	
52. James Acoral			
53. mike yuralik			
54. Phillip Pavella			
55. Michael P Gunlickfish			
56. Gustie Hanson Sr			
57. Peter Oyaluk			
58. Demtri Gust			
59. John Wonhola			
60. Wassillie Blunka			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok 13

~~Newhalen~~ – April ~~12~~, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
~~51.~~ 61 Nancy Waskey		(b) (6)	
~~52.~~ 62 Delores Larson			
~~53.~~ 63 Tim Pavella			
~~54.~~ 64 Faith Andrew			
~~55.~~ 65 Mary Olympic			
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Luther E. Hobson Jr.	R	(b) (6)	
2. Charlotte Ballenbe			
3. Christina Salmon	Lake & Penn ~~Nda~~ Borough Assembly		
4. Jackie C Hobson		(b) (6)	
5. John B. Branson			
6. Michelle Ravenmoon	Lake & Penn & Borough Assembly		
7. Tim Vogel			
8. DARcelle BALLUTA	Lake & Pen		
9. Paul Hobson SR.	Hobson SR.		
10. June Tracey			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ventura Samaniego	Kijik Corp.	(b) (6) [redacted]	
12. Billy Trefon Jr	Nondalton Tribal Council		
13. Timothy Hobson	None Nondalton		
14. George Alexie	" "		
15. Natalia Martila	Nondalton Tribal		
16. Elizabeth A. Ralkta	" "		
17. Virginia Delkittie	Nondalton		
18. Melvin Trefon	NONDALTON		
19. Clara Trefon	Nondalton		
20. Louis Weedman	Nondalton		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Clarence Delkittie	Tribe	(b) (6) [redacted]	
22. Bjorn Olson	UTBB		
23. Alannah Hurley	UTBB		
24. Wesley Sammis Farlaney	NARF		
25. Molly Dschner	UTBB		
26. Will Evanoff	Tribal Council Nondalton		
27. Kristy Jeffries	Tribal Council		
28. Sarah O'Neal	UW		
29. Briana Delkittie	Nondalton Tribal Council		
30. Nenita Wilson			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Michelle Wilson	Nondalton Tribal Council	(b) (6)	
32. Sunflower Dekkittie	Nondalton Tribal Council		
33. Darlene Nolan	NND T. Member		
34. Randy Kakaruk	Nondalton Tribal Member		
35. Fawn Silas	———		
36. TeresaRickteroff	P-O Box 73 " "		
37. Illeah Aaberg	PO Box 43		
38. Chris Crookham	PO Box 43		
39. ROB KAKARUK	PO Box 116		
40. Harry Harshakoff	PO Box 35 Kvik		

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US Army Corps of Engineers®

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Kim Williams	BBNC	(b) (6) [redacted]	
42. Ivon Washington			
43. Eric Tallekpalek			
44. Myrtice Evalt	Nunamta Aulukestai		
45. Mark Noden	[illegible]	(b) (6) [redacted]	
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AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Alannah Hurley	Yup'ik	(b) (6)	
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AMERICAN OVERSIGHT

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Marie Paul	BBNC	(b) (6) [redacted]
2. Bertha Parian-Lockuk	UTBB	
3. Ishnook Myrtle Ishnook		
4. William P Johnson		
5. Helen Aderman	BBNA Marine Mammals	
6. Wassiliisia Bennis	BBNA -CAO	
7. Wassiliisia Bennis	self	
8. DAVE BOULKER	-	
9. Patricia Treydte	Self	
10. Everette Henderson	BBNC	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Karl Hill		(b) (6)
12. Sam Eveslage		
13. Tom Eveslage		
14. Deborah McLean		
15. Katherine Carscallen		
16. Jimmy Coppchosh		
17. Susie Jenkins-Brito		
18. Courtenay Carty		
19. Violet King		
20. Tod Larson		

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US Army Corps of Engineers

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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Deven Lisac		(b) (6) [redacted]
22. Elaine Phillips		
23. Stephen Boyd		
24. Myra Olsen		
25. David Wetter		
26. Morgan Allen		
27. Christopher Manos	BTBNA	
28. Shannon Clouse		
29. Kalin Clouse		
30. Kolbi Clouse		

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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Avery Lill	KDLG	(b) (6) [redacted]
32. Betty Gardiner	CPVC	
33. Annalee Carty		
34. Charlene Savo		
35. Harry Wassily SR.	Clark's Pt. Tribal.	
36. LaRhae Angasan		
37. Cory Angasan	N	
38. [illegible]		
39. Andy Aderman		
40. Alisha Folsom		

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US Army Corps of Engineers

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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Bruce Ilutsik	Aleknagik Traditional Council	(b) (6) [redacted]
42. Jean Barrett	City of DLG	
43. Hailey Carty		
44. Lara Collis		
45. Nicole Krause		
46. Susanna Henry	U.S. Fish & Wildlife Service	
47. Malcolm Wright		
48. Bernina Venua		
49. Cory Howard		
50. Steve Wassily		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Reyton Woods		(b) (6)
52. Andrea Hurley		
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Cate Gomez		(b) (6)
132. ROBERT HIMSCHOOT		
133. Doug Johnson		
134. Gayla Hoseth		
135. Terry D. Mann		
136. Valencia Mann		
137. Thomas Tilden		
138. Dan Dunaway	me	
139. Gary Cline	Self	
140. Thomas Woods	Self	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
251. Mark Nolen		(b) (6)
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
371. Ethel J. Nelson		(b) (6) [redacted]
372. George L. Nelson		
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Dillingham – April 17, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
481.	Tim Williams	BBNC Curyung Tribe	(b) (6)
482.	Cody Larson		
483.	Diane Wetter		
484.	Jackie Nelson		
485.	Chonice Johnson		
486.	Vernon Von Victor	Bristol Bay Economic Dev. Corp	
487.	Mike Davis	UAF	
488.	Ingrid Andrew	interested	
489.	Wassillie Tikden	BB	
490.	Moses L Kritz III	B B	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
491. Sharon Clark	self nonpte	(b) (6) [redacted]
492. MARK LISAC	Self	
493. Alannah Hurley	UTBB	
494. Glen Szymoniak	school Dist	
495. Izzy Ross	self	
496. Susan Flensburg	self	
497. Frederick Angasan III	Self	
498. Greyy Maxmiller	Self	
499. Richard Alto	self	
500. Page O'connell	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
501. Hannah Hendrickson		(b) (6) [redacted]
502. Rebekah Fonkert		
503. Holly Wyatt		
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181.		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191.		(b) (6) [redacted]
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
231.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
281.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
351.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431.		(b) (6)
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461.		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
471.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Betsy Hostetter (Hostetter)		(b) (6)	(b) (6)
2. Andy Smith			
3. Nick Smith			
4. [illegible]	JTBB		
5. Christina Salmon			
6. Keilan salmon			
7. Karl Hill	IVC		
8. Glen R. Alsworth Sr. / Glen R. Alsworth Sr	LP Board		
9. Everette Anderson			
10. Renae Zackar			

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Lindsay Laykind	VTBB	(b) (6)	
12. RANDY ALVAREZ			
13. Dannika Salmon	NA		
14. JON Alvarez			
15. Audra Gooden			
16. Michelle Powermoon			
17. Charlie Gifford			
18. Whit Gooden			
19. John Chukwak			
20. Gregory Zacker			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Jeff Bringhurst	Self	(b) (6) (b) (6) [redacted]	
22. Olga Zackar			
23. Anna Perino	Self		
24. Avery Nelson			
25. Tanya Salmon	Self		
26. Jerm Gooden			
27. Annie Wilson			
28. Julie Salmon	self		
29. Alicia Zackar	Self		
30. Olivia Sinyon	self		

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Alice Zackar	self	[redacted]	
32. Dallia Andrew	self		
33. Ruth Simyon	self		
34. Sharolynn Zackar	self		
35. Yako Nicholi	Self		
36. Sandra Alvarez	Self	[redacted]	
37. Daniel Chythlook	Self		
38. DENNIS Andrew Sr	self		
39. Sherry Nelson	self		
40. Alexanna Salmon	self		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Lydia Olympic	—	(b) (6) [redacted]	[redacted]
42. [illegible]	Self		
43. Tatyana Zaccha	Self		
44. Terek Anelon	own		
45. Sheryl Wassillie	own		
46. Steve Routh			
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Myrtle Evalt	Nunamta Aulukestai	(b) (6) [redacted]	
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US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Mischa F. Hanna	BBNC	(b) (6) [redacted]
2. Gina M. Wardell		
3. Charles McKee c/o P.O. # 243053	self	
4. Taryn Kiekow Heimer	NRDC	
5. Rick Delkittie Sr.	Nondalton Tribe	
6. Kerry Adler	self	
7. Kim Williams	BBNC / Curyung Tribe	
8. Joseph James	Pan-American Invest mts	
9. Joe Riggs		
10. Dana Stewart	DES.IT	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Mark McCullough		(b) (6) [redacted]
12. RAINBOW AZURE	Turtle Mtn Chippewa & ~~Yakama~~ Yakama Tribe	
13. Jill Burke	Bloomberg ~~BNA~~	
14. Sue Bahn	-	
15. Adrianne Christensen	Pedro Bay	
16. RAYN ABERG	PEDRO BAY	
17. Nelli Williams		
18. Daniel J. Michels	Crystal Creek Lodge King Salmon	
19. Chris Bruns	None	
20. Jenny Weis		

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Tim Sohn	Journalist	(b) (6) [redacted]
22. Ron Benkert	ADF&G	
23. Doug Griffin	Southwest Alaska Municipal Conference - (SWAMC)	
24. Ryan Astalos		
25. Melissa Thayne	Alaskan	
26. Gerald Protzman		
27. Howard I. Grey		
28. Don Perrin		
29. Mariah Oxford	Pebble Watch	
30. MARC LESTER	ANCH. DAILY NEWS	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Anna Kohl		(b) (6) [redacted]
32. Marilyn Houser	None	
33. Emily Fehrenbacher	Salmon State	
34. Eric Booton	Trout Unlimited	
35. Brooke Merrell	NPS	
36. Jim Posey	P.A. LAC	
37. Phil Walczak	KTUU	
38. Carl Portman	RDC	
39. Leslie Tose	USACE	
40. Beth Verga	KTUU-TV	

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Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Elwood Brehmer	ASOC	(b) (6) [redacted]
42. Mary Romero	—	
43. Jeremy Grant	—	
44. Alex DeMarBan	Anchorage Daily News	
45. Jennifer Worabel	Alaska Miners Assoc.	
46. Terry L Seely	Alaskan	
47. Nicole O'Hara	ABC/Fox Alaska	
48. MARIANNA HALL	RDC	
49. Abe Williams	Bristol Bay Fisher	
50. Deantha Crockett	Alaska Miners	

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Public Scoping Meeting

US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Emily Carlson	KTVA	(b) (6) [redacted]
52. John Thompson	KTVA	
53. Rick Halford		
54. Jason Brune		
55. Emily Vullo		
56. Jack Colonell		
57. KRISTEN ULERY		
58. BRIAN KRAFT		
59. Charlotte MacCay		
60. George Edwardson	Self	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. MaryAnn K. Johnson	Portage Creek	(b) (6) [redacted]
62. Charlie Johnson	Portage Creek	
63. Gaylathoseth	Dillingham	
64. Myrtle Ewalt	Dlg	
65. Shayna Wisdom	Fairweather Science	
66. Stephanie Patton	—	
67. LANCE POWELL	—	
68. John Holman	—	
69. Sherry Dugan	—	
70. Carrie Ceal	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Myra Olsen		(b) (6) [redacted]
72. Thomas Rebler		
73. Destinee Holstrom		
74. George Holstrom Jr		
75. Craig Mishler		
76. Molly Vaughan	EPA	
77. Dennis Hyppolite	TY	
78. Agnes Rychnovsky		
79. Marina Barner		
80. Jalen Konukpeok	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Barbara Hood	NA	(b) (6) [redacted]
82. Nancy Pfeiffer	Human	
83. BRIAN BAKER		
84. FRANK WAKE	NONE	
85. JESS HILLYER	NONE	
86. Pat Abney	None	
87. Jamie Dithmas	—	
88. Sheldon Wardell	None	
89. CHRIS WIITA	N/A	
90. NICK Hansen		

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. MARIUS PANZARELLA		(b) (6)
92. Cathe Heroy		
93. Leila Pyle		
94. Karlene Leeper		
95. Kate Sandvig		
96. Russ Miller		
97. Kay Heafner		
98. GLENN M. GUSTAFSON		
99. MIKE COOPER		
100. Julian & Jean		

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Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Kerry Wilkins		(b) (6) [redacted]
102. Kim Ansaknore		
103. Vivian Mendenhall		
104. Andria Agli		
105. Elijah Good-Farm		
106. Travis Rector		
107. Janice Stamper		
108. [illegible]		
109. Jessica Speed		
110.		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Johanna Grasso		(b) (6)
112. Cecilia Kleinkauf		
113. Barbara Crews		
114. Libby Roderick		
115. Kate Nilsson		
116. Rich Stromberg		
117. Laura Sherman		
118. Lucy Terry	Eskimo	
119. BILL JASO		
120. & Susan Hooker		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. Thomas Tilden	self	(b) (6)
122. BROOKS LARSON	self	
123. Tyler Heneghan	Self	
124. RYAN PETERSON	—	
125. Francesca DuBrock	—	
126. Laurie Miller	Self	
127. PAMELA TESCHE	self	
128. Daniel McIntock	Self	
129. Jessi Thornton	Cook Inletkeeper	
130. VICTORIA Lytle	—	

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Ronda Pokupec		(b) (6) [redacted]
132. [illegible]	—	
133. Julie K Wahl	Citizens Climate Lobby Sierra Club AK Center	
134. Barbara Norris	AK Center	
135. Rachelle Griffitts	Student - UAA Environmental Engineering	
136. DAVE COOLIDGE	—	
137. Jeanette LeClair		
138. Wassiliissa Gumbridge		
139. Dr. Stephanie Quinn-Davidson, PhD	self - Salmon/fisheries scientis	
140. Griffin Dunn	Stadeat ES APU	

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Public Scoping Meeting

US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Michelle Leffingwell	Self / Bear Trail Lodge Local fisherman Yoga(+)Ak	(b) (6) [redacted]
142. Margaret M. Anderson	Alaskan	
143. Thomas Harman	Fisherman	
144. Brenda I Waitman	Igiugig Lodge LLC	
145. Norman Straub	Intricate Bay Lodge	
146. Spencer Waitman	Igiugig Lodge LLC	
147. Becky Bitter	Alaskan	
148. David Theriault	Fisherman	
149. Rashad Galimba		
150. Ann James	Born & raised Alaskan	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Karen Button	resident	(b) (6) [redacted]
152. CHRIS KLOSTERMAN	TRYLC AIR ALASKA	
153. Micaela Hogan	volunteer	
154. Susan NIMAN	Resident	
155. Bill Shervanit	self (AK resident)	
156. RICHARD KNIGHT	RESIDENT	
157. Carolyn E. Phillips	None	
158. George Pletnikoff, Jr	Unangax̂	
159. Jessica Barnes	Resident	
160. Brian Coyle	Resident	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Laura Chartier	N/A	(b) (6) [redacted]
162. KAREN GUNDERSON		
163. THOMAS A. SCHWARTZ	N/A	
164. Myranda Walso		
165. Jeff Parker	Attorney for Bristol Bay BOFA/EC	
166. Su Chon	N/A	
167. Dayle Sanborn		
168. Gerard Farkas	Alaska Resident	
169. Steven Silber	Chulitna Lodge -Lake + Penn Borough Resident	
170. Andrew Conrad	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. LARRY RUNDQUIST		(b) (6) [redacted]
172. Steven McNicholas		
173. Derek Hansen		
174. DIANE E. OSTERHAUS		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
381. James Wilson	Mat Su. Bonanch	(b) (6) [redacted]
382. Mary Kay Ryckman	Self	
383. Rochelle Harrison	self grizzlyskins fa	
384. Verna Kolyaha	Pedro Bay	
385. Mark Newman	self	
386. Kelly Kass	Self	
387. Neverley Wake	EPA Tribal Coordinator	
388. Everette Anderson	BBNC	
389. Myrtle J. Lonsdale	CDOK Inlet	
390. Ron Tenny	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391. Sarah E Anderson		(b) (6)
392. Harry M. Walker		
393. C. Steffens		
394. S Rooth		
395. Jennifer Wardell		
396. Brian Kortl		
397. Jeanne Hanson		
398. Sylvia Panzarella	No Pebble Mine!	
399. Lindsey Kenyon	ERM	
400. Oleksandr Lushchyk		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
401. Carolyn Brodie		(b) (6)
402. Erik Koppenol		
403. Ruth R Hamme		
404. Kathrine Corsenstein		
405. CAMILLE COLLINS		
406. MARK Miller		
407. Felicia Miller		
408. Vincent Vet		
409. Riki Lebman		
410. SUEWARD		

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411. Barbara Loutrel		(b) (6) [redacted]
412. Peter F Alward	Alk citizen/resident	
413. Kristen Collins		
414. Sophie Tidler		
415. Shirley Kelly	Bristol Bay Fisher	
416. CHRISTOPHER JOHN ERPELDING	BRISTOL BAY FISHERMAN	
417. PAUL CREWS	Individual	
418. P. Derchick	Individual	
419. Dawnell Smith	Individual	
420. Jane Whitsett	Individual	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421. Lisa Alexia		(b) (6) [redacted]
422. Michael Alexia		
423. Susan Tenwilliger		
424. Jenna DiFolco		
425. Maria Tahenakos		
426. Bryce Niver	No Pebble!	
427 Brian Cantor		
428. JACK FOSTER		
429. Art Allen		
430. Ryan VanderBie		

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US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431. Lindsey Diamond		(b) (6) [redacted]
432. Raymond Kolesser		
433. Oliver Garrett		
434. Elijah Kahula	Save Bristol Bay	
435. R. Lytle		
436. Evan Anderson		
437. Stephan C. Paliwoda	RETIRED ARCHITECT (former Corps of Engineers emplo	
438. Kayla Miller		
439. Kenneth Woodside		
440. Paul Frost		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441. Judy Caminer		(b) (6) [redacted]
442. Lenny Anderson		
443. David J. Haaland	Self	
444. Richard L. Anderson	"	
445. Brad Waitman	Igiugig Lodge	
446. Ming Stephens	None	
447. Regis Pappert	Self	
448. Austin Quinn-Davidson		
449. Rebecca King	Alaskan	
450. Alex Nelsen	Ak Resident	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
451. Kori Blake	Save Bristol Bay	(b) (6) [redacted]
452. James Apone	Save the Earth	
453. Jeanne Stewart	Beluga Whale Alliance	
454. DAVID TARCY	NONE	
455. Erin Borowski	none	
456. Angelica Whitley		
457. Ryan Witten	None	
458. Maya Heubner	none	
459. Darla Munguia	None	
460. Christina Harwell	None	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461.	Kassidy O'Connell		(b) (6) [redacted]
462.	William J. Schrenk	NA	
463.	Robert Wiy	—	
464.	Keenan	—	
465.	Yasuhiro Ozuru	—	
466.	Sam Moore		
467.	Kelly Drummond	—	
468.	Audrey Anderson	—	
469.	John Fowler	—	
470.	Merle Jerue	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
611. Jeremy Tamkin		(b) (6) [redacted]
612. Braelan Michael Welsch		
613. Joel Hadley		
614. Elizabeth Welsh		
615. Gracee Hadley		
616. Carl Johnson		
617. Mika Alexa		
618. Bernhard Richert		
619. Nera Schroeder		
620. Sammie Ellsworth		

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
621.	Carissa Churchill		(b) (6) [redacted]
622.	STEVEN CALLAGHAN		
623.	Adam Kurr		
624.	Breena Keller		
625.	Jessica Henderson		
626.	Abraham Henderson		
627.	Vickie Harman		
628.	Levi Oyster		
629.	E. Madison		
630.	M. Ammann	ne Pebble	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
631. Mckenna Hanson	UAA- alumni	(b) (6) [redacted]
632. Rachel James		
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Anchorage – April 19, 2018

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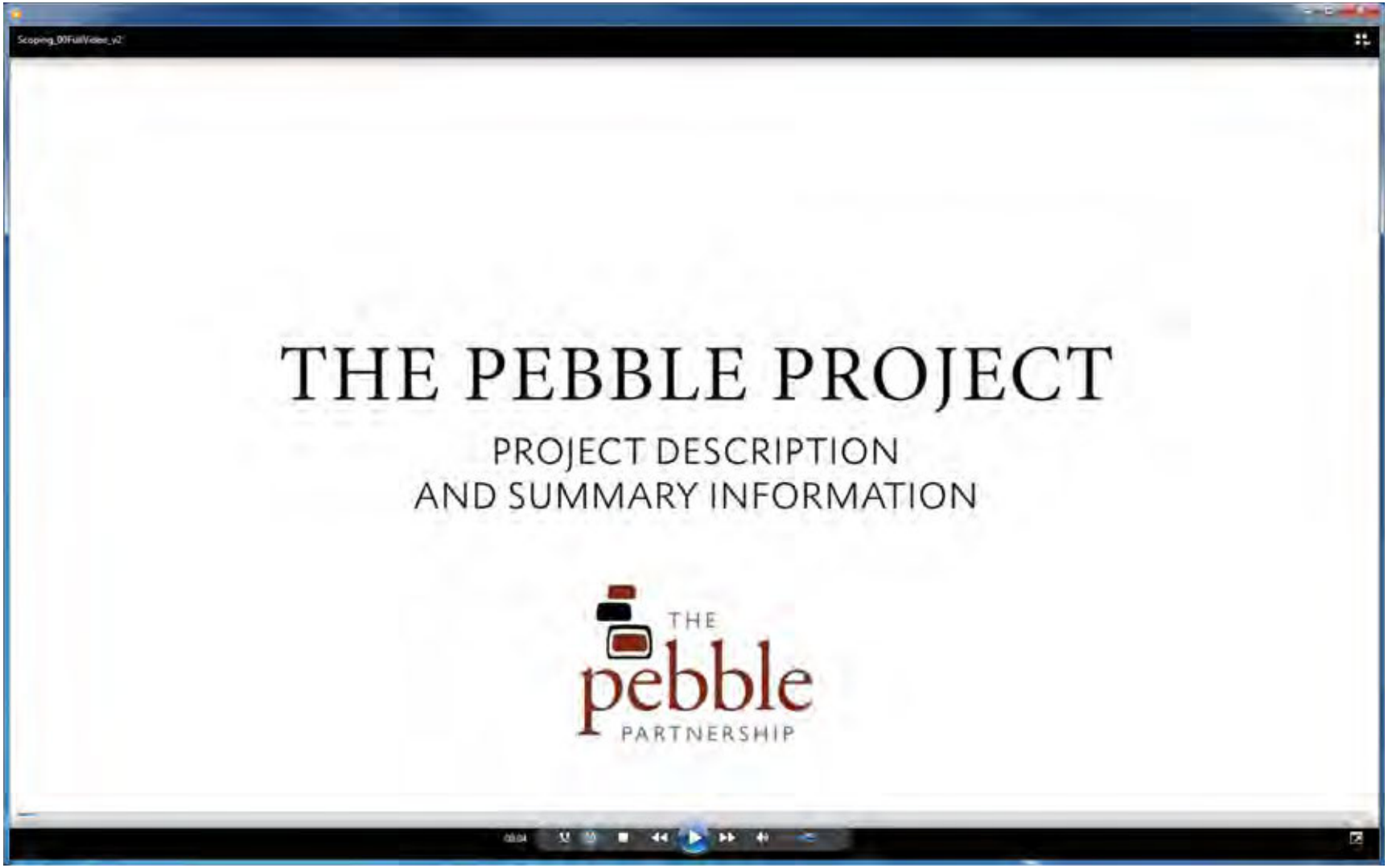


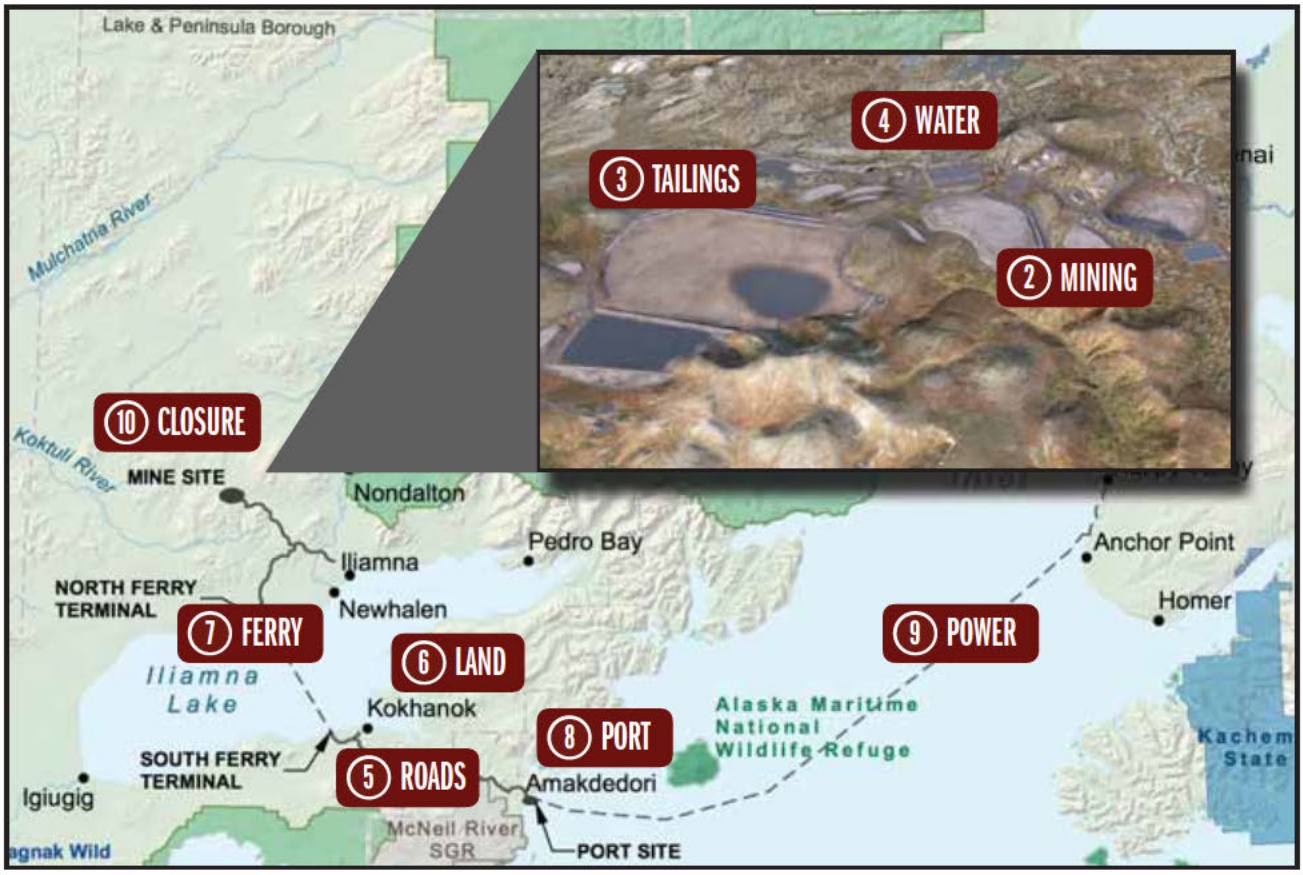
AMERICAN
OVERSIGHT

THE PEBBLE PROJECT

① OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) in southwest Alaska as an open-pit mine, with associated infrastructure.

PROJECT DESCRIPTION DETAILS



SUMMARY INFORMATION

- Located on state of Alaska land
- Project operating life of 20 years
- Employment of 2,000 people for construction and 850 for operation
- Gas pipeline from Anchor Point and gas-fired power plant at site
- Road and lake ferry to Cook Inlet
- Segregated storage of bulk and pyritic tailings

THE pebble PARTNERSHIP

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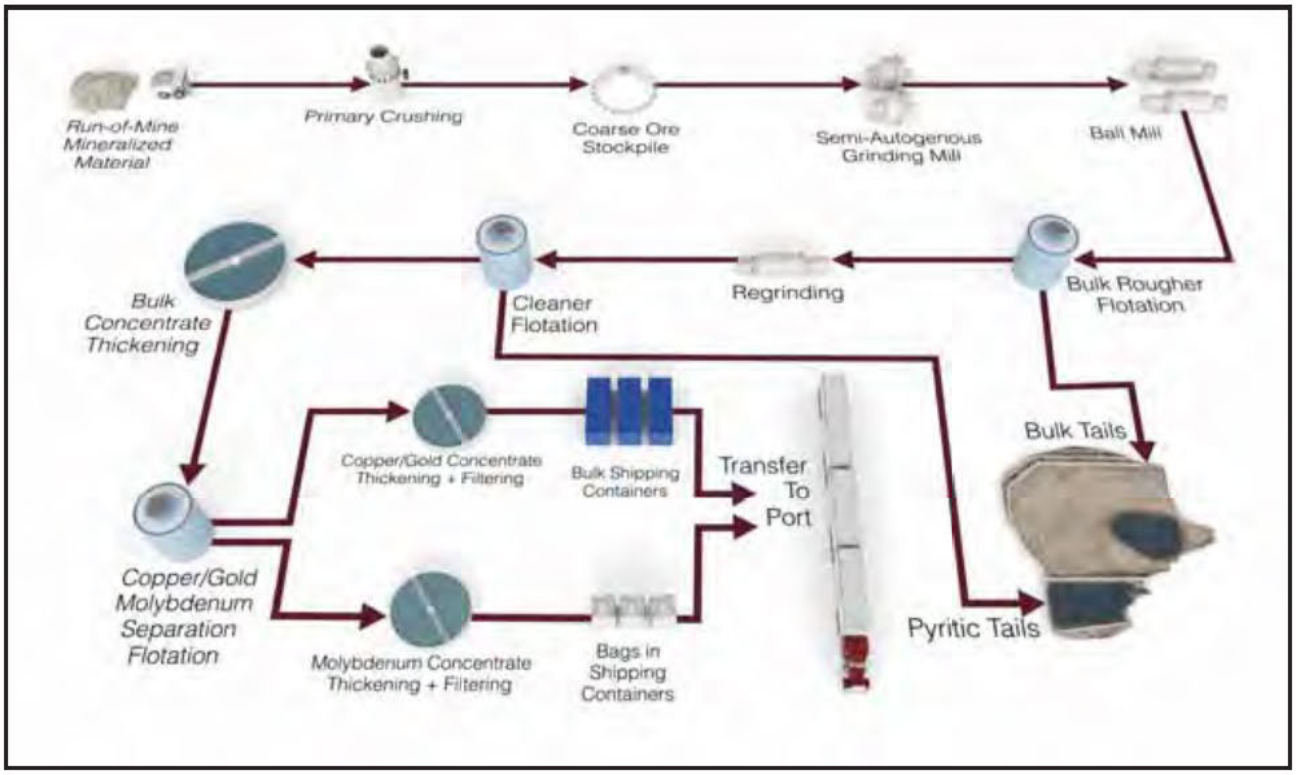
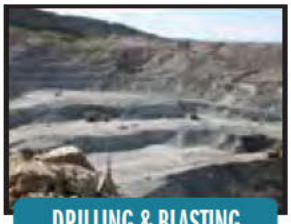
MINING & PROCESSING

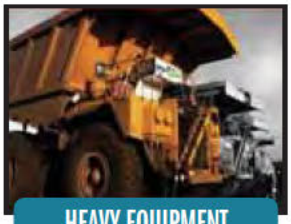
The Project will mine approximately 1.1 billion tons of mineralized material throughout the 20-year mine life.

AN OVERVIEW OF MINERAL PROCESSING




OPEN PIT RENDERING


DRILLING & BLASTING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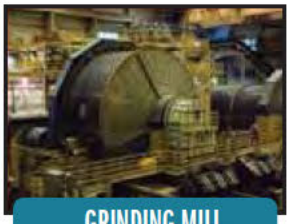
GRINDING MILL

SUMMARY INFORMATION

- Mining rate up to 90 million tons per year
- Milling rate up to 58 million tons per year
- Annual copper/gold concentrate production of 600,000 tons
- Annual molybdenum concentrate production of 15,000 tons

THE pebble PARTNERSHIP

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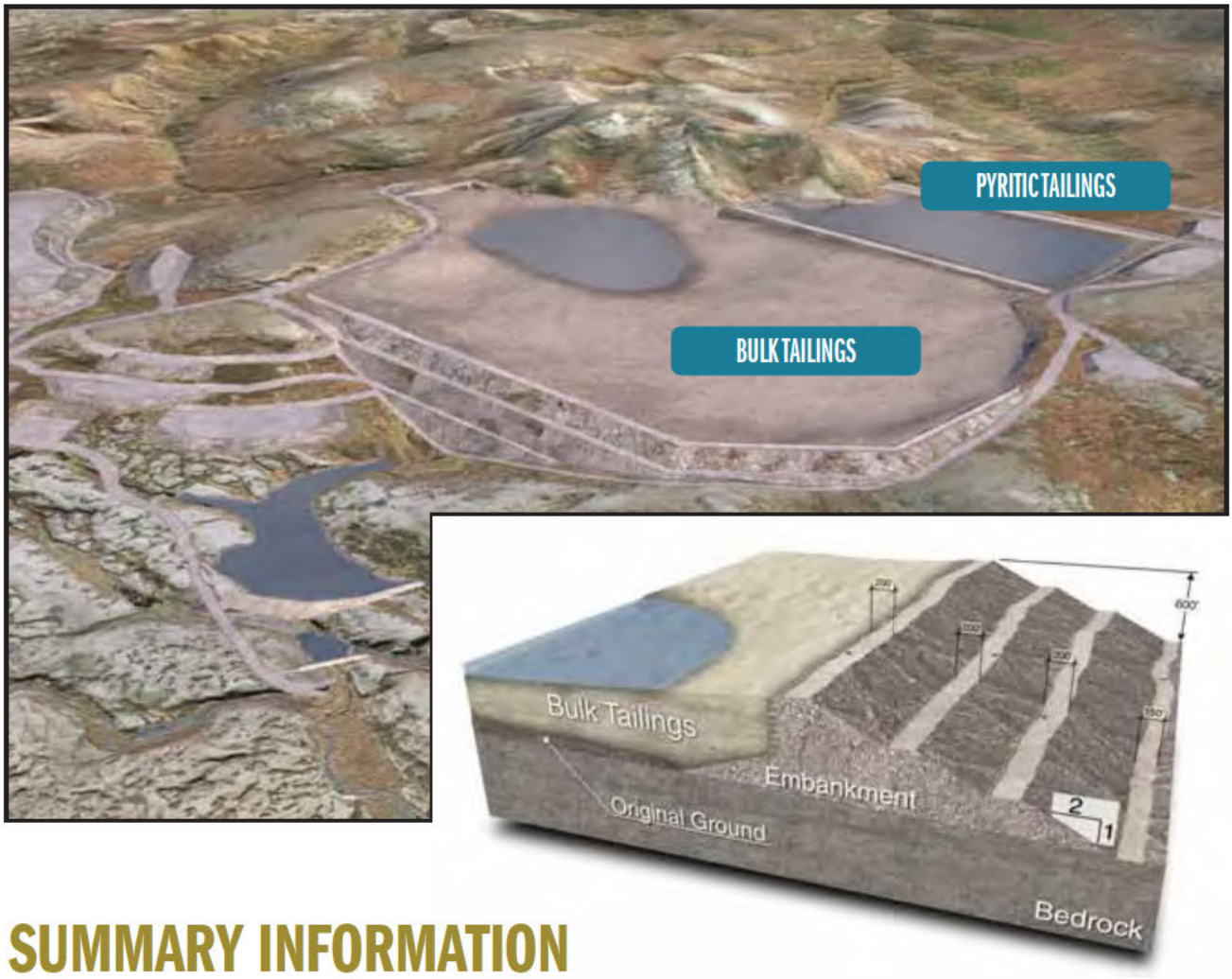
TAILINGS STORAGE

3 TAILINGS

Pebble Limited Partnership (PLP) conducted a multiyear, multidisciplinary evaluation to select a Tailings Storage Facility (TSF) location that meets all engineering and environmental goals. It will store ground-up material after minerals have been extracted.

TAILINGS STORAGE FACILITY



SUMMARY INFORMATION

- Designed to meet Alaska Dam Safety Program standards
- Separate cells for bulk and pyritic tailings
- Minimize water storage in bulk tailings to keep water away from embankment
- Fully-lined cell for pyritic tailings with water cover
- Rock-filled embankments (600' high at main embankment)
- Seepage collection facilities for all embankments

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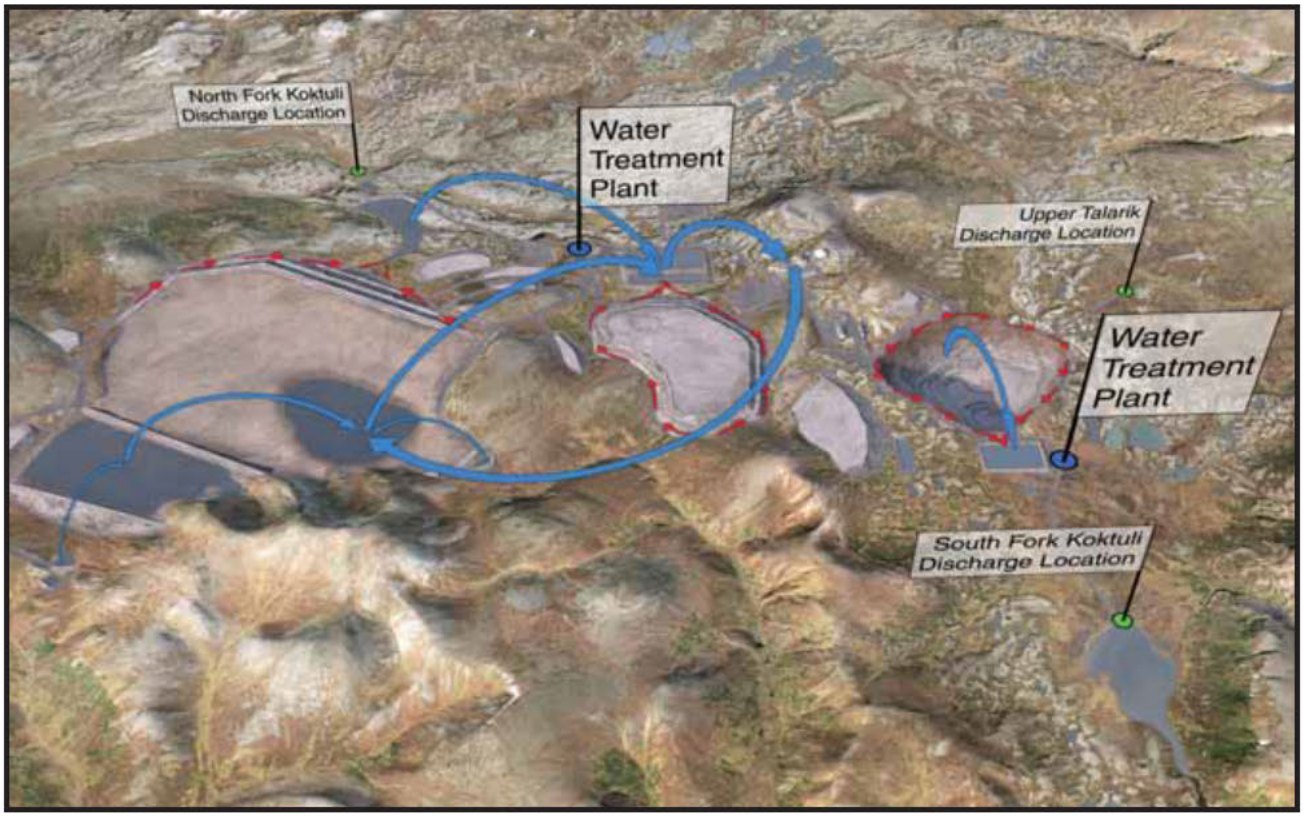
WATER MANAGEMENT

4 WATER

Pebble Limited Partnership (PLP) has designed the water management plan to minimize the volume of water diverted from natural flows and to treat and condition all water to meet quality standards before discharge.

MONITORING AND TREATMENT



SUMMARY INFORMATION

- All water is tracked and managed from rainfall to discharge
- One water treatment plant for pit-related water
- One water treatment plant for tailings, stockpile, and process contact water
- All water treated and conditioned to meet quality standards before release
- Discharge locations in each of three drainages
- No mixing zones will be required
- Discharge managed based on downstream habitat needs

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ROADS & TRANSPORT

5 ROADS

An 83-mile transportation corridor runs from the mine site to a port site on Cook Inlet. The route was selected to minimize impact on wetlands, minimize stream crossings, and avoid area of known subsistence and recreational use.

NORTH & SOUTH ROAD SEGMENTS



TRANSPORT BY TRUCK

CONCENTRATE CONTAINERS

SALMON PASSAGE

SUMMARY INFORMATION

- Personnel flown to Iliamna Airport and driven to mine site
- 30-mile (north segment) and 35-mile (south segment) private roads
- Spur roads connecting to the villages of Iliamna, Newhalen, and Kokhanok
- Stream crossings designed to state of Alaska standards
- Up to 35 round trips by truck each day (one by ferry)
- Concentrate hauled in bulk containers with locking lids
- Fuel hauled in 6350-gallon sealed tank containers

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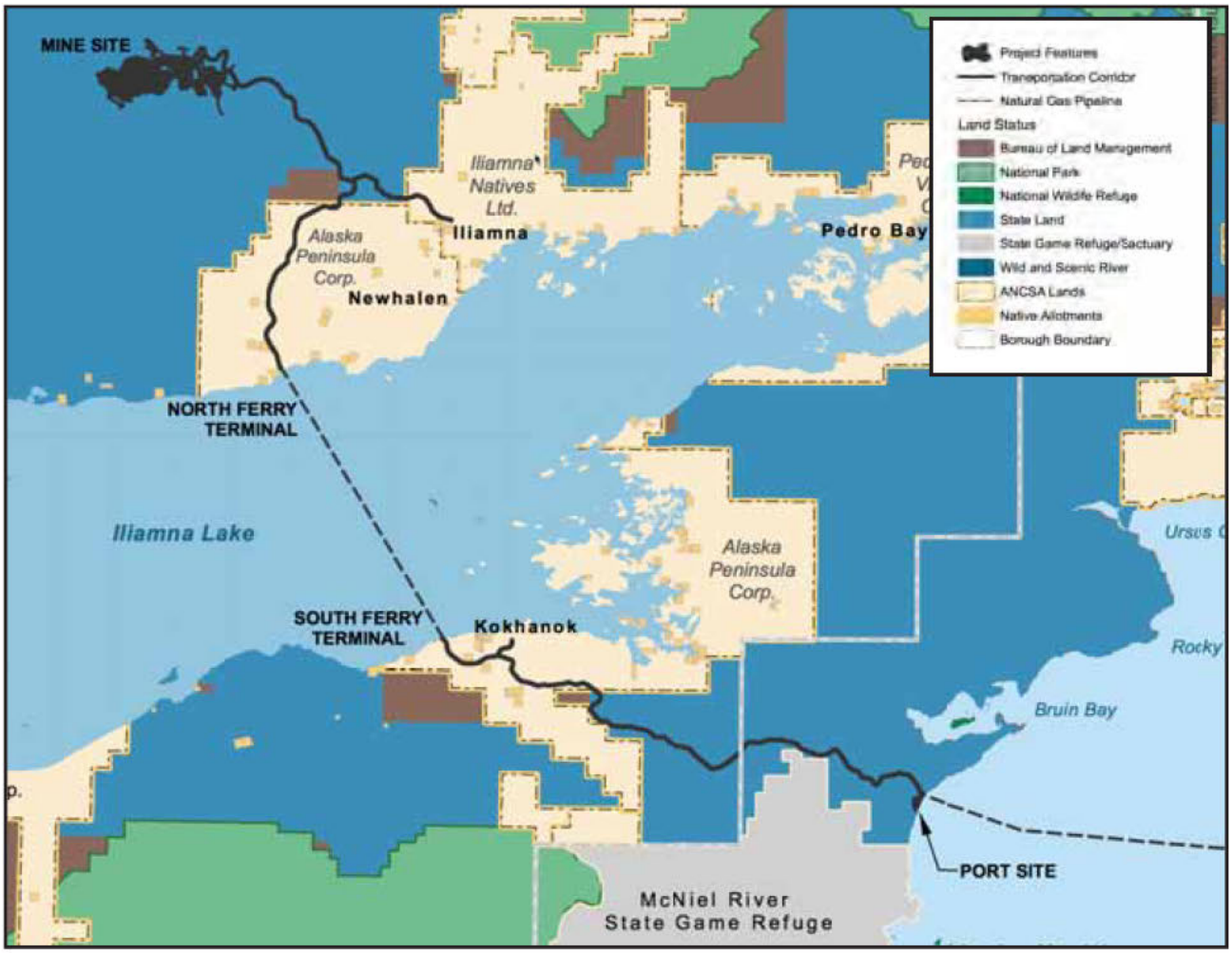
LAND STATUS

The mine site — including the pit, tailings storage, and all primary facilities — is located on state of Alaska land. The transportation corridor includes state of Alaska and ANCSA land.

MINE SITE & CORRIDOR LAND OWNERSHIP



SUMMARY INFORMATION

- Access Road = 65% state of Alaska + 35% Alaska Peninsula Corporation
- Iliamna Airport Spur = 55% state of Alaska + 45% Iliamna Natives Limited
- Iliamna Lake Crossing = 100% state of Alaska
- Kokhanok Airport Spur = 100% Alaska Peninsula Corporation

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FERRY & TERMINALS

7 FERRY

A custom-built ice breaking ferry will transit Iliamna Lake year round, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates.

ILIAMNA LAKE CROSSING



SUMMARY INFORMATION

- The one-way ferry trip across Iliamna Lake is about 18 miles
- An average of one round trip per day will be required
- Vessel is designed to operate year-round, in all ice conditions
- Symmetrical forward and aft with two ice-breaking bows
- 12 crew members may be accommodated on the ferry

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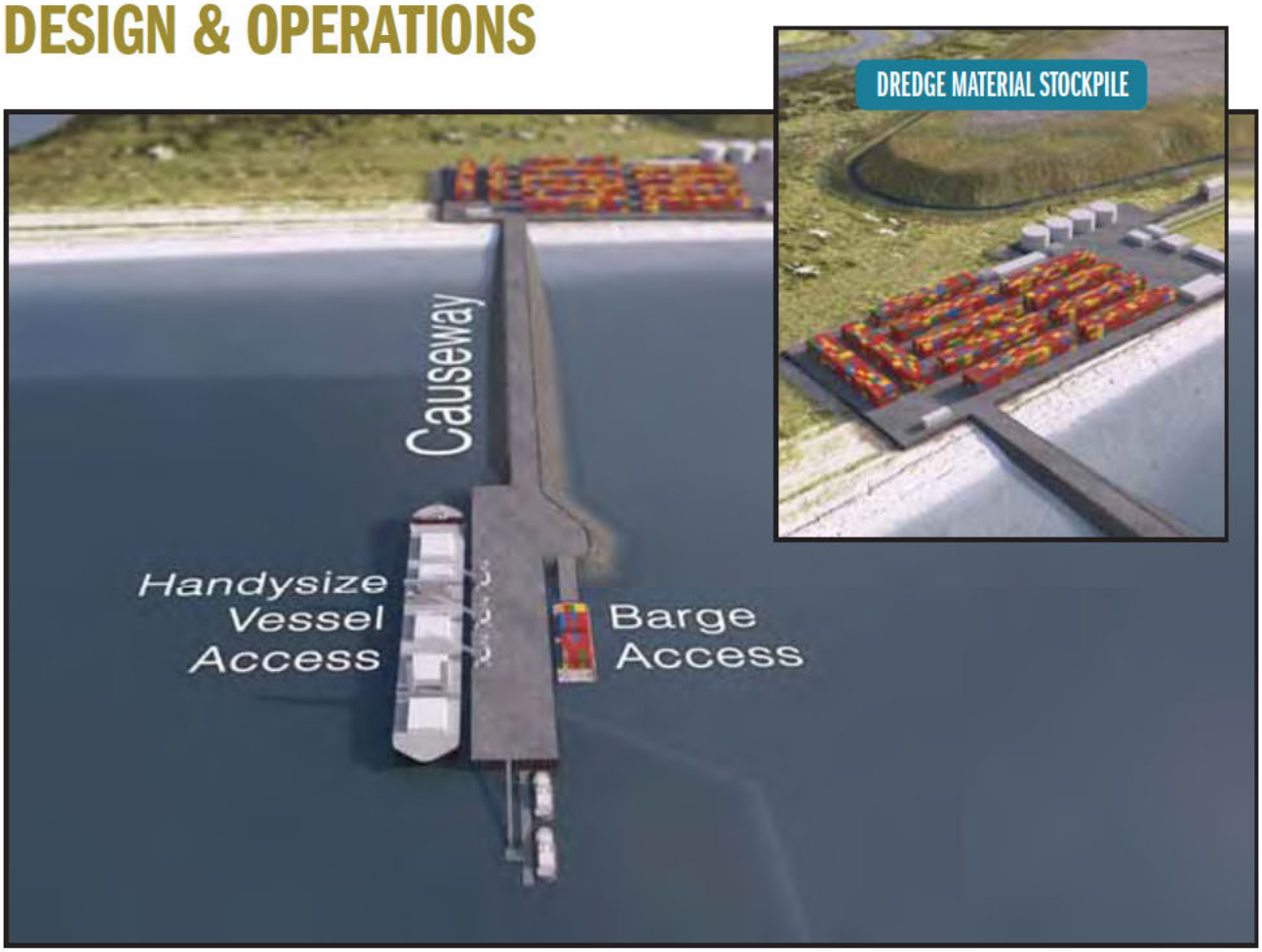
AMAKDEDORI PORT

8 PORT

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site.

DESIGN & OPERATIONS



SUMMARY INFORMATION

- 50-foot deep channel dredged to provide access for Handysize bulk carriers
- Mineral concentrate will be direct-loaded from the containers onto the vessels
- Equipment and supplies delivered by barge
- Shore-based facilities will receive and store containers and fuel
- Up to 25 concentrate shipments annually
- Up to 30 marine barge loads annually

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POWER GENERATION

The power plant will be sized to meet the anticipated load of 230 megawatts using high-efficiency turbine or reciprocating engine generators operating in a combined-cycle configuration.

NATURAL GAS PIPELINE + POWER PLANT



SUMMARY INFORMATION

- Pipeline will connect to existing gas supply infrastructure near Happy Valley
- Buried pipe will transport gas to a compressor station near Anchor Point
- 94-mile subsea pipeline across Cook Inlet will come ashore near port site, follow road to site, and cross the bed of Iliamna Lake
- Gross flow rate of 50 million standard cubic feet per day
- 10" pipeline on land, 12" pipeline for water crossings
- Emergency backup power provided by diesel generators

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CLOSURE & RECLAMATION

10 CLOSURE

Pebble Limited Partnership (PLP) is committed to conducting all mining operations, including reclamation and closure, in accordance with all local, state, and federal regulations.

PEBBLE: DESIGNED FOR CLOSURE

RECLAMATION

AFTER...

5 YEARS

Most buildings removed

Terrain resculpted

Native plants resown

20 YEARS

Vegetation well-established in reclaimed areas

Pit continues to fill with water

30 YEARS

Pit lake has formed

Water is pumped from pit for treatment and discharge





SUMMARY INFORMATION

- Removal of mill and other facilities not used after closure
- Hauling of PAG waste rock into the open pit for under water storage
- Recontouring and placement of overburden for revegetation
- Plan and infrastructure for long term water management and treatment
- Financial assurance for closure and long term site management is required before construction

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How to Comment

Tips for Writing Effective Comments

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings.
- **Learn about the steps in the NEPA process** and opportunities for submitting comments to the U.S. Army Corps of Engineers.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through June 29.
- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS.

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The National Environmental Policy Act

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership. The EIS process will take several months to complete a Draft EIS for public review, and several months to incorporate public comments into the draft to develop the Final EIS.

Steps in the EIS Process

Notice of Intent to Prepare an EIS

The USACE released a Notice of Intent to the United States Federal Register. This initiated the process to prepare an EIS and began the scoping process.

Scoping: Meetings and Comments

The scoping process kicks off on April 1, 2018. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Draft EIS

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period.

Public Review of Draft EIS: Meetings and Comments

After the Draft EIS is released, the public will have a chance to submit comments. During that time, the USACE will plan public meetings to collect comments.

Final EIS

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release.

Record of Decision

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and commenting on.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consequences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.

For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.

For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. For example: wetland fill from one projects.

For example: wetland fill from one project, combined with the wetland fill from a separate project.

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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of analysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS.

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisciplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide an interdisciplinary team to develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirety of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

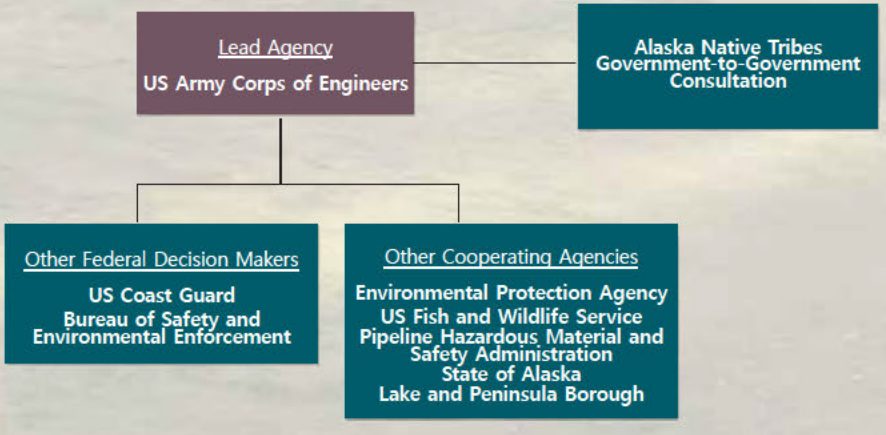
- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

Lead and Cooperating Agencies



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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action that could have lesser environmental impacts.

In addition to Anchorage, Public meetings were held in April in the following communities:

- Naknek
- Kokhanok
- Homer
- Newhalen
- New Stuyahok
- Nondalton
- Dillingham
- Igiugig

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods-ways in which potential negative impacts could be avoided or lessened.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Let us know what aspects of the proposed project are important to you!

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to give your comment orally to a dedicated court reporter, or electronically submit using one of the dedicated laptop computers. You can also submit hand-written comments, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Scoping comments can be submitted through June 29, 2018.

*Comments received/postmarked after June 29 will be considered, but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publicaly available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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fold here



fold here

Program Manager
US Army Corps of Engineers
Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

Please place first-class postage here.

From:

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FACT SHEET

Pebble Limited Partnership Project Proposed Natural Gas Pipeline

Background

The Bureau of Safety and Environmental Enforcement (BSEE) is a cooperating agency on the Environmental Impact Statement that the United States Army Corps of Engineers, Alaska District, is preparing for the Pebble Limited Partnership project.

The Pebble Limited Partnership is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The proposed project infrastructure will include an approximately 230-megawatt power plant that will be fueled using natural gas. Natural gas would be supplied to the site using a roughly 190-mile pipeline that would connect to the project site from a tie-in on the Kenai Peninsula near Happy Valley.

While BSEE has no regulatory oversight of onshore mining, our role will include a Pipeline Right-of-Way grant approval process for the proposed pipeline crossing federal waters of the Outer Continental Shelf in Cook Inlet.

Proposed Pipeline

The gas pipeline alignment, as currently proposed, would start near Happy Valley on the Kenai Peninsula and travel south paralleling the Sterling Highway for approximately 9 miles to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the proposed Pebble port site near the mouth of Amakdedori Creek. A second compressor station and offtake point is located at the port site. The pipeline then follows the proposed road alignment from the port to the mine site, including crossing Iliamna Lake on the lake bed for approximately 18 miles. BSEE's jurisdiction for the proposed pipeline will likely only cover 63 miles, the portion that crosses federal waters of Cook Inlet.

The pipeline, as currently proposed, would be constructed of steel and designed to have a gross flow rate of 50 million standard cubic feet of natural gas per day. The onshore portions of the pipeline would be 10-inch diameter, while the offshore portion would be constructed using heavy wall 12-inch diameter pipe with negative buoyancy. All appropriate federal regulations would be followed in the design, construction, and operation of the pipeline.

Right-of-Way Decision Process

Pipeline right-of-way requirements for permitting are detailed in the 30 Federal Code of Regulations Part 250—Oil And Gas And Sulphur Operations In The Outer Continental Shelf Subpart J—Pipelines and Pipeline Rights-of-Way.

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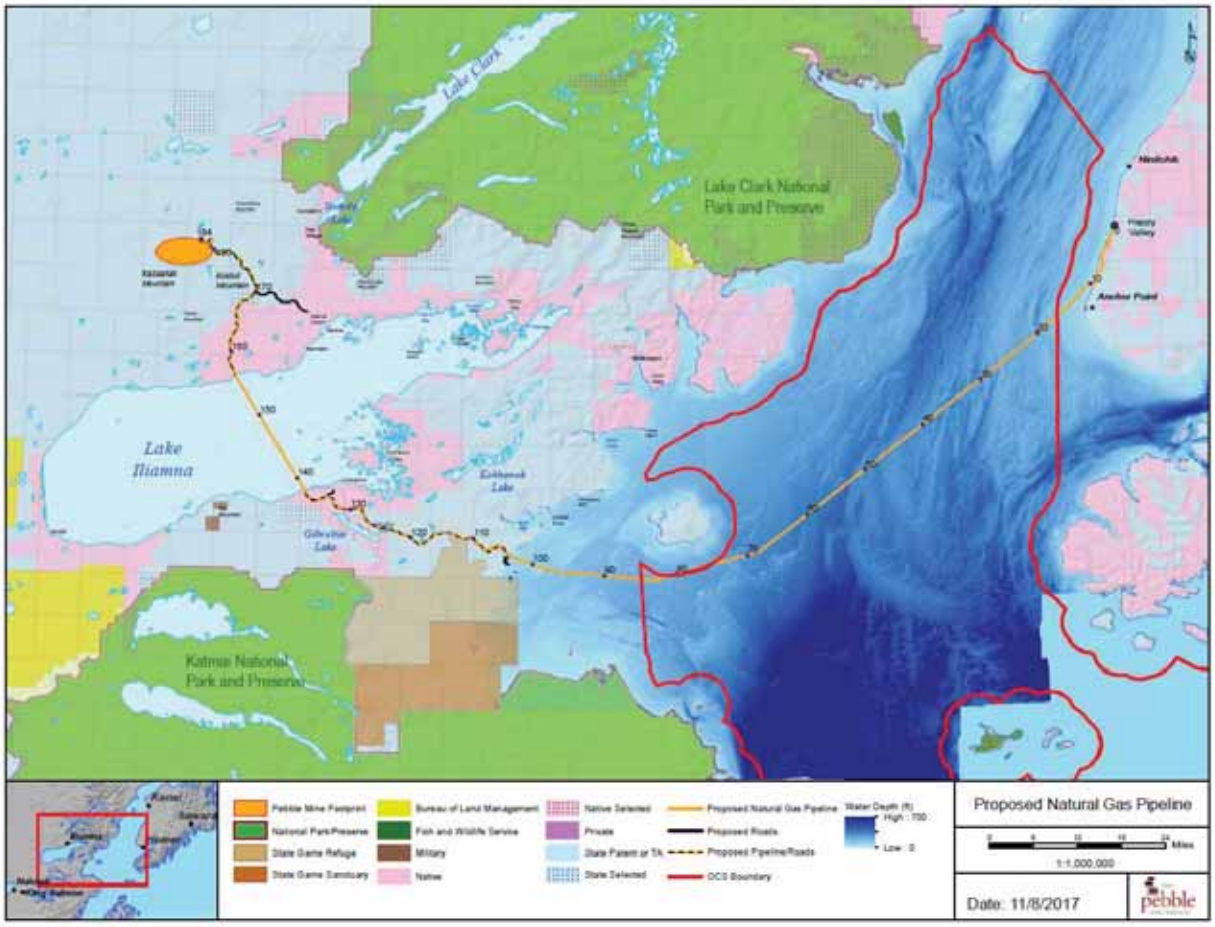
Applications for permits must be submitted to the BSEE Regional Supervisor and will include detailed information about the right of way, including consideration of effects from water currents, storm or ice scouring, soft bottoms, mudslides, earthquakes, permafrost, and other relevant environmental factors.

While the pipeline in this case will ultimately be regulated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, BSEE's interest is to have the requisite level of information that enables a well-informed right-of-way decision process, with the knowledge that environmental and safety factors have been considered and addressed.

Pebble Project Proposed Natural Gas Pipeline



-- BSEE --

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McGrath, Patricia

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, August 23, 2018 4:04 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Cc: Craig, Bill; Bella, Elizabeth; POA Special Projects
Subject: scoping report comments

All,
Due to the size of the scoping report, please send a follow up email after submittal of your agencies comments informing me that you have sent them. I want to ensure none of them get lost in the cyber world.

VR

Shane McCoy
Program Manager

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McGrath, Patricia

From: McGrath, Patricia
Sent: Friday, August 24, 2018 8:46 AM
To: POA Special Projects
Cc: Molly Vaughan (Vaughan.Molly@epa.gov); Craig, Bill (bill.m.craig@aecom.com)
Subject: RE: scoping report comments

Hi Shane-
Molly sent EPA's comments on the scoping report to you on August 8.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, August 23, 2018 4:04 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; Bella, Elizabeth <elizabeth.bella@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: scoping report comments

All,
Due to the size of the scoping report, please send a follow up email after submittal of your agencies comments informing me that you have sent them. I want to ensure none of them get lost in the cyber world.

VR

Shane McCoy
Program Manager

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McGrath, Patricia

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Friday, August 31, 2018 3:01 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Subject: final scoping report available on the project website

All,
The final scoping report is available for the public and agencies to review.

Shane McCoy
Program Manager

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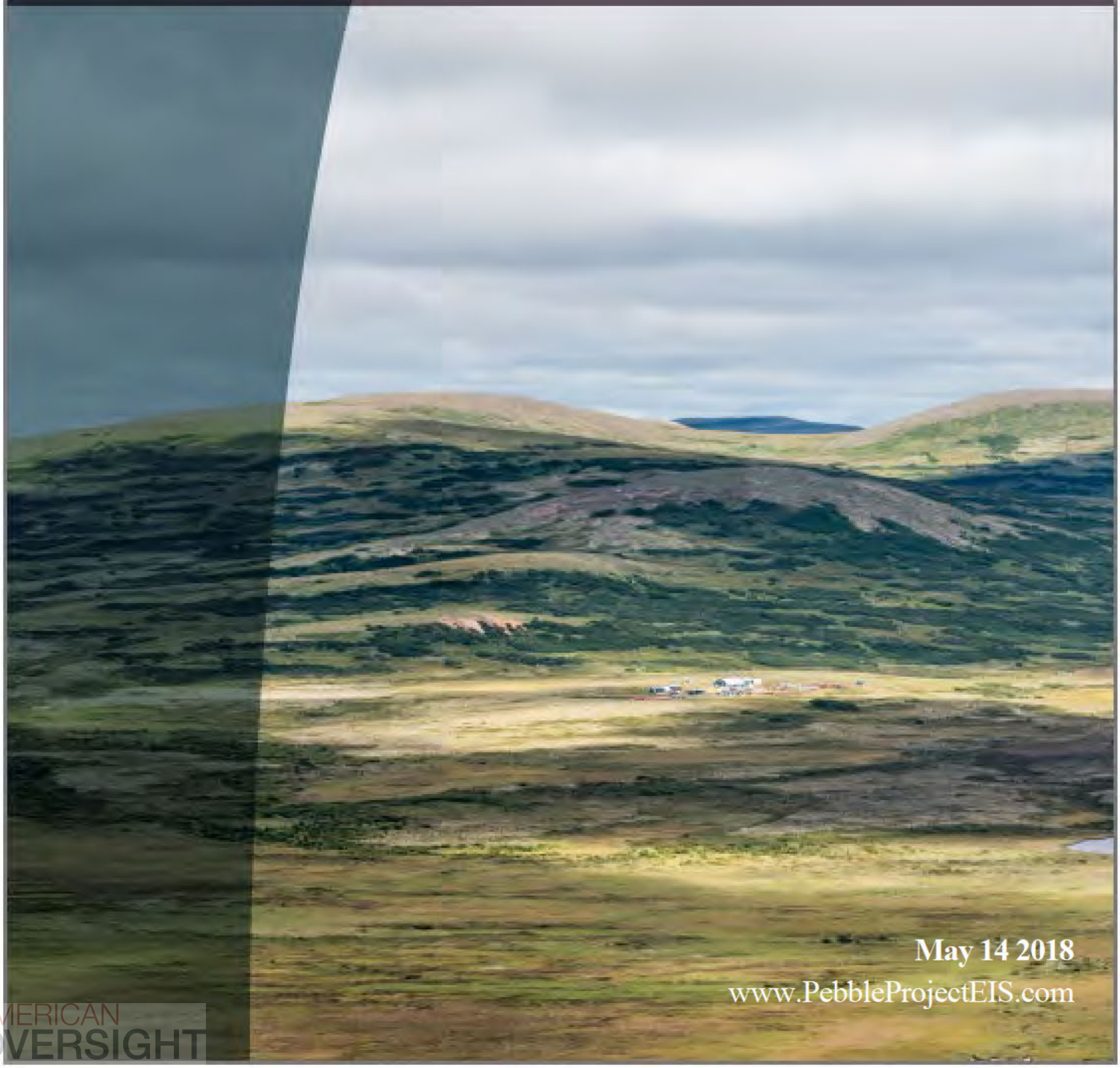
US Army Corps of Engineers

Pebble Project EIS

Preliminary Scoping Issues Report



May 14 2018

www.PebbleProjectEIS.com

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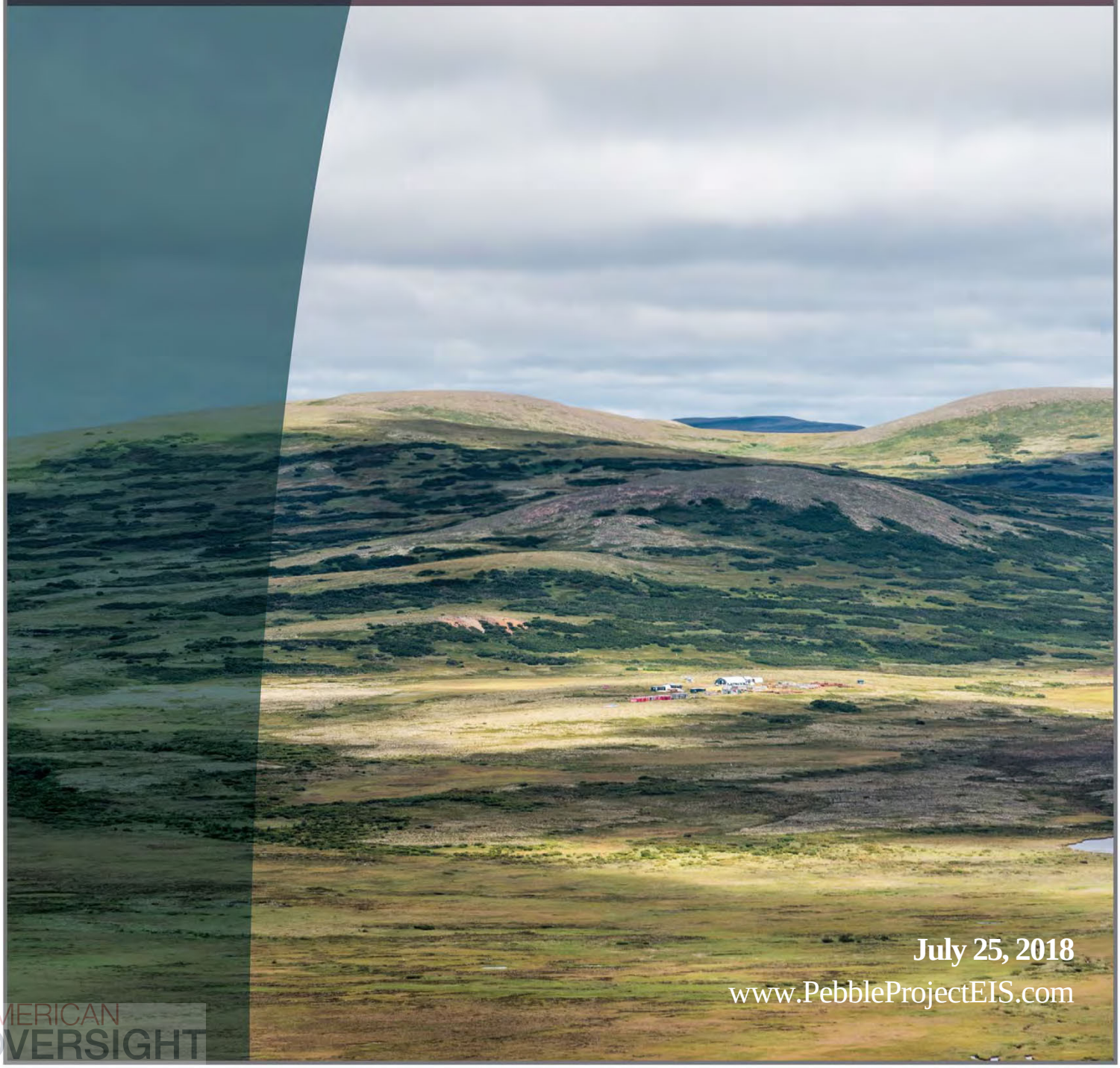
US Army Corps of Engineers

Pebble Project EIS

Draft Scoping Report



July 25, 2018

www.PebbleProjectEIS.com

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LIST OF ACRONYMS AND ABBREVIATIONS

BSEE	Bureau of Safety and Environmental Enforcement
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
GHG	greenhouse gas
LIDAR	Light Detection and Ranging
NEPA	National Environmental Policy Act
PLP	Pebble Limited Partnership
TSF	Tailings Storage Facility
U.S.C	United States Code
USACE	U.S. Army Corps of Engineers

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1.0 INTRODUCTION

This Scoping Report has been developed for the U.S. Army Corps of Engineers (USACE) to share the types of issues that were received during the scoping period from the general public and the cooperating agencies. It documents outreach efforts during the scoping period and summarizes the primary issues of concern and suggested alternatives from the public. The Scoping Report will be used to develop alternatives for the Environmental Impact Statement (EIS) and identifies issues that are important to the public and should be considered in the analysis of the EIS.

2.0 PROJECT OVERVIEW AND SCOPING PROCESS

2.1 BACKGROUND

The USACE, Alaska District, intends to prepare a Draft EIS to assess the potential social, economic, and environmental impacts associated with the proposed Pebble Project. The EIS will assess potential effects of a range of alternatives.

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The proposed project would require a natural gas-fired power plant supplied by a natural gas pipeline to the Mine Site, and transportation infrastructure including a road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an ice-breaking ferry crossing to a terminal on the south shore of Iliamna Lake, and a road to the proposed Amakdedori Port on Cook Inlet.

2.2 NOTICE OF INTENT

An application for a Department of the Army permit was submitted by PLP pursuant to Section 404 of the Clean Water Act (33 United States Code [U.S.C.] 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017. The application was deemed complete, and was advertised in a Public Notice, Pacific Operations Area (POA) POA–2017–271, on January 5, 2018. On March 29, 2018, the USACE issued a Notice of Intent in the Federal Register to prepare an EIS for the proposed project. The Notice of Intent is included in Appendix A, and the Public Notice is included in Appendix B.

2.3 SCOPING PROCESS

2.3.1 Scoping Process Overview

The scoping period began on April 1, 2018. On March 30, 2018, the USACE issued a press release to announce the opening of the 30-day comment period and to provide information for how to submit comments. On April 6, 2018, their second press release extended the scoping period by 60 days to continue through June 29, 2018. See Appendix B for both press releases.

Scoping is conducted to assist in determining the breadth of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. The Council on Environmental Quality defines scoping as an “early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 Code of Federal Regulation 1501.7). The scoping process provides an opportunity for people potentially

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affected by the project to express their views and concerns and to contribute to the completeness of the EIS.

2.3.2 Public Notice, Press Releases, and Other Media

Prior to the scoping period start, the USACE began organizing public meetings and developing materials related to scoping that were provided to the public.

The project website (www.PebbleProjectEIS.com) went live on March 19, 2018. The website includes information about the project, EIS process, and scoping. The USACE uses the website to disseminate important information to the public, such as the scoping meeting schedule. The website also included a form for the public to submit scoping comments; this online comment form included a map where commenters could mark a point that related to their comment. Comments that have been submitted are available for the public to view. Some individual comments to the website contain multiple documents. Screenshots of the website (dated May 7, 2018) are in Appendix B.

On March 20, 2018, the USACE mailed hardcopies of a Scoping Package to 35 identified Alaska Native Tribal Organizations in the project area. The complete Scoping Package (in Appendix B) was also made available on the project website and includes:

- Information about the scoping process
- A description of the project
- The process for developing alternatives
- A list of resources to be analyzed in the EIS
- Information on the National Environmental Policy Act (NEPA)
- Roles of the various participating organizations
- An EIS schedule and outline
- Information on submitting comments
- A comment form.

To help advertise the scoping period, the USACE began mailing the project's Newsletter #1 on March 29, 2018. The newsletter provided details on the public meeting schedule as well as information on how to submit comments; it was sent to every post office box in 33 communities, and to 140 other organizations and individuals on a mailing list. A total of 3,670 newsletters were mailed. The USACE also ran announcements in the Bristol Bay Times, the Homer News, and the Anchorage Daily News a week prior to relevant meetings. Finally, a flyer was emailed to communities where scoping meetings were scheduled for distribution on April 6, 2018. Newsletter #1, newspaper affidavits, and the flyer can be found in Appendix B.

2.4 PUBLIC SCOPING MEETINGS

Public scoping meetings were held in nine communities, including Anchorage. A total of 914 participants signed in at the public meetings (see Appendix C for sign-in sheets). The primary purpose of the public meetings was to present a project overview, give the public a forum for submitting verbal and electronic comments, and provide an opportunity to talk to the USACE about the EIS and the Department of the Army permit application process. Table 1 shows the meeting locations and the number of people who signed in.

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Table 1: Scoping Meetings

Date	Community	Location and Time	Number Signed In
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM	45
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM	68
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM	223
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM	47
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM	65
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM	46
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM	88
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM	47
April 19, 2018	Anchorage	Dena'ina Center, 11:00 AM-9:00 PM	285

2.4.1 Meeting Description

The format of the public meetings varied depending on the location. A sign-in station with hardcopies of supporting material was set up at all locations. The sign-in sheet was used to update the project mailing list.

In general, a brief introduction by the USACE was given. A 17-minute video describing the project was shown (or was available to be watched), and the public were given multiple ways to comment. Time was allotted for members of the public and media to speak directly with USACE staff, State of Alaska staff, or in some locations, other cooperating agency staff. AECOM (the third party NEPA contractor) staff were also present.

In Naknek, Kokhanok, Newhalen, New Stuyahok, Nondalton, and Igiugig, the USACE provided a microphone ("hot mic") where participants could speak their comments out loud in front of other meeting attendees. Comments were transcribed by a court reporter, either during the hot mic session or individually after the session. In Homer, Dillingham, and Anchorage, two court reporters were available to take comments one-on-one; therefore, no hot mic was provided.

At all meetings, laptop computers were provided for the public to submit comments electronically to the project website. Paper comment forms were available for handwritten or typed comments, which could be submitted to the USACE at a meeting or mailed later.

2.4.2 Meeting Materials Description

The USACE requested that the PLP create a video describing their proposed project and mining process. The resulting 17-minute video gives an introduction to the surrounding environment, project components and footprint, water management and mining process, and reclamation. At some meetings this video was shown after the USACE introduction, and at others it was shown on a repeating loop.

Ten posters prepared by the PLP to describe the project, the mining process, and reclamation were also displayed. The USACE created additional posters describing the NEPA process and how to write effective comments. The Anchorage meeting also included posters on the scoping process, the EIS outline, resources to be discussed in the EIS, and roles of cooperating agencies.

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The USACE also provided the Scoping Package, paper comment forms, and a handout from the Bureau of Safety and Environmental Enforcement (BSEE), a cooperating agency. A screenshot of the video, as well as all posters and handouts, are in Appendix D.

2.4.3 Additional Agency Involvement

A kickoff meeting for cooperating agencies was held on June 6, 2018, where the roles of cooperating agencies for this EIS were discussed. Cooperating agencies will have opportunity to provide input throughout the process, including alternatives development, providing technical expertise for analysis, and suggesting mitigation. In addition, the State of Alaska, BSEE, and the Pipeline and Hazardous Materials Safety Administration attended some scoping meetings to answer questions about their role and expertise.

2.4.4 Government-to-Government Consultation

Executive Order (EO) 13175, "Consultation and Coordination with Indian Tribal Governments," was enacted in 2000 and requires federal agencies to consult with Native Alaska tribal governments when considering policies that would impact tribal communities. Government-to-government consultation meetings began before the scoping period started and will continue throughout the EIS process.

2.4.5 Next Steps in the NEPA Process

Scoping is the first opportunity for public involvement under the NEPA process. An additional opportunity for public comment will follow the release of the Draft EIS scheduled for early 2019. A Notice of Availability will be published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment. The Draft EIS comment period will include public meetings in the same communities where scoping meetings were held. The project website will be updated throughout the EIS process.

Public comments shape the NEPA process by identifying project-related questions and issues of concern. Typically questions are in reference to the project, existing environment, extent of temporal and spatial impacts, or potential consequences to the human environment from the proposed action. Substantive questions and issues of concern, which can inform the scope of analysis and alternatives to be considered in the EIS, are grouped by subject matter in this Scoping Report. This information is used in the alternatives development process, the study of the affected environment, and in the process to analyze environmental consequences (or impacts). Documents that are received from the public during the scoping process via the project website, mail, and email are referred to as submissions during analysis. Each submission can contain many coded comments which are then used to inform the scope of the analysis. Submissions without substantive comments that are not specific to a particular issue are considered non-substantive. These include comments in support of or in opposition to the applicant’s proposed project.

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3.0 SCOPING COMMENT SUMMARY

This section contains a description of the scoping comment analysis process and a summary of the public scoping comments received. Due to the large number of comments submitted as part of scoping for an EIS, it can be challenging for the EIS preparation team, as well as the general public, to read all the comments and understand all of the issues raised. Standard practice has been to code and enter comments into a database program that captures and summarizes issues and recommendations from scoping comments. However, the EIS team and the general public will continue to have access to comments submitted on the website for reference purposes.

The public comment summary includes the following:

- Description of the scoping comment analysis process (description of the comment database, development of the coding structure, identification and coding of comments, comment summary process).
- A summary of issues identified, categorized by physical environment, biological environment, social environment, or NEPA process.

3.1 SCOPING CONTENT ANALYSIS PROCESS

Public and agency comments submitted by the close of the scoping period were analyzed and categorized using a process called “content analysis.” The analysis process included:

1. Import and organization of all comments/submission content into a comment database.
2. Development of a coding structure to analyze the comments.
3. Review of submissions to assign codes to comments.
4. Preparation of a Scoping Report with analysis results.

The goals of the content analysis process are to:

1. Ensure that every submission (every received set of comments, submitted by any means, is defined as a “submission”) is considered.
2. Identify the concerns raised by commenters.
3. Represent the breadth and depth of the public’s viewpoints and concerns as fairly as possible.
4. Present those concerns in a way that facilitates consideration of comments and conveys the issues raised during scoping.

All comments were treated equally. Emphasis was on the content of a comment, rather than who wrote it or the number of submissions in agreement.

3.1.1 Scoping Comment Database

Names, contact information, and comment text for commenters who submitted comments were entered into an electronic database. Many comments were submitted to the USACE in electronic format through the project website comment form. A large volume of comments were received by the USACE via email and/or postal service. As comments were received, they were made available for the public to view on the project website. Hardcopy comments, including those delivered by postal service or submitted in person at public meetings, were scanned and entered into the database, and also posted to the project website.

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The content of the comments was filtered using various database queries and identifying potential form letters (see form letter discussion below). Any submission identified as having the same commenter information and content, regardless of delivery format (e.g., hardcopy letter, email) or date, was counted as one submission.

3.1.2 Form Letters

Form letters are defined as multiple submissions with the same content. Electronic comments were pre-screened in the database, using various queries to identify similar content and thus potential form letters. If consistent content was identified, a form letter record with that content was created in the database and additional submissions with the same content were placed into that form letter category.

3.1.3 Coding Structure Development

Submission content was sorted into categories to represent commenters' concerns and rationale through a coding structure. Codes provide an efficient and accurate grouping of similar comments; coded concerns are referred to as "comments" in this report.

The aim of the coding structure is to identify applicable Pebble Project facilities and components, environmental resources, and planning processes in submissions. An initial coding structure was developed based on expected issues and concerns; this structure was continuously refined as more submissions were received to identify any additional concerns.

3.1.4 Comment Identification and Coding

Submissions were reviewed to identify substantive comments that will be used to formulate the issues and analysis conducted in the EIS process. Individual statements within a submission were identified as a comment(s) and then assigned to categories/topics.

Submissions may contain more than one comment, each coded based on the issue and the specific rationale. This form of analysis allows for specific comments to be captured and then grouped under the umbrella of a general resource issue. The NEPA process considers the substance of issues but does not consider who wrote the comment or the number of similar comments (like votes).

3.2 PUBLIC COMMENT SUBMISSION SUMMARY

3.2.1 Submissions Received

[Note: This section is preliminary; final comment tallies are pending and will be included in the Final Scoping Report.]

In total, 174,873 submissions were received through June 29, 2018. A total of 4,055 of these submissions were considered non-form letters. There were several variations of form letters that were received, with a total of 170,818 form letters. The USACE received five petitions with a total of 295,721 signatures that were considered as non-form letter submissions. The validity of these petition signatures has not been verified. Submissions with substantive comments were analyzed for key issues. The top five key issue fields for non-form letters and form letters are shown in Figure 1 and Figure 2.

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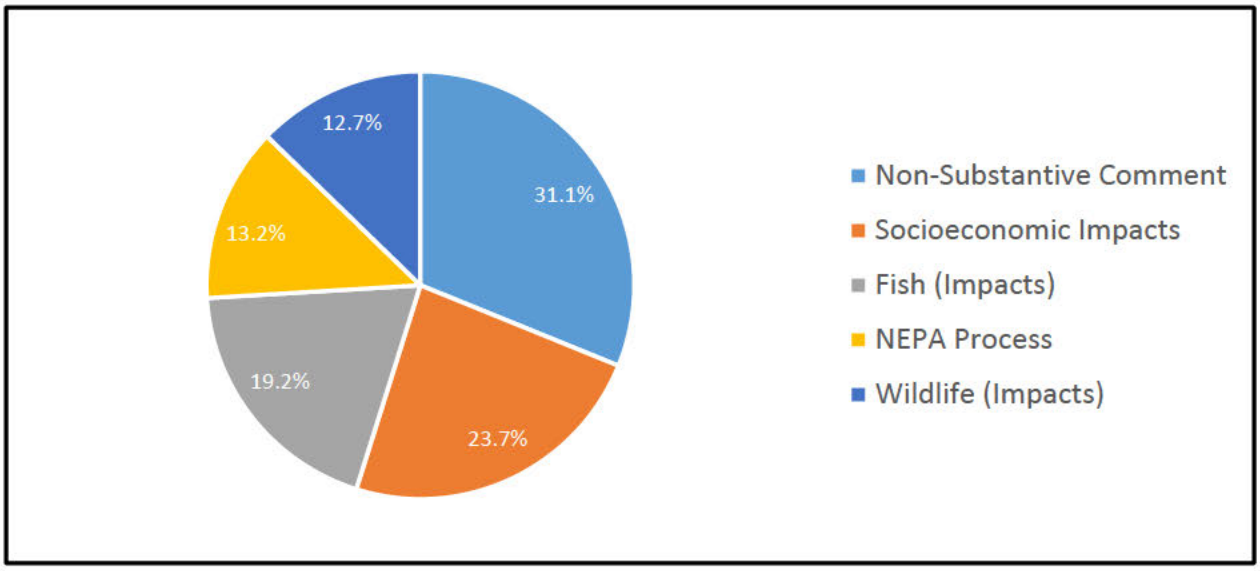
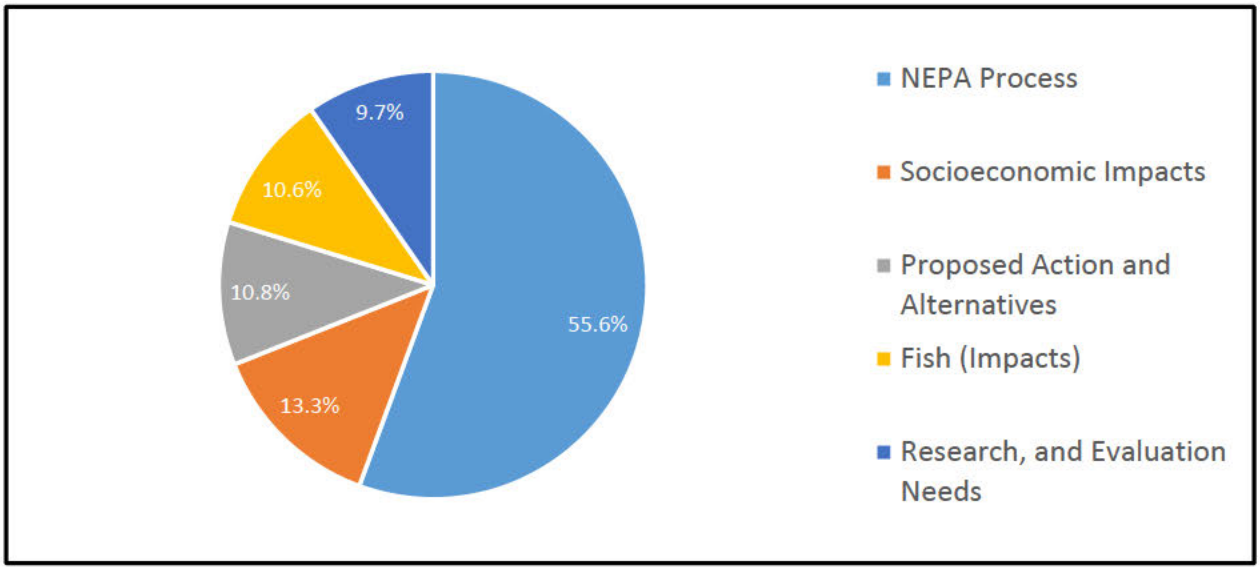
Figure 1. Top Five Key Issue Fields (Non-Form Letters)



[Note: The numbers in Figure 1 are pending final tallies.]

Figure 2. Top Five Key Issue Fields (Form Letters)



[Note: The numbers in Figure 2 are pending final tallies.]

A total of 8,866 substantive comments were received from non-form letter submissions, and 345,848 substantive comments were received from form letters.

3.3 COMMENT SUMMARY PROCESS

The intent of this Scoping Report is to provide representative summaries that capture, with a minimum of repetition, major topic areas or concerns expressed during the public scoping period. The topic areas or concerns contained in the summary of public comment will be used to develop the issues, alternatives, and mitigation strategies that will be analyzed in the EIS process. It will also inform the public of issues that were raised from their scoping comments.

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In writing this summary, comment analysts reviewed coded comments to understand the overall content of the comment and to identify topic areas or concerns in similar comments from different respondents. Similar comments were summarized into concise narrative statements and organized by the key issues.

Comments are organized in two broad categories below:

- **Resource Topics**. This section provides issues identified in scoping comments organized by resource topic. Resource-specific comments are grouped, such as comments concerning fish and wildlife habitat loss, loss of recreational access, or dust and emissions along the access roads and at the Mine Site. These topics are divided by the physical environment, the biological environment, and the social environment.
- **NEPA Process and Regulatory Compliance**. This section provides a summary of public comments on the NEPA process and alternatives to the proposed project. Topics include the public involvement process, project purpose and need, other laws and regulations, tribal consultation, cooperating agencies, and the no action alternative. Public comment suggestions for proposed action alternatives and mitigation measures are also included.

3.4 SUMMARY OF PUBLIC COMMENT –RESOURCE TOPICS

3.4.1 General Resources

A variety of general comments were received indicating that the EIS should analyze the direct, indirect, and cumulative impacts on general resources or the environment in the project area.

3.4.2 Physical Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific physical resources, including:

- Air quality
- Climate change
- Geology and seismic activity
- Surface and groundwater hydrology impacts
- Noise impacts
- Spill risks and release
- Hazardous materials stored and transported to and from the mine site
- Natural gas supply and pipeline safety
- Tailings dam
- Water resources – quality and quantity.

3.4.2.1 Air Quality

Comments were received on impacts to air quality as a result of project construction and mining operations.

- Comments were received regarding impacts to air quality from construction, fugitive dust emissions, vehicle equipment emissions, and mining activities.

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- Concerns were made regarding fugitive dust pollution from the mine and roads, and what chemicals may be used to control dust.
- Impacts to air quality including impacts from transporting ore and materials, or loading and shipping ore and concentrate.
- Impacts from air pollutants emitted during mine operations and contribution to greenhouse gas (GHG) emissions from the power plant.

3.4.2.2 Climate Change

Comments were received about the impacts of climate change to the environment and how climate change trends may interact with effects of the proposed project.

- Look at the carbon and GHG additions to the atmosphere from the proposed project.
- Provide a comprehensive emissions inventory of criteria pollutants, GHG emissions, and significant hazardous air pollutant emissions for all project components and phases.
- Create a report and use comparisons to make the units of measure understandable to the public.

3.4.2.3 Geology and Seismic Activity

Comments were received regarding impacts to the geology of the project area, including concerns that major faults occur in the proposed project area and may affect project facilities.

- Include detailed information about seismically active areas, geological faults and tectonic activity, and corresponding design features.
- Analyze impacts to bedrock, surface geology, gravel resources, paleontological resources, and landforms from all proposed project components.
- Describe how the proposed project facilities would withstand earthquakes, particularly the tailings storage facility (TSF).
- Analyze impacts from volcanic activity, especially at Amakdedori Port and along the pipeline from the Augustine Island volcano.

3.4.2.4 Surface and Groundwater Hydrology

Comments were received on impacts to groundwater systems and aquifers, transportation of groundwater, and how it moves underground. A thorough understanding of the groundwater and surface water hydrology and how they relate to each other should be demonstrated.

- Evaluate changes in water volume in the stream areas impacted, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. Include seasonal changes to the different stream segments.
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points. Areas of stream incision as a result of flow changes should be identified, as well as losses of connectivity to floodplains and riparian wetlands currently.
- Address earthquake impacts on hydrology characteristics.
- Explain the water balance model of the project. A complete water management plan based on recent data should be provided before impacts can be assessed.

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3.4.2.5 Noise

Comments were received on impacts of noise pollution as a result of project construction and mining operations.

- Discuss noise impacts of blasting in the project area, and describe the blasting methods that would be used.
- Consider noise in the water created by the proposed icebreaker ferry and the impacts to fish, bears, and other wildlife.

3.4.2.6 Spill Risks and Releases

Comments were received about the potential for fuel and oil spills or accidental releases from various aspects of the project, including adequate response capacity to clean up spills in various conditions, and potential impacts to natural resources or environment from spills or release.

- Analyze impacts of spills of diesel and natural gas to every resource discussed in the EIS.
- An earthquake could rupture the gas pipeline under the lake when salmon are migrating and impact fish and wildlife.
- Explain who is responsible for spill response on Cook Inlet and Iliamna Lake. Response plans should be developed for all parts of the project.
- The wetlands that surround the mine site would make it difficult to contain contaminated waters if any of the storage or processing sites at the mine or along the transportation corridor were to leak or fail. Therefore, it is essential to ensure that this infrastructure has no possibility of failure during the life of the mine or for decades to centuries after the mine is closed down.
- There is concern about the number of times the ore slurry/concentrate, fuel, and other supplies must be transferred. Each transfer increases the risk of a spill or release.

3.4.2.7 Hazardous Materials

Comments were received about the potential for hazardous material storage, spills, and impacts to resources or the environment; in particular, to address chemicals associated with mine process and storage of materials (such as arsenic or acids).

- The revised mine plan calls for no cyanide to be brought in to the region.
- Address impacts of hazardous and solid waste generated from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and evaluated into the Draft EIS.
- Describe how blasting agents would be transported and managed, and how much would be used.
- During the copper extraction process, an alcohol is added during the flotation along with a collector chemical called potassium amyl xanthate (or the potassium salt of an alkyl dithiocarbonate), which can be toxic.
- The process chemicals described in the permit application appear to be generic descriptions, rather than descriptions of the specific chemicals to be used. A more complete description of the ore processing is needed. A complete list of process chemicals, by manufacturer, as well as the annual amount to be used, is also required.
- List any herbicides, pesticides, or road de-icing compounds.

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3.4.2.8 Natural Gas: Pipeline and Gas Supply

Comments were received on the impacts of the proposed project on the supply, demand and cost of natural gas in the proposed project area and Cook Inlet.

- There could be lower costs of fuel in rural Alaska as result of potential new gas supply and spur/distribution systems.
- The supply of available natural gas in Cook Inlet may not be sufficient to provide power to the proposed project.
- Explain if the use of natural gas by PLP would affect existing Alaska Railbelt supply and users.

Comments were received on the design, route, construction, and safety and reliability of the natural gas pipeline crossing Cook Inlet and Iliamna Lake.

- That part of Alaska has exceptionally high tides – routinely greater than 20 feet. Please consider this when analyzing an underwater gas pipeline.
- There are safe and secure methods to construct a pipeline that would cross existing submarine cables. The pipeline owner/operators should enter into a cable crossing agreement to ensure the safety and security of both the fiber cables and the gas pipeline.
- There are not any pipelines in Cook Inlet this long. A commenter noted that in Nikiski, the seabed can change rapidly. This can cause unforeseen problems in maintenance. While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay experiences challenging winter sea conditions.
- At Iliamna Lake, maintenance could be difficult when the lake is frozen.
- The route for this pipeline would be near the base of Augustine Volcano, which is the most active volcano in Cook Inlet and has erupted eight times since 1812.
- Cook Inlet has huge tides, glacial silt, ice flows, and strong currents and is corrosive to almost everything. Explain who will pay for the maintenance and repair of this pipeline.
- The eastern end of the proposed pipeline route runs along a soft, sandy bluff north of Anchor Point. The bluffs are eroding an average of 1.1 feet/year.

3.4.2.9 Tailings Dam

Comments were received regarding concern for the stability of the tailings dam, potential for tailings dam failure, and impacts of such a failure.

- Describe the impacts of dam failure and recognize the public concern of the stability of the tailings dam. Specifically, consider the impacts to biological and social environments of a dam failure as a result of an earthquake.
- Look at examples of other tailings dam failures (in Spain, Canada, Australia, and others in the United States).
- Analyze impacts from tailings leaks and leaching, not just failures.
- Tailings dam engineering has improved considerably over the decades. Pebble's tailings dam design will have to be approved to adequately protect the environment before the project would be permitted.

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- Analyze impacts from rainfall causing overtopping of the tailings dam. Alaska has a propensity for large storms and with climate change and warming effects, risk for large storms is increased.
- It is recommended that large tailings dams use dynamic rather than pseudostatic analysis for potential dam failure under earthquake loading.

3.4.2.10 Water Quality and Quantity

Comments were received concerning a detailed analysis and discussion of the physical and chemical impacts on all water resources.

- Analyze impacts to water quality and quantity from construction, operation, and post-closure.
- Analyze pit water and tailings dam management.
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches.
- Analyze erosion, turbidity, temperature changes.
- Ferry crossing concerns, including changes in shoreline erosion and turbidity, and pollution from the proposed ferry.
- Composition of the (potential) contaminants from all project sources, including blasting.
- Prevailing winds will create water surface waves on the pyritic tailings facility which will allow oxidation of the tailings.
- Risks associated with acid rock drainage from mine project components, including the waste rock facility, leaching, and pathways for acid rock drainage. Acid rock drainage was noted as a potential source of impact on many resources, such as water quality, wetlands, fish, and subsistence food resources.
- Describe how acid rock drainage, tailings, and metals leaching would be tested, monitored, and treated during mining and post-closure.
- Analyze the potential for wastewater to enter streams and rivers.
- Project components should be designed for 500-year events, given predictions for wetter spring and summers in this area.
- The EIS should identify the Alaska Pollutant Discharge Elimination System discharge locations, identify applicable water quality standards, and analyze the likelihood of discharges to meet standards.
- The EIS should identify and describe the location of water sources for hydrostatic testing.

3.4.3 Biological Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific biological resources, including:

- Vegetation and ecosystems.
- Fish and aquatic resources.
- Wetlands and special aquatic sites.
- Wildlife and non-threatened and endangered species birds and mammals.
- Threatened and endangered species.

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3.4.3.1 Vegetation and Ecosystems

Comments were received concerning potential for disturbance from project construction and operations, and from invasive species. Comments were also received concerning terrestrial, lake, and marine habitat impacts from project construction and operations.

- Analyze the potential direct, indirect, and cumulative effects of all components and all phases (including reclamation and restoration) of the proposed project on terrestrial, marine, and freshwater ecosystems.
- Analyze impacts to rare and sensitive plants (including removal).
- Address how fugitive dust would affect vegetation within the project area and beyond.
- Address risk for invasive (non-native) species introduction by marine barges and the ferry; include ballast water management.
- Analyze ecosystems as unique in the Bristol Bay area, in the degree to which they remain unaffected by commercial development and other human technologies. Evaluate how the proposed project could alter the biological and human ecosystems and landscape.

3.4.3.2 Fish and Aquatic Resources

Comments were received related to potential impacts to fish (King Salmon, Sockeye Salmon, Silver Salmon, Pink Salmon, Chum Salmon, Dolly Varden/Arctic char, Rainbow Trout, and Grayling) populations, abundance, diversity, migratory patterns, contamination, and potential for displacement from project components.

- Address effects of ferry traffic on resident and migrating fish in Iliamna Lake: the potential for the ferry to cause erosion of the lake shoreline and the effect of that on fish; the effect of the ferry on salmon spawning and rearing habitat; the effect of increased noise on salmon productivity; the potential for increased turbidity and its effect on salmon; the potential for ferry traffic to cause wave action that could harm the fry on their way to the ocean; the potential for ferry propellers to entrap fish and cause mortality; and the potential for fish to avoid the area around the ferry and not come back to the area.
- Address effects of gravel pits on stream hydrology and fisheries.
- The USACE should understand that a disruption of habitat could affect the nutrients returned to the ecosystem by the salmon provide when they return to these watersheds.
- Water withdrawal and capture, storage, treatment and release of wastewater associated with the mine could impair the fish habitat functions of streams, wetlands, and aquatic resources.
- Address the potential for fish to become contaminated from sedimentation, metals, toxins, mining chemicals or fuel spills.
- Evaluate how the proposed project road to Iliamna Lake would impact fish species as road traffic will create dust that may contain copper and other heavy metals that could enter the watershed and affect resident aquatic organisms including salmon.
- Dredging off Amakdedori Beach may affect schooling of salmon and/or Dolly Varden before they run up Chenik Creek, McNeil River and Mikfik Creek.
- Analyze the impact of anthropogenic erosion on fish gills from construction and mining. Anthropogenic turbidity has severe impacts on newly emergent fry. Address

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the effects of constructing the Amakdedori Port and maintenance dredging would have on Cook Inlet herring spawning habitat in Kamishak Bay.

- The area that makes up the "headwaters" is full of underwater streams in which small fry/fingerlings swim as they emerge. They sometimes swim into lakes and ponds of the region and often get too big to get out; they are called land-locked salmon.

Comments were received regarding the impacts of the mine access road crossing streams and anadromous waters, and the impacts of those stream crossings on fish.

- The EIS must include and present all the waters documented in the Alaska Department of Fish and Game Anadromous Waters Catalog at a minimum; however, it should be recognized that the Catalog under-represents waters that actually support anadromous fish on the order of 20 to 40 percent.
- Current plans will impact more than 5 miles of anadromous streams.
- The construction process would build an 80-mile road system with 200 stream crossings impacts that should be analyzed.
- Analyze bridge and culvert impacts to fish, including fish passage and habitat condition change. The proposed 75-mile-long road system would include 222 culverts, 149 of which are not designed for fish passage.
- The proposed road corridor has been designed to minimize impact on wetlands, minimize stream crossings and avoid areas of known for subsistence and recreational use.
- Describe how state protocols regarding fish-bearing streams would be enforced.
- An independent third party needs to verify which streams along the road corridor are fish-bearing. History has shown that PLP and their consultants may have underestimated the number of streams containing fish.

Comments were received regarding the impacts to aquatic resources, including introduction of invasive species.

- Shipping from foreign ports may result in ballast water transporting invasive species such as green crab, which would have a devastating impact on the ecosystem and commercial shellfishery.
- The potential or known effects of a disrupted winter ice regime, lack of ice cover on resident species of fish, birds, and mammals should be investigated. These changes may have contributed to the most recent Kvichak sockeye run decrease. Partial or reduced ice cover may have affected planktonic production, hence food for salmon that may have caused salmon to smolt early.

3.4.3.3 Wetlands and Special Aquatic Sites

Comments were received on filling of wetlands and alternations of wetlands habitat, fragmentation, and loss of wetland habitat as a result of project activities.

- Include delineation of all wetlands that could be affected by the proposed project.
- The estimated mine site would fill 3,190 acres of wetlands and water bodies, nearly three times the maximum set by the Environmental Protection Agency (EPA) for Bristol Bay in 2014.
- Analyze impacts to wetlands dewatering and hydrological changes, pollution to wetlands, impacts on wetlands functions, clearing and removal of wetland vegetation,

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degrading wetland vegetation from all proposed Pebble project components and during construction, operation, and closure phases.

- Given the extent of streams, wetlands, lakes and ponds both overlying the Pebble deposit and within adjacent watersheds, excavation of a massive mine pit and construction of large tailing impoundments and waste rock piles would result in discharge of dredged or fill material into these waters.

3.4.3.4 Wildlife and Non-Threatened and Endangered Birds and Mammals

Comments were received related to potential impacts to wildlife (including terrestrial and marine mammals), and on potential impacts to migratory birds and waterfowl populations; abundance, diversity, migratory patterns and potential for displacement; and attraction of birds to tailing ponds.

- Assess how wildlife can acclimate to construction and operation impacts.
- Analyze how noise levels from construction or large vessel traffic may deter bears from coming to McNeil River Falls, or could affect bear behavior and change or end the use of McNeil River by bears.
- The proposed road and Amakdedori Port could change brown bear migration and result in brown bear mortalities.
- Analyze impacts that habitat fragmentation from Amakdedori Port and the mine access road would have on bear movements.
- Examine how increased contact between bears that use the McNeil River and humans could result in food conditioning of bears or direct bear mortality by humans.
- The proposed ferry could strike marine mammals (seals) in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry. The seals have been considered in the past for Endangered Species Act status.
- Ferries could impact the migration patterns of wildlife.
- The USACE should incorporate traditional knowledge on freshwater seals in Iliamna Lake into the EIS and be aware that there is a Freshwater Seal Commission.
- The transportation of mining materials across Cook Inlet and Iliamna Lake could have potentially negative effects for local marine mammals, particularly underwater noise pollution that impacts marine mammals.
- The Bristol Bay watershed is unique in that it provides habitat for more than 190 birds. Additionally, there are more than 40 species of water birds here and confirmed breeding sites for more than 22 species.
- There are no Bristol Bay Tribal Multi-Species Conservation and Management Plans for Iliamna Lake, the Nushagak River, Nushagak Bay, Kvichak Bay, and Alaska Peninsula. The USACE should mandate these tribal marine multi-species conservation plans be completed before issuing a permit.
- Describe what steps the developers propose to keep tailings ponds/lakes free from pollutants or physically restrict birds from trying to land on them.
- Analyze impacts from noise, blasting, and other human interference to birds.
- Blast control can mitigate noise impacts to birds, like they do with birds at the airport.
- Address effects of the project on birds and migratory waterfowl.
- Kamishak Bay is home to a large seabird nesting colony that would be impacted by disturbance generated from industrial development at Amakdedori Creek.

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- Bald eagles nest and feed along the coast and along all of the major salmon spawning rivers in the Bristol Bay and Cook Inlet regions, with a relatively high number of golden eagles also found here.
- Calving grounds for the Mulchatna caribou herd are in the proposed project area and the EIS should include an analysis of the impact of both mine construction and mine operations on caribou calving in the region.
- Exploration activities at the site have caused caribou to avoid the area.

3.4.3.5 Threatened and Endangered Species

Comments were received on impacts to threatened and endangered species as a result of project construction and operations.

- The proposed port site is designated Critical Habitat for the endangered Cook Inlet beluga whale and the threatened northern sea otter.
- Federally listed threatened northern sea otters and threatened Steller's eiders occur in the waters of Cook Inlet, including Kamishak Bay.

3.4.4 Social Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific social resources, including:

- Socioeconomics
- Subsistence
- Traditional way of life
- Archaeological and cultural resources
- Land ownership, management, and use
- Transportation and navigation
- Recreation
- Environmental justice
- Public health and safety
- Visual resources
- Wilderness characteristics.

3.4.4.1 Socioeconomic Impacts

Comments were received regarding the economic impacts to local communities, regional economy, and national economy.

- PLP should give the USACE an independently prepared economic feasibility analysis, which is usually done for other mines like Donlin. Without it, the USACE will be unable to take a hard look at all reasonable alternatives in the draft EIS.
- The Pebble Mine would bring much needed economic opportunity to a region by creating jobs during construction and operation. The Lake and Peninsula Borough has an unemployment rate of 16.6 percent. Presently commercial fishing has a very limited effect on some communities' local economy.
- Residents are moving closer to much larger metropolitan regions to seek opportunities that do not currently exist near their homes in the region. New job

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opportunities could reduce out-migration, which could help maintain rural schools and allow people in the region to participate in subsistence activities.

- Consider that the project would create a boom and bust economic cycle that would ultimately leave people without jobs.
- The mining company will bring their own workers and not train local people to work at the mine.
- The population would increase during construction and heavily impact local communities.
- Consider the socioeconomic impacts to Bristol Bay's recreational fisheries. More than 37,000 angling trips are taken to Bristol Bay each year, which supports dozens of businesses, and a $91 million annual economy. The project could also damage the Bristol Bay wild salmon brand because the watershed would no longer be pristine.
- The commercial salmon fishing economy sustains 20,000 jobs; 20,000 jobs will be lost if this mine goes forward.
- Consider that the Kennicott Copper Mine was located in the watershed of the Copper River which did not affect the value of the salmon fishery in that region.
- The impact of the use of Iliamna Lake and the proposed transportation corridors/pipelines on sport fishing and the sport fishing-related economy should be evaluated.
- Analyze impacts on the bear viewing industry near the proposed Amakdedori Port.
- Consider that fish taxes are important to the finances of the Bristol Bay Borough.
- Consider that PLP would not pay its fair share of equity to the state. The actual federal and state income royalty or tax on the production would be 3 to 5 percent of that production’s value. In comparison to oil, this is inadequate.
- Review social benefits such as education opportunities, and potential reduction in the high cost of living in the region due to transportation improvements.
- PLP should consider using regional Native corporations that are already in the pipeline construction and maintenance industry.
- Examine the economic costs and benefits specific to the state of Alaska including scenarios where no environmental disaster occurs and also the worst disaster happens.
- There were inquiries made in comments if there would be compensation to commercial fishermen if there is a disaster and fish prices go down, similar to what was done with Exxon Valdez.
- The risks to the people and environment would outweigh the short-term benefits.
- Examine the potential impacts to the Homer Electric Association ratepayers.
- The socioeconomic analysis in the EIS should include first order losses from habitat, second order losses, and public perception losses. Existence values have been acknowledged as real and quantifiable and should be used.
- The EIS should use a dynamic net economic benefit approach wherever possible in assessing the socioeconomic impact. One commenter noted that discounting future values can be a highly useful tool for comparing economic benefits over time but that this method may also be misapplied. The USACE should consider that a great deal of work has since been performed on existence values.

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3.4.4.2 Food and Fiber Production – Subsistence

Comments were received related to potential impacts to subsistence resources (food and fiber production) like harvest, sharing, and traditional use areas. Comments were also received on contamination concerns and/or avoidance of subsistence resources.

- The USACE should study the direct, indirect, and cumulative effects of construction, operation, and closure at all stages of the mine and relating infrastructure to all activities relating to fishing, hunting, and other subsistence practices for the Native Village of Tyonek, the Native Village of Port Graham, the Native Village of Seldovia, the Kenaitze Tribe, the Ninilchik Tribe, the Chikaloon Tribe, and all others near in and around the Cook Inlet regions.
- Consider the importance of the salmon fishery to subsistence and the heavy reliance on fish for all users in the area.
- Analyze impacts on subsistence resources including wildlife migration, habitat for growing food, traditional use areas, fisheries, berries and other edible plants, and the cumulative effects from other mining activity. Consider that impacts to any subsistence resource (e.g., fish, wildlife, vegetation) would impact subsistence as well.
- Analyze impacts of potential contaminants entering into the air or water and affecting subsistence resources, including effects on subsistence resources due to potential accidental spills, and bioaccumulation of toxins in subsistence resources, and effects.
- Consider the impacts to the residents along Iliamna Lake who rely on access to small islands for the harvest of bird eggs in the spring.
- We are in fear for our subsistence way of life. Leave our dinner table alone!
- Helicopter traffic during exploration disrupted subsistence activities and this would occur during construction and operations of the mine. Particularly, helicopter traffic impacts spring waterfowl hunting (geese), displaces caribou, and impacts the Koktuli River.
- Many species of fish are used for subsistence harvest, not just salmon.
- Analyze potential beneficial impacts to subsistence as cash income earned from jobs could support subsistence activities. Cash income could be available to fund the boats, motors, fuel, and nets necessary to maintain subsistence activities.
- A sudden influx of noise, people, and heavy equipment over ancestral hunting and fishing lands would have an effect on the intangible resources the sustainable subsistence culture has to offer.
- There could be an influx of workers to construct, run, and remove the mine that would want to have fishing and hunting access to the same resources as the local subsistence communities and will generate user conflict.
- The mine and roads might also facilitate access to previously lightly used areas increasing hunting, fishing berry picking and other pressures.
- Be sure to include Kodiak Island to your analysis, as it has important subsistence areas that could be impacted by the project.
- Over 80 edible and medicinal plants grow and are harvested in the project area including several species of berries, wild peas, wild onions, ferns, cow parsnip, rosehips, and many others.

Comments were received on impacts to important locations for subsistence activity from the project, including:

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- The road corridor would go through our winter moose hunting area in the Talarik Creek watershed.
- The Nushugak, Mulchatna, and Koktuli watersheds are the hunting and fishing areas for people of New Stuyahok.
- The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
- The mountain behind Nondalton is traditional subsistence area.
- The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.
- The people in Seldovia have a long tradition of subsistence fishing for herring in Kamishak Bay. The herring also support other animals that we subsist on.

3.4.4.3 Traditional Culture and Way of Life

Comments were received related to potential cultural impacts and the desire to maintain traditional practices. Includes comments related to traditional land use areas (cultural continuity), and traditional ecological knowledge.

- There are concerns that the mine would be detrimental to the culture, way of life, and history to the people that live in the area, and have been there for centuries.
- Fully disclose the potential impacts of project-related activities on local Alaska Native traditional ways of life. Local culture and environment has already changed from what it was historically, and this may affect the ability to pass values on to future generations.
- Traditional ecological knowledge should be studied and incorporated into the Draft EIS. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants, and other resources of the region.
- The profit from the mine and “benefits” are not long term, while preserving Native heritage and leaving a legacy for future generations is a cause that is worthy of consideration.
- The EIS must identify and describe the cultural and spiritual uses of water by the human communities of the region.
- The Amakdedori Port area has been used as a site for a cultural camp, subsistence use areas, and school field trips.
- EIS should look at the long term social impacts, such as trapping and lifestyle change impacts. The project will kill the hearts and souls of the people; our subsistence way of life has more than monetary value.

3.4.4.4 Archeological and Cultural Resources

Concerns were expressed about impacts to archaeological and cultural resources subject to Section 106 of the National Historic Preservation Act.

- Analyze impacts to cultural resources (historical and pre-historical sites) and direct destruction of cultural resources from all project components.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.

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- There are ancestral burial grounds at/near the proposed Amakdedori Port, along the road route on the south side of Iliamna Lake, and on the road route to the south ferry dock.
- Analyze impacts to irreplaceable Native Alaskan rock art sites. This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.

3.4.4.5 Land Ownership, Management and Use

Comments were received about land status (ownership), land management, and land use for the project area.

- The proposed mine site and many project components including the port site and a majority of the transportation corridor are proposed on state-owned lands. Mine construction, operation, and closure would limit any access to these lands and transportation corridor to private entities only.
- Ensure that activities are consistent with land use plans and goals of all landowners, including the State of Alaska, and Alaska Native corporations.
- The Pebble Mine will be built on state land set aside decades ago in Western Alaska specifically for mining.
- Although the area is classified in the State's area plan as "mineral," a classification is nothing more than recognition of the resource reasonably believed to exist in a particular management unit. The management intent is neutral as to whether mineral development should occur in these units.
- Disclose any impacts to Native Allotments and Native Corporation lands in the project area.
- A pattern of land use change would occur in the region that could be a long-term pattern with additional mining deposits explored for development.
- Analyze the effect of project components on the public use of the surrounding area with regards to trails and waterfront usage.
- Explain the security status of the ferry terminals, the mine access road, and Amakdedori Port, including when and how the public may or may not access or cross project facilities.
- Explain if local Tribal governments have included the mine access road in their Indian Reservation Roads Program that would make it public, versus private roads as stated by PLP.

3.4.4.6 Transportation and Navigation

Comments were received regarding the impacts to transportation systems, including airports, roads, rivers, and trails as a result of the project.

- Evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts at Iliamna Lake, Kamishak Bay, and Cook Inlet. The Draft EIS should evaluate how the ferry crossing and vessel traffic could disrupt schedules, local access and local boaters.
- An ice-breaking ferry across Iliamna Lake would create difficulties and hazardous situations for people travelling across the ferry route on snowmachines.

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- No depths are recorded on navigation charts for Iliamna Lake. Some rocks on the chart do not exist; others are not where the charts show them to be. Some are not on the charts at all. There are places where the depth goes from 400 feet to 30 feet.
- Consider the impact of travel restrictions from road and ferry and who is benefiting.
- The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
- The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 mph.
- A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.
- The Amakdedori Port location experiences very strong onshore winds that could be hazardous. It is also in an area that could be impacted by a tsunami.
- It will be difficult to maintain the Amakdedori Port dredged channel due to sediment transport in that area.
- The plans for the Amakdedori Port have been changed since the original permit application. The change may reduce maintenance and operation cost, however barge lightering of concentrate to the bulk cargo ships may increase risk and safety in the poor weather conditions Kamishak Bay is famous for.
- Analyze impacts from increased air traffic during all project phases.
- Concerns were expressed about additional traffic on the Sterling Highway.
- The mine access road would ascend a mountain pass before descending to Iliamna Lake. Has PLP submitted a design and specific route for the road? For perspective on what this road will look like, consider the Pile Bay-Williamsport road where rock slides and falling boulders are a constant threat.

3.4.4.7 Recreation

Comments were received on impacts to recreation and tourism; recreational hunting and fishing usage near the mine, along river systems, and in transportation/pipeline corridor during construction and operation. This includes comments on disruption of recreational experiences (bear viewing, sport fishing).

- Consider the effects of project components on recreational hunting and existing guided hunting operations (e.g., changes to access, disturbance of wildlife from helicopters or vehicle traffic).
- Concerns about impacts to fish, and how impacts to species could be detrimental to the sport fishing community and businesses.
- The proposed project would bring an influx of the number of people in the Iliamna area that would want to recreate, sport fish and hunt, including mine employees and support industry personnel.
- Displacement of wildlife would impact the experience of people, throughout the proposed project area but would specifically impact the recreationists at McNeil State Game Refuge.
- The mine itself and the proposed tailings dam could not be in a worse location to threaten the trophy rainbow fishing that the many fly-out lodges rely on. The lodges provide long term employment for many in the Iliamna and Lake Clark areas.

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3.4.4.8 Environmental Justice

Comments were received relating to disproportionate, adverse impacts to low income and minority communities as result of the proposed project.

- Analyze impacts related to environmental justice include food security and subsistence resources, health impacts from pollution and exposure to increased industrial activities and noises, increased risk of injury and exposure to hazardous materials, increased exposure to outsiders and the cascading social and psychological problems that brings.
- The economic benefits will not be for the people of the region but the impacts will.
- The environmental justice risk outweighs the benefits.

3.4.4.9 Public Health

Comments were received on impacts to local communities' public health and infrastructure as a result of the project (disease, contaminants, lifestyle changes, behavioral health, and physical health), as per EO 12898.

- An analysis of health effects, such as a Health Risk Assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health.
- Analyze public health concerns related to development and infrastructure development in rural communities.
- The short- and long-term impacts from all stages of the project include increased risks of accidents and injuries, exposure to hazardous materials, negative impacts on food, nutrition, and subsistence, increased potential for infectious diseases, and risks to health and human services from population-stressed infrastructure and services
- It is important for the EIS to consider the social and psychological impacts the stress of this project has already put on people and the communities who live in the project area.
- Evaluate the potential impacts of development on indigenous women, and increased rate of violence as a result.
- Fully discuss the potential that the proposed project could be associated with behavioral health impacts, such as increased use of drugs and alcohol. More disposable income in communities may increase the use of alcohol and drugs.
- An influx of people could bring diseases to an area with minimal healthcare available that may not be able to handle large capacities of patients.

3.4.4.10 Visual Resources and Aesthetics

Comments were received on visual impacts that included:

- Consider visual impacts of the mine, roads, and Amakdedori Port to recreation, and secondary industries like flightseeing operators and wildlife viewing guides.
- The project will have permanent and significant impacts on the appearance of the landscape as viewed from key observation points, planes, etc. and will in turn impact use and enjoyment of the area by many.

3.4.4.11 Wilderness Characteristics

Comments were received related to wilderness characteristics and values.

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- This area has wilderness characteristics, and is adjacent to a national park.
- The potential impact on the Koktuli and Nushagak rivers and tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake have an undeniable wilderness quality that could be impacted by the proposed project. Impacts to the Gibraltar, Talarik, and Koktuli drainages should be considered and, when possible, quantified
- The project would mean the loss of pristine wilderness throughout the area.

3.5 SUMMARY OF PUBLIC COMMENT—NEPA PROCESS AND REGULATORY COMPLIANCE

Comments were received on the NEPA process and need for compliance with regulations including:

- The general NEPA process
- The purpose and need of the proposed project
- The proposed action and project alternatives
- Cumulative effects analysis
- Mitigation measures
- Monitoring and adaptive management
- Bonding and reclamation
- Data and available information
- Research and evaluation needs.

3.5.1 The NEPA and EIS Process

Comments were received about the overall NEPA and EIS process, the permit application to the USACE, due process, and the scoping meetings. These types of comments generally do not inform preparation of the EIS as to the project purpose and need, resources/level of impacts to be analyzed, or alternatives to the proposed action that should be considered. A summary of the general NEPA process comments includes the following:

- The Pebble Mine application is incomplete. The USACE should suspend its NEPA process/ not release a Draft EIS without more information from PLP. Foundational information for major parts of Pebble's proposal, including the proposed transportation corridor, port or use of Iliamna Lake, are lacking from their application. The data PLP supplied is more than 10 years old and thus is not reliable for analyzing project impacts.
- The Pebble Mine application is not incomplete. The Pebble Mine plan and application has recently been revised to satisfy EPA guidelines.
- There should be opportunities at each public hearing for oral comments in an open public forum. Everyone should have the opportunity to hear the comments of fellow concerned citizens. Open oral comments provide new information and learning opportunities not only for USACE and their contractors, but for all attendees. Please change your scoping format for future meetings to include an opportunity to express concerns through an open oral comment period.
- The limited number of scoping hearings and failure to host scoping hearings in communities within the Nushugak and Kvichak River drainages means that the opinions and voices of local populations have not been accounted for.

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- Consider additional scoping meetings in Washington and Oregon.
- Extend the scoping period beyond 30 days. Tribes in Bristol Bay are requesting at least 120 days for this scoping period.
- A 30 day scoping process is sufficient. Few projects have been talked about for as long and with such passion as the Pebble Mine and at this point, no new information about possible adverse effects will come to light.
- Changing the mining plan in the middle of the scoping period means the scoping comment period should be extended and new meetings held.
- The USACE should compare PLP's plans to the EPA's analysis before moving forward with permitting.
- PLP should get a fair permitting process.
- The EIS process is being rushed; the USACE took more time to prepare the Donlin Gold EIS. The USACE cannot take the 'hard look' required by NEPA in this timeframe.
- With the loss of funding, the USACE should reject this application as insufficient, since this is no longer a financially viable project.
- The Pebble Project has changed some of their plans to accommodate concerns of Alaskans. The State of Alaska has a strong track record of regulating responsible mineral development for projects of all sizes and complexities. The Pebble Project will be no exception.
- The USACE evaluation should include the already defined types of authorizations required for a mine like Pebble and the proven scientific and technical information required to support these decisions.
- To manage the high volume of public comments the USACE should consider using software that uses Near-Duplicate Detection.
- The scope of the EIS should include impacts to federally protected units near the project site, including National Parks and National Wildlife Refuge units.

Comments were received that the USACE should initiate formal consultation and coordination with tribal governments. This includes comments on formal consultation and coordination under EO 13175.

Coordination with other agencies is an important part of the NEPA process. Comments were received on how the USACE should seek and promote full- and broad-scope participation by federal and state resource agencies and tribal government entities as cooperating agencies, and undergo comprehensive formal consultation with appropriate entities (for example, consulting with the National Marine Fisheries Service regarding Essential Fish Habitat). Comments were also received on how the USACE should extend cooperating agency invitations to interested tribal governments, as well as local, state, and federal agencies with special expertise and involve cooperating agencies on the full scope of the proposed Pebble Project.

3.5.2 Purpose and Need of the Action and USACE Permits

Comments were received regarding the purpose and need of the action, and the public interest of the project for the purpose of USACE permitting.

- The Pebble EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing

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regulations for NEPA. This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

- Explain how an EIS process can proceed without more commitment from financial backers.
- PLP says their project would help with mineral independence but they will export all of the mined minerals.
- The USACE should accept the purpose and need statement contained in the permit application from PLP.
- The Draft EIS should reflect not only the purpose and need of the project proponent, and the USACE, but also the broader public interest and need based on the scoping comments.
- Describe the permit process. Specifically note if there is a time limit for the applicant to act on a permit before it becomes invalid.
- The lack of a feasibility analysis makes the project as planned un-practicable in regards to NEPA requirements.
- Wrong mine, wrong place.

3.5.3 Proposed Action and Alternatives

Comments requested more detailed information on the proposed project plans, such as the water management plan, transportation plans, and spill response plans.

- The design and operational plans for the proposed project and alternatives should be evaluated.
- Because PLP changed their plans in the middle of the scoping period, the project design is still fluctuating and is not ready for an environmental review.
- The proposed project design and the modern environmental safeguards it incorporates, as well as the significant economic potential it represents for the State of Alaska, should be fairly considered and incorporated into the EIS based solely on the scientific data presented to the USACE in this proposal.

Commenters suggested that a wide range of alternatives should be analyzed for mine pit and tailings locations, types of tailings facilities, tailings dam construction, mine rate and strip ratio, waste rock segregation methods, gold recovery methods, support facility locations, energy sources, pipeline routes, water discharge locations, road alignments, types of water crossings, and ferry routes. Specific alternatives to the proposed project that were suggested include:

- The USACE must look at a range of alternatives beyond Pebble's mine site and include alternatives for mining copper and gold somewhere other than Bristol Bay.
- The USACE does not need to explore alternatives to Pebble's proposed mine site as being somewhere other than Bristol Bay because it already 100 miles from the bay and should be deemed a reasonable distance.
- Apply a realistic scope to assess mine impacts. The timeframe of analysis is small at 20 years; the applicant's website notes that the mine can operate for 200 years and could have 11 billion tons of ore. The USACE should consider alternatives to permit 50 percent or 100 percent of the current known resources to be mined.
- There should be an alternative that restricts the size of the mine to what the EPA found appropriate in its Watershed Assessment.
- All of the pyritic tailings should be removed and not stored on the land in perpetuity.

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- There should be an alternative that includes full treatment of pyritic tailings at the time of mine closure, before or instead of dumping them in the mine pit.
- Tailings would be thickened, possibly to 55 percent solids. Alternatives (slurry, thickened tails, paste tails) need to be analyzed in the EIS.
- The EIS needs to provide an alternative that uses dry stack tailings. Dismissal of such an alternative needs to provide examples of where dry stack is currently used successfully and why this can or cannot be replicated.
- As an alternative to a tailings ponds dam for waste storage, all waste should be trucked to Canada and stored in Canada, since the company is Canadian.
- Different covers for the reclaimed tailings area, including “store and release” and impermeable covers, need to be assessed as alternatives in the EIS.
- Consider an alternative where the tailings pond is constructed at a location that will not impair surface waters, block fish passage, or have the potential to contaminate ground or surface waters.
- The EIS needs to include alternatives that provide water storage areas where excess water can be moved out of the TSF and out of the seepage pond in the event of extreme precipitation.
- The EIS should produce an alternative in which all embankments except the internal one are downstream construction.
- Modern pro-active mine design suggestions, including not placing tailings dams where a failure would put sensitive habitat at risk, should be assessed as alternatives in the EIS.
- Consider including a combination of simultaneous open pit and underground mining, a larger open pit mine, or a longer lived open pit mine. It may be possible to mine with open pits for the shallower portions, and mine by underground mining the deeper or eastern portions of the Pebble Deposit.
- The USACE should consider finding an alternative location to take the ore for processing.
- The EIS needs to analyze whether gravity concentration as a recovery method for gold recovery is viable at this deposit. This appears to be a method used in placer deposits.
- The USACE should consider the possibility of having cyanide processing at the mine site and transporting cyanide by truck or pipeline North and West toward the Nushagak Hills where pits would be out of range of the creeks and rivers flowing into the salmon spawning areas.
- An alternative of running mining operations and ore trucks on natural gas or electricity needs to be included in the EIS.
- The EIS should examine an alternative that treats water for discharge to meet the water quality of the natural receiving waters, if they are of higher quality than Alaska most stringent criteria. Studies have shown that where natural waters are very low in copper and cadmium, discharges above those background levels can have potentially toxic effects.
- The EIS needs to include an alternative for water treatment that will result in zero discharge of metals to the watershed.
- In order to contain gases that may contain acid rock drainage from getting into the air in the project area, the USACE should develop an alternative that covers the

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development with an air tight structure and the fumes should be cleaned before release into the atmosphere.

- The previous plan for a road along the northeastern side of Iliamna Lake, and the new proposed roads and a ferry across Iliamna Lake both put different communities at risk.
- The EIS should consider identifying alternative ferry terminal locations if the proposed sites are found to contain valuable spawning and/or rearing habitats for sockeye salmon.
- The two ferry terminal locations are both at the mouths of blue ribbon trout streams (Upper Talarik Creek and Gibraltar River). Alternative sites closer to populated areas should be considered if possible. The village of Kokhanok airstrip would be an alternative on the south side; a location closer to Newhalen, but away from the mouth of the river is an alternative on the north side.
- The mine access road would follow a branch of Upper Talarik Creek. An alternative that places a dock in Iliamna and uses the proposed Iliamna Spur Road to access the mine needs to be considered in the EIS to reduce potential impacts on Upper Talarik Creek.
- A better alternative is to use the existing road and resources at Pile Bay and Williamsport.
- Running an ore concentrate pipeline around Iliamna Lake to the existing road between Pile Bay and Williamsport is a safer alternative to ferrying ore concentrate across Iliamna Lake in the winter to address concerns about the potential for contamination of surface water in Iliamna Lake.
- Consider having only seasonal (summer) barge transport across Lake Iliamna to avoid impacts to winter transportation options for residents of nearby villages.
- As an alternative to the Iliamna Lake crossing, consider a haul road that would stay north of this lake, then head south from Pedro Bay to the Amakdedori port.
- The road system would cross numerous anadromous streams. It would be best to require bridges at all of these crossings. Oregon and Washington states have been working for many years to bring back their salmon runs. Recreating salmon habitat including headwaters has proven to be extremely hard.
- A port at Diamond Point in Iliamna Bay should be evaluated against the proposed Amakdedori Port.
- Alternative port sites should be evaluated due to the potential ecological impact from the project.
- There is no need to dredge the proposed port to -50 feet; a shallower depth should be evaluated.
- The EIS should assess the whole breadth of dredging activities when determining the possible impacts to aquatic organisms and consider practicable alternatives that would avoid and minimize impacts.
- The range of dredged material management alternatives include should include beneficial uses such as beach nourishment or construction material, a disposal site in internal waters landward of the Kamishak Bay closing line, and an ocean disposal site seaward of the Kamishak Bay closing line.
- The EIS should consider alternative methods for delivering natural gas to the project area, given the risk of natural gas entering the marine environment, the impact it

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would have on marine resources, and how gas line leaks or ruptures would be contained.

- The EIS should review potential alternative alignments for the pipeline route, such as an alignment north of Augustine Island.
- Include an alternative pipeline route that goes north to connect with the planned natural gas pipeline to support the development and operation of the Donlin Mine.
- Alternative fuel sources should be evaluated in an effort to eliminate the potential long term consequences that a subsea pipeline can have on the environment.
- Alternative energy sources should be examined. Many of the minerals to be mined will go into solar panels, wind turbines, and hydro turbines. The PLP could support the industries they will be supplying by utilizing alternative, renewable energy sources.
- The EIS should consider alternatives to laying the pipeline directly on the seafloor bottom (unburied) and evaluate the effects of an unburied pipeline's impact on crab movements, access to important habitat, and direct mortality.
- The EIS should evaluate practicable alternatives for reducing the amount of natural gas pipeline that is installed in the Sterling Highway right-of-way, which is managed by the Alaska Department of Transportation and Public Facilities.

3.5.4 Cumulative Effects Analysis Process

Comments were received on how the cumulative effects analysis should be thorough, well-defined, and complete.

- Describe how the Draft EIS process considers cumulative effects, and identify the geographic scope and timeframe for the cumulative effects analysis.
- The USACE needs to acknowledge that the current permit application could be the initial phase in a much broader mine development plan. Pebble Limited Partnership has repeatedly said, as recently as September 2017, their project is, "a multi-generational opportunity. Its size and scale will lead to a very, very long life mine." Based on statements such as this, and official records indicating they plan to mine up to 11 billion tons of ore, it is reasonably foreseeable that Pebble intends to expand its mine far beyond what is currently proposed. Reviewing just phase one of the project unlawfully segments environmental review, shortchanges the public interest, and risks untold impacts to the Bristol Bay region's world-class fisheries.
- There are 20 large-scale active mining claims in the Bristol Bay watershed that this project could encourage by providing the transportation and power infrastructure. The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- The EIS needs a cumulative effects analysis on culture.
- Additional large-scale landscape and infrastructure development, facilitated by the initial road, pipeline, and barge and ferry ports is a reasonably foreseeable impact. The EIS should discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.
- The EIS should include an assessment of the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.

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- The EIS should include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure.

3.5.5 Mitigation Measures

Comments were received related to the need for project mitigation, and suggestions for mitigation measures.

- Use scientific data that details what damage is anticipated and determines whether and how such damage can be mitigated, including whether such mitigation is even possible.
- Tribes and the public should be involved in the mitigation planning, and monitoring of the proposed project.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- Consider and recognize the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- The measures suggested by PLP will not work.
- PLP has not given any mitigation plans for sociocultural impacts; sociocultural impacts cannot be mitigated.
- PLP has not provided a plan for compensatory mitigation. The Draft EIS should describe such a plan and reasonable alternatives to it. The USACE should consider mitigation banks, or at a minimum, in-lieu fee programs, not less reliable permittee-responsible mitigation.
- Water takes the path of least resistance, so rainfall will attempt to make its way to the river bodies, but this can be mitigated with runoff ponds and filtrated release.
- Consider bilge water treatment that is capable of more than oil-water separation to protect Lake Iliamna's ecology.
- Require that the tailings pond be lined in such a way as to prevent any interaction between tailings waste and groundwater.
- This EIS should address the timing of ferry traffic across Iliamna Lake with regard to the movement of commercial fishing boats across the lake, both before and after the salmon season, and during salmon spawning.
- The ice-breaker ferry should be constructed and assembled at an alternate location to allow for naval architectural oversight and engineering support.
- Construct the natural gas pipeline in the winter to reduce environmental impacts.
- Suggested mitigation measures for the road corridor include chip sealing, winter maintenance plans, monitoring culverts, plans for vehicle emergency response, clear policy on use of the road by non-mining personnel.
- All culverts should be required to be designed for fish passage at all times, and monitored and corrected to ensure fish passage for the lifespan of the project and closure.
- The culverts should be designed with software that can better predict stress and deflection in heavily-loaded, complex soil structures interaction dependent culvert structures.
- All upland water crossings should be designed for all impacts above the 1.5 times stream width at ordinary high water.

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- Take measures to decrease whale strikes by ships.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.
- There should be no fly zones, to address caribou hunting impacts.

3.5.6 Monitoring and Adaptive Management

Comments were received in regards to the need for monitoring plans during operations and after closure of the mine.

- The history of multiple open pit mining sites has shown that the open reservoirs put in place to hold contaminated water and processing liquids have routinely been compromised by leaking and/or by drastic failure of containment levees. While they highlight the measures taken to put these toxins in containment, they fail to address the long term maintenance and mitigation of the toxins to make them inert.
- Explain what oversight and monitoring would be applied to meet minimum detrimental environmental conditions, by whom, and under what authority.
- Explain if there would be a fund for additional environmental monitoring while the project is ongoing.
- Describe how and by whom the tailings dam will be monitored during project operations and then at the end of the mining period.

3.5.7 Bonding and Reclamation

Comments were received related to reclamation activities, bonding, and setting up an escrow fund for restoration. Comments asked the USACE to explain in the EIS the mechanisms for treatment in perpetuity and post-closure (i.e., plan for permanent water treatment, the entity that would pay post closure costs – secure financing in perpetuity).

- Alaska regulatory requirements require a financial assurance to cover the costs of premature closure of the mine and the costs of post-closure water treatment. Calculating this cost is an essential part of the economic analysis EIS.
- Local communities would be hooked up to the gas line, as well as a maintenance crew watching over the hazardous tailing piles and dams. Describe bonding to cover these costs if something happens to PLP.
- The reclamation bond amount needs to be enough to fix any damage. This needs to be a permanent interest bearing fund that will supply enough funds in perpetuity, to cover unexpected future disasters, not just planned monitoring and reclamation.

3.5.8 Data and Available Information

Comments were received that suggested specific, documents, articles, or other information that should be utilized when developing the Draft EIS.

- Review research on fiber optics cable placement on tundra by Rorik Peterson at the University of Alaska Fairbanks. In addition, the USACE should review mapping provided by GCI regarding fiber optic cable placement of the TERRA-Southwest and Kodiak Kenai Fiber Link cable crossings in Cook Inlet and Iliamna Lake that would intersect with the proposed natural gas pipeline.
- Acknowledge how Traditional Ecological Knowledge information may be used and how to ensure that sensitive information is protected and follow a set of protocols for use of this information.

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- Regarding impacts to shellfish populations, review the following:
  - Alaska Department of Environmental Conservation: Cook Inlet Subarea Contingency Plan (CISCP) sensitive areas section. Available from https://dec.alaska.gov/spar/ppr/plans/scp_ci/CISCP_DSensitive_Areas_Jan2017.pdf.
  - Collapsed or recovering shellfish fisheries in the state of Alaska. Preliminary Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1 1J02-06, October 1999.
- Review spills in Cook Inlet. In a study by the Cook Inlet Regional Citizen's Advisory Council, 70 of the 88 were caused by structural or mechanical failures.
- "After leaks, Cook Inlet's aging oil and gas pipelines get an unprecedented review." *Anchorage Daily News*, May 2, 2018.
- Woodson, Ross D. 1990. Offshore Pipeline Failures. University of California, Berkeley, Department of Civil Engineering, Hydraulic and Coastal Engineering.
- Alaska Department of Fish and Game, Division of Commercial Fisheries news release: 2018 Bristol Bay Sockeye Salmon Forecast.
- *The Economic Importance of the Bristol Bay Salmon Industry.* Prepared for the Bristol Bay Regional Seafood Development Association by Gunnar Knapp Mouhcine Guettabi Scott Goldsmith. April 2013.
- There is a recent text book edited by Dr. Carol Anne Woody that should be a resource for the EIS.
- *Review of Pebble Limited Partnership's Environmental Baseline Document, Geochemical Characterization.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- *Critique of Pebble Limited Seismic Hazard Assessment.* Available from http://pebblescience.org/pebble-ebd-critiques.html.
- Regarding salmon and fish habitat, review the following:
- Limpinsel, D. E., Eagleton, M. P., and Hanson, J. L, 2017. *Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska.* EFH 5 Year Review: 2010 through 2015. U.S. Dep. Commer., NOAA Tech.
- Review certified fish habitat areas found here: https://extra.sf.adfg.state.ak.us/
- Ching, Jason S., Curry J. Cunningham, and Thomas P Quinn. *Iliamna Lake Spawning Ground Habitat Assessment and Data Access*. Final Report to the Bristol Bay Regional Seafood Development Association, December 2014. School of Aquatic and Fishery Sciences University of Washington.
- Brennan and Daniel E. Schindler and Diego P. Fernandez, 2017. *Using strontium in otoliths to determine the natal origin and habitat use of sockeye salmon in the Nushagak River.* University of Washington, School of Aquatic and Fishery Sciences, University of Utah, Department of Geology and Geophysics.
- Hauser, William J. 2007. Potential Impacts of the Proposed Pebble Mine on Fish Habitat and Fishery Resources of Bristol Bay. Fish Talk Consulting.
- Pebble Project Freshwater, Marine Fish and Instream Flow Technical Working Groups: Development of Study Objectives and Agency Recommendations.
- Bristol Bay Fish Facts. Prepared for United Fishermen of Alaska Salmon Habitat Information Program, for Pebble Mine EIS Scoping—2018. See also Additional

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Anadromous Cataloged Waterbodies (attached to public comment submitted by United Fishermen of Alaska).

- In incorporating potential human health effects of the proposal and environmental impacts, apply the four components of the precautionary principle, as described in Kriebel et al., 2001: *Environmental Health Perspectives*. Available from https://www.ncbi.nlm.nih.gov/pubmed/11673114.
- Sharma, R. P., & Kumar, A. 2013. *Case histories of earthen dam failures*. International Conference on Case Histories in Geotechnical Engineering, 8, 6. Available from

  https://scholarsmine.mst.edu/cgi/viewcontent.cgi?article=3092&context=icchge.
- It has been reported that PLP has Light Detection and Ranging (LIDAR) data that covers the project area. LIDAR should provide a good indication of surface faulting. The LIDAR data could be very helpful in addressing the question of whether the Lake Clark fault may extend farther to the southwest.
- "Suncor investigating after more than 100 birds die at new oilsands mine". *Financial Post*, September 19, 2017.
- Bristol Bay Tribal Multi-Species Conservation and Management Plans. Currently there are none for Iliamna, Nushagak River, Nushagak Bay, Kvichak Bay, and Peninsula, but they should be incorporated into the EIS when complete.
- Cederholm, C. J., D. H. Johnson, R. E. Bilby, L.G. Dominguez, A. M. Garrett, W. H. Graeber, E. L. Greda, M. D. Kunze, B.G. Marcot, J. F. Palmisano, R. W. Plotnikoff, W. G. Pearcy, C. A. Simenstad, and P. C. Trotter. 2000. "Pacific Salmon and Wildlife: Ecological Contexts, Relationships, and Implications for Management." Special Edition Technical Report, Prepared for D. H. Johnson and T. A. O'Neil (Managing directors), Wildlife-Habitat Relationships in Oregon and Washington. Washington Department of Fish and Wildlife, Olympia, Washington.
- *Where Water is Gold: Life and Livelihood in Alaska's Bristol Bay.* By Carl Johnson, with a foreword by Sandra Day O'Connor. Copyright 2016 by Braided River and the Mountaineers Foundation.
- *From the Hinterlands to Tidewater: A Grassroots Pictorial 1885-1965.* By John B. Branson, 1998. The National Park Service, Lake Clark National Park and Preserve.
- Kokhanok portion of the Katmai Project Jukebox program. Judy Nelson/Shirley Nielsen. http://jukebox.uaf.edu/Katmai/Kokhanok/html/main.html
- H W McCurdy. 1966. Marine History of the Pacific Northwest. Pg 344. http://alaskashipwreck.com/shipwrecks-by-area/south-central-alaska-shipwrecks/south-central-alaska-wrecks/
- Bristol Bay Seasonal Subsistence Gathering Cycle. (Attached to comment submitted by Curyung Tribal Council).

3.5.9 Research and Evaluation Needs

Comments were received regarding the lack of baseline research, monitoring, and evaluation needs, or data gaps for the project.

- The USACE should suspend its NEPA process until the PLP presents sufficient environmental baseline and economic data about its proposal so as to reasonably inform the NEPA process.

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- No new baseline documents or data were submitted with PLP's application to the USACE in December 2017. The only publicly available baseline documents compiled by PLP are now more than a decade old, with data collected from 2004 to 2008. Those baseline studies failed to include newly proposed project components such as the transportation corridor, Iliamna Lake, and the proposed port site.
- Study the Montana mining industry (e.g., Berkeley Mine) and how often that state has experienced a negative environmental pollution outcome from a mine which was not cleaned up properly.
- There is a lack of baseline studies on newly added mine components for an informed permit process, such as wastewater discharges to Frying Pan Lake.
- An ecotoxicology assessment needs to be conducted for the pit lake, and it needs to be conducted when the pit first rebounds to its full level, and where pit lake stratification turns over and pit lake water mixes.
- Baseline data for the proposed Amakdedori Port and Kamishak Bay may be lacking in terms of what is known about water currents, shifting sands/silts and ice and how these physical conditions may affect trenching. The mud at Amakdedori Bay provides and important ecological function and habitat.
- No baseline data exists for the proposed port and use of Iliamna Lake, or the 83-mile transportation corridor making it impossible to analyze the potential impacts these activities would have on sensitive salmon habitat, tributaries, and adjacent wetlands.
- There are no relevant studies of Iliamna Lake. Frissell and Shaftel's spawning data are more than 7 years old.
- The Alaska Department of Fish and Game lacks assessment tools for the shellfish that live in Cook Inlet. Current baseline studies for these species do not exist. In light of the possible increase in sediment deposition rate resulting from dredging in the area of the Pebble Project, the USACE should require a shellfish population baseline assessment and impact statement regarding the dredging project prior to any dredging work beginning in Amakdedori Bay.
- An extensive and thorough baseline study on bear populations including numbers, movement, diet, and feeding areas should be done.
- More studies are needed to understand freshwater seals and all other animals in the Iliamna Lake area.
- There needs to be more baseline data on all species in the Bristol Bay river mouths and estuaries and the species in the Amakdedori Port area of Kamishak Bay.
- Require appropriate inventory survey for the broad range of historic property types that may be present in the Area of Potential Effect, including archeological sites/districts, properties of cultural and religious significance to Tribes, cultural landscapes, standing structures, and Historic Districts.
- Stream courses should be accurately documented using best available technology. The application relies largely on National Hydrography Dataset which is outdated and overlooks important tributary habitat.
- Evaluate all streams crossed by the road corridor for fish presence (including documentation of species, life stages, and abundance).
- Quantify salmon populations in the North Fork Koktuli, South Fork Koktuli, Upper Talarik Creek, and their tributaries, as well as all stream crossings in the transportation corridor, with at least five years of data.

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- The effects of ice breaking on winter lake ecology are not known; study is required to determine the width of the ice-free corridor and the impacts of changes in light, current, and lake surface albedo on spring melt date, phyto- and zooplankton bloom timing, and lake food webs.

3.5.10 Non-Substantive Comment

Submissions without substantive comment that are not specific to a particular issue or do not inform the analysis conducted in the EIS are considered non-substantive. These include comments in support of, or in opposition to, the applicant's proposed project.

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APPENDIX A – NOTICE OF INTENT

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com*.

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. *Description of the Proposed Project.* Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

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APPENDIX B – PUBLIC NOTICES

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US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: January 5, 2018

REFERENCE NUMBER: POA-2017-271

WATERWAY: Multiple

An application has been received in this office from Pebble Limited Partnership (applicant) to discharge fill material into and perform work within waters of the United States. The project site is located in Southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough. The project consists of four primary project elements: a mine site, a port at Amakdedori, transportation corridor, and natural gas pipeline. The submitted application is available on the Corps website at www.poa.usace.army.mil/Missions/Regulatory/Permitting-Section-Homepage/Department of the Army Permit Application POA-2017-271 submitted by Pebble Limited Partnership.

The Corps has determined and notified the applicant that an environmental impact statement level of analysis will be required for the review of the Department of the Army Permit application. As such, the Corps will conduct public scoping after publishing a Notice of Intent to develop an EIS in the federal register. The Notice of Intent will include a list of public scoping locations. Times and dates for these locations will subsequently be advertised via Corps Public Notice and website as well as local media outlets.

Please contact Sheila Newman, Regulatory Division Program Manager at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at poaspecialprojects@usace.army.mil if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

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NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
March 30, 2018
Release No. 18-006

Contact:
John Budnik, 907-753-2615
John.P.Budnik@usace.army.mil

Scoping for Department of the Army Permit Application 2017-271-Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District requests public input regarding the scope of the environmental impact statement level of analysis for Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership.

The Pebble Project has been in the public eye for many years and there have been multiple public input and comment opportunities from other agencies. This public body of information has helped to inform the Corps' preliminary scope for the environmental impact analysis.

The Corps is now asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures.

Since Jan.5, the permit application has been publically available on the Alaska District's website. On Jan.12, the application was mailed via CD to 35 federally recognized Alaska Native Tribes alongside invitations for government-to-government consultation throughout the entire evaluation process including the EIS. The Corps maintains the application as well as additional scoping information at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska, 99506-0898

Beginning April 1, scoping input can be entered directly into the project website at www.pebbeprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

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Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

Meeting locations and times are indicated below. A video explaining major project components will be available for viewing. The Corps will have representatives available to answer questions regarding the Department of the Army permit application review process. Individuals may come in at any time during open hours and to provide scoping input. A Yupik translator will be available at the meetings.

Naknek
Monday, April 9
Naknek School
3:30 PM – 7:30 PM

Kokhanok
Tuesday, April 10
Tribal Hall
3:30 PM – 7:30 PM

Homer
Wednesday, April 11
Homer High School,
5:00 PM – 9:00 PM

Newhalen
Thursday, April 12
Newhalen School
3:30 PM – 7:30 PM

New Stuyahok
Friday, April 13
Community Building
1:00 PM to 4:30 PM

Nondalton
Monday, April 16
Tribal Center
3:30 PM – 7:30 PM

Dillingham
Tuesday, April 17
Dillingham Middle School
5:00 PM – 9:00 PM

Igiugig
Wednesday, April 18
Community Building
3:30 PM – 7:30 PM

Anchorage
Thursday, April 19
Dena'ina Center
11:00 AM – 9:00 PM

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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AMERICAN OVERSIGHT

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
April 6, 2018
Release No. 18-007

Contact:
John Budnik, 907-753-2615
Public.affairs3@usace.army.mil

Corps extends public scoping period for Department of Army permit application 2017-271 Pebble Limited Partnership, Environmental Impact Statement

JOINT BASE ELMENDORF-RICHARDSON – The U.S. Army Corps of Engineers – Alaska District has allotted more time for the public scoping period for the environmental impact statement level of analysis for Department of Army permit application 2017-271 submitted by Pebble Limited Partnership.

An additional 60 days has been added to the original 30-day public scoping period that began on April 1. Therefore, interested parties that would like to provide scoping input have until June 29 to submit.

The Corps is asking the public for any additional information to help inform the scope of analysis as it specifically relates to the Pebble Limited Partnership's submitted permit application to include potentially affected resources, alternative options, analytical methodology, and potential mitigation measures. The permit application is available on the project website at www.pebbleprojecteis.com.

Scoping input can be submitted by mail to:

U.S. Army Corps of Engineers, Alaska District
Program Manager, Regulatory Division
ATTN: DA Permit Application 2017-271, Pebble Limited Partnership
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Scoping input can be entered directly into the project website at www.pebbleprojecteis.com.

Also, scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter. Please note that public scoping meetings are not public hearings. The Corps has chosen to arrange meetings to provide the public with an easy forum to provide input. All information received will become part of the public record upon receipt.

For more information regarding the evaluation of DA Permit application POA-2017-271 please visit https://www.pebbleprojecteis.com.

To learn more about the Corps' Regulatory Division and its program, visit http://www.poa.usace.army.mil/Missions/Regulatory/.

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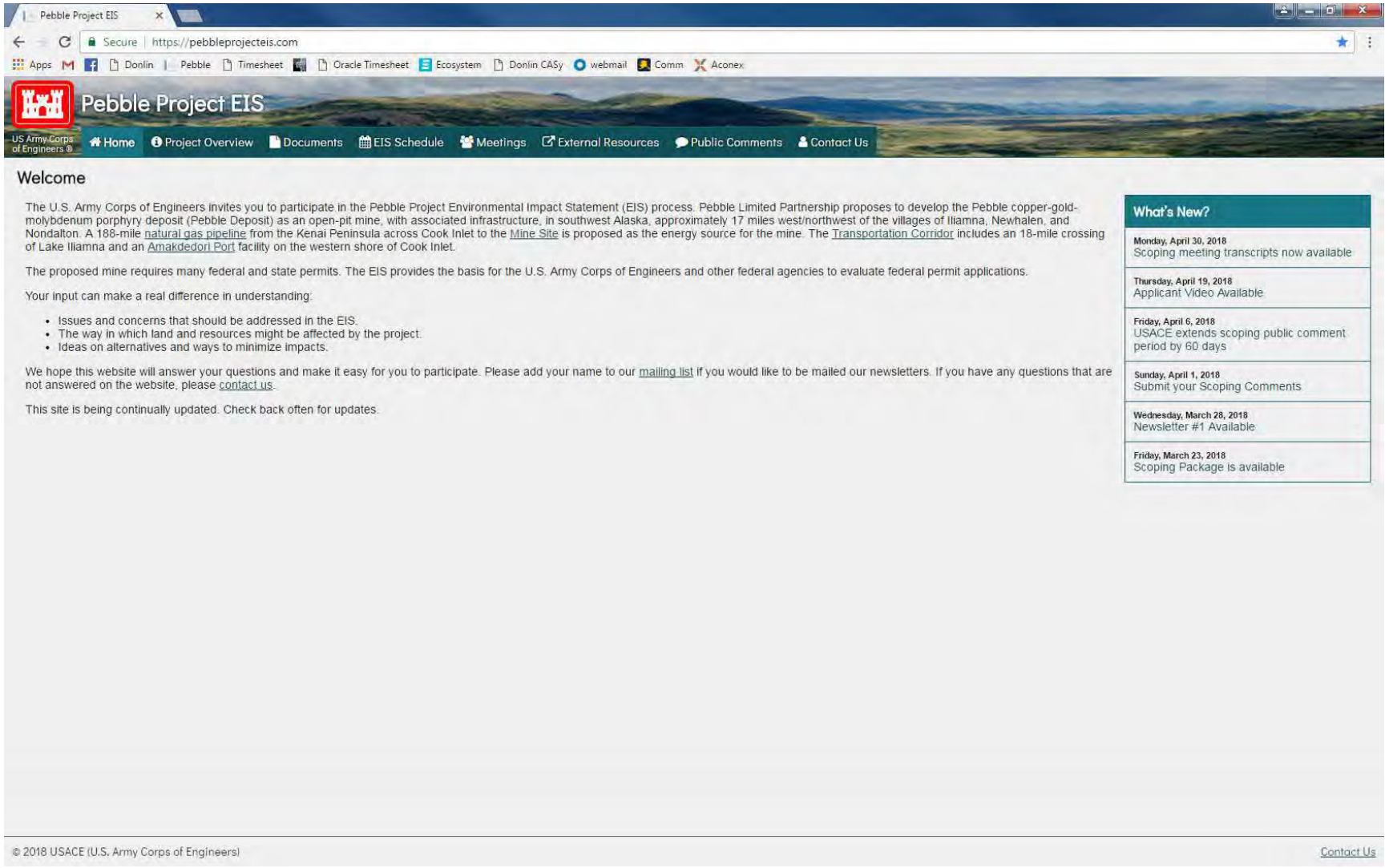

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Pebble Project EIS

Secure | https://pebbleprojecteis.com/overview/projectoverview

Apps | Donlin | Pebble | Timesheet | Oracle Timesheet | Ecosystem | Donlin CASy | webmail | Comm | Aconex

Pebble Project EIS

US Army Corps of Engineers

Project Overview

Pebble Limited Partnership (Applicant) has applied for permits to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure. The Pebble Deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. In addition to the Mine Site, the project would have three other major components: Transportation Corridor, Amakdedori Port, and Natural Gas Pipeline.

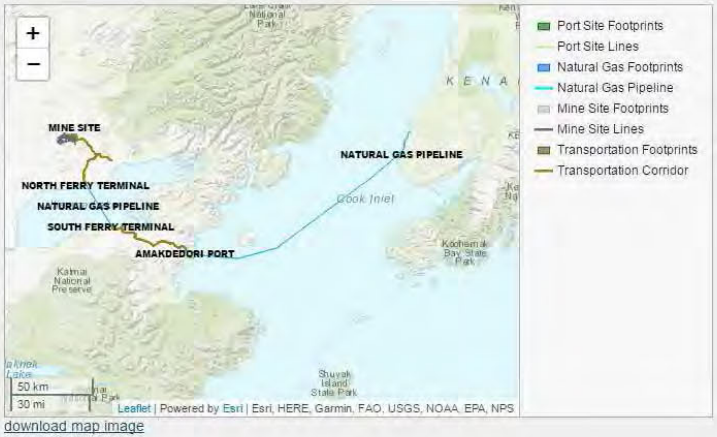
The Pebble Deposit lies within a 417-square-mile claim block held by subsidiaries of the applicant and by a subsidiary of the applicant's parent company, Northern Dynasty. Neither the applicant nor Northern Dynasty currently owns surface rights associated with these mineral claims. All lands within the claim block are owned by the State of Alaska. Rights to develop on State of Alaska land may be acquired when necessary locations for mine development have been determined and permits awarded. The Transportation Corridor crosses both state land and land patented under the Alaska Native Claims Settlement Act.

The proposed project would have a mine life of approximately 20 years. During that time, there would be:

- a total of 1.2 billion tons of material mined over the life of the project;
- mining rate up to 90 million tons per year;
- milling rate up to 58 million tons per year;
- annual copper-gold concentrate production of 600,000 tons; and
- annual molybdenum concentrate production of 15,000 tons.

The project would have an operating schedule of two 12-hour shifts per day for 365 days per year, and employ approximately 2,000 personnel for construction and 850 for operations.

A more detailed project description from the the applicant to the U.S. Army Corps of Engineers can be found here.



download map image

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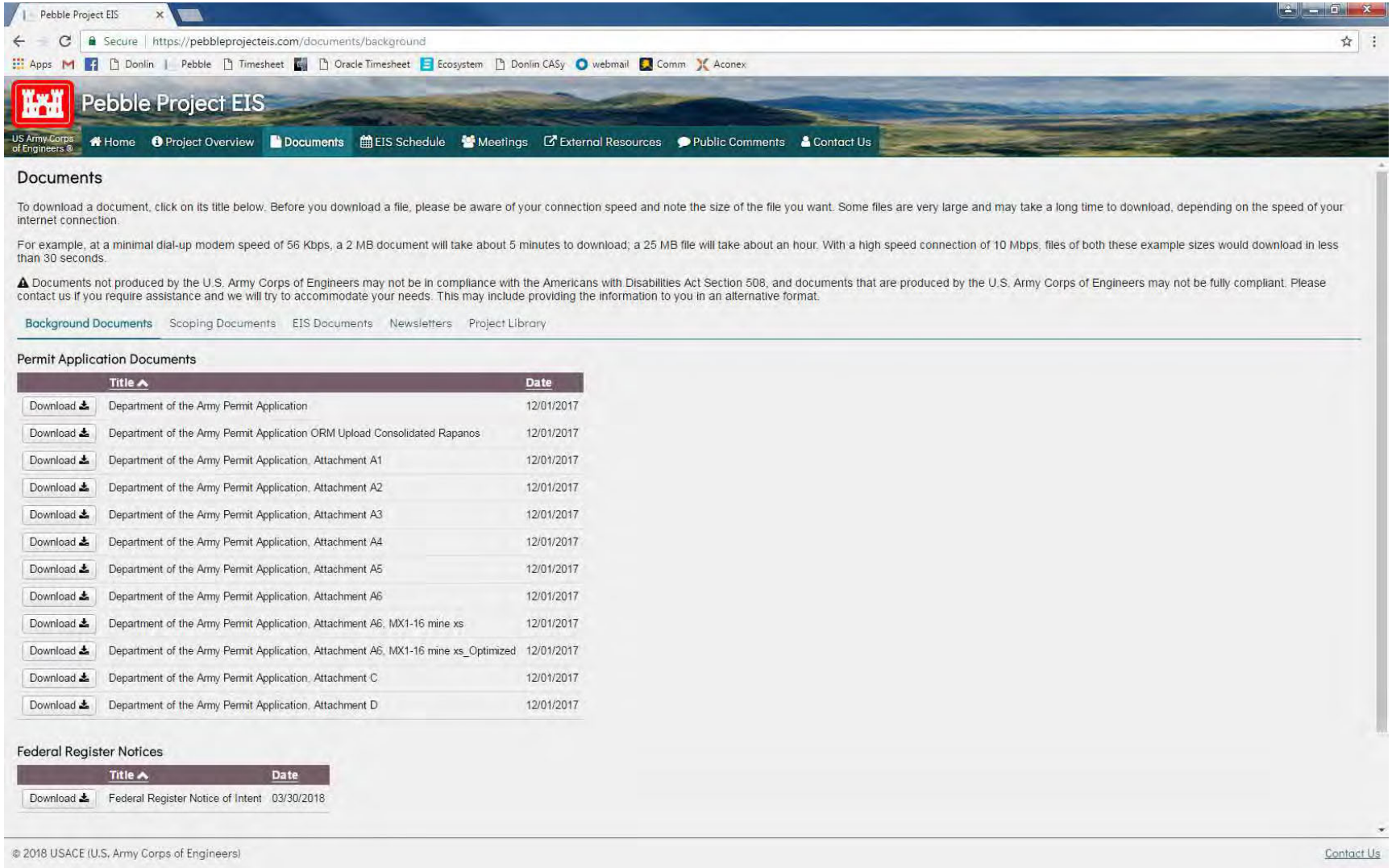

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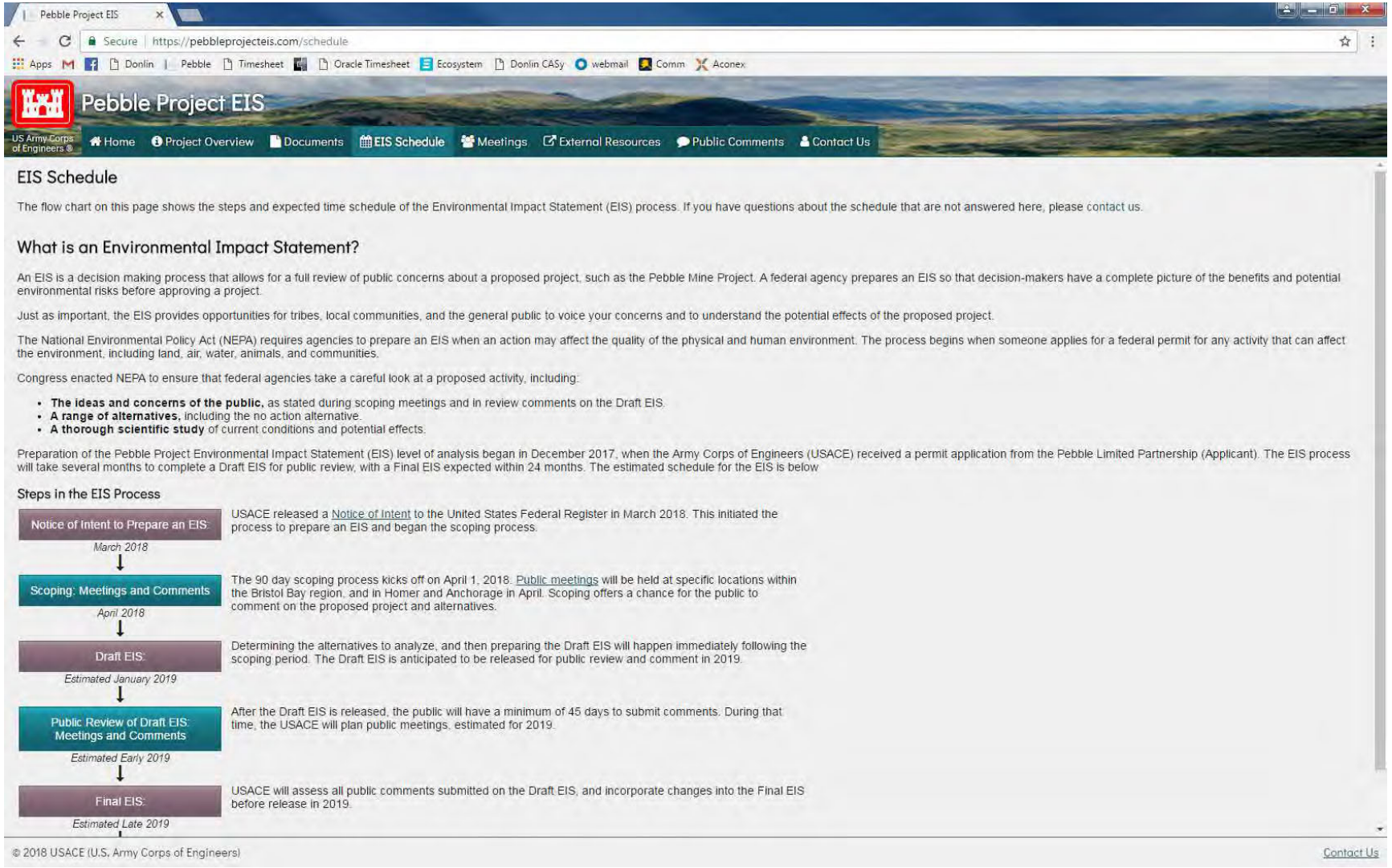

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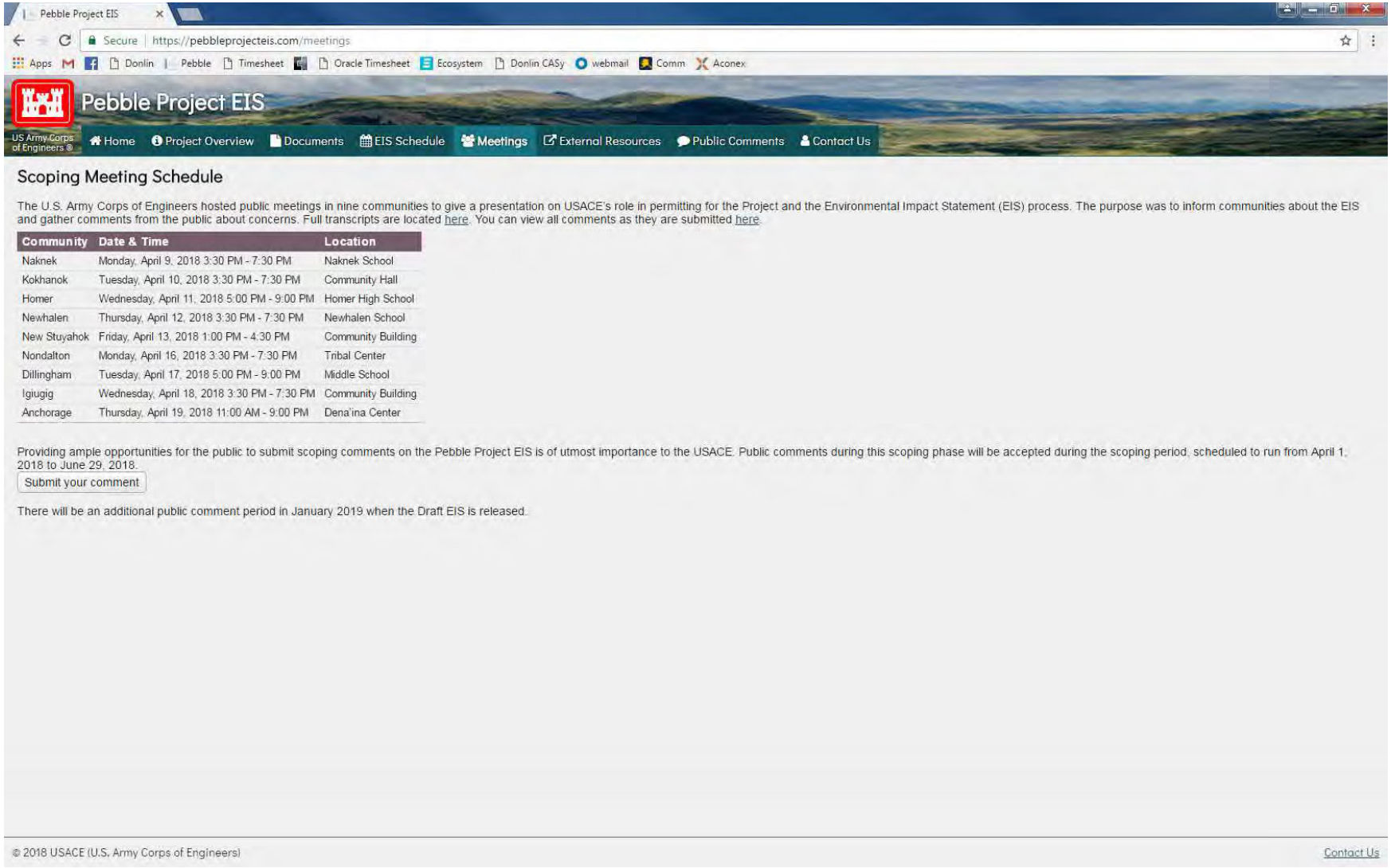

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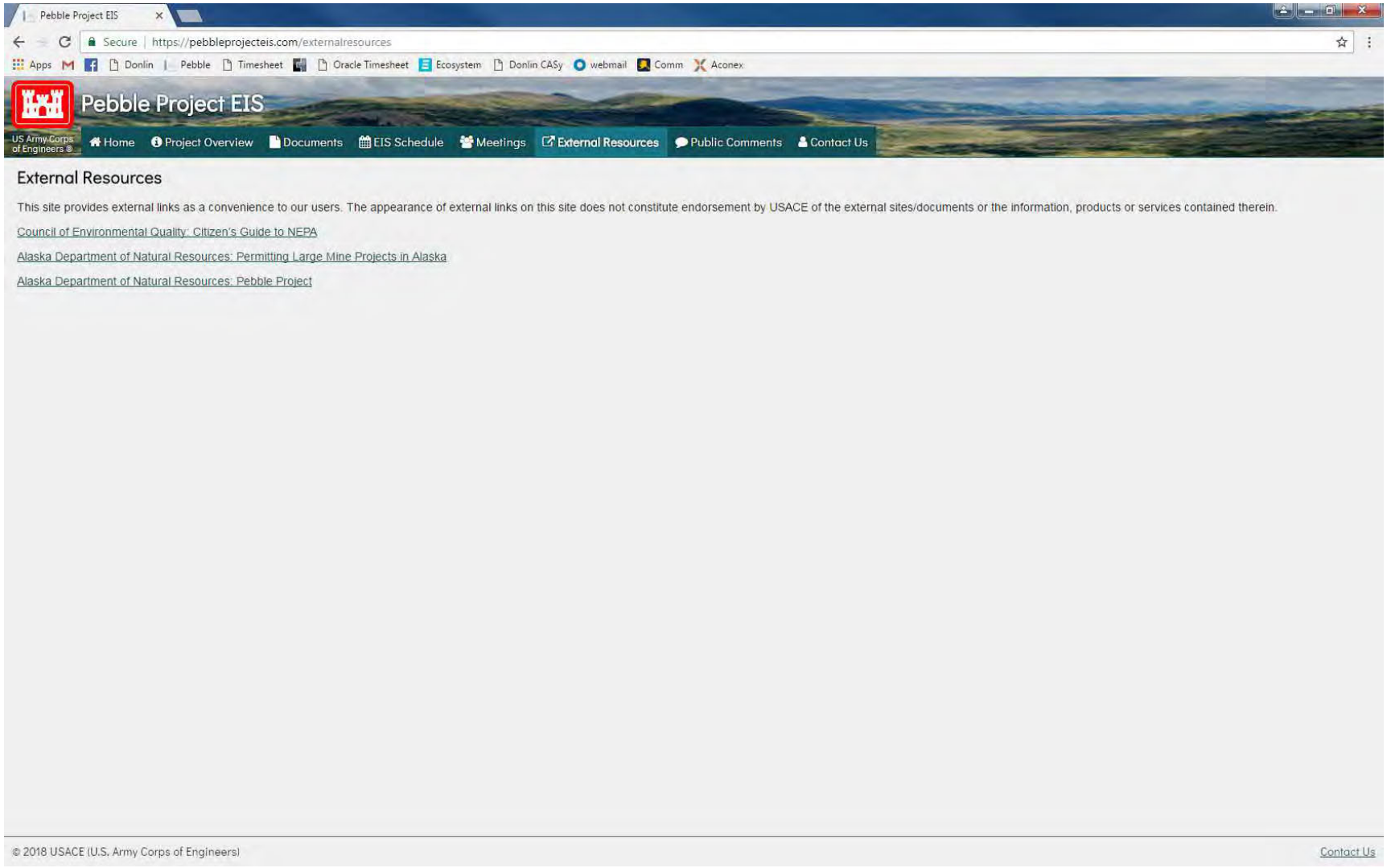

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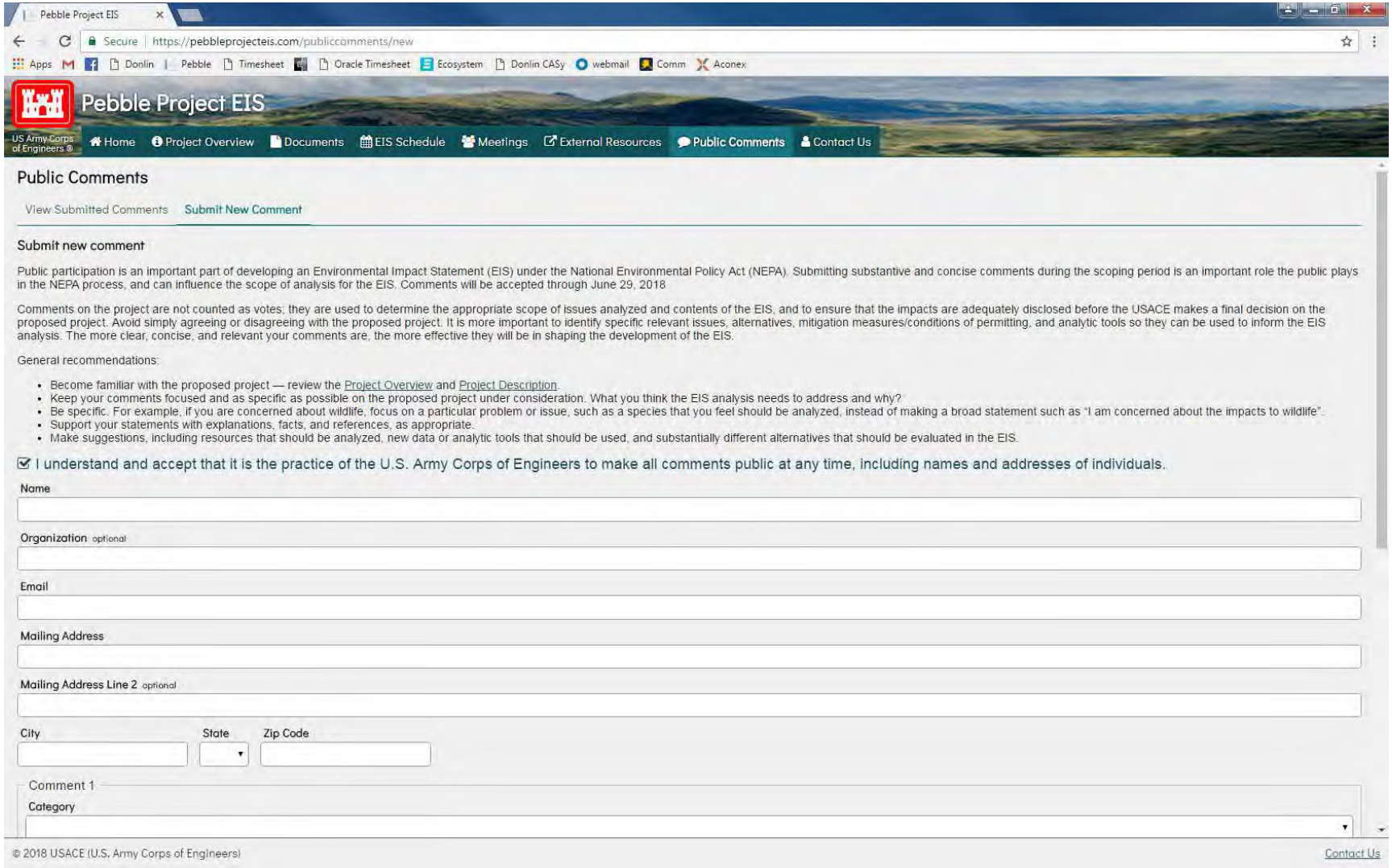

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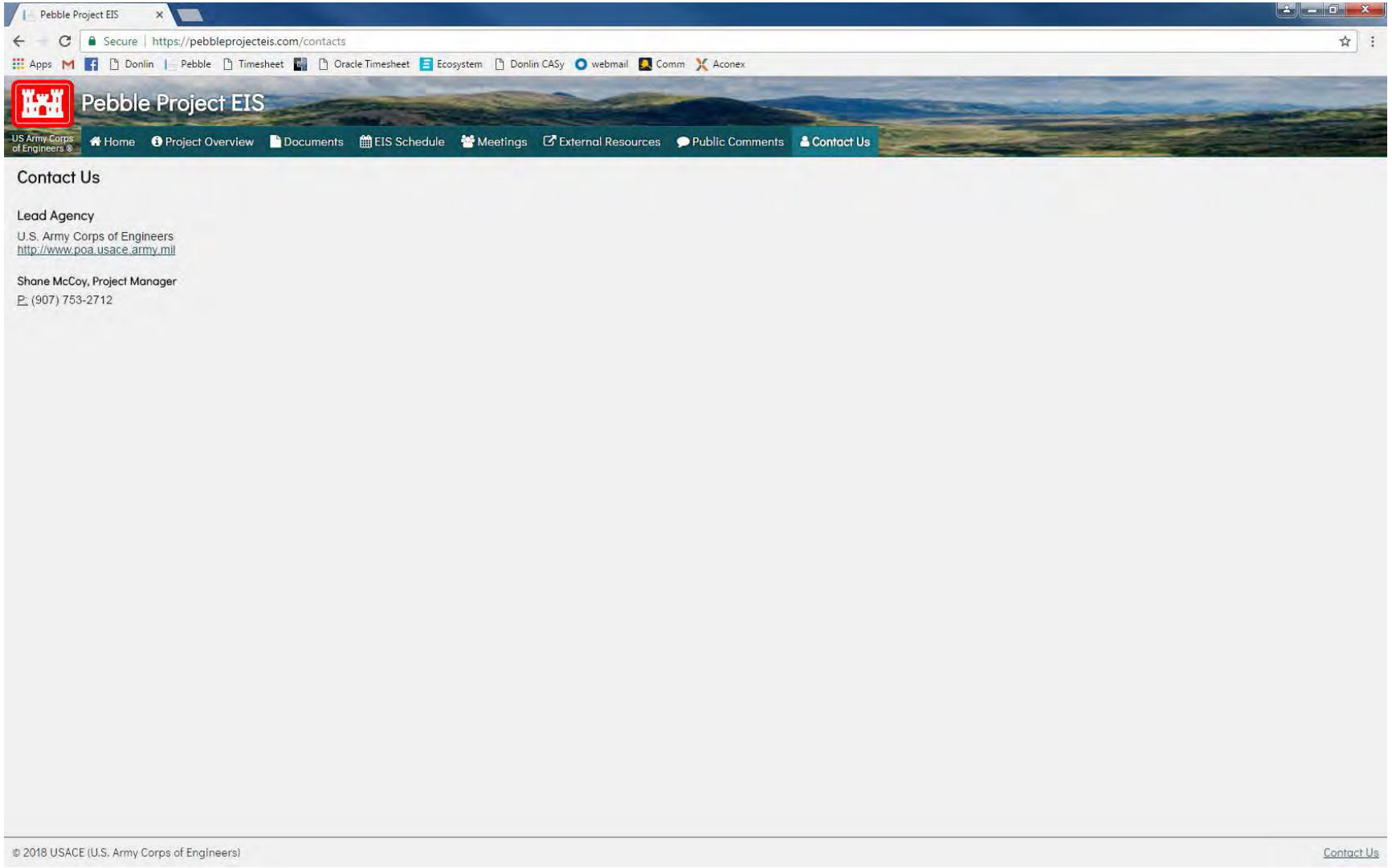

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DEPARTMENT OF THE ARMY PERMIT APPLICATION POA-2017-271, SCOPING PACKAGE

SCOPING PACKAGE CONTENTS

1. Public Scoping for the Pebble Project EIS
2. Pebble Limited Partnership (Applicant) Project Description
3. How Alternatives will be Developed
4. What Resources will be Analyzed in the EIS?
5. What is NEPA?
6. Roles and Responsibilities
7. EIS Schedule
8. EIS Outline
9. How to Comment
10. Pebble Project Comment Form
11. Frequently Asked Questions

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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action to express their views and concerns, and to offer suggestions on the scope of analysis. Public input may include ideas for alternatives to the proposed action that could have lesser environmental impacts.

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be avoided or lessened.

Public meetings will tentatively be held during the scoping period of April 1st to June 29th, 2018, in the following communities:

- Anchorage*
- Dillingham*
- Homer*
- Igiugig
- Kokhanok
- Naknek
- Newhalen
- New Stuyahok
- Nondalton

* To avoid long wait times, an open public testimony format will not be used.

Please check our website for the current meeting schedule.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to come to a scoping meeting and give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Scoping comments can be submitted through June 29, 2018.

*Comments received/postmarked after June 29 will be considered, but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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PEBBLE PROJECT DESCRIPTION

Pebble Limited Partnership (PLP), proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) as an open-pit mine, with associated infrastructure, in southwest Alaska. The Pebble Deposit is located approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit, and Kokhanok, which is located 3 miles to the northeast of the proposed road from the port site to the south ferry terminal on Lake Iliamna (see Figure 1).

PEBBLE PROJECT COMPONENTS

The Pebble Project as proposed consists of four facility and operations components:

Mine Site and Associated Facilities (see Figure 2)

- **Open pit mine**, developed in stages, with each stage expanding the area and deepening the previous stage. Final dimensions of the open pit would be approximately 6,500 feet long and 5,500 feet wide, with depths between 1,330 and 1,750 feet.
- **Mine site mineral processing facilities** include a crushing plant, coarse ore stockpile, grinding plant, froth flotation circuits to produce concentrates, and concentrate filters to remove moisture before shipment.
- **Copper-gold concentrate** would be loaded into covered bulk shipping containers and transported by truck to the Amakdedori Port. **Molybdenum concentrate** would be bagged and containerized before shipping to Amakdedori Port.
- **Tailings Storage Facility** located within the North Fork Koktuli watershed:
  - 1.1 billion tons storage volume.
  - separate cells for bulk and pyritic (lined) tailings.
  - four embankments: main (600 feet high), south (350 feet high), and east (60 feet high) perimeter embankments and an internal embankment (420 feet high) separating the bulk and pyritic tailings cells.
- **Low Grade Ore Stockpile** up to 330 million tons of mineralized material, segregated by relative value, and PAG waste rock, placed on an engineered liner to control seepage losses through the stockpile.
- **Waste rock** – Non-potentially acid generating (NPAG) waste rock would be used to construct various mine site structures, including the TSF embankments and mine site roads. PAG waste rock would be stored within the LGO stockpile until mine closure, and then back-hauled into the open pit.
- **Overburden Stockpile** segregated to the southwest of the open pit, and surrounded by a berm of non-mineralized rock to contain the material and increase stability.
- **Water Supply, Management and Treatment** consists of five components**:**
  - potable water well field and treatment plant.
  - two water management ponds (open pit and LGO/main).
  - sediment ponds.
  - three seepage ponds (south, west, and main embankment).
  - two water treatment plant/three discharge locations (north, south and east).

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- **Personnel camps** include a main construction camp to accommodate 1,700 workers, later refurbished for 850 rooms for operations.
- **Power generation** capacity and distribution infrastructure: 230 megawatt delivery capacity fired by natural gas and a 69-kilovolt distribution system.

Amakdedori Port Site (See Figure 3)

- **Ore carrier vessels** up to 40,000 dead weight tons and 700 feet in length, up to **25 Handysize ships will be required annually** to transport concentrate.
- Up to **30 marine line-haul barge loads of supplies and consumables** will be required annually. **Two ice-breaking tug boats** will be used to support marine facility operations.
- **2000 foot earthen access causeway** extending out to a marine jetty located in 15 feet of natural water depth.
- **Access channel and turning basin,** dredged to 50 foot depth.
- **Shore-based facilities** to receive and store containers and fuel, two, 2-MW natural gas power generators with an emergency diesel generator, a natural gas compressor station, maintenance facilities, employee accommodations, and offices.
- **Fuel storage** consisting of four 1.25 million gallon tanks inside a lined and bermed area

Transportation Corridor (see Figure 3)

Road System Connecting Amakdedori Port to the Mine Site

- **Private, double-lane road extending 30 miles south from the Mine Site to North ferry terminal** on the north shore of Iliamna Lake.
- **Private, double-lane road extending 35 miles southeast from the South Ferry Terminal to the Amakdedori Port** on Cook Inlet.
- **Eight bridges**, six of which would be single-span, two-lane bridges that range in length from approximately 90 to 170 feet. There would be one large (550 feet) multi-span, two-lane bridge across the Newhalen River and one large (455 feet) multi-span, two-lane bridge across the Gibraltar River.
- Daily transportation of concentrate, fuel, reagents and consumables would require **up to 35 truck round trips per day for each leg of the road**, including three loads of fuel per day.
- **Village surface road connections** from the Transportation Corridor to Iliamna, Newhalen, and Kokhanok.

Ferry Service and Terminals on Lake Iliamna

- **18 mile ferry crossing of Lake Iliamna.**
- **All-season icebreaking ferry** with 12 crew members.
- **Inbound supplies from the Amakdedori Port to the Mine Site** and **outbound copper-gold and molybdenum concentrates, backhauled waste, and empty containers.**
- **Average of one round trip ferry per day.**
- **Two ferry terminals** with 40 foot rock/aggregate causeway, container handling and storage facilities, office and maintenance buildings, and local power supply.

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Natural Gas Pipeline System (see Figure 1)

- **188 mile 10-12 inch diameter natural gas pipeline**, buried 3 feet deep onshore, in five segments:
  - starts on the eastern shore of Cook Inlet at Happy Valley near Anchor Point along the Sterling Highway.
  - 94 mile subsea pipeline crosses Cook Inlet to the Amakdedori Port Site.
  - 35 mile buried pipeline adjacent to the road from port site to south ferry terminal.
  - 18 mile pipeline across Lake Iliamna.
  - 30 mile buried pipeline adjacent to the road from north ferry terminal to Mine Site.
- **Two gas fired compression stations**, one on the eastern end at Anchor Point, and one at the Amakdedori Port.
- **Buried fiber optic cable** adjacent to pipeline.

PROJECT CONSTRUCTION

- **The project would take approximately four years to construct,** on four main project components – Mine Site, Amakdedori Port, Transportation Corridor, and Pipeline.
- **Transportation infrastructure to access the site is the first step**, along with Pre-production Phase environmental protection systems and temporary facilities that support construction crews (camps at port site, mine site, ferry terminals).
- **Initial access to the mine site within one year,** followed by earthworks, plant facilities, tailings storage embankments, stockpile foundations/liners, and water treatment facilities.
- **Natural gas line installation** will occur during the second and third construction years.
- **Completion of Pre-production Open Pit, power plant and processing facilities** in year 4.
- **Construction employment** estimated at 2,000 workers.

PROJECT OPERATIONS

- **Project operating life of 20 years**, **three mining phases –** pre-production, production and stockpile reclaim.
- **Conventional open pit mine –** drill, blast, truck and shovel operation.
- **Blasting events –** once to twice a day.
- **Tailings Storage Facility water management –** Control, collection, and recovery of tailings water for recycling or treatment prior to discharge; seepage collection system below impoundment structures; freeboard to contain inflow design flood.
- **Total material mined –** 1.2 billion tons over the life of the project.
- **Mining rate** up to 90 million tons per year, **milling rate** up to 58 million tons per year.
- **Annual concentrate production –** 600,000 tons copper gold, 15,000 tons molybdenum.
- **Operations employment** estimated at 850 workers, two shifts per day, 365 days/year.

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PROJECT CLOSURE

- **Reclamation and closure jurisdiction** – Alaska Department of Natural Resources Division of Mining, Land, and Water, and Alaska Department of Environmental Conservation.
- **Design for Closure** – early consideration of requirements for Closure and post-Closure site management.
- **Segregation of the bulk and pyritic tailings storage cells** to facilitate Tailings Storage Facility closure.
- **Potentially Acid Generating waste rock** backhauled to mine pit for subaqueous storage.
- **Comprehensive water management plan** that strategically discharges surplus treated water to downgradient streams in a manner that reduces the effect of flow changes on stream flow and fish habitat.
- **Removal of mill and other infrastructure** not required for closure and reclamation.
- **Reclamation of disturbed areas** through grading, use of top soil as need and revegetated.
- **Road system retained** as needed for post-Closure activities and monitoring.
- **Pit lake water quality will be monitored;** water will be treated and discharged before levels approach elevation where groundwater flows outward from the open pit.

For more details, see Attachment D Project Description, Department of Army Application for Permit (POA-2017-271) on www.PebbleProjectEIS.com.

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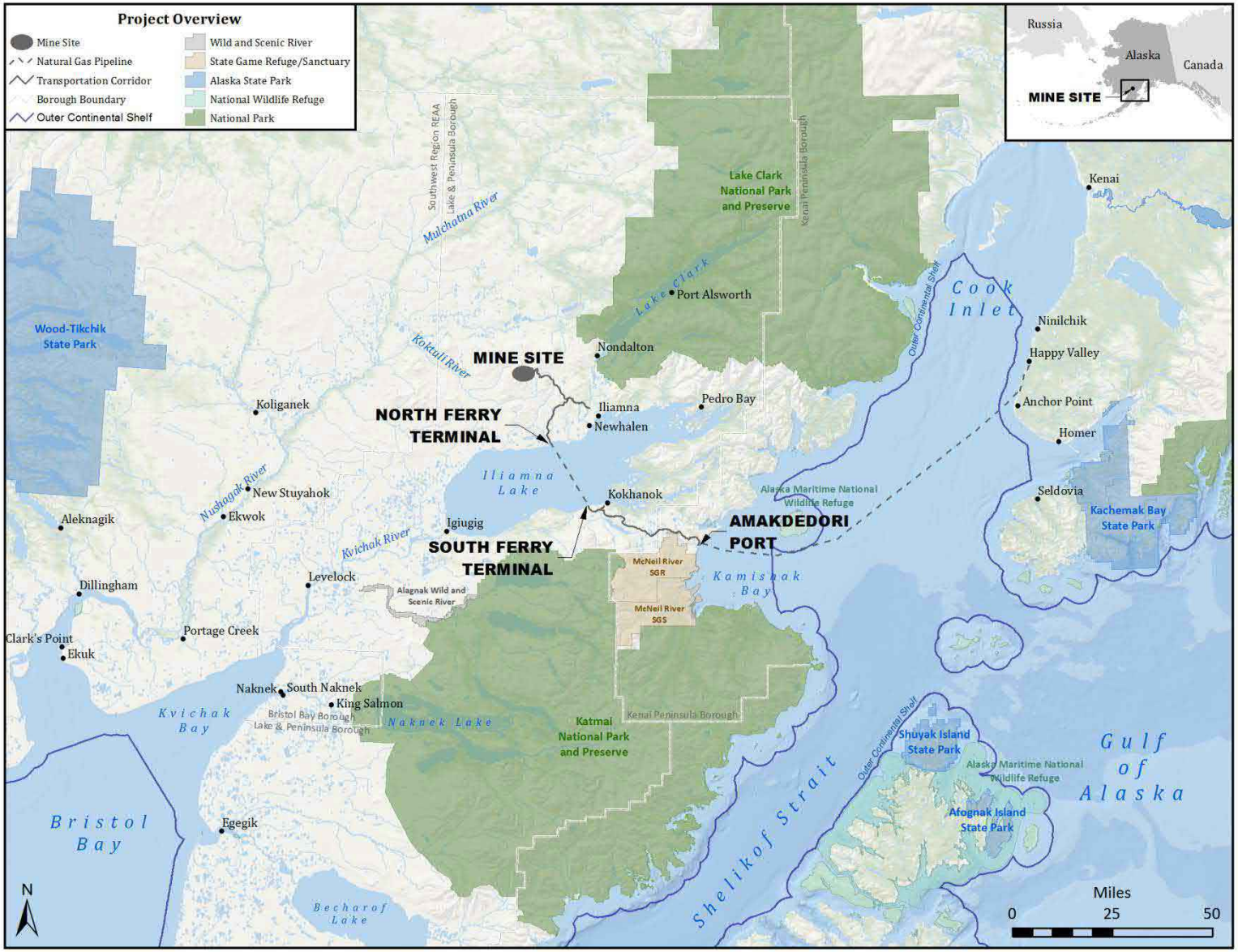

Figure 1. Project Overview

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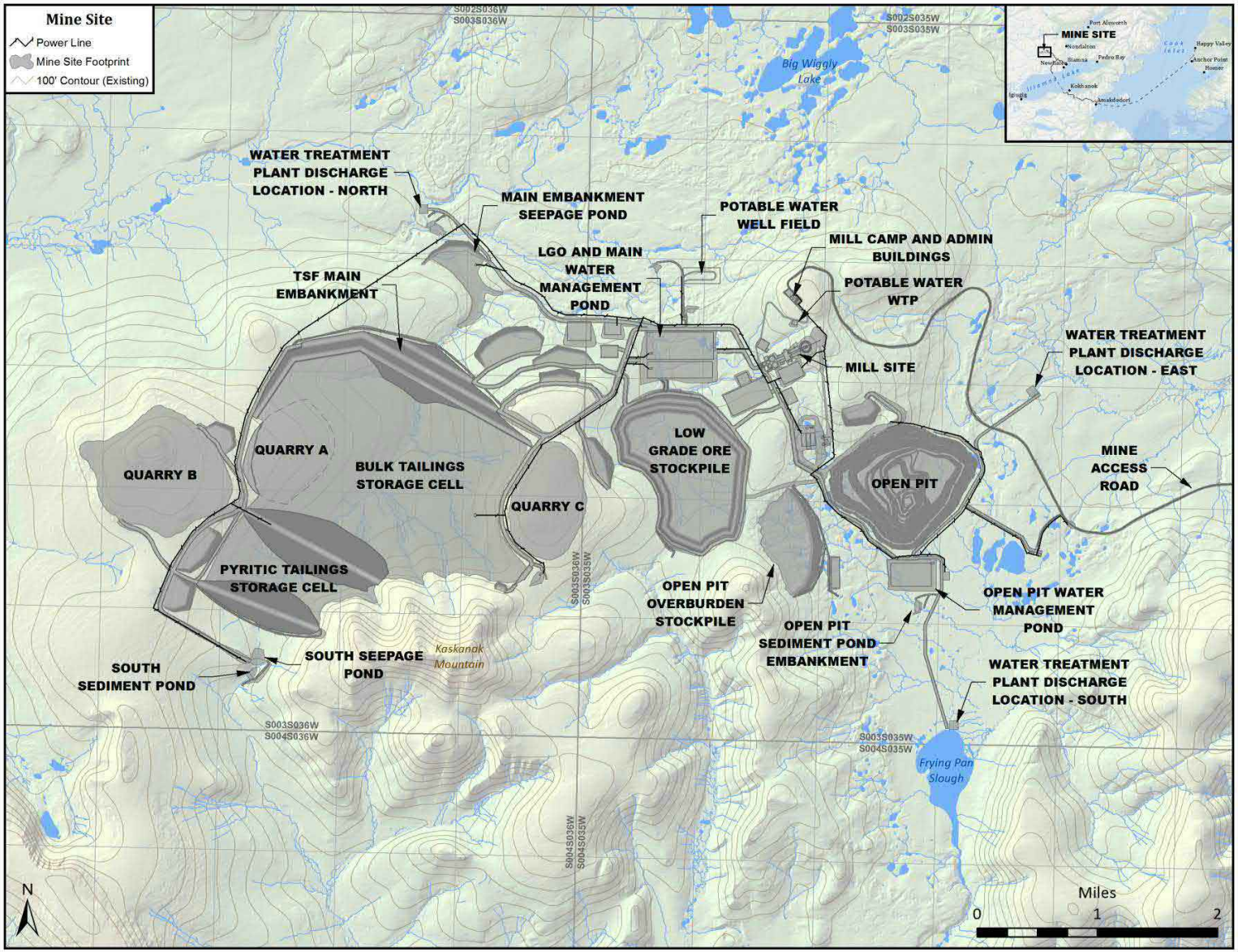

Figure 2. Mine Site and Associated Facilities

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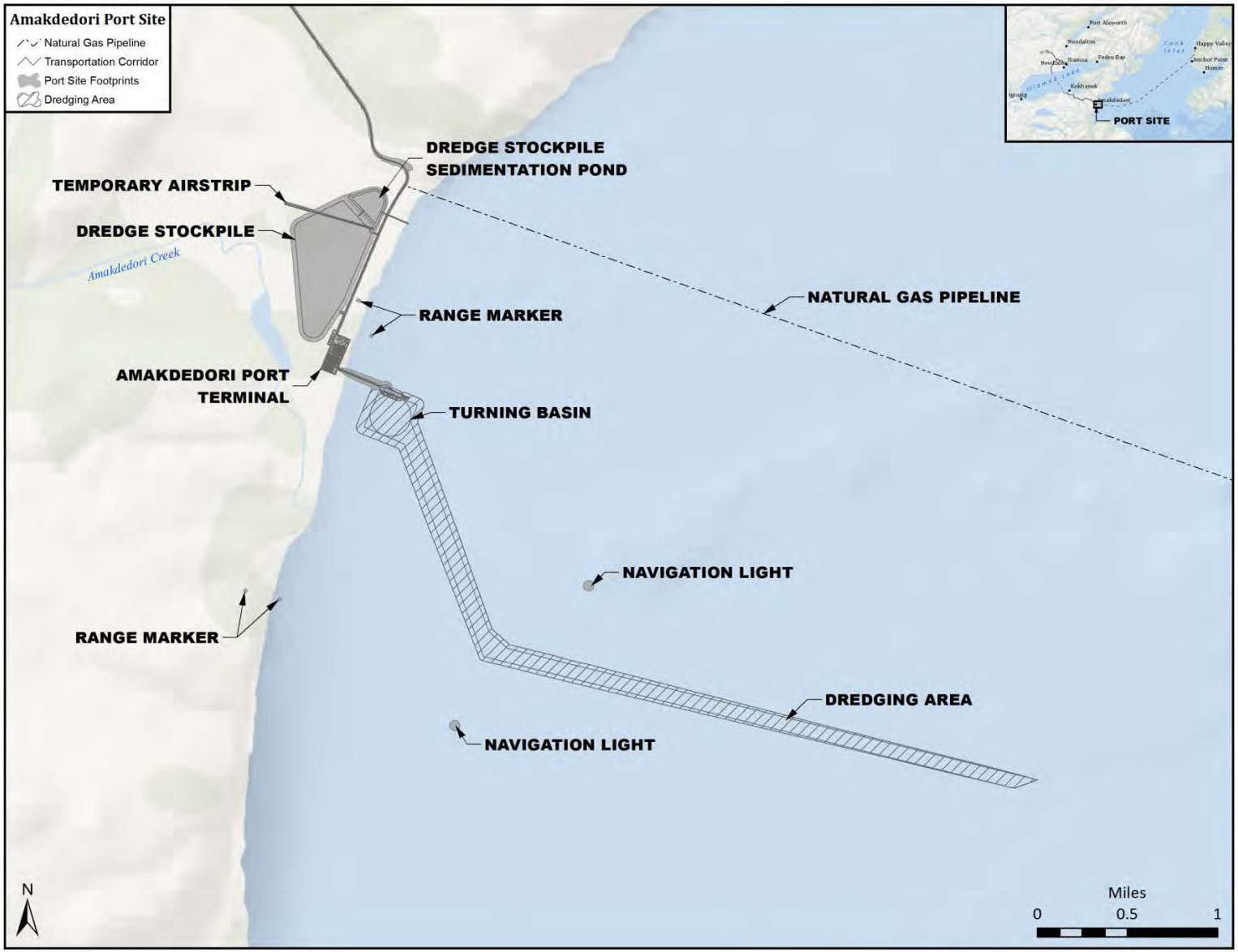

Figure 3. Amakdedori Port Site

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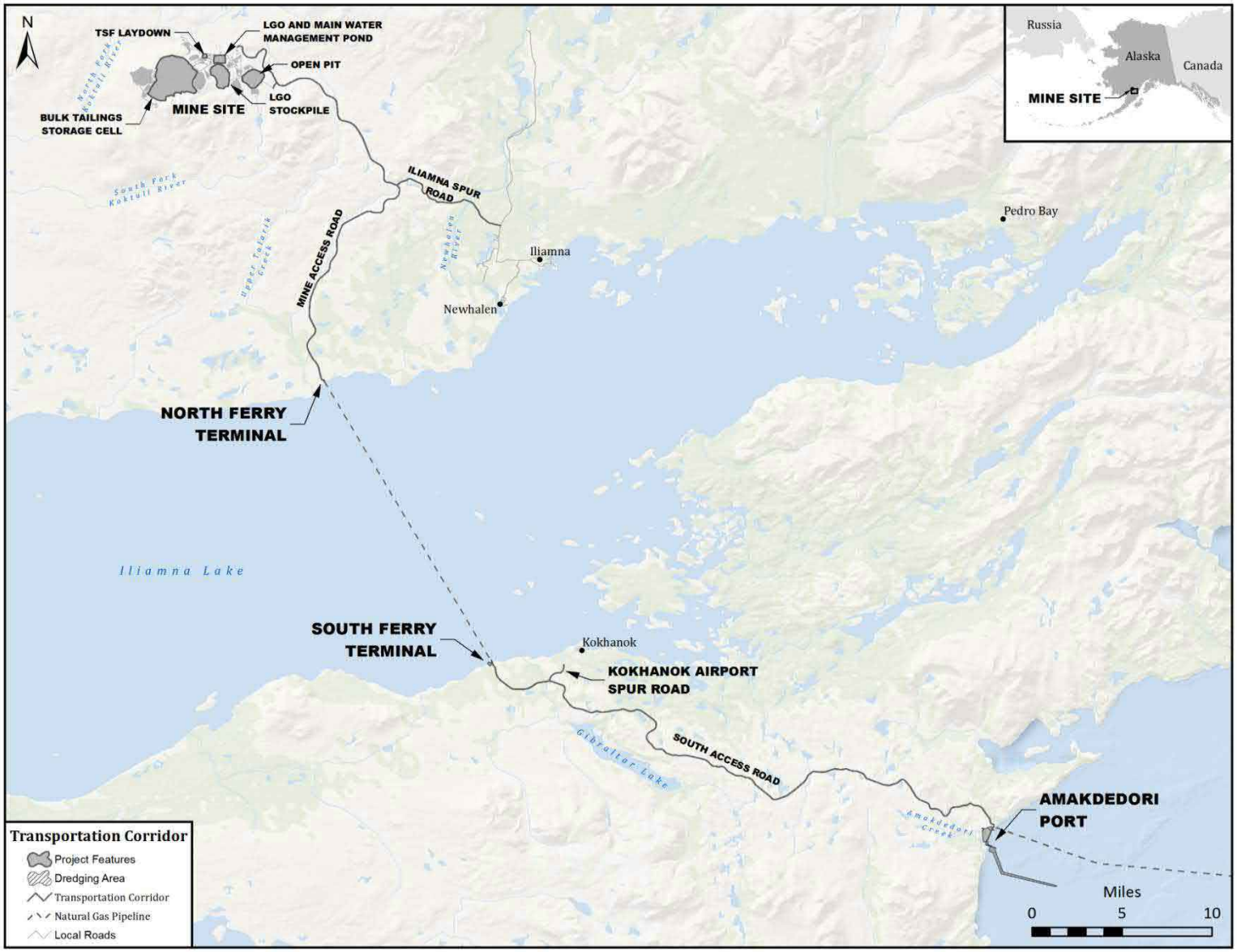

Figure 4. Transportation Corridor

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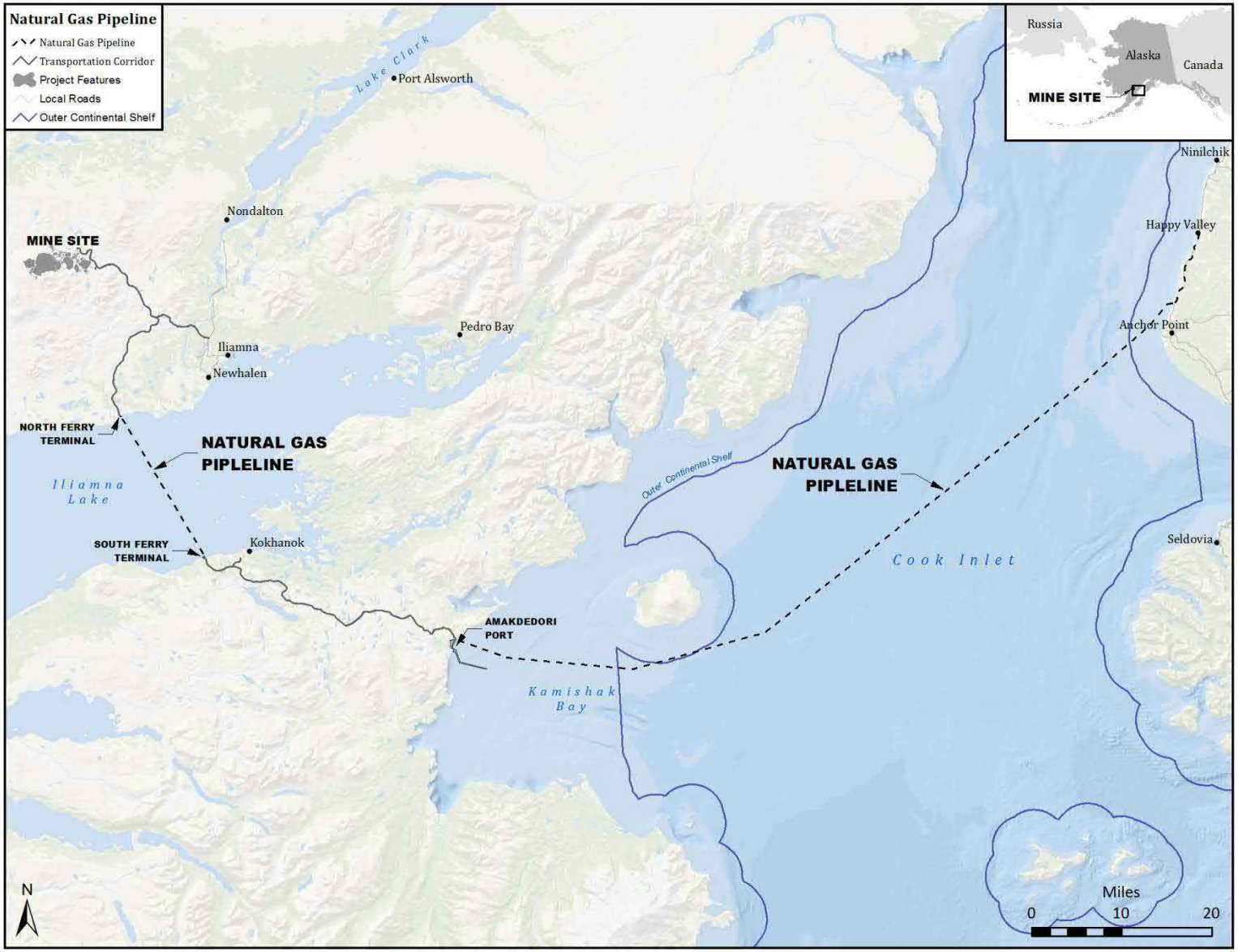

Figure 5. Natural Gas Pipeline

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How Alternatives will be Developed for the Pebble Project Environmental Impact Statement (EIS)

1. Identify need to which the United States Army Corps of Engineers (USACE) – Alaska District is responding and identify the overall project purpose. State the applicant's objectives for the project.
2. Compile a range of alternatives to be considered that meet the overall project purpose with consideration of the applicant's objectives. The alternatives compilation will include the no action alternative, any alternatives considered by the applicant, and alternatives suggested during the scoping process.
3. Determine whether identified alternatives are reasonable in accordance with the National Environmental Policy Act.
    a. Reasonable is based on the consideration of the overall project purpose including stated objectives as well as technology, economics, and common sense.
    b. Determine whether an alternative meets the overall project purpose inclusive of objectives.
        i. Alternatives that do not meet the overall project purpose will be eliminated at this stage.
        ii. Alternatives that meet the overall purpose will move forward.
    c. Alternatives that meet the overall project purpose will be reviewed to determine whether the alternative was available to the applicant during project planning (past 10 years).
        i. Alternatives identified as reasonable but were not available to the applicant will be removed at this time.
        ii. Alternatives that were available will move forward.
    d. Alternatives will be reviewed for technical feasibility (can these alternatives be accomplished using existing technology and equipment?).
        i. Alternatives determined to not be technically feasible will be removed at this stage.
        ii. Alternatives determined to be technically feasible will move forward.
    e. Alternatives will be reviewed for economic feasibility.
        i. Any alternative claimed to not be economically feasible by the applicant will require an economic analysis to support statement.
        ii. An alternative proven to not be economically feasible will be removed at this time.
        iii. Alternatives determined to be economically feasible will move forward.
    f. Alternatives will be reviewed using common sense.
        i. Alternatives that increase adverse environmental impacts will be removed at this time.
        ii. Alternatives will also be reviewed for logistical feasibility. Alternatives that are not logistically feasible will be removed at this time.

Identified REASONABLE ALTERNATIVES with significantly LESSER impacts will be evaluated in the EIS along with the NO ACTION alternative and the applicant's PROPOSED alternative.

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How Alternatives are Screened for Practicability

Due to the USACE specific authorities, alternatives must also be screened for practicability. The practicability determination is described below. Ultimately, the USACE must identify the **least environmentally damaging practicable alternative (LEDPA)** in the Record of Decision prior to making a decision under Section 404 of the Clean Water Act.

1. From the identified reasonable alternatives, further identify practicable alternatives in accordance with Clean Water Act Section 404(b)(1) of the Clean Water Act (the Guidelines). The Guidelines state practicable means the project is available and capable of being done after taking into consideration **cost**, **existing technology** and/or **logistics** in light of the overall project purpose including the applicant's objectives. Logistics and existing technology have at this point been screened in our determination of reasonable alternatives and are included below only for completeness and explanatory purposes. *An alternative needs to fail only one practicability factor to be determined not practicable*.
    a. Costs – Cost is analyzed in the context of the overall scope/cost of the project and whether it is unreasonably expensive. This determination is typically made in relation to comparable costs for similar actions in the region or analogous markets. Cost is to be based on an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost must be current with respect to the time of the alternatives analysis. Because one alternative costs more than another does not mean that the more expensive alternative is impracticable. It is important to note that in the context of this definition, cost does not include economics.
    b. Existing Technology – The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available.
    c. Logistics – The alternatives evaluated may incorporate an examination of various logistics associated with the project (e.g., placement of facilities within a specified distance to major thoroughfares, utilization of existing storage or staging areas, and/or safety concerns that cannot be overcome).
    d. Availability – The Guidelines state that if an alternative is otherwise practicable, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, the fact that an applicant does not own an alternative parcel, does not preclude that parcel from being considered as a practicable alternative. This factor is normally a consideration as a logistics and possibly cost limitation.
    e. Two tests are specified in the Guidelines for alternatives when the basic purpose of a project does not require siting within special aquatic sites such as wetlands. The basic purpose of this project is mining. The type of mining proposed (transitional metal-copper, gold, molybdenum) does not require siting within special aquatic sites. Therefore:
        i. It is presumed that alternatives that do not affect special aquatic sites such as wetlands are available

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ii. It is presumed that alternatives in sites that are not special aquatic sites will have a LESSER ADVERSE impact on the aquatic ecosystem

*Once an otherwise practicable alternative has been identified, the applicant (Pebble Limited Partnership) will be required to clearly demonstrate to the USACE that both of these presumptions have been rebutted or the alternative will be considered in the determination of the LEDPA***.**

**All practicable alternatives are also reasonable alternatives.

2. The final step in developing alternatives is to construct detailed descriptions for the reasonable alternatives that have been retained and carried forward for evaluation in the EIS.

How the Public Can Provide Useful Guidance on Alternatives that should be Considered in the EIS

The purpose of scoping is to determine the alternatives that should be considered in the analysis and determine the extent and nature of issues by which each alternative should be evaluated.

Scoping is an important opportunity for all citizens to provide specific suggestions for alternatives that should be considered in preparing the EIS, and issues that should be addressed in that process. The following guidelines may be useful in submitting comments during the scoping period (*examples shown in italics*):

1. Keep in mind the reasonable alternative screening criteria described above – any suggestions should fulfill the overall project purpose in consideration of the applicant's objectives with a focus on reducing potential adverse environmental impacts.
2. You can suggest alternatives specific to components for developing the mine (*mining methods, water treatment, tailings management*), the port site, the transportation corridor and modes (*rail*), and the natural gas pipeline.
3. You can suggest changes in location of project components (*road, port site, mine components*).
4. You can suggest potential mitigation measures and conditions of development that may reduce environmental impacts.
5. Be as specific as possible and provide the reason for making your suggestions (*construction of a rail connection may eliminate truck traffic and reduce dust levels*).

The USACE will make the results of the scoping process publically available by publishing the Scoping Report on the project website (pebbleprojecteis.com) and will also communicate information for newsletters.

How Alternatives will be evaluated in this EIS

Once reasonable alternatives have been identified for evaluation as above, the USACE will evaluate each alternative in relation to the following:

- Conservation
- Economics
- Aesthetics

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- General environmental concerns
- Wetlands
- Historic properties (inclusive of sacred sites or areas of community and/or spiritual significance)
- Fish and wildlife values (inclusive of endangered species, marine mammals, fisheries and wildlife)
- Flood hazards
- Floodplain values
- Land use (inclusive of transportation corridors)
- Navigation
- Shore erosion and accretion
- Recreation
- Water supply and conservation
- Water quality
- Energy needs
- Safety
- Food and fiber production (this would include subsistence activities)
- Mineral needs
- Considerations of property ownership
- The needs and welfare of the people

In the EIS, we will develop a framework to analyze each of these issues with emphasis on issues that rise to the highest level of importance.

During scoping, we are also asking you to help us determine which of these factors are of highest concern to you, to provide information of specific concern regarding any factor listed, and to identify any other specific issues that are not listed. As with your comments related to alternatives, please be as specific as possible when identifying other issues or expanding on issues identified above. This will help us develop the analytical framework moving forward.

For alternatives identified as practicable, the USACE will ultimately make the following determinations:

1) Whether the alternative is the least environmentally damaging practicable alternative,

2) Whether the LEDPA will cause or contribute to the violation of applicable state or federal laws, such as water quality standards or the Endangered Species Act,

3) Whether the LEDPA will result in significant degradation of waters of the United States

4) Whether the LEDPA includes appropriate and practicable steps have been taken to minimize the adverse impacts of the project on wetlands and other waters.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component. *For example: pollutant discharge from a source could directly result in lowered water quality.*

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway. *For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.*

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. *For example: wetland fill from one project, combined with the wetland fill from a separate project.*

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What is NEPA?

The national commitment to the environment was formalized through the passage of the National Environmental Policy Act (NEPA) of 1969. NEPA's goal is to help the federal government make decisions with full understanding of the potential environmental consequences associated with federal projects or authorizations. A thorough understanding of consequences allows us to identify potential actions that can be taken to protect, restore, or enhance the environment.

As the USACE prepares to review the submitted permit application, it must conduct a detailed study of:

- how the project will be built,
- the consequences of the project (good or bad) on the environment and for communities,
- alternative ways to develop the project that still meet the project's purpose and needs while better protecting people and the environment, and
- measures that can be taken to avoid or lessen any harmful impacts of the project.

[redacted]

Before a decision is made and throughout its analysis, the federal government must ask citizens to voice concerns and suggest alternatives to ensure decisions on federal actions are well informed.

Steps in the EIS Process



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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of anlaysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. As lead agency, the USACE is responsible for identifying, inviting, and assigning roles to cooperating agencies including agencies that also have permitting decisions to make for the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisiplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide the interdisciplinary team that will develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, developing the Draft and Final EIS, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

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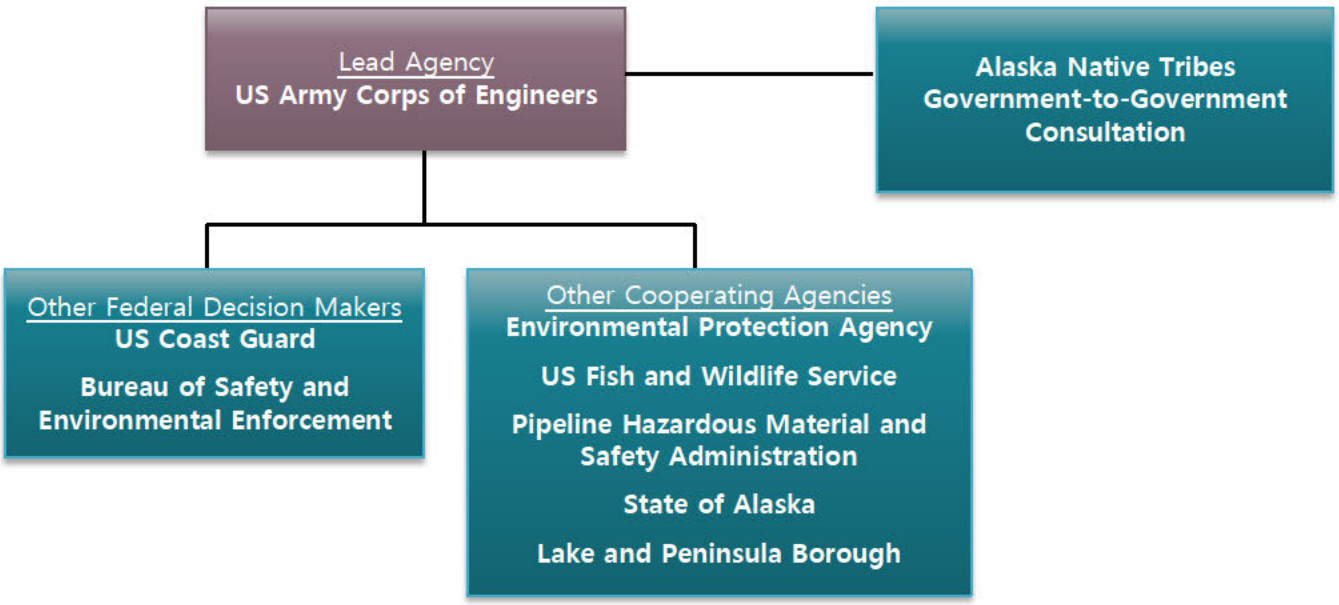
Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirity of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Lead and Cooperating Agencies



EIS Schedule

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began in December 2017, when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership (Applicant). The EIS process will take several months to complete a Draft EIS for public review, with a Final EIS expected within 24 months. The estimated schedule for the EIS is below.

Steps in the EIS Process

Notice of Intent to Prepare an EIS
March 2018

The USACE released a Notice of Intent to the United States Federal Register in March 2018. This initiated the process to prepare an EIS and began the scoping process.

Scoping: Meetings and Comments
April 2018

The 30 day scoping process kicks off on April 1, 2018. Public meetings will be held at specific locations within the Bristol Bay region, and in Homer and Anchorage in April. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Draft EIS
Estimated Jan. 2019

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period. The Draft EIS is anticipated to be released for public review and comment in 2019.

Public Review of Draft EIS: Meetings and Comments
Estimated early 2019

After the Draft EIS is released, the public will have a minimum of 45 days to submit comments. During that time, the USACE will plan public meetings, in the same locations that occurred during scoping, estimated for 2019.

Final EIS
Estimated late 2019

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release in 2019.

Record of Decision
Estimated early 2020

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application. This is estimated to be released in 2020.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. The EIS will be organized into chapters to address the specific requirements in the National Environmental Policy Act (NEPA). By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and providing comments.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consiquences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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How to Comment

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

[redacted]

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings. The website for the Pebble Project EIS is www.PebbleProjectEIS.com.
- **Learn about the steps in the NEPA process** and opportunities for submitting to the U.S. Army Corps of Engineers (USACE). Public comment periods are during scoping, and at the draft EIS.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through April 30.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed before the USACE makes a final decision on the permit application. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS. For a citizen's guide to NEPA, visit https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html.

[redacted]

- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Support your statements** with explanations, facts, and references, as appropriate.
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29, 2018.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publically available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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From:

Please place first-class postage here.

Program Manager
US Army Corps of Engineers Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK 99506-0898

fold here



fold here

Frequently Asked Questions

What is the U.S. Army Corps of Engineers' relationship with the applicant?

The U.S. Army Corps of Engineers (USACE) has no relationship with the applicant and is neither for or against the project. The USACE has a responsibility to review the applicant's proposed project with the same objectivity as it would any permit application and make a permit decision under the USACE statutory authorities.

Is the Pebble Project already approved and going to be built?

No.

What is the USACE's role in reviewing this project?

The applicant has applied for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. It is the USACE's responsibility to evaluate their application and ultimately make permit decisions (approval or denial) under the USACE's Clean Water Act and Rivers and Harbors authorities.

Why is the USACE conducting an EIS for this project?

The National Environmental Policy Act (NEPA) mandates an EIS-level of analysis should be conducted for review of any potential federal authorizations that could "significantly affect the quality of the human environment." The USACE has reviewed the permit application and has determined that the proposed project could "significantly affect the quality of the human environment."

Are any other federal decisions required based on the applicant's submittal of the permit application?

Two additional federal agencies have federal decision making authority: the U.S. Department of the Interior Bureau of Safety and Environmental Enforcement, and the U.S. Coast Guard.

Will the USACE seriously consider the No Action Alternative and what factors might lead to its selection?

The USACE cannot be pre-decisional, therefore, the process will be required to analyze and consider the No Action Alternative. In the context of USACE's evaluation, the No Action Alternative constitutes an action that would not include the discharge of fill material into waters of the United States.

What is the role of cooperating agencies that do not have federal decisions to make?

The role of cooperators invited due to specific expertise is to support the lead agency in developing the environmental analysis and providing technical assistance at the request of the lead agency.

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What is the role of federally recognized Alaska Native Tribes in the EIS process?

Thirty five federally recognized Alaska Native Tribes have been asked to consult directly with the USACE as lead agency throughout the entire decision making process to include the development of the environmental impact statement.

When and how will my comments be considered in preparing the EIS?

Public comments can be submitted at any time during the preparation of an EIS. Formal requests for comment occur during two important phases of an EIS:

- During the Scoping Period, the public is asked to comment on the issues and potential impacts that should be addressed in the EIS. The public is also asked to suggest alternatives to the proposed action that should be considered for evaluation in the EIS.
- Once the Draft EIS is released for public review and comment, the public is given the opportunity to submit comments in written form via the project website and orally at public meetings on the Draft EIS.
- All comments submitted will be put into the record, analyzed, and considered in determining the scope and potential impacts within the EIS and in making changes to the Draft EIS during the preparation of the Final EIS.
- The USACE is required to prepare responses to comments submitted on the Draft EIS; comments submitted and response will be included in the Final EIS.

Pebble Project EIS

NEWSLETTER 1 | April 2018 | www.PebbleProjectEIS.com

US Army Corps of Engineers

Scoping Notice

The U.S. Army Corps of Engineers (USACE) Alaska District is conducting an Environmental Impact Statement (EIS) level of analysis to evaluate Department of the Army permit application POA-2017-271 submitted by Pebble Limited Partnership (PLP). PLP's application states the purpose of discharges of dredged and/or fill material into jurisdictional waters of the United States is for the purpose of developing a copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The EIS scoping period begins April 1 and ends April 30, 2018.

The scoping period provides opportunities for any person interested in the proposed project to share information that can help shape the scope of analysis of the EIS. This may include ideas for alternatives to the applicant's proposed action as identified in the permit application (publically available at pebbleprojecteis.com) that could have lesser environmental impacts and identifying areas and/or issues of particular concern.



SCOPING PROCESS BEGINS

About PLP's Permit Application

PLP is proposing to develop the Pebble Deposit which is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble Deposit. Portions of the proposed project lie within the Lake and Peninsula and Kenai Peninsula boroughs. Development of the Pebble Deposit would require federal permits from the USACE, The United States Coast Guard, and the Bureau of Safety and Environmental Enforcement for various aspects of the major project components. These three federal agencies are required to comply with the National Environmental Policy Act and thus will be using the EIS to inform their respective federal decisions. The major project components are briefly described here followed by an overview of the EIS process.

Major Project Components

Mine Site. The fully developed Mine Site would include the open pit mine, a tailings storage facility, a low grade ore stockpile, overburden stockpiles, material sites, water management ponds, milling and processing facilities, and supporting infrastructure such as a power plant, water treatment plants, camp facilities, and fuel and material storage facilities.

Transportation Corridor. The Transportation Corridor would connect the Mine Site to the Amakdedori Port on the west side of Cook Inlet. It has three main components:

1. A private, double-lane road extending 30 miles south from the Mine Site to a ferry terminal on the north shore of Iliamna Lake.
2. An ice-breaking ferry to transport materials, equipment, and ore concentrates 18 miles across Iliamna Lake between ferry terminals on the north and south shores of the lake.
3. A private, double-lane road extending 35 miles southeast from the South Ferry Terminal near the community of Kokhanok, to the Amakdedori Port on the west side of Cook Inlet.

Amakdedori Port. The Amakdedori Port would be located near Amakdedori Creek on the western shore of Cook Inlet, approximately 190 miles southwest of Anchorage and approximately 95 miles southwest of Homer. It would include shore-based and marine facilities for the shipment of ore concentrates, freight, and fuel for the project. A 1300-foot earthen causeway with a 700-foot wharf would connect the port site with the docking facility. A 50-foot deep turning basin would be dredged adjacent to the docking facility, along with a 50-foot deep access channel. Other facilities would include fuel storage and transfer facilities, power generation and distribution facilities, maintenance facilities, employee accommodations, and offices.

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Natural Gas Pipeline. Natural gas, sourced from the existing natural gas supply infrastructure for the Cook Inlet area, would supply power generation for the Pebble Project, and would require the construction of a 188-mile pipe. The gas pipeline alignment would connect to existing infrastructure near Happy Valley on the Kenai Peninsula and travel south, paralleling the Sterling Highway for 9 miles to a compressor station near Anchor Point. From the compressor station, the pipeline would head southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the Amakdedori Port. A second compressor station and offtake point would be located at the port site. The pipeline would then follow the transportation corridor from the port to the mine site, including crossing Iliamna Lake on the lakebed.

ABOUT THE EIS



The USACE is serving as the lead federal agency for this EIS. The Bureau of Safety and Environment Enforcement and the United States Coast Guard have federal decision-making authority over portions of the applicant's proposed project and will serve as cooperating agencies. The U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, the State of Alaska (multiple divisions), the Lake and Peninsula Borough, the Pipeline and Hazardous Materials and Safety Administration, and the U.S. Environmental Protection Agency will serve as cooperating agencies to provide technical assistance for specifically identified special expertise. Thirty-five federally recognized tribal governments have been invited to participate directly through government-to-government consultation.

The EIS will identify potential impacts and potential benefits of the proposed project and reasonable altenatives on the physical, biological, and social environment from all phases of the project, including construction, operations, and post-closure. The EIS will also look at mitigation methods—ways in which potential negative impacts could be lessened. The USACE will use available scientific literature and subsequent data collected, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to subsistence resources and land uses during project construction, operations, and closure. The EIS will address long-term cumulative effects, consider a reasonable range of alternatives, and analyze a range of practical mitigation and monitoring measures for protecting public health, water quality, wildlife, and subsistence resources.



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Participate!

All interested parties are invited to participate in the EIS process. The goals of the public scoping process are to:

- Gather comments and suggestions from interested parties to help determine issues and concerns that are relevant to the analysis of potential impacts
- Help define a reasonable range of alternatives to evaluate in the EIS
- Capture information that will lead to the development of good mitigation and monitoring measures

Public Scoping Meetings

USACE has chosen to conduct scoping in multiple ways including scoping meetings in addition to our newsletters, website, and other communication methods. The scoping schedule includes meetings across the project area, as well as in Anchorage and Homer. The public meeting schedule is listed below.

COMMUNITY	DATE AND TIME	LOCATION
Naknek	April 9, 2018, 3:30 pm	Naknek School
Kokhanok	April 10, 2018, 3:30 pm	Tribal Hall
Homer*	April 11, 2018, 5:30 pm	High School
Newhalen	April 12, 2018, 3:30 pm	Newhalen School
Nondalton	April 16, 2018, 3:30 pm	Tribal Center
Dillingham*	April 17, 2018, 5:00 pm	Middle School
Iguigig	April 18, 2018, 3:30 pm	Community Building
Anchorage*	April 19, 2018, 5:00 pm	Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

TO PARTICIPATE...

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. Come to scoping meetings and share your thoughts regarding project impacts and benefits and ideas for alternatives. Give your comment orally to a dedicated court reporter, or electronically submit using one of a number of dedicated laptop computers. You can also bring written comments to a meeting, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Let us know what aspects of the proposed project are important to you!

Written scoping comments can be submitted through April 30, 2018.
Comments received/postmarked after April 30 will be considered, but may not be included in the scoping report.
Comments will be reviewed and incorporated into the Draft EIS, as appropriate

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Program Manager
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US Army Corps of Engineers
PO Box 6898
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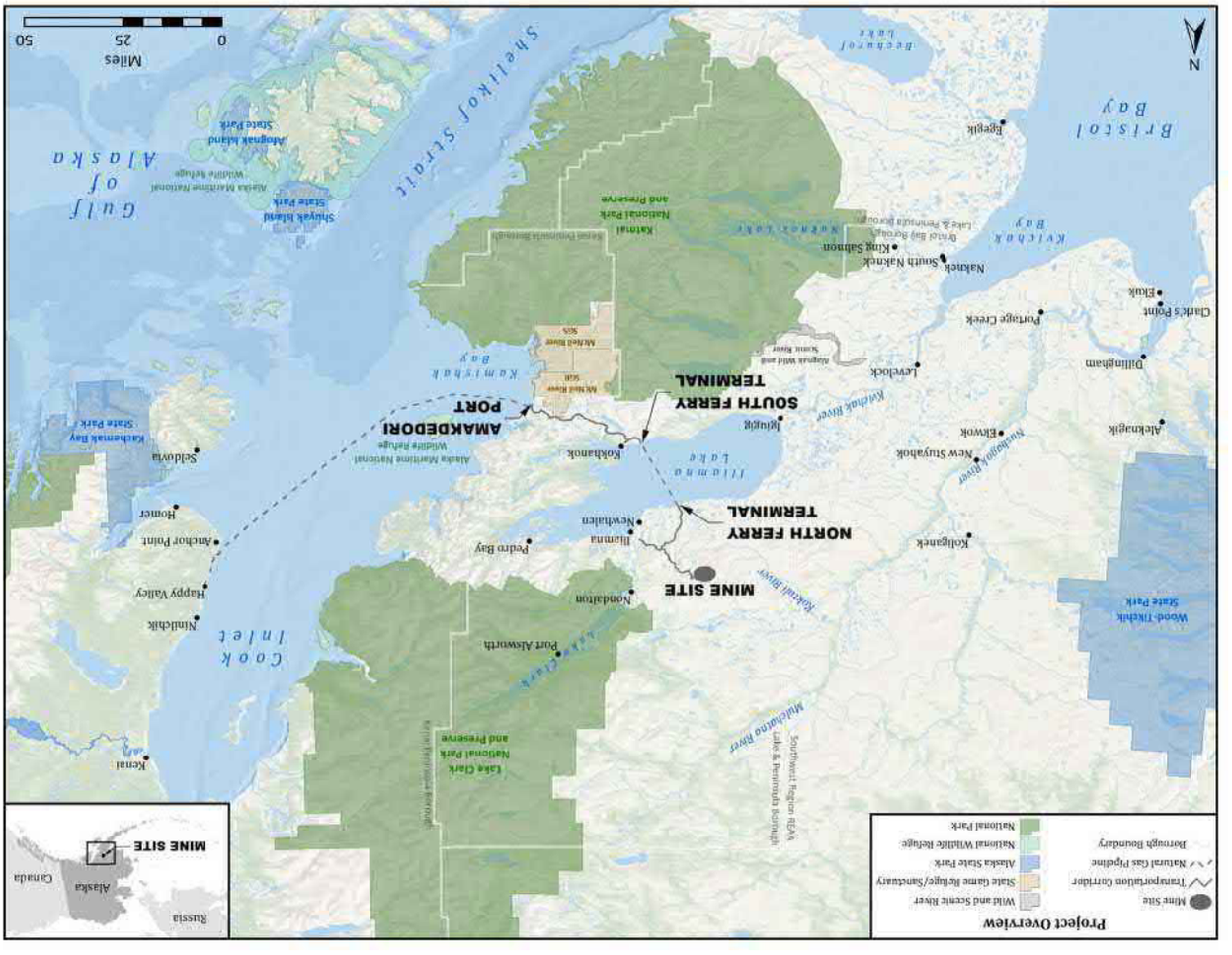

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 08, 2018, April 09, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed _____
Joleesa Stepetin

Subscribed and sworn to before me
this 9th day of April, 2018

_____
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS. Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Naknek	Mon. April 9, 2018	3:30 – 7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30 – 7:30 pm Tribal Hall
Homer*	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30 – 7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00 – 4:30 pm Community Bldg
Nondalton	Mon. April 16, 2018	3:30 – 7:30 pm Tribal Center
Dillingham*	Tue. April 17, 2018	5:00 – 9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30 – 7:30 pm Community Building
Anchorage*	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

ANCHORAGE DAILY NEWS

AFFIDAVIT OF PUBLICATION

Account #: 270423
AECOM
700 G STREET STE 500
ANCHORAGE, AK 99501

Order#	0001419104	**Product**	ANC-Anchorage Daily News
Cost	$1,195.20	**Placement**	0300
		Position	0301

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Anchorage Daily News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

April 15, 2018, April 16, 2018

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin
Joleesa Stepetin

Subscribed and sworn to before me
this 16th day of April, 2018

Britney Thompson
Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska

MY COMMISSION EXPIRES
2/23/2019

Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

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Dillingham*	Tue. April 17, 2018	5:00 – 9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30 – 7:30 pm Community Building
Anchorage*	Thurs. April 19, 2018	11:00 am – 9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

Public comments may be submitted from April 1, 2018 through June 29, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898.

Notary Public
BRITNEY L. THOMPSON
State of Alaska
My Commission Expires Feb 23, 2019

AMERICAN OVERSIGHT

AFFP

Notice of Public Meetings

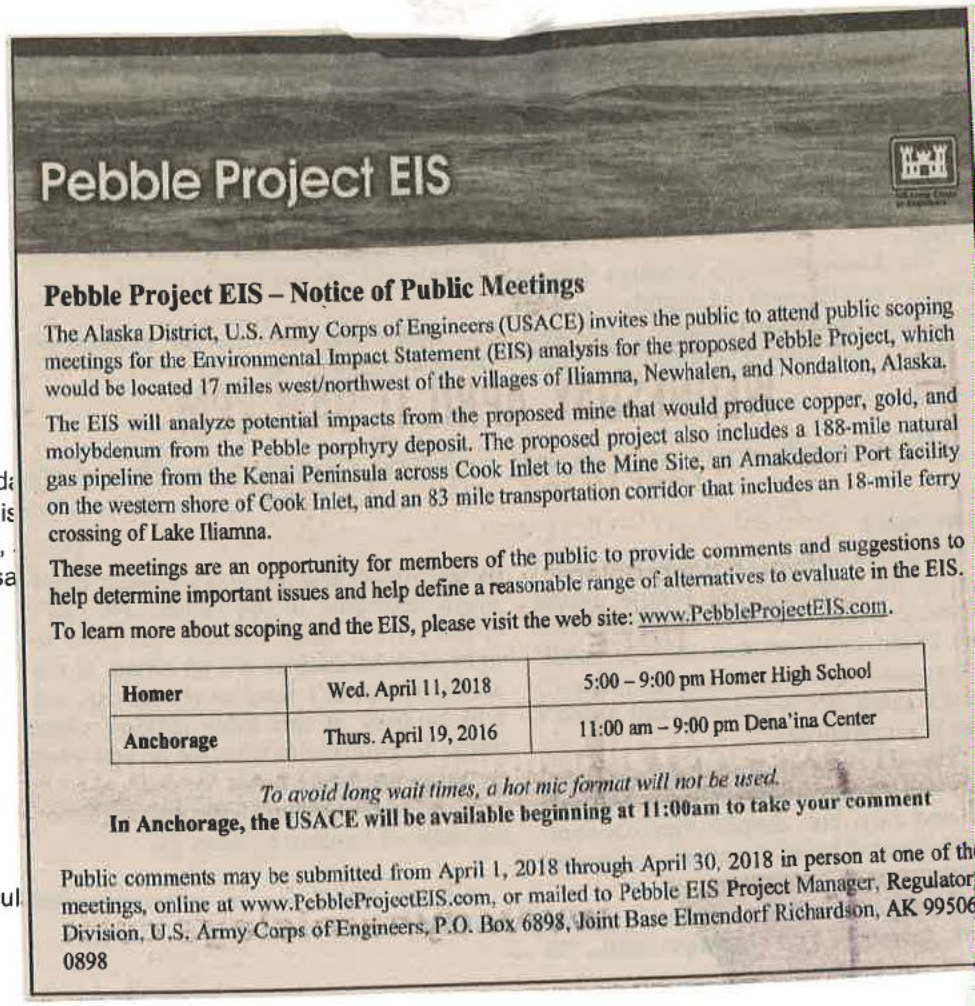
Affidavit of Publication

STATE OF ALASKA }
COUNTY OF KENAI } SS

Denise Reece, being duly sworn, says:

That she is Principal Clerk of the Homer News, a da
newspaper of general circulation, printed and publis
Homer, Kenai County, Alaska; that the publication,
of which is attached hereto, was published in the sa
newspaper on the following dates:

April 05, 2018, April 12, 2018



Pebble Project EIS

Pebble Project EIS – Notice of Public Meetings

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the proposed Pebble Project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Homer	Wed. April 11, 2018	5:00 – 9:00 pm Homer High School
Anchorage	Thurs. April 19, 2016	11:00 am – 9:00 pm Dena'ina Center

To avoid long wait times, a hot mic format will not be used.

In Anchorage, the USACE will be available beginning at 11:00am to take your comment

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of th
meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Project Manager, Regulator
Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506
0898

That said newspaper was regularly issued and circul
on those dates.
SIGNED:

Denise Reece

Principal Clerk

Subscribed to and sworn to me this 12th day of April 2018.

Mary Von Beaudion, Notary Public, Kenai County, Alaska

My commission expires: August 29, 2020

MARY VON BEAUDION
Commission Expires
NOTARY
PUBLIC
AUGUST 29, 2020
STATE OF ALASKA

00001218 13002507

Jessica Evans
AECOM
700 G. Street, Suite 500
ANCHORAGE, AK 99501

AMERICAN OVERSIGHT

US Army Corps of Engineers

Invites You to Attend Public Scoping

for the

Pebble Project EIS

Naknek	Mon. April 9, 2018	3:30—7:30 pm Naknek School
Kokhanok	Tue. April 10, 2018	3:30—7:30 pm Community Hall
Homer*	Wed. April 11, 2018	5:00—9:00 pm Homer High School
Newhalen	Thurs. April 12, 2018	3:30—7:30 pm Newhalen School
New Stuyahok	Fri. April 13, 2018	1:00—4:30 pm Community Building
Nondalton	Mon. April 16, 2018	3:30—7:30 pm Tribal Center
Dillingham*	Tue. April 17, 2018	5:00—9:00 pm Middle School
Igiugig	Wed. April 18, 2018	3:30—7:30 pm Community Building
Anchorage*	Thurs. April 19, 2016	Comments accepted beginning 11:00 am—9:00 pm Dena'ina Center

**To avoid long wait times, a hot mic format will not be used.*

The Alaska District, U.S. Army Corps of Engineers (USACE) invites the public to attend public scoping meetings for the Environmental Impact Statement (EIS) analysis for the Pebble Limited Partnership's proposed project, which would be located 17 miles west/northwest of the villages of Iliamna, Newhalen, and Nondalton, Alaska.

The EIS will analyze potential impacts, benefits, and alternatives from the proposed mine that would produce copper, gold, and molybdenum from the Pebble porphyry deposit. The proposed project also includes a 188-mile natural gas pipeline from the Kenai Peninsula across Cook Inlet to the Mine Site, an Amakdedori Port facility on the western shore of Cook Inlet, and an 83 mile transportation corridor that includes an 18-mile ferry crossing of Lake Iliamna.

These meetings are an opportunity for members of the public to provide comments and suggestions to help determine important issues and help define a reasonable range of alternatives to evaluate in the EIS.

To learn more about scoping and the EIS, please visit the web site: www.PebbleProjectEIS.com.

Public comments may be submitted from April 1, 2018 through April 30, 2018 in person at one of the meetings, online at www.PebbleProjectEIS.com, or mailed to Pebble EIS Program Manager, Regulatory Division, U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506-0898

Please note that public scoping meetings are not public hearings. Scoping input can be submitted in person at public meetings via directly into the provided computers, handing in written comments, or speaking to a court reporter

AMERICAN OVERSIGHT

APPENDIX C – MEETING SIGN-IN SHEETS

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1.	Maureen Knutsen	self/~~husband~~	(b) (6) [redacted]
2.	HENRY F. Fischer Jr	Self employed	
3.	William REGAN	RETIRED	
4.	Dorothy M Larson	BBNC	
5.	Marilyn A Hansen	housewife	
6.	Paul Hansen Sr	Subsistence/fisherman	
7.	~~Sharon~~ Thompson	resident	
8.	~~Abe~~ Williams	PLP/Self	
9.	Richard Russell	formerly ADF&G but now just for myself	
10.	Peter Andrew	BBNC	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11.	Henry		(b) (6) [redacted]
12.	Ted Shangin		
13.	Joe Chythlook	BBNC	
14.	Shirley	BBNC	
15.	Daniel J. O'Hara	Bristol Bay Bor.	
16.	Everett Thompson	Bristol Bay Fisherman Local	
17.	Dylan Mancuso	Bristol Bay Fisherman	
18.	Mellisa Mancuso	BB resident	
19.	Lindsay Layland	BB resident	
20.	Russell Phelps	BBNC	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. George Wilson Jr	BBFA/personal	(b) (6) [redacted]
22. Russell Nelson	BBNC	
23. John Christensen	Native Village of Port Heiden	
24. Jodie Hasenbay	Naknek	
25. Cody Lawson	D. Wayhan	
26. MegAnna Schlais	Naknek	
27. Pete Carus	KS/NAKNEK	
28. CaroLAnn Hester	Naknek Set Gillnet Fisher	
29. Beth Hill		
30. Anna Hoover	Egegik Drifter	

Peter Andrews

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Eddie Clark	Egegik Setnetter	(b) (6)
32. DALE PETERS	NO MINE! NO WAY!! NAKNEK SETNETTER LOCAL BUSINESS OWNER	
33. Veronica Wood	Naknek Resident	
34. Eseta Sherman	Small Business	
35. Joshua Gumlickpak	Alushagak Drifter	
36. Paul Hansen Jr	Fisherman Driftnet	
37. Rose Chr Hansen	Naknek Resident	
38. Annette CARLSON	Naknek resident	
39. Josey Wood	Resident	
40.		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. William Weatherby		(b) (6)
42. Kate Conley	Lake & Peninsula Borough	
43. John Wise		
44. BECKY SAVO	resident BBB	
45.		
46.		
47.		
48.		
49.		
50.		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Wesley Foster		(b) (6) [redacted]
52.		
53.		
54.		
55.		
56.		
57.		
58.		
59.		
60.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Naknek – April 9, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61.		(b) (6) [redacted]
62.		
63.		
64.		
65.		
66.		
67.		
68.		
69.		
70.		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify? Y

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Gerald Andrew		(b) (6) [redacted]
2. David McAlister		
3. Paul Chukwak	chukwak	
4. Joe Chythlook		
5. John Nelson Jr	self	
6. Sheila M. Hobson		
7. Jim Tilly	self	
8. Michelle Ravenmoon	Lake & Penn Borough Assembly	
9. Steve Nowaltok		
10. Joe Hyde		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Agnes Mike		(b) (6) [redacted]
12. Marlene Tilly		
13. Rickterff Marsha Rickterff		
14. Matt Matt Rickterff		
15. Kimberly Williams		
16. NATHAN HILL	LAKE + PENINSULA BOROUGH	
17. Trofim Wassillie		
18. Mariana Eknaty		
19. Diedre Hill	B.B.N.C. / land owner	
20. Mollie Gatzke		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify? 4

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Viola Paul		(b) (6)
22. Greg Andrew Jr.		
23. Sergie Chukwak	Levelockvillage	
24. Luke Zackar		
25. Gustie Tallekpalek	Levelock AK	
26. Gilbert Andrew	Kokhanok AK	
27. Laura Evan-Andrew	Kokhanok, AK	
28. Nicll Newyaka Jr.	Kokhanok AK	
29. Avery. Gill	KDLG	
30. Cynthia Olympic-Andrew	Kokhanok	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31.	Alesia Newyak	Kokhanok	(b) (6)
32.	Mary Nelson	Kokhanok	
33.	Fran Andrew	Kokhanok	
34.	Jimmy Ekuty	Kokhanok	
35.	Natalia Wassillie	Kokhanok	
36.	Marisa Hobson	Kokhanok	
37.	Isaiah Mike	Kokhanok	
38.	Joseph Zackar	Kokhanok	
39.	John Chukwak	Levelock	
40.	Martha Kernak	Kokhanok	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Testify?

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41.	Alice Cobb	Kokhanok	(b) (6)
42.	John F. Gust	Kokhanok	
43.	Gregory Wassillie	Kokhanok	
44.	Samuel Madrid	Kokhanok	
45.	Anni Hester (Hester)	Kokhanok	
46.	Joe A Paine	KOKHANOK	
47.	Alexander Tallekpalek		
48.	Joe Woods	Kokhanok	
49.	Raymond Apokedak	Levelock	
50.	Nicholas Chocknok	Kokhanok	

AMERICAN OVERSIGHT

Testify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Brittany Bush		(b) (6)
52. Evangaline Chemaic		
53. Sonia Delkettle		
54. ~~Megan Kluff~~		
55. Samara chemaic	Kokhanok	
56. Helen chemaic	Kokhanok	
57. Cara Pellegrino	Kokhanok	
58. Shelby Gallus	Kokhanok	
59. Jordan Putka	Kokhanok	
60. Charene Raehl	Kokhanok	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Kokhanok – April 10, 2018

Test.ify?

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Marlene Nielsen		[redacted] (b) (6)
62. Sharolyn Chocknok		
63. Jootsie Roehl	handed in	
64. Roy Andrew		
65. Kathy Wassillie		
66. Nancy Wassillie		
67. Jesse Davis		
68. Loney Moses		
69.		
70.		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. DAN BOONE	NONE	(b) (6) [redacted]
2. JACK POLSTER	"	
3. Eileen Sheridan	Cook Inlet Keepers	
4. GARY Sheridan	"	
5. Wilma Williams	me	
6. Royce Page	NONE	
7. JACK ALLARDICE	NONE	
8. JOHN WHITTIER	NONE	
9. Amanda Kelly	none	
10. Janet Fink	none	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Sera Baxter		(b) (6) [redacted]
12. John Allardice		
13. MICHELLE MICHAUD		
14. Chris Perry		
15. Mimi Martin		
16. BRYAN ZAK		
17. SHIRLEY EVANS		
18. Georgeanna Heaverley		
19. Shlomo Gherman		
20. [illegible]		

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Benn Levine	none	(b) (6) [redacted]
22. Lindsay Layland	N/A	
23. Emilie Springer	UAF	
24. Martha Crow	fisherwoman	
25. Charles Cramp Jr	farmer-none	
26. Barbara Reilly		
27. Larry Shone	None	
28. Milli Lundgren	Fisherman	
29. Mike Lundgren	Fisherman	
30. Clyde Bogan	Interested Alaskan to save our fishery	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. JEFF MIDDLETON		(b) (6) [redacted]
32. Dennis Andrews		
33. Shelley Gill	Eye of the Whale.org	
34. Michael Yourkowski		
35. Dave Lewis	Salmon Lover	
36. George Matz		
37. John McHall	BBEG	
38. MATT HAKALA		
39. Loretta Brown	Salmon State	
40. Jessie Nelson	Cook Inlet Aquaculture Lower Inlet Setter	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Beaver Nelson	Cook Inlet seiner	(b) (6) [redacted]
42. Brad Cameron	Sportsfisherman	
43. Janette Latimer	Nurse	
44. Lisa Krebs	Bristol Bay Fisherman	
45. Ricky Carter	Tender owner in B. B.	
46. George Smallwood	Keeper	
47. Marika Carey		
48. Shirk Carey		
49. Kyle Schneider	Sportfisherman/Educator	
50. Donna Adarhold	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Charlie Franz		(b) (6) [redacted]
52. Claire Heaton	comfish	
53. Jim Plymire	Bear Cove Fisheries LLC	
54. Jinky Handy		
55. Malcolm Milne	North Pacific Fisheries Assoc.	
56. Revelle Russell	North Pac Fishing Assoc UCIDA	
57. Jennifer Hakala	NPFA	
58. GARY AULT		
59. Andrew Gregiren		
60. Jaime Gable		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. Jon James Sharp	human	(b) (6) [redacted]
62. Chessie Sharp		
63. Laura McIntoe		
64. MARK MASSIGI		
65. Reba Temple	fisherman	
66. RON KEFFER	CAN	
67. Carolyn Maclow	teacher/salmon advoca	
68. STEVE BAIRD		
69. Jane Miles		
70. Catie Bursch	Fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Wendy Wayne		(b) (6)
72. Lolita Brache		
73. Tess Dally		
74. Charles Lindsay	VCIDA	
75. Renie Cannava		
76. Peter Cannava		
77. Joey Kraszeski		
78. Solstice Kraszeski		
79. LOGAN SANDER		
80. Barb Russell		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Pat & Lyle Bellamy		(b) (6) [redacted]
82. Cheryl Rykaczewski	MARICULTURE OYSTER FARMER – ASSN.	
83. McKibben Jochinsky	HOMER NEWS/ PEBBLE LITTER	
84. Sharon Brooks	resident	
85. Laura Luttrell		
86. ROB LUND	RESIDENT	
87. Karen Murdock	resident	
88. Thomas McDonough	resident	
89. Wesley & Sharon Henny	resident	
90. LuAnne M. Nelson	resident	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. Brandon Hill	Cook Inletkeeper	(b) (6) [redacted]
92. Tim Scheffel DO	Private-Healthcare	
93. Stu Schmutzler	private	
94. Amanda Campbell		
95. Sean Campbell		
96. Kathryn Carsson	private	
97. Mako Haggerty	self	
98. Amy Christiansen	self	
99. Shevawn Miller	self	
100. Amy Woodruff	self	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. BRENDA DONNA	Alaskan (self)	(b) (6)
102. DREW SMITH	ALASKAN	
103. Erin Knudtson	"	
104. Patricia Cue	Conservat Kachemak Bay Society	
105. DINA SHERMAN	ALASKAN	
106. Tim Steinberg	Alaskan	
107. Laurie Daniel	Alaskan	
108. Katie Dawson	Alaskan	
109. Tammy Carmack	Alaskan / touris	
110. David Schauble	Alaskan	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Philip Brudie	local fisherman	(b) (6) [redacted]
112. Joe Svymbersky	Local fisherman	
113. Diane Svymbersky	business owner	
114. Roberta Highlands	Kachemak Bay Conservation Society	
115. Ernest Sweja	Local	
116. Bill Wiehe	Local	
117. Leon Smith		
118. Trisha J. Davis	Superfund Site Survivor	
119. Mark Munro	Fisherman Bear View Air Taxi	
120. Matthew Martushev	Commercial fisherman	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. NATALIA MCCANN		(b) (6) [redacted]
122. John Mink		
123. SARAH ROBERTSON	HOMER BIRTH & WELLNE	
124. GLENN CALDWELL		
125. Jeff Dean		
126. Skywalker Payne		
127. Daniel Layland	COOK INLET RESIDENT 35yr Bristol Bay Sum	
128. DAVE BACHRACH		
129. Doug Reid		
130. Deborah Smith	Cook Inlet Keeper Supporter	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Lynn Temple		(b) (6) [redacted]
132. MARY FRISCHE		
133. KARA CLEMENS		
134. Andrea VanDinther	Bear Guide	
135. Sofia Lobay		
136. Isabella Lobay		
137. Hudson Lobay		
138. Joe Lobay		
139. Jeanne Parker	teacher	
140. Russell Miller		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141.	ALISON OTTARA		(b) (6) [redacted]
142.	Miranda Weiss	Citizen voter mother	
143.	GREGORY FRIES	VOTER/CITIZEN	
144.	Morgan Edminster	Fisherman/voter/citizen	
145.	EDWIN O. KILCHER	COMMERCIAL BARGE & BUSINESS	
146.	Charlotte Adamson	Farmer	
147.	Francie Roberts	Citizen	
148.	LACEY VELSKO	COMMERCIAL FISH	
149.	Penelope Haas	ADF&G/Commercial Fishing	
150.	Todd Gustafson		

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151.	Mark Schollenberger		(b) (6) [redacted]
152.	RICHARD HARNESS	SEASIDE ADVENTURE	
153.	TORREY SHORT	Wildland Firefighter	
154.	ELAINE BURGESS		
155.	Dorla Harness	citizen	
156.	Cynthia Morelli	fish eater	
157.	Lynn Takeeka Spence		
158.	CHERYL BAECHLER	HOMER citizen Landowner	
159.	Tim Whip		
160.	JACK CUSHING	HOMER CITIZEN	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Susan Cushing	Homer Resident	(b) (6) [redacted]
162. [illegible]	Homer Resident	
163. Shannon McBride-Morin	Kachemak Bay Wilderness Lodge. Homer	
164. Lars	Homer Resident	
165. Ben	Homer Resident	
166. Maggie Goedeke	Homer Resident	
167. Robert Johnson	Alaska resident, fisheries biologist, tribal employee	
168. Monica Zappa	Ninilchik, AK setnet	
169. Peter Andrew	BBNC	
170. Rika Mouw	resident	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. JENIFER DICKSON	HOMER	(b) (6) [redacted]
172. Sherri Burt	Seldovia	
173. PEGGY PAVER	HOMER	
174. Aaron Ford	Homer	
175. Nicole Arevalo	myself	
176. JUDY GONSALVES	BRISTOL BAY FISHERMA HOMER RESIDENT	
177. Charlie Christoffersen	Kenai	
178. Zenovia Prokopiof-Tallekpalek	Levelock	
179. Jordan Jackinsky		
180. Brad Thornburgh	Homer	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
181. Betty Siegel	–	(b) (6) [redacted]
182. Daniel Del Missier		
183. Stephanie Zuniga	—	
184. Wes Schacht	Homeroid	
185. Jodi Andrews		
186. Christine Kulcheski		
187. Mikee Flora	Bristol Bay Fisherman	
188. Taylor Andrade	Homer Resident employed in Tourism.	
189. Kyla Dammann		
190. Anne Wieland	—	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
191. BOB MOORE	AK RESIDENT 48 yrs.	(b) (6) [redacted]
192. Mercedes Becker	Ak resident 21 yrs	
193. Karen Northrop	AK resident 21+yrs	
194. Ruby Haigh	AK resident 66yr	
195. Carrie Oats	Ak resident 19yrs.	
196. Cal Loomer	AK Resident	
197. PETE BECK	AK RESIDENT	
198. TRISH BOYER	AK RESIDENT	
199. Michael Mosley	Ak Resident	
200. TIM OSMAR	AK Resident	

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
201. Beverly Cronen		(b) (6) [redacted]
202. Louis Dupree		
203. Amanda Miotke		
204. Diedre Hill	B.B.N.C.	
205. Karen Schmidt		
206. Kim M'Nett	Kachemak Bay Conservation Society	
207. NANCY HILLSTRAND	PIONEER ALASKAN FISHERIES	
208. Jeffrey Lee		
209. Joey Allred		
210. Karianna Derr	Homer	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
211. Timothy Gervais	fisherman	(b) (6) [redacted]
212. Ruby		
213. Margaret		
214. Meghan		
215. Eileen Mullen	fisherwoman	
216. Martin Renner		
217. Sue Mauger		
218. WAYNE ADERHOLT	—	
219. Anders Gustafson	Bristol Bay Heritage Land Trust Homer Local Guide	
220. Leah Evans	Homer	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
221. Mary Edminster	Homer	(b) (6) [redacted]
222. Scott Bartlett	Homer	
223. Aimee Sulczynski		
224.		
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
231.		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Homer – April 11, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
241.		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Raymond Wassille		(b) (6) [redacted]	
2. Tasha Hobson	Student		
3. Wyatt Wassilie			
4. Lem Batchelder		[redacted]	
5. Greg Anelon	self		
6. Myrtle Anelon	INL		
7. Ethel Adcox			
8. James R Lamontsa			
9. Verna Kolyaha	Pedro Bay		
10. Wade	Student		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Benfoss	Pedro Bay	[redacted] (b) (6)	[redacted]
12. Avery Lill	KDLG		
13. Keith Jensen	Pedro Bay		
14. Kara Jensen	Pedro Bay Tribe		
15. Wynn Knighton	Pedro Bay		
16. Molly Dischner	UTBB		
17. Ira W. Nickoli	none		
18. Terry Wassillie	Newhalen Tribal Council		
19. Samantha Herrick	Pedro Bay		
20. Mike Clark	Iliamna		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

US Army Corps of Engineers

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. LARRY T. HILL	—	— (b) (6) [redacted]	
22. RANDY ALVAREZ			
23. Heather Mase	—		
24. Manuel Anelon			
25. Kim Williams			
26. Anelon Charity			
27. Alex Wassillie			
28. Lisa Reimers			
29. Andrew Wassillie			
30. Lenere Anelon			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Nathan Kilbride	—	[redacted] (b) (6)	[redacted]
32. Maxine Wassillie			
33. Lydia Olympic	—		
34. Joe Chythlook	BBNC		
35. Russell Nelson	Resident of BB		
36. Norman Van Vactor	Bristol Bay Economist		
37. Margie Olympic	Newhalen		
38. Agnes Ryshansky	Newhalen		
39. Chip Embretson	Iliamna		
40. Harvey Anderson	Iliamna Native		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Newhalen – April 12, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Bill Cornell		(b) (6) [redacted]	
42. Joanne Wassillie			
43. Annie Wassillie			
44. Cathleen Gust			
45. Sheena Ishnook			
46. Sarah Armstrong			
47. Tim Andrew!			
48.			
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AMERICAN OVERSIGHT

US Army Corps of Engineers.

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

Father Alexie YES ✓

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. John Hanson Sr.	NSTC	(b) (6) [redacted]	
2. (Wally) Wassilie Gusison	New Stuyahok Traditional Council		
3. Stephan Blunka			
4. Randal A Hastings	community member		
5. Adrian Wonhola	community member		
6. Timothy Wonhola	" "		
7. Mike Oyaluk	" "		
8. John Hanson Jr	" "		
9. Kim Williams			
10. Tatianna Oyaluk			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Gustie Kusma		(b) (6) [redacted]	
12. Moxie Andrew JR.			
13. Mathona Gust			
14. MaryAnn Gust			
15. Evan Kusma Sr.			
16. DENNAS Andrew			
17. Bobby Larson			
18. Thomas Tilden			
19. Tatianna Gumlickpuk			
20. Charlie & Gumlickpuk			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Myrtice Evan	Nunamta Aulukestai	(b) (6)	
22. Joe Chythlook	BBNC		
23. Gusty S Blunka Sr			
24. Wass Neketa Sr.			
25. Mary Workola			
26. Andrew Wyason			
27. Peter Christopher Sr.	Stuyahok Ltd.		
28. Lucas Barr	pupil		
29. Marie Paul	BBNC		
30. Alannah Hurley	UTBB		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	~~Are you planning to comment?~~
31. Lindsay Layland	NTBB	[redacted] (b) (6)	[redacted]
32. Frances A. Nelson	New Koliganek Village Council		
33. Jenn McBrown Jen tell	New Koliganek Villiage council		
34. Mary Ann Wassilie	New Stuyahok		
35. Michael Gust			
36. Matrona Andrew			
37. Irene Wonhola			
38. Natalia Christopher	New Stuyahok		
39. Natalia Oyaluk	New Stuyahok		
40. Glen Olympic			

Glen Olympic

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Natalia Wassilieff		(b) (6)	
42. Blunka Wassilieff Sr			
43. Bjorn Olson	~~BBUTBB~~		
44. Wassilie Andrews			
45. Harvey Demantle			
46. SERGIE IVALUK			
47. Annie Chunak			
48. Ivan Blunka			
49. Thomas Woodman			
50. L. Alexie Askoak			

AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok – April 13, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Nina P. Gust		(b) (6)	
52. James Acoral			
53. mike yuralik			
54. Phillip Pavella			
55. Michael P Gunlickfish			
56. Gustie Hanson Sr			
57. Peter Oyaluk			
58. Demtri Gust			
59. John Wonhola			
60. Wassillie Blunka			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

New Stuyahok 13

~~Newhalen~~ – April ~~12~~, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
~~51.~~ 61 Nancy Waskey		(b) (6)	
~~52.~~ 62 Delores Larson			
~~53.~~ 63 Tim Pavella			
~~54.~~ 64 Faith Andrew			
~~55.~~ 65 Mary Olympic			
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~~60.~~ 70			

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Luther E. Hobson Jr.	R	(b) (6) [redacted]	
2. Charlotte Ballenbe			
3. Christina Salmon	Lake & Penn ~~Ltd~~ Borough Assembly		
4. Jackie C Hobson			
5. John B. Branson			
6. Michelle Ravenmoon	Lake & Penn & Borough Assembly		
7. Tim Vogel			
8. DARcelle BALLUTA	Lake & Pen		
9. Paul Hobson SR. Hobson SR.			
10. June Tracey			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Ventura Samaniego	Kijik Corp.	(b) (6)	
12. Billy Trefon Jr	Nondalton Tribal Council		
13. Timothy Hobson	None Nondalton		
14. George Alexie	" "		
15. Natalia Martila	Nondalton Tribal		
16. Elizabeth A. Ralkta	" "		
17. Virginia Delkittie	Nondalton		
18. Melvin Trefon	NONDALTON		
19. Clara Trefon	Nondalton		
20. Louis Weedman	Nondalton		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Clarence Delkittie	Tribe	(b) (6)	
22. Bjorn Olson	UTBB		
23. Alannah Hurley	UTBB		
24. Wesley Sammis Farlaney	NARF		
25. Molly Dschner	UTBB		
26. Will Evanoff	Tribal Council		
27. Kristy Jeffries	Nondalton Tribal Council		
28. Sarah O'Neal	UW		
29. Briana Delkittie	Nondalton Tribal Council		
30. nenita Wilson			

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Michelle Wilson	Nondalton Tribal Council	(b) (6)	
32. Sunflower Dekkittie	Nondalton Tribal Council		
33. Darlene Nolan	NND T. Member		
34. Randy Kakaruk	Nondalton Tribal Member		
35. Fawn Silas	———		
36. TeresaRickteroff	P-O Box 73 " "		
37. Illeah Aaberg	PO Box 43		
38. Chris Crookham	PO Box 43		
39. ROB KAKARUK	PO Box 116		
40. Harry Harshakoff	PO Box 35 Kwik		

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US Army Corps of Engineers®

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Kim Williams	BBNC	(b) (6) [redacted]	
42. Ivon Washington			
43. Eric Tallekpalek			
44. Myrtice Evalt	Nunamta Aulukestai		
45. Mark Noden	[illegible]	[redacted]	
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Nondalton – April 16, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Alannah Hurley	Yup'ik	(b) (6)	
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Marie Paul	BBNC	(b) (6) [redacted]
2. Bertha Parian-Lockuk	UTBB	
3. Ishnook Myrtle Ishnook		
4. William P Johnson		
5. Helen Aderman	BBNA Marine Mammals	
6. Wassiliisia Bennis	BBNA -CAO	
7. Wassiliisia Bennis	self	
8. DAVE BOULKER	-	
9. Patricia Treydte	Self	
10. Everette Henderson	BBNC	

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Karl Hill		(b) (6) [redacted]
12. Sam Eveslage		
13. Tom Eveslage		
14. Deborah McLean		
15. Katherine Carscallen		
16. Jimmy Coppchosh		
17. Susie Jenkins-Brito		
18. Courtenay Carty		
19. Violet King		
20. Tod Larson		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Deven Lisac		(b) (6) [redacted]
22. Elaine Phillips		
23. Stephen Boyd		
24. Myra Olsen		
25. David Wetter		
26. Morgan Allen		
27. Christopher Manos	BBNA	
28. Shannon Clouse		
29. Kalin Clouse		
30. Kolki Clouse		

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Pebble Project Environmental Impact Statement

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Avery Lill	KDLG	(b) (6) [redacted]
32. Betty Gardiner	CPVC	
33. Annalee Carty		
34. Charlene Savo		
35. Harry Wassily SR.	Clark's Pt. Tribal.	
36. LaRhae Angasan		
37. Cory Angasan	N	
38. [illegible]		
39. Andy Aderman		
40. Alisha Folsom		

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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41.	Bruce Ilutsik	Aleknagik Traditional Council	(b) (6) [redacted]
42.	Jean Barrett	City of DLG	
43.	Hailey Carty		
44.	Lara Collis		
45.	Nicole Krause		
46.	Susanna Henry	U.S. Fish & Wildlife Service	
47.	Malcolm Wright		
48.	Bernina Venua		
49.	Cory Howell		
50.	Steve Wassily Steve Wassily		

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Reyton Woods		(b) (6)
52. Andrea Hurley		
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Cate Gomez		(b) (6) [redacted]
132. ROBERT HIMSCHOOT		
133. Doug Johnson		
134. Gayla Hoseth		
135. Terry D. Mann		
136. Valencia Mann		
137. Thomas Tilden		
138. Dan Dunaway	me	
139. Gary Cline	Self	
140. Thomas Woods	Self	

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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
251. Mark Nolen		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
371. Ethel J. Nelson		(b) (6) [redacted]
372. George L. Nelson		
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Pebble Project Environmental Impact Statement

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
481. Tim Williams	BBNC Curyung Tribe	(b) (6) [redacted]
482. Cody Larson		
483. Diane Wetter		
484. Jackie Nelson		
485. Chonice Johnson		
486. Vernon Von Vactor	Bristol Bay Economic Dev. Corp	
487. Mike Davis	UAF	
488. Ingrid Andrew	interested	
489. Wassillie Tikden	BB	
490. Moses L Kritz III	B B	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
491. Sharon Clark	self nonpte	(b) (6) [redacted]
492. MARK LISAC	Self	
493. Alannah Hurley	UTBB	
494. Glen Szymoniak	school Dist	
495. Izzy Ross	self	
496. Susan Flensburg	self	
497. Frederick Angasan III	Self	
498. Greyy Maxmiller	Self	
499. Richard Alto	self	
500. Page O'connell	Self	

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
501. Hannah Hendrickson		(b) (6) [redacted]
502. Rebekah Fonkert		
503. Holly Wyseck		
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
281.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
291.		(b) (6)
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AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
301.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
311.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
321.		(b) (6) [redacted]
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
331.		(b) (6)
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
341.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
351.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Public Scoping Meeting

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411.		(b) (6) [redacted]
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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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Public Scoping Meeting

Dillingham – April 17, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
511.		(b) (6) [redacted]
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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AMERICAN OVERSIGHT

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
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US Army Corps of Engineers

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
1. Betsy Hostetler Hostetler		(b) (6) [redacted]	
2. Andy Smith			
3. Nick Smith			
4. [illegible]	JTBB		
5. Christina Salmon			
6. Keilan salmon			
7. Karl Hill	IVC		
8. Glen R. Alsworth Sr. Glen R. Alsworth Sr	LP Board		
9. Everette Anderson			
10. Renae Zackar			

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US Army Corps of Engineers

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
11. Lindsay Laykind	VTBB	(b) (6) [redacted]	
12. RANDY ALVAREZ			
13. Dannika Salmon	NA		
14. JON Alvarez			
15. Audra Gooden			
16. Michelle Bowermoon			
17. Charlie Gifford			
18. Whit Gooden			
19. John Chukwak			
20. Gregory Zacker			

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Pebble Project Environmental Impact Statement

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Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
21. Jeff Bringhurst	Self	(b) (6) [redacted]	
22. Olga Zackar			
23. Anna Perino	Self		
24. Avery Nelson			
25. Tanya Salmon	Self		
26. Jerm Gooden			
27. Annie Wilson			
28. Julie Salmon	self		
29. Alicia Zackar	Self		
30. Olivia Sinyon	self		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
31. Alice Zackar	self	[redacted] (b) (6)	
32. Dallia Andrew	self		
33. Ruth Simyon	self		
34. Sharolynn Zackar	self		
35. Yako Nicholi	Self		
36. Sandra Alvarez	Self		
37. Daniel Chythlook	Self		
38. DENNIS Andrew Sr	self		
39. Sherry Nelson	self		
40. Alexanna Salmon	self		

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Pebble Project Environmental Impact Statement

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US Army Corps of Engineers

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
41. Lydia Olympic	—	[redacted] (b) (6)	
42. [illegible]	Self		
43. Tatyana Zaccha	Self		
44. Terek Anelon	own		
45. Sheryl Wassillie	own		
46. Steve Routh			
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

Public Scoping Meeting

Iguigig – April 18, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address	Are you planning to comment?
51. Myrtle Evalt	Nunamta Aulukestai	[redacted] (b) (6)	
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US Army Corps of Engineers

Pebble Project Environmental Impact Statement

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
1. Mischa F. Hanna	BBNC	(b) (6) [redacted]
2. Gina M. Wardell		
3. Charles McKee c/o P.O. # 243053	self	
4. Taryn Kiekow Heimer	NRDC	
5. Rick Delkittie Sr.	Nondalton Tribe	
6. Kerry Adler	self	
7. Kim Williams	BBNC / Curyung Tribe	
8. Joseph James	Pan-American Invest mts	
9. Joe Riggs		
10. Dana Stewart	DES.IT	

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Pebble Project Environmental Impact Statement

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US Army Corps of Engineers

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
11. Mark McCullough		(b) (6) [redacted]
12. RAINBOW AZURE	Turtle Mtn Chippewa & ~~Yakama~~ Yakama Tribe	
13. Jill Burke	Bloomberg ~~BNA~~	
14. Sue Bahn	-	
15. Adrianne Christensen	Pedro Bay	
16. RAYN ABERG	PEDRO BAY	
17. Nelli Williams		
18. Daniel J. Michels	Crystal Creek Lodge King Salmon	
19. Chris Bruns	None	
20. Jenny Weis		

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
21. Tim Sohn	Journalist	(b) (6) [redacted]
22. Ron Benkert	ADF&G	
23. Doug Griffin	Southwest Alaska Municipal Conference - (SWAMC)	
24. Ryan Astalos		
25. Melissa Thayne	Alaskan	
26. Gerald Protzman		
27. Howard I. Grey		
28. Don Perrin		
29. Mariah Oxford	Pebble Watch	
30. MARC LESTER	ANCH. DAILY NEWS	

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Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
31. Anna Kohl		(b) (6) [redacted]
32. Marilyn Houser	None	
33. Emily Fehrenbacher	Salmon State	
34. Eric Booton	Trout Unlimited	
35. Brooke Merrell	NPS	
36. Jim Posey	P.A. LaC	
37. Phil Walczak	KTUU	
38. Carl Portman	RDC	
39. Leslie Tose	USACE	
40. Beth Verga	KTUU-TV	

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Anchorage – April 19, 2018

PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
41. Elwood Brehmer	ASOC	(b) (6) [redacted]
42. Mary Romero	—	
43. Jeremy Grant	—	
44. Alex DeMarBan	Anchorage Daily News	
45. Jennifer Worabel	Alaska Miners Assoc.	
46. Terry L Seely	Alaskan	
47. Nicole O'Hara	ABC/Fox Alaska	
48. MARIANNA HALL	RDC	
49. Abe Williams	Bristol Bay Fisher	
50. Deantha Crockett	Alaska Miners	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
51. Emily Carlson	KTVA	(b) (6) [redacted]
52. John Thompson	KTVA	
53. Rick Halford		
54. Jason Brune		
55. Emily Vullo		
56. Jack Colonell		
57. KRISTEN ULERY		
58. BRIAN KRAFT		
59. Charlotte MacCay		
60. George Edwardson	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
61. MaryAnn K. Johnson	Portage Creek	(b) (6) [redacted]
62. Charlie Johnson	Portage Creek	
63. Gaylathoseth	Dillingham	
64. Myrtice Ewalt	Dlg	
65. Shayna Wisdom	Fairweather Science	
66. Stephanie Patton	—	
67. LANCE POWELL	—	
68. John Holman	—	
69. Sherry Dugan	—	
70. Carrie Ceal	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
71. Myra Olsen		(b) (6) [redacted]
72. Thomas Rebler		
73. Destinee Holstrom		
74. George Holstrom Jr		
75. Craig Mishler		
76. Molly Vaughan	EPA	
77. Dennis Hyppolite	TY	
78. Agnes Rychnovsky		
79. Marina Barner		
80. Jalen Konukpeok	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
81. Barbara Hood	NA	(b) (6) [redacted]
82. Nancy Pfeiffer	Human	
83. BRIAN BAKER		
84. FRANK WAKE	NONE	
85. JESS HILLYER	NONE	
86. Pat Abney	None	
87. Jamie Dithmas	—	
88. Sheldon Wardell	None	
89. CHRIS WIITA	N/A	
90. NICK Hansen		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
91. MARIUS PANZARELLA		(b) (6)
92. Cathe Heroy		
93. Leila Pyle		
94. Karlene Leeper		
95. Kate Sandberg		
96. Russ Miller		
97. Kay Heafner		
98. GLENN M. GUSTAFSON		
99. MIKE COOPER		
100. Julian & Jean		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
101. Kerry Wilkins		(b) (6)
102. Kim Ansaknicke		
103. Vivian Mendenhall		
104. Andria Agli		
105. Elijah Good-Faun		
106. Travis Recon		
107. Janice Stamper		
108. Gaupend Run		
109. Jessica Speed		
110.		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
111. Johanna Grasso		(b) (6)
112. Cecilia Kleinkauf		
113. Barbara Crews		
114. Libby Roderick		
115. Kate Nilsson		
116. Rich Stromberg		
117. Laura Sherman		
118. Lucy Terry	Eskimo	
119. BILL JASO		
120. & Susan Hooker		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
121. Thomas Tilden	self	(b) (6)
122. BROOKS LARSON	self	
123. Tyler Heneghan	Self	
124. RYAN PETERSON	—	
125. Francesca DuBrock	—	
126. Laurie Miller	Self	
127. PAMELA TESCHE	self	
128. Daniel McIntock	Self	
129. Jessi Thornton	Cook Inletkeeper	
130. VICTORIA Lytle	—	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
131. Ronda Pokupec		[redacted] (b) (6)
132. [illegible]	—	
133. Julie K Wahl	Citizens Climate Lobby Sierra Club AK Center	
134. Barbara Norris	AK Center	
135. Rachelle Griffitts	student - UAA Environmental Engineering	
136. DAVE COOLIDGE	—	
137. Jeanette LeClair		
138. Wassiliisia Gumlickpuk		
139. Dr. Stephanie Quinn-Davidson, PhD	self - Salmon/fisheries scientis	
140. Griffin Dunn	Student ES APU	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
141. Michelle Leffingwell	Self / Bear Trail Lodge Local fisherman Yoga(+)Ak	(b) (6) [redacted]
142. Margaret M. Anderson	Alaskan	
143. Thomas Harman	Fisherman	
144. Brenda I Waitman	Igiugig Lodge LLC	
145. Norman Straub	Intricate Bay Lodge	
146. Spencer waitman	Igiugig Lodge LLC	
147. Becky Bitter	Alaskan	
148. David Theriault	Fisherman	
149. Rashad Galimba		
150. Ann James	Born & raised Alaskan	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
151. Karen Button	resident	(b) (6) [redacted]
152. CHRIS KLOSTERMAN	TRYLC AIR ALASKA	
153. Micaela Hogan	volunteer	
154. Susan NIMAN	Resident	
155. Bill Shervanit	self (AK resident)	
156. RICHARD KNIGHT	RESIDENT	
157. Carolyn E. Phillips	None	
158. George Pletnikoff, Jr	Unangax̂	
159. Jessica Barnes	Resident	
160. Brian Coyle	Resident	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
161. Laura Chartier	N/A	(b) (6) [redacted]
162. KAREN GUNDERSON		
163. THOMAS A. SCHWARTZ	N/A	
164. Myranda Walso		
165. Jeff Parker	Attorney for Bristol Bay BOFA/EC	
166. Su Chan	N/A	
167. Dayle Sanborn		
168. Gerard Farkas	Alaska Resident	
169. Steven Silber	Chulitna Lodge -Lake + Penn Borough Resident	
170. Andrew Conrad	N/A	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
171. LARRY RUNDQUIST		(b) (6)
172. Steven McNicholas		
173. Derek Hansen		
174. DIANE E. OSTERHAUS		
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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
381. James Wilson	Mat-Su. Borough	(b) (6)
382. Mary Kay Ryckman	self	
383. Rochelle Harrison	self grizzlyskins [illegible]	
384. Verna Kolyaha	Pedro Bay	
385. Mark Newman	self	
386. Kelly Kass	self	
387. Neverley Wake	EPA Tribal Coordinator	
388. Everette Anderson	BBNC	
389. Myrtle J. Lonsdale	Cook Inlet	
390. Ron Tenny	Self	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
391. Sarah E Anderson		(b) (6)
392. Harry M. Walker		
393. C. Steffens		
394. S Rooth		
395. Jennifer Wardell		
396. Brian Kortl		
397. Jeanne Hanson		
398. Sylvia Panzarella	No Pebble Mine!	
399. Lindsey Kenyon	ERM	
400. Oleksandr Lushchyk		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
401. Carolyn Brodie		(b) (6)
402. Erik Koppenol		
403. Ruth R Hamme		
404. Kathrine Corsenstein		
405. CAMILLE COLLINS		
406. MARK Miller		
407. Felicia Miller		
408. Vincent Vet		
409. Riki Lebman		
410. SUE WARD		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
411. Barbara Loutrel		(b) (6) [redacted]
412. Peter F Alward	Alk citizen/resident	
413. Kristen Collins		
414. Sophie Tidler		
415. Shirley Kelly	Bristol Bay Fisher	
416. CHRISTOPHER JOHN ERPELDING	BRISTOL BAY FISHERMAN	
417. PAUL CREWS	Individual	
418. P. Derrchick	Individual	
419. Dawnell Smith	Individual	
420. Jane Whitsett	Individual	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
421. Lisa Alexia		(b) (6) [redacted]
422. Michael Alexia		
423. Susan Tenwilliger		
424. Jenna DiFolco		
425. Maria Tahenakos		
426. Bryce Niver	No Pebble!	
427 Brian Cantor		
428. JACK FOSTER		
429. Art Allen		
430. Ryan VanderBie		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
431. Lindsey Diamond		(b) (6)
432. Raymond Kolesser		
433. Oliver Garrett		
434. Elijah Kahula	Save Bristol Bay	
435. R. Lytle		
436. Evan Anderson		
437. Stephan C. Paliwoda	RETIRED ARCHITECT (former Corps of Engineers emplo	
438. Kayla Miller		
439. Kenneth Woodside		
440. Paul Frost		

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
441.	Judy Caminer		(b) (6) [redacted]
442.	Lenny Anderson		
443.	David J. Haamaid	Self	
444.	Richard L. Anderson	"	
445.	Brad Waitman	Igiugig Lodge	
446.	Ming Stephens	None	
447.	Regis Pappert	Self	
448.	Austin Quinn-Davidson		
449.	Rebecca King	Alaskan	
450.	Alex Nelsen	Ak Resident	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
451. Kori Blake	Save bristol Bay	(b) (6) [redacted]
452. James Apone	Save the Earth	
453. Jeanne Stewart	Beluga Whale Alliance	
454. DAVID TARCY	NONE	
455. Erin Borowski	none	
456. Angelica Whitley		
457. Ryan Witten	None	
458. Maya Heubner	none	
459. Darla Munguia	None	
460. Christina Herwell	None	

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	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
461.	Kassidy O'Connell		(b) (6)
462.	William J. Schreck	NA	
463.	Robert Wiy	—	
464.	Keenan	—	
465.	Yasuhiro Ozuka	—	
466.	Sam Moore		
467.	Kelly Drummond	—	
468.	Audrey Anderson	—	
469.	John Fowler	—	
470.	Merle Jerue	—	

AMERICAN OVERSIGHT

Pebble Project Environmental Impact Statement

Public Scoping Meeting

US Army Corps of Engineers

Anchorage – April 19, 2018

	PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
611.	Jeremy Tamkin		(b) (6)
612.	Braelan Michael Welsch		
613.	Joel Hadley		
614.	Elizabeth Welsh		
615.	Gracee Hadley		
616.	Carl Johnson		
617.	M. Eka. Alexa		
618.	Bernhard Richert		
619.	Hera Schroeder		
620.	Sammie Ellsworth		

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
621. Carissa Churchill		(b) (6) [redacted]
622. STEVEN CALLAGHAN		
623. Adam Kurr		
624. Breena Keller		
625. Jessica Henderson		
626. Abraham Henderson		
627. Vickie Harman		
628. Levi Oyster		
629. E. Madison		
630. M. Ammann	ne Pebble	

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PLEASE PRINT Name	Affiliation (if any)	E-Mail or Address
631. Mckenna Hanson	UAA- alumni	(b) (6) [redacted]
632. Rachel James		
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APPENDIX D – MEETING MATERIALS

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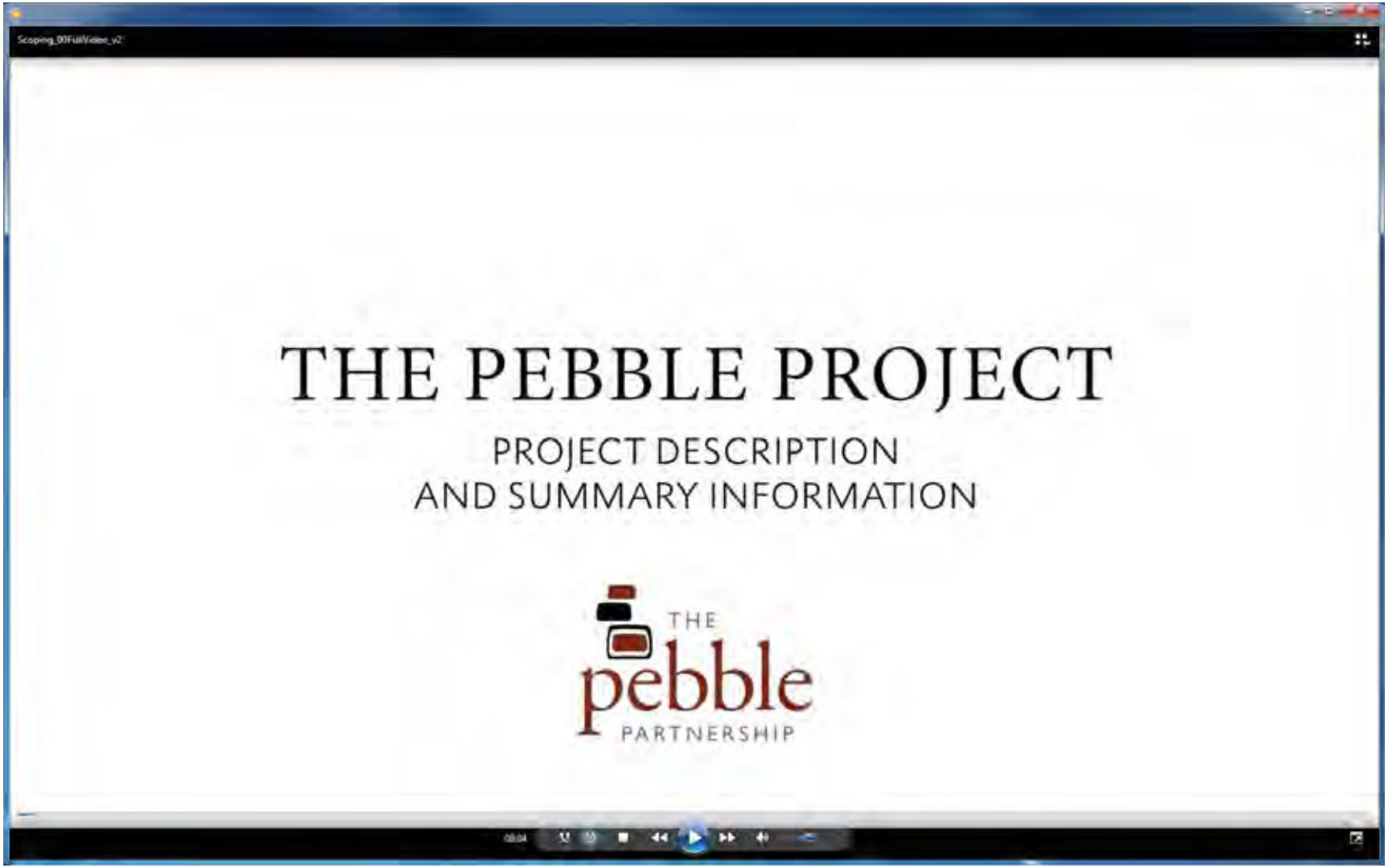


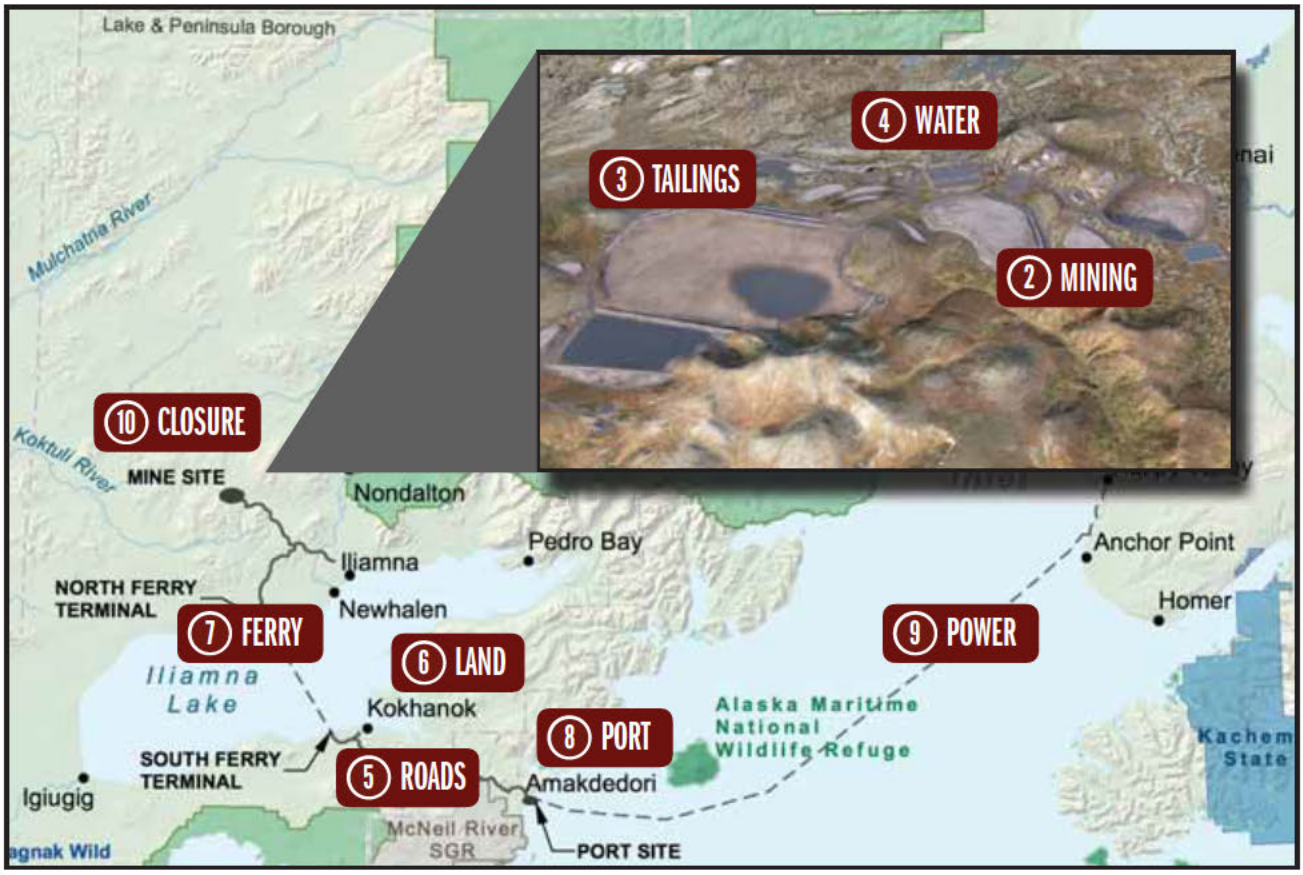
AMERICAN
OVERSIGHT

THE PEBBLE PROJECT

① OVERVIEW

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble Deposit) in southwest Alaska as an open-pit mine, with associated infrastructure.

PROJECT DESCRIPTION DETAILS



SUMMARY INFORMATION

- Located on state of Alaska land
- Project operating life of 20 years
- Employment of 2,000 people for construction and 850 for operation
- Gas pipeline from Anchor Point and gas-fired power plant at site
- Road and lake ferry to Cook Inlet
- Segregated storage of bulk and pyritic tailings

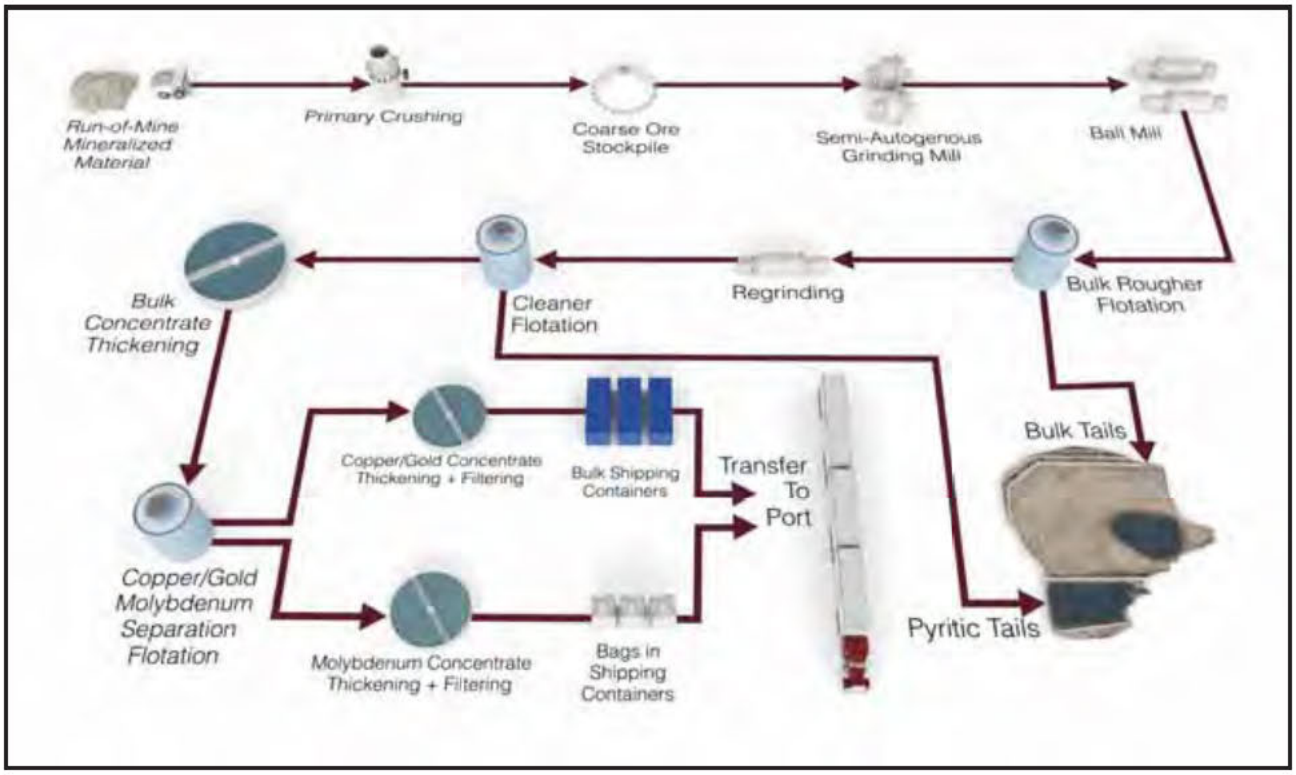
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

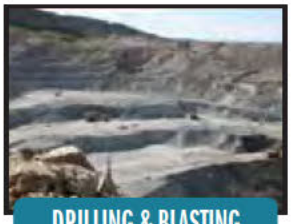
MINING & PROCESSING

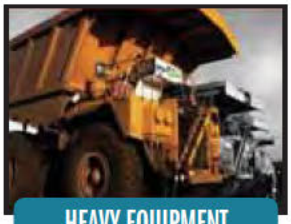
The Project will mine approximately 1.1 billion tons of mineralized material throughout the 20-year mine life.

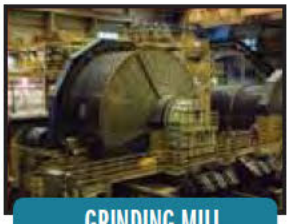
AN OVERVIEW OF MINERAL PROCESSING




OPEN PIT RENDERING


DRILLING & BLASTING


HEAVY EQUIPMENT


GRINDING MILL

SUMMARY INFORMATION

- Mining rate up to 90 million tons per year
- Milling rate up to 58 million tons per year
- Annual copper/gold concentrate production of 600,000 tons
- Annual molybdenum concentrate production of 15,000 tons

THE pebble PARTNERSHIP

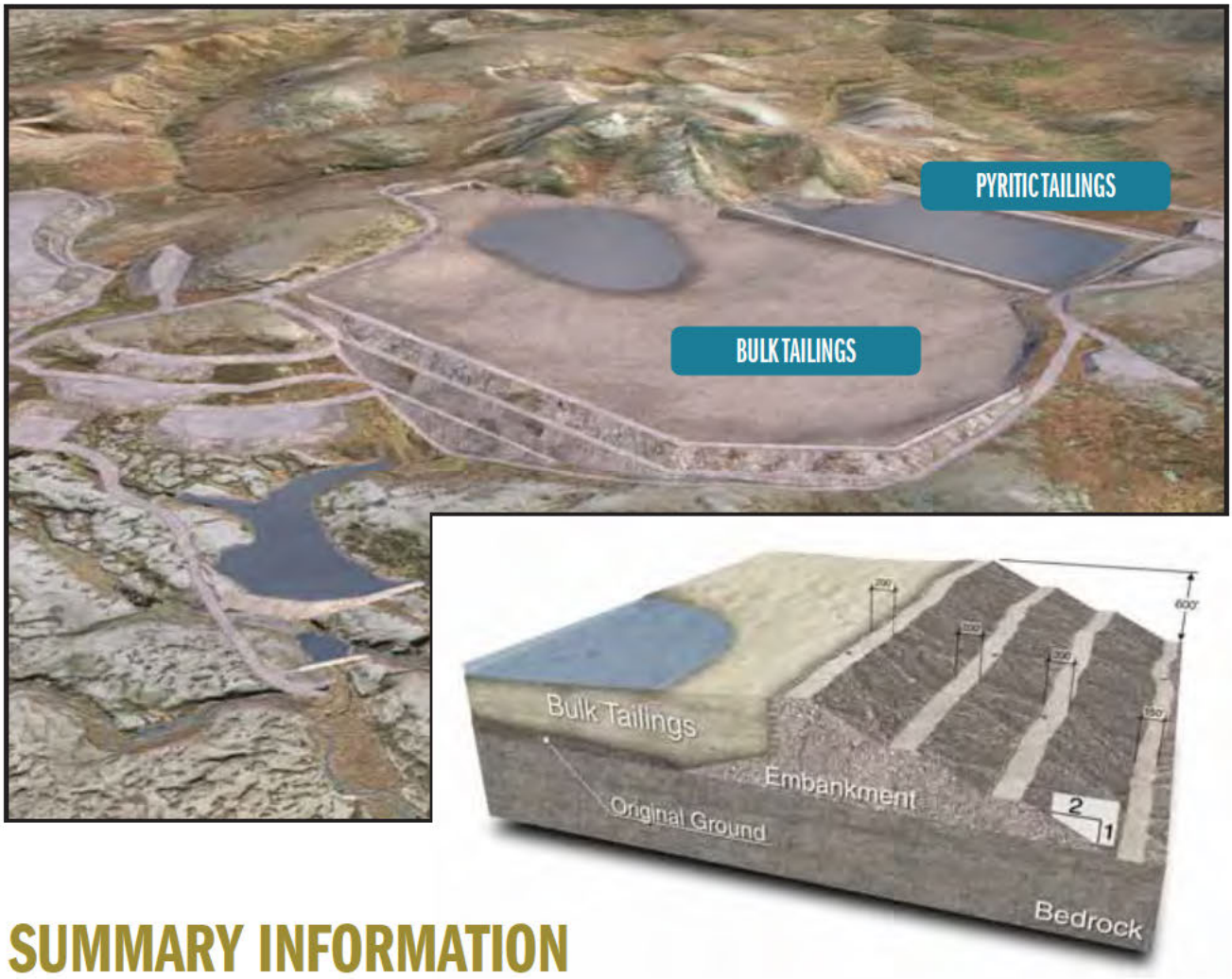
AMERICAN OVERSIGHT

TAILINGS STORAGE

3 TAILINGS

Pebble Limited Partnership (PLP) conducted a multiyear, multidisciplinary evaluation to select a Tailings Storage Facility (TSF) location that meets all engineering and environmental goals. It will store ground-up material after minerals have been extracted.

TAILINGS STORAGE FACILITY



SUMMARY INFORMATION

- Designed to meet Alaska Dam Safety Program standards
- Separate cells for bulk and pyritic tailings
- Minimize water storage in bulk tailings to keep water away from embankment
- Fully-lined cell for pyritic tailings with water cover
- Rock-filled embankments (600' high at main embankment)
- Seepage collection facilities for all embankments

THE pebble PARTNERSHIP

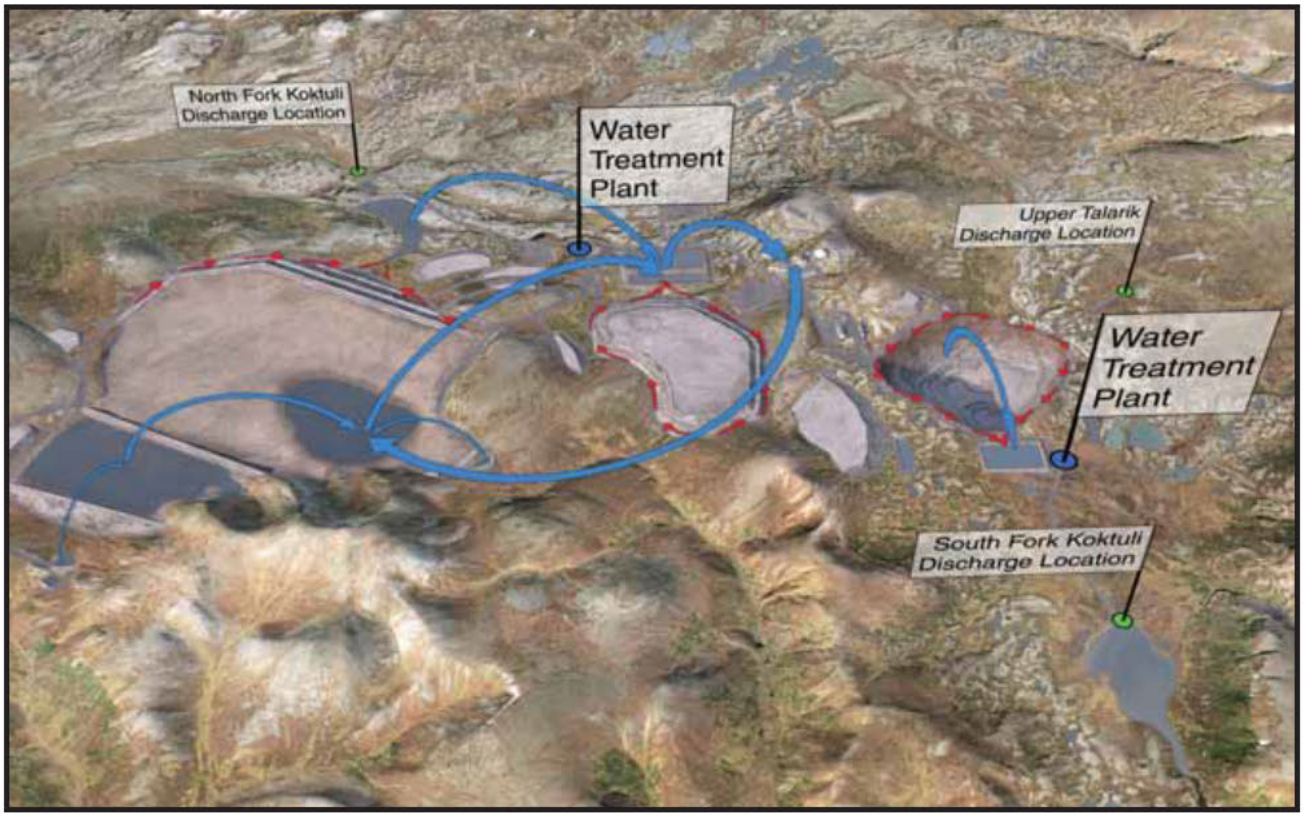
AMERICAN OVERSIGHT

WATER MANAGEMENT

4 WATER

Pebble Limited Partnership (PLP) has designed the water management plan to minimize the volume of water diverted from natural flows and to treat and condition all water to meet quality standards before discharge.

MONITORING AND TREATMENT



SUMMARY INFORMATION

- All water is tracked and managed from rainfall to discharge
- One water treatment plant for pit-related water
- One water treatment plant for tailings, stockpile, and process contact water
- All water treated and conditioned to meet quality standards before release
- Discharge locations in each of three drainages
- No mixing zones will be required
- Discharge managed based on downstream habitat needs

THE pebble PARTNERSHIP

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ROADS & TRANSPORT

5 ROADS

An 83-mile transportation corridor runs from the mine site to a port site on Cook Inlet. The route was selected to minimize impact on wetlands, minimize stream crossings, and avoid area of known subsistence and recreational use.

NORTH & SOUTH ROAD SEGMENTS



TRANSPORT BY TRUCK

CONCENTRATE CONTAINERS

SALMON PASSAGE

SUMMARY INFORMATION

- Personnel flown to Iliamna Airport and driven to mine site
- 30-mile (north segment) and 35-mile (south segment) private roads
- Spur roads connecting to the villages of Iliamna, Newhalen, and Kokhanok
- Stream crossings designed to state of Alaska standards
- Up to 35 round trips by truck each day (one by ferry)
- Concentrate hauled in bulk containers with locking lids
- Fuel hauled in 6350-gallon sealed tank containers

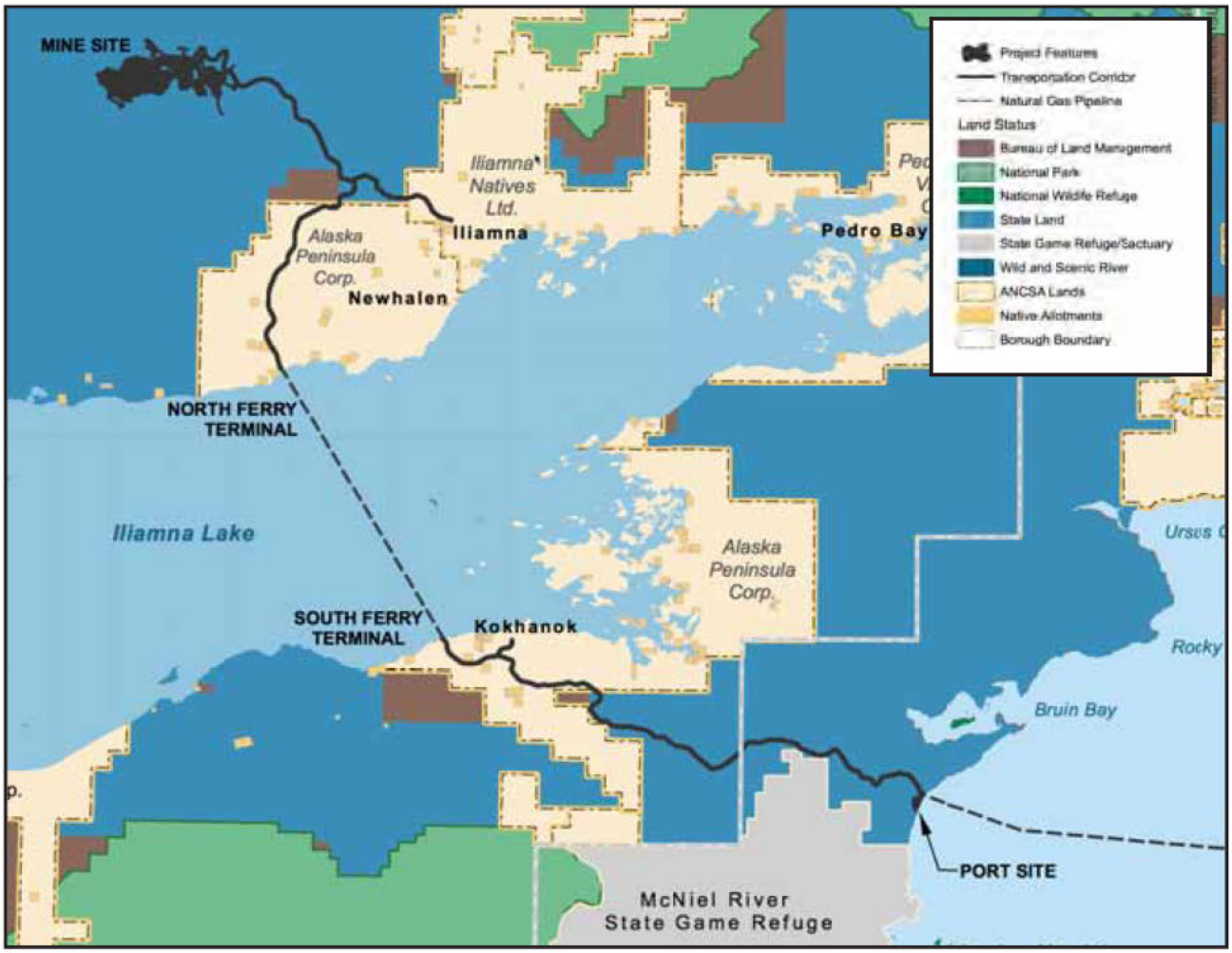
THE pebble PARTNERSHIP

AMERICAN OVERSIGHT

LAND STATUS

The mine site — including the pit, tailings storage, and all primary facilities — is located on state of Alaska land. The transportation corridor includes state of Alaska and ANCSA land.

MINE SITE & CORRIDOR LAND OWNERSHIP



SUMMARY INFORMATION

- Access Road = 65% state of Alaska + 35% Alaska Peninsula Corporation
- Iliamna Airport Spur = 55% state of Alaska + 45% Iliamna Natives Limited
- Iliamna Lake Crossing = 100% state of Alaska
- Kokhanok Airport Spur = 100% Alaska Peninsula Corporation

THE pebble PARTNERSHIP

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FERRY & TERMINALS

7 FERRY

A custom-built ice breaking ferry will transit Iliamna Lake year round, carrying inbound supplies from the Amakdedori Port to the mine site and returning with copper-gold and molybdenum concentrates.

ILIAMNA LAKE CROSSING



SUMMARY INFORMATION

- The one-way ferry trip across Iliamna Lake is about 18 miles
- An average of one round trip per day will be required
- Vessel is designed to operate year-round, in all ice conditions
- Symmetrical forward and aft with two ice-breaking bows
- 12 crew members may be accommodated on the ferry

THE pebble PARTNERSHIP

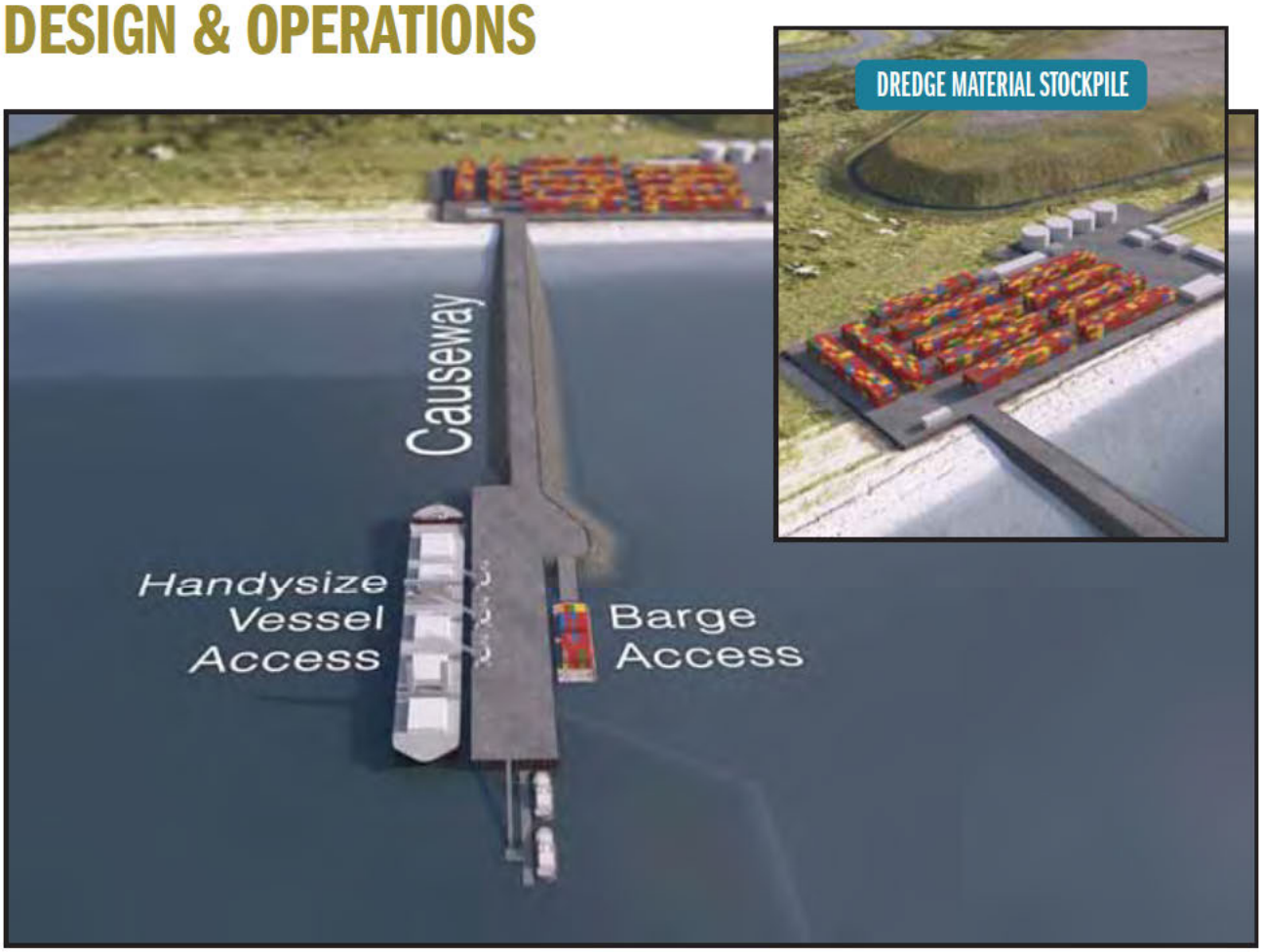
AMERICAN OVERSIGHT

AMAKDEDORI PORT

8 PORT

Incoming supplies such as equipment, reagents, and fuel will be barged to the Amakdedori Port and then transported by truck to the mine site.

DESIGN & OPERATIONS



SUMMARY INFORMATION

- 50-foot deep channel dredged to provide access for Handysize bulk carriers
- Mineral concentrate will be direct-loaded from the containers onto the vessels
- Equipment and supplies delivered by barge
- Shore-based facilities will receive and store containers and fuel
- Up to 25 concentrate shipments annually
- Up to 30 marine barge loads annually

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POWER GENERATION

The power plant will be sized to meet the anticipated load of 230 megawatts using high-efficiency turbine or reciprocating engine generators operating in a combined-cycle configuration.

NATURAL GAS PIPELINE + POWER PLANT



SUMMARY INFORMATION

- Pipeline will connect to existing gas supply infrastructure near Happy Valley
- Buried pipe will transport gas to a compressor station near Anchor Point
- 94-mile subsea pipeline across Cook Inlet will come ashore near port site, follow road to site, and cross the bed of Iliamna Lake
- Gross flow rate of 50 million standard cubic feet per day
- 10" pipeline on land, 12" pipeline for water crossings
- Emergency backup power provided by diesel generators

THE pebble PARTNERSHIP

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CLOSURE & RECLAMATION

10 CLOSURE

Pebble Limited Partnership (PLP) is committed to conducting all mining operations, including reclamation and closure, in accordance with all local, state, and federal regulations.

PEBBLE: DESIGNED FOR CLOSURE

RECLAMATION

AFTER...

5 YEARS

Most buildings removed

Terrain resculpted

Native plants resown

20 YEARS

Vegetation well-established in reclaimed areas

Pit continues to fill with water

30 YEARS

Pit lake has formed

Water is pumped from pit for treatment and discharge





SUMMARY INFORMATION

- Removal of mill and other facilities not used after closure
- Hauling of PAG waste rock into the open pit for under water storage
- Recontouring and placement of overburden for revegetation
- Plan and infrastructure for long term water management and treatment
- Financial assurance for closure and long term site management is required before construction

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How to Comment

Tips for Writing Effective Comments

Public participation is an important part of developing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). Submitting substantive and concise comments during the scoping period is an important role the public plays in the NEPA process, and can influence the scope of analysis for the EIS.

- **Become familiar with the proposed project** — Review the project or agency website, read the project description, monitor local newspapers, and attend public meetings.
- **Learn about the steps in the NEPA process** and opportunities for submitting comments to the U.S. Army Corps of Engineers.
- **Keep your comments focused and as specific as possible** on the proposed project under consideration, what you think the EIS analysis needs to address and why.
- **Submit your comments within the timeframes announced** to ensure that your concerns are considered and addressed during the drafting of the EIS; the Scoping Comment period is from April 1 through June 29.
- **Be specific**. For example, if you are concerned about wildlife, focus on a particular problem or issue, such as a species that you feel should be analyzed, instead of making a broad statement such as "I am concerned about the impacts to wildlife."
- **Make suggestions,** including resources that should be analyzed, new data or analytic tools that should be used, and substantially different alternatives that should be evaluated in the EIS.

Comments on the project are not counted as votes; they are used to determine the appropriate scope of issues analyzed and contents of the EIS and to ensure that the impacts are adequately disclosed. Avoid simply agreeing or disagreeing with the proposed project. It is more important to identify specific relevant issues, alternatives, mitigation measures/conditions of permitting, and analytic tools so they can be used to inform the EIS analysis. The more clear, concise, and relevant your comments are, the more effective they will be in shaping the development of the EIS.

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The National Environmental Policy Act

Preparation of the Pebble Project Environmental Impact Statement (EIS) level of analysis began when the US Army Corps of Engineers (USACE) received a permit application from the Pebble Limited Partnership. The EIS process will take several months to complete a Draft EIS for public review, and several months to incorporate public comments into the draft to develop the Final EIS.

Steps in the EIS Process

Notice of Intent to Prepare an EIS

The USACE released a Notice of Intent to the United States Federal Register. This initiated the process to prepare an EIS and began the scoping process.

Scoping: Meetings and Comments

The scoping process kicks off on April 1, 2018. Scoping offers a chance for the public to comment on the proposed project and alternatives.

Draft EIS

Determining the alternatives to analyze, and then preparing the Draft EIS will happen immediately following the scoping period.

Public Review of Draft EIS: Meetings and Comments

After the Draft EIS is released, the public will have a chance to submit comments. During that time, the USACE will plan public meetings to collect comments.

Final EIS

The USACE will assess all public comments submitted on the Draft EIS, and incorporate changes into the Final EIS before release.

Record of Decision

The Record of Decision will lay out USACE's decision on the application submitted by the Applicant. Three decisions are possible: issue a permit, issue a permit with conditions, or denial of the application.

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EIS Outline

How the Draft and Final EIS will be Organized

The Environmental Impact Statement (EIS) will analyze the potential impacts to the biological, physical, and social environments. By understanding the layout of the document ahead of time, readers can more easily find the specific sections they may be interested in reviewing and commenting on.

Executive Summary – Provides overview of the Draft and Final EIS, summarizes draft findings of potential impacts, and serves as a guide for where to find details.

Chapter 1. Purpose and Need – Describes the purpose of the proposed project to inform the range of alternatives analyzed in the EIS.

Chapter 2. Alternatives – Describes alternatives to be analyzed, including a No Action Alternative, the Proposed Action (as designed by the Pebble Limited Partnership), and reasonable and practicable alternatives to address issues raised during scoping and the EIS process, such as, but not limited to, tailings and mine water management, alternate pipeline routes, surface access to the mine site and vehicle traffic levels, and port/ferry facilities, location, and traffic levels.

The purpose and need of a project is essential in establishing a basis for developing the range of reasonable alternatives required in an EIS and identifying and selecting a preferred alternative.

Chapter 3. Affected Environment – Describes the baseline conditions of key resource topics in the proposed project environment (such as fish and wildlife, water quality, economics, food production, commercial fishing, and recreation).

Chapter 4. Environmental Consequences of Action – Analyzes the potential direct, indirect, and cumulative impacts, as well as potential mitigation measures relevant to each of the resources from the proposed action and each alternative.

Chapter 5. List of Preparers – Presents the list of contributors to the preparation of the EIS, including their affiliation, project role, educational background, and years of experience. Cooperating agency roles and responsibilities are also described in Chapter 5.

Chapter 6. List of Agencies, Organizations, and Persons to Whom copies of the Statement Have Been Sent – Describes the distribution of the Draft and Final EIS documents for informational purposes and to identify public locations where the document is available.

Chapter 7. References – Presents the references used in preparing the EIS.

Chapter 8. Appendices – Presents the in-depth analyses, comments/response to comments, coordination, consultations, mailing lists and other information used in the analysis of the applicant's project.

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What Resources will be Analyzed in the EIS?

Using the analysis in the Environmental Impact Statement (EIS), The U.S. Army Corps of Engineers (USACE) will evaluate the environmental and related social and economic effects of the proposed project. The analysis will include direct and indirect impacts, cumulative effects, and potential spill and tailings dam failure scenarios. Comments received during the scoping period will likely result in additional resources to be considered in the analysis.

Social Environment

- Cultural Resources
- Historic Properties
- Land use and management
- Subsistence
- Transportation and Navigation
- Aesthetics
- Recreational and Commercial Fisheries
- Recreation
- Needs and Welfare of the People
- Environmental Justice
- Health and Safety

Physical Environment

- Geohazards
- Geology
- Soils
- Surface Water Hydrology including flood plains and flood hazards
- Groundwater Hydrology
- Water Quality
- Noise
- Air Quality
- Climate Change

Biological Environment

- Wetlands/Special Aquatic Sites
- Vegetation
- Birds
- Terrestrial Wildlife
- Fisheries and Aquatic Resources
- Marine Wildlife
- Threatened and Endangered Species

Direct impacts occur through direct interaction of an activity with an environmental, social, or economic component.

For example: pollutant discharge from a source could directly result in lowered water quality.

Indirect impacts on the environment are not a direct result of the project, but often a result of a complex impact pathway.

For example: pollutants in the air from a source could land on vegetation, indirectly causing acidic soils.

Cumulative impacts occur when the incremental impact of the project is combined with the effects of other past, present and reasonably foreseeable future projects. For example: wetland fill from one projects.

For example: wetland fill from one project, combined with the wetland fill from a separate project.

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Roles and Responsibilities

When the Pebble Limited Partnership (Applicant) submitted an application on December 22, 2017, the US Army Corps of Engineers, Alaska District (USACE) was compelled to begin processing the permit application in accordance with 33 CFR 320. The USACE determined that review of the application would require an environmental impact statement (EIS) level of analysis in compliance with the National Environmental Policy Act. The USACE is the lead federal agency for developing the EIS.

Role of the Corps

The USACE, as the lead agency, is responsible for reviewing the permit application submitted by the applicant, and analyzing the potential environmental impacts from the proposed project. The USACE will lead the effort to take a hard look at reasonable and practicable alternatives and evaluate the impacts of the proposed project utilizing an interdisciplinary team. At the completion of the environmental impact analysis, the USACE, will issue a Record of Decision related to USACE's authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Role of the 3rd Party Contractor

AECOM (a consulting firm) has been hired to provide an interdisciplinary team to develop a fact-based independent analysis of the Pebble Project as proposed and evaluate identified reasonable alternatives. AECOM will work solely under the direction of the USACE and will be the primary developers of the EIS. AECOM will also provide support to the USACE for scoping and public involvement, development of alternatives to the proposed action, assessment of potential impacts, and distribution. The AECOM team is made up of specialists and scientists in the biological environment, the physical environment, and the social environment.

Role of Alaska Native Tribes

The USACE has invited 35 federally recognized Alaska Native Tribes to consult throughout the entirety of the federal decision making process, including the development of the environmental impact statement. Federally recognized Alaska Native Tribes that the USACE has extended government-to-government consultation invitations to are:

- Aleknagik Traditional Council
- Chignik Bay Tribal Council
- Chignik Lagoon Village Council
- Chignik Lake Traditional Council
- Clarks Point Village Council
- Curyung Tribal Council
- Egegik Village Council
- Ekuk Village Council
- Ekwok Village Council
- Igiugig Village Council
- Iliamna Village Council
- Ivanof Bay Tribal Council
- King Salmon Tribal Council
- Kokhanok Village Council
- Levelock Village Council
- Manokotak Village Council
- Naknek Village Council
- Nanwalek IRA Council
- Native Tribe of Kanatak
- Native Village of Perryville
- New Koliganek Village Council
- New Stuyahok Traditional Council
- Newhalen Tribal Council
- Ninilchik Traditional Council
- Nondalton Tribal Council
- Pedro Bay Village Council
- Pilot Point Tribal Council
- Port Graham Tribal Council
- Port Heiden Village Council
- Portage Creek Village Council
- Seldovia Village Tribal Council
- South Naknek Vilage Council
- Traditional Council of Togiak
- Twin Hills Village Council
- Ugashik Traditional Council

Role of the Applicant

As the applicant is required to provide information to the USACE related to their proposed project. This includes:

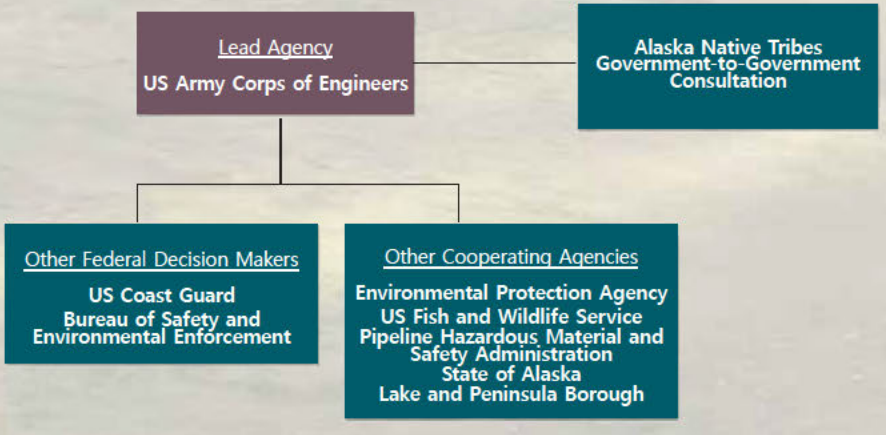
- description of the proposed project,
- background material, completed research, and site information,
- data for the development of maps and figures, and
- other information that may be identified as necessary during preparation of the EIS.

The applicant will not be involved in the development of the EIS beyond this limited scope.

Role of Cooperating Agencies

Several cooperating agencies have been invited to provide technical support to the lead agency, the USACE. Cooperating agencies will be actively engaged in scoping and alternatives development and will then be assigned to technical teams based on the specific reasons they were invited to become cooperating agencies. Although cooperating agencies are involved in preparation and writing of certain portions of the EIS and cooperators may use the EIS for their own decisions, the USACE has final authority on the EIS content.

Lead and Cooperating Agencies



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Public Scoping for the Pebble Project EIS

The US Army Corps of Engineers (USACE) is preparing an Environmental Impact Statement (EIS) to analyze the impacts of issuing permits for an open pit, copper-gold-molybdenum porphyry deposit, with associated infrastructure, as proposed by the Pebble Limited Partnership. The EIS scoping period begins April 1, 2018 and ends June 29, 2018.

At the beginning of developing an EIS, USACE reaches out through scoping to involve members of the public. The scoping period provides opportunities for people who could be affected by the proposed action that could have lesser environmental impacts.

In addition to Anchorage, Public meetings were held in April in the following communities:

- Naknek
- Kokhanok
- Homer
- Newhalen
- New Stuyahok
- Nondalton
- Dillingham
- Igiugig

The EIS will identify potential impacts on the physical, biological, and social environment from all phases of the proposed project, including construction, mine operation, closure, and post-closure. The EIS will also look at mitigation methods-ways in which potential negative impacts could be avoided or lessened.

During the scoping period, USACE will work with the public to identify issues and concerns to thoroughly analyze the potential effects of the proposed project. USACE will use the scientific literature, alongside traditional knowledge and observations provided by the public.

We welcome your comments and information on the resources that are important to you. For example, many communities will be concerned about potential impacts to fish, subsistence resources, and traditional land uses during project construction, operations, and closure.

To Participate...

Let us know what aspects of the proposed project are important to you!

Providing ample opportunities for the public to submit scoping comments on the Pebble Project EIS is of utmost importance to the USACE. A good way to get involved is to give your comment orally to a dedicated court reporter, or electronically submit using one of the dedicated laptop computers. You can also submit hand-written comments, use the comment form on the project website (www.PebbleProjectEIS.com), or send them to:

Program Manager, Regulatory Division
US Army Corps of Engineers
PO Box 6898
Joint Base Elmendorf Richardson,
AK 99506-0898

Scoping comments can be submitted through June 29, 2018.

*Comments received/postmarked after June 29 will be considered, but may not be included in the scoping report. Comments will be reviewed and incorporated into the Draft EIS.

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Pebble Project EIS Comment Form

You can submit comments using the form on the website (www.PebbleProjectEIS.com), to a court reporter at a public scoping meeting, or in writing (using computers available at a meeting or by mail). We will not be taking public testimony at large meetings in Anchorage, Homer, and Dillingham. If you'd like to mail your comments or submit them at a meeting, please feel free to use this form and attach additional sheets as needed. Write your comments, questions, and suggestions below, then fold this page in thirds so that the mailing address is visible. Remember to affix first-class postage before putting it in the mail, postmarked by the comment deadline of June 29.

The following questions may help:

- What are your specific concerns about this project and how should they be addressed in the EIS?
- Are there particular fish and wildlife resources, subsistence activities/use areas, or other places that you use and how might they be affected by the project?
- Are there alternative ways of developing any of the components of the Pebble Project that should be considered in preparing the EIS?

Please note that all public comments, including names and addesses of of individuals and organizations, are publicaly available as part of documenting public involvement in preparing the EIS. The US Army Corps of Engineers intends to place public comments received during scoping on the project website.

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fold here



fold here

Program Manager
US Army Corps of Engineers
Regulatory Division
P.O Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

Please place first-class postage here.

From:

AMERICAN OVERSIGHT

FACT SHEET

Pebble Limited Partnership Project Proposed Natural Gas Pipeline

Background

The Bureau of Safety and Environmental Enforcement (BSEE) is a cooperating agency on the Environmental Impact Statement that the United States Army Corps of Engineers, Alaska District, is preparing for the Pebble Limited Partnership project.

The Pebble Limited Partnership is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska. The proposed project infrastructure will include an approximately 230-megawatt power plant that will be fueled using natural gas. Natural gas would be supplied to the site using a roughly 190-mile pipeline that would connect to the project site from a tie-in on the Kenai Peninsula near Happy Valley.

While BSEE has no regulatory oversight of onshore mining, our role will include a Pipeline Right-of-Way grant approval process for the proposed pipeline crossing federal waters of the Outer Continental Shelf in Cook Inlet.

Proposed Pipeline

The gas pipeline alignment, as currently proposed, would start near Happy Valley on the Kenai Peninsula and travel south paralleling the Sterling Highway for approximately 9 miles to a compressor station. From the compressor station, the pipeline heads southwest across Cook Inlet for 60 miles, before turning west for 35 miles to a landfall at the proposed Pebble port site near the mouth of Amakdedori Creek. A second compressor station and offtake point is located at the port site. The pipeline then follows the proposed road alignment from the port to the mine site, including crossing Iliamna Lake on the lake bed for approximately 18 miles. BSEE's jurisdiction for the proposed pipeline will likely only cover 63 miles, the portion that crosses federal waters of Cook Inlet.

The pipeline, as currently proposed, would be constructed of steel and designed to have a gross flow rate of 50 million standard cubic feet of natural gas per day. The onshore portions of the pipeline would be 10-inch diameter, while the offshore portion would be constructed using heavy wall 12-inch diameter pipe with negative buoyancy. All appropriate federal regulations would be followed in the design, construction, and operation of the pipeline.

Right-of-Way Decision Process

Pipeline right-of-way requirements for permitting are detailed in the 30 Federal Code of Regulations Part 250—Oil And Gas And Sulphur Operations In The Outer Continental Shelf Subpart J—Pipelines and Pipeline Rights-of-Way.

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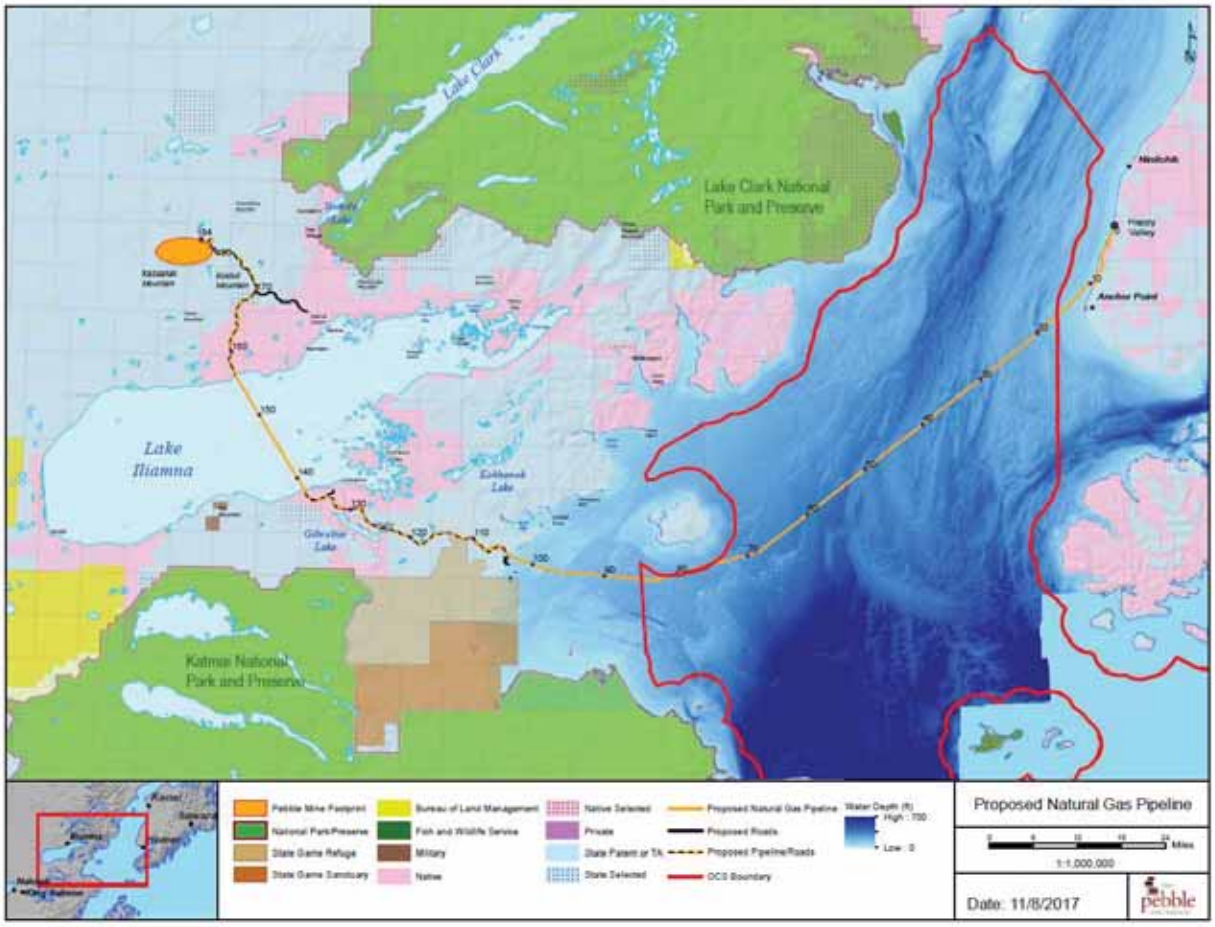
Applications for permits must be submitted to the BSEE Regional Supervisor and will include detailed information about the right of way, including consideration of effects from water currents, storm or ice scouring, soft bottoms, mudslides, earthquakes, permafrost, and other relevant environmental factors.

While the pipeline in this case will ultimately be regulated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, BSEE's interest is to have the requisite level of information that enables a well-informed right-of-way decision process, with the knowledge that environmental and safety factors have been considered and addressed.

Pebble Project Proposed Natural Gas Pipeline



-- BSEE --

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Vaughan, Molly

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, July 26, 2018 1:09 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Cc: Craig, Bill
Subject: Draft scoping report; please submit comments by 8/8/2018
Attachments: Draft Scoping Report_20180725.pdf

All,
Attached is the draft Scoping Report, out much earlier than I had anticipated. Please review and provide agency comments by COB 8/8/2018.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Vaughan, Molly

From: Vaughan, Molly
Sent: Tuesday, June 26, 2018 2:15 PM
To: McGrath, Patricia
Subject: FW: comments on CH 3; scoping comments

Hi Patty - I did not have any comments on the draft scoping report, and did not receive any from associate reviewers. Unless you have comments, please let Shane know that we have reviewed and don't have comments on the report, but will be sending our own comprehensive scoping letter by the June 29 deadline.

Regarding Chapter 3 -- I did not see any response from Shane regarding the missing text for a few of the chapters he was asking for our assistance on. Did you ever hear anything from him on that?

I will be working through the comments from the team (including yours, thank you) over the next couple days.

Thanks,
Molly

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Tuesday, June 26, 2018 1:21 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Subject: comments on CH 3; scoping comments

All,
Please provide any comments for the draft chapters as soon as you can, please remember we are looking for "what we missed" and if your agency does not believe it is capturing the correct information.

Also, a little reminder that scoping comments need to be submitted by 29 June.

VR

Shane McCoy

AMERICAN OVERSIGHT

Vaughan, Molly

From: McGrath, Patricia
Sent: Tuesday, June 26, 2018 2:34 PM
To: POA Special Projects
Cc: McCafferty, Katherine A CIV USARMY CEPOA (US); Vaughan, Molly
Subject: RE: comments on CH 3; scoping comments

Hello Shane -

EPA has reviewed the draft scoping report and we have no comments on the report, except that it should incorporate additional scoping comments received, including our scoping comments that will be submitted by the June 29 deadline.

Regarding comments on the draft sections of chapter 3 sent to us on June 5. We are reviewing sections 3.1, 3.5, 3.11, 3.14, 3.17, 3.18, and 3.22 and will submit comments by the July 5 deadline discussed during the cooperating agency meeting - sooner if we are able.

On June 6 and 7, I sent you emails regarding sections 3.16 (surface water hydrology) and 3.26 (vegetation). In your June 5 email, you sent us the figures from those sections, but not the text. If you would like us to review the text of those sections (as was identified for our review in the EIS outline), then please send the text to Molly and I.

Thanks -
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Tuesday, June 26, 2018 2:21 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Subject: comments on CH 3; scoping comments

All,
Please provide any comments for the draft chapters as soon as you can, please remember we are looking for "what we missed" and if your agency does not believe it is capturing the correct information.

Also, a little reminder that scoping comments need to be submitted by 29 June.

VR

Shane McCoy

AMERICAN OVERSIGHT

Vaughan, Molly

From: Vaughan, Molly
Sent: Wednesday, August 08, 2018 10:13 AM
To: POA Special Projects
Cc: McGrath, Patricia
Subject: RE: Draft scoping report; please submit comments by 8/8/2018
Attachments: EPA Comments Pebble EIS draft scoping report 080818.docx

Good morning, Shane.
Thank you for the opportunity to review the Draft Scoping Report. Please find EPA's comments attached. Please let us know if you have any questions regarding these comments.
Regards,
Molly

~~~~~~

Molly Vaughan
U.S. Environmental Protection Agency Region 10 Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, AK 99513-7588

907-271-1215
vaughan.molly@epa.gov
~~~~~~

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, July 26, 2018 1:09 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>
Subject: Draft scoping report; please submit comments by 8/8/2018

All,
Attached is the draft Scoping Report, out much earlier than I had anticipated. Please review and provide agency comments by COB 8/8/2018.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Vaughan, Molly

From: McGrath, Patricia
Sent: Friday, August 24, 2018 7:46 AM
To: POA Special Projects
Cc: Vaughan, Molly; Craig, Bill (bill.m.craig@aecom.com)
Subject: RE: scoping report comments

Hi Shane-
Molly sent EPA's comments on the scoping report to you on August 8.
Patty

-----Original Message-----
From: POA Special Projects [mailto:poaspecialprojects@usace.army.mil]
Sent: Thursday, August 23, 2018 4:04 PM
To: bobl@jadenorth.com; Brooke Merrell <brooke_merrell@nps.gov>; Curyung Tribal <courtenay@curyungtribe.com>; 'cvaughn@achp.gov' <cvaughn@achp.gov>; Daugherty, Linda (PHMSA) <linda.daugherty@dot.gov>; David Seris (David.M.Seris@uscg.mil) <David.M.Seris@uscg.mil>; Douglass Cooper <douglass_cooper@fws.gov>; Hassell, David (PHMSA) <david.hassell@dot.gov>; Joan Kluwe <joan_kluwe@nps.gov>; John Eddins <jeddins@achp.gov>; Kevin Pendegast <kevin.pendergast@bsee.gov>; 'mary_colligan@fws.gov' <mary_colligan@fws.gov>; McCafferty, Katherine A CIV USARMY CEPOA (US) <Katherine.A.McCafferty2@usace.army.mil>; McCall, John <john.mccall@bsee.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Vaughan, Molly <Vaughan.Molly@epa.gov>; Moselle, Kyle W (DNR) <kyle.moselle@alaska.gov>; manager@lakeandpen.com; POA Special Projects <poaspecialprojects@usace.army.mil>; nondaltontribe@yahoo.com; Wesley Furlong <wfurlong@narf.org>
Cc: Craig, Bill <bill.m.craig@aecom.com>; Bella, Elizabeth <elizabeth.bella@aecom.com>; POA Special Projects <poaspecialprojects@usace.army.mil>
Subject: scoping report comments

All,
Due to the size of the scoping report, please send a follow up email after submittal of your agencies comments informing me that you have sent them. I want to ensure none of them get lost in the cyber world.

VR

Shane McCoy
Program Manager

AMERICAN OVERSIGHT

Vaughan, Molly

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, August 23, 2018 3:04 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Cc: Craig, Bill; Bella, Elizabeth; POA Special Projects
Subject: scoping report comments

All,
Due to the size of the scoping report, please send a follow up email after submittal of your agencies comments informing me that you have sent them. I want to ensure none of them get lost in the cyber world.

VR

Shane McCoy
Program Manager

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McGrath, Patricia

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, July 26, 2018 2:09 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Cc: Craig, Bill
Subject: Draft scoping report; please submit comments by 8/8/2018
Attachments: Draft Scoping Report_20180725.pdf

All,
Attached is the draft Scoping Report, out much earlier than I had anticipated. Please review and provide agency comments by COB 8/8/2018.

VR

Shane McCoy
Program Manager

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McGrath, Patricia

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, May 24, 2018 12:27 PM
To: Bob Loeffler; Curyung Tribal; 'cvaughn@achp.gov'; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); Nathan Hill; POA Special Projects; Pres William Evanoff; Wesley Furlong
Subject: FW: Preliminary Scoping Issues Report
Attachments: COVER.docx; Appendix A_Federal Register NOI.pdf; Appendix B_Media and Outreach.pdf; Appendix C_Public Meeting Sign-in Sheets.pdf; Appendix D_Public Meeting Materials.pdf; Preliminary Scoping Issues Report_051818.docx

All,
Attached is a very preliminary report from comments received to date in the scoping period. (b) (6) so I am a little behind in sending info for the June 6 CA meeting. I will be sending more information today and tomorrow.

Shane

-----Original Message-----
From: Evans, Jessica [mailto:jessica.evans@aecom.com]
Sent: Monday, May 14, 2018 1:02 PM
To: POA Special Projects <poaspecialprojects@usace.army.mil>
Cc: Bella, Elizabeth <elizabeth.bella@aecom.com>; Craig, Bill <bill.m.craig@aecom.com>; Bellion, Tara <tara.bellion@aecom.com>
Subject: [Non-DoD Source] Preliminary Scoping Issues Report

Shane,

Attached is the complete Preliminary Scoping Issues Report. This includes:

* A document cover

* The report (in Word)

* Appendices A through D

Please send confirmation of receipt, so we can be sure that the attachments made it through.

Thanks,

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Jessica

Jessica Evans

Environmental Scientist/Planner

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LIST OF ACRONYMS AND ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
CEQ	Council on Environmental Quality
CWA	Clean Water Act
EIS	Environmental Impact Statement
EO	Executive Order
G2G	government-to-government
MW	megawatt
NEPA	National Environmental Policy Act
PLP	Pebble Limited Partnership
USACE	U.S. Army Corps of Engineers

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1.0 INTRODUCTION

This Preliminary Scoping Issues Report has been developed as an interim product, intended for the U.S. Army Corps of Engineers (USACE) to share the types of issues that have been received thus far in the scoping period with cooperating agencies. The final comprehensive product, the Scoping Report, will be developed at the conclusion of the scoping period.

2.0 PROJECT OVERVIEW AND SCOPING PROCESS

2.1 BACKGROUND

The Alaska District, USACE intends to prepare a Draft Environmental Impact Statement (EIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble Project. The EIS will assess potential effects of a range of alternatives.

Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Iliamna Lake. The proposed project would require approximately four years to construct, with a projected mine life of 20 years. The proposed project would include excavation of an open pit that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 megawatts (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the mine site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point. The pipeline would follow the Sterling Highway south for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow the mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the mine site.

2.2 NOTICE OF INTENT

An application for a Department of the Army permit was submitted by PLP pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. On March 29, 2018, USACE issued a Notice of Intent in the Federal Register to prepare an EIS for the proposed project. The Notice of Intent is included in Appendix A and the Public Notice is included in Appendix B.

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2.3 SCOPING PROCESS

2.3.1 Scoping Process Overview

The scoping period began on April 1, 2018. On March 30, 2018, the USACE issued a press release to announce the opening of the 30-day comment period and to provide information for how to submit comments. On April 6, 2018, their second press release extended the scoping period by 60 days to continue through June 29, 2018. See Appendix B for both press releases.

Scoping is conducted to assist in determining the scope of analysis, significant issues, and alternatives to be analyzed in depth in the Draft EIS. The Council on Environmental Quality (CEQ) defines scoping as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). The scoping process provides an opportunity for people potentially affected by the project to express their views and concerns and to contribute to the completeness of the EIS.

This Preliminary Scoping Issues Report includes the initial results of the scoping comment analysis as well as appendices with pertinent documents (e.g., the Notice of Intent, sign-in sheets, and other scoping materials).

2.3.2 Public Notice, Press Releases, and Other Media

Prior to the scoping period start, the USACE began organizing public meetings and developing materials.

The project website (www.PebbleProjectEIS.com) went live on March 19, 2018. The website includes information about the project and EIS process. The USACE will use the website to disseminate important information to the public, such as the public meeting schedule. The website also provides an online form for the public to submit scoping comments. Comments that have been submitted are available to view in as close to real time as possible. Screen shots of the website (dated May 7, 2018) are in Appendix B.

On March 20, 2018, the USACE mailed hard copies of a Scoping Package to 35 identified Tribes in the Project Area. The complete Scoping Package (in Appendix B) includes:

- Information about the scoping process;
- A description of the project;
- The process for developing alternatives;
- A list of resources to be analyzed in the EIS;
- Information on the National Environmental Policy Act (NEPA);
- Roles of the various participating organizations;
- An EIS schedule and outline; and
- Information on submitting comments and a comment form.

To advertise the scoping period, the USACE began mailing the project's Newsletter #1 on March 29, 2018. The newsletter provided details on the public meeting schedule as well as information on how to submit comments. It was sent to every post office box in 33 communities, as well as 140 other organizations and individuals on a mailing list; a total of 3,670 newsletters were mailed. The USACE also ran announcements in the Bristol Bay Times, the Homer News, and the Anchorage Daily News. Finally, a flyer was emailed to communities for distribution on April 6, 2018. Newsletter #1, newspaper affidavits, and the flyer can be found in Appendix B.

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2.4 PUBLIC SCOPING MEETINGS

Public meetings were held in nine communities, including Anchorage. A total of 914 participants signed in to the public meetings (see Appendix C for sign-in sheets). The primary purpose of the public meetings was to give the public a forum for submitting comments, and an opportunity to talk to the USACE about the EIS and the Department of the Army permit application. Table 1 shows the meeting locations and the number of people who signed in.

Table 1: Scoping Meetings

Date	Community	Location and Time	Number Signed In
April 9, 2018	Naknek	Naknek School, 3:30-7:30 PM	45
April 10, 2018	Kokhanok	Community Hall, 3:30-7:30 PM	68
April 11, 2018	Homer	Homer High School, 5:00-9:00 PM	223
April 12, 2018	Newhalen	Newhalen School, 3:30-7:30 PM	47
April 13, 2018	New Stuyahok	Community Building, 1:00-4:30 PM	65
April 16, 2018	Nondalton	Tribal Center, 3:30-7:30 PM	46
April 17, 2018	Dillingham	Middle School, 5:00-9:00 PM	88
April 18, 2018	Igiugig	Community Building, 3:30-7:30 PM	47
April 19, 2018	Anchorage	Dena'ina Center, 11:00am-9:00 PM	285

2.4.1 Meeting Description

The format of the public meetings varied depending on the location. In general, a brief introduction by the USACE was given. A 17-minute video describing the project was shown (or available to be watched), and the public was given multiple ways to comment. Time was allotted for members of the public to speak directly with USACE staff, State of Alaska staff, or in some locations, other cooperating agency staff. AECOM (the third party NEPA contractor) staff were also present.

In Naknek, Kokhanok, Newhalen, New Stuyahok, Nondalton, and Igiugig, the USACE provided a microphone ("hot mic") where participants could speak their comments out loud in front of other meeting attendees. Comments were transcribed by a court reporter, either during the hot mic session or individually after the session. In Homer, Dillingham, and Anchorage, two court reporters were available to take comments one-on-one; no hot mic was provided.

At all meetings, laptop computers were provided for the public to submit comments electronically to the project website. The online comment form included an interactive map; commenters could mark a point on the map that corresponds to their comment. Paper comment forms were available for handwritten or typed comments, which could be submitted to the USACE at a meeting or mailed later.

2.4.2 Meeting Materials Description

The USACE requested that the PLP create a video that described their proposed project and mining process. The resulting 17-minute video gives an introduction to the surrounding environment, project components and footprint, water management and mining process, and reclamation. At some meetings this video was shown after the USACE introduction, and at others it was shown on a repeating loop.

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Ten posters prepared by the PLP to describe the project, the mining process, and reclamation were displayed. The USACE displayed posters describing both the NEPA process, and how to write effective comments. The Anchorage meeting also included posters on the scoping process, the EIS outline, resources to be discussed in the EIS, and roles of cooperating agencies.

The USACE also provided the Scoping Package, paper comment forms, and a handout from the Bureau of Safety and Environmental Enforcement, a cooperating agency. A screenshot of the video, as well as all posters and handouts are in Appendix D.

2.4.3 Additional Agency Involvement

[Note: Agency involvement will be summarized after the scoping period has ended.]

2.4.4 Government-to-Government Consultation

[Note: Specific government-to-government activities will be summarized after the scoping period has ended.]

2.4.5 Next Steps in the NEPA Process

Scoping is the first opportunity for public involvement under the NEPA process. An additional opportunity for public comment will follow the release of the Draft EIS. A Notice of Availability will be published in the Federal Register informing stakeholders and other members of the public that the Draft EIS is available for comment in early 2019. The Draft EIS comment period will include public hearings.

Public comments shape the NEPA process by identifying project-related questions and issues of concern. Typically questions are in reference to the project, existing environment, extent of temporal and spatial impacts, or potential consequences to the human environment from the proposed action. Substantive questions and issues of concern are grouped by subject matter in this scoping report. This information is used in the alternatives development process, the study of the affected environment, and in the process to analyze environmental consequences (or impacts).

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3.0 SCOPING COMMENT SUMMARY

This section contains a description of the scoping comment analysis process and a summary of the public scoping comments received to date. The public comment summary includes the following:

- Description of the scoping comment analysis process (description of the comment database, development of the coding structure, identification and coding of comments, comment summary process); and
- A summary of issues identified to date, categorized by physical environment, biological environment, social environment, or NEPA process.

3.1 SCOPING CONTENT ANALYSIS PROCESS

Public and agency comments were analyzed and categorized using a process called "content analysis." The analysis process included:

1. Importing and organizing all submission content into a comment database;
2. Developing a coding structure;
3. Review of submissions to assign codes to relevant comments; and
4. Preparation of a narrative report of analysis results.

The goals of the content analysis are to:

1. Ensure that every submission (every received set of comments, submitted by any means, is defined as a "submission") is considered;
2. Identify the concerns raised by commenters;
3. Represent the breadth and depth of the public's viewpoints and concerns as fairly as possible; and
4. Present those concerns in a way that facilitates consideration of comments.

All comments were treated equally. Emphasis was on the content of a comment, rather than who wrote it or the number of submitters who agreed with it.

3.1.1 Scoping Comment Database

Names, contact information, and comment text for commenters who submitted comments were entered into an electronic database. The majority of the comments were submitted to the USACE in electronic format through the project website comment form. Some comments were received by the USACE via email or postal service. As comments were received they were made available to the public to view on the project website. Hard-copy comments, including those delivered by postal service or submitted in person at public meetings, were scanned and entered into the database and also posted to the project website.

The content of the comments was filtered using various database queries and identifying potential form letters (see form letter discussion below). Any submission identified as having the same commenter information and content, regardless of delivery format (e.g., hard-copy letter, email) or date, was counted as one submission.

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3.1.2 Form Letters

Form letters are defined as any submissions with the same content. Electronic comments were pre-screened in the database, using various queries to identify similar content and thus potential form letters. If consistent content was identified, a form letter record with that content was created in the database and additional submissions with the same content were placed into that form letter category.

3.1.3 Coding Structure Development

Submission content was sorted into categories to represent commenters' concerns and rationale through a coding structure. Codes provide an efficient and accurate grouping of similar comments; coded concerns are referred to as "comments" in this report.

The aim of the coding structure is to identify applicable project elements, environmental resources, and planning processes in submissions. An initial coding structure was developed based on expected issues and concerns; this structure will continue to be developed as more submissions are received to identify any additional concerns.

3.1.4 Comment Identification and Coding

Submissions were reviewed to identify substantive comments that will be used to formulate the issues and analysis conducted in the EIS process. Individual statements within the submission are identified as a comment and then assigned to a category/topic by an automated system. Submissions may contain more than one comment, each coded separately based on the issue and the specific rationale. This form of analysis allows for specific comments to be captured and then grouped under the umbrella of a general resource issue.

3.2 PUBLIC COMMENT SUBMITTAL SUMMARY

3.2.1 Submittals Received

In total, XXX comments were received up to June 29, 2018. XXX form letters were received.

[Note: Comment statistics will be summarized after the comment period is complete.]

3.3 COMMENT SUMMARY PROCESS

[Note: Comment content will be summarized into a final narrative summary for the final version of this report.]

The intent of the narrative summary is to provide representative summaries that capture, with a minimum of repetition, major topic areas or concerns expressed during the public scoping period. The topic areas or concerns contained in the summary of public comment will be used to develop the issues, alternatives, and mitigation strategies that will be analyzed in the EIS process.

During the summary writing process, comment analysts review coded comments to understand the overall content of the comment and to identify topic areas or concerns in similar comments from different respondents. Similar comments are summarized into concise narrative statements and organized by the theme categories.

Comments are organized in two broad categories below:

- Summary of Public Comment – Resource Topics. This section provides issues identified in scoping comments organized by resource topic (e.g., air quality,

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socioeconomics, and fish). This section summarizes resource-specific comments, such as comments concerning fish and wildlife habitat loss, loss of recreational access, and dust and emissions along the access roads and at the mine site.

- Summary of Public Comment – NEPA Process and Regulatory Compliance. This section provides a summary of public comments on the NEPA process and alternatives. Topics include the public involvement process, project purpose and need, other laws and regulations, tribal consultation, cooperating agencies, and the no action alternative. Public comment suggestions for proposed action alternatives and mitigation measures are also included.

3.4 SUMMARY OF PUBLIC COMMENT – RESOURCE TOPICS

3.4.1 General Resources

A variety of general comments were received indicating that the EIS should analyze the direct, indirect, and cumulative impacts on resources in the Project Area.

3.4.2 Physical Resources

Comments indicated that the EIS should analyze the direct, indirect, and cumulative impacts on specific physical resources, including:

- Air quality;
- Climate change;
- Geology and seismic activity;
- Surface and groundwater hydrology impacts;
- Noise impacts;
- Fuel spill risks and releases;
- Hazardous materials stored and transported to and from the mine site;
- Natural gas supply and pipeline safety;
- Tailings dam; and
- Water resources – quality and quantity.

3.4.2.1 Air Quality

Comments were received regarding impacts to air quality from construction, fugitive dust emissions, vehicle equipment emissions and mining activities. These include:

- Dust pollution from the mine and roads, and what chemicals may be used to control dust.
- Impacts to air quality including impacts from transporting ore and materials, or loading and shipping ore and concentrate.
- Emissions from the power plant.
- Impacts related to fugitive dust.
- Prevailing winds creating waves on the pyritic tailings facility which could allow oxidation of the tailings resulting in acid generation.
- Impacts from air pollutants emitted during mine operations and contribution to greenhouse gas emissions from the power plant.
- Greenhouse gas emissions as a result of the proposed project and all alternatives.

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3.4.2.2 Climate Change

Comments were received about the impacts of climate change to the environment and how climate change trends may interact with effects of the proposed project.

3.4.2.3 Geology and Seismic Activity

Comments were received regarding impacts to the geology of the project area, including concerns that major faults occur in the proposed Project Area.

- Describe how the proposed project facilities would withstand earthquakes, particularly the tailings storage facility.
- Include detailed information about seismically active areas, geological faults and tectonic activity, and corresponding design features.
- Analyze impacts to bedrock, surface geology, gravel resources, paleontological resources, and landforms from all proposed project components.
- Analyze impacts from volcanic activity, especially at Amakdedori.

3.4.2.4 Surface and Groundwater Hydrology

Comments were received on impacts to groundwater systems and aquifers from tailings, transportation of groundwater, and how it moves underground. A thorough understanding of the groundwater and surface water hydrology and how they relate to each other should be demonstrated.

- Analyze impacts from the mining process lowering the groundwater table and what that will do to surface water hydrology in nearby streams.
- Address earthquake impacts on hydrology characteristics.
- Explain the water balance model of the project.

3.4.2.5 Noise

Comments were received on impacts of noise pollution as a result of project construction and mining operations.

- Discuss noise impacts of blasting in the project area, and describe the blasting methods that would be used.

3.4.2.6 Fuel Spill Risks and Releases

Comments were received about the potential for fuel and oil spills or accidental releases, including adequate response capacity to clean up spills in various conditions, and potential impacts to natural resources or environment from spills or release.

- Analyze impacts of spills of diesel and natural gas to every resource discussed in the EIS.
- An earthquake could rupture the gas pipeline under the lake when salmon are migrating and kill the fish.
- Explain who is responsible for spill response on Cook Inlet and Iliamna Lake. Response plans should be developed for all parts of the project.

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3.4.2.7 Hazardous Materials

Comments were received about the potential for hazardous material storage, spills, and impacts to resources or the environment and, in particular, address chemicals associated with mine process and storage of materials (arsenic, acids).

- The revised mine plan calls for no cyanide to be brought in to the region.
- Address impacts of hazardous and solid waste generated from the proposed project. A hazardous and solid waste material handling, storage, management, and disposal plan should be developed and evaluated into the Draft EIS.
- Describe how blasting agents will be transported and managed.
- During the copper extraction process an alcohol is added during the flotation along with a collector chemical called potassium amyl xanthate (or the potassium salt of an alkyl dithiocarbonate), which can be toxic.

3.4.2.8 Natural Gas: Pipeline and Gas Supply

Comments were received on the impacts of the proposed project on the supply, demand and cost of natural gas in the proposed Project Area and Cook Inlet.

- Lower costs of fuel in rural Alaska as result of potential new gas supply and spur/distribution systems.
- The supply of available natural gas in Cook Inlet may not be sufficient to provide power to the proposed project.
- Alternative energy sources should be examined. Many of the minerals to be mined will go into solar panels, wind turbines, and hydro turbines. The PLP could support the industries they will be supplying by utilizing alternative, renewable energy sources.
- Explain if the use of natural gas by PLP would affect existing railbelt supply and users.

Comments were received on the design, route, construction, and safety and reliability of the natural gas pipeline.

- That part of Alaska has exceptionally high tides – routinely greater than 20 feet. Please consider this when analyzing an underwater gas pipeline.
- There are safe and secure methods to construct a pipeline that would cross existing submarine cables. The pipeline owner/operators should enter into a cable crossing agreement to ensure the safety and security of both the fiber cables and the gas pipeline.
- There are no pipelines in Cook Inlet this long. In Nikiski, it is surprising how rapidly the seabed can change. This can cause unforeseen problems in maintenance. While lower Cook Inlet and Kamishak Bay do not have ice or currents to the same extent as the upper Cook Inlet, Lower Cook Inlet is not nearly as protected as the waters of upper Cook Inlet, and Kamishak Bay has probably the worst winter sea conditions of anywhere this side of the Bering Sea.
- At Iliamna Lake, maintenance could be difficult when the lake is frozen.
- The route for this pipeline means that it will be sitting at the base of Augustine Volcano.

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3.4.2.9 Tailings Dam

Comments were received regarding concern for the stability of the tailings dam, potential for tailings dam failure, and impacts of such a failure.

- Describe the impacts of dam failure and recognize the public concern of the stability of the tailings dam. Specifically, the USACE should consider the impacts to biological and social environments of a dam failure as a result of an earthquake.
- Analyze impacts of a tailings dam failure to every resource discussed in the EIS.
- Look at examples of other tailings dam failures (in Spain, Canada, Australia, and others in the United States). Some dams have failed because of engineering, some because of earthquakes.
- Analyze impacts from tailings leaks and leaching, not just failures.
- Tailings dam engineering has improved considerably over the decades. Pebble's tailings dam design will have to be approved to adequately protect the environment before the project will be permitted.
- Analyze impacts from rainfall causing overtopping of the tailings dam.

3.4.2.10 Water Quality and Quantity

Comments were received concerning a detailed analysis and discussion of the physical and chemical impacts on all water resources.

- Analyze impacts to water quality and quantity from construction and operation.
- Analyze pit water and tailings dam management.
- The mine site water balance should be estimated for each phase of the mine development.
- The proposed pit will be contaminated during closure like the Berkeley Pit in Montana and be forever toxic to wildlife and waterfowl.
- Analyze erosion, turbidity, temperature changes.
- Ferry crossing concerns, including changes in shoreline erosion and turbidity, and pollution from the proposed ferry.
- Composition of the (potential) contaminants from all project sources, including blasting.
- Prevailing winds will create waves on the pyritic tailings facility which will allow oxidation of the tailings.
- Risks associated with acid rock drainage from mine project components, including the waste rock facility, leaching, and pathways for acid rock drainage. Acid rock drainage was noted as a potential source of impact on many resources, such as water quality, wetlands, fish, and subsistence food resources.
- Describe how acid rock drainage, the tailings, and metals leaching would be managed and treated post-closure.
- Analyze the potential for wastewater to enter streams and rivers.

3.4.3 Biological Resources

Comments indicated that the EIS should analyze the direct, indirect and cumulative impacts on specific biological resources, including:

- Vegetation and ecosystems;

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- Fish and aquatic resources;
- Wetlands and special aquatic sites;
- Wildlife and non-Threatened and Endangered Species (TES) birds and mammals; and
- Threatened and Endangered Species.

3.4.3.1 Vegetation and Ecosystems

Comments were received concerning potential for disturbance from project construction and operations, and on invasive species. Comments were also received concerning terrestrial, lake, and marine habitat impacts from project construction and operations.

- Analyze impacts to rare and sensitive plants (including removal).
- Address how fugitive dust would affect vegetation within the project area and beyond.
- Address risk for invasive (non-native) species introduction by marine barges and the ferry; include ballast water management.
- Analyze ecosystems as unique in the Bristol Bay area, in the degree to which they remain unaffected by commercial development and other human technologies. Evaluate how the proposed project could alter the biological and human ecosystems and landscape.
- Analyze the potential direct, indirect, and cumulative effects of all components and all phases (including reclamation and restoration) of the proposed project on terrestrial, marine, and freshwater ecosystems.
- Analyze impacts that habitat fragmentation from Amakdedori Port and the mine access road would have on bear movements.

3.4.3.2 Fish and Aquatic Resources

Comments were received related to potential impacts to fish (King Salmon, Sockeye Salmon, Silver Salmon, Pink Salmon, Chum Salmon, Dolly Varden/Arctic char, Rainbow Trout, and Grayling) populations, abundance, diversity, migratory patterns, contamination, and potential for displacement from project components.

- Address effects of ferry traffic on resident and migrating fish in Iliamna Lake: the potential for the ferry to cause erosion of the lake shoreline and the effect of that on fish; the effect of the ferry on salmon spawning and rearing habitat; the effect of increased noise on salmon productivity; the potential for increased turbidity and its effect on salmon; the potential for ferry traffic to cause wave action that could harm the fry on their way to the ocean; the potential for ferry propellers to entrain fish and cause mortality, and the potential for fish to avoid the area around the ferry and not come back to the area.
- Address effects of gravel pits on stream hydrology and fisheries.
- Iliamna Lake creatures are poorly studied and additional baseline studies are needed.
- Water withdrawal and capture, storage, treatment and release of wastewater associated with the mine could impair the fish habitat functions of streams, wetlands, and aquatic resources.
- Address the potential for fish to become contaminated from mining chemicals or fuel spills.

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- Evaluate how the proposed project road to Iliamna Lake would impact fish species as road traffic will create of dust that may contain copper and other heavy metals that could enter the watershed and affect resident aquatic organisms including salmon.

Comments were received regarding the impacts of the mine access road crossing streams and anadromous waters, and the impacts of those stream crossings on fish.

- Current plans will impact more than 5 miles of anadromous streams.
- The construction process would build an 80-mile road system with 200 stream crossings.
- Analyze bridge and culvert impacts to fish, including fish passage and habitat condition change.
- Proposed road corridor has been designed to minimize impact on wetlands, minimize stream crossings and avoid areas of known for subsistence and recreational use**.**

Comments were received regarding the impacts to aquatic resources, including introduction of invasive species.

- Shipping from foreign ports may result in ballast water transporting invasive species such as green crab, which would have a devastating impact on the ecosystem and commercial shellfishery.
- Require a shellfish population (scallops, razor clams, and hardshell clams) baseline assessment and impact assessment regarding the dredging project prior to any dredging work at Amakdedori Port. Base recommendations on the impacts this dredging will have on the shellfish populations of Western Cook Inlet. The proposed channel dredging could affect the sedimentation deposition rate on adjacent beaches and nearshore shellfish habitat.

3.4.3.3 Wetlands and Special Aquatic Sites

Comments were received on filling of wetlands and alternations of wetlands habitat, fragmentation, and loss of wetland habitat as a result of project activities.

- Include delineation of all wetlands that could be affected by the proposed project.
- Estimated mine site to fill 3,190 acres of wetlands and water bodies, nearly three times the maximum set by the EPA for Bristol Bay in 2014.
- Impacts to wetlands dewatering and hydrological changes, pollution to wetlands, impacts on wetlands functions, clearing and removal of wetland vegetation, degrading wetland vegetation from all proposed Pebble project components and during construction, operation, and closure phases.
- Given the extent of streams, wetlands, lakes and ponds both overlying the Pebble deposit and within adjacent watersheds, excavation of a massive mine pit and construction of large tailing impoundments and waste rock piles would result in discharge of dredged or fill material into these waters.

3.4.3.4 Wildlife and non-TES Birds and Mammals

Comments were received related to potential impacts to wildlife (including terrestrial and marine mammals), and on potential impacts to migratory birds and waterfowl populations; abundance, diversity, migratory patterns and potential for displacement; and attraction of birds to tailing ponds.

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- Describe how the project construction, operation, and closure would change wildlife patterns and behavior. Noise from mining, the mine access roads, ferry traffic could all impact behavior.
- Assess how wildlife can acclimate to construction and operation impacts.
- Analyze how noise levels from construction or large vessel traffic may deter bears from coming to McNeil River Falls, or could affect bear behavior and change or end the use of McNeil River by bears.
- Examine how increased contact between bears that use the McNeil River and humans could result in food conditioning of bears or direct bear mortality by humans.
- The proposed ferry could strike marine mammals (seals) in Iliamna Lake, which would congregate in the open water created by the icebreaking ferry.
- Ferries could impact the migration pattern of wildlife.
- Take advantage of traditional knowledge on freshwater seals in Iliamna Lake, there is a Freshwater Seal Commission.
- The transportation of mining materials across Cook Inlet has potentially negative effects for local marine mammals, particularly underwater noise pollution that impacts the use of sonar in marine mammals such as whales, dolphins, and seals, and about the speed of the cargo ships carrying materials.
- Consider noise in the water created by the proposed ice-breaker ferry and the impacts to fish and wildlife.
- The Bristol Bay watershed is unique in that it provides habitat for more than 190 birds. Additionally, there are more than 40 species of water birds here and confirmed breeding sites for more than 22 species.
- Describe what steps the developers propose to keep tailings ponds/lakes free from pollutants or physically restrict birds from trying to land on them.
- Analyze impacts from noise, blasting, and other human interference to birds.
- Blast control can mitigate noise impacts to birds, like they do with birds at the airport.
- Address effects of the project on birds and migratory waterfowl that are used for subsistence.

3.4.3.5 Threatened and Endangered Species

- The proposed port site is designated Critical Habitat for the Cook Inlet Beluga Whale and the Northern Sea Otter, both listed as endangered; and Iliamna Lake is home to freshwater seals that have been considered in the past for Endangered Species Act status.

3.4.4 Social Resources

Comments indicated that the EIS should analyze the direct, indirect and cumulative impacts on specific social resources, including:

- Socioeconomics;
- Subsistence;
- Traditional way of life;
- Archaeological and cultural resources;
- Land ownership, management, and use;
- Transportation and navigation;

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- Recreation;
- Environmental justice;
- Public health and safety;
- Visual resources; and
- Wilderness characteristics.

3.4.4.1 Socioeconomic Impacts

Comments were received regarding the economic impacts to local communities, regional economy, and national economy.

- PLP should give the USACE an independently prepared economic feasibility analysis, which is usually done for other mines like Donlin. Without the economic feasibility analysis, the USACE could be analyzing and the public could be commenting on a mine that will never be built due to a lack of funds.
- The impact of the use of Iliamna Lake and the proposed transportation corridors/pipelines on sport fishing and the sport fishing-related economy should be evaluated.
- Consider the socioeconomic impacts to Bristol Bay's recreational fisheries. More than 37,000 angling trips are taken to Bristol Bay each year, which supports dozens of businesses, and a $91 million annual economy.
- The project could destroy the Bristol Bay commercial sockeye salmon fishery.
- The project could damage the Bristol Bay wild salmon brand because the watershed would contain a mining district and no longer be pristine.
- Consider that the project would create a boom and bust economic cycle that would ultimately leave people without jobs.
- The mining company will bring their own workers and not train local people to work at the mine.
- The Pebble Mine would bring much needed economic opportunity to a region by creating jobs during construction and operation.
- Residents are moving closer to much larger metropolitan regions to seek opportunities that do not currently exist near their homes in the region.
- Consider that the Kennicott Copper Mine was located in the watershed of the Copper River which did not affect the value of the salmon fishery in that region.
- The population would increase during construction and heavily impact local communities.
- EIS should look at the long term social impacts, such as trapping and life style change impacts.
- The commercial salmon fishing economy sustains 20,000 jobs; 20,000 jobs will be lost if this mine goes forward.
- People need jobs and fish.
- Analyze impacts on the bear viewing industry near the proposed Amakdedori Port.
- There were inquiries about if there would be compensation to commercial fishermen if there is a disaster and fish prices go down like was done with Exxon Valdez.
- The project will kill the hearts and souls of the people; our way of life has no value.
- Consider that fish taxes are important to the finances of the Bristol Bay Borough.

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- Review social benefits like education opportunities, and potential reduction in the high cost of living in the region due to transportation improvements.
- PLP should consider using regional Native corporations that are already in the pipeline construction and maintenance industry.

3.4.4.2 Food and Fiber Production – Subsistence

Comments were received related to potential impacts to food and fiber production (subsistence) and subsistence resources like harvest, sharing, and traditional use areas. Comments were also received on contamination concerns and/or avoidance of subsistence resources.

- Consider that impacts to any subsistence resource (e.g., fish, wildlife, vegetation) would impact subsistence as well.
- Consider the importance of the salmon fishery to subsistence and the heavy reliance on fish for all users in the area.
- Analyze impacts on subsistence resources including wildlife migration, habitat for growing food, traditional use areas, fisheries, berries and other edible plants, and the cumulative effects from other mining activity.
- Analyze impacts of potential contaminants entering into the air or water and affecting subsistence resources, including effects on subsistence resources due to potential accidental spills, and bioaccumulation of toxins in subsistence resources, and effects
- Impacts to the residents along Iliamna Lake who rely on access to small islands for the harvest of bird eggs in the spring.
- We are in fear for our subsistence way of life. Leave our dinner table alone!
- Helicopter traffic during exploration displaced caribou from the project area and this would also occur during construction and operations of the mine. Also address Koktuli.
- Helicopter traffic impacts on spring waterfowl hunting, geese. Operations air traffic could be significant, there should be no fly zones, and address caribou hunting impacts.
- Helicopter traffic during exploration disrupted subsistence activities and this would occur during construction and operations of the mine.
- Many species of fish are used for subsistence harvest, not just salmon.
- Analyze potential beneficial impacts to subsistence as cash income earned from jobs could support subsistence activities. Cash income could be available to fund the boats, motors, fuel, and nets necessary to maintain subsistence activities.
- A sudden influx of noise, people, and heavy equipment over ancestral hunting and fishing lands would have a devastating effect on the intangible riches the sustainable Dena'ina subsistence culture has to offer.

Comments were received on impacts to important locations for subsistence activity from the project, including:

- The proposed road in the Talarik watershed is an important moose hunting area.
- The road corridor would go through our winter moose hunting area.
- Helicopter traffic during exploration at Pebble displaced caribou from the project area and this would also occur during construction and operations of the mine.
- We depend on king salmon from the Koktuli River.

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- The Amakdedori area has been historically used for early subsistence activities, including salmon harvest.
- The mountain behind Nondalton is traditional subsistence area.
- The Frying Pan Lake area is important to Nondalton people and shared with other neighboring people.

3.4.4.3 Traditional Culture and Way of Life

Comments were received related to potential cultural impacts and the desire to maintain traditional practices. Includes comments related to traditional land use areas (cultural continuity), and traditional ecological knowledge.

- Fully disclose the potential impacts of project-related activities on local Alaska Native traditional ways of life. Local culture and environment has already changed from what it was historically, and this may affect the ability to pass values on to future generations.
- Traditional ecological knowledge should be studied and incorporated into the Draft EIS. Individual tribal members engage in traditional subsistence activities and have knowledge and experience with their land, wildlife, wetlands, fish, birds, plants, and other resources of the region.

3.4.4.4 Archeological and Cultural Resources

Concerns were expressed about impacts to archaeological and cultural resources subject to Section 106 of the National Historic Preservation Act.

- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- There are ancestral burial grounds at/near the proposed Amakdedori port.
- Amakdedori has been used as a site for a cultural camp.
- Analyze impacts to irreplaceable Native Alaskan rock art sites. This region of Alaska contains several recorded rock art (petroglyph) sites. No doubt more such sites remain to be discovered. Many of the rock art panels are on shorelines and only visible during low tide; thus, it is easy for archaeological surveys to miss these important cultural resources.
- Analyze impacts to cultural resources (historical and pre-historical sites) and direct destruction of cultural resources from all project components.

3.4.4.5 Land Ownership, Management and Use

Comments were received about land status (ownership), land management, and land use for the project areas.

- The proposed mine site and many project components including the port site and a majority of the transportation corridor are proposed on state-owned lands. Mine construction, operation, and closure would limit any access to these lands and transportation corridor to private entities only.
- A pattern of land use change would occur in the region long-term with additional mining deposits explored for development.
- Review any trails that could be impacted by the project.

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- The Pebble Mine will be built on state land set aside decades ago in Western Alaska specifically for mining.
- Ensure that activities are consistent with land use plans and goals of all landowners, including the State of Alaska, and Alaska Native corporations.
- Analyze the effect of project components on the public use of the surrounding area with regards to trails and waterfront usage.
- Explain the security status of the ferry terminals, the mine access road, and Amakdedori Port, including when and how the public may or may not access or cross project facilities.
- Explain if local Tribal governments have included the mine access road in their Indian Reservation Roads Program that would make it public, versus private roads as stated by PLP.

3.4.4.6 Transportation and Navigation

Comments were received regarding the impacts to transportation systems, including airports, roads, rivers, and trails as a result of the project.

- Evaluate the potential impacts resulting from navigational challenges, traffic, and user conflicts at Iliamna Lake, Kamishak Bay, and Cook Inlet. The Draft EIS should evaluate how the ferry crossing and vessel traffic could disrupt schedules, local access and local boaters.
- An ice-breaking ferry across Iliamna Lake would create difficulties and hazardous situations for people travelling across the ferry route on snowmachines.
- Analyze impacts from increased air traffic during all project phases.
- Concerns about traffic on the Sterling Highway.
- The wind has pushed ice on the north shore of Iliamna Lake in piles as high as 50 feet and could damage the proposed ferry terminal.
- The east winds on Iliamna Lake are strong and generate large waves that would make the proposed ferry unreliable and dangerous; winds can reach 100 mph.
- A disabled ferry could be blown by the wind onto the shoreline such as at Eagle Bluffs.
- The Amakdedori Port location experiences very strong onshore winds that could be hazardous.
- Consider the impact of travel restrictions from road and ferry and who is benefiting.
- It will be difficult to maintain the Amakdedori Port dredged channel due to sediment transport in that area.

3.4.4.7 Recreation

Comments were received on impacts to recreation and tourism; recreational hunting and fishing; usage near the mine, along river systems, and in transportation/pipeline corridor during construction and operation. This includes comments on disruption of recreational experiences (bear viewing, sport fishing).

- Consider the effects of project components on recreational hunting and existing guided hunting operations (e.g., changes to access, disturbance of wildlife from helicopters or vehicle traffic).

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- Concerns about impacts to fish, and how impacts to species could be detrimental to the sport fishing community and businesses.
- The proposed project would bring an influx of the number of people in the Iliamna area that would want to recreate, sport fish and hunt, including mine employees and support industry personnel.
- Displacement of wildlife would impact the experience of people.

3.4.4.8 Environmental Justice

Comments were received relating to disproportionate, adverse impacts to low income and minority communities as result of the proposed project.

- Analyze impacts related to environmental justice include food security and subsistence resources, health impacts from pollution and exposure to increased industrial activities and noises, increased risk of injury and exposure to hazardous materials, increased exposure to outsiders and the cascading social and psychological problems that brings.
- The economic benefits will not be for the people of the region but the impacts will.
- The environmental justice risk outweighs the benefits.

3.4.4.9 Public Health

Comments were received on impacts to local communities' public health and infrastructure as a result of the project (disease, contaminants, lifestyle changes, behavioral health, and physical health).

- Analyze public health concerns related to development and infrastructure development in rural communities.
- The short and long-term impacts from all stages of the project include increased risks of accidents and injuries, exposure to hazardous materials, negative impacts on food, nutrition, and subsistence, increased potential for infectious diseases, and risks to health and human services from population-stressed infrastructure and services
- Consider the social and psychological impacts the stress this project has already put on people and the communities who live in the project area. It is important for the EIS to consider stress, social and psychological impacts.
- Evaluate the potential impacts of development on indigenous women, and increased rate of violence as a result.
- Fully discuss the potential that the proposed project could be associated with behavioral health impacts, such as increased use of drugs and alcohol. More disposable income in communities may increase the use of alcohol and drugs.
- An influx of people could bring diseases to an area with minimal healthcare available that may not be able to handle large capacities of patients.

3.4.4.10 Visual Resources and Aesthetics

Comments were received on visual impacts.

- Evaluate the impacts to visual resources with the potential to diminish the visual experience of visitors and local residents.
- Consider visual impacts to recreation, and secondary industries like flightseeing operators and wildlife viewing guides.

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- The project will have permanent and significant impacts on the appearance of the landscape as viewed from key observation points, planes, etc. and will in turn impact use and enjoyment of the area by many.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.

3.4.4.11 Wilderness Characteristics

Comments were received related to wilderness characteristics and values.

- This area has wilderness characteristics, and is adjacent to a National Park.
- The potential impact on the Koktuli, Nushagak and its tributaries, Upper/Lower Talarik Creeks, the Gibraltar River, the Kvichak River, and other tributaries of Iliamna Lake have an undeniable wilderness quality that could be impacted by the proposed project. The impact of the loss of pristine wilderness, specifically in the Gibraltar, Talarik, and Koktuli drainages should be considered and, when possible, quantified.

3.4.5 NEPA Process and Regulatory Compliance

Comments were received on the NEPA process and need for compliance with regulations including:

- The general NEPA process;
- The purpose and need of the proposed project;
- Cumulative effects analysis;
- Government to government consultation;
- The proposed action and project alternatives;
- Mitigation measures;
- Monitoring and adaptive management;
- Bonding and reclamation;
- Data and available information; and
- Research and evaluation needs.

Comments were received about the overall NEPA and EIS process, the permit application to the USACE, due process, and the scoping meetings. These types of comments generally do not inform preparation of the EIS as to the project purpose and need, resources/level of impacts to be analyzed, or alternative to the proposed action that should be considered in the EIS. A summary of the general NEPA process comments includes the following:

- The Pebble Mine application is incomplete. The USACE should suspend its NEPA process/ not release a Draft EIS without more information from PLP. Foundational information for major parts of Pebble's proposal, including the proposed transportation corridor, port or use of Iliamna Lake, are lacking from their application. The data PLP supplied is more than 10 years old and thus is not reliable for analyzing project impacts.
- The Pebble Mine application is not incomplete. The Pebble Mine plan and application has recently been revised to satisfy EPA guidelines.
- There should be opportunities at each public hearing for oral comments in an open public forum. Everyone should have the opportunity to hear the comments of fellow concerned citizens. Open oral comments provide new information and learning opportunities not only for USACE and their contractors, but for all attendees. Please

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change your scoping format for future meeting to include an opportunity to express concerns through an open oral comment period.

- The limited number of scoping hearings and failure to host scoping hearings in communities within the Nushugak and Kvichak River drainages means that the opinions and voices of local populations have not been accounted for.
- Extend the scoping period beyond 30 days. Tribes in Bristol Bay are requesting at least 120 days for this scoping period.
- A 30 day scoping process is sufficient. Few projects have been talked about for as long and with such passion as the Pebble Mine and at this point, no new information about possible adverse effects will come to light.
- The USACE should compare PLP's plans to the EPA's analysis before moving forward with permitting.
- The USACE needs to acknowledge that the current permit application could be the initial phase in a much broader mine development plan. Reviewing just phase one of the project unlawfully segments environmental review, shortchanges the public interest, and risks untold impacts to the Bristol Bay region's world-class fisheries. The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- PLP should get a fair permitting process.
- The EIS process is being rushed; the USACE took more time to prepare the Donlin Gold EIS.

Comments were received that the USACE should initiate formal consultation and coordination with tribal governments. This includes comments on formal consultation and coordination under EO 13175.

Coordination with other agencies is an important part of the NEPA process. Comments were received on how the USACE should seek and promote full and broad-scope participation by federal and state resource agencies and tribal government entities as cooperating agencies, and undergo comprehensive formal consultation with appropriate entities. Comments were also received on how the USACE should extend cooperating agency invitations to interested tribal governments, as well as local, state, and federal agencies with special expertise and involve cooperating agencies on the full scope of the proposed Pebble Project.

3.4.5.1 Purpose and Need of the Action and USACE Permits

Comments were received regarding the purpose and need of the action, and the public interest of the project for the purpose of USACE permitting.

- Explain how an EIS process can proceed without more commitment from financial backers.
- PLP says their project would help with mineral independence but they will export all of the mined minerals.
- The USACE should accept the purpose and need statement contained in the permit application from PLP.
- The Pebble EIS should present a clear and concise statement of the underlying purpose and need for the proposed project consistent with the implementing regulations for NEPA (40 CFR 1502.13). This statement should be framed broadly enough as to allow for the analysis of a range of reasonable alternatives.

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- The Draft EIS should reflect not only the purpose and need of the project proponent, and the USACE, but also the broader public interest and need based on the scoping comments.

3.4.5.2 Cumulative Effects Analysis Process

Comments were received on how the cumulative effects analysis should be thorough, well-defined, and complete.

- Describe how the Draft EIS process considers cumulative effects, and identify the geographic scope and timeframe for the cumulative effects analysis.
- Consider the cumulative impacts of fully mining the entire 11 billion-ton deposit. Pebble Limited Partnership has repeatedly said, as recently as September 2017, their project is, "a multi-generational opportunity. Its size and scale will lead to a very, very long life mine." Based on statements such as this, and official records indicating they plan to mine up to 11 billion tons of ore, it is reasonably foreseeable that Pebble intends to expand its mine far beyond what is currently proposed.
- There are 20 large-scale active mining claims in the Bristol Bay watershed that this project could encourage by providing the transportation and power infrastructure.
- The EIS scope should include looking at the impacts of the potential of creating a mining district in the area.
- Needs a cumulative effects analysis on culture.

3.4.5.3 Proposed Action and Alternatives

Comments requested more detailed information on the project plans, such as the water management plan, transportation plans, and spill response plans.

- The design and operational plans for the proposed project and alternatives should be evaluated. Alternatives to the proposed project were suggested.
- All of the pyritic tailings should be removed and not stored on the land in perpetuity.
- There is no need to dredge the proposed port to -50 feet; a shallower depth should be evaluated.
- A port at Diamond Point in Iliamna Bay should be evaluated against the proposed Amakdedori Port.
- The USACE should consider finding an alternative location to take the rocks for processing.
- As an alternative to a tailings ponds dam for waste storage, all waste should be trucked to Canada and stored in Canada, since the company is Canadian.
- The USACE must look at a range of alternatives beyond Pebble's mine site and include alternatives for mining copper and gold somewhere other than Bristol Bay.
- The USACE does not need to explore alternatives to Pebble's proposed mine site as being somewhere other than Bristol Bay because it already 100 miles from the bay and should be deemed a reasonable distance.
- The previous plan involved a road along the northeastern side of Iliamna Lake, and was justifiably criticized for the devastation that it would have brought to the village of Pedro Bay and the many salmon-bearing streams that it would have crossed. Now the proposed project includes roads and a ferry across Iliamna Lake. This would place a different part of the basin at great risk, and requires continual barge traffic across this large and windy lake. This is very likely to prove disastrous, and then the

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operators of the mine will compel the state as a whole and the residents of this basin to accept some other plan such as a road around the lake in the eastern or western end. These will be equally bad ideas.

- The USACE should consider alternatives to permit 50 percent or 100 percent of the current known resources to be mined. A larger and longer mine plan more fully benefits economic development in the state of Alaska and the USA.
- The road system would cross numerous anadromous streams. It would be best to require bridges at all of these crossings. Oregon and Washington states have been working for many years to bring back their salmon runs. Recreating salmon habitat including headwaters has proven to be extremely hard.
- Apply a realistic scope to assess mine impacts. The time frame of analysis is small at 20 years; the applicant's website notes that the mine can operate for 200 years and could have 11 billion tons of ore. Examine the full extent of mining the deposit.
- More alternatives should be considered, including a combination of simultaneous open pit and underground mining, a larger open pit mine, or a longer lived open pit mine. It may be possible to mine with open pits for the shallower portions, and mine by underground mining the deeper or eastern portions of the Pebble deposit.

3.4.5.4 Mitigation Measures

Comments were received related to the need for project mitigation, and suggestions for mitigation measures.

- PLP has not given any mitigation plans for sociocultural impacts.
- The mine may go into production without enough safeguards, or conditions to mitigate, and then go bankrupt and impact the environment.
- Tribes and the public should be involved in the mitigation planning, and monitoring of the proposed project.
- The sociocultural impacts cannot be mitigated.
- Review any traditional native or cultural sites within the mine and utility corridors, and provide mitigation for same.
- Consider and recognize the extensive mitigation measures that Pebble has built into the new proposed plan to address environmental and stakeholder concerns.
- Water takes the path of least resistance, so rainfall will attempt to make its way to the river bodies, but this can be mitigated with runoff ponds and filtrated release.
- Take measures to decrease whale strikes by ships.
- Measures should be implemented to minimize the aesthetic impacts as much as is reasonably possible.

3.4.5.5 Monitoring and Adaptive Management

Comments were received in regards to the need for monitoring plans during operations and after closure of the mine.

- The history of multiple open pit mining sites has shown that the open reservoirs put in place to hold contaminated water and processing liquids have routinely been compromised by leaking and / or by drastic failure of containment levees. While they highlight the measures taken to put these toxins in containment, they fail to address the long term maintenance and mitigation of the toxins to make them inert.

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- Explain what oversight and monitoring would be applied to meet minimum detrimental environmental conditions, by whom, and under what authority.
- Explain if there would be a fund for additional environmental monitoring while the project is ongoing.

3.4.5.6 Bonding and Reclamation

Comments were received related to reclamation activities, bonding, and setting up escrow fund for restoration. Mechanisms for treatment in perpetuity post closure (i.e., plan for permanent water treatment, the entity that would pay post closure costs – secure financing in perpetuity).

- Local communities would be hooked up to the gas line, as well as a maintenance crew watching over the hazardous tailing piles and dams. Describe bonding to cover these costs if something happens to PLP.
- It appears PLP has organized and financed the project so that there is no ongoing substantial entity to bear the costs of any environmental cleanup caused by the mine, its operation, or eventual closure. Explain what provision has been made for them to post say a $500 million bond to cover such damage.
- The reclamation bond the company would agree to would never be enough.

3.4.5.7 Data and Available Information

Comments were received that suggested specific, documents, articles, or other information that should be utilized when developing the Draft EIS.

- Review research on fiber optics cable placement on tundra by Rorik Peterson at the University of Alaska Fairbanks. In addition, the USACE should review mapping provided by GCI regarding fiber optic cable placement of the TERRA-SW and KKFL cable crossings in Cook Inlet and Iliamna Lake that would intersect with the proposed natural gas pipeline.
- Regarding impacts to shellfish populations, review the following:
    - Alaska Department of Environmental Conservation (ADEC): CISCP sensitive areas section - https://dec.alaska.gov/spar/ppr/plans/scp_ci/CISCP_DSensitive_Areas_Jan2017.pdf, page D40-41.
    - Collapsed or recovering shellfish fisheries in the state of Alaska IR.1J.2002.06.pdf Preliminary Report to the Alaska Board of Fisheries COLLAPSED OR RECOVERING SHELLFISH FISHERIES IN THE STATE OF ALASKA, ALASKA DEPARTMENT OF FISH AND GAME, Division of Commercial Fisheries, Regional Information Report 1 1J02-06, OCTOBER 1999.
- Acknowledge how Traditional Ecological Knowledge information may be used and how to ensure that sensitive information is protected and follow a set of protocols for use of this information.
- Review spills in Cook Inlet. In a study by the Cook Inlet Regional Citizen's Advisory Council, 70 of the 88 were caused by structural or mechanical failures.
- Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries news release: 2018 Bristol Bay Sockeye Salmon Forecast.

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- The Economic Importance of the Bristol Bay Salmon Industry. Prepared for the Bristol Bay Regional Seafood Development Association by Gunnar Knapp Mouhcine Guettabi Scott Goldsmith. April 2013.
- There is a recent text book edited by Dr. Carol Anne Woody that should be a resource for the EIS.

3.4.5.8 Research and Evaluation Needs

Comments were received regarding the lack of baseline research, monitoring, and evaluation needs, or data gaps for the project.

- The USACE should suspend its NEPA process until the PLP presents sufficient environmental baseline and economic data about its proposal so as to reasonably inform the NEPA process.
- No new baseline documents or data were submitted with PLP's application to the USACE in December 2017. The only publicly available baseline documents compiled by PLP are now more than a decade old, with data collected from 2004 to 2008. Those baseline studies failed to include newly proposed project components such as the transportation corridor, Iliamna Lake, and the proposed port site.
- Baseline data for the proposed Amakdedori Port and Kamishak Bay may be lacking in terms of what is known about water currents, shifting sands/silts and ice and how these physical conditions may affect trenching.
- ADF&G lacks assessment tools for the shellfish that live in Cook Inlet. Current baseline studies for these species do not exist. In light of the possible increase in sediment deposition rate resulting from dredging in the area of the Pebble Project, the USACE should require a shellfish population baseline assessment and impact statement regarding the dredging project prior to any dredging work beginning in Amakdedori Bay.
- No baseline data exists for the proposed port and use of Iliamna Lake, or the 83-mile transportation corridor making it impossible to analyze the potential impacts these activities would have on sensitive salmon habitat, tributaries, and adjacent wetlands.
- An extensive and thorough baseline study on bear populations including numbers, movement, diet, and feeding areas should be done.
- There is a lack of baseline studies on newly added mine components for an informed permit process, such as wastewater discharges to Frying Pan Lake.

3.4.6 Non Substantive Comment

Submissions without substantive comment that are not specific to a particular issue are considered non-substantive. These include comments in support of or in opposition to the applicant's proposed project.

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APPENDIX A – NOTICE OF INTENT

APPENDIX B – PUBLIC NOTICES

APPENDIX C – MEETING SIGN-IN SHEETS

APPENDIX D – MEETING MATERIALS

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Region 10 Regional Administrator meeting with Pebble Limited Partnership CEO
Topic: Requested by PLP as a "courtesy visit with the RA"
Meeting Date: June 7, 2018
Location: Regional Office; RA's conference room (Seattle, WA)
List of Third Party Attendees (including affiliation): • Tom Collier (CEO, PLP)
Did EPA decide which third parties would attend?: No; meeting was at request of Tom Collier
List of EPA Attendees: • Chris Hladick (Regional Administrator) • David Allnutt (Director, OERA)
Agenda: none
Did EPA/Third Party Set the Agenda?: n/a
Did EPA/Third Party Run the Meeting: meeting was held as a meet and greet.

Notes from Discussion (including individual advice/feedback provided to Agency):
**This section is intended to compile individual input received from meeting attendees. It does not reflect group advice.*
• Meeting began at 2pm Seattle time.
• Collier confirmed that he had no agenda for the meeting other than to introduce himself to Hladick and let EPA know what was happening with the Corps' consideration of the Pebble Mine project.
  ○ The Corps' scoping public comment period concludes at the end of this month.
  ○ The Corps has been processing comments as they come in.
  ○ Current plan is to have a draft EIS approximately one year from now (spring 2019).
• Hladick conveyed his understanding that PLP has been studying the project area for many years.
• Collier stated that he had worked in permitting his whole career and had never seen a project that considered more alternatives than have been considered for this mine.
  ○ But he acknowledged that the EIS process could suggest new alternatives that PLP has not yet considered.
Non-Responsive: Potential Confidential Business Information Identified by the Pebble Limited Partnership
[redacted]

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Non-Responsive: Potential Confidential Business Information Identified by the Pebble Limited Partnership

- Hladick expressed his appreciation for the information and for Collier's time.
- Meeting adjourned at approximately 2:25pm Seattle time.

Next Steps/Follow-up Discussed: None

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Instructions

When EPA hosts a meeting, designate a note taker. After the meeting, the note taker should copy and paste the template into this running word document and fill out the relevant information. The note taker should then notify other EPA attendees so that they can verify that the meeting notes are accurate.

Template for Meeting Notes

TITLE
Topic:
Meeting Date:
Location:
List of Third Party Attendees (including affiliation): •
Did EPA decide which third parties would attend?: Yes/No/Explain
List of EPA Attendees: •
Agenda:
Did EPA/Third Party Set the Agenda?:
Did EPA/Third Party Run the Meeting:
Notes from Discussion (including individual advice/feedback provided to Agency): **This section is intended to compile individual input received from meeting attendees. It does not reflect group advice.*
Next Steps/Follow-up Discussed: None

TITLE
Topic: DAA Lee Forsgren Meeting with Sport Fishing Group on Bristol Bay/Pebble Mine
Meeting Date: 12/11/2018, 1:00 PM
Location: EPA Headquarters
List of Third Party Attendees (including affiliation): **External**: Brian Kraft, Owner of Alaska Sportsmen's Lodge; K.C. Walsh, President of Simms Fishing Products; Jeff Crane, President of the Congressional Sportsmen's Foundation; Meghan Morris, Bass Pro Foundation and Philanthropy Advisor; Sara Tucker, Natural Resource Results.
Did EPA decide which third parties would attend?: Yes/No/Explain
List of EPA Attendees: **EPA**: DAA Lee Forsgren, Clay Miller, Brittany Bennett
Agenda:
Did EPA/Third Party Set the Agenda?:
Did EPA/Third Party Run the Meeting:
Notes from Discussion (including individual advice/feedback provided to Agency):

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- All external attendees spoke of personal connections to the Bristol Bay watershed and fisheries. Several also spoke of the value of the fisheries to their businesses and customers, as well as the global economy.
- Attendees emphasized that the process (presumably 404 and NEPA) is important and ought to be robust. Attendees also expressed concerns that the process will be predetermined by political pressure.
- One attendee questioned whether the EIS would consider the cumulative impact to the watershed of an expanded mine, citing that Pebble's permit application is for a much smaller mine than originally touted and that the attendee expects it will grow over time.
    - Forsgren responded that cumulative and regional impacts are typically considered in an EIS, and that any expansion would likely require additional permits because it is likely that the area they would expand to would be jurisdiction (even under the proposed WOTUS definition).
- One attendee asked for clarity about EPA's piecemeal comments on the EIS/404 process.
    - Forsgren responded that we are getting materials piecemeal and responding to them as we receive them.
- Attendees submitted a table titled "Informational Gaps Identified in the Pebble Project EIS Scoping Report." [This will be saved in EPA's SharePoint]. Attendees stated that they are concerned the EIS will overlook the listed elements and that they are advocating for a robust process. One attendee stated that their biggest concern is water disposal, water use, perpetual maintenance of the tailings dam, and that discharges into Upper Talarik Creek seem to absent in the EIS.
    - Forsgren skimmed through this list and responded that we would engage to some extent via commenting in: (1) surface water issues, (2) groundwater where a surface water interface exists, (3) injections into aquifers and wells, (4) long term water quality monitoring, and (5) seismic activity as it relates to water quality).
- Attendees provided a copy of a letter submitted to ASA Civil Works R.D. James requesting to suspend the permit review process until Corps receives more information regarding the Pebble permit application.

Next Steps/Follow-up Discussed: None

Meeting Notes: 12/10/18 EPA/Seafood Industry Mtg on Pebble Mine
Topic: EPA/Seafood Industry Mtg on Pebble Mine
Meeting Date: December 10, 2018
Location: Region 10 Offices, Seattle, WA
List of Third Party Attendees (including affiliation): • Joseph Chythlook (BBNC Chairman) • Everette Anderson (BBNC Director) • Glenn Reed (Pacific Seafood Processors Association) • Jon Bridge (Ben Bridge Jewelers)

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- Daniel Cheyette (BBNC, Lands and Natural Resources)
- Brett Veerhusen (Businesses for Bristol Bay)
- Peter Van Tuyn (Bessenyey & Van Tuyn, outside counsel for BBNC)

Did EPA decide which third parties would attend?: Yes/No/Explain

No – request for meeting and invite list came from Dan Cheyette at BBNC

List of EPA Attendees:

- Chris Hladick, RA
- David Allnutt, Director, OERA

Agenda: none

Did EPA/Third Party Set the Agenda?: n/a

Did EPA/Third Party Run the Meeting: n/a

Notes from Discussion (including individual advice/feedback provided to Agency):

**This section is intended to compile individual input received from meeting attendees. It does not reflect group advice.*

Dan Cheyette: Conveyed his desire to use this meeting to exchange information on the ongoing Corps NEPA process and any updates regarding the status of EPA's pending CWA § 404(c) Proposed Determination.

Meeting opened with introductions from the external visitors.

Peter Van Tuyn: Urged EPA not to equate opposition to the recent Alaska Ballot Measure 1 (salmon initiative) with support for Pebble mine development. For example, Glenn Reed and his organization opposed the salmon initiative but also oppose development of the mine.

Joe Chythlook: This was record-setting year for salmon fishing in Bristol Bay. Everyone he talked to did very well commercially, and it was also a good year for subsistence. Would like to ensure that the people of Bristol Bay region can continue to live that way of life.

Everette Anderson: Bristol Bay is the last place of its kind. Strong cultural ties; strong commercial ties.

DC: 60M+ sockeye were harvested in Bristol Bay in 2018; the fishery is the economic cornerstone of region. But it's not just about the fisheries.

Brett Veerhusen: Opposition to the mine is not just about the 14k direct jobs; also reflects a desire to protect secondary and tertiary jobs worldwide. For the seafood industry, it's very important to keep trust with consumers. Alaska seafood is currently the no. 1 trusted source of protein.

Jon Bridge: Consumer trust is also important for the jewelry industry – public interest in "blood diamonds" several years ago demonstrated this phenomenon. Ben Bridge supports the Responsible

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Jewelry Council, which promotes fair labor and environmental standards for resource extraction. Ben Bridge has two stores in AK, so has been close to the Pebble issue in particular for many years.

Glenn Reed: don't neglect jobs outside of fishing and processing sectors. For example, BB fishery is very important for Alaska's transportation sector.

DC: The Corps' schedule for processing PLP's permit application seems very aggressive and unrealistic.

Chris Hladick: EPA has registered its concerns on the Corps' proposed schedule. David can describe what the PD did and didn't do and where we are procedurally on that.

David Allnutt: Provided an overview of EPA's role in issuing the PD, proposing to withdraw it, and then suspending withdrawal proceedings. Emphasized that the PD proposes restrictions on mining the Pebble deposit but does not prohibit or veto such mining.

EPA has organized two teams of technical and programmatic specialists: one to assist with the Corps' environmental review and permitting processes, and another to manage the CWA § 404(c) process. We are serving as a cooperating agency under NEPA and have offered our technical assistance to the Corps as it analyzes alternatives and potential impacts. We're working hard to meet the Corps' cooperating agency deadlines. We also intend to review and comment in writing on the DEIS once that is available from the Corps.

PVT: During a recent visit to DC, he was told by Corps HQ that the 404 permit would be "the last permit" issued – would only be issued after PLP had secured its state and local authorizations. Is this consistent with what EPA has heard from the Corps?

DA: I have only been in touch with the Corps' Alaska District staff about this project – not Corps or Army HQ. I have not discussed this particular issue. I am aware, though, that PLP has not yet applied for its state permits.

DC: Have the cooperating agencies requested more time to review the preliminary DEIS?

DA: I have not personally participated in the recent cooperating agency meetings, but I understand that there has been considerable discussion about the proposed schedule. The current deadline of December 21 does represent some flexibility by the Corps.

PVT: Has Region 10 been given any policy direction from EPA HQ regarding the timing of the 2014 PD?

DA: We are aware of Administrator Pruitt's direction (in a June 2018 memo) to EPA-OW to develop a proposed rule to revise how EPA exercises its authority under CWA § 404(c). We are not aware of any policy direction outside of the June 2018 memo.

JC: BBNC is profit-making entity; not against mining or resource development generally. BBNC's opposition to Pebble is not just about the environment, it's about the people and the resource.

Meeting adjourned after one hour.

Next Steps/Follow-up Discussed: None

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EPA Deputy AA Meeting with PLP
Topic: Bristol Bay
Meeting Date: Nov 14, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Abe Williams, The Pebble Partnership (PLP) • Chasity Anelon, PLP • Rhiannon Nanabook, PLP • Ventura Sumanigo, Kijik • Brad Angasan, ADC • Krista Williams, BBNC Shareholder • Shannon Johnson-Nanabook, Iliamna
Did EPA decide which third parties would attend?: No.
List of EPA Attendees: • Lee Forsgren • Brian Frazer • Russ Kaiser
Agenda: Status of Bristol Bay PD
Did EPA/Third Party Set the Agenda?: Third Party, Abe Williams
Did EPA/Third Party Run the Meeting: Meeting ran as a conversation
Notes from Discussion (including individual advice/feedback provided to Agency): EPA Notes (Forsegren): • We will stay on current path, noting there are no immediate actions for EPA to take with respect to the (c) action. • We will remain engaged in the NEPA process as it relates to our mission. • We will continue to be transparent and listen to views from interested parties. • We will use the NEPA document findings and latest science to inform our ultimate decision on the (c) action - we will use facts to support our decision. • We don't know what the final decision will be at this time and reminded them that there is no pre-judged outcome for the action. • Lee will be the lead for OW, and it is not clear at this time if the Acting Administrator or Henry Darwin will be the decision-maker. Third Party Summary Notes: • Requested EPA to please remove the pending (c) action as it is creating investor uncertainties, which is creating a lower growth rate in needed jobs in the area and likely eliminating future jobs as a consequence of not taking an action. Also, potentially causing other community issues. • Looming veto inhibits Corps from completing NEPA process. Lee F clarified that (c) action only prevents Corps from making final permit decision. They can complete NEPA ROD. • Salmon initiative failed … need to consider that in your findings. • BBNC doesn't represent all positions for the AK Natives.

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Next Steps/Follow-up Discussed: Request for Lee to convey meeting summary highlights with decision-makers. Lee indicated he would do so when he had the opportunity to do so.

EPA Deputy AA Meeting with BBNC
Topic: Bristol Bay
Meeting Date: Sep 11, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Joseph Chythlook, Chairman of BBNC Board • Harold Robin Samuelsen Jr., BBNC Director • Russell Nelson, BBNC Director • Shawn Aspelund, BBNC Director • Peter Andrew Jr., BBNC Director • Andria Agli, BBNC VP Corporate Relations • Inez Bielefeld, BBNC Administrative Manager • Daniel Cheyette, BBNC VP Lands and Resources • Peter Van Tuyn, Bessenyey & Van Tuyn • Phil Hardy, Strategies 360
Did EPA decide which third parties would attend?: No.
List of EPA Attendees: • Lee Forsgren
Agenda: Bristol Bay EIS Status and Next Steps Forward
Did EPA/Third Party Set the Agenda?: Third Party/BBNC
Did EPA/Third Party Run the Meeting: Meeting ran as a conversation
Notes from Discussion (including individual advice/feedback provided to Agency): • Lee opened and indicated that we are staying on course and there are no actions for EPA at this time related to the (c) action. Will need to determine at a later date when to request public comment on the proposed action and what that will look like. Not there yet. • Lee indicated that we were supporting the Corps in developing the DEIS, when requested by Corps. • The group will plan to visit the Administrator's office in Spring, 2019, and invite appropriate folks to the area so that they can explain the project and identify potential environmental consequences on the ground. • Lee also discussed broader AK initiatives, including the mitigation memo and the flexibilities that exist in the rule.
Next Steps/Follow-up Discussed: None.

TITLE

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Topic: Meeting
Meeting Date: August 2, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Pebble Limited Partnership
Did EPA decide which third parties would attend?: Yes/No/Explain
List of EPA Attendees: • Henry Darwin
Agenda:
Did EPA/Third Party Set the Agenda?:
Did EPA/Third Party Run the Meeting:
Notes from Discussion (including individual advice/feedback provided to Agency): **This section is intended to compile individual input received from meeting attendees. It does not reflect group advice.*
Next Steps/Follow-up Discussed: None

EPA Deputy AAOW Meeting with Pebble
Topic: Review process for Pebble's CWA Section 404 Permit Application
Meeting Date: June 5, 2018
Location: EPA HQ (Washington, DC)
List of Third Party Attendees (including affiliation): • Peter Robertson, Pebble • Brad Angasan, VP of Corporate Affairs for AK Peninsula Corporation • Ventura Samaniego, President and CEO of Kijik Corporation • Henry Olympic, President of Newhalen Tribal Council
Did EPA decide which third parties would attend?: No – meeting at request of Pebble
List of EPA Attendees: • Lee Forsgren (Deputy AAOW) • Russell Kaiser (Chief, Freshwater and Marine Regulatory Branch (FMRB)) • Palmer Hough (Environmental Scientist, FMRB) • Heidi Nalven (OGC)
Agenda: None
Did EPA/Third Party Set the Agenda?: N/A
Did EPA/Third Party Run the Meeting: Pebble ran the meeting and described it as an opportunity for EPA to hear from Alaska Natives who are supportive of the proposed Pebble Mine.
Notes from Discussion (including individual advice/feedback provided to Agency): • Robertson kicked off the meeting and gave the floor to the Alaska Native reps that he invited to participate. Each rep shared thoughts on Pebble mine • Angasan – discussed jobs and other potential economic benefits of a mine at the Pebble deposit and noted the permit review process would be challenging and that Pebble deserved opportunity to go through review process • Ventura – noted that not all AK Native groups oppose Pebble mine, Kijik Corporation is also exploring mining claims and has experienced challenges raising money for its potential mining projects

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- Olympic – noted that before Pebble many in Newhalen were on welfare and drug use was high, after Pebble there are more work opportunities and more opportunities to support families in Newhalen

Next Steps/Follow-up Discussed: None

EPA Deputy AAOW Meeting with Bristol Bay Native Corporation

Topic: EPA's decision not to withdraw PD and Pebble's 404 Permit Application/Corps NEPA process

Meeting Date: April 18, 2018

Location: EPA HQ (Washington, DC)

List of Third Party Attendees (including affiliation):

- Joseph Chythlook, Bristol Bay Native Corporation, Chairman of the Board
- Dorothy Larson, Bristol Bay Native Corporation, Vice-Chair of the Board
- Russell Nelson, Bristol Bay Native Corporation, Board Member
- Peter Andrew, Bristol Bay Native Corporation, Board Member
- Jason Metrokin, Bristol Bay Native Corporation, CEO
- Daniel Cheyette, Bristol Bay Native Corporation VP Lands
- Mat Jackson, Grunden's General Manager
- Kristine Lynch, Pacific Seafood Processors Association VP
- Peter Van Tyne, Bristol Bay Native Corporation, Counsel

Did EPA decide which third parties would attend?: No – meeting at request of BBNC

List of EPA Attendees:

- Lee Forsgren (Deputy AAOW)
- Brian Frazer (Chief, Oceans, Wetlands and Communities Division)
- Russell Kaiser (Chief, Freshwater and Marine Regulatory Branch (FMRB))
- Palmer Hough (Environmental Scientist, FMRB)

Agenda: None

Did EPA/Third Party Set the Agenda?: N/A

Did EPA/Third Party Run the Meeting: Meeting was an opportunity for BBNC to thank EPA for its decision not to withdraw the 2014 PD and to express concerns it has with Corps' NEPA process for Pebble 404 permit application. At the beginning of the meeting, Lee let BBNC have the floor.

Notes from Discussion (including individual advice/feedback provided to Agency):

- Dan thanked Lee and EPA for coming to Bristol Bay in October 2017 for the public hearings, for listening to what BBNC and other stakeholders had to say about the 2014 PD, and for EPA's January 2018 decision not to withdraw the 2014 PD.
- Lee indicated that, at some time in the future, EPA would be taking more public comment on what effect Pebble's new permit application could have on the 2014 PD but that it would be premature to do so before more information and analysis regarding the potential impacts of Pebble's new mine become available.
- Dan, Jason and other BBNC reps expressed concerns they have with the Corps' NEPA process for Pebble's permit application including:
    - Corps' "rushed" process, they noted that the EIS process for Donlin Mine had 105-day scoping period, numerous scoping meetings with opportunity for public to speak openly, and adequate outreach and translation services for meetings. Compared to Pebble's initial 30-day scoping period, fewer scoping meetings with limited opportunity for public to speak openly, and inadequate outreach and translation services.

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- They noted that it took huge push-back from congressional delegation, governor, etc to get Corps to extend scoping period for Pebble to 90 days.
- They expressed concerns that cooperating agencies have been given a limited role by Corps in EIS process.
- They expressed concerns that the Corps' timelines for the Pebble EIS are unrealistic.
- They expressed concerns that Corps' scoping meetings were run more like a PR opportunity for Pebble, since Corps showed Pebble's promo video and then limited public's ability to comment openly at many of the meetings.
- They expressed concerns that Pebble's permit application lacked key elements necessary to facilitate adequate scoping including: a draft water management plan, draft compensatory mitigation plan, and preliminary assessment of the economic feasibility of the proposed mine project.
- They noted that public perception is the Corps is trying to "fast-track" review of Pebble and cut corners in its review.

- Dan/Jason noted that they had shared these concerns with Ryan Fisher, Deputy ASA-CW, when they met with him earlier in the day.

Next Steps/Follow-up Discussed: None

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2017 EPA Headquarters Bristol Bay Meetings/Events for Docket EPA-R10-OW-2017-0369

Meeting/Event	Date	Location	Organizations/Groups Represented	Discussion Summary / Topics
Tom Collier and Darrin Munoz	May 1, 2017	EPA Headquarters, Washington DC	Pebble Limited Partnership	Discussion included Pebble's concerns regarding the 2014 Proposed Determination. The Administrator responded that any potential deviation from proper process were and would continue to be reviewed and addressed appropriately.
Peter Robertson and Tom Collier	July 10, 2017	Phone	Pebble Limited Partnership	PLP called to confirm that EPA was on track to initiate a proposal to withdraw the Proposed Determination and that the "initiation" would be publicly known. EPA confirmed both and stated that they would endeavor to update PLP regarding the action.
Alan Mintz	September 13, 2017	EPA Headquarters, Washington DC	Partner of Van Ness Feldman, LLP, and registered lobbyist for client Pebble Limited Partnership	Lee Forsgren, Deputy Assistant Administrator for EPA's Office of Water, and Mintz have worked on common issues for many years – this meeting was an opportunity for them to catch up with each other. EPA's involvement in Bristol Bay was neither the purpose of the meeting nor its focus. The two briefly discussed the proposed Pebble mine and the history of the EPA's review of the watershed under section 404(c). Mintz suggested that he felt the process used by the previous Administration was fundamentally flawed, and Forsgren indicated that the new Administration intends to review the matter.
Peter Robertson	September 21, 2017	EPA Headquarters, Washington DC	Pebble Limited Partnership	Robertson described PLP's status for identifying a partner, adjusting the mine plan, and submitting a permit application. EPA confirmed that it was still in the process of the proposal to withdraw the Proposed Determination, and no decision had been made. EPA stated that they will proceed through the regulatory process in its normal sequence.
Robin Samuelson (1), Norm Van Vactor (2), Matthew Paxton (3)	October 31, 2017	EPA Headquarters, Washington DC	Bristol Bay Economic Development Corporation (1, 2) and Adams and Reese LLP (3)	Discussion included the potential impacts of a proposed Pebble mine on fisheries resources in the Bristol Bay region. The Administrator reiterated that his intial actions on the withdrawal were about due process and that they do not signal how the Agency might come out on any permit action. BBEDC proposed that EPA suspend the existing process where it is now and give PLP an opportunity to submit their application.

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Agenda

- Overview of Alternatives
- Format and Level of Detail for Chapter 2
- Update on Appendix B – Alternatives Development Process
- Review of Select Alternatives
  - Filtered Tailings (Dry Stack)
  - Other Mine Locations
  - Underground Mining

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Overview of Alternatives

- Alternatives to be Analyzed in Detail
  - No Action Alternative
  - Action Alternative 1 – Applicant's Proposed Alternative (includes 3 variants)
  - Action Alternative 2 – North Road and Ferry/Downstream Dams (includes 2 variants)
  - Action Alternative 3 – North Road Only (includes 1 variant)

EPA-00135-006474

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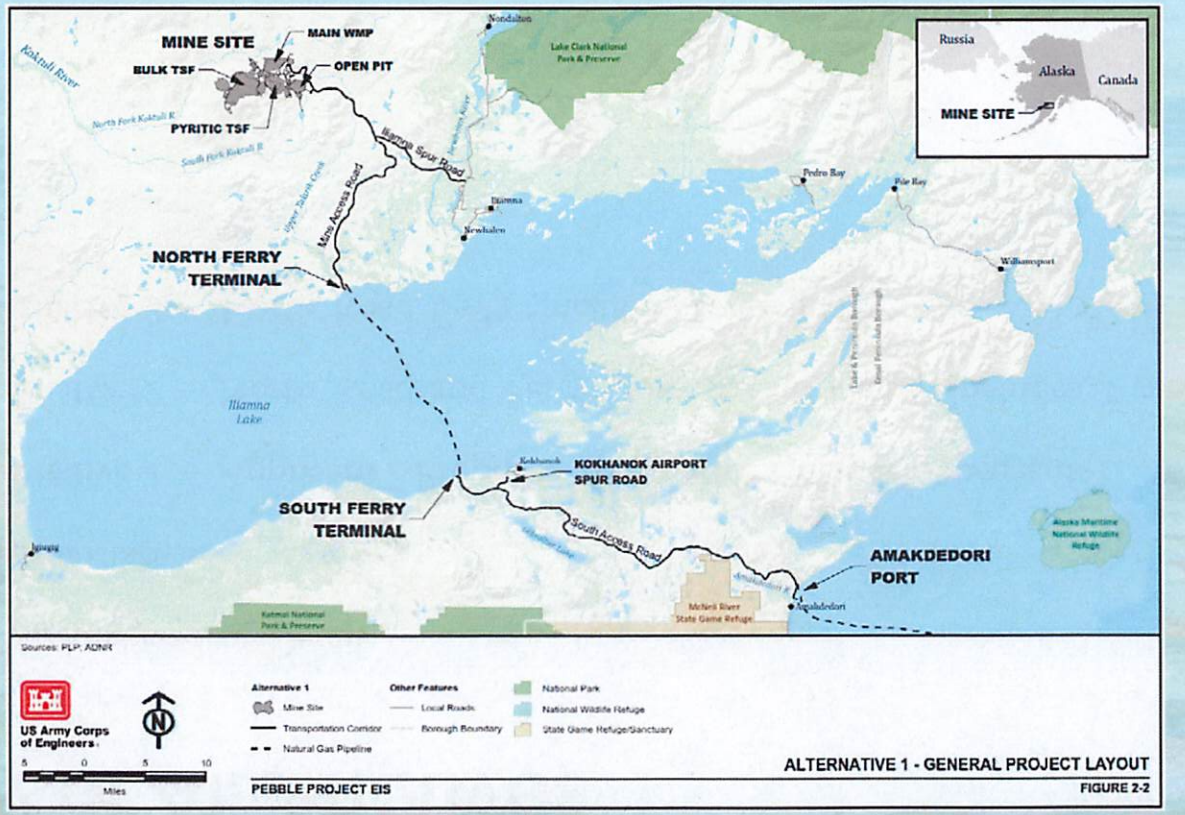
Action Alternative 1



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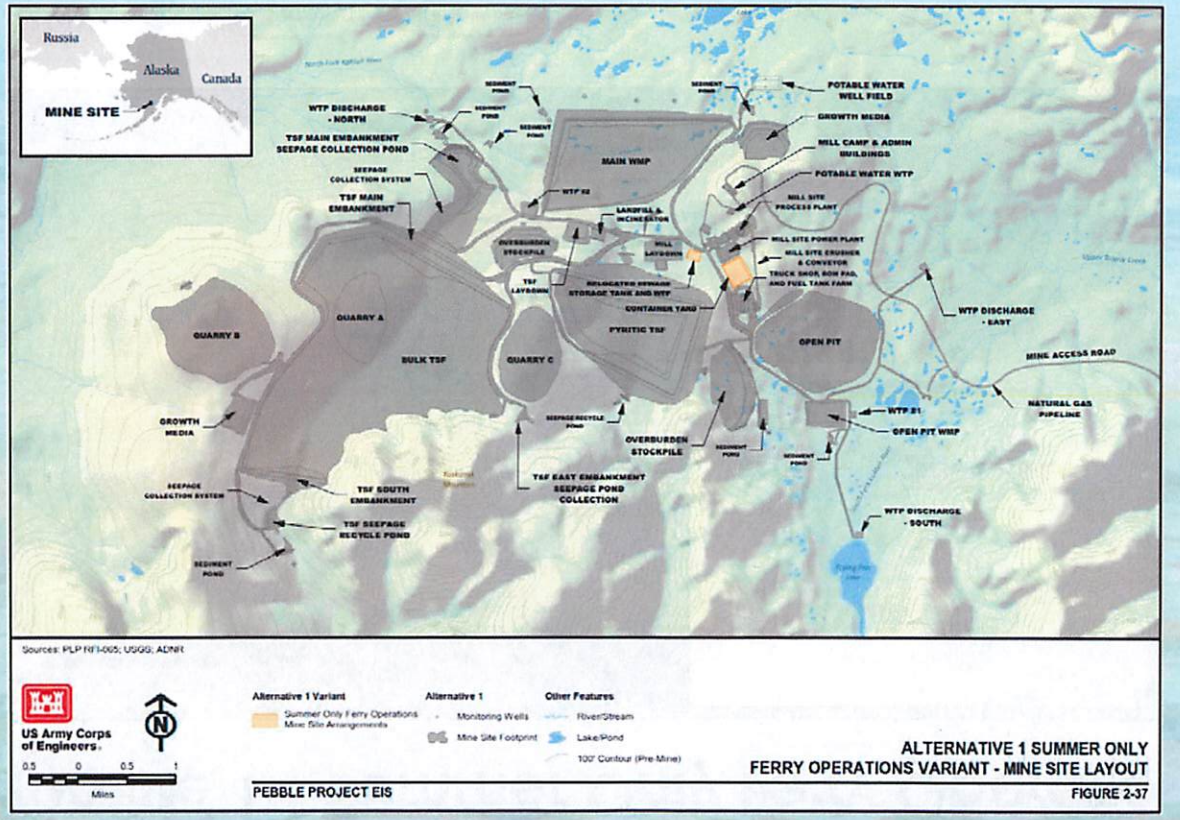
Action Alternative 1 – Summer Only Ferry Operations Variant



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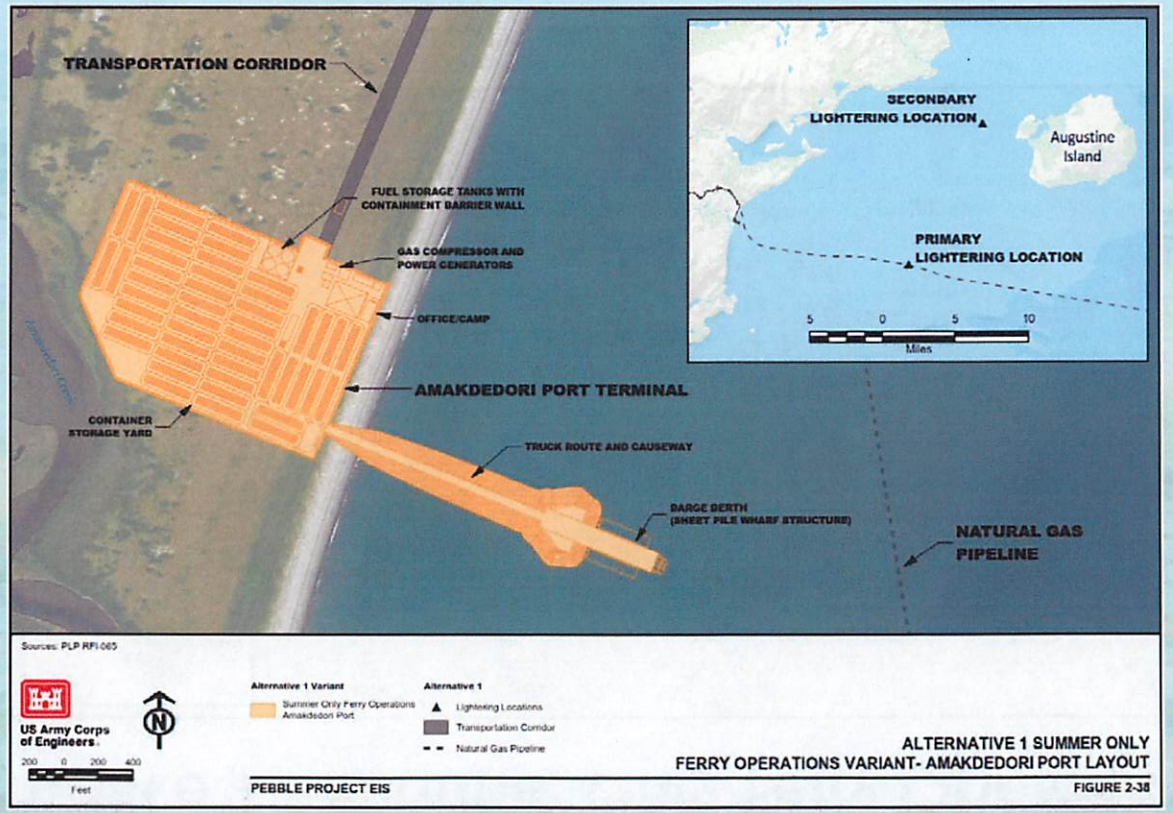
Action Alternative 1 – Summer Only Ferry Operations Variant



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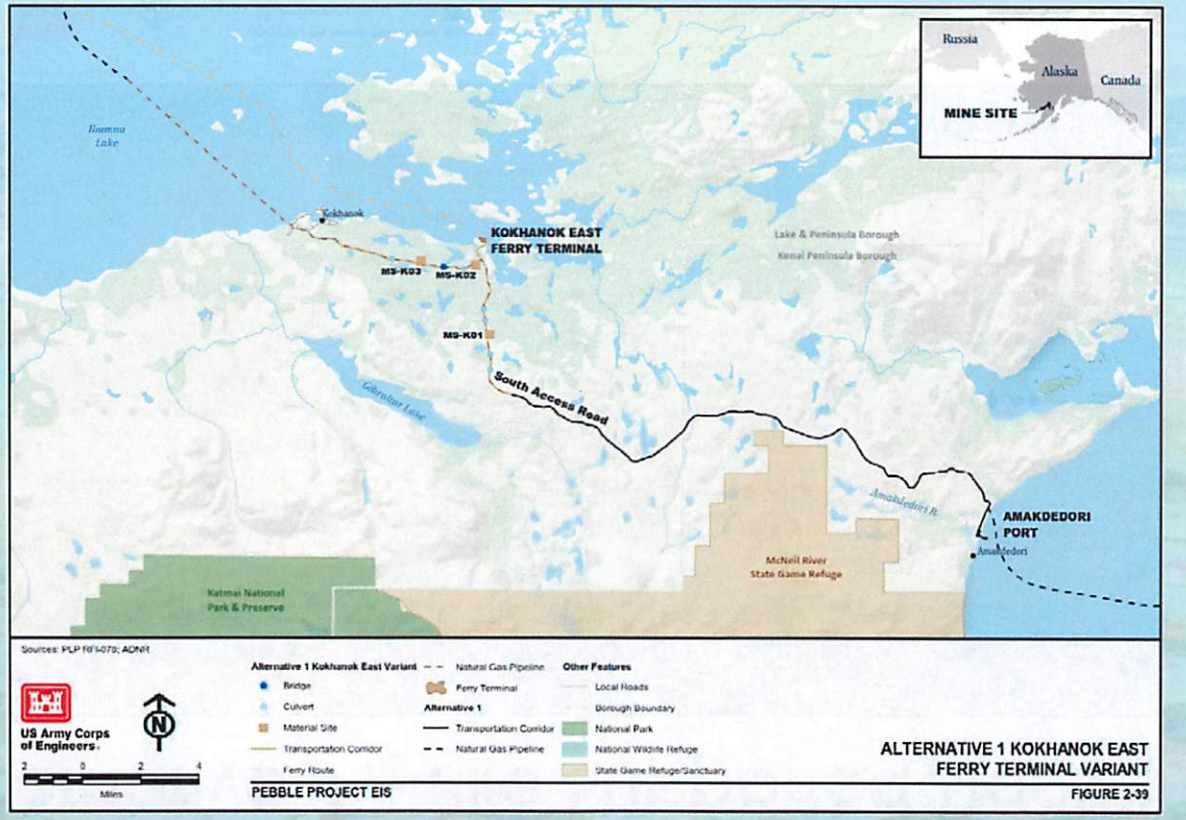
Action Alternative 1 – Kokhanok East Ferry Terminal Variant



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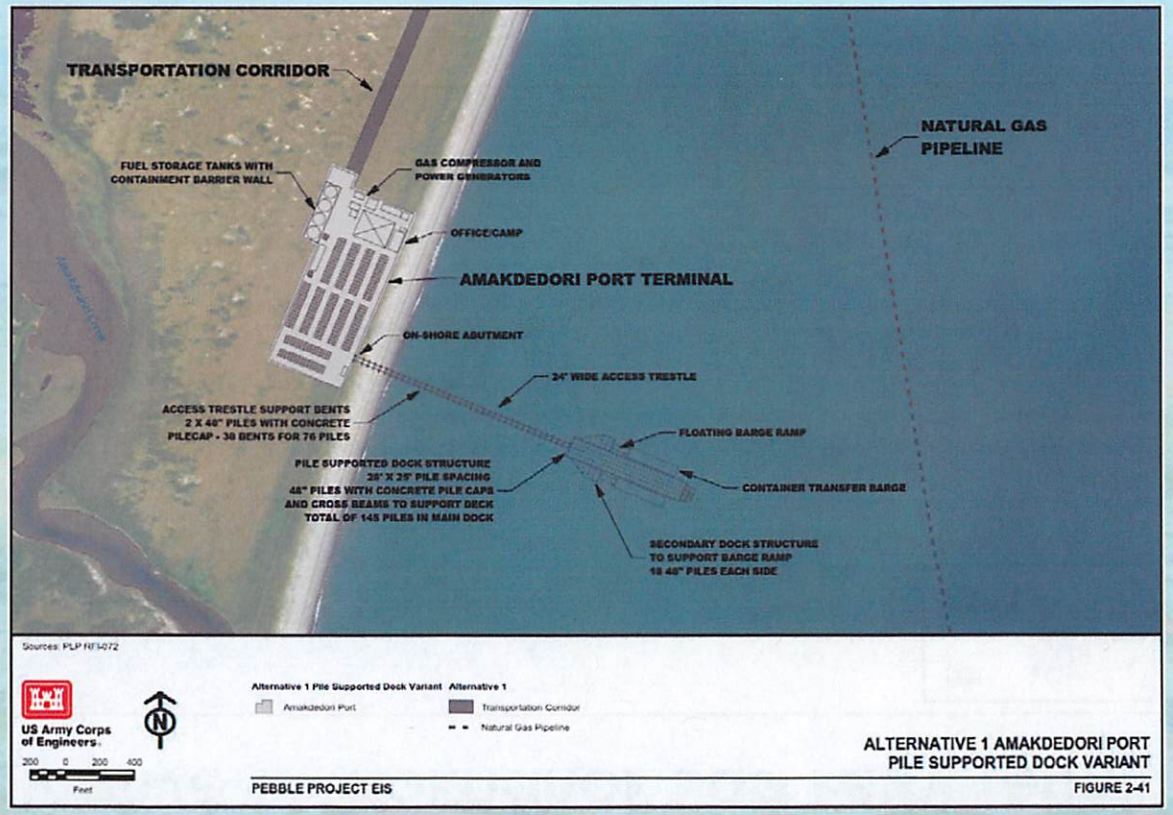
Action Alternative 1 – Pile Supported Dock Variant



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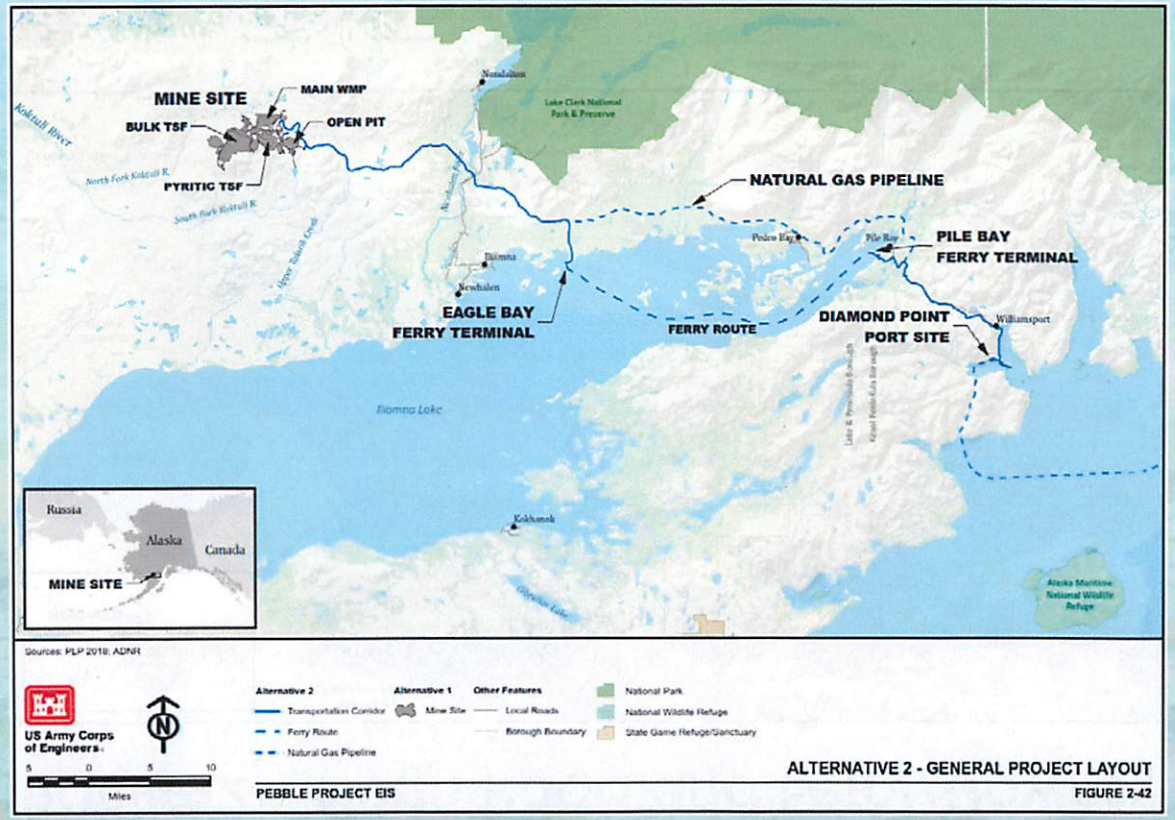
Action Alternative 2 – North Road and Ferry/Downstream Dams



EPA-00135-006480

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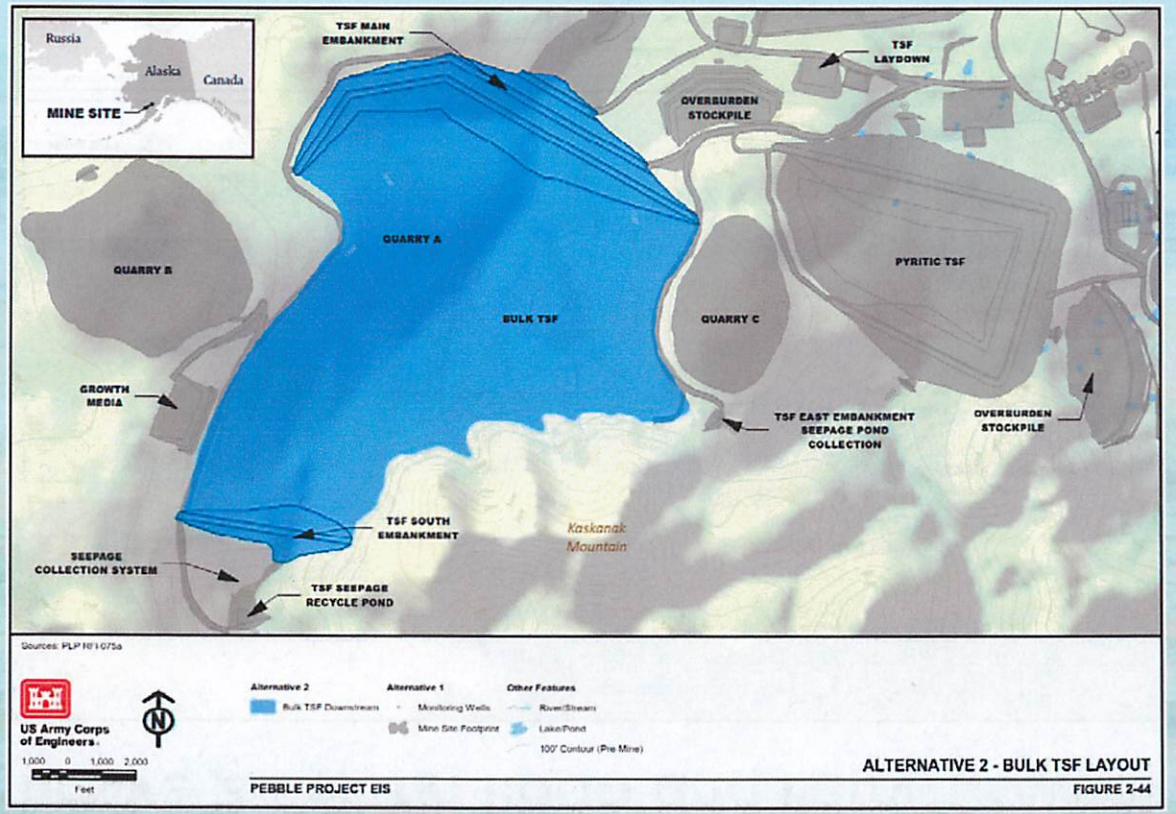
Action Alternative 2 – North Road and Ferry/Downstream Dams



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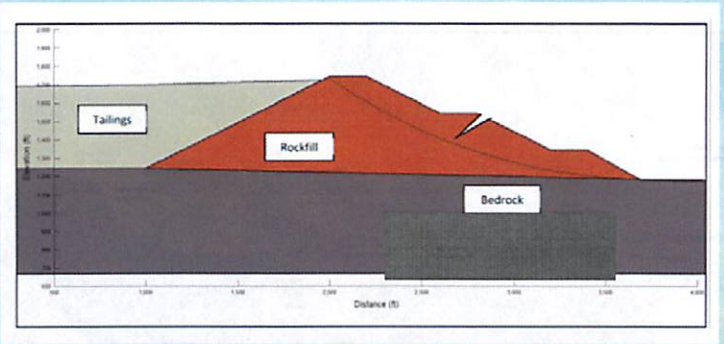
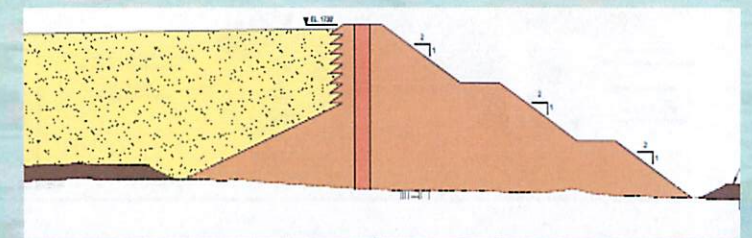
Action Alternative 2 – North Road and Ferry/Downstream Dams

Alternative 2 – Bulk TSF Downstream Dam



Alternative 1 – Bulk TSF Centerline Dam



EPA-00135-006482

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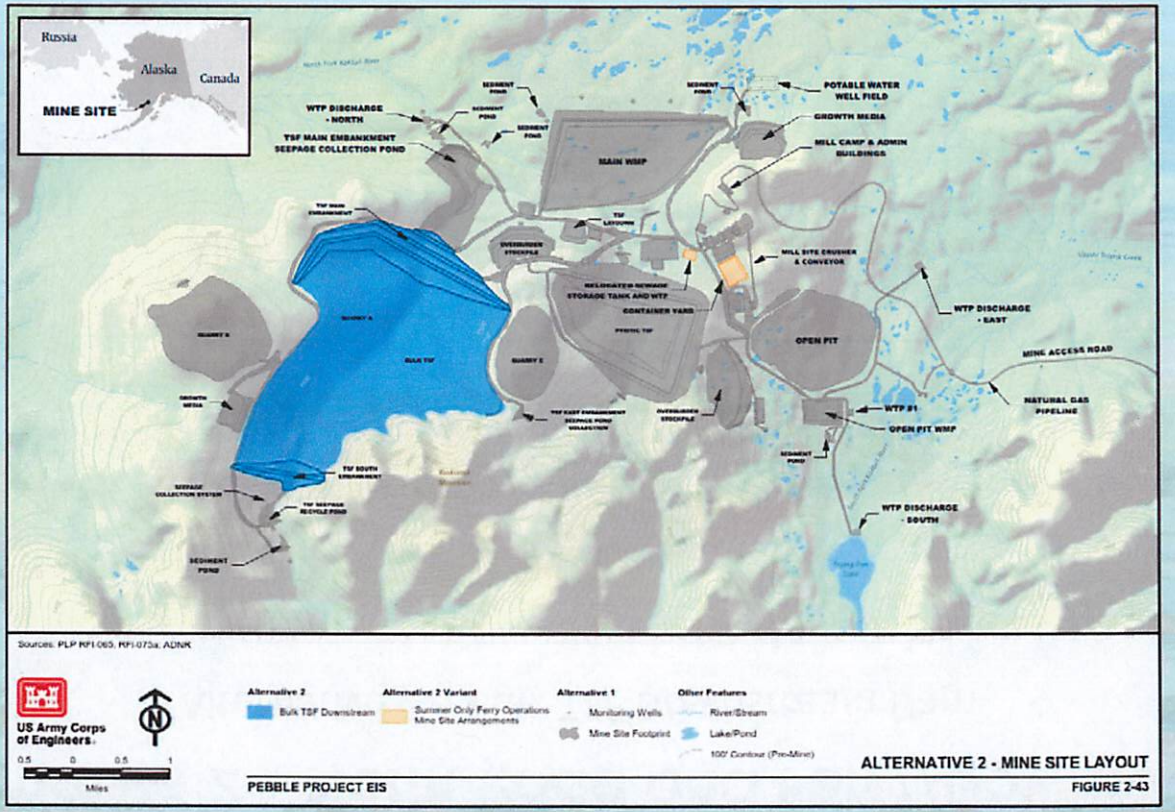
Action Alternative 2 – Summer Only Ferry Operations Variant



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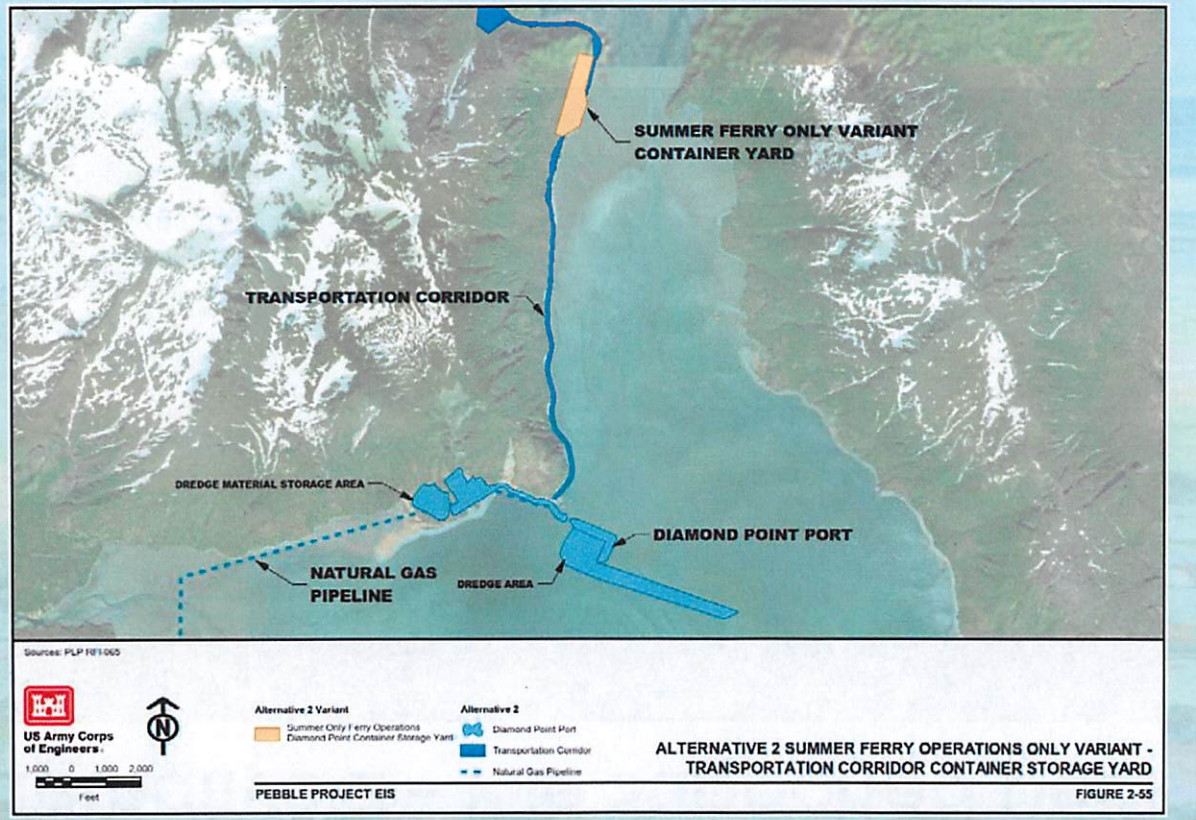
Action Alternative 2 – Summer Only Ferry Operations Variant



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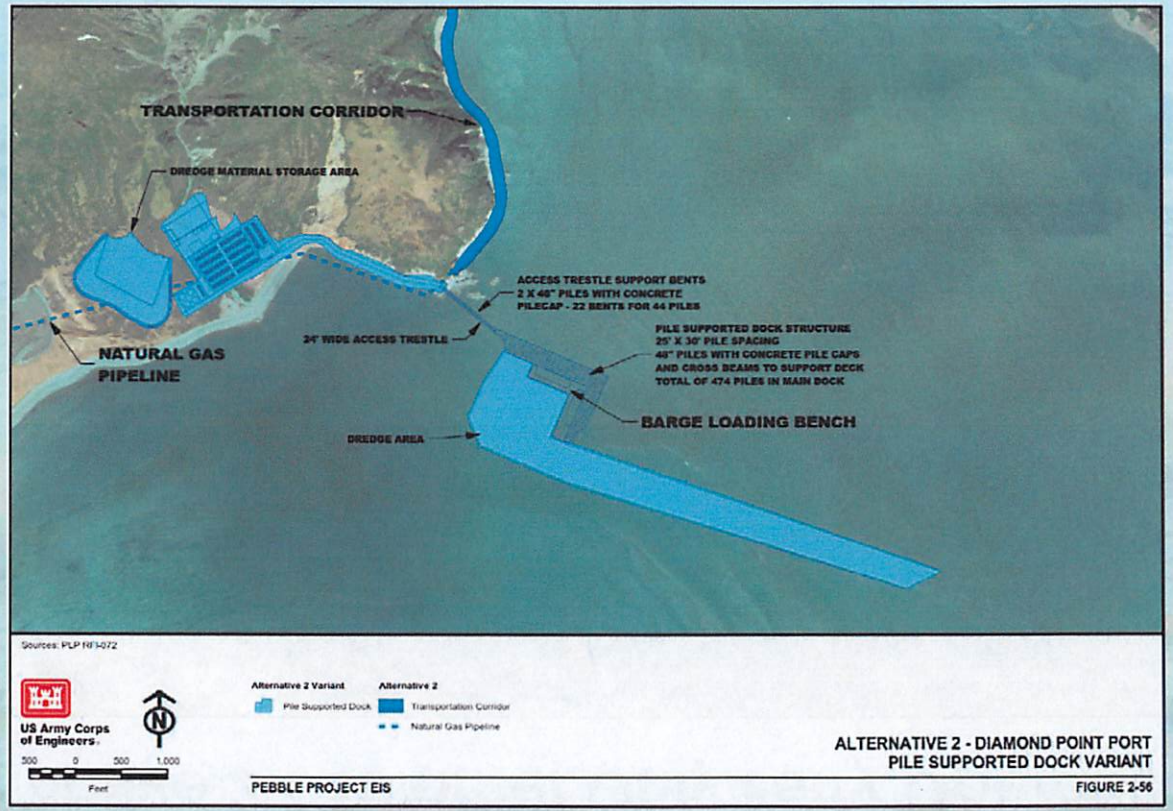
Action Alternative 2 – Pile Supported Dock Variant



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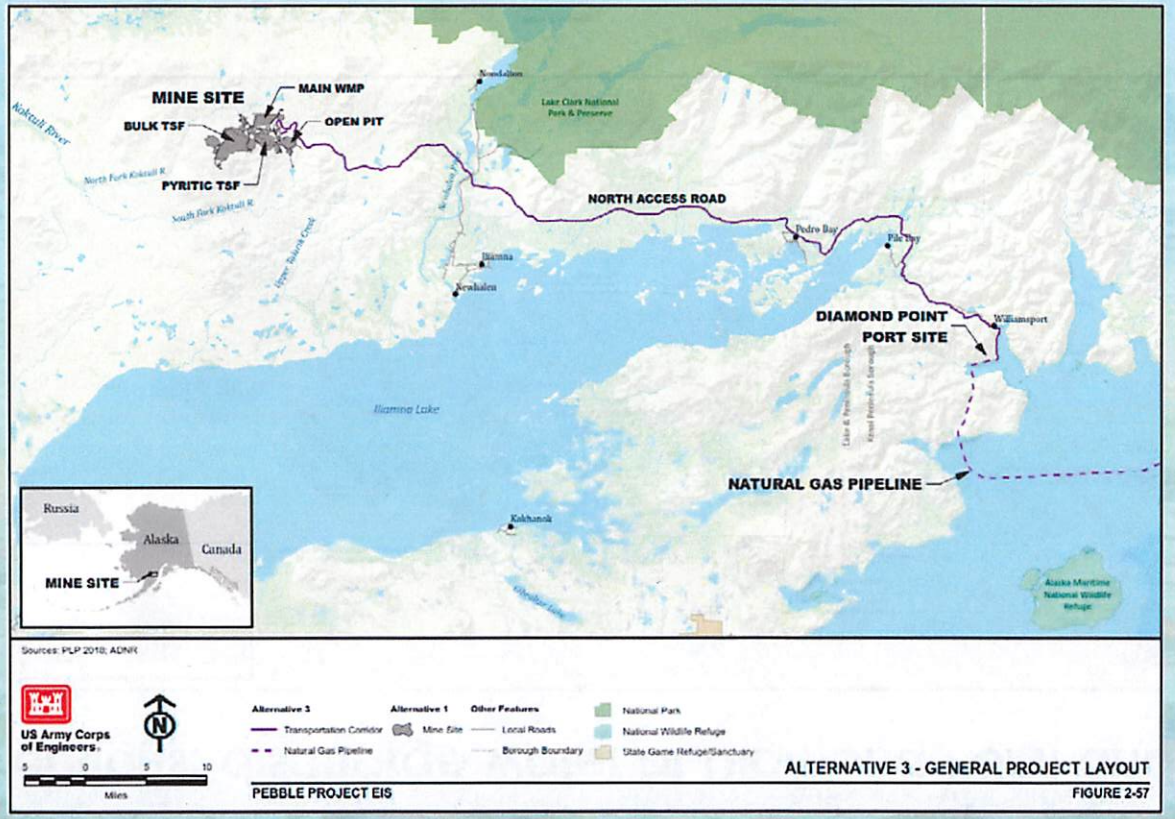
Action Alternative 3 – North Road Only



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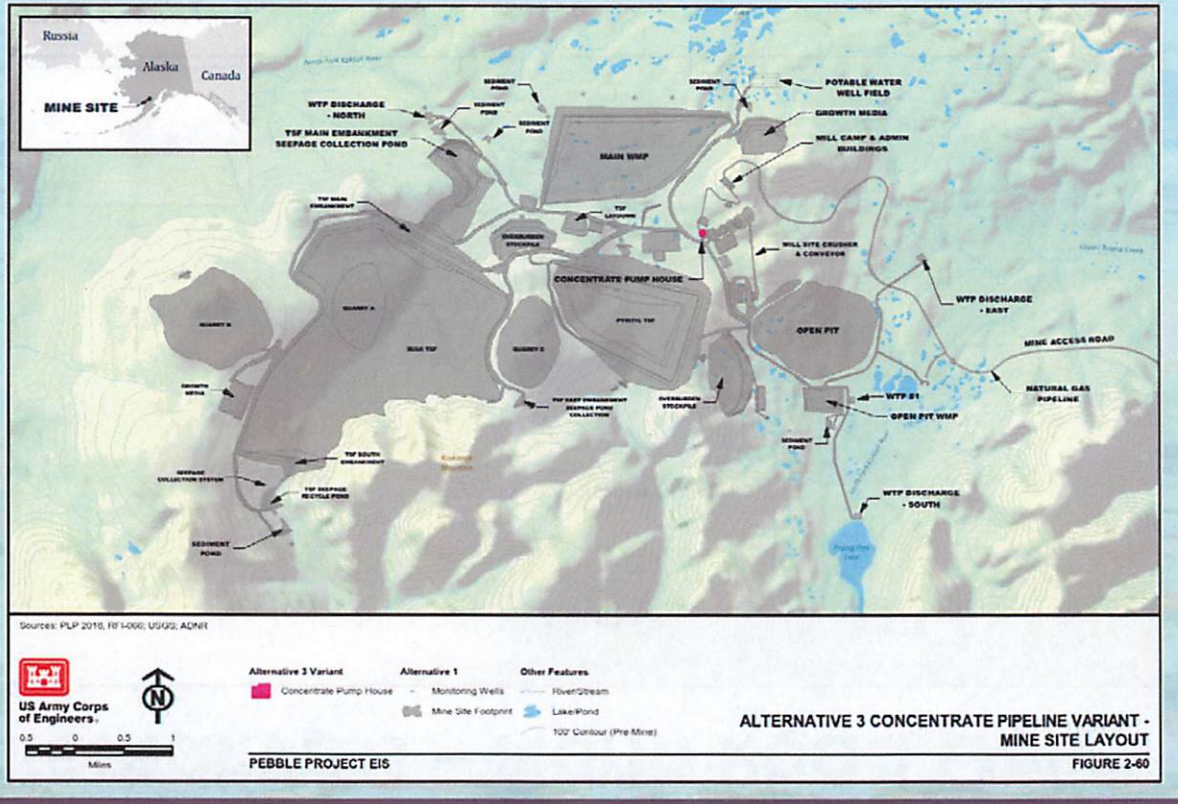
Action Alternative 3 – Concentrate Pipeline Variant

Includes two options: discharge water at Diamond Point and return water pipeline



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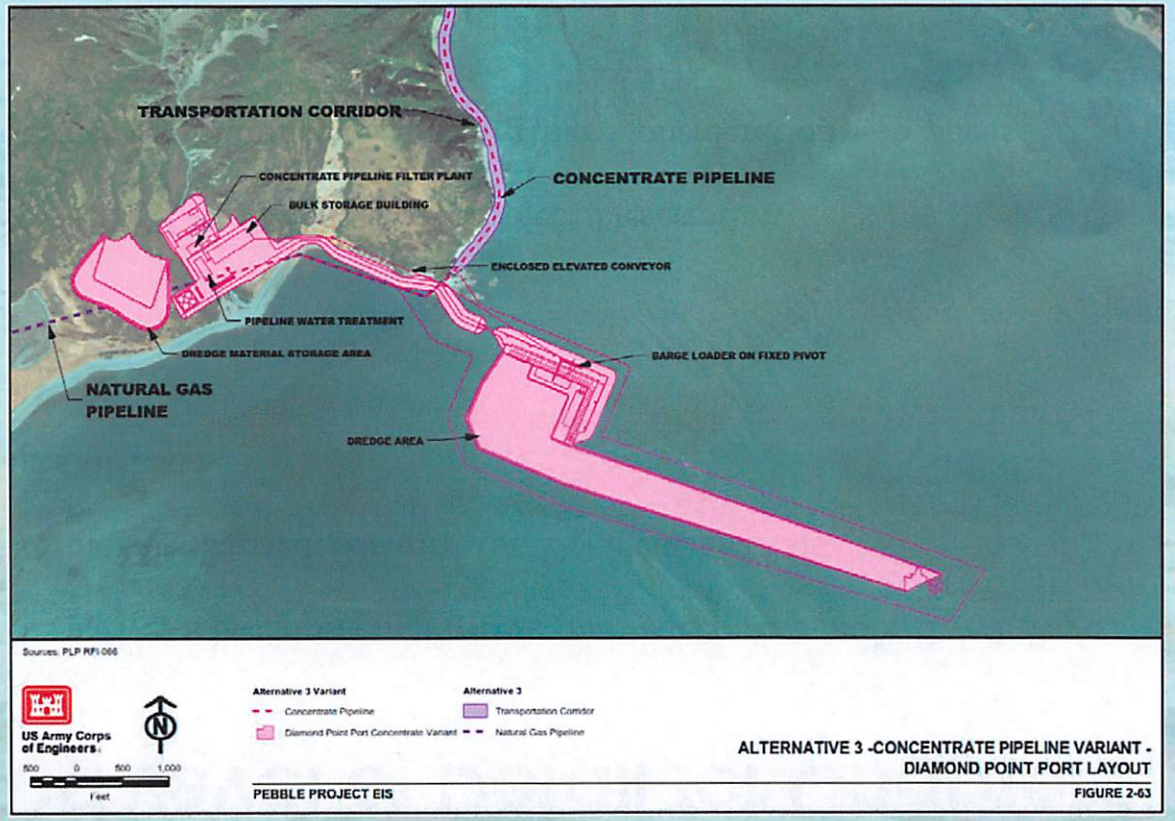
Action Alternative 3 – Concentrate Pipeline Variant



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Format and Level of Detail for Chapter 2

- Section 2.1 – Alternatives Development Process, references Appendix B – 1 Page
- Section 2.2 – Alternatives Carried Forward for Detailed Analysis
  - 30 to 35 pages of text
  - 64 figures
  - 23 Tables
  - Appendix N – PLP October 10, 2018 Project Description
- Section 2.3 – Alternatives Eliminated from Further Consideration – 6 pages

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Update on Appendix B – Alternatives Development

- August 17, 2018 – Preliminary List of Options and Screening Criteria
  - Condensed version intended to solicit feedback on list of options and screening criteria
  - Comments received from one Cooperating Agency
  - Comments were considered when preparing the next version of Appendix B

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Update on Appendix B – Alternatives Development

- September 14, 2018 – Alternatives Development Process
  - Screening criteria modified
  - Presented the screening analysis for each alternative
  - Comments from USACE and three Cooperating Agencies
    - Currently considering comments and revising the appendix (eliminated language referring to ability of mine operator to make profit)
    - Several additional options (e.g., 115,000 tons per day throughput, Pebble East, many additional TSF locations)
    - Several options were subject to additional consideration (e.g., underground mining, in pit processing and conveying, treating tailings to make inert)
  - Next version of Appendix B will be Draft EIS

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Review of Select Alternatives

- Filtered Tailings (Dry Stack)
  - Applies to Bulk TSF only
  - Conventional slurry typically 20 to 40 percent solids
  - PLP proposes thickened tailings – approximately 55 percent solids
  - Dry stack alternative would filter to 80 to 85 percent solids
  - PLP responded to RFIs 054 and 076
  - AECOM mining experts reviewed RFIs – September 24 Memorandum
  - Dry stack is not technically practicable

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Review of Select Alternatives

- Other Mine Locations
  - Appendix B looked at Whistler, Pyramid, and five massive sulfide deposits
  - Pebble East has been added – RFI 094
  - Whistler and the five sulfide deposits do not meet USACE overall purpose
  - Pebble East and Pyramid still under evaluation
- Underground Mining
  - RFI 094 – received from PLP October 18, 2018
  - Currently being evaluated by AECOM mining engineers

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Pebble Project Scoping Meetings Schedule

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
April	1	2	3	4 G2G teleconference with Naknek 7:00pm	5	6	7
	8	9 Naknek/King Salmon (confirmed) *Naknek School* 3:30pm *EPA Participant: Molly*	10 Kokhanok (confirmed) *Tribal Hall* 3:30pm *EPA Participant: Neverley*	11 Homer (confirmed) *Homer High School* 5:30pm	12 Iliamna/ New Halen (confirmed) *New Halen School* 3:30pm *EPA Participant: Neverley*	13 New Stuyahuk 3:30 pm EPA Participant: Neverley	14
	15	16 Nondalton (confirmed) *Tribal Center* 3:30pm *EPA Participant: Patty*	17 Dillingham (confirmed) *High School* 5:00pm	18 Igiugig (confirmed) *Community Bldg* 3:30pm *EPA Participant: Patty*	19 Anchorage (confirmed) *Dena'ina Center* 5:00pm	20	21
	22	23	24	25	26	27	28
			Contingency and make-up week				

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 29, 2018

Mr. Shane McCoy, Project Manager
U.S. Army Corps of Engineers
Regulatory Division
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Mr. McCoy:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' March 29, 2018, Notice of Intent initiating the scoping process for the proposed Pebble Project Environmental Impact Statement development (EPA Region 10 Project Number 18-0002-COE). We have also reviewed the additional project information available on the Corps website. The EPA is providing comments for your consideration pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500-1508) and Section 309 of the Clean Air Act. The EPA is also supporting the Corps in EIS development as a cooperating agency, due to our special expertise. We appreciate the opportunity to provide early input in the analysis of the Pebble Project.

The Pebble Limited Partnership (PLP) is proposing to develop the Pebble deposit in southwest Alaska, containing copper, gold, and molybdenum. The proposed project includes an open-pit mine, tailings storage facility, a low-grade ore stockpile, an overburden stockpile, a mill facility, a natural gas-fired power plant, and other mine site facilities. The anticipated throughput at the mill facility is 160,000 tons of ore per day, and the proposed mine operating life is 20 years. The proposed project also includes development of a 188-mile natural gas pipeline across Cook Inlet and Lake Iliamna and two compressor stations used to transport natural gas from the Kenai Peninsula to the mine site. The proposed transportation network includes 65 miles of roads, ferry terminals on the north and south shores of Lake Iliamna for use by an ice-breaking ferry, and the Amakdedori Port on Cook Inlet (including dredging and disposal of up to 20 million cubic yards of dredged material).

The scoping comments that follow are provided to inform the Corps of issues the EPA believes are significant and warrant explicit treatment in the EIS, based on current information. Overall, the EPA encourages the development of an EIS that evaluates and compares a full range of reasonable alternatives and comprehensively discusses the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action.

The EPA has significant concerns regarding the potential impacts of mining activities near the world-class fisheries of the Bristol Bay Watershed.[1] Many of these concerns have been previously documented in the EPA's 2014 Bristol Bay Watershed Assessment, which evaluated the potential impacts of large-scale mining on the region's fish resources, and in the Agency's 2014 Proposed Determination under

[1] See https://www.epa.gov/bristolbay for more information.

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Section 404 of the Clean Water Act. This Proposed Determination proposed restrictions on the discharge of dredged or fill material to waters of the U.S. to protect waters that support fishery areas in and near the Pebble deposit area. Because the Watershed Assessment and the Proposed Determination were completed before PLP submitted its permit application to the Corps, these assessments did not consider and were not based on the specific parameters of PLP's pending proposal. The EIS should thoroughly analyze the potential impacts of PLP's proposal to aquatic and other resources, including the anticipated direct impacts of the proposed action, and the reasonably foreseeable indirect and cumulative impacts. We note that the geographic extent of the proposed project infrastructure is not limited to the Bristol Bay watershed, and we recommend that the EIS analyze all areas of impact from the project, including Cook Inlet.

We appreciate the information provided in the Corps' scoping package, including the list of resources to be analyzed in the EIS, and we agree that the suite of issues presented are appropriate to analyze in detail in the EIS. Our enclosed scoping comments provide our recommendations for analysis of key areas that will be the focus of our review of the project, including natural resource impacts, as well as human health and impacts to communities and federally recognized tribes. Our scoping comments also include recommendations related to: risk analysis and hazardous materials management, including geotechnical stability; analytical tools and methodologies, including predictive modeling of impacts to water, air, fish, and other aquatic resources; mitigation and monitoring; and financial assurance. Identification of these key issues and recommendations is based on the EPA's knowledge of the proposed project as well as our experience with mining projects in Alaska and other Region 10 states.

We appreciate the opportunity to participate early in the planning process for this project and are looking forward to working with you as you develop the EIS. Should you have any questions regarding our comments, please contact Patty McGrath, EPA Region 10 Mining Advisor at (206) 553-6113 or mcgrath.patricia@epa.gov.

Sincerely,

R. David Allnutt
Director

Enclosure:

1. U.S. Environmental Protection Agency Detailed Scoping Comments for the Pebble Project EIS

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EPA Region 10 Detailed Scoping Comments for the
Pebble Project Environmental Impact Statement

GENERAL COMPONENTS OF NEPA ANALYSIS

Purpose and Need

We recommend that the EIS include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with the implementing regulations for NEPA[2] and the Clean Water Act Section 404(b)(1) Guidelines (Guidelines).[3] In presenting the purpose and need, the EIS should reflect not only the Corps' purpose in responding to the permit application, but also the broader public interest and need for this project. An appropriately defined purpose and need statement is of critical importance to setting up the analysis of a range of reasonable and practicable alternatives in the EIS that will meet the requirements of both NEPA and the Guidelines.

Range of Alternatives

We recommend that the EIS include a range of reasonable alternatives that meet the stated purpose and need for the project, are responsive to the issues identified during the scoping process and through tribal consultation, and include options for avoiding significant environmental impacts. This will ensure that the NEPA analysis provides agency decision makers and the public with information that defines the issues and identifies a clear basis for the choices made among the range of alternatives, as required by NEPA. The EIS should clearly outline the physical design of current and proposed facilities and alternatives (including ore storage sites, waste rock disposal areas, tailings areas, water storage and conveyance facilities, and supporting infrastructure including the transportation corridor, port site, and pipeline).

The EIS should "rigorously explore and objectively evaluate all reasonable alternatives"[4] even if some of them are outside the capability or the jurisdiction of the agency preparing the EIS for the proposed action.[5] This includes identifying the specific criteria that were used to (1) develop the range of reasonable alternatives, (2) eliminate certain alternatives, and (3) identify the agency preferred alternative, as appropriate. In addition, we recommend the EIS provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail.

While NEPA requires the evaluation of *reasonable* alternatives to the proposed action, the Guidelines require the analysis of *practicable*[6] alternatives in order to identify the least environmentally damaging

[2] 40 C.F.R. § 1502.13.
[3] Within the context of the Guidelines, practicable alternatives to the proposed discharge of fill or dredged material are identified "in light of overall project purposes," which is also termed "the basic purpose of the proposed activity." 40 C.F.R. § 230.10(a)(2).
[4] 40 C.F.R. § 1502.14(a).
[5] 40 C.F.R. § 1502.14(c).
[6] An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2).

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practicable alternative (LEDPA), which is the only alternative that can be permitted.[7] The analysis of alternatives for NEPA can provide the information for evaluation of alternatives under the Guidelines.[8] We recommend that the EIS range of alternatives include the practicable alternatives developed for the Guidelines analysis.

In evaluating the proposed project and alternatives, the analysis should include an evaluation of performance and effectiveness, as well as the planned monitoring to ensure efficacy of proposed design features, environmental protection measures, and mitigation.[9]

Regarding mitigation for purposes of NEPA, we recommend that the alternatives analysis include appropriate mitigation measures not already included in the proposed action or alternatives.[10] The EIS should evaluate reasonable alternatives, including mitigation measures, to reduce or minimize adverse impacts to environmental resources. We recommend that, in conducting such an evaluation, the Corps consider:

- The disturbance footprint;
- Habitat value, cultural significance, and risks in siting project components for the proposed mine site components, as well as the port site, transportation corridor, and pipeline components;
- Source control measures (effective management of waste rock and tailings to prevent acid generation and metal leaching) and containment (liners and covers);
- Measures to reduce contact between mine waste materials and surface water and groundwater (such as surface water diversions and liners and covers as recommended above);
- Impacts of pit dewatering on groundwater and stream flows;
- Treatment to promote compliance with water quality standards;
- The physical stability of structures (e.g., pit walls, ore storage and waste rock facilities, tailings facility) during operations and closure, such as considering dry stack tailings;
- Impacts along the pipeline route and transportation corridor, including to Lake Iliamna;
- Impacts from dredged material disposal;
- Impacts to the marine environment at the Amakdedori Port site;
- Air pollutant emissions; and
- Impacts to traditional and cultural uses and resources, including key subsistence species and sites.

Indirect Impacts

We recommend that the EIS include consideration of all reasonably foreseeable indirect effects caused by the action but that may occur later in time or farther removed in distance.[11] The indirect effects analysis "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural

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[7] 40 C.F.R. § 230.10(a)
[8] 40 C.F.R. § 230.10(a)(4).
[9] The term mitigation included in this "Range of Alternatives" section is referring to the general term as it applies to NEPA. Compensatory mitigation for purposes under CWA section 404 cannot be used to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 40 C.F.R. § 230.10(a). *See* 1990 Memorandum of Agreement between Army and EPA concerning the determination of mitigation under CWA section 404(b)(1) Guidelines.
[10] 40 C.F.R. § 1502.14(f).
[11] 40 C.F.R. § 1508.8(b).

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systems, including ecosystems."[12] While NEPA does not require agencies to engage in speculation, "[t]he EIS must identify all of the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are reasonably foreseeable."[13]

We therefore recommend that the EIS evaluate the expansion and continued operation of the currently proposed project to the extent that the Corps considers it to be a reasonably foreseeable indirect effect of the proposed action. The current proposed Pebble Project description includes mining of approximately 1.1 billion tons of mineralized material, while the 2011 Preliminary Assessment Technical Report[14] estimated that the total Pebble mineral resource may be 11.9 billion tons. It may be reasonable to predict that a mine at the Pebble deposit will eventually operate for longer than 20 years and recover and process additional ore based on the size of the deposit, the significant infrastructure that will be developed under the current project description, and statements made by the Pebble Limited Partnership regarding the potential to examine expanding the mine once initial production has begun on the current proposal.[15] Accordingly, we recommend that the EIS consider the potential impacts associated with reasonably foreseeable mine expansion scenarios, including up to 11.9 billion tons.

In addition, we recommend that the EIS consider the extent to which it is reasonably foreseeable that the proposed transportation corridor and natural gas pipeline may be made accessible to the public and may stimulate additional reasonably foreseeable mining projects in the area, and potential environmental effects associated with that induced mining. Although PLP's current proposal only includes private access to the infrastructure components, public access may be granted in the future. This potential may be different for the different infrastructure elements. For example, if the pipeline is regulated as a common carrier, then public access could be allowed if capacity permits. We recommend that the EIS discuss any reasonably foreseeable future public access to the project's infrastructure components and analyze any reasonably foreseeable indirect effects of this action.

Construction and operation of the project would result in increased vessel traffic in Cook Inlet and on Lake Iliamna because vessels will bring supplies to the site and transport products off-site. In addition to evaluating the direct effects of the increased transportation, we recommend that, if it is reasonably foreseeable that the ports and ferry landings will become available for public use, then any reasonably foreseeable future use of these components should be assessed in the EIS as indirect or cumulative effects. Should the port and ferry terminals remain open following mining, this infrastructure may result in increased use and vessel traffic beyond what PLP is currently proposing.

Indirect project impacts under NEPA can include secondary effects, which are defined by the Guidelines as "effects on the aquatic ecosystem that are associated with the discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[16] The consideration of secondary effects is necessary for the Guidelines analysis, and examples of potential secondary effects are discussed in the section on aquatic resources below.

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[12] *Id.*

[13] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 18 (CEQ, 1981).

[14] Preliminary Assessment of the Pebble Project, Southwest Alaska, February 2011. Developed by Wardrop, A Tetra Tech Company, for Northern Dynasty Minerals, Ltd.

[15] e.g., see http://www.alaskajournal.com/2018-01-10/permit-application-reveals-size-scaled-down-pebble-project. "Collier has acknowledged the company might look to expand after initial production commences but contends growing the project would require additional rounds of environmental reviews and permitting that would be independent from any approvals Pebble already had."

[16] 40 C.F.R. § 230.11(h).

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Cumulative Impacts

In accordance with NEPA, the cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be affected by, past, present, or reasonably foreseeable future activities in the project area, "regardless of what agency (federal or non-federal) or person undertakes such other actions."[17]

The Guidelines also fundamentally require consideration of reasonably foreseeable cumulative effects in determining whether a project complies with the significant degradation prohibition and to ensure that discharges will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.[18] Cumulative effects are "the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material," which individually may be minor, but cumulatively may result in a "major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems."[19]

For the cumulative impacts assessment, we recommend that the EIS delineate appropriate geographic boundaries, including natural ecological boundaries whenever possible, as well as consider an appropriate time period for the project's effects. We recommend that resources be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of any historical degradation (e.g., due to exploration activities), and to predict the environmental effects of the project components.

Past, present, and reasonably foreseeable future activities that should be considered in the cumulative impact assessment will vary across the geographic scope of the various mine-site and infrastructure components. Please refer to CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act"[20] and the EPA's "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[21] for assistance with identifying appropriate boundaries and identifying appropriate past, present, and reasonably foreseeable future projects to include in the analysis.

In particular, we recommend that the cumulative effects analysis consider, but not be limited to, the following activities:

- Past and current exploration activities conducted by PLP and others at the Pebble site;
- Current exploration activities occurring in the Bristol Bay watershed region;
- Reasonably foreseeable expansion and continued operation of the currently proposed project (while this is an indirect effect under NEPA, as discussed above, it is a cumulative effect under the Guidelines);
- Reasonably foreseeable future use of project infrastructure (road, port, pipeline); and,
- Reasonably foreseeable development of additional mining projects as a result of increased exploration activity in the region. Even if those activities are not determined to be indirect effects of the proposed action (as discussed above), they are still reasonably foreseeable.

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[17] 40 C.F.R. § 1508.7.
[18] 40 C.F.R. § 230.10(c).
[19] 40 C.F.R. § 230.11(g).
[20] http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm.
[21] http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf.

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ENVIRONMENTAL RESOURCE IMPACTS

Aquatic Resources, Including Wetlands, Streams, and Fish

Evaluating Compliance with the Clean Water Act Section 404(b)(1) Guidelines
The Corps' potential CWA Section 404 permitting action is triggering preparation of the EIS. We recommend that the Corps' permitting regulations and the Guidelines therefore provide the context for identifying relevant issues and evaluating alternatives in the EIS.

The Guidelines are the substantive environmental criteria for the evaluation of proposed discharges of dredged or fill material, and applicants must demonstrate compliance with the Guidelines.[22] The EIS is a significant component of the administrative record for the District's permit decision, which can and should provide sufficient information to address compliance with the Guidelines and the Corps' public interest review.[23] Although it is not mandatory, we support the Corps' decision to include of the public interest review factors into the list of issues to be considered in the EIS. This will enable the expected benefits to be balanced against reasonably foreseeable detriments, and all relevant public interest factors to be weighed.

We recommend that the organization of the EIS facilitate the evaluation of the proposed project's compliance with the Guidelines. Issues relevant to compliance with the Guidelines should be addressed explicitly in the EIS where possible. Alternatively, a stand-alone Section 404(b)(1) analysis could be included as its own section of, or appendix to, the EIS. As mentioned above, we recommend that the range of alternatives evaluated in the EIS be sufficient to identify the LEDPA. In addition, we recommend that the final EIS identify which alternative is the LEDPA.

The Guidelines prohibit, for example, the authorization of a proposed discharge that would cause or contribute to the violation of an applicable water quality or toxic effluent standard, jeopardize a listed threatened or endangered species, or impact a marine sanctuary.[24] We recommend that these criteria be used to evaluate and compare alternatives.

The Guidelines also prohibit the authorization of a proposed discharge which will cause or contribute to significant degradation of the aquatic ecosystem.[25] Findings of significant degradation must be based upon specific factual determinations, evaluations, and tests identified in the Guidelines. These include the evaluation of the direct, secondary, and cumulative effects of the proposed discharge and alternatives on specific resources including fish, wildlife, and special aquatic sites. The significant degradation findings must also evaluate the effects to resource characteristics including aquatic ecosystem diversity, productivity, and stability. Evaluating the potential for significant degradation also requires the consideration of effects to human uses or values, including recreational, aesthetic, and economic values. With regard to fisheries, the Guidelines require, for example, an evaluation of effects to all forms and life stages of aquatic organisms in the food web, including fish and the plants and animals on which they feed and depend upon for their needs.[26] The Guidelines also require an evaluation of effects to

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[22] 40 C.F.R. § 230.12(a)(3)(iv).
[23] See 33 C.F.R. § 320.4.
[24] 40 C.F.R. § 230.10(b).
[25] 40 C.F.R. § 230.10(c).
[26] 40 C.F.R. § 230.31.

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recreational and commercial fisheries, which includes harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man.[27] The Corps has proposed including a number of these evaluations in the EIS. We recommend that as many of the specific factual determinations, evaluations, and tests required by the Guidelines as possible be included in the EIS, and be used to evaluate and compare alternatives.

The Guidelines also prohibit any proposed discharge that does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem.[28] Subpart H of the Guidelines identifies numerous possible steps to minimize impacts, including reducing the footprint of the project, using co-location of facilities whenever possible, implementation of best management practices to reduce environmental impacts, configuring the project footprint to reduce or eliminate impacts to higher functioning aquatic resources and other appropriate and practicable measures. Also, as previously discussed, we recommend that the EIS include appropriate minimization measures both as part of the action alternatives and relative to the affected environment. The discussion of minimization measures should include assessment of their likely effectiveness.

Compensatory Mitigation

For unavoidable impacts to wetlands, streams, and other aquatic resources, the Guidelines require appropriate and practicable compensatory mitigation to offset unavoidable environmental impacts associated with discharges permitted under CWA Section 404. We recommend that the EIS consider potential mechanisms to offset likely unavoidable aquatic resource impacts. We also recommend that the EIS include the applicant's proposed compensatory mitigation plan. Compensatory mitigation requirements, including the components of a compensatory mitigation plan, are described in Subpart J of the Guidelines. Pursuant to the Guidelines, the level of detail in the compensatory mitigation plan should be commensurate with the scale and scope of the impacts.

Compensatory mitigation may be provided through purchase of credits from an approved mitigation bank, purchase of credits from an approved in-lieu fee mitigation program, and/or completion of a permittee-responsible compensatory mitigation project(s). Final compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Section 404 permit.[29] Compensatory mitigation required by the Guidelines is separate from, and may be in addition to, proposed project impact mitigation under NEPA.

Characterizing the Affected Environment

We recommend that the EIS describe aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. For example, if wetlands are mapped using a Cowardin classification, that mapping should be to the smallest identifiable map unit. Likewise, streams should be classified and mapped accordingly. The baseline information for aquatic resources should include their functional condition and integrity. We also recommend that the EIS evaluate the characteristics of the potentially affected aquatic resources, how those characteristics provide fish habitat, and how such habitat could be adversely impacted by the proposed project. Wetlands and streams perform different functions at different rates, and capturing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions (exploration and mining) on these resources.

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[27] 40 C.F.R. § 230.51.
[28] 40 C.F.R. § 230.10(d).
[29] 40 C.F.R. § 230.93(a)(1).

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Characterizing the distribution of resident and anadromous fish in potentially affected streams and other aquatic resources is also important, and we recommend the use of data sources such as the Anadromous Waters Catalog[30] and the Alaska Freshwater Fish Inventory[31] to help with this characterization.

Aquatic Resource Impacts Analysis

We recommend that the areal extent (i.e., acreage) of impacts to aquatic resources be quantified in the EIS for both direct and secondary effects. The acreage values for the direct and secondary impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, mudflats, and other waters. In other words, reported acreage losses should represent the total loss of jurisdictional waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles. Channel length values are a more intuitive metric for some, and facilitate different types of analyses than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, including fishery support functions, or change in the condition of the resource.

Direct effects are impacts on aquatic resources within the footprint of the discharge of dredged or fill material. Direct effects at the mine site would include stream and other aquatic resource losses within the footprints of the tailings storage facility, the ore and overburden storage sites, the mine pit, and other mine site facilities described in the permit application. Construction of the transportation and pipeline corridors and port facility will likely involve such discharges as well.

Secondary effects, as defined by the Guidelines, are associated with the discharge of dredged or fill material, but do not result from actual placement of this material. These effects are also considered indirect impacts under NEPA. Examples of secondary effects that should be evaluated in the EIS include the following:

- Elimination of streams and wetlands due to drowning by the tailings impoundment and other mine components;
- Dewatering of streams and other aquatic resources due to pumping of groundwater during open pit mining and filling during closure;
- Fragmentation of aquatic resources due to the placement of the mine pit, ore storage sites, tailings storage facility, and other mine components;
- Degradation of downstream fish habitat due to streamflow alterations resulting from water capture, withdrawal, storage, treatment, or release at the mine site;
- Degradation of downstream fish habitat due to water quality impacts associated with mine construction and operation;
- Degradation of downstream fish habitat due to the loss of important inputs such as nutrients and groundwater from upstream sources;
- Degradation of aquatic resources due to dust deposition from mining and transportation activities.

The evaluation of the proposed project's impacts and alternatives should fully consider the physical, chemical, and biological effects of each of the direct and secondary effects, and should consider incremental changes from these impacts along each stream segment downstream of the impact site.

[30] See https://www.adfg.alaska.gov/sf/SARR/AWC/.
[31] See http://www.adfg.alaska.gov/index.cfm?adfg=ffinventory.main.

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Considering the value of the region's commercial, subsistence, and recreational fishery resources, we recommend that the EIS focus on quantifying direct, indirect, and cumulative impacts on resident and anadromous fish and their habitat resulting from losses of streams with documented fish occurrences; losses of headwater source areas of these streams; losses of wetlands, lakes, and ponds; and streamflow alterations. We appreciate that the Corps has made the EPA's 2014 Bristol Bay Watershed Assessment available on the Pebble Project website, and we also recommend that this document be referenced in preparing the EIS.[32]

The losses of stream reaches and adjacent wetlands from dewatering, as well as changes to downstream reaches and adjacent wetlands, may result in physical, chemical, and biological changes which would impact fishery habitat and habitat support. We recommend that the EIS model and consider these impacts compared to baseline conditions, including but not limited to:

- Evaluate changes in water volume in the stream areas of impact, as well as changes in the downstream reaches of the watershed resulting from losses of upstream contributions of water. We recommend that the analysis address seasonal changes to the different stream segment hydrographs, including changes to seasonal temperatures, dissolved oxygen levels, sediment transport capabilities, and any associated changes to sediment grain sizes in the different stream segments;
- Evaluate flow changes in the impacted stream reaches, both from pit dewatering as well as any proposed in-stream discharge points, to assess any potential changes to stream profile, form, and pattern, and to identify any areas of accretion and/or scouring which may reasonably be anticipated. We also recommend that areas of stream incision as a result of flow changes be identified, as well as losses of connectivity to floodplains and riparian wetlands currently connected to the downstream reaches;
- Identify potential changes to nutrient levels, turbidity, and dissolved oxygen, particularly with respect to seasonal patterns in the downstream reaches. We further recommend that both the direct losses of both autochthonous and allochthonous inputs from upstream reaches lost and/or disconnected from wetland and other riparian habitats, as well as the incremental reductions in those inputs in downstream segments throughout the stream reaches and their effects on system-wide primary, secondary, and tertiary production, be evaluated. These analyses should consider the direct changes to downstream habitats as well as changes to fisheries support in the different stream reaches;
- Evaluate decreases in anticipated invertebrate transport and production in downstream segments and those effects on fish production; and
- Evaluate the effects of disconnecting any off-channel habitat both near the areas of direct impact and throughout the downstream reaches, both for losses of allochthonous inputs and also for potential losses of nursery habitat.

We recommend that the direct, indirect, and cumulative impacts of any of these potential physical, chemical, and biological alterations be examined for how they may result in the loss and/or degradation of fish habitat, including alterations with respect to spawning, overwintering, nursery, and migration. Habitat losses that may result from freeze-through or seasonal warming of fish production areas should also be evaluated.

[32] See https://www.epa.gov/bristolbay/bristol-bay-assessment-final-report-2014.

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Water Quality and Quantity

Evaluating Impacts to Surface Water and Groundwater Quality and Quantity

Water quality is one of the EPA's principal concerns at mine facilities due to the potential for acid-generating and metal-leaching waste materials (ore, waste rock, tailings, pit walls) that are exposed to the environment and require management over long periods of time. In addition, road construction and operation have the potential to contribute a significant quantity of sediment to streams. We recommend that the EIS characterize baseline surface water and groundwater quality, quantity, and interactions, and evaluate the impacts of all aspects of the proposed operations and alternatives (including pit dewatering and backfilling, tailings management and disposal, water management, and port-site and transportation aspects) on these hydrologic components and describe mitigation for adverse impacts.

Given the potential impacts of the proposed Pebble Project, the EPA recommends that the Corps specifically include in the water resources analysis for the EIS (see also our recommendations for Analysis Tools and Methodologies):

- Characterization of existing groundwater, surface water, springs, and wetland resources within the area of both the project and all potential alternatives, including groundwater levels, flow direction and gradients, and chemistry;
- Development of a hydrogeologic conceptual site model, including:
    - Maps of groundwater, surface water, springs, and wetland resources in the area to be developed or affected;
    - Baseline data on the extent and quality of groundwater, surface water, springs and wetlands;
    - Information on the quantity and location of all aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
    - Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters;
    - Identification and description of all wetlands and surface waters that could be affected by the project and alternatives; where applicable, acreages, channel lengths, habitat types, values and functions of these waters should be identified;
    - Identification and description of hydrologic pathways (e.g., the connectivity of springs or groundwater to surface waters; the connectivity of all streams to each other and to wetlands); and
    - A detailed water balance for the proposed action and each alternative.
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), specific pollutants likely to impact those waters and a comparison to applicable environmental standards (e.g., surface water and drinking water quality standards);
- Consideration of downstream impacts and potential for changes in metal speciation and bioavailability (in particular, the impacts of copper, which can have adverse effects on salmon at very low concentrations);
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes; and
- Consideration of effects of seasonality on water quantity and quality impact assessment, including predictions for all phases of the project (construction, operations, and closure).

Anti-degradation

The anti-degradation provisions of the CWA apply to those waterbodies where water quality standards are currently being met. In certain high-quality waters, the anti-degradation provisions prohibit

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degrading water quality unless it is determined that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.[33] We recommend that the EIS discuss whether and how the CWA anti-degradation requirements could be met.

Water Management and Treatment

We recommend that the EIS describe the plans for water management, treatment, and discharge during all phases of the project (construction, operations, and closure), including plans for long-term water treatment. The EIS should evaluate and disclose the adequacy, reliability, effectiveness, and operational uncertainty associated with proposed operation and closure (long-term) water management and treatment techniques, taking into account seasonality and potential changes associated with future climate scenarios. We also recommend that the analysis characterize chemical compositions and quantities of process waters, mine drainage, storm water, and treated and untreated effluent. This information should be supported by the results of treatability testing. Assumptions used in the analysis should be disclosed and be reasonably conservative. If long-term water treatment is needed, we recommend that the EIS include modeling of predicted stream concentrations of contaminants of concern, both with and without treatment, to evaluate the potential impacts to water quality if the treatment system is not working properly.

The EIS should also identify the Alaska Pollutant Discharge Elimination System (APDES) discharge locations, identify applicable water quality standards, and analyze the likelihood and ability of all discharges to meet applicable standards and the direct, indirect, and cumulative impacts of such discharges to the receiving waters. We recommend that any applicable water quality variance requests, site-specific criteria proposals, and/or any other planned or potential requests for water quality standard revisions also be disclosed in the EIS.

Sediment Management and Stormwater Runoff

Since the project has the potential to cause or contribute to erosion of soils and subsequent sediment loading to nearby surface waters, we recommend that the EIS evaluate construction design and operation practices that will be used to minimize erosion and control stormwater runoff from the mine site, port sites, transportation corridor, and pipeline route. We recommend that the EIS discuss specific mitigation measures that may be necessary or beneficial in preventing and minimizing adverse impacts to water quality and disclose the effectiveness of such measures. We suggest that the Corps consider the Best Management Practices identified by the EPA for mining facilities[34] and specify those that would be suitable and likely implemented at the Pebble Project. We also recommend that the EIS document the project's consistency with applicable APDES stormwater permitting requirements.

Hydrostatic Test Water

Hydrostatic testing will likely be utilized to verify pipeline integrity. We recommend that the EIS identify and describe the location of the water sources required for hydrostatic testing, in terms of surface area, depth, volume, withdrawal rate, and project requirements. For each water source, we recommend that the EIS discuss the presence of any anadromous and/or resident fish species, including discussion of any direct and cumulative impacts to fisheries resources. In addition, we recommend that locations and methods of discharges to land and/or surface waters be specified in the EIS. Emphasis should be placed on minimizing inter-basin transfers of water to the maximum extent practicable, to

[33] 40 C.F.R. § 131.12.

[34] https://www3.epa.gov/npdes/pubs/sector_g_metalmining.pdf.

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minimize the risk of mobilizing invasive species. We recommend that the EIS describe the mitigation measures and control devices that would be implemented to minimize environmental impacts.

Marine Environment and Freshwater Lakes

Port Construction and Dredging Impacts

According to the Permit Application Appendix D – Project Description, the Amakdedori Port will require dredging of a channel and turning basin for shipping access to berths. According to the application, annual maintenance dredging will be necessary throughout the life of the port facility. Dredging activities potentially affect habitats and key ecological functions that support recruitment and sustainability of estuarine and marine organisms. We recommend that the EIS:

- Characterize the marine benthic environment and organisms, sediment composition and grain size, etc.;
- Identify any biologically important areas, such as migratory routes, benthic communities, and subsistence areas;
- Evaluate marine dredging, dewatering, transloading (from water to land), placement methods and options (summer and winter), and disposal sites (offshore, nearshore, upland, and open-water), as well as beneficial uses of the dredged material;
- Include and evaluate a sampling and analysis plan, as well as a marine dredging and disposal plan;
- Evaluate the following potential impacts of dredging activities on species and their habitats:
  - Substrate removal and any resulting habitat and species removal (entrainment);
  - Potential changes to estuarine bathymetry, fluvial and tidal energy, and substrate roughness, and any attendant impacts to salinity structure and estuarine circulation;
  - Potential changes to sediment transport processes, including effects on adjacent shorelines;
  - Alteration of sediment composition in and around the dredging site (including changes to the nature and diversity of benthic communities);
  - Local resuspension of sediments and any turbidity increases;
  - Spread of sediments (and any associated contaminants) into the area surrounding the dredging site;
  - Release of sediment-associated nutrients, potential increases in eutrophication and resulting decreases in dissolved oxygen concentrations;
  - Decreased primary production due to reduced transparency of the water column and/or smothering, particularly at in-water disposal sites; and
  - Enhanced bioavailability and ecotoxicological risk of background contaminants and/or chemical or biochemical changes of contaminants;
- Consider implementation of effective mitigation measures to ensure that marine resources and habitats are adequately protected; and
- Incorporate a monitoring plan for marine protected resources and associated habitats to ensure effectiveness of mitigation measures.

Because of the magnitude of the proposal, dredging and disposal operations will need to be carefully planned and scheduled to avoid and minimize impacts to sensitive marine mammals, fish, shellfish, and their habitat at critical spawning and migration periods.

Dredged Material Disposal

According to the Permit Application Appendix D, dredged material will be used to construct the jetty, causeway, and/or the main terminal patio area, if suitable. Excess dredged material will be stockpiled in

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an upland location adjacent to the port facilities. The EPA recommends an on-the-ground wetland delineation at the proposed dredged material disposal site to verify whether there are any jurisdictional waters of the United States at this location.

The proposed discharge of dredged material effluent from the confined disposal facility into Kamishak Bay is subject to regulation under Section 404 of the CWA. Thus, the EIS should include sufficient information to support making the required determinations and findings under the Guidelines. For example, Subpart G of the Guidelines includes general evaluation procedures and specific testing procedures to reach the determinations required by 40 C.F.R. § 230.11. The Inland Testing Manual[35] also provides detailed technical guidance on how to evaluate and test dredged material consistent with the Guidelines. In particular, the EPA recommends using the ITM Appendix B, "Guidance for Evaluation of Effluent Discharges from Confined Disposal Facilities."

To support disposal decisions, we recommend that the EIS provide an inventory of the physical and chemical characteristics of the dredged material and an assessment of disposal alternatives. We recommend that the range of dredged material management alternatives include: no action; the proposed action; beneficial uses such as beach nourishment or construction material; a disposal site in internal waters, landward of the Kamishak Bay closing line (regulated under the CWA); and an ocean disposal site seaward of the Kamishak Bay closing line (regulated under the Marine Protection, Research and Sanctuaries Act).

Potential for Ocean Disposal of Dredged Material

Under Section 102 of the MPRSA, the EPA is responsible for designating and managing ocean dumping sites for all materials, including dredged material. The EPA designates ocean disposal sites through rulemaking and sites are published at 40 C.F.R. § 228.15. The EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas similar to the site in physical, chemical, and biological characteristics. All studies for the evaluation and potential selection of dredged material disposal sites should be conducted in accordance with the criteria for the selection of disposal sites for ocean dumping published in 40 C.F.R. §§ 228.5 and 228.6. The minimum requirements for baseline assessment surveys are found in 40 C.F.R. § 228.13.

The evaluation process includes conducting oceanographic studies to establish the environmental conditions at all alternative locations being considered as potential sites, as well as the area or region encompassing the alternative sites. Results from oceanographic studies and other sources are used to model likely dispersion and deposition of material disposed at the alternative sites and evaluate potential impacts. If there are no practicable alternatives to ocean dumping that will have a less adverse impact on the environment, this information is used to select the best ocean site proposed for designation.

If ocean disposal is to be considered as an alternative, we encourage the Corps to engage early and actively with the EPA to ensure that site selection activities are consistent with the MPRSA and the ocean disposal criteria. The EIS must be adequate for the EPA to ensure that use of the site selected for designation will not likely cause unreasonable degradation to the surrounding marine environment. In addition, only dredged material that is authorized for disposal under the MPRSA and 40 C.F.R. Part 227 may be disposed in an EPA-designated ocean dredged material disposal site.

[35] See https://www.epa.gov/cwa-404/inland-testing-manual.

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Impacts of Vessel Traffic

Marine traffic, including barges and other vessels associated with construction and operation of the proposed project, may also result in impacts to the marine environment. For example, vessel traffic may result in potential impacts to marine mammals, including threatened and/or endangered species, and their migration patterns and routes; subsistence, commercial, and recreational fisheries; and other vessel use. We recommend the EIS describe the vessel traffic schedule in Cook Inlet; patterns and marine transportation routes; subsistence, commercial, and recreational fishery resources; and the migration period, patterns, and routes of potentially affected marine mammals, including Cook Inlet Belugas. The direct, indirect and cumulative impacts from vessel traffic on marine mammals, threatened and endangered species, critical habitats, and fishery resources should be analyzed in the EIS, and the EIS should discuss the mitigation measures that would be implemented to minimize such impacts.

Use of the proposed ice-breaking ferry on Lake Iliamna may result in similar impacts to the freshwater lake environment, including the potential for wake impacts to the shoreline. We recommend the EIS analyze the direct, indirect, and cumulative impacts of the year-round use of the lake proposed by the applicant on threatened and/or endangered species, fishery resources, and other lake user groups, and discuss mitigation measures to minimize impacts.

Air Quality

The EPA recommends that the EIS evaluate how the construction and operation of the proposed project and alternatives could affect air quality and what measures may be needed to mitigate potentially significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. To address potential air quality impacts, the EIS should consider whether the direct, indirect, or cumulative impacts of project-related air emissions would result in any adverse impact on air quality or air quality-related values.

Potential air pollutant concerns for the proposed project include:

- Operation of heavy machinery and equipment, including marine vessels, during construction and operations that result in the emission of fossil fuel combustion exhausts. Such exhausts will include oxides of nitrogen, oxides of sulfur, carbon monoxide, and particulates. The significance of the contribution of project emissions to the formation of secondary particulate matter ($PM_{2.5}$) and ozone should also be evaluated;
- Fugitive dust emissions may be generated from construction and operation of the mine, ancillary facilities, and supporting infrastructure. In addition to human health effects, dust blown from the roadway can settle onto wetlands, vegetation, or waterbodies, impairing their health as well; and
- Hazardous air pollutants may result from fuel combustion and ore processing. The *National Air Toxics Assessment* asserts that numerous human epidemiology studies show increased lung cancer rates associated with diesel exhaust and significant potential for non-cancer health effects (see http://www.epa.gov/ttn/atw/nata). Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule (66 Fed. Reg. 17,230, March 29, 2001) lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. The EPA recommends the EIS disclose whether hazardous air pollutant emissions would result from project construction and operations, discuss the cancer and non-cancer health effects associated with air toxics and diesel particulate matter, and identify sensitive receptor populations and individuals likely to be exposed to these emissions.

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We recommend the following steps for the EIS air quality analysis:

- Characterize the existing conditions to set the context for evaluating project impacts, including:
  - Regional climate and meteorology,
  - Air quality and air quality related values (e.g., visibility),
  - Identification of sensitive receptors in the vicinity;
- Review air quality regulations and any air permitting requirements that apply to the air pollutant sources associated with the project;
- Provide a comprehensive emissions inventory of criteria pollutants (in tons per year), greenhouse gas emissions (in metric tons CO_2 equivalents per year), and significant HAP emissions for all project components (mine site, transportation corridor, port, and pipeline) and project phases; and
- If projected emissions are significant, conduct near-field and far-field air quality modeling to assess project-related air quality and visibility impacts. Also, see our recommendations related to Predictive Modeling, later in this document.

We recommend that the Corps evaluate and incorporate best management practices and mitigation measures into the EIS to reduce emissions of criteria pollutants and HAPs, which also have co-benefits of reducing GHGs. We recommend that the EIS include a comprehensive fugitive dust control plan as well as a construction air pollutant emissions control plan to address reduction of engine emissions.

These recommendations are separate and distinct from, and are not intended as a substitute for compliance with, any additional obligations of the Corps and the project proponent to comply with the federal Clean Air Act and any applicable state or tribal air pollution laws, which may require, among other things, obtaining pre-construction permits and operating permits, compliance with new source performance standards and/or national emission standards for hazardous air pollutants, as well as any applicable state implementation plan (SIP) requirements, including, as applicable to the Corps, the requirements under Section 176 of the Clean Air Act regarding conformity of federal activities to implementation plans approved or promulgated under section 110 of the Clean Air Act.

Climate Adaptation

The EPA recommends that the EIS include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area, including its long term infrastructure. This could help inform the development of measures to improve the resilience of the proposed project. If projected changes could notably exacerbate the environmental impacts of the project, the EPA recommends these impacts also be considered as part of the NEPA analysis.

Fish and Wildlife, including Endangered Species and Essential Fish Habitat

The EPA recommends that the EIS evaluate impacts to fish and wildlife from the proposed project and alternatives. The aquatic resources section above also provides recommendations related to fisheries.

Special consideration should be given to listed and proposed species under the Endangered Species Act and Essential Fish Habitat under the Magnuson Stevens Fishery Conservation and Management Act. NEPA regulations require that, to the fullest extent possible, the EIS be prepared concurrently with

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environmental analyses required by the ESA and other environmental laws.[36] Magnuson Stevens Act and ESA implementing regulations also encourage coordination with other environmental reviews.[37, 38]

We recommend that the EIS discuss the species listed and proposed as threatened or endangered under the ESA and the essential fish habitat within the project area (including the pipeline, roads, and port site) and the potentially impacted area surrounding the project. The EIS should describe impacts to ESA species and EFH and discuss the activities proposed to avoid, minimize, mitigate, and monitor listed and proposed species and EFH. We understand that the Corps will develop a biological assessment to evaluate impacts to listed and proposed endangered species and EFH, and recommend that it be included with the draft EIS. We also recommend that the federal action agencies work together to ensure that a single biological assessment is developed that meets all agencies' needs.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties, including those of traditional religious and cultural importance, following regulations in 36 C.F.R. Part 800. The NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, to consult with the appropriate State Historic Preservation Officer /Tribal Historic Preservation Officer. We support the Corps' early engagement with the Advisory Council on Historic Preservation, and we recommend that the EIS discuss any potential impacts to historic properties, including any tribal, cultural, or other treaty resources that are historic properties or traditional cultural properties. In addition, the EIS should identify alternatives and mitigation to avoid significant impacts. Recommendations related to traditional uses and resources that are not historic properties are discussed further below.

Invasive Species

We know that ballast water from barges or vessels can be a major source of non-native species into marine ecosystems. Non-native species can adversely impact the economy and the environment and cause harm to human health. Impacts may include reduction of biodiversity of species inhabiting coastal waters due to competition between non-native and native species for food and resources. We recommend that the EIS discuss potential impacts from non-native invasive species associated with ballast water in vessels that will be utilizing the Amakdedori Port associated with this project and identify mitigation measures to minimize adverse impacts to the marine environment and human health.

SAFETY, RISK ANALYSIS, AND HAZARDOUS MATERIALS MANAGEMENT

Accidents and Failures

An array of spills, accidents, and failures can occur at mining sites. We recommend that the EIS describe the control measures that will be in place to prevent these events from occurring during construction, operations, and closure. To identify these events, we recommend that the Corps evaluate the proposed design and management of the tailings facility, dams, and other structures and evaluate PLP's waste and water management and reclamation plans to determine the project-specific likelihood of different types of accidents and failures. Designs and management plans for the pipeline and transportation components

[36] 40 C.F.R. § 1502.25.
[37] 50 C.F.R. § 600.92 (c), (f).
[38] 50 C.F.R. § 402.06.

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(road, ports, shipping) should also be evaluated to determine the probability of accidents and failures. We recommend that the results of these evaluations be documented in the EIS. For those events that are determined to be of low probability but high consequence, we recommend that the EIS evaluate the potential effects of such events on aquatic ecosystems, particularly fishery resources, and other resources. The EIS should also discuss mitigation measures that could minimize the risk or damages of such events.

Physical Stability of Structures

The EIS should assess the likelihood of earthquakes in the region and describe the geotechnical stability of the tailings and waste storage facilities and open pit walls during operations and closure. We recommend including a description of how these facilities are designed and how they would be operated, closed, and monitored to ensure stability. In addition, we recommend that a risk assessment, such as a Failure Modes Effects Analysis, (FMEA) be conducted on each of the tailings dams with the results summarized in the EIS. An FMEA considers potential failure modes and identifies the relative likelihood and consequences of the failure modes, which are key considerations for impact assessment. We recommend that the EIS incorporate mitigation or alternatives to improve stability should the FMEA identify failure modes that are anything other than a tolerable risk.

For the tailings impoundment in particular, we recommend that the Corps require a demonstration that the structure complies with state dam safety criteria and has been designed by qualified persons. In addition, we recommend that the Corps require that the dam be independently reviewed (and modified if indicated by the review)[39]. Given the proposed size of the dams associated with the Pebble project and value of the downstream resources, we believe that an independent review of the dam structure is appropriate. We recommend that the results of the independent review be documented in the EIS in order to support the assessment of geotechnical stability.

As mentioned above in the Range of Alternatives section, we recommend that the Corps consider alternatives to improve physical stability of the tailings, including consideration of filtered tailings (dry stack). We note that consideration of a filtered tailings alternative and assessment of safety and stability via a FMEA and independent review panel are consistent with recommendations of *The Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach* (January 30, 2015). In addition to investigating the cause of the Mount Polley tailings storage facility failure, the Review Panel made recommendations on actions that could be taken to ensure that similar failure does not occur at other mines. We recommend that the Corps consider the Review Panel Report and, in particular, the recommendations related to best available technology for new impoundments, design commitments to support permit applications, and actions to validate the safety of tailings storage facilities.

Hazardous Materials

We recommend that the EIS address the potential direct, indirect, and cumulative impacts of hazardous materials/wastes management and storage from the construction and operation of the proposed project and alternatives. Mining activities may involve the transport of hazardous materials, and we recommend that the EIS disclose the types and amounts of materials that will be used at each step of mining operations. In addition, we recommend that the EIS describe measures that will be taken to minimize the

[39] 33 C.F.R. § 325.1.

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chances of an accidental release, emergency measures that will be implemented should such an event occur, and how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations.

We also recommend that potential health impacts to local communities or other project area users be identified, as well as any strategies employed to communicate risks or actual emergencies. As part of this analysis, we recommend that the EIS use scientific and traditional ecological knowledge to describe potential health effects from exposure to hazardous materials and the effects on the palatability of eating potentially contaminated foods.

HUMAN HEALTH AND IMPACTS TO COMMUNITIES

Sociocultural Impacts

It is anticipated that the proposed project will result in employment opportunities for Alaska Native residents, as well as generate local and corporate revenues in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts may affect a community's ability to access traditional and accustomed subsistence use areas. We recommend that the EIS identify the specific communities, federally recognized tribes, and corporations that could be impacted, both positively and negatively, which will help agency decision makers and the public understand the scope of the potential sociocultural impacts.

We recommend that the sociocultural impacts associated with this project and alternatives be fully evaluated and disclosed in the EIS and include, but not be limited to, the following:

- Socioeconomic Impacts
    - Evaluate potential changes to the region's economy as a result of the mine construction and operation (e.g., changes to commercial fishery, recreational fishery, and tourism sectors).
    - Evaluate impacts associated with economic changes to families, communities, and cultures, including potential changes to those aspects of the area's economy that are currently subsistence-based;
    - Evaluate the potential decline in the region's economy following mine closure; and
    - Evaluate replacement costs of traditional foods if access or availability are impacted by the proposed project.
- Accessibility of Traditional Use Areas
    - Identify community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, camping, berry picking, and other uses;
    - Describe the potential access limitations to these traditional use areas and their impacts to local communities; and
    - Coordinate with the tribes and communities on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.
- Compatibility of Traditional Use Areas
    - Identify project activities that may conflict with traditional and accustomed uses; and

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- Coordinate with the affected tribes and communities to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses and the construction and operation of this project.

Environmental Justice and Impacted Communities

In compliance with NEPA and Executive Order 12898 on Environmental Justice, actions should be taken to conduct adequate public outreach and participation that ensures that the public and Native American tribes understand possible impacts to their communities and trust resources.

Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.[40] The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be uniquely vulnerable populations that may be impacted.

The CEQ has developed guidance concerning how to address Environmental Justice in the environmental review process.[41] In accordance with this guidance, the EPA recommends that the EIS address the following points:

- Identify low income, minority, and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts;
- Disclose the results of meaningful involvement efforts, such as community identified impacts;
- Evaluate identified project impacts for their potential to disproportionately impact low income, minority, or Alaska Native communities, relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the Corps' decision making process;
- Propose mitigation for unavoidable impacts that will or are likely to occur; and
- Include a summary conclusion, sometimes referred to as an "environmental justice determination" that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on the EPA's website at: https://www.epa.gov/environmentaljustice.

Health Risk or Impact Analysis

The EPA recommends that the Corps undertake a screening process to determine which aspects of health (including but not limited to public, environmental, mental, social, and cultural) could be impacted by the proposed project. Depending on the screening results, an analysis of health effects, such

[40] EO 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-income Populations. February 11, 1994.
[41] http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf.

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as a health risk assessment or Health Impact Assessment, may be needed to determine the direct, indirect, and cumulative impacts to health. This analysis may need as much time to complete as the Draft EIS, therefore we recommend that early screening is essential to ensuring a timely analysis. We further recommend that the Corps partner directly with local, state, tribal, and federal health officials to determine the type of analysis needed to assess health impacts and conduct the analysis, and to determine appropriate and effective mitigation of potential health impacts.

Scope of Health Assessment in EIS

In terms of the scope of the health assessment, we recommend that the potential for contaminant exposure and resulting risks be evaluated. In addition, we recommend that the EIS consider how income from new jobs can result in positive or negative health impacts, for example by increasing socioeconomic status or by generating rapid social and community change. We also recommend considering the health impacts of potential changes to traditional way of life from the project, including reduced reliance on a traditional diet due to lack of access and corresponding increased reliance on substitutes.

Data Collection

To appropriately evaluate health impacts, we recommend that specific health data that may not be routinely collected as part of the scoping process may be required. To ensure that the necessary data are available for this evaluation, the Corps may want to involve public health professionals early in the NEPA process. Public health data and expertise for prospective health impact analysis, or for providing input on health issues, may be available from local health departments, tribal health agencies, the Alaska Department of Health and Social Services, or federal public health agencies such as the U.S. Centers for Substances and Disease Registry, or the Indian Health Service.

Methods and Tools

The Health Impact Assessment methodology is a common tool that can be used to assess potential health impacts. HIA is a combination of procedures, methods, and tools that enables systematic analysis of potential positive or negative effects of a policy, plan, program, or project on the health of a population, as well as the distribution of those effects within the population.[42] Depending on available data and potential effects, there are different levels of HIA analysis, and we recommend that the Corps' involve public health professionals in determining the appropriate level of analysis. In addition to evaluating impacts, we recommend that the HIA identify the appropriate actions to manage or mitigate health effects from the proposed project.

Guidelines for conducting an HIA are available from various sources.[43] The World Health Organization has links to many guides.[44] The International Finance Corporation has also developed detailed guidelines for conducting an HIA.[45] In addition, the State of Alaska has developed *Technical Guidance for Health Impact Assessment*, also known as the "Alaska HIA Toolkit".[46]

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[42] This definition is from the International Association for Impact Assessment (IAIA), which is modified from the World Health Organization's Gothenberg consensus statement (1999).

[43] The EPA does not endorse or recommend use of any single or particular guidance on HIA. These references are provided as general information and to assist permitting agencies with identifying additional resources on HIA.

[44] See http://www.who.int/hia/about/guides/en/.

[45] See http://www.ifc.org/wps/wcm/connect/a0f1120048855a5a85dcd76a6515bb18/HealthImpact.pdf?MOD=AJPERES.

[46] See http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf.

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CONSULTATION AND COORDINATION WITH TRIBAL GOVERNMENTS

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States' government-to-government relationships with Indian tribes. In addition, pursuant to Public Law 108-119, 118 Stat. 452, as amended by Public Law 108-4217, 188 Stat. 3267, federal agencies are required to consult with Alaska Native Claims Settlement Act corporations on the same basis as Indian tribes under Executive Order 13175. We recommend that the EIS describe the process and outcome of any government-to-government and/or government-to-corporation consultations regarding the Pebble Project, issues that were raised during the tribal consultations and how those issues were addressed.

Cooperating agency involvement establishes a mechanism for addressing intergovernmental issues throughout the EIS development process, and we support the Corps' inclusion of two tribal governments as cooperating agencies. We recommend that the Corps remain open to including other potentially affected tribal governments that have the resources and interest in serving as cooperating agencies for EIS development, consistent with the July 28, 1999, memorandum from CEQ to the heads of federal agencies.

ANALYSIS TOOLS AND METHODOLOGIES

Baseline Data Adequacy

We suggest categorizing and synthesizing existing data to ensure pertinent information is available for review and use in the EIS analysis. We understand that the Corps intends to establish focused workgroups during development of the EIS. We support this approach and recommend that the workgroups include cooperating agency subject matter experts for key areas (air, water, wetlands, fisheries, etc.) to review baseline data for completeness, identify data gaps, and recommend approaches toward resolving those gaps in a timely manner. For example, additional analysis or collection of additional data may be required to characterize the accuracy of best available baseline estimates of resources such as fish populations, groundwater elevations, or wetland extents. Such information will be critical for designing and developing a robust monitoring framework and for assessing impacts during and after project development and comparing those to the baseline.

Geochemistry/Characterization of Ore, Waste Rock, and Tailings

To provide reliable predictions of water quality and impacts to surface water and groundwater due to wastewater and mine waste management, we recommend that the physical and chemical characteristics of the ore, pit walls, waste rock, and tailings should be determined and disclosed in the EIS. Environmental samples used to support projections should represent a range of conditions that currently occur and that could occur in the future as a result of the project, including under potentially altered future climate conditions. Waste materials (ore, waste rock, tailings) used for environmental projections should be representative of the material to be mined and related to the mine plan and proposed processing methods. Physical and chemical characterization should be conducted in a manner that provides environmentally conservative estimates of impacts.

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It may be helpful to consider EPA Region 10's Sourcebook for Hardrock Mining for recommendations related to the NEPA analyses of mining projects.[47] We recommend that the following information be utilized to characterize geologic and mineralogy setting/aqueous geochemistry in the baseline environment and impact prediction sections of the EIS:

- Whole rock analysis;
- Mineralogy;
- Drill core descriptions;
- Block model or similar model (a computerized estimate of the quantity and characteristics of ore and waste);
- Available literature on the ore deposit;
- Mineral occurrences (e.g., on fracture surfaces, in groundmass, using hand specimens and thin section) with an emphasis on sulfides and carbonates;
- Acid-base accounting;
- Long-term kinetic testing (including possible startup of test pads if sufficient material and access to site are available);
- Baseline surface and ground water quality and flows (including springs);
- Potentiometric surface for groundwater;
- Hydraulic properties (e.g., hydraulic conductivity, porosity, permeability) of soil, vadose zone, and groundwater aquifers, especially under proposed locations of mine facilities; and
- Hydrogeochemical models for prediction of water quality.

Predictive Modeling

We recommend that predictive modeling be based on a site-specific conceptual model that describes the system boundaries, spatial and temporal scales, hydraulic (for water modeling) and chemical characteristics, sources of data and data gaps, and the mathematical relationships used to describe processes. We also recommend that our suggestions be applied to any environmental and predictive modeling used for assessing impacts in the EIS. The water quality model, in particular, should be capable of predicting both whole water and dissolved fractions of metals/metalloids and should provide temporal predictions that are consistent with the time-steps in applicable water quality criteria.

Any modeling documentation should include:

- Tables of parameter values used in the model;
- Tables and graphs of results;
- Uncertainty and sensitivity analyses;
- Errors associated with both measured and assumed data; and
- Recommendations for further analysis, if applicable.

We recommend that discussions on modeling include a clear statement of the management objectives intended to be achieved by the modeling, the level of analysis required to meet the objectives, and uncertainties associated with modeled outcomes. For your reference, please refer to EPA's guidance that provides recommendations for the effective development, evaluation, and use of models in

[47]U.S. EPA Region 10. 2003. EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska January 2003.

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environmental decision making.[48]

We recommend that the EIS use caution in describing absolute outcomes based on modeling. Mathematical modeling used for describing the physical and chemical characteristics of the project site and potential impacts includes a level of uncertainty; understanding these uncertainties and associated risks is necessary for informed decision making. We recommend that the study plan for modeling analysis clearly state the purpose, questions of concern, method, data, and limitations of the model to generate valuable interpretations. We also strongly recommend an appropriately conservative approach be taken with modeling and a range of predictive outcomes be discussed (e.g., most likely case, reasonable worst-case, and reasonable best-case scenarios) that reflect a range of climatic settings and critical input values. Inclusion of a reasonable range of outcomes allows the agencies to make better informed plans for mitigation, adaptive management, and contingencies to respond to reasonably foreseeable adverse impacts.

Traditional Ecological Knowledge

Due to the location of the proposed project and traditional uses of the area, we recommend the identification, inclusion, and integration of traditional ecological knowledge into the EIS analysis, as appropriate. Such anthropological work can include the collection of local and traditional knowledge concerning the affected environment, anticipated impacts from the project, and traditional hunting and land use patterns in the area. We recommend that, in addition to reviewing any pertinent traditional ecological knowledge currently available, additional studies be conducted as necessary to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed project and project alternatives. This information should be reviewed and included in the EIS to the extent possible and utilized in the analysis of potential impacts.

MITIGATION, MONITORING, AND ADAPTIVE MANAGEMENT

Mitigation

CEQ regulations at 40 C.F.R. § 1508.20 define mitigation to include five categories of actions to address impacts. Briefly stated, these are: avoiding, minimizing, rectifying, reducing, and compensating. The regulations at 40 C.F.R. § 1502.14(f), 1502.16(h), and 1508.25 indicate that appropriate mitigation measures should be addressed in an EIS both as part of the analysis of alternatives and in discussions of environmental consequences.

Mitigation is also relevant to evaluating compliance with the Guidelines, which prohibit discharges of dredged or fill material that will cause or contribute to significant degradation of the waters of the United States, and prohibit all discharges *"unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."*[49] The Guidelines identify numerous types of actions to mitigate potential adverse impacts, which include

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[48] Guidance Document on the Development, Evaluation and Application of Environmental Models (PDF). EPA/100/K-09/003. March 2009. http://www.epa.gov/crem/cremlib.html.

[49] 40 C.F.R. § 230.10(d).

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measures to avoid, minimize, and compensate for impacts. Avoidance, minimization, and compensation form a "mitigation sequence" that must be followed in order to comply with the Guidelines' requirement that all appropriate and practicable steps be taken to mitigate impacts to aquatic resources.[50] Compensatory mitigation considerations under the Guidelines are discussed further in the section on aquatic resources above.

The EPA recommends that the EIS identify the type of activities that would require mitigation measures during the construction, operation, and closure phases of this project. In addition, we recommend identifying whether implementation of each measure is required by the Corps or any other governmental entity and which entity will be responsible for implementing the measure. To the extent possible, mitigation goals and measurable performance standards should be identified in the EIS to reduce impacts to a particular level or adopted to achieve an environmentally preferable outcome. CEQ guidance on the Appropriate Use of Mitigation and Monitoring seeks to enable agencies to create successful mitigation planning and implementation procedures with robust public involvement and monitoring programs.[51]

Monitoring

Environmental monitoring programs should be designed to assess both impacts from the project and whether implemented mitigation measures are effective. We recommend that the monitoring programs:

- Define the monitoring goals and objectives;
- Provide details to demonstrate that goals and objectives will be achieved such as the parameters to be monitored, monitoring locations and frequency, data analysis, and reporting;
- Discuss actions (contingencies, triggers, adaptive management, corrective actions, etc.) that will be taken based on monitoring results;
- Identify and incorporate controls and pre-project data with quantified bias and precision to enable detection of impacts, success of BMPs, and ability to distinguish these from natural variation; and
- Require regular analysis and reporting of data to oversight agencies, including submittal of a sampling and quality assurance plan for agency approval.

We recommend that the monitoring programs be described in the EIS and that the EIS also discuss public participation, and how the public can get information on mitigation effectiveness and monitoring results.

Adaptive Management Planning

We recommend that the EIS utilize adaptive management and contingency planning to describe the strategy for responding to unforeseen circumstances at the site. The strategy should include "trigger levels" (e.g., exceedance of ecological benchmarks) or observations (e.g., statistically significant trends in indicators, permit violations, water balance problems, changes in discharge or chemistry of springs/seeps) that would set follow-up actions into motion. This strategy or plan should be described so that reviewers may comment on its adequacy. This type of plan, when coupled with the monitoring program, is necessary to mitigate for uncertainties and risks associated with predictions of

[50] 40 C.F.R. § 230.10(a), (d); *See* Memorandum of Agreement between U.S. Department of Army and the Environmental Protection Agency on the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.
[51] https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

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environmental outcomes, and will provide an early warning system of unexpected outcomes.

FINANCIAL ASSURANCE

NEPA provides for the disclosure of all information concerning the environmental consequences of a proposed action to agency decision makers and the public before decisions are made and actions are taken. A key component in determining the environmental impacts of a mining project is the effectiveness of the closure and reclamation activities, including long-term water management. In turn, whether any closure and reclamation activities that may be necessary will be adequately funded is key to determining whether those activities will be effective. We therefore recommend that the project's ability to self-fund, and/or any third-party financial assurance mechanisms, be disclosed. Disclosure of the financial assurance amount and mechanism is particularly important for this project given that PLP's proposal includes long term water management and treatment.

We recommend that the draft EIS disclose the estimated costs to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives. The EPA recommends that the final EIS identify proposed financial assurance mechanisms and demonstrate that these mechanisms would ensure that necessary reclamation work is completed.

The EPA is available for further conversations about the level of detail to include in the document. Below are the main elements that we believe should be disclosed in the EIS:

1. Site Reclamation (facility closure, earth moving/stabilization, revegetation, etc.):

- Phases of reclamation;
- Estimated cost (+/- percent) to reclaim and close the site in a manner that achieves reclamation goals and post-mining land use objectives;
- Criteria for determining success of reclamation activities for financial assurance release; and
- Costs associated with implementing contingency measures to address reasonably foreseeable but not specifically predicted outcomes.

2. Long-Term Site Management (post-closure water treatment, mitigation of impacts to aquatic resources, site maintenance, and monitoring):

- Itemized cost estimate (including reasonable contingencies) and appropriate economic variables to calculate the net present value of future expenses; and
- If a trust fund is utilized, address the "mechanics" of the fund, including:
    - Trust fund mechanism (e.g., current value trust, net present value trust, etc.);
    - Requirements for timing of payments into the trust fund;
    - How the Corps would ensure that the trust fund or other financial assurance could not be claimed by a creditor in the case of bankruptcy;
    - Acceptable financial instruments;
    - How trust management fees and taxes will be paid;
    - Identity of the trust fund beneficiaries; and
    - Identity of the operator with responsibility/liability for financial assurance.

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Bi-Monthly Regional Division Director Call

July 3, 2018: 2:00 pm (EST)

Conference Call: Dial-in number: (b) (6)

Agenda

- Introductions and Announcements (5 min)
- 309 rating transformation - Status (5 min)
- Project review (10 min)
- 404 comments (10 min)
- non-responsive - material unrelated to Bristol Bay/ Pebble Mine

Next call: September 4, 2018: 2:00 (EST)

non-responsive - material unrelated to Bristol Bay/Pebble Mine

non-responsive - material unrelated to Bristol Bay/Pebble Mine

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Bi-Monthly Regional Division Director Call

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[redacted]

Non-Responsive: Material Unrelated to Bristol Bay/Pebble Mine

[redacted]

non-responsive - material unrelated to Bristol Bay/Pebble Mine

[redacted]

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Bi-Monthly Regional Division Director Call

non-responsive - material unrelated to Bristol Bay/Pebble Mine

AMERICAN OVERSIGHT

Allnutt, David

From: McGrath, Patricia
Sent: Tuesday, June 12, 2018 8:40 AM
To: R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Allnutt, David; Anderson-Carnahan, Linda; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Szerlog, Michael
Cc: Douglas, Mark; Stern, Allyn; Douglas, Mark; Stern, Allyn
Subject: RE: Bristol Bay Check-in

- PATTY
- MARK
- PALMER

Meeting agenda:

- Status of scoping letter
- Cooperating agency meeting – 3.5 HOURS
- Site travel -
- QFR
- PLP response – (b)(5) Deliberative Process Privilege (b)(5) Deliberative Process Privilege [redacted]
- Forsgren and Hladick meeting
- Western Caucus response

-----Original Appointment-----
From: R10-OERA Calendar
Sent: Monday, February 5, 2018 10:13 AM
To: Allnutt, David; Anderson-Carnahan, Linda; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; R10-OERA Calendar; Allnutt, David; Anderson-Carnahan, Linda; McGrath, Patricia; Palomaki, Ashley; Steiner-Riley, Cara; LaCroix, Matthew; Vaughan, Molly; Hough, Palmer; Combes, Marcia; Mendelman, Krista; Lindsay, Andrea; Skadowski, Suzanne; Nogi, Jill; Peterson, Erik; Nalven, Heidi; Fordham, Tami; Szerlog, Michael
Cc: Douglas, Mark; Stern, Allyn; Douglas, Mark; Stern, Allyn
Subject: Bristol Bay Check-in
When: Tuesday, June 12, 2018 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; Conference Line: (b) (6) [redacted]

Conference Line: (b) (6) [redacted]

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McGrath, Patricia

From: POA Special Projects <poaspecialprojects@usace.army.mil>
Sent: Thursday, October 11, 2018 12:00 PM
To: bobl@jadenorth.com; Brooke Merrell; Curyung Tribal; Daugherty, Linda (PHMSA); David Seris (David.M.Seris@uscg.mil); Douglass Cooper; Hassell, David (PHMSA); J. Loichinger; Joan Kluwe; John Eddins; Kevin Pendegast; 'mary_colligan@fws.gov'; McCafferty, Katherine A CIV USARMY CEPOA (US); McCall, John; McGrath, Patricia; Vaughan, Molly; Moselle, Kyle W (DNR); manager@lakeandpen.com; POA Special Projects; nondaltontribe@yahoo.com; Wesley Furlong
Cc: Craig, Bill; POA Special Projects
Subject: Dry Stack Alternative - no do outs (UNCLASSIFIED)
Attachments: 10_11_2018_Pebble_EIS_Dry Stack_Memo.pdf

CLASSIFICATION: UNCLASSIFIED

All,
Per comments from several CAs and comments received during scoping, we are considering a Dry Stack Alternative for the TSF. Attached is a memo describing the process and rationale used to evaluate that alternative. This is for consideration and comment if you so desire, or we can discuss it on the 24th.

VR

Shane McCoy
Program Manager
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

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McGrath, Patricia

Subject: ORD support for Pebble EIS
Location: (b) (6) [redacted]

Start: Thu 4/5/2018 1:00 PM
End: Thu 4/5/2018 2:00 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: McGrath, Patricia
Required Attendees: McGrath, Patricia; Schofield, Kate; Suter, Glenn; Molly Vaughan (Vaughan.Molly@epa.gov)
Optional Attendees: Lavoie, Emma; Bierwagen, Britta
Resources: (b) (6) [redacted]

Glenn Suter
Br. Hq Bierwagen
Molly Vaughn
Kate Scaf
Scott Hagerthy

(b) (6) [redacted]

(b)(5) Deliberative Process Privilege [redacted]

(b) (6) [redacted]

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(b) (6) [redacted]

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McGrath, Patricia

Subject: Pebble Cooperating Agency Meeting
Location: Atwood Conference Center Room 106, 550 W 7th Avenue, Anchorage

Start: Wed 10/24/2018 1:30 PM
End: Wed 10/24/2018 5:30 PM

Recurrence: (none)

Meeting Status: Accepted

Organizer: Craig, Bill

Shane will be providing additional information on the meeting next week but asked that I send the teleconference and WebEx information. Additional materials/handouts will be distributed before the meeting for those calling in.

Draft Agenda:
1. Review of alternatives to be analyzed in detail
2. Format and level of detail for Chapter 2
3. Update on Appendix B (addressing USACE/CA comments, next version will be Draft EIS)
4. Review of select alternatives:
a. Filtered tailings (dry stack)
c. Other mine locations
d. Underground mining

-- Do not delete or change any of the following text. --

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EPA - Molly
Patty
USACE - Shane
NPS - Joan Kluwe
Lake + Penn - Bob Loeffler
ACHP - Jon Edding
Nondalton - Matt Newman
Curyung < Kim Williams
Courtney Carty
BSEE - Jeff
PHMSA - Kim West.
USFWS - Doug Copper
SofA - Kyle M.

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McGrath, Patricia

Subject: Pebble EIS hydro & water discussion
Location: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10Sea-ConfLineMM-206-553-7076;

Chris
Palmer
Tim
Cindi

Start: Tue 11/27/2018 9:00 AM
End: Tue 11/27/2018 10:00 AM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: McGrath, Patricia
Required Attendees: McGrath, Patricia; Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Muluken Muche (muche.muluken@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Molly Vaughan (Vaughan.Molly@epa.gov)
Optional Attendees: Barbara Butler (Butler.Barbara@epa.gov)
Resources: R10Sea-Room-14Elwha/R10-Rooms-Service-Center; R10Sea-

(b) (6) [redacted]

(b) (6) [redacted]

All-
The purpose of this meeting is to discuss our thoughts/comments on Pebble PDEIS sections related to surface water and groundwater quality, hydrology, and hydrogeology before we submit comments to the Corps. In particular, I am interested in your thoughts on the modeling efforts and sufficiency at characterizing potential impacts. I know that you all might not have completed your reviews yet, but want to discuss initial thoughts.
Thanks - Patty

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McGrath, Patricia

Subject:	Pebble EIS: Agency Meeting on Alternatives
Location:	AECOM - 500 G Street Suite 500, Anchorage or Teleconference
Start:	Wed 8/22/2018 2:00 PM
End:	Wed 8/22/2018 4:00 PM
Recurrence:	(none)
Meeting Status:	Accepted
Organizer:	Craig, Bill

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Agenda is attached.

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Pebble Project EIS

Cooperating Agency Meeting Agenda
August 22, 2018; 1:00 to 3:00 pm
AECOM Conference Room
700 G Street, Suite 500
Host: Bill Craig (907) 261-6703

(b) (6) [redacted]

1. **Introductions**
2. **Corps Status Report**
   a. **Reminder that cooperating agency comments on early drafts of Chapters 3 and 4 are due August 31.**
3. **Alternatives Development Update**
   a. **Purpose – update cooperating agencies on alternatives development and request feedback on range of alternatives/preliminary screening**
   b. **Review of Four Step Alternatives Development Process – see AECOM memo dated August 17**
      Step 1 – Define Screening Criteria
      Step 2 – Compile Full Range of Options
      Step 3 – Apply Screening Criteria to Full Range (we are here)
      Step 4 – Package Options into Alternatives
   c. **Review of the alternative options (Table 1 in August 17 memo)**
   d. **Agency questions and feedback**

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- ~~Gayla~~

Cuiyung - Courtney, Cary, Gayla

NPS - Joan Klume

Coker Penn - Nathan Hill, Bob Loeffler

SOA - Kyle Moselle

AECOM - Jessica Evans, John Isaacs, Bill Craig

EPA - Molly, Patty

USACE - Shane, Courtney

FWS - Doug Cooper, +

ACHP - John Eddins

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Alternative Screening Discussion – Cooperating Agency Meeting

August 22, 2018 1:00-3:00 PM AECOM Conference Room 700 G Street, Suite 500

Attendees and Affiliation

AECOM	Bill Craig (Host), Elizabeth Bella, Jessica Evans, Jon Isaacs, Cara Wright, Sasha Forland (phone)
USACE	Shane McCoy, Katie McCafferty
BSEE	John McCall
USFWS	Douglass Cooper, Catherine Yeargan
EPA	Patty McGrath (phone), Molly Vaughan
NPS	Joan Kluwe (phone)
State of Alaska	Kyle Moselle (phone)
ACHP	John Eddins
Lake and Peninsula Borough	Bob Loeffler, Nathan Hill (phone)
Curyung Tribal Council	Courtenay Carty (phone), Gayla Hoseth (phone)
Nondalton Tribal Council	Wes Furlong (Native American Rights Foundation) (phone), Bill Beckley (phone) and Bruno Ridolfi (Ridolfi Environmental) (phone)

Purpose of Meeting: Update on alternatives development and request feedback on range of alternatives/preliminary screening.

Action Items:

- Cooperating agencies may submit additional comments by email. USACE will email cooperating agencies to set a deadline (early next week, week of 8/27/2018).
- AECOM will forward RFI 062 on mine buildout to participants (DONE).
- AECOM will develop the updated screening options table (Appendix B of the EIS) and alternatives description for cooperating agency review (week of 9/10/2018).

Meeting Notes:

Alternatives Development Update: Bill Craig reviewed the alternatives screening criteria stepped process, that screening is currently at Step 3, and is still ongoing for some the options. Bill further explained how scoping comments were incorporated into analysis of options.

MINE LOCATIONS AND LAYOUT OPTIONS

LOC-001 through LOC-003: Patty McGrath suggested a figure to illustrate and explain why these options have been selected.

MINING OPTIONS

MNG-002: Kyle Moselle suggested expanding reason for dismissal in the subsequent narratives as screening moves forward.

PROCESSING OPTIONS

Kyle mentioned that PRO-002 and other narratives need to be clear that information was provided by PLP and has been independently evaluated by the USACE and the EIS team.

THROUGHPUT OPTIONS

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Patty suggested need for more back-up statements about financial return.

GOLD RECOVERY – No Comments

POWER OPTIONS

New Option POW-11: Bill mentioned this option will be added to address a more direct natural gas pipeline route across Cook Inlet.

ACCESS OPTIONS

ACC-003: Bill mentioned this option would put the gas pipeline in Iliamna Lake or overland for the route sections that do not include a road.

ACC-021: Catherine Yeargan recommended expanding the rationale to use lightering and explain why deep draft navigation channel is no longer in the Proposed Alternative due to sea otter concerns.

ACC-004: Bob Loeffler noted that there have been some concerns regarding use of the ferry.

Kyle discussed north ferry terminal location; there were several comments during scoping about ice stacking up, wind, erosion, high-value moose hunting habitat. Bill mentioned some north terminal site options were dismissed due to the potential level of local project activity.

A site east of the ACC-006 option (small bay east of proposed site) was suggested as an additional option or as a variant to the proposed action (similar to how the Kokhanok East Ferry Terminal Site was included in ACC-001).

ACC-011: Bob mentioned this option may create more issues for subsistence and village of Kokhanok. Bill said evaluation would continue in greater detail.

CONCENTRATE TRANSPORT

Patty mentioned there is a need to clarify what concentrate would be transported (copper or molybdenum concentrates, or both). Bill mentioned more detailed descriptions would be developed and considered. A new option may be a concentrate pipeline and return water line to process facility or a water treatment plant with marine outfall at Diamond Point facilities.

RECLAMATION AND CLOSURE – No comments

TAILINGS

Bill said paste tailings and dry stack options are under review. Kyle offered that the State can put resources toward the evaluation to help.

Patty suggested reviewing the ongoing EIS process for the Resolution copper/molybdenum mine in Arizona regarding tailings management techniques.

Kyle suggested as an editorial comment to focus on Proposed Alternative then incorporate evaluation of component options as alternatives; suggested using the Access options description as example to possibly organize options presentation better.

Bob had an editorial comment – TSF-011 not listed. Elizabeth Bella thought the content may have been moved to mitigation discussions and the numbering sequence change not updated.

TSF-012: Need to edit the Assessment piece to clarify that all tailings management options will need to account for the conditions (e.g., seismic activity, unexpected water volumes) – not just the option for Emergency Storage.

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Patty asked whether there is an option to place bulk and pyritic tailings in one location. Bill replied no but a combined bulk and pyritic facility could be analyzed. Kyle mentioned it may be reasonable to evaluate environmental effects of leaving pyritic tailings in temporary storage and not returned to pit.

Bill mentioned that PLP was asked what a 78-year mine with 55% development would look like –information was been requested for cumulative analysis (RFI 062).

Sasha Forland will forward RFI 062 to cooperating agencies and follow up once a response is received (DONE).

PAG WASTE ROCK OPTIONS – No comments

WATER TREATMENT AND AIR – No comments

Kyle mentioned the State received RFI 064 (regarding water quality criteria) and expects ADEC response by next Tuesday (Aug 28) to inform water treatment analysis.

Alternative Discharge Points: Patty asked if other discharge locations are included in options. Kyle noted there were questions during scoping about discharge locations.

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McGrath, Patricia

Subject:	Pebble permit oversight/NEPA team
Location:	R10Sea-Room-14Elwha/R10-Rooms-Service-Center
Start:	Thu 4/26/2018 1:00 PM
End:	Thu 4/26/2018 2:00 PM
Recurrence:	Monthly
Recurrence Pattern:	the fourth Thursday of every 1 month(s) from 1:00 PM to 2:00 PM
Meeting Status:	Meeting organizer
Organizer:	McGrath, Patricia
Required Attendees:	Molly Vaughan (Vaughan.Molly@epa.gov); Matthew LaCroix (LaCroix.Matthew@epa.gov); Christopher Meade (Meade.Chris@epa.gov); Cindi Godsey (Godsey.Cindi@epa.gov); Karl Pepple (Pepple.Karl@epa.gov); Jay McAlpine (McAlpine.Jay@epa.gov); Ashley Palomaki (Palomaki.Ashley@epa.gov); Neverley Shoemake (shoemake.neverley@epa.gov); Palmer Hough (Hough.Palmer@epa.gov); Timothy Maley (maley.timothy@epa.gov); Chris Eckley (Eckley.Chris@epa.gov)
Optional Attendees:	Skadowski, Suzanne
Resources:	R10Sea-Room-14Elwha/R10-Rooms-Service-Center

(b) (6) [redacted]

Monthly Pebble permit oversight/NEPA team meeting
Agenda to be sent out before each meeting

Here is agenda for our team meeting today. Please let me know if you have additional items:

Status of scoping letter – Molly
Scoping meetings – Molly, Neverley, Patty
ORD support – Patty
Next steps

(b)(5) Deliberative Process Privilege [redacted]

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THE pebble PARTNERSHIP

EPA Region 10
Project Overview
February 8, 2018

John Shively – Chairman
James Fueg – Vice President, Permitting

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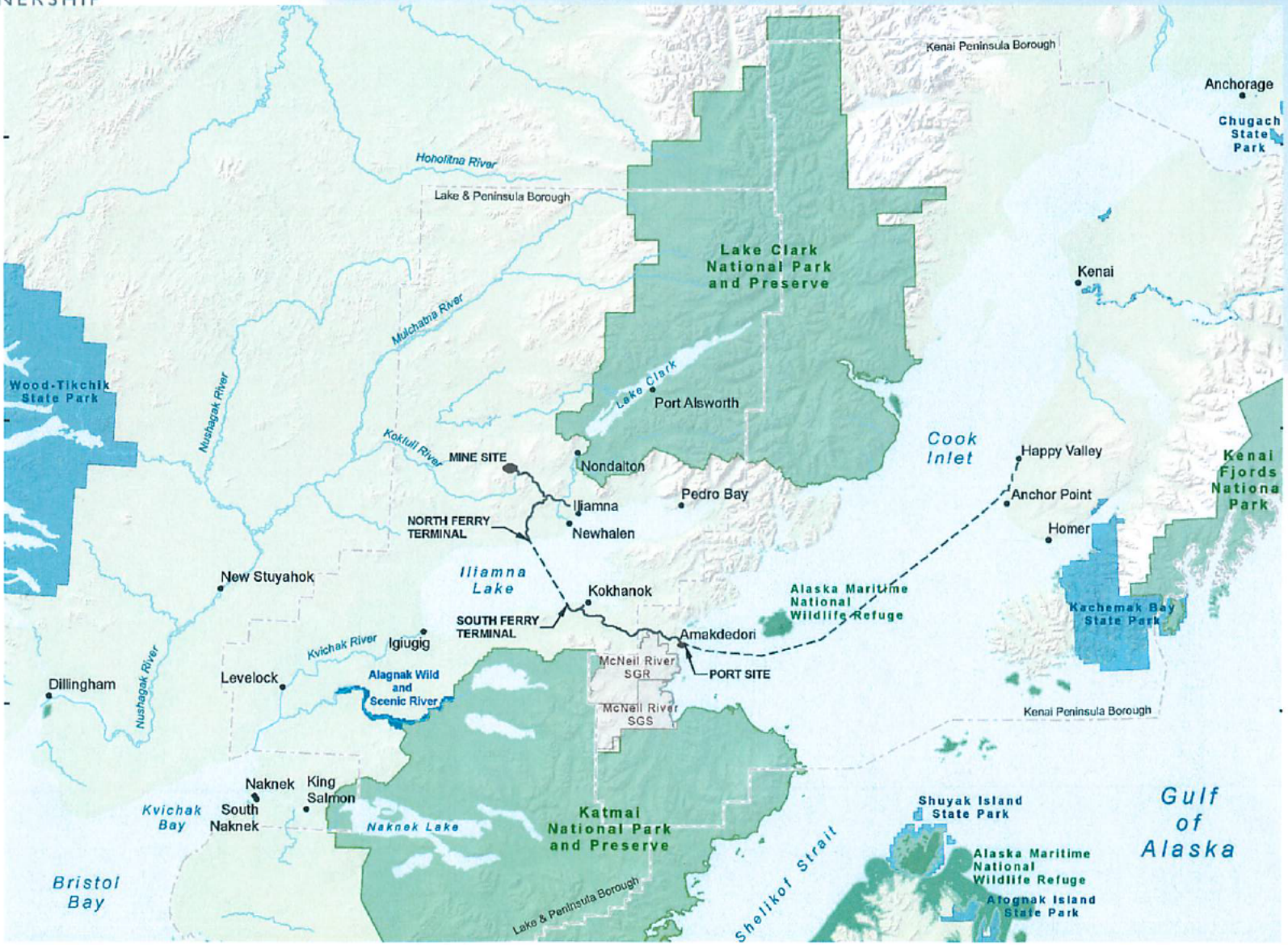
Project Location



EPA-00135-006576

(b)(5) Deliberative Process Privilege

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Project Summary

- 20-year operating life
- 1.2 billion tons of material mined
- Annual processing rate of 58 million tons (b)(5) Deliberative Process Privilege [redacted]
- Annual Cu-Au concentrate 600 thousand tons
- Annual Mo concentrate 15 thousand tons
- No permanent waste rock storage facility
- Segregated storage of bulk and pyritic tailings
- 230 megawatt gas fired powerplant
- Gas pipeline from Anchor Point
- Road and lake ferry to Cook Inlet
- 850 jobs during operations

(b)(5) Deliberative Process Privilege [redacted]

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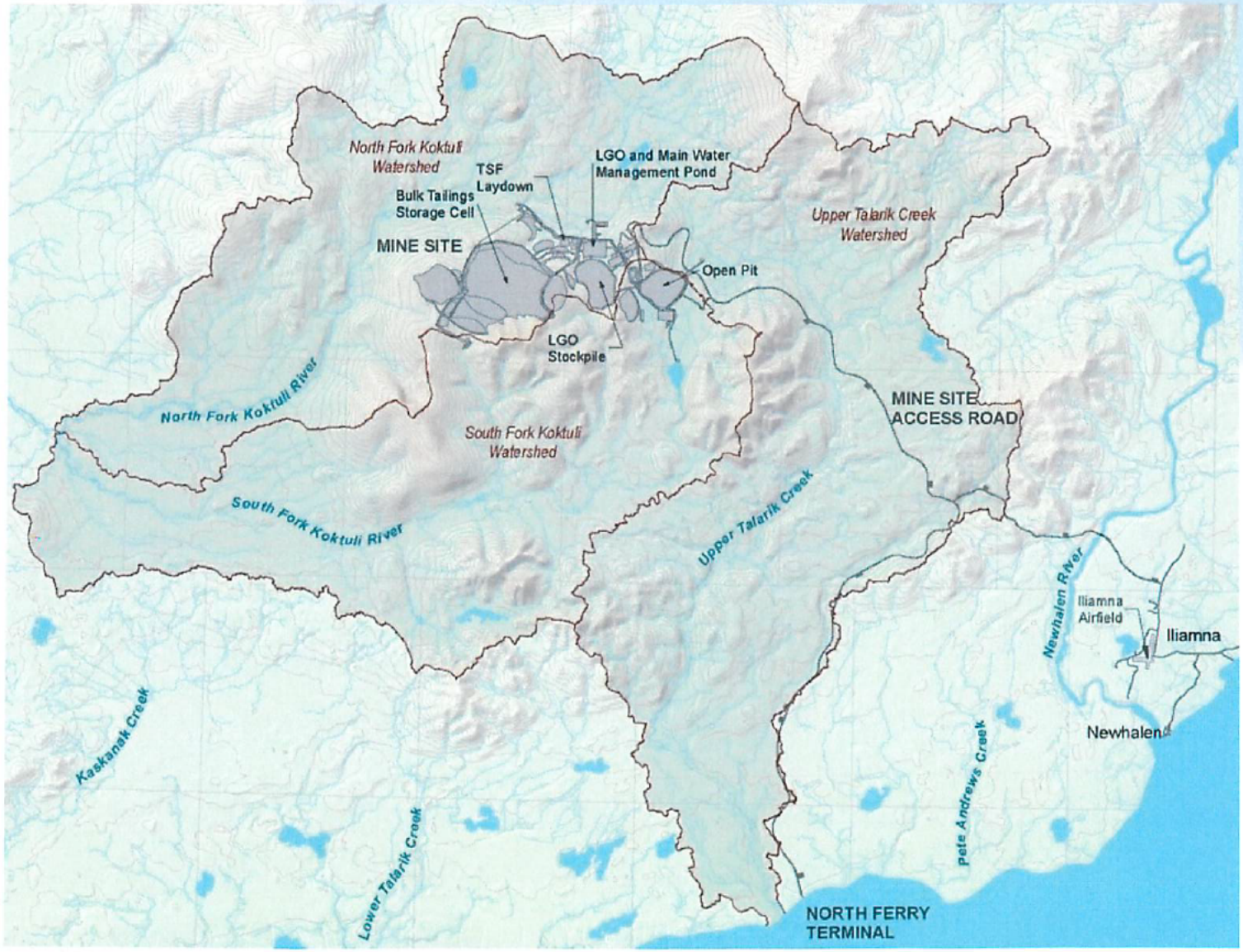
THE pebble PARTNERSHIP

Layout and Major Drainages

(b)(5) Deliberative Process Privilege

EPA-00135-006578



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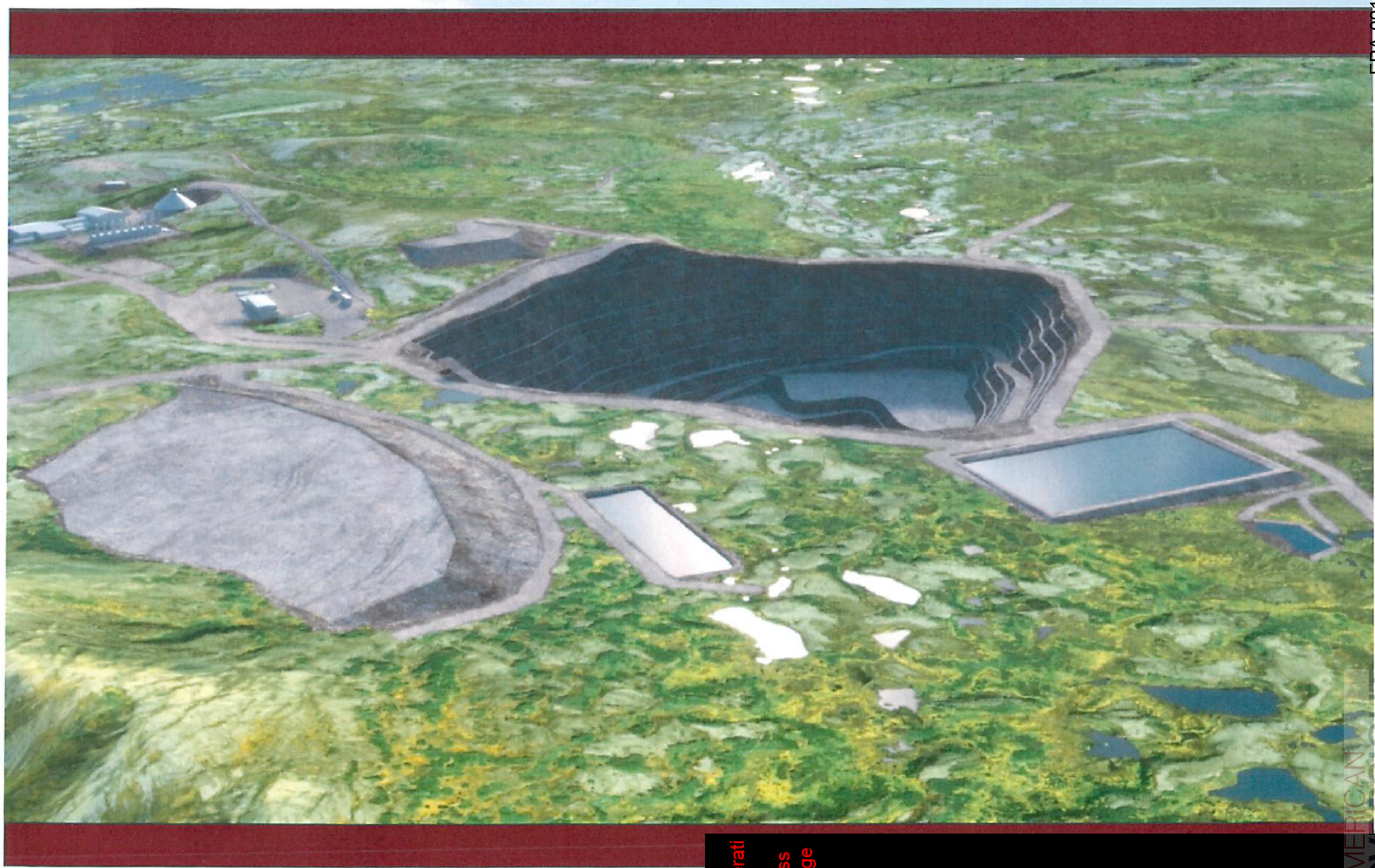
Mining



EPA-00135-006579

(b)(5) Deliberative Process Privilege

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Tailings Storage Facility

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

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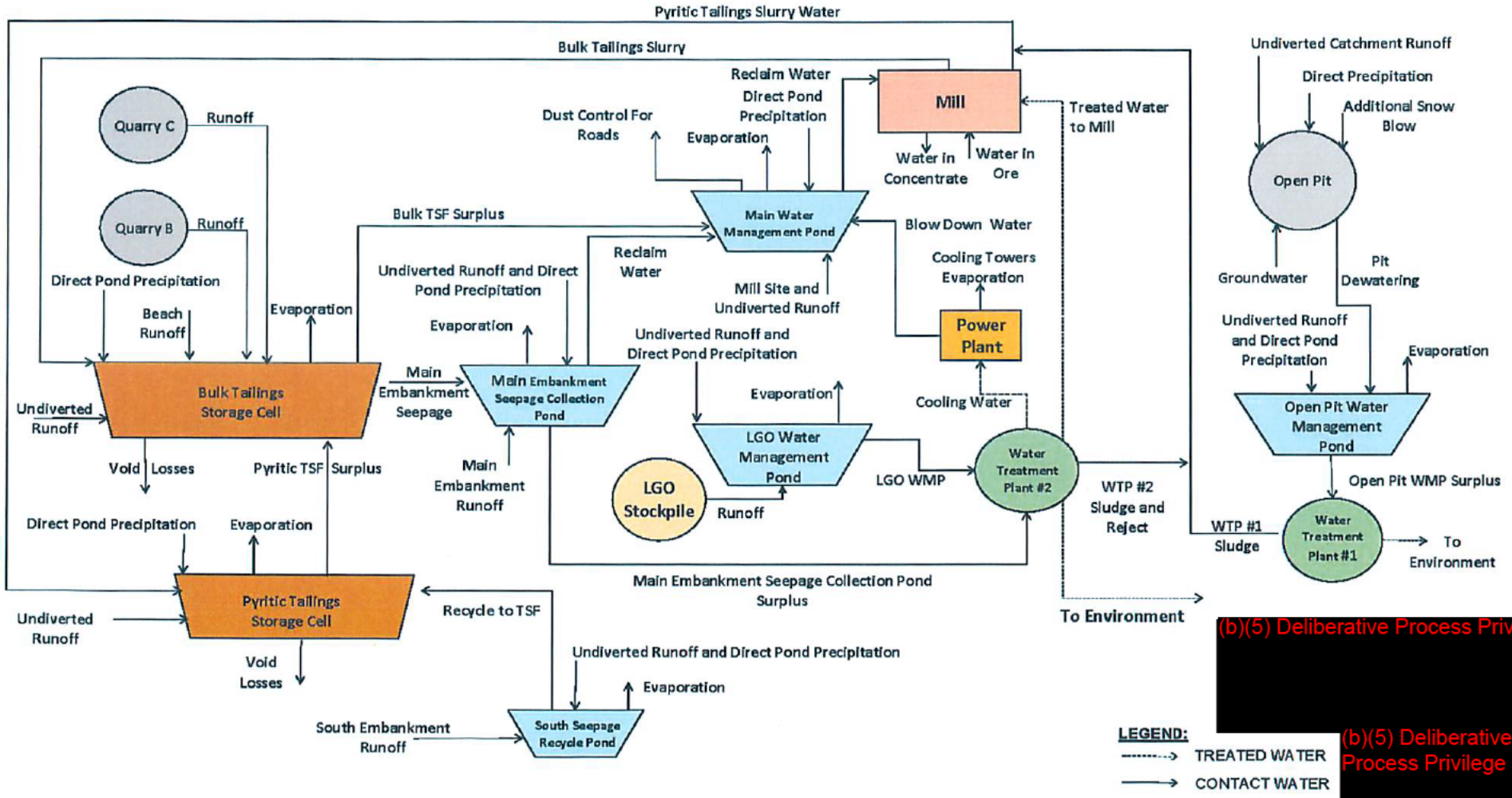
Water Balance

(b)(5) Deliberative Process Privilege



(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

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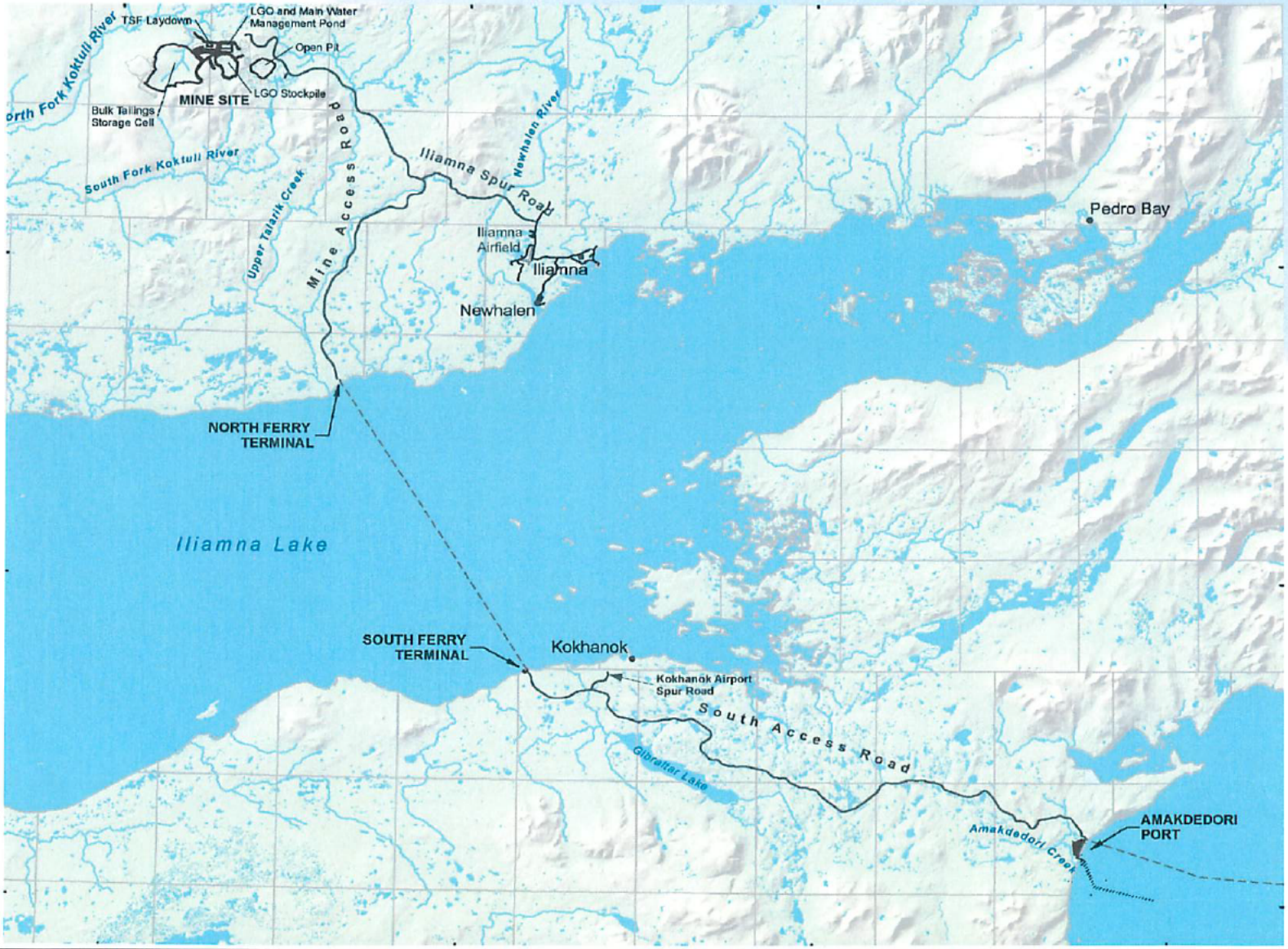
(b)(5) Deliberative Process Privilege

THE pebble PARTNERSHIP

Access



(b)(5) Deliberative Process Privilege

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Iliamna Lake Ferry

(b)(5) Deliberative Process Privilege

- **Ice breaking ferry for year-round operation**
  - Design based on operating ferry on Williston Lake
- **Ferry will be constructed at the south ferry terminal location**
- **Average of one round trip per day**
  - 3 hours each way in ice
  - 1.5 hours each way in open water

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege



(b)(5) Deliberative Process Privilege



(b)(5) Deliberative Process Privilege



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Amakdedori Port Site

- Causeway and jetty
- 50-ft draft dredged channel
- North side of jetty for supply barge access
- Annual operations traffic
  - Up to 25 concentrate vessels
  - Up to 30 supply barges

[redacted]

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege





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United States Army Corps of Engineers
Meeting Agenda
Cooperating Agencies

Department of the Army Permit Application POA-2017-271, Pebble Limited Partnership

June 6, 2018 0800-1530

Join WebEx meeting
(b) (6) [redacted]

Join from a video system or application
(b) (6) [redacted]

Join by phone
(b) (6) [redacted]

Meeting Objectives: Identify technical working groups and points of contacts, Protocols for technical team interactions and expectations.

0800-0900	Welcome and Introductions
	Introductions of new CAs and revisit previous CAs
0900-1000	Introduction to Technical leads and back grounds
1000-1030	Break
1030-1200	Review of roles and responsibilities;
	Cooperating Agency Coordination Plan/Protocols and expectations
1200-1300	Lunch
1300-1400	Proposed Schedule for resource planning
	Chapter 3 – send for 30 day review
	Scoping report; comments by 29 June
1400-1415	Break
1415-1530	Other*, wrap up, follow up task identification, closing comments

*other may be discussion on project changes to date

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6/6 - CA meeting

USACE - Shane, Katie

USCG - Dave Seris

BSEE - John McCall

USFWS - Douglas Cooper

Vondalton / NARF - ~~Matt~~ Newman (NARF)
George Aloxi

NPS - Joan Klimas

EPA - Patty, Molly

AECOM - Bill Craig

ADNR - Kylee Mosolle (via phone)

Curyung - Courtney Curry Tribal Administrator

ACHP - John Eddins

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

(b)(5) Deliberative Process Privilege

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Individuals are required to self-report any arrests, charges or convictions that would keep the individual from obtaining or maintaining a favorable suitability or fitness determination. Programs impacted are referenced within the 42 U.S. Code § 13041 and include impacted individuals such as employees, DoD contractors, providers, adults residing in a family child care home, volunteers, and others with regular reoccurring contact with children.

Affected Public: Individuals or Households.

Annual Burden Hours: 1,250.

Number of Respondents: 5,000.

Responses per Respondent: 1.

Annual Responses: 5,000.

Average Burden per Response: 15 minutes.

Frequency: On occasion.

Respondents are DoD contractors, family child care providers, family child care adult family members residing in the home, and specified volunteers who provide child care services for children under age 18. This form will be initiated by DoD staff and will be maintained in the initiating DoD offices and/or appropriate Human Resources or Security Offices.

Dated: March 23, 2018.

Aaron T. Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2018–06284 Filed 3–28–18; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement (EIS) for the Pebble Project

AGENCY: U.S. Army Corps of Engineers, Department of Defense.

ACTION: Notice of intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (the Corps) intends to prepare a Draft Environmental Impact Statement (DEIS) to assess the potential social, economic, and environmental impacts associated with the proposed Pebble open pit mine in wetlands, streams and Ocean near Cook Inlet. The EIS will assess potential effects of a range of alternatives.

DATES: Public scoping meetings are tentatively scheduled in Anchorage, Homer, Dillingham, King Salmon (Naknek), Iliamna (Newhalen), Nondalton, and Kokhanok (Iguigig) will occur in mid-April 2018. Information about these meetings and meeting dates will be published locally, posted at *http://www.pebbleprojecteis.com,* and available by contacting the Corps.

ADDRESSES: U.S. Army Corps of Engineers, P.O. Box 6898, Joint Base Elmendorf Richardson, AK 99506–0898.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EIS should be referred to: Mr. Shane McCoy, Regulatory Division, *telephone:* (907) 753–2715 at *http://www.pebbleprojecteis.com* or by mail to the above address. To be added to the project mailing list and for additional information, please visit the following website: *http://www.pebbleprojecteis.com.*

SUPPLEMENTARY INFORMATION: An application for a Department of the Army permit was submitted by the Pebble Limited Partnership pursuant Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) on December 22, 2017, and was advertised in a Public Notice, POA–2017–271, on January 5, 2018. The public notice is available on Alaska District's public website at: *http://www.poa.usace.army.mil//Portals/34/docs/regulatory/publicnotices/2018/POA-2017-271%20Pebble_PN.pdf?ver=2018-01-05-153755-640.*

1. Description of the Proposed Project. Pebble Limited Partnership (PLP) is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as an open-pit mine, with associated infrastructure, in southwest Alaska, north of Lake Iliamna. The proposed project would require approximately four years to construct, with a projected mine life of approximately 20 years. Major project components include excavation of an open pit, that ultimately would be approximately 6,500 feet long by 5,500 feet wide, with depths between 1,330 and 1,750 feet; a tailings impoundment with 1.1 billion tons storage volume; a low grade ore stockpile with the capacity to store up to 330 million tons; an open pit overburden stockpile; a mill facility processing approximately 160,000 tons of ore per day; a natural gas-fired power plant with a total connected load of 230 mega-watt (MW), supplied by a 188-mile, 10 to 12-inch diameter, natural gas pipeline across Cook Inlet and Iliamna Lake to the Mine Site; and transportation infrastructure including a 30-mile road from the Mine Site to a ferry terminal on the north shore of Iliamna Lake, an 18-mile crossing with an ice-breaking ferry to a terminal on the south shore of Iliamna Lake, and a 35-mile road to the proposed Amakdedori Port on Cook Inlet. The proposed mine and related facilities would have a total footprint of approximately 5.9 square miles.

The pipeline route would originate on the Kenai Peninsula, connecting to the existing gas pipeline infrastructure near Happy Valley. A metering station would be constructed at the off-take point and the pipeline would then follow south along the Sterling Highway for 9 miles to a gas-fired compressor station north of Anchor Point. The compressor station would feed a 94-mile subsea pipeline from the east shore of Cook Inlet to Amakdedori Port on the west shore. A second gas-fired compressor station would be located at the port site. The pipeline route would then follow a 30-mile mine access road to the south shore of Iliamna Lake, where the pipeline would enter Iliamna Lake for approximately 18 miles. The pipeline would come ashore at on the north shore of the lake, where it would follow the mine access road to the Mine Site.

2. *Alternatives.* A range of alternatives of the proposed action will be identified, and those found to be reasonable and practicable will be fully evaluated in the DEIS, including: the no action alternative, the applicant's proposed alternative, alternative mine locations and mine plans, alternative mining methods and processes, alternatives that may result in avoidance and minimization of impacts, and mitigation measures not in the proposed action. However, this list is not exclusive and additional alternatives may be considered for inclusion.

3. *Scoping Process and Public Involvement.* The scoping period will extend from April 1, 2018, through April 30, 2018. Scoping is conducted to assist in determining the scope of analysis, significant issues and alternatives to be analyzed in depth in the DEIS. Comments should be as specific as possible. Additional public involvement will be sought through the implementation of the public involvement plan and the agency coordination team.

4. *Significant Issues.* Numerous issues will be analyzed in depth in the DEIS related to the effects of the proposed Pebble mine and associated infrastructure construction, operation, and closure. These issues will include, but will not be limited to, the following: wetlands, water quality, air quality, hazardous materials, fish and wildlife, vegetation, cultural resources, food production, land use, needs and welfare of the people (socioeconomics including commercial fishing and tourism), recreation, general environmental

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concerns, historic properties, navigation, and safety.

5. *Additional Review and Consultation.* Additional review and consultation which will be incorporated into the preparation of the DEIS will include, but are not necessarily limited to coordination under Section 401 of the Clean Water Act, Essential Fish Habitat coordination; consultation under Section 7 of the Endangered Species Act; and consultation under the National Historic Preservation Act

Shelia Newman,

Deputy Chief, Regional Regulatory Division, U.S. Army Corps of Engineers, Alaska District.

[FR Doc. 2018–06369 Filed 3–28–18; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2018–ICCD–0030]

Agency Information Collection Activities; Comment Request; Expanding Opportunity Through Quality Charter Schools Program: Technical Assistance To Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices

AGENCY: Office of Innovation and Improvement (OII), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before May 29, 2018.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use *http://www.regulations.gov* by searching the Docket ID number ED–2018–ICCD–0030. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW, LBJ, Room 216–44, Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Patricia Kilby-Robb, 202–260–2225.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices.

OMB Control Number: 1855–0016.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 102.

Total Estimated Number of Annual Burden Hours: 136.

Abstract: This request is for an extension of OMB approval to collect data for the Expanding Opportunity through Quality Charter Schools Program: Technical Assistance to Support Monitoring, Evaluation, Data Collection, and Dissemination of Best Practices formerly titled Charter Schools Program (CSP) Grant Awards Database. This current data collection is being coordinated with the EDFacts Initiative to reduce respondent burden and fully utilize data submitted by States and available to the U.S. Department of Education (ED). Specifically, under the current data collection, ED collects CSP grant award information from grantees (State agencies, charter management organizations, and some schools) to create a new database of current CSP-funded charter schools. Together, these data allow ED to monitor CSP grant performance and analyze data related to accountability for academic purposes, financial integrity, and program effectiveness.

Dated: March 23, 2018.

Tomakie Washington,

Acting Director, Information Collection Clearance Division, Office of the Chief Privacy Officer, Office of Management.

[FR Doc. 2018–06244 Filed 3–28–18; 8:45 am]

BILLING CODE 4000–01–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0819]

Information Collection Being Reviewed by the Federal Communications Commission

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or the Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collection. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the

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